

Musician's Manual



64 Voice Expandable Stage and Studio Keyboard

ENSONIQ™

LEADING THE WORLD IN SOUND INNOVATION

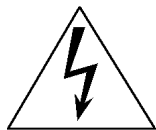
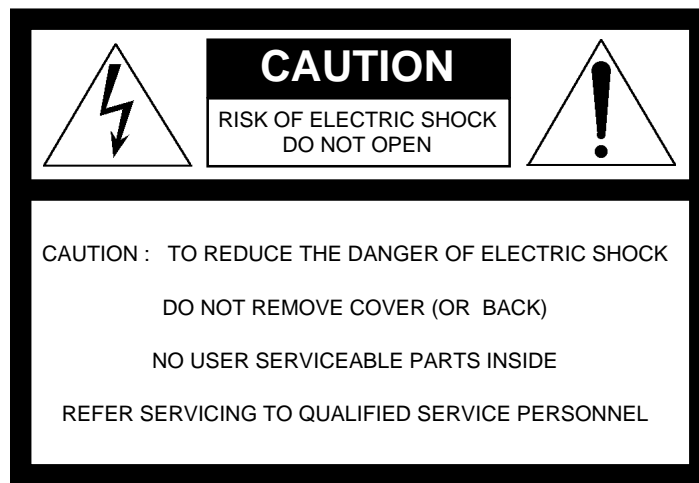
READ THIS FIRST!

WARNING!!

Grounding Instructions

This product must be grounded. If it should malfunction or break down, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

DANGER: Improper connection of the equipment-grounding conductor can result in the risk of electric shock. Check with a qualified electrician or service personnel if you are in doubt as to whether the product is properly grounded. Do not modify the plug provided with this product — if it will not fit the outlet, have a proper outlet installed by a qualified electrician.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electronic shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

SEE IMPORTANT SAFETY INSTRUCTIONS ON BACK COVER!

**"INSTRUCTIONS PERTAINING TO A RISK OF FIRE,
ELECTRIC SHOCK, OR INJURY TO PERSONS"**

IMPORTANT SAFETY INSTRUCTIONS

WARNING—When using electric products, basic precautions should always be followed, including the following:

1. Read all the instructions before using the product.
2. Do not use this product near water - for example, near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimming pool, or the like.
3. This product should be used only with a cart or stand that is recommended by the manufacturer.
4. This product, either alone or in combination with an amplifier and headphones or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
5. The product should be located so that its location or position does not interfere with its proper ventilation.
6. The product should be located away from heat sources such as radiators, heat registers, or other products that produce heat.
7. The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.
8. This product may be equipped with a polarized line plug (one blade wider than the other). This is a safety feature. If you are unable to insert the plug into the outlet, contact an electrician to replace your obsolete outlet. Do not defeat the safety purpose of the plug.
9. The power supply cord of the product should be unplugged from the outlet when left unused for a long period of time.
10. Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
11. The product should be serviced by qualified service personnel when:
 - a. The power supply cord or the plug has been damaged; or
 - b. Objects have fallen, or liquid has been spilled into the product; or
 - c. The product has been exposed to rain; or
 - d. The product does not appear to operate normally or exhibits a marked change in performance;
or
 - e. The product has been dropped, or the enclosure damaged.
12. Do not attempt to service the product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified service personnel.

SAVE THESE INSTRUCTIONS



LEADING THE WORLD IN SOUND INNOVATION

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Audio Jacks

Phones, MainLeft (Mono), MainRight, AuxLeft (Mono), AuxRight jacks allow you to listen to the ZR-76. See Chapter 2.

Foot Pedal Jacks

CV Pedal (Volume), Footswitch1 (Sustain), Footswitch2 jacks provide additional functionality through the use of foot pedals. See Chapter 3.

Demo button

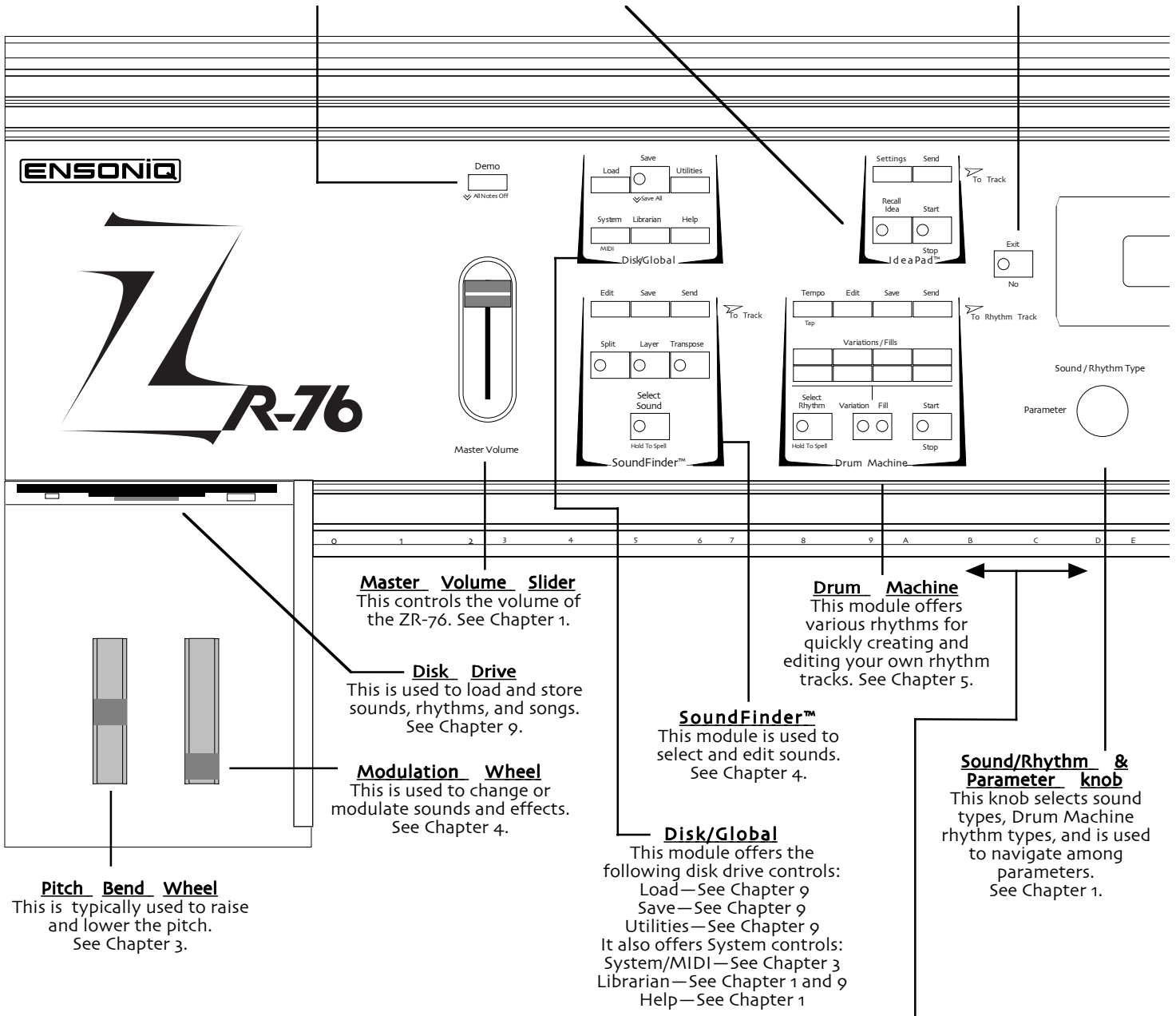
Plays special demonstration songs to give you an idea of how terrific the ZR-76 sounds. See Chapter 1.

Idea Pad™

A special recorder that continuously captures your ideas. See Chapter 6.

Exit/No button

This button is used to cancel commands and answer questions posed on the display. See Chapter 1.



Master Volume Slider

This controls the volume of the ZR-76. See Chapter 1.

Disk Drive

This is used to load and store sounds, rhythms, and songs. See Chapter 9.

Modulation Wheel

This is used to change or modulate sounds and effects. See Chapter 4.

Pitch Bend Wheel

This is typically used to raise and lower the pitch. See Chapter 3.

Drum Machine

This module offers various rhythms for quickly creating and editing your own rhythm tracks. See Chapter 5.

SoundFinder™

This module is used to select and edit sounds. See Chapter 4.

Disk/Global

This module offers the following disk drive controls:
Load—See Chapter 9
Save—See Chapter 9
Utilities—See Chapter 9
It also offers System controls:
System/MIDI—See Chapter 3
Librarian—See Chapter 1 and 9
Help—See Chapter 1

Sound/Rhythm & Parameter knob

This knob selects sound types, Drum Machine rhythm types, and is used to navigate among parameters. See Chapter 1.

alpha-numeric characters (0-9, A-Z)

The keys correlating to the alpha-numeric characters can be used to name and select sounds and sequences. See Chapters 4 and 9.

MIDI Jacks

MIDI In, Out Thru jacks allow interfacing with other MIDI devices. See Chapter 2.

AC Line/Power

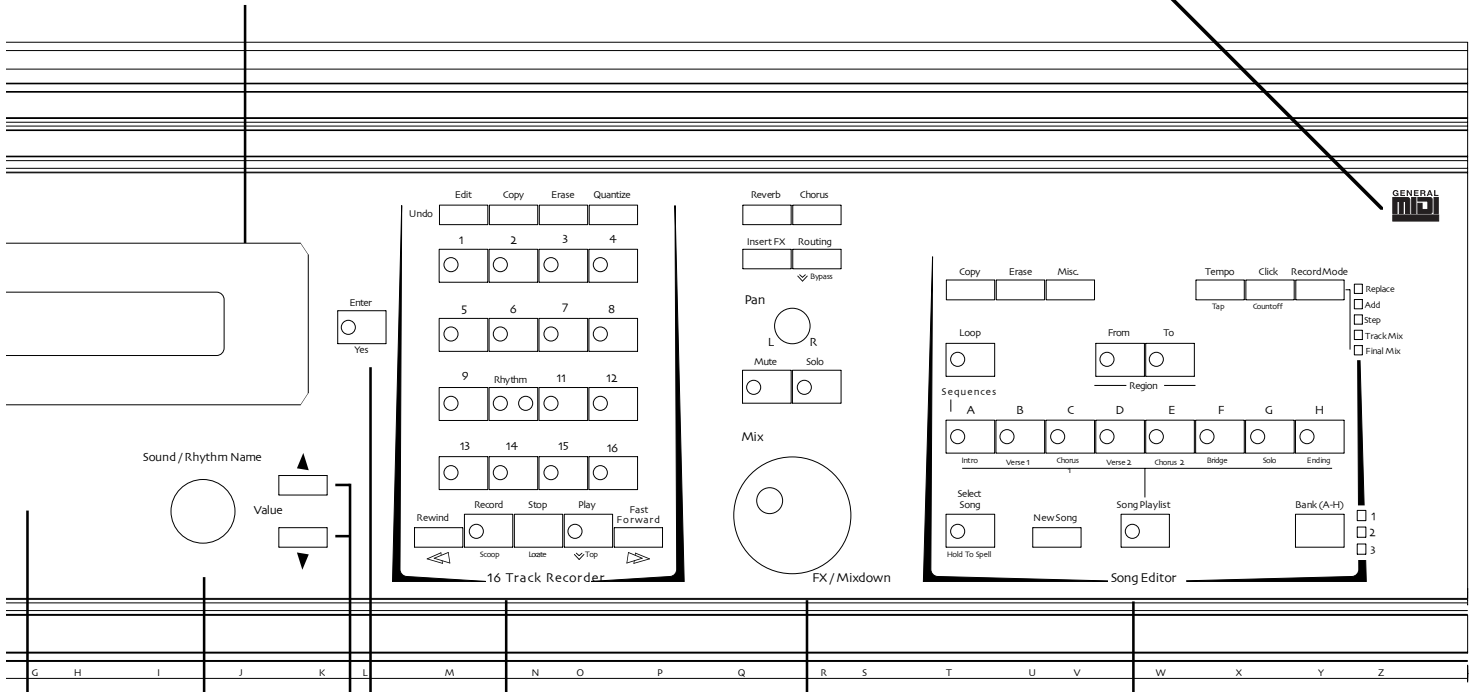
Jack and switch used for powering up the ZR-76. See Chapter 1.

LCD Display

The 40-character display shows information and offers choices. See Chapter 1.

General MIDI-compatible

The ZR-76 is General MIDI-compatible. See Chapter 3.



Sound/Rhythm Name & Value knob

This knob selects sounds using ENSONIQ's exclusive SoundFinder™ and RhythmFinder™. It is also used to edit displayed parameters. See Chapter 1.

Up/Down Arrow buttons

These buttons are used to select ZR-76 parameters. See Chapter 1.

16 Track Recorder

This module is used to turn your idea into a fully-realized musical arrangement. See Chapter 7.

Enter/Yes button

This button is used to answer questions posed on the display. See Chapter 1.

FX/Mixdown

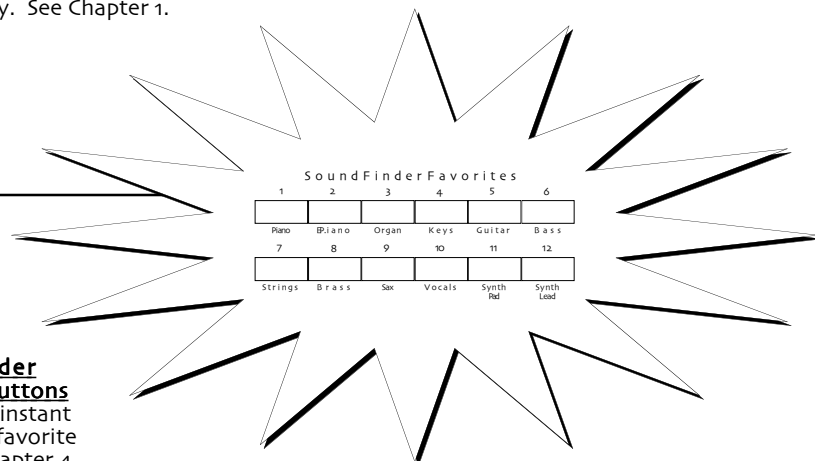
This module controls the volume and pan settings, and accesses the effects settings. See Chapter 8.

Song Editor

This module provides control over each sequence. See Chapter 7.

SoundFinder Favorites buttons

These provide instant access to your favorite sounds. See Chapter 4.



Chapter 1

Welcome

Congratulations on the purchase of your new ZR-76, and thank you for choosing ENSONIQ, the leader in workstation design since the 1987 introduction of the first affordable workstation, the ESQ-1. The ZR-76 is an exciting, third-generation product. Based on the popular MR-76, the ZR-76 takes the concept of a song composition workstation to the next step.

The ZR-76 offers a comprehensive array of tools for the composer and performer: terrific CD-quality 44kHz sounds—including The Perfect Piano™ by William Coakley—crystal-clear 18-bit effects, a full-featured 16 Track Recorder, a powerful FX/Mixdown facility, a built-in Drum Machine for jamming, and ENSONIQ's revolutionary Idea Pad™, a brand-new way to capture inspiration as it strikes. The ZR-76 also features the latest advances in ENSONIQ's SoundFinder™ technology, as well as onscreen Help. These features, and more, will be discussed in the overview later in this chapter.

The first thing you'd probably like to do is check out some of your ZR's exciting features.

Getting Ready

The simplest way to listen to the ZR-76 is by using stereo headphones. Push the ZR's Master Volume slider all the way down and plug your headphones into the rear-panel Phones jack. The Phones jack output works with both low and high impedance headphones. Make sure you set the Master Volume slider carefully—high-output volume levels could damage your hearing. Play some keys on the keyboard, and carefully move the Master Volume slider up to a comfortable listening level.

You may also listen using the rear-panel Main Left and Main Right outputs (or the Main Left output only if you want to listen in mono). If you're connecting your ZR-76 to a mixer, lower the mixer's input trims and faders all the way. Move the ZR's Master Volume slider all the way up, and then adjust the input trims and faders on your mixer to set the volume to an appropriate level.

If you'd like to run the ZR's Main outputs through your home stereo, bear in mind that your ZR-76 is capable of producing a far greater dynamic range than what your system may be used to, and so, a little care is required. Set the ZR's Master Volume slider about halfway up, and operate your stereo at conservative levels to be on the safe side.

There's a more detailed description of how to connect the ZR-76 and set appropriate volume levels in *Chapter 2* of the ZR-76 Musician's Manual—*The ZR-76 Studio*.

Powering Up

Once you've got a listening method established, you can power up your ZR-76.

To Turn On the ZR-76

1. Plug the ZR's line cord into the AC Line receptacle on its rear panel.
2. Connect the other end of the cable to a grounded AC outlet.
3. Press the Power button on the right side (viewed from the front) of the ZR's rear panel.

Once your ZR-76 completes its power-up sequence, the display will look something like this:

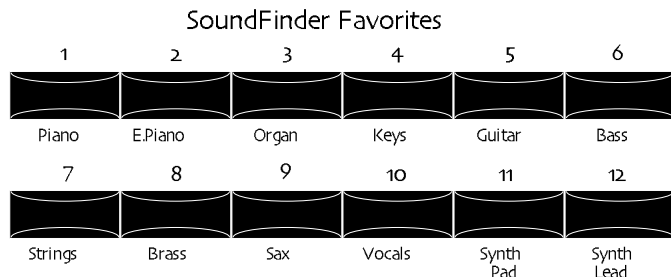


You're ready to start enjoying your ZR-76 sounds.

Explore the ZR-76 Sounds

Finding Favorite Sounds

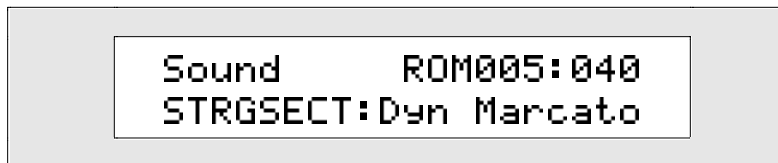
In the center of the ZR-76’s front panel, underneath its display, you’ll find the two rows of SoundFinder Favorites buttons. These buttons provide instant access to the best of the ZR-76’s sounds.



Under each Favorites button is a description of the sound that will be selected when you press the button.

To Select Sounds Using the Favorites Buttons

1. Press any of the Favorites buttons—the sound assigned to the button will be selected and shown in the ZR’s display. For example, if you press the Strings Favorites button, you’ll see:



↑
The name of the sound you’ve just selected

2. Play the ZR’s keyboard to enjoy this sound.
3. Press the other Favorites buttons and play the keyboard to hear to the sounds they select.

Tip: You can select six additional favorites by holding down an upper button and pressing the button just beneath it, or vice versa.

You can actually assign any sound you like to any of Favorites button, or upper/lower pair of buttons. To learn more about the Favorites buttons, see *Chapter 4—SoundFinder*.

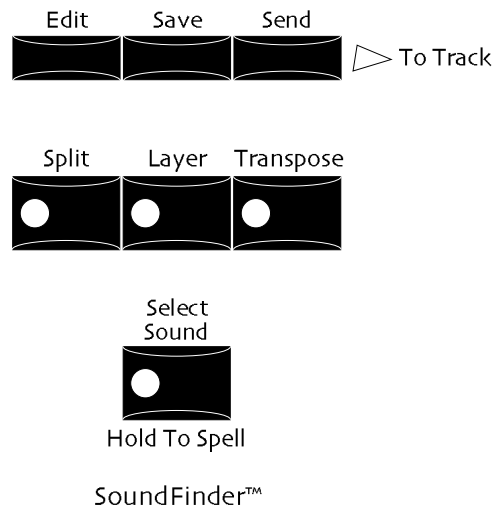
Introducing SoundFinder™

SoundFinder™ sorts the ZR’s many onboard sounds into useful categories, so that finding them is a snap! SoundFinder also allows you to locate sounds by typing their names on the keyboard.

SoundFinder will be described more fully in the conceptual overview later in this chapter, and in full detail in *Chapter 4—SoundFinder*. You can find a complete list of the ZR-76 sounds in *Chapter 13—Supplemental Information*.

To Choose ZR-76 Sounds by Category

1. Locate the SoundFinder section on the ZR's front panel.

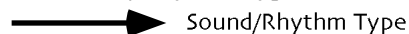


2. Press the Select Sound button—its LED lights and the main SoundFinder display appears:

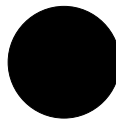


The sound you see displayed may be different

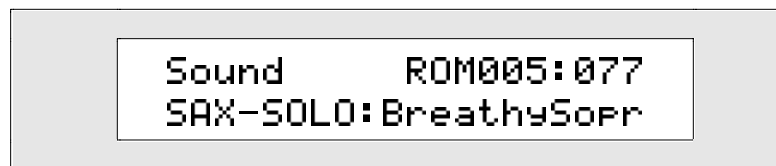
3. Play the keyboard to hear the selected sound.
4. Turn the left-hand Sound/Rhythm Type knob clockwise and counter-clockwise on the ZR's front panel.



Parameter

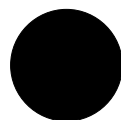
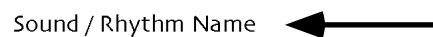


As you turn the knob, different sound categories appear in the lower left corner of the display.



The currently selected sound type

5. Find a sound type category that interests you.
6. Turn the Sound/Rhythm Name knob in either direction to choose a sound of the selected type.



Value

Sound names appear on the lower right-hand portion of the display.



The currently selected sound

7. Play some music on the keyboard to hear the sound you've selected.
8. To select other sounds, use the same method: turn the Sound/Rhythm Name knob to locate the type of sound you want to hear, and the Sound/Rhythm Name knob to pick an individual sound.

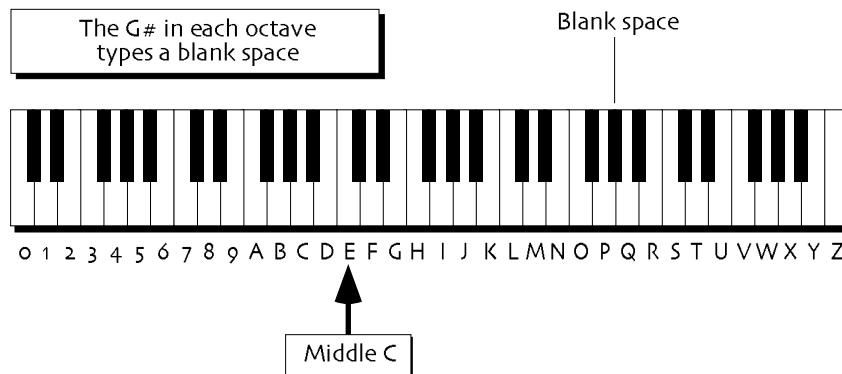
Working with the ZR-76 sounds, and with SoundFinder, is described fully in *Chapter 4—SoundFinder*.

To Locate a ZR-76 Sound By Name

1. Locate the SoundFinder section on the ZR's front panel.
2. Press the Select Sound button, and hold it down.



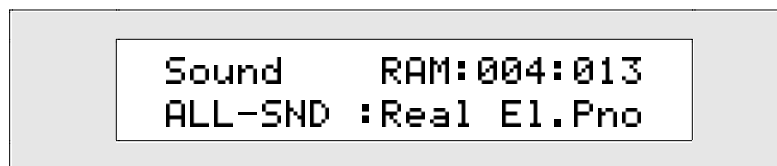
Each white key on the ZR's keyboard from the C two octaves below Middle C to the B nearly three octaves above has been assigned a number or letter, printed on the ZR just above the key. The G# in each octave types a blank space.



Note: The keys outside of the range shown above are not used for the selection of sounds.

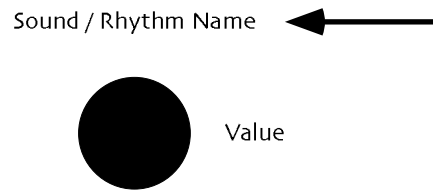
3. While continuing to hold the Select sound button down, use the keyboard to type the beginning of the name of the sound you're looking for.

By watching the ZR's display, you'll see SoundFinder continually narrowing the search as you type each letter. Sometimes just the first few letters are enough to identify a sound if no other sound shares those letters.



The name of each sound you find is shown here

If you can only recall the beginning of a sound's name, and SoundFinder locates more than one sound matching what you've typed, it will display the alphabetically first sound. To access the other matches, turn the Sound Name knob clockwise.



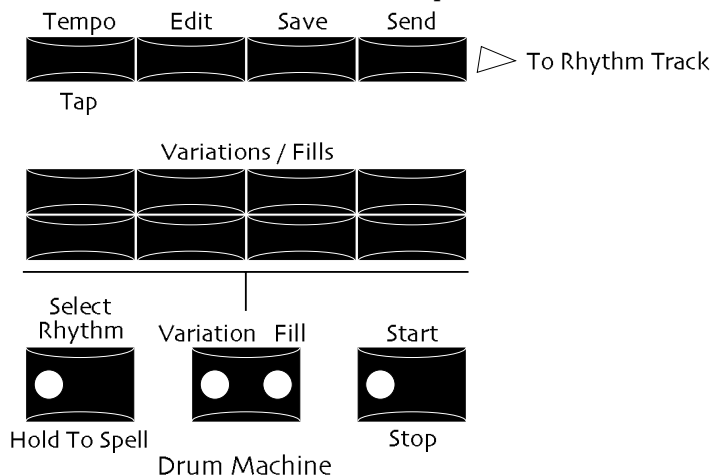
Jam with the ZR-76 Drum Machine

Introducing the Drum Machine

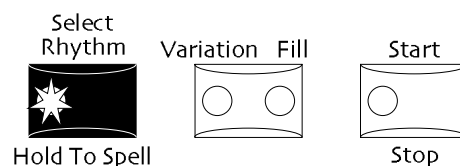
The ZR-76 includes its own Drum Machine that you can play along with as you investigate musical ideas, or when you just want to have some fun.

To Turn the Drum Machine On

1. Locate the Drum Machine on the ZR's front panel.



2. Press the Select Rhythm button—its LED lights up.



The main Drum Machine display appears:

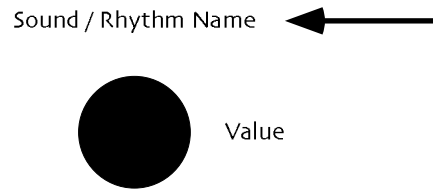


The rhythm you see displayed may be different

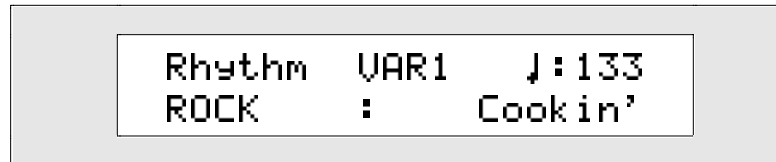
3. Press the Drum Machine's Start/Stop button to hear the selected rhythm. The Start/Stop LED lights, and the Drum Machine begins to play.

Each rhythm has eight variations—looped patterns that play over and over—and eight drum fills.

- Find a rhythm type category that interests you.
- Turn the Sound/Rhythm Name knob clockwise or counter-clockwise to choose a rhythm of the selected type.



Rhythm names appear on the lower right-hand portion of the display.



↑
The currently selected rhythm

- Press the Drum Machine's Start/Stop button to hear the rhythm you've chosen, and try out its variations and fills.
- Press the Start/Stop button to turn off the Drum Machine.

Tip: You can also select rhythms by holding down the Select Rhythm button and spelling the desired rhythm's name on the keyboard. There is a list of the rhythms that shipped with your ZR-76 in *Chapter 13*.

Working with the Drum Machine is described more fully in *Chapter 5—The Drum Machine*.

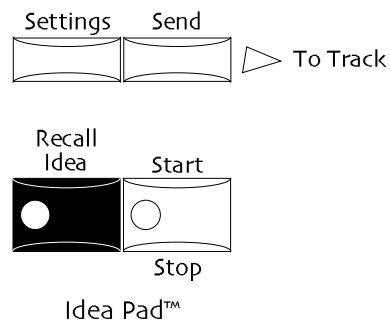
The Inspiration Catcher

Introducing the Idea Pad

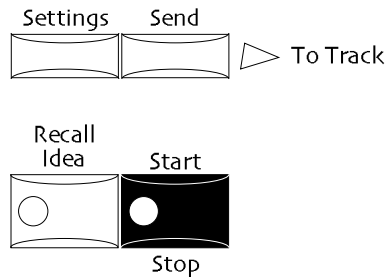
Certainly one of the most truly exciting innovations in the ZR-76 is the Idea Pad, an ingenious recorder that's always recording, capturing everything you play. No more grasping at evaporating flashes of brilliance—the Idea Pad catches every one.

To Listen To What You Just Played

- Press the Recall Idea button—the Idea Pad will play the last idea it captured, and then stop.

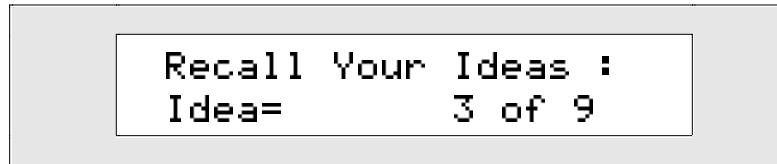


- To hear your latest music again, press the Start/Stop button.



To Listen to Other Ideas Captured by the Idea Pad

- If you've just listened to an idea, the display will show:



↑ The currently selected idea ↑ The number of ideas in the Idea Pad

If you haven't been listening to the Idea Pad, press Recall Idea.

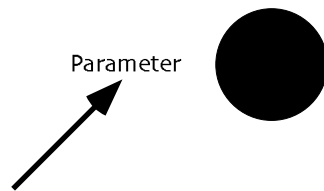
Each idea is assigned a number as it's recorded. The higher the number, the more recent the idea is.

You can use the up/down arrow buttons...



...or the Parameter knob to select the idea you'd like to hear.

Sound/Rhythm Type



If the Idea Pad's Auto-Play parameter is set to On, selecting an idea with the up or down button will cause it to automatically begin playing (*Chapter 6* describes all of the Idea Pad settings).

- Use the up/down arrow buttons or the Parameter knob to select an idea.
- If you've selected an idea with the Parameter knob, press the Idea Pad Start/Stop button to begin playback of the idea.
- Press the Idea Pad Start/Stop button to end playback of the selected idea.

The Idea Pad is described in detail in *Chapter 6—The Idea Pad*.

Listening to The ZR-76 Demos

The Built-In Demos

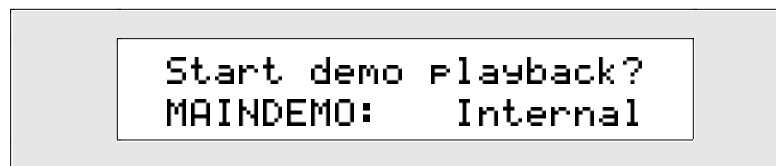
Your ZR-76 comes with a collection of built-in demonstration songs that will give you an idea of how great it sounds. These demos are easily accessed by pressing the Demo button on the ZR's front panel.

To Play the ZR-76 Demos

1. Press the Demo button.

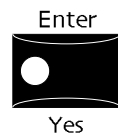


The display shows:



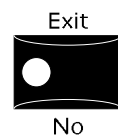
Your display may differ. Turn the Sound/Rhythm Name knob counter-clockwise until the display looks as it does above.

2. Press the Enter/Yes button.



The demo will begin playing.

3. If you'd like to stop the demo before it's finished, press the Exit/No button.



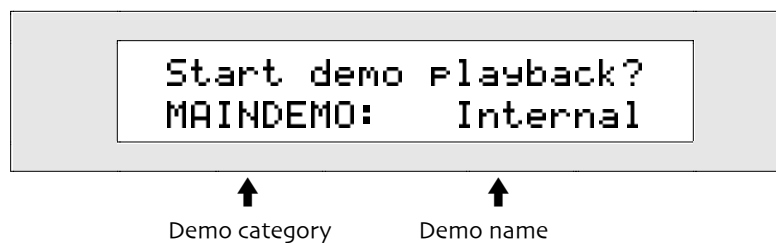
Note: The Demo button also functions as a MIDI All Notes Off button. See below.

Selecting Other Demos

You can select any of the ZR's demos at any time. They're sorted by stylistic category so that you can easily find a demo of interest.

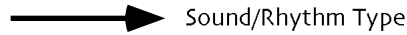
To Select Another Demo to Listen To

1. If you've already pressed the Demo button and listened to the main demo, the display should look something like this.

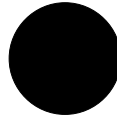


If it doesn't, press the Demo button now.

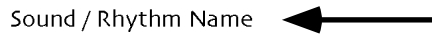
2. Use the Sound/Rhythm Type knob to select a demo category.



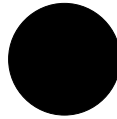
Parameter



3. Use the Sound/Rhythm Name knob to select a specific demo.



Value



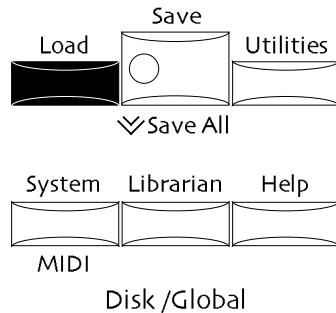
4. Press the Enter/Yes button to play the demo.
5. If you'd like to stop the demo, press the Stop/No button to end playback.

Playing Standard MIDI Files

The ZR-76 can import Standard MIDI Files (SMFs) created on a computer or some other musical device. Loadable SMF files can be as large as 215k in size.

To Import and Play a Standard MIDI File

1. Insert a DOS-formatted HD or DD disk containing an SMF into the ZR's floppy disk drive.
2. Press the Load button.

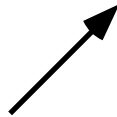


After a few moments, the "Load from Disk?" display will appear.

If your display doesn't show "1-MIDIFILE" in its lower left corner, turn the ZR's Parameter knob until it does.

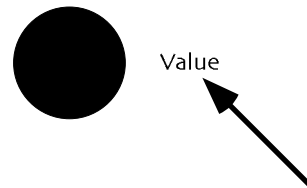
Sound/Rhythm Type

Parameter

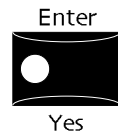


- If there's more than one SMF on the floppy, you can turn the Value knob to select the desired file.

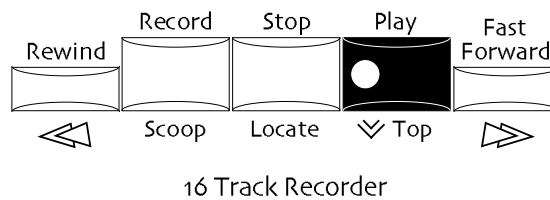
Sound / Rhythm Name



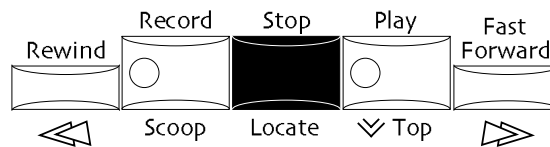
- Press the Yes button.



- Press the Yes button—the selected SMF will load into the lowest-numbered empty sequence location.
- Press the 16 Track Recorder Play button to hear the imported SMF.



- You can press the Stop button to end playback.



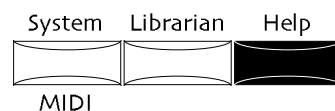
Chapter 7—Recording describes converting Standard MIDI Files into ZR sequences, changing its sounds, adjusting its track settings and recording new tracks.

The ZR-76 Onscreen Help

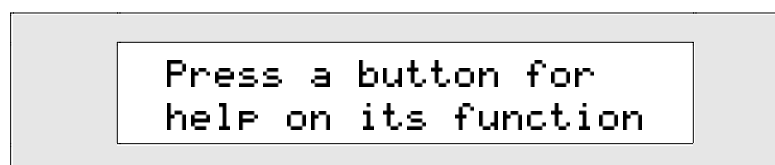
The ZR-76 offers special informational displays that explain the purposes of each front-panel button. When you'd like to learn what a particular button does, you'll find the answer right in your ZR-76.

To Access the ZR-76 Onscreen Help

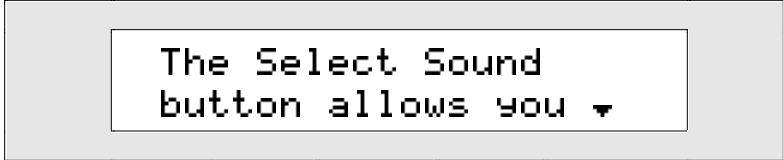
- Press the Help button.



The display will show:



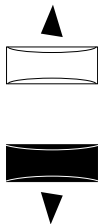
- Press the button you'd like to learn about—the display will provide information about that button:



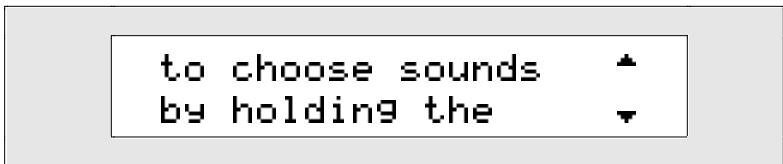
This is the onscreen help for the SoundFinder Select Sound button

Many of the help entries contain more than one display's worth of information.

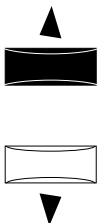
3. Press the down arrow on the ZR's front panel to view the next help page.



4. Continue pressing the down button until you've finished reading the description of the selected button.



5. To go back to an earlier page, press the up button.



6. The help function will display the last-selected page for a few moments and then return to what you were doing before accessing help.
7. If you'd like to exit from a help display immediately, press the Help button again.

Conceptual Overview of the ZR-76

SoundFinder™

SoundFinder, as its name implies, is the place to go for ZR-76 sounds. The ZR-76 contains hundreds of CD-quality sounds constructed from the many high-quality digital sound waves resident in the each ZR-76. Typical sounds use up to 16 of these waves.

The ZR-76 also offers a special category of sounds—drum and percussion kits—which can have up to 64 standard sounds assigned to individual keys. Though these are most commonly drum and percussion sounds, you can use any kind of sound you'd like in a kit. Each drum or percussion kit key has its own volume, pan, pitch and effect settings. The drum and percussion kits you'll find in your ZR-76 were programmed to work seamlessly with the ZR-76 Drum Machine.

All of the ZR-76 sounds can be customized to suit your needs using the extensive SoundFinder editing options. In addition, if you've got a computer, you can use the supplied Unisyn editing software to build your own ZR-76 sounds from scratch. Sounds can be saved to high-density and double-density floppy disks using the ZR's disk drive.

You can add new sounds to your ZR-76 by purchasing ENSONIQ ZRD Series Sound Disks. You may also install ENSONIQ EXP Series Wave Expansion Boards, which provide completely new sound waves, and sounds based on them. Additional sounds that take advantage of expansion board waves can be obtained through the purchase of ENSONIQ's EXD Series Disks.

In SoundFinder, you can use any sounds to easily create:

- splits—where one sound is heard in the lower part of the keyboard and a different sound is heard in the upper part
- layers—where two sounds are heard stacked on top of each other
- combination split/layers—where the lower part of the keyboard plays the split sound, and the upper area contains two sounds layered on top of each other

Each of these combinations can be saved as a preset—an ideal tool for performance—or as a single sound that can be used for recording in the ZR-76.

SoundFinder is more than just an area on the front panel of your ZR-76. It's an incredibly simple-to-use method for finding the sounds you want. Computer users may be familiar with databases, which allow you to view information in a manner of your choosing. SoundFinder operates in much the same way. Your ZR-76 keeps a list of all the sounds available to it at any given time, and shows them to you in logical, musically convenient categories called *sound types*.

Sound types show you sounds by instrument family—VOCALS or BELLS, for example—or by a number of other useful criteria, including the location in the ZR's memory where they reside. The ALL-SND category is especially useful, since it shows all of the ZR's sounds arranged in alphabetical order. The *CUSTOM and USER-SND categories can be used for storing your own sounds.

If you know the name of the sound you're looking for, you can hold down SoundFinder's Select Sound button and spell the sound's name using the ZR's keyboard. Each key has been assigned a number or letter, which is printed above the key. SoundFinder will retrieve the sound you want.

Any sound you select in SoundFinder can be sent to the ZR's 16 Track Recorder when it comes time to develop one of your musical ideas.

The SoundFinder section also unlocks the ZR's power as a MIDI keyboard for performance. By setting a SoundFinder sound, split and/or layer to transmit MIDI, your keyboard can be turned into a three-way MIDI master controller.

Any sound in SoundFinder can also be selected via MIDI. The sounds are arranged inside the ZR-76 in groupings called banks. Each bank corresponds to a MIDI Bank Select number, and each sound has its own MIDI program change.

Sounds, SoundFinder and the customization of sounds are all discussed fully in *Chapter 4—SoundFinder*.

Drum Machine

The ZR-76 Drum Machine provides highly realistic rhythmic accompaniment for music-making in a wide variety of styles. Simple to operate, yet packed with editing options, the Drum Machine is perfect for playing along with in performance, for fun, or while searching for new song ideas.

To operate the Drum Machine, all you need to do is select a rhythm and hit the Start button. The Drum Machine has its own version of SoundFinder—call it *RhythmFinder*, if you will. Rhythms are divided into categories that can be selected with the Sound/Rhythm Type knob. The Sound/Rhythm Name knob chooses individual rhythms from within the selected category. Additional rhythms are available on ENSONIQ's ZRD Series Sound Disks.

Each Drum Machine rhythm contains eight variations of the same musical style, as well as eight drum fills for providing musical punctuation to your beats. Just about everything in a rhythm is customizable: you can change the drum or percussion kit used by a rhythm, alter the sounds in the kit, or change what each variation or fill plays. You can change a rhythm's tempo by tapping on the Drum Machine's Tempo button, or by dialing it in manually. You can even swap musical phrases between one rhythm and another to assemble your own rhythms, which can be stored in your ZR's memory, and on floppy disk for safekeeping. You can also save a collection of rhythms to floppy as a rhythm bank. If you've got a PC-compatible computer, you can make your own rhythms using the RhythmBuilder utility you can find at ENSONIQ's World Wide Web site at <http://www.ensoniq.com>.

You can send a Drum Machine rhythm to the 16 Track Recorder, for use as a rhythm track for your music.

The Drum Machine is discussed fully in *Chapter 5—The Drum Machine*.

Idea Pad

The ZR-76 presents ENSONIQ's innovative Idea Pad. If you've ever had fleeting magic slip through your fingers when you were unable to recreate something you've played, you'll appreciate the Idea Pad.

The Idea Pad is a special recorder that's always running, automatically capturing everything you play. Since it's always active, you can be confident that everything you've just played is safely stashed in the ZR's memory. To retrieve your ideas, simply press the Idea Pad's Recall Idea and Start/Stop buttons, and you'll hear your latest musical discovery intact, just as it sounded the first time. The Idea Pad will have caught your idea, the sound you used, and the rhythm you were playing along with if you were jamming with the Drum Machine.

The Idea Pad is also the perfect place to stash those sudden inspirations that send you running for your keyboard in the middle of the night or day. Simply turn your ZR-76 on, play your new idea on the keyboard before it evaporates, and the Idea Pad will capture it for you, fresh from your musical imagination. No more stopping to set tempos, pick tracks or wait for your computer to boot up: the Idea Pad gets your thoughts down quickly, before that initial spark has a chance to fade.

If the Idea Pad captures something you'd like to keep, you can send your idea—along with any Drum Machine rhythm you were using—over to the ZR's 16 Track Recorder for further work.

As you perfect tracks in the 16 Track Recorder, the Idea Pad keeps listening to you, capturing take after take that you can retrieve and audition at will.

The Idea Pad is described more fully in *Chapter 6—The Idea Pad*.

16 Track Recorder

The 16 Track Recorder is a digital MIDI sequencer adorned with powerful editing features that will help you turn your inspirations into full-blown musical arrangements. In addition to standard recording methods, the 16 Track Recorder offers such treats as looped ADD mode—where the sequence plays over and over and you can add music each time it cycles around. It includes handy scoop-erase functions. You can record real-time volume and stereo panning changes on each of its 16 tracks. You'll also find several useful methods for locating to various points within a sequence.

The ZR's Undo function allows you to restore any track to the state it was in before the last recording or editing operation. And when you're working with the 16 Track Recorder, the Idea Pad keeps on going, recording everything you do. As you refine your music take after take, the Idea Pad catches each one and holds onto it for you—with the Idea Pad running, there's no such thing as going a few takes too far. You can always move an earlier take out of the Idea Pad and right back into the 16 Track Recorder.

The 16 Track Recorder can play Drum Machine rhythms on a special rhythm track. You can record Drum Machine performances—your inspired selection of variations and fills—on this track. You can even record additional drum notes right on top of the rhythm. The tempo of any sequence can be tapped out or set manually.

The 16 Track Recorder records each section of music—each sequence—as a Standard MIDI file. When you've finished taking advantage of the ZR's extensive recording track editing tools, you can save each sequence to floppy disk and move over to your computer for further work in your favorite software sequencer. Your computer can send MIDI back to your ZR-76, so that you can continue to use its sounds and rhythms without missing a beat.

Your ZR-76 loads Standard MIDI Files (SMFs) from DOS-formatted floppies. The 16 Track Recorder can immediately play SMFs created on a computer or other musical device. SMFs can also be easily converted to ZR sequences, so that you can customize them to your needs or add new tracks recorded on your ZR-76.

16 Track Recorder sequences can also be used as set-ups for live performance. By assigning the sounds you use in a particular song to different tracks in the same sequence, you can use the sequence as a kind of super-preset containing everything you need for that song. You can set up a whole set's worth of sounds in this manner by creating a sequence for each song you'll be playing, and saving the whole set as an ZR-76 song.

The 16 Track Recorder is described more fully in *Chapter 7—Recording*.

Song Editor

The Song Editor is the command center for ZR-76 recording operations, providing total control over each song, from its reference metronome to the manner in which the 16 Track Recorder records, to the lengths and names of the song's component sections. The Song Editor's playlist function lets you line up your

sections in the order you'd like them to be heard, regardless of the order in which they were recorded. When you're done experimenting with different structures, you'll have created a new song.

Chapter 7—Recording details the workings of the Song Editor.

FX/Mixdown

The ZR's FX/Mixdown facility allows you to add the final polish to your sounds, sequences and songs with its comprehensive volume and stereo panning controls, and by providing access to the ZR's powerful 24-bit effects (or *FX*). Each sound and sequence can take advantage of three types of effects:

- the insert effect—each sound in SoundFinder or sequence in the 16 Track Recorder can have one of these exceptional effects; sounds in the 16 Track Recorder use the sequence's insert effect
- a Global Chorus—each song has its own high-quality digital chorus effect that can be used by SoundFinder sounds, or by 16 Track Recorder sounds
- a Global Reverb—each song has its own high-quality digital reverb effect that can be used by SoundFinder sounds, or by 16 Track Recorder sounds
- dry—many of the ZR-76 sounds sound terrific without any effect at all

The effects are applied by sending each sound or 16 Track Recorder track to an effect bus, or *FX Bus*. There are six effect busses:

- the Insert FX Bus
- the Chorus FX Bus
- the LightReverb FX Bus
- the MediumReverb FX Bus
- the WetReverb
- the Dry FX Bus (sounds using this bus are un-effected)

Each FX bus has its own settings that determine how it will use the effect (or effects) it can access, as well as which rear-panel outputs it will ultimately utilize.

The ZR's FX/Mixdown section also provides muting and soloing options for isolating individual tracks or groups of tracks in the 16 Track Recorder.

Chapter 8—FX/Mixdown provides a complete description of the ZR's FX/Mixdown facility and the ZR-76 effects.

The ZR-76 Memory and Storage

The ZR's memory is divided into two general categories:

- ROM for "Read Only Memory"—permanent, un-erasable memory that holds sounds, rhythms and presets created by ENSONIQ
- INT for "Internal"—writable memory that you can use to store your own sounds, rhythms, presets, sequences and songs

The INT memory itself contains two different types of memory:

- FLASH—memory which remains in your ZR-76 even when you power off. In addition to holding all of your system-wide settings, FLASH makes an ideal place to store sounds, rhythms and presets that you'll always want to have on hand as creation and performance tools.
- RAM—short for "DRAM"—an area of memory useful for holding items that you'll only need for a particular work session. When you turn your ZR-76 off, RAM memory is cleared of its contents. The Idea Pad and the 16 Track Recorder share this type of memory with RAM sound and rhythm banks.

The ZR's librarian allows you to perform a number of memory management tasks that allow you to get the most out of your ZR-76. Using the librarian, you can, among other things, configure your INT memory to suit your purposes, keep track of your FLASH and RAM memory usage and initiate various kinds of MIDI System Exclusive data transmissions.

Your ZR-76 has a built-in high-density floppy disk drive (it can also read double-density disks) so you can save your work to floppy disks. Sounds, rhythms, presets, sequences and songs can be easily saved to disk.

As a convenience, the ZR-76 Save LED will flash when you've got a sound, preset, rhythm or sequence in RAM that hasn't yet been stored on a floppy disk for safekeeping.

If you've got a computer, and would like to use your favorite sequencing program to further develop your sequences, you can pop your ZR-76 floppy into your computer's drive and load in your ZR-76 music. Any computer that can read a DOS-formatted disk—and that includes just about every recent type of computer—can read the Standard MIDI files on an ZR-76 floppy.

The ZR-76 memory and floppy disk operations are described in *Chapter 9—Memory and Storage*.

ENSONIQ EXP Series Wave Expansion Boards and MR-FLASH Boards

The ZR-76 can be expanded with the addition of ENSONIQ EXP Series Wave Expansion Boards and an MR-FLASH board. The EXP boards provide a wealth of new sound waves and new sounds, while an MR-FLASH board adds the ability to load AIF and .wav samples into your ZR. Expansion boards are mounted inside the ZR's case—you can easily install them yourself! You can also purchase ENSONIQ EXD Series floppy disks, which contain additional sounds based on expansion board sound waves.

Your ZR-76 already contains one EXP board: EXP-4, The Perfect Piano™ by William Coakley. As its name implies, this board adds to the ZR's built-in sound waves a top-quality set of Steinway D piano waves, as well as waves sampled from a pair of electric pianos.

For more details about expanding the ZR-76, see *Chapter 10—Expanding the ZR-76*.

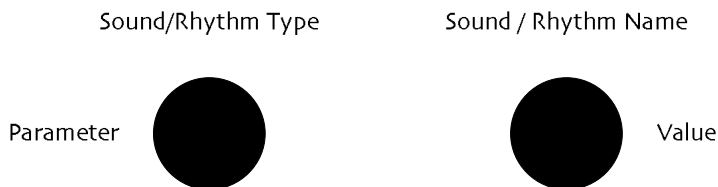
ZR-76 Controls

The ZR-76 Display

The ZR's display has been designed to provide you with all the information you'll need as you use your ZR-76. The display will change as you perform different tasks, since what you'll need to know at any given time will vary depending on what you're doing. The ZR-76 Musician's Manual describes how the display functions as you use each of the ZR's many features.

The Knobs Under the ZR-76 Display

Many of the ZR's begin with turning the two large knobs located under the ZR's display.



When you select sounds, rhythms or presets, the left knob functions as Sound/Rhythm Type selector, while the right knob chooses individual sounds, rhythms and presets of the selected type.

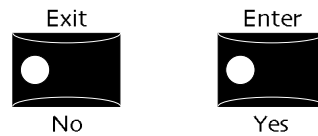
Your ZR-76 provides many editing options. Each of these options is called a *parameter*. It's setting is called its *value*. When editing, the left knob chooses parameters and the right knob edits their values.

The up/down arrows to the right of the Sound/Rhythm Name-Value knob perform the same functions as the knob, except as noted during the manual.



The Buttons on Either Side of the ZR-76 Display

Many of the operations you can perform in your ZR-76 are offered as questions posed on the ZR's display. Whenever you see a question, you'll also find that the red LED in the Exit/No button and the green LED in the Enter/Yes button are flashing.



The flashing LEDs underscore that an answer to the displayed message is required in order to proceed with, or cancel, the current procedure. Press the Enter/Yes or Exit/No buttons to answer the displayed question.

All Notes Off

When using MIDI equipment, there are occasions when your system may get confused. This can cause a barrage of notes to sound which will continue until you do something to stop them. The ZR-76 provides an All Notes Off button, which you can double-click (press two times quickly) to silence these unwanted notes. You'll find it in the upper left area of the ZR's front panel (it's also the Demo button). Think of the All Notes Off button as a "panic button."



ZR-76 Accessories

These accessories came along with your ZR-76. If any of these items is missing, please call ENSONIQ Customer Service at (610) 647-3930.

- ZRD-100 Sound, Rhythm and Sequence Disk, containing:
 - DRUMDEMO.MF3—a 16 Track Recorder demo of the ZR-76 drum kits and Drum Machine rhythms
 - !FLSRTHM.RBK—backup of the 20 Default Flash (INT) Rhythm Patterns
 - BALLADS.RBK—bank of 7 Ballad Rhythms
 - COUNTRY.RBK—bank of 6 Country Rhythms
 - DANCE_1.RBK—bank of 7 Dance Rhythms
 - DANCE_2.RBK—bank of 7 Dance Rhythms
 - ISLAND.RBK—bank of 5 Island Rhythms
 - JAZZ.RBK—bank of 4 Jazz Rhythms
 - LATIN.RBK—bank of 7 Latin Rhythms
 - POP.RBK—bank of 6 Pop Rhythms
 - R&B.RBK—bank of 8 R&B Rhythms
 - RAP&HOP.RBK—bank of 9 Rap & Hip-Hop Rhythms
 - ROCK.RBK—bank of 16 Rock Rhythms
 - WORLD.RBK—bank of 3 World Rhythms

Note: The three-letter DOS file name suffixes are not visible when loading these files into the ZR-76.

- Musician's Manual (MM-131)
- Detachable power cord
- Unisyn editing software
- SW-6 single damper foot switch

Available Options for Your ZR-76

These optional accessories are available from your Authorized ENSONIQ Dealer, or by calling ENSONIQ's toll-free accessory line at (800) 553-5151:

- ZRD Series Sound Disks
- EXD Series Sound Disks—for use with specific ENSONIQ EXP Series Wave Expansion Boards
- ENSONIQ EXP Series Wave Expansion Boards
- ENSONIQ MR-FLASH Sample Memory Board
- SW-10 Dual Damper Foot Switch—2 pedal piano-type for sustain pedal, sostenuto, and sequencer start/stop. The ZR-76 can use two of these for a total of four foot switches.
- CVP-1 (CV Pedal)—for voice/FX modulation or volume control
- Detachable MS-1 Music Stand (ZR-76 only)

If You Experience Odd Behavior

If your ZR-76 is behaving peculiarly—for instance, the display is showing characters that shouldn't be there, or you're experiencing "unexpected event" messages—the following procedures may fix your problem, eliminating the need to call an authorized ENSONIQ repair station or ENSONIQ Customer Service:

- A soft restart—a button combination that acts like turning your ZR-76 off and on.

Warning: Performing a soft restart will result in your ZR-76 clearing its RAM memory, in the same way that powering off and on would. If you decide to do a soft restart, try saving any sequences or RAM sounds, presets or rhythms you'd like to preserve to a floppy disk before performing the restart. (see *Chapter 9* for details).

- A hard reinitialization procedure performs a very deep-level reinitialization of the ZR-76. This procedure should be primarily be used only in cases where the ZR's front-panel buttons, for some reason, don't allow you to perform a soft restart, or if a soft restart fails to solve your problem.

Warning: During a hard reinitialization, any sounds, rhythms or presets in FLASH, as well as any sounds, rhythms, presets, sequences or songs stored in RAM will be lost. All system parameters will be reset, as well. If you decide to reinitialize, try saving any items you want to preserve to a floppy first—see *Chapter 9* for details. The sounds and rhythms that were in FLASH when you first purchased your ZR-76 are safely stored on the ZRD-100 floppy disk that came with your ZR.

To Perform a Soft Restart

Warning: Make sure that everything in RAM that you'd like to keep has been safely stored on a floppy disk before you reinitialize, since reinitialization will clear the ZR's internal RAM memory.

1. Press and hold down the SoundFinder Save button.
2. While still holding Save, press the Exit/No button.

If performing a soft restart doesn't end the strange occurrences, you may need to perform a hard reinitialization of your ZR-76.

To Perform a Hard Reinitialization

Warning: Make sure that everything in FLASH or RAM that you'd like to keep has been safely stored on floppy disk before you reinitialize, since reinitialization will clear the ZR's internal entire INT memory (it will also reset all system settings to their default values). The ZRD-100 floppy disk that shipped with your ZR contains a copy of the sound and rhythm banks that were in FLASH when your ZR-76 shipped from the factory.

1. Turn your ZR-76 off.
2. Press and hold down the Song Editor Erase button.
3. While still holding Erase, turn your ZR-76 on and allow it to power up fully before letting go of erase.

If reinitializing the ZR-76 fails to correct the problem, contact an Authorized ENSONIQ Repair Station or ENSONIQ Customer Service at (610) 647-3930.

Need More Help?

Whether you're an aspiring programmer looking for additional information about basic effect processing techniques and MIDI theory, or a professional sound engineer working with advanced applications, you may want more detailed information beyond the scope of this manual. The following books can help enhance your understanding of effect processing, MIDI, and related topics. These, in addition to the numerous monthly magazines, provide a wealth of information. While we don't endorse any one of these publications, we offer this partial list as a resource for you to draw on.

The Mix Bookshelf

For prices and more information call: 1-800-233-9604

MIDI

BECOMING A COMPUTER MUSICIAN, Jeff Bowen
MAKING MUSIC WITH YOUR COMPUTER, David (Rudy) Trubitt, Ed.
MIDI: A COMPREHENSIVE INTRODUCTION, Joseph Rothstein
MIDI XPLAINED, Steinberg/Jones
THE MIDI MANUAL, David Huber
UNDERSTANDING MIDI, David Wills
WHAT'S MIDI?, Jon Eiche

RECORDING

IMPROVING YOUR SIGNAL PROCESSING SKILLS, (cassette & manual) Bill Gibson
MASTER HANDBOOK OF ACOUSTICS, F. Alton Everest
MODERN RECORDING TECHNIQUES, Huber & Runstein
SOUND REINFORCEMENT HANDBOOK, Davis & Jones

SYNTHESIS

FUNDAMENTAL TECHNOLOGIES OF THE SYNTHESIZER, Errol G. Specter
SYNTHESIZER PERFORMANCE, Jeff Pressing
WHAT'S A SYNTHESIZER?, Jon Eiche

VIDEOS

SHAPING YOUR SOUND, (video series) Tom Lubin

Alfred Publishing Company

For prices and more information call 1-818-891-5999

MIDI

ADVANCED MIDI APPLICATIONS, GPI *BASIC MIDI APPLICATIONS*, GPI *WHAT IS MIDI?*, GPI

Hal Leonard Publishing

For prices and more information call 1-414-774-3630

MIND OVER MIDI, GPI *TUNING IN: MICROTONALITY IN ELECTRONIC MUSIC*, Scott R. Wilkinson

Monthly Magazines

The following magazines offer many specific articles and columns that can provide additional information.

THE TRANSONIQ HACKER

An independent news magazine for ENSONIQ Users. For prices and information, call 1-503-227-6848.

KEYBOARD

For subscription rates and more information call 1-800-289-9919

ELECTRONIC MUSICIAN

For subscription rates and more information call 1-800-888-5139

HOME & STUDIO RECORDING

For subscription rates and more information call 1-818-407-0744

MIX

For subscription rates and more information call 1-800-888-5139

EQ

For subscription rates and more information call 1-212-213-3444

Chapter 2

The ZR-76 Studio

Introduction

The ZR-76 is a MIDI recording studio unto itself, with powerful composition, arrangement, recording and mixing tools. The ZR-76 also makes for an excellent central command center for a studio containing other MIDI modules. In a more elaborate setting—including perhaps a personal computer and/or audio recorder—the ZR-76 is a valuable creative and sonic resource. This chapter describes how to connect and use the ZR-76 in some of the most popular studio environments.

The key to setting up any studio is to approach the process in an orderly, methodical manner. As each cable or wire is added, the studio grows in complexity. If you have a firm grasp of what's connected, and where, you'll find managing your rig to be much more pleasant. As you add more gear—or troubleshoot—the extra care you take now will pay off in the ease with which you'll be able to adapt your studio to future needs.

Getting Ready

It's always good policy to turn everything off—and all volume settings down—before you wire equipment together. This protects you and your gear from unwelcome surprises.

1. Turn the volume off for each piece of equipment you plan to include in your studio.
2. Turn down any mixer faders or other volume controls for the sound system you're using.
3. Turn off the power for everything being included in your set-up.

What Connections Need to be Made?

In any modern MIDI studio system, there are three types of connections to be made:

- MIDI connections
- Audio connections
- Power connections

Making MIDI Connections

The ZR-76 will communicate with the rest of your equipment via MIDI. The nature of these connections and the number of MIDI cables you'll need varies, depending on your set-up. Each studio has its own needs, which we'll explain in the individual set-ups in this chapter.

The studio scenarios described in this chapter are:

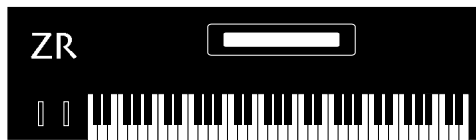
- Using the ZR-76 as a stand-alone studio
- Using the ZR-76 as the center of a MIDI studio
- Using the ZR-76 with a computer
- Using the ZR-76 with an audio recorder
- Using the ZR-76 with an alternate controller
- Using the ZR-76 with a MIDI patchbay

If you've got questions about MIDI itself, or any of the terms above, consult the Glossary or "What Is MIDI?" sections of *Chapter 13*.

Even if your plans for the ZR-76 differ from the scenarios described in this chapter, you're likely to find the set-ups useful as starting points for your own studio design.

Using the ZR-76 as a Stand-Alone Studio

The ZR-76 is a complete songwriting studio straight out of the box. See “Making Audio Connections” and the “Making the Power Connection” later in this chapter for important information on using the ZR-76 in a variety of listening situations, and for tips on powering up.



To Learn More

Chapter 1 provides a good starting point for learning about the ZR-76.

Using the ZR-76 as the Center of a MIDI Studio

The ZR-76 makes an excellent command center for a MIDI studio containing other MIDI instruments, including sound modules such as ENSONIQ’s ZR-Rack.

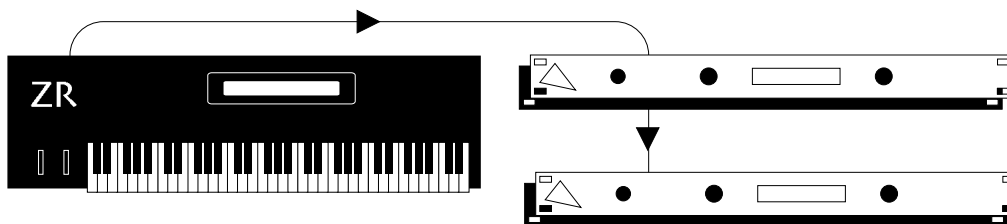
What You’ll Need

- One less MIDI cable than the number of MIDI devices

Note: If you’re going to connect more than one MIDI instrument to the ZR-76, and you’re not using a MIDI patchbay—see “Using the ZR-76 with a MIDI Patchbay” later in this chapter—each of the MIDI instruments must have a MIDI Thru capability (consult each instrument’s manual for further info). This will allow you to “daisy-chain” the devices.

To Connect the ZR-76 to Other MIDI Devices

1. Connect one end of a MIDI cable to the ZR’s MIDI Out.
2. Connect its other end to the MIDI In of the first MIDI device you want to use.
3. If you want to add other MIDI instruments, connect another MIDI cable to the first device’s MIDI Thru jack (some MIDI instruments use the MIDI Out jack for MIDI Thru; see your device’s manual if it has no MIDI Thru jack).
4. Connect the cable’s other end to the next device’s MIDI In.
5. Repeat steps three and four for each MIDI device you want to add.



Note: If your set-up utilizes a MIDI patcher, consult your patcher’s documentation to learn how to set up the equivalent of this MIDI connection, and see “Using the ZR-76 with a MIDI Patchbay” later in this chapter.

To Finish Your Connections

Now that you’ve made your MIDI connections between your computer and the ZR-76, skip ahead to “Making Audio Connections,” and then “Making the Power Connection” later in this chapter.

For more information on using your ZR-76 as a MIDI master controller, see *Chapter 4*.

Using the ZR-76 with a Computer

The ZR-76 is designed as the perfect companion for a personal computer. You can edit its sounds on your computer using the supplied Unisyn software. Use the ZR's Idea Pad as your inspiration-catcher and its 16 Track Recorder to flesh out your initial idea. Save the components of the new song—its sequences—to floppy disk. Since ZR-76 files can be read by any computer that understands Standard Midi Files (SMFs) and can read a DOS-formatted floppy, you can load your sequences straight off of a floppy and into your computer's sequencer—or combination sequencing/recording program—for further work. When you've moved your ZR sequences over to your computer, your computer will communicate with the ZR-76 via MIDI to access the sounds you used to create your new song. You can also use your computer to design your own new sounds using an editing program. After setting up your hardware as described below, see "Using the ZR-76 with a Computer Sequencer" at the end of *Chapter 7*.

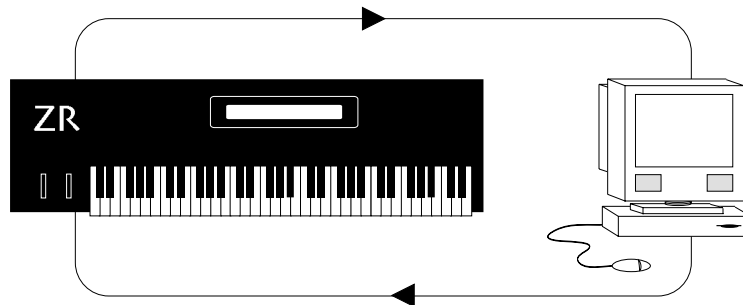
Some computers are manufactured with MIDI In/Out/Thru jacks. If yours doesn't have built-in MIDI jacks, you'll need to purchase a MIDI interface for your computer. Make sure that your computer, its MIDI programs, and—if you're using one—its MIDI interface are configured correctly. Consult their documentation to learn how to use them with a multi-timbral MIDI device like the ZR-76.

What You'll Need

- Two MIDI cables.

To Connect the ZR-76 and a Computer

1. Connect one end of a MIDI cable to your computer's MIDI Out.
2. Connect the cable's other end to the ZR's MIDI In.
3. Connect one end of the other MIDI cable to the ZR's MIDI Out.
4. Connect its other end to the computer's MIDI In.



Note: If your set-up utilizes a MIDI patcher, consult your patcher's documentation to learn how to set up the equivalent of this MIDI connection, and see "Using the ZR-76 with a MIDI Patchbay" later in this chapter.

To Finish Your Connections

Now that you've made your MIDI connections between your computer and the ZR-76, skip ahead to "Making Audio Connections," and then "Making the Power Connection" later in this chapter.

To Learn More

See "Using the ZR-76 with a Computer Sequencer" in *Chapter 7*.

Using the ZR-76 with an Audio Recorder

The ZR-76 can provide the perfect MIDI complement for an audio recorder, digital or analog, tape or hard drive—the ZR-76 handles all of the MIDI chores, while the recorder handles the audio. Add some effects to your audio, using an effects processor, and you've got a finished master recording.

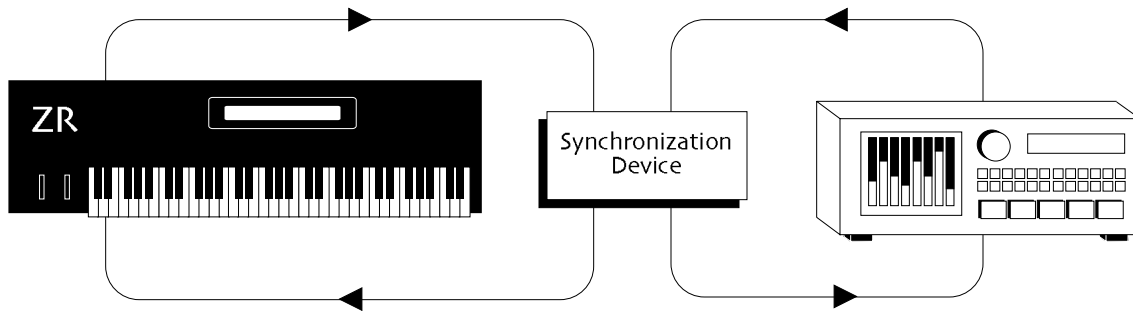
When using the ZR-76 with an audio recorder, you'll want to have a means of synchronizing the two devices. There are a number of capable synchronization products on the market—to work with the ZR-76, yours must support MIDI clocks, as well as the type of synchronization required by your audio recorder (consult its documentation to learn what kind of synchronization it responds to).

What You'll Need

- Two MIDI cables to connect the ZR-76 to your synchronization device
- The cabling necessary to connect your audio recorder to the synchronization device (consult their manuals for further information)

To Connect the ZR-76 and an Audio Recorder

1. Connect one end of a MIDI cable to the ZR's MIDI Out.
2. Connect the cable's other end to your synchronization device's MIDI In.
3. Connect one end of the other MIDI cable to the ZR's MIDI In.
4. Connect its other end to the synchronization device's MIDI Out.
5. Connect the required cables between the audio recorder and synchronization device.



Note: If your set-up utilizes a MIDI patcher, consult your patcher's documentation to learn how to set up the equivalent of this MIDI connection, and see "Using the ZR-76 with a MIDI Patchbay" later in this chapter.

To Finish Your Connections

Now that you've made the MIDI connections between your audio recorder and the ZR-76, skip ahead to "Making Audio Connections," and then "Making the Power Connection" later in this chapter.

To Learn More

Chapter 7 describes how to synchronize the ZR's 16 Track Recorder to external MIDI devices.

Using the ZR-76 with an Alternate Controller

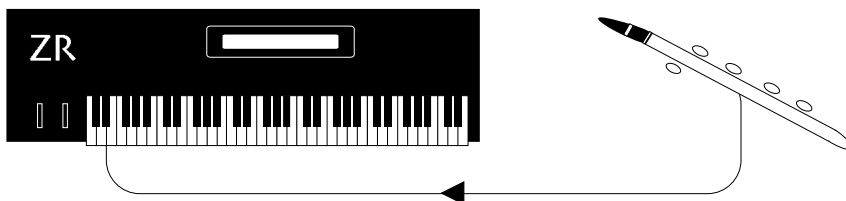
You can use any MIDI controller to play the ZR's sounds in SoundFinder or the 16 track recorder. This includes MIDI wind controllers and other MIDI keyboards, MIDI drum pads or triggers, MIDI guitars, or anything else a musician might play which sends out MIDI data.

What You'll Need

- One MIDI cable

To Connect the ZR-76

1. Connect one end of your MIDI cable to your controller's MIDI Out.
2. Connect the other end to the ZR's MIDI In.



Note: If your set-up utilizes a MIDI patcher, consult your patcher’s documentation to learn how to set up the equivalent of this MIDI connection, or see “Using the ZR-76 with a MIDI Patchbay” below.

To Finish Your Connections

Now that you’ve made the MIDI connections between your controller and the ZR-76, skip ahead to “Making Audio Connections,” and then “Making the Power Connection” later in this chapter.

To Learn More

For further information:

- on playing the ZR’s sounds via MIDI, see “SoundFinder MIDI” in *Chapter 4*.
- on recording onto an ZR-76 16 Track Recorder track via MIDI, see *Chapter 7*.

Using the ZR-76 with a MIDI Patchbay

A MIDI patchbay—especially one with merging capabilities—is the ideal way to connect your ZR-76 to other MIDI devices. Once everything is wired up to the patchbay, all inter-device connections are just a few mouse clicks, button presses or knob twists away.

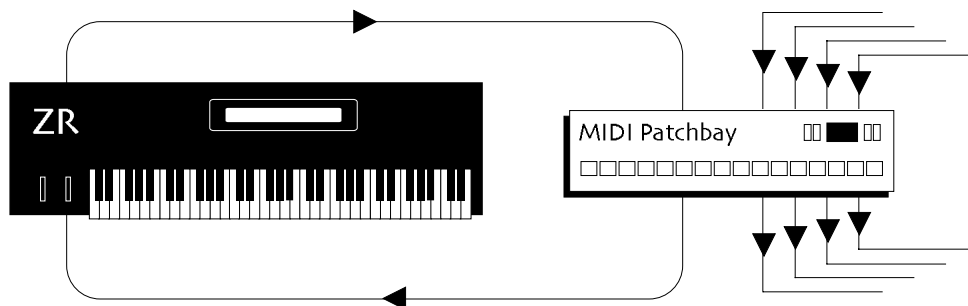
MIDI patchbays typically provide numbered pairs of MIDI In and Out jacks—each of these pairs is used by a single MIDI device. Consult your patchbay’s documentation to see if the manufacturer has recommendations as to which location—that is, pair—should be used by your computer or your master controller (your ZR-76 can be used for this purpose). If your patchbay’s documentation mentions no specific rules in this regard, you can connect any device to any location.

What You’ll Need

- A pair of MIDI cables for each MIDI device you’ll be connecting to the patchbay

To Make Your ZR-76 and Patchbay Connections

1. Select a patchbay location for the ZR-76.
2. Connect the ZR’s MIDI Out to the MIDI In of the patchbay location you’ve chosen for the ZR-76.
3. Connect the same location’s MIDI Out to the ZR’s MIDI In.
4. Repeat these steps for each MIDI device you’d like to connect to your MIDI patchbay.



Consult your patchbay’s documentation to learn how to route MIDI signals from one MIDI device to another (or others). The optimal routings will depend on how you’ll be using your MIDI equipment. The great thing about a patchbay is that, as new MIDI needs arise, it only takes a few moments to meet them.

To Finish Your Connections

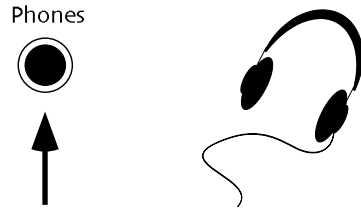
Once you’ve programmed your patchbay, you can move on to Making Audio Connections below.

Making Audio Connections

In any set-up, you’ll need to determine what type of audio connection you’d prefer to establish between the ZR-76 and the rest of your system. There are a number of options.

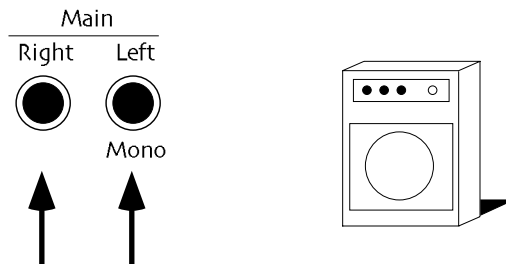
- You can listen to the ZR-76 with headphones plugged into the rear-panel Phones jack. This is great for

privacy—when you’re practicing, no one else can hear what you’re up to. It’s also a convenient way to experience the ZR’s crystal-clear sound without added noise from other equipment in your rig. The ZR’s Volume knob controls your listening volume.

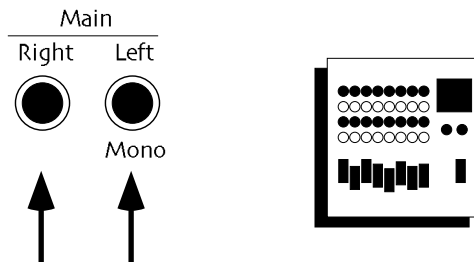


Using headphones is always available as an option, regardless of other audio connections you’ve made with the ZR-76. Plugging in headphones does not mute the other audio outputs from the ZR-76.

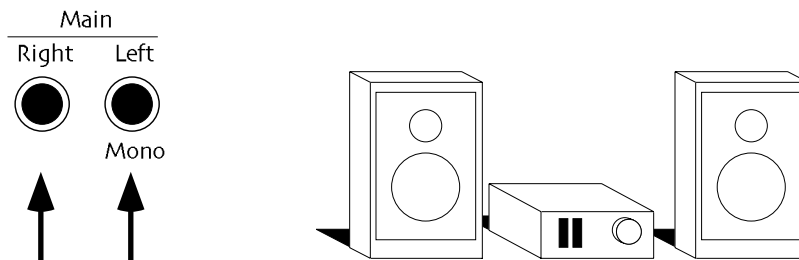
- If you’d prefer to use the ZR-76 in mono through a traditional keyboard or guitar amplifier, or through a single fader on a mixing console, connect one end of a 1/4” phone-type audio cable to the Main Out Left jack on the ZR’s back panel, and the other end to your amplifier or mixer. The “ZR-76 Output Jacks” section in *Chapter 13* contains technical information about the ZR’s output jacks.



- If you’d like to operate your ZR-76 in stereo through a pair of faders on a mixing console, a stereo amplifier or two separate mono amps, you’ll need two 1/4” phone-type cables. Connect one end of each cable to the ZR’s rear-panel Main Out Left and Right jacks and the other end to your desired destination. The “ZR-76 Output Jacks” section in *Chapter 13* contains technical information about the ZR’s output jacks.

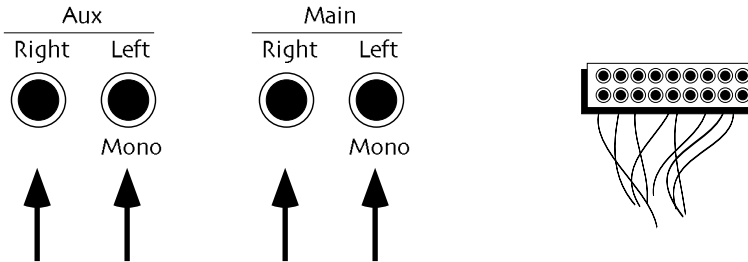


- You can also connect the ZR-76 to your home stereo, though a bit of caution is required. The ZR-76 is capable of producing a far greater dynamic range than a home stereo typically encounters when playing compact discs, cassettes and LPs. See “Setting Volume Levels” below to learn how to safely set the ZR’s Volume when using it with a home stereo. You’ll need two 1/4”-phone-to-RCA-type cables, or you’ll need to create some by attaching adapters to standard 1/4” phone or RCA cables. Connect the 1/4” phone plug end of each 1/4”-to-RCA cable to the ZR’s rear-panel Main Out Left and Right jacks and the RCA end to your stereo’s auxiliary inputs. The “ZR-76 Output Jacks” section in *Chapter 13* contains technical information about the ZR’s output jacks.



- If you’re connecting the ZR-76 to an audio patch bay, or if you’ve got four available inputs on your

mixing console, you may elect to use all of the ZR's outs. The ZR-76 offers—in addition to the Main Outs—a pair of Aux Outs, useful for extracting sounds or groups of sounds from the ZR's main outs mix. This allows you to treat the extracted material with its own outboard processing, or to control its volume more easily by assigning it separate faders on a mixer. To use all four outputs, you'll need four 1/4" phone-type cables. Connect one end of each to the ZR's rear-panel Main and Aux Outs Left and Right, and the other end to a patch bay position or mixer channel. The “ZR-76 Output Jacks” section in *Chapter 13* contains technical information about the ZR's output jacks.



“Using the ZR's Four Outputs” in *Chapter 3* describes how to route sounds to the Aux Outs. The ZR-76 also provides a simple switch for easily sending everything you may have routed to the Aux Outs back into the Main Outs mix. See “Determining the Behavior of the Aux Outs” in *Chapter 3*.

Making the Power Connection

The ZR-76 requires grounded AC power, supplied through the power cord that came with your ZR-76. The ZR-76 power supply is intelligent and will adjust to your local voltage.

To Provide Power to Your ZR-76

1. Connect one end of the ZR's power cable to a grounded AC outlet.
2. Connect the other end of the ZR's power cord to the AC Line jack on the ZR's rear panel.
3. Connect the other pieces of equipment in your system which require AC power to AC outlets.

Powering Up

You should always turn on the device which will be transmitting MIDI before you turn on the device which will be receiving it. If you have a series of MIDI devices, start with the first device in the chain, then power up the second, the third, and so on. This prevents unpleasant surprises which can result from unplanned MIDI information being “spit” out of transmitting devices as they power up. Such MIDI garbage could confuse a receiving device, and possibly disable it temporarily. If this should occur for some reason, and the ZR-76 becomes “confused,” try double-clicking the ZR's All Notes Off button. If this doesn't correct the problem, turn the ZR's power off, and then back on.

Setting Volume Levels

The ZR's best fidelity is obtained when its volume is turned all the way up—you should always set it as high as possible. Here are some tips:

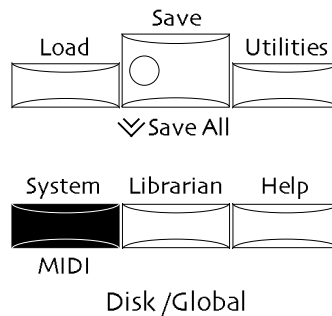
- If you're using the ZR's Phones jack, the Volume slider controls your listening level. Set it to a comfortable level.
- If you're using the ZR-76 with a keyboard or guitar amplifier, start with your amp input at a low setting. Turn the ZR's volume up as far as you can without experiencing distortion (unless that's what you want). Then turn up your amp channel to a comfortable listening level.
- If you're routing the ZR-76 directly to a mixing console, or indirectly through a patchbay, turn the ZR's volume all the way up and make adjustments to the input gain of your mixer faders to ensure the sound doesn't undesirably distort.
- If you're listening to the ZR-76 through a home stereo, set your stereo's volume to its normal level. With the ZR's Volume slider all the way down, play the keyboard with maximum force, or load up the loudest ZR-76 song you have and press Play. Slowly bring up the ZR's Volume slider as far as you can without hearing distortion. The ZR-76 is capable of producing a far greater dynamic range than a home stereo typically encounters when playing compact discs, cassettes and LPs, and you want to make sure that loud music from the ZR-76 will not damage your system.

Chapter 3

Global Settings

The ZR-76 offers a range of options that allow you to tailor its behavior to suit your way of working. These global, system-wide settings operate in the background, letting you get on with the art of making music. They remain in effect at all times and are preserved when the ZR-76's power is switched off.

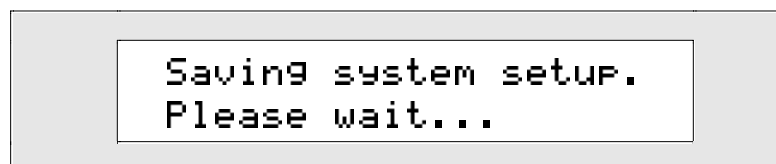
These options can be found in the Disk/Global area of your ZR-76. They are accessed by pressing the System button.



How the ZR-76 Remembers System Settings

All ZR-76 system settings are stored in FLASH memory. 15 seconds after you change any of them, or when you leave the ZR's System area, normal operations will pause briefly to allow the ZR to store the new settings into FLASH.

The display will briefly show:



For more information about FLASH memory, see *Chapter 9*.

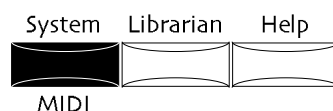
General System Editing Techniques

The System Groupings

The ZR-76 provides a great many system settings. In order to make getting to them simpler, they've been grouped into five sections. Each section is accessed by answering "yes" to a displayed question.

To Edit Global System Settings

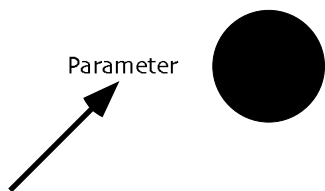
1. Press the System button.



The No and Yes LEDs will begin to flash.

2. Locate the Parameter knob on the ZR's front panel.

Sound/Rhythm Type



- 3. Turn the Parameter knob to select one of the following questions:



If you now press the Yes button in response to this display, you can change the keyboard's velocity and pressure response, set effect output routings, and control aspects of sound selection and memory protection.



When you press the Yes button in response to this display, you can change the global pitch bend settings, global tuning and the global pitch table.



When you press the Yes button in response to this display, you can assign various functions to the four possible foot switches available when you add two ENSONIQ SW-10 foot pedals to your ZR-76.

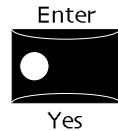


When you press the Yes button in response to this display, you can change the way the ZR-76 works with other MIDI devices.



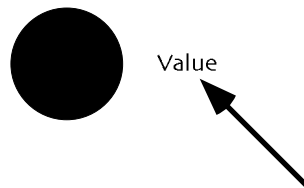
When you press the Yes button in response to this display, you can set up the ZR-76 for General MIDI. (For a description of General MIDI, see "What Is General MIDI?" in *Chapter 13*.)

- 4. Press the Yes button in response to the question you've selected.



5. Each one of the system options that you may adjust is called a *parameter*. Turn the Parameter knob to select the system parameter you'd like to set.
6. Use the Value knob to change the selected parameter's *value*.

Sound / Rhythm Name



Each of the system parameters is described later in this chapter.

Setting Your System Preferences

Adjusting the Keyboard's Response to Velocity

A keyboard such as the one in your ZR-76 senses how hard you play by measuring the *velocity* of your keystrikes. The Touch Curve parameter allows you to adjust the velocity response of the ZR-76 keyboard to match your playing style and technique. Taking the time to find the right setting for you will help you get the most out of the ZR's expressive sounds. There are six velocity curve (Touch) settings:

- Table-1
- Table-2
- Table-3
- Table-4
- Fixed 64
- Fixed127

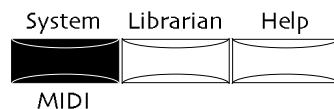
For more information about the ZR-76 velocity curves, see *Chapter 13*.

Note: The ZR-76 keyboard transmits release velocity according to a single specially-optimized release curve.

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Adjust Keyboard Velocity

1. Press the System button.

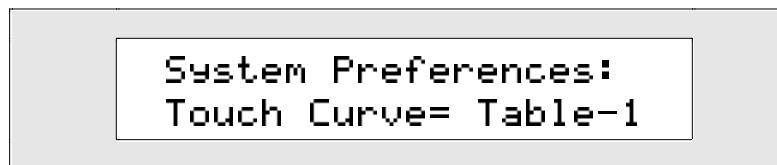


2. Turn the Parameter knob until the display shows:



3. Press Yes if you'd like to change the current system preferences. Press No if you'd like to cancel the procedure.

- Turn the Parameter knob until the display shows:



The current Touch Curve value

- Turn the Value knob or press the up/down arrow buttons to set the Touch Curve parameter to the value that best matches your playing style. Play some music at each setting to find the value that feels the most comfortable for your style of playing.
The Touch Curve values that begin with “Fixed” will cause every key to play at the same velocity, no matter how hard or soft you play.

Note: This parameter affects the way your ZR-76 responds to velocity internally, as well as the velocity values it transmits via MIDI.

Adjusting the Keyboard’s Response to Pressure

Some of the sounds in the ZR-76 respond to the Channel Pressure messages produced by the ZR’s keyboard when you press down on its keys at the bottom of their travel. It’s a good idea to customize your ZR’s pressure settings so that you can activate channel pressure without either doing so inadvertently, or with too much difficulty.

The Press Threshold parameter allows you to adjust the pressure of the keyboard to match your playing style and technique. The pressure threshold can be varied between SOFT (minimum force required to bring in pressure) and HARD (maximum force required to bring in pressure).

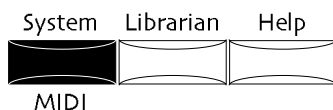
- SOFT—is for someone with a light touch. With this setting, a minimum amount of pressure is required to reach the maximum level of any pressure-controlled parameter.
- MED—requires slightly harder pressing to reach maximum pressure levels. This is the default setting.
- FIRM—represents average pressure sensitivity. A FIRM setting should be right for the player with an average touch.
- HARD—is for the strong player who presses the keys hard. It allows the widest possible range of pressure sensitivity.

Tip: Start with the default settings, then go up or down to find your optimal setting.

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Adjust Keyboard Pressure

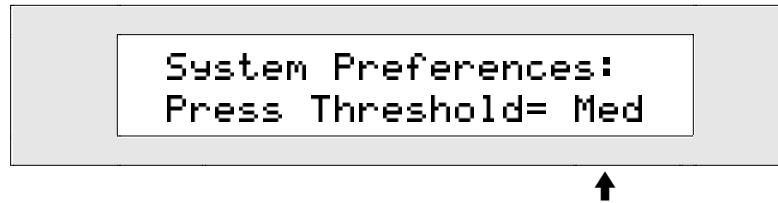
- Press the System button.



- Turn the Parameter knob until the display shows:



- Press Yes if you'd like to change the current system preferences. Press No if you'd like to cancel the procedure.
- Turn the Parameter knob until the display shows:



The current Press Threshold value

If you would like to make it easy to generate keyboard pressure by pressing on the keys, set the parameter to Soft. If you would like to make it more difficult to generate keyboard pressure by pressing on the keys, set the parameter to Hard. Try different settings to find the one most comfortable for you.

- Turn the Value knob or press the up/down arrow buttons to set the Touch Curve parameter to the value that best matches your playing style.

Note: This parameter affects the way your ZR-76 responds to pressure internally, as well as the pressure values it transmits via MIDI.

Using the ZR's Four Outputs

The rear panel of the ZR-76 offers four audio outputs. There are two stereo pairs: the Main Outs and the Aux Outs.



The Main Outs are used as the primary feed from the ZR-76. The Aux Outs are useful for extracting sounds or groups of sounds from the ZR's Main Out mix. By routing a sound to the Aux Outs, you can treat it to its own outboard processing, or control its volume individually by assigning it to its own fader on a mixer. Use standard balanced (TRS stereo cables) or unbalanced (TS mono cables) for the Main and Aux Outs.

As the labels on the Aux Out jacks and Main Out jacks indicate, the ZR-76 employs automatic switching on each pair of outputs:

- Main Outputs Left and Right are normally stereo outputs. However, if nothing is plugged into the Right Output, the stereo signal will be summed to mono and sent to the Left Main Output.
- Similarly, the Aux Outputs Left and Right are normally stereo outputs. However, if nothing is plugged into the Right Aux Output, the stereo signal will be summed to mono and sent to the Left Aux Output.

Routing Sounds to Specific Outputs

All tracks sounds are routed to a rear-panel output via an effect bus. In routing a sound to a particular pair of outs:

- The sound is assigned to an FX bus.
- The bus goes to an effect (except the dry bus, which goes directly to the outputs you choose).
- The effect is assigned to either the Main Outs or the Aux Outs.

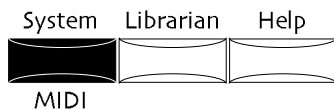
When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Send a Sound to the Desired Outputs

1. If you're using SoundFinder, select the sound you'd like to send to a particular output and route it to an effect bus. (To learn how to route a SoundFinder sound to an effect bus, see *Chapter 8*.)

If you're using the 16 Track Recorder, press the track button containing sound you'd like to send to a particular output, and route it to an effect bus. (To learn how to route a sound on a track to an effect bus, see *Chapter 8*.)

2. Press the System button.



3. Turn the Parameter knob until the display shows:



4. Press Yes if you'd like to change the current system preferences. Press No to cancel the procedure.
5. Turn the Parameter knob until the display shows the output assign parameter for the FX bus you've chosen.

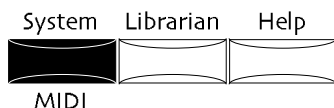
Note: The LightReverb, Medium Reverb and WetReverb busses all use the GlobalReverbOut parameter.

6. Use the Value knob to select either the Main or Aux Outs.

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Route a Specific Effect Bus to the Desired Outputs

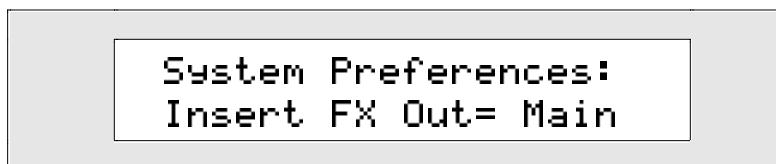
1. Press the System button.



2. Turn the Parameter knob until the display shows:



3. Press Yes if you'd like to change the current system preferences, or No to cancel the procedure.
4. Turn the Parameter knob until the display shows the name of the Effect Bus you would like to assign to an output.



↑
↑

The name of the effect bus
The current output assignment

You can change the routing of the insert, global chorus, global reverb, and dry effect busses. Each of these effect busses can be routed either to:

- Main—the ZR’s primary outputs
 - Aux—the ZR’s additional outputs
5. Turn the Value knob to route the effect bus you selected to the desired output.

Determining the Behavior of the Aux Outs

The Aux Outs are used for the extraction of sounds from the Main Outs mix. The ZR-76 is designed to provide the maximum flexibility when using the Aux Outs in your rig. The AuxToMainOuts System parameter offers three different ways to employ the Aux Outs. You can choose which one will work best for you.

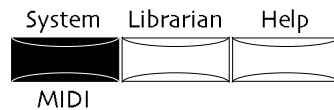
When AuxToMainOuts is set to Auto, the ZR employs intelligent jack switching, which allows it to sense whether or not you’ve got a cable plugged into the Left Aux Out jack. If you do, the Main and Aux Outs function as totally discrete stereo feeds. If there’s nothing connected to the jack, any signal sent to the Aux Outputs will be summed into the Main Outputs. This is convenient for musicians who seek to keep mixer input use to a minimum, or who anticipate using the Aux Outs only rarely.

Musicians who would prefer to permanently connect all four ZR keyboard outs will find the remaining two AuxToMainOuts values useful. When the parameter is set to Never, the Aux and Main Outs are kept discrete. When it’s set to Always, the Aux Outs are summed into the Main Outs. This allows musicians to leave all four ZR-76 output cables connected. When the Aux Outs are needed as a separate stereo feed, the AuxToMainOuts parameter can be set to Never. When only the Main Outs are required, it can be set to Always.

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Enable Automatic Aux Out Routing Based on Cabling

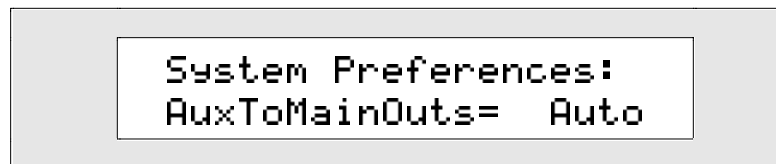
1. Press the System button.



2. Turn the Parameter knob until the display shows:



3. Press Yes if you’d like to change the current system preferences. Press No if you’d like to cancel the procedure.
4. Turn the Parameter knob until the display shows:



The current AuxToMainOuts value

The AuxToMainOuts parameter can be set to:

- Never—the Aux and Main Outs will be discrete, even if the Left Aux Out is not connected.
- Always—the Aux signal will be summed into the Main outputs, even if the Left Aux Out is connected.
- Auto—the ZR-76 will sum any sounds sent to the Aux Outs into the Main Outs if there’s no cable

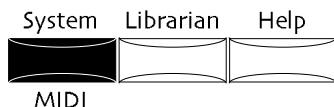
plugged into the Left Aux Out jack.

- Use the Value knob to set AuxToMainOuts to Auto.

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Utilize Permanently Connected Aux Outs

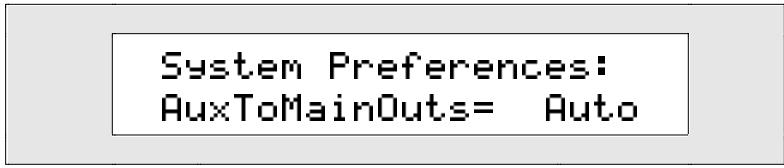
- Press the System button.



- Turn the Parameter knob until the display shows:



- Press Yes if you'd like to change system preferences. Press No if you'd like to cancel the procedure.
- Turn the Parameter knob until the display shows:



The current AuxToMainOuts value

The AuxToMainOuts parameter can be set to:

- Never—the Aux and Main Outs will be discrete, even if the Left Aux Out is not connected.
 - Always—the Aux signal will be summed into the Main outputs, even if the Left Aux Out is connected.
 - Auto—the ZR-76 will sum any sounds sent to the Aux Outs into the Main Outs if there's no cable plugged into the Left Aux Out jack.
- Use the Value knob to set AuxToMainOuts to Never when you need to use the Aux Outs as a discrete stereo feed, or to Always when using the Main Outs only.

Enabling or Disabling Automatic Effect Routing

ZR-76 sounds that use an insert effect are also assigned an alternate effect bus routing for situations in which the desired insert effect is unavailable. This would include times when you're already committed to using some other insert effect in a SoundFinder preset or a 16 Track Recorder sequence. For sounds that depend on an insert effect, the alternate effect bus, or *Alt. FX Bus*, provides a sensible "second-best" choice for those situations. The *Alt. FX Bus* setting for sounds that use an insert effect can be edited using the supplied Unisyn sound editing software.

Not all sounds use an insert effect. Each sound can be assigned instead to the global chorus, global reverb, or left dry, according to the setting of its FX Bus parameter. This parameter is accessed by pressing the Routing button in the FX/Mixdown section of the ZR's front panel. When you set a sound's FX Bus parameter to Chorus, LightReverb, MediumReverb, WetReverb or Dry, and save the sound, you've also set its *Alt. FX Bus* to the same value. The *Alt. FX Bus* for each sound can be directly accessed using your Unisyn software.

For more on how the ZR's effects work, see *Chapter 8*.

There may be times when you don't want this pre-programmed effect routing to be used. The ZR-76 provides the AutoSelect FXBus parameter for enabling or disabling the use of each sound's *Alt. FX Bus*

setting when selecting new split or layer sounds in SoundFinder, or track sounds in the 16 Track Recorder.

When Selecting a Split or Layer Sound in SoundFinder

When you select a new split or layer sound in SoundFinder:

- with AutoSelect FXBus on, the sound you choose will be routed to its Alt. FX Bus
- with AutoSelect FXBus off, the split or layer effect bus setting will remain unchanged when you select the new sound

Note: After you've selected a split or layer sound, you can manually change its effect bus as you please, regardless of the setting of the AutoSelect FXBus parameter.

When Selecting a Sound for a New, Undefined Track

In the 16 Track Recorder, when you select a sound for a new, undefined track:

- with AutoSelect FXBus on, the sound you choose will be routed to its Alt. FX Bus
- with AutoSelect FXBus off, the track will be set to the effect bus routing currently being used in SoundFinder

Note: After you've selected a sound, you can manually change the track's effect bus as you please, regardless of the setting of the AutoSelect FXBus parameter.

When Changing the Sound on a Track

When you change the sound on a track in the 16 Track Recorder:

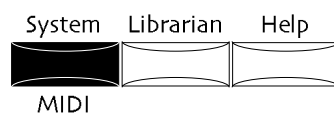
- with AutoSelect FXBus on, the sound you choose will be routed to its Alt. FX Bus
- with AutoSelect FXBus off, the track effect bus setting will remain unchanged when you select the new sound

Note: After you've changed the track's sound, you can manually change the track's effect bus as you please, regardless of the setting of the AutoSelect FXBus parameter.

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Set the AutoSelect FXBus Parameter

1. Press the System button.

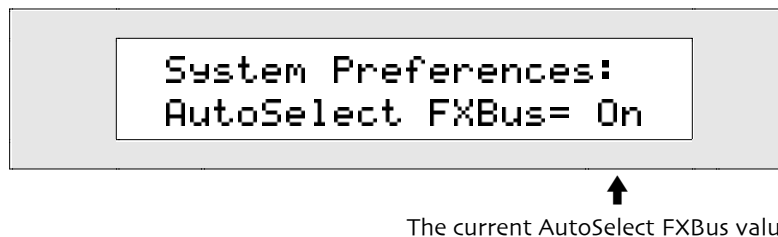


2. Turn the Parameter knob until the display shows:



3. Press Yes if you'd like to change the current system preferences. Press No if you'd like to cancel the procedure.

- Turn the Parameter knob until the display shows:



The AutoSelect FXBus parameter can be set to:

- On—to let the ZR-76 pick the chorus or reverb bus for newly-selected sounds that have no insert effect in SoundFinder, and for newly selected split, layer and 16 Track Recorder track sounds
 - Off—to leave the effect bus assignment unchanged when a new sound is selected anywhere in your ZR-76
- Use the Value knob to set AutoSelect FXBus to the desired setting.

Protecting Track Settings in the 16 Track Recorder

Sounds are programmed with their own optimal settings, and when you choose a sound, it brings those settings along. As a result, the following 16 Track Recorder track parameters will be reset when you select a new sound on a track: Pitch Bend Up, Pitch Bend Down, Octave Shift, Semitone Shift, Fine Tuning, PchTbl, Glide Mode, Glide Time, Delay Time, SyncLFO&Noise, Normal LFO Rates, LFO Depth, LFO Delay Time, Amp Env Attack, Amp Env Decay, Amp Env Release, Filter Cutoff, Filt Env Attack, Filt Env Decay, Filt Env Release and Amp&FiltEnv Vel.

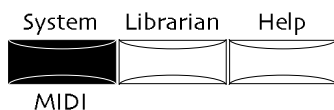
You might want to choose a new sound without losing your current track settings. You can use the system Track ParamReset parameter to determine whether or not these track parameter settings will be retained when you select a new sound. This parameter affects 16 Track Recorder sound selection from the ZR-76's front panel, as well as sound selection through the reception of MIDI Program Changes.

The system Track ParamReset parameter also affects how tracks respond to a Reset All Controllers MIDI message. When the ResetControlRecv System parameter—described later in this chapter—is set to On, a number of track parameters are reset to default values when the ZR-76 receives a Reset All Controllers message. (See “Receiving Reset All Controllers MIDI Messages” later in this chapter.) Setting the Track Param Reset to Off will protect the settings of the track parameters listed above from Reset All Controllers MIDI messages.

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Determine if New Sounds Reset Track Parameters

- Press the System button.

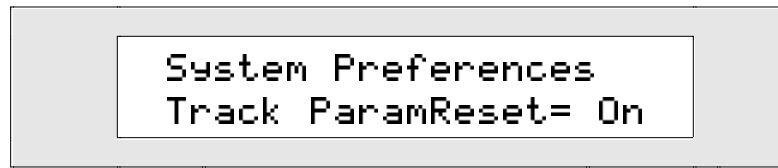


- Turn the Parameter knob until the display shows:



- Press Yes if you'd like to change the current system preferences. Press No if you'd like to cancel the procedure.

- Turn the Parameter knob until the display shows:



The current Track ParamReset value

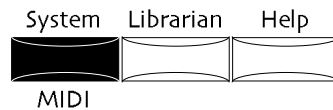
The Track ParamReset parameter may be set to:

- On—16 Track Recorder track parameters will be reset when a new sound is selected for a track or when Reset All Controllers MIDI messages are received.
 - Off—16 Track Recorder track parameters will not be reset when a new sound is selected for a track, or when Reset All Controllers MIDI messages are received.
- Use the Value knob to set Track ParamReset to the desired setting.

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Protect Track Parameters from Reset All Controllers

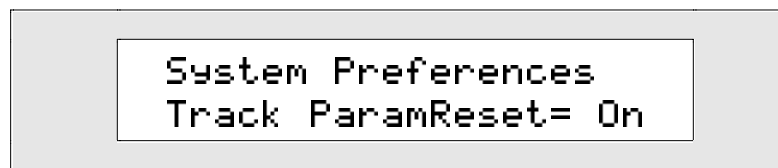
- Press the System button.



- Turn the Parameter knob until the display shows:



- Press Yes if you'd like to change the current system preferences. Press No if you'd like to cancel the procedure.
- Turn the Parameter knob until the display shows:



The current Track ParamReset value

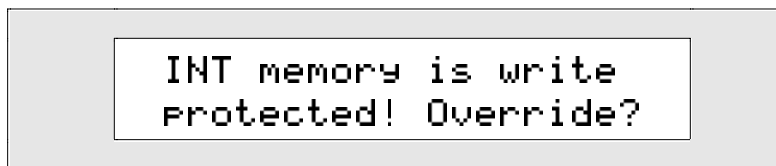
The Track ParamReset parameter may be set to:

- On—track parameters will be reset when a new sound is selected for a track or when Reset All Controllers MIDI messages are received.
 - Off—track parameters will not be reset when a new sound is selected for a track, or when Reset All Controllers MIDI messages are received.
- Use the Value knob to set Track ParamReset to the desired setting.

Protecting the ZR-76's Memory

When caught in a burst of creativity, it's all too easy to inadvertently erase things you'd rather preserve. The ZR-76 offers a special screen prompt as a reality check during activities that could result in the loss of sounds, rhythms or presets you don't really want to lose. When saving sounds, rhythms or presets,

the ZR can be set to display:

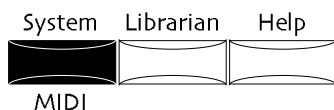


When you encounter this message, you can press Yes to continue what you were doing, or press No to abort the procedure. The Write Protect system parameter allows you to enable this parameter if you feel you'd benefit from this double-check, or to disable it if you'd find the prompt unnecessary:

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Enable or Disable the Write Protect Prompt

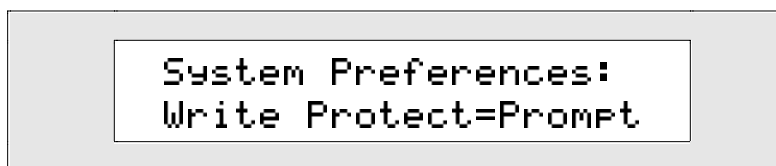
1. Press the System button.



2. Turn the Parameter knob until the display shows:



3. Press Yes if you'd like to change the current system preferences. Press No if you'd like to cancel the procedure.
4. Use the Parameter knob to scroll until the display shows:



The current Write Protect value

- Off—the ZR-76 will save a sound, rhythm or preset to the RAM or FLASH bank without displaying the write-protect prompt.
 - Prompt—the ZR-76 will display the write-protect prompt before it saves a sound, rhythm or preset to the RAM or FLASH bank.
5. Use the Value knob to set Write Protect to the desired value.

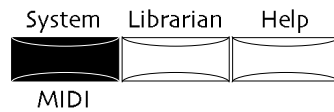
The 16 Track Recorder Rewind Sound

Many recording engineers have fond (and some not-so-fond) memories of the classic reel-to-reel recording tape recorders. One such memory was the sound produced when the tape was rewound. The ZR-76 offers this novelty sound as an option when you press the 16 Track Recorder Rewind button.

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Enable/Disable the 16 Track Recorder Rewind Sound

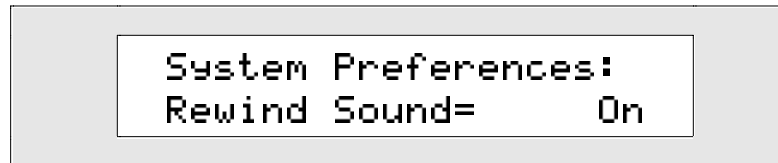
1. Press the System button.



2. Turn the Parameter knob until the display shows:



3. Press Yes if you'd like to change the current system preferences. Press No if you'd like to cancel the procedure.
4. Turn the Parameter knob until the display shows:



The current Rewind Sound value

The Rewind Sound parameter may be set to:

- On—pressing the 16 Track Recorder Rewind button will play the rewind sound.
 - Off—pressing the 16 Track Recorder Rewind button will not play the rewind sound.
5. Use the Value knob to set Rewind Sound to the desired setting.

Editing Global Pitch Settings

Using the Global Pitch Bend Settings

The pitch bend wheel is the spring-loaded wheel located to the far left of the keyboard. It's most commonly used to bend the pitch of notes up or down by pushing the wheel forward (up) or pulling it back (down).

Most ZR-76 sounds are programmed to respond to Pitch Bend messages in ways appropriate to the purpose of the sound. The ZR also offers a global pitch bend setup, which is always available to any sound. By setting the sound's pitch bend up and down parameters to "Sys," you can instruct a sound to use the global pitch bend settings instead of its own programmed settings. (See *Chapter 4* for details.)

The ZR-76 offers three parameters for controlling the global pitch bend:

- Pitch Bend Up
- Pitch Bend Down
- PitchBendMode

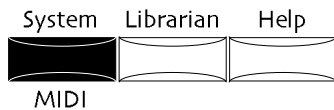
Global Pitch Bend Up and Down

Both pitch bend up and pitch bend down have their own individual settings, and either can be set to raise or lower the pitch of any sound. This parameter affects any sound whose Pitch Bend Up or Down parameter is set to "Sys."

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Determine the Global Pitch Bend Up Range

1. Press the System button.



2. Turn the Parameter knob until the display shows:



3. Press Yes if you'd like to change the system pitch settings, or No to cancel the procedure.

4. Turn the Parameter knob until the display shows:



The current Pitch Bend Up value

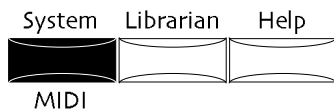
The global Pitch Bend Up parameter can be set to:

- 1-12dn or 1-12up—the pitch of sounds whose Pitch Bend Up=Sys will be lowered or raised by the number of equal-temper semitones set here when the pitch bend wheel is pushed all the way forward.
 - Off—sounds whose Pitch Bend Up=Sys will not change pitch when the pitch bend wheel is pushed forward.
5. Use the Value knob to set the Pitch Bend Up value you desire.

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Determine the Global Pitch Bend Down Range

1. Press the System button.

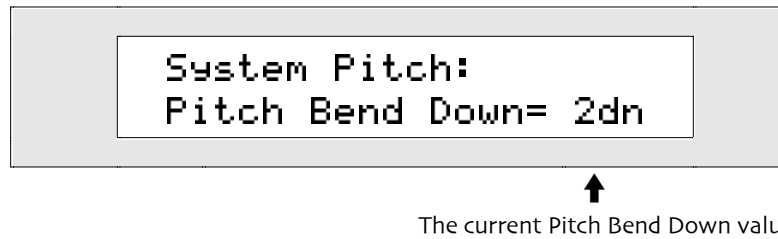


2. Turn the Parameter knob until the display shows:



3. Press Yes if you'd like to change the current system pitch settings. Press No if you'd like to cancel the procedure.

- Turn the Parameter knob until the display shows:



The global Pitch Bend Down parameter can be set to:

- 1-12dn or 1-12up—the pitch of sounds whose Pitch Bend Down=Sys will be lowered or raised by the number of equal-temper semitones set here when the pitch bend wheel is pulled all the way back.
 - Off—sounds whose Pitch Bend Down=Sys will not change pitch when the pitch bend wheel is pulled back.
- Use the Value knob to set the Pitch Bend Down value you desire.

Setting the Global Pitch Bend Mode

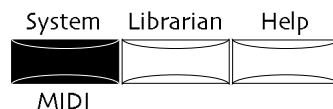
The PitchBendMode parameter unlocks a powerful feature that allows you to decide which notes will be affected by the pitch bend wheel. This parameter—which affects all onboard sounds—can be set to one of three values:

- Normal—Pitch Bend messages will affect all notes currently sounding.
- Held—Pitch Bend messages will affect only those notes sounding from keys which are being physically held down.
Notes held with the sustain pedal or already ringing off will remain at their original pitch. This feature can be used to create guitar-style pitch bends or to “paint” with pitch, leaving different notes sustaining at different pitches.
- Prog—Pitch Bend messages will affect notes according to each sound’s programmed pitch bend mode.

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Control Which Notes Will Bend

- Press the System button.

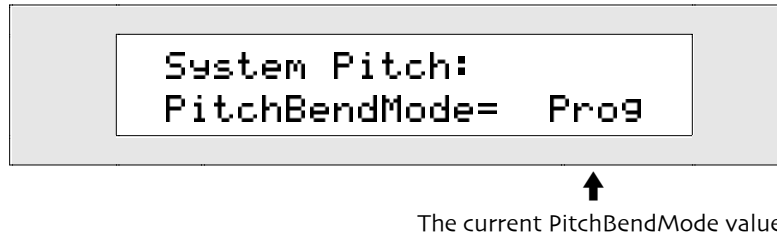


- Turn the Parameter knob until the display shows:



- Press Yes if you’d like to change the current system pitch settings. Press No if you’d like to cancel the procedure.

- Turn the Parameter knob until the display shows:



The global PitchBend Mode parameter can be set to:

- Normal—all notes that are playing will be affected by Pitch Bend messages.
- Held—only notes which are being physically held down will be affected by Pitch Bend messages.
- Prog—Pitch Bend messages will affect notes according to each sound’s programmed pitch bend mode.

- Use the Value knob to set the PitchBend Mode to the desired value.

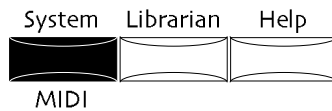
Fine Tuning the ZR-76

There may be a time when you need to use the ZR-76 with an instrument that just can’t be tuned, or when you have to deal with musicians who don’t want to retune for one reason or another. The tuning parameter allows you to adjust the ZR-76’s tuning to match other instruments. The ZR-76 defaults to A=440, with an equi-tempered pitch table.

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Fine Tune the ZR-76

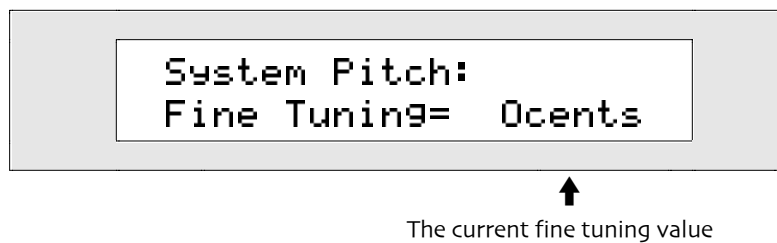
- Press the System button.



- Turn the Parameter knob until the display shows:



- Press Yes if you’d like to change the current system pitch settings. Press No to cancel the procedure.
- Turn the Parameter knob until the display shows:



- Use the Value knob to set the amount that you want to raise or lower the pitch. The pitch can be lowered or raised from -50 to +49 cents.

Note: Setting the ZR-76 to 0 cents is equivalent to A=440. 100 cents is the equivalent of a semitone.

Using Pitch Tables

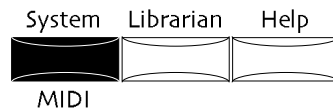
The intervals (or relationships) between notes in a scale can be altered to create special pitch tables. The ZR's pitch tables have a tuning resolution of 256 cents per semitone. The default pitch table is "EqualTemper," the western 12-tone equi-tempered pitch table. However, you can select from a large assortment of traditional, modern, ethnic, and exotic pitch tables in the ZR-76. The ZR also provides a RAM location for a custom pitch table, and supports the MIDI pitch table Bulk Tuning Dump and Single Note Tuning Change standards (this is explained fully in *Chapter 13*). If you've got the appropriate computer program, you can create your own pitch tables, and transmit them to the ZR-76 via SysEx.

Tip: Each track in the 16 Track Recorder has its own PitchTbl parameter that determines the pitch table the track will use. By setting each track to a different pitch table, you can set up the ZR-76 to produce 16 different tunings at once!

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Assign a Global Pitch Table

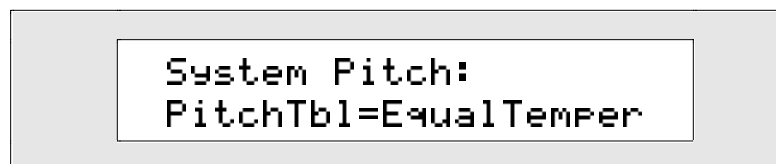
1. Press the System button.



2. Turn the Parameter knob until the display shows:



3. Press Yes if you'd like to change the system pitch settings, or No to cancel the procedure.
4. Turn the Parameter knob until the display shows:



The current PitchTbl value

5. Use the Value knob to select the pitch table that you want to use. This selects the system pitch table, and will affect all sounds and tracks that have their PitchTbl parameter set to "Sys." (See *Chapter 4* for details.)

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Assign a Sound to the Global Pitch Table

1. If you're using SoundFinder, select the sound you'd like to assign to the global pitch table and press the SoundFinder Edit button.
If you're using the 16 Track Recorder, press the track button whose sound you'd like to assign to the global pitch table.
2. Turn the Parameter knob until the display shows "PitchTbl="

PitchTbl can be set to:

- Prog—to use the PitchTbl value programmed into the sound
 - Sys—to use the global system pitch table
 - the special pitch tables built into the ZR’s memory
3. Turn the Value knob to set PitchTbl to Sys.

Note: When you select a new sound, PitchTbl will be reset to Prog. This can be prevented in the 16 Track Recorder by setting the System Track ParamReset parameter to Off. The Track ParamReset parameter is described earlier in this chapter.

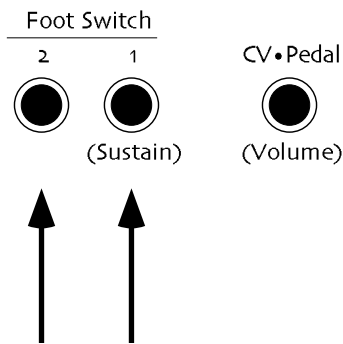
This parameter also responds to an NRPN LSB value of 021. To learn what an NRPN, and what it would be used for, see “Using RPNs and NRPNs to Edit Sound Parameters” at the end of *Chapter 4*.

For a complete list of pitch tables and their descriptions, see *Chapter 13— Supplemental Information*.

Setting Up Foot Switches

Using Foot Switches

The ZR-76 is equipped with two stereo foot switch jacks, located on its rear panel:



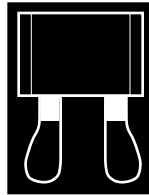
These two independent foot switch jacks support either a single (mono) or dual (stereo) foot switch, and can be assigned to a number of different functions, allowing a total of four independent foot switch controllers when two optional ENSONIQ SW-10 Dual Foot Switches are connected.

When the SW-2 or the SW-6 is connected to either Foot Switch jack:



It functions as the right foot switch and is completely programmable.

When the SW-10 is connected to either Foot Switch jack:



Both the left and right foot switches are completely and independently programmable.

There are four parameters that let you assign the foot switches to a variety of functions. When a single foot switch is connected, set the FtSw 1L parameter described below to “Unused.”

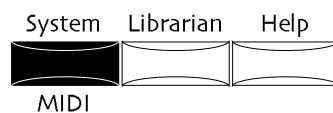
Warning: If you are using a single foot switch (ENSONIQ SW-2 or SW-6) in either of the Foot Switch jacks, the FtSw 1L and/or FtSw 2L values on the system page should *always* be set to “Unused.” The foot switch jacks are optimized for use with a stereo foot switch (such as ENSONIQ’s SW-10 foot switch), and when a single foot switch is connected, it operates as the right foot switch.

For more information about using mono and stereo foot switches with the ZR-76, see *Chapter 13—Supplemental Information*.

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Assign a Function to a Foot Switch

1. Press the System button.



2. Turn the Parameter knob until the display shows:

System/MIDI:
Set up foot control?

3. Press Yes if you’d like to change the current foot switch settings. Press No if you’d like to cancel the procedure.

There are four foot switch parameters, each of which represents one of the four available foot switch pedals:

- FtSw 1L—the left pedal of foot switch 1
- FtSw 1R—the right pedal of foot switch 1
- FtSw 2L—the left pedal of foot switch 2
- FtSw 2R—the right pedal of foot switch 2

Each foot switch pedal can be set to perform a specified function when pressed:

- Unused—pressing the pedal will have no effect.
- Sustain—holding the pedal will cause notes to continue sounding after the key is released, much like the sustain pedal on a piano.

- **Sostenuto**—any keys that are held down when you press the pedal will sustain until you release the pedal; keys pressed down after you press the pedal will not sustain. This is similar to the sostenuto pedal on a piano.
- **SysCTRL1**—pressing the pedal down will send a value of 127 to any aspect of a sound or effect that is modulated by the controller designated as CTRL1; releasing the pedal will send a value of 0 to any aspect of a sound or effect that is modulated by the controller designated as CTRL1. (For details on setting the CTRL1 parameter and descriptions of CTRL1 settings, see “Setting Up New Real-Time Controllers” later in this chapter.)
- **SysCTRL2**—pressing the pedal down will send a value of 127 to any aspect of a sound or effect that is modulated by the controller designated as CTRL2; releasing the pedal will send a value of 0 to any aspect of a sound or effect that is modulated by the controller designated as CTRL2. (For details on setting the CTRL2 parameter and descriptions of CTRL2 settings, see “Setting Up New Real-Time Controllers” later in this chapter.)
- **SysCTRL3**—pressing the pedal down will send a value of 127 to any aspect of a sound or effect that is modulated by the controller designated as CTRL3; releasing the pedal will send a value of 0 to any aspect of a sound or effect that is modulated by the controller designated as CTRL3. (For details on setting the CTRL3 parameter and descriptions of CTRL3 settings, see “Setting Up New Real-Time Controllers” later in this chapter.)
- **SysCTRL4**—pressing the pedal down will send a value of 127 to any aspect of a sound or effect that is modulated by the controller designated as CTRL4; releasing the pedal will send a value of 0 to any aspect of a sound or effect that is modulated by the controller designated as CTRL4. (For details on setting the CTRL4 parameter and descriptions of CTRL4 settings, see “Setting Up New Real-Time Controllers” later in this chapter.)
- **up arrow**—pressing the pedal will have the same effect as pressing the up arrow button on the front panel.
- **down arrow**—pressing the pedal will have the same effect as pressing the down arrow button on the front panel.

Tip: You can utilize foot switches to select presets or sounds by assigning the two pedals in an SW-10 stereo foot switch to “up arrow” and “down arrow.” When you’ve selected the preset bank in SoundFinder, each press of a pedal will select the next, or previous, preset. If you’d like to use this function for choosing sounds, select the desired SoundFinder category, and the pedals will move you forward and back through the sounds in the category you’ve chosen.

- **Split**—pressing the pedal will have the same effect as pressing the Split button on the front panel.
- **Layer**—pressing the pedal will have the same effect as pressing the Layer button on the front panel.
- **Transpose**—pressing the pedal will have the same effect as pressing the Transpose button on the front panel.
- **Recall Idea**—pressing the pedal will have the same effect as pressing the Recall Idea button on the front panel.
- **IPStart**—pressing the pedal will have the same effect as pressing the Idea Pad Start/Stop button on the front panel.
- **DMFillVar1 through DMFillVar8**—pressing the pedal will have the same effect as pressing the same numbered Variations/Fills button on the front panel.
- **Fill/Var**—pressing the pedal will have the same effect as pressing the Fill Variation button on the front panel.
- **DMStart**—pressing the pedal will have the same effect as pressing the Drum Machine Start/Stop button on the front panel.
- **Play/Stop**—pressing the pedal will have the same effect as pressing the 16 Track Recorder Stop button if a song or sequence is playing; it will have the same effect as pressing the 16 Track Recorder Play button if a song or sequence is not playing.
- **PlayTop/Stop**—pressing the pedal will have the same effect as pressing the 16 Track Recorder Play button on the front panel.
- **RecPlay/Stop**—pressing the pedal will start recording on the currently selected track. If the 16 Track Recorder is already recording, pressing the pedal down will stop recording. This setting can be used for punch-ins in the 16 Track Recorder (see *Chapter 7*)
- **Record**—pressing the pedal will have the same effect as pressing the front panel’s Record button.

- Stop—pressing the pedal will have the same effect as pressing the 16 Track Recorder Stop button on the front panel.
- Rewind—pressing the pedal will have the same effect as pressing the 16 Track Recorder Rewind button on the front panel.
- FastForward—pressing the pedal will have the same effect as pressing the 16 Track Recorder Fast Forward button on the front panel.
- Mute—pressing the pedal will have the same effect as pressing the Mute button on the front panel.
- Solo—pressing the pedal will have the same effect as pressing the Solo button on the front panel.
- RegionFrom—pressing the pedal will have the same effect as pressing the Region From button on the front panel.
- RegionTo—pressing the pedal will have the same effect as pressing the Region To button on the front panel.
- PrevFavorite—pressing the pedal will select the previous favorite sound from the group of 18 favorites. When the first favorite is selected, tapping the pedal again will select the 18th favorite.
- Next Favorite—pressing the pedal will select the next favorite sound from the group of 18 favorites. When the last favorite is selected, tapping the pedal again will select the first favorite.

Tip: You can program the Favorites buttons using foot switches—see *Chapter 4*.

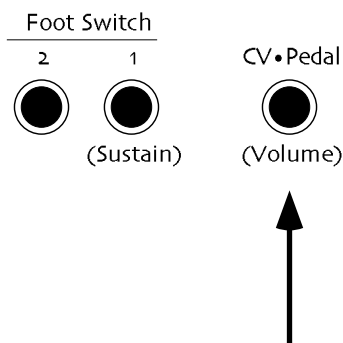
Tip: When a MIDI-OUT sound is selected in SoundFinder (including split or layer sounds), or on a track in the 16 Track Recorder, MIDI messages produced by the foot switches—such as sustain, sostenuto or any MIDI controllers assigned to SysCTRLs—will be transmitted via MIDI by the ZR-76.

5. Turn the Value knob or press the up/down arrow buttons to select the desired foot switch function.

Warning: If you are using a single foot switch (SW-2 or SW-6) in either of the Foot Switch jacks, the FtSw 1-L and/or FtSw 2-L values on the system page should *always* be set to “Unused.” The foot switch jacks are optimized for use with a stereo foot switch (such as ENSONIQ’s SW-10 foot switch), and when a single foot switch is connected, it operates as the right foot switch.

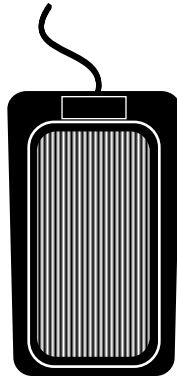
Using a CV Pedal as a Modulator

The ZR-76 also offers a CV•Pedal jack, located on the rear panel of your unit:



This jack is for connecting an optional ENSONIQ Model CVP-1 Control Voltage Foot Pedal, which is assignable as a modulator to various parameters within the ZR-76. The pedal gives you a handy alternative modulation source when you want an additional modulation controller—as in situations where both of your hands are busy playing the keyboard.

ENSONIQ
CVP-1
Control Voltage Foot Pedal



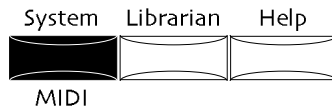
A CV pedal plugged into this jack can also act as a volume pedal, controlling the overall loudness of your ZR-76. The System CVPedal parameter determines whether the CV pedal will act as a modulator, a volume pedal, or as one of the special System Controllers (see below).

Pedal/CV Specs: 3-conductor (Tip=control voltage input, Ring=510 ohm resistor to +5 Volts, Sleeve=ground). 36 KOhm input impedance, DC coupled. Input voltage range=0 to 3 volts DC. Scan rate=32mS (maximum recommended modulation input=15 Hz). For use with an external control voltage, use a 2-conductor cable with the voltage on the tip and the sleeve grounded.

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Assign a Function to the CV Pedal

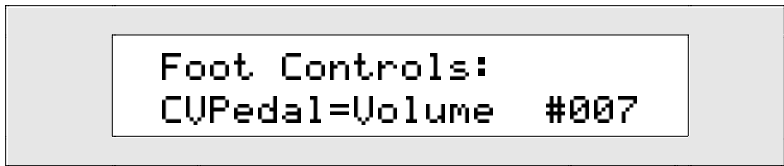
1. Press the System button.



2. Turn the Parameter knob until the display shows:



3. Press Yes if you'd like to change the current foot switch settings. Press No if you'd like to cancel the procedure.
4. Turn the Parameter knob until the display shows:



The current CV pedal assignment

You can set the CV pedal to send values to any aspect of a sound or effect that is modulated by a

MIDI controller. The CVPedal parameter can be set to:

- FootCtrl#004—to send values to any aspect of a sound or effect that is modulated by MIDI Controller #4 (Foot pedal).
- Volume #007—to send values to any aspect of a sound or effect that is modulated by MIDI Controller #7 (Volume).
- SysCTRL1—to send values to any aspect of a sound or effect that is modulated by CTRL1. (For details on setting the CTRL1 parameter and descriptions of CTRL1 settings, see “Setting Up New Real-Time Controllers” later in this chapter.)
- SysCTRL2—to send values to any aspect of a sound or effect that is modulated by CTRL2. (For details on setting the CTRL2 parameter and descriptions of CTRL2 settings, see “Setting Up New Real-Time Controllers” later in this chapter.)
- SysCTRL3—to send values to any aspect of a sound or effect that is modulated by CTRL3. (For details on setting the CTRL3 parameter and descriptions of CTRL3 settings, see “Setting Up New Real-Time Controllers” later in this chapter.)
- SysCTRL4—to send values to any aspect of a sound or effect that is modulated by CTRL4. (For details on setting the CTRL4 parameter and descriptions of CTRL4 settings, see “Setting Up New Real-Time Controllers” later in this chapter.)

Tip: When the CV pedal is set to one of the four SysCTRLs, and a MIDI-OUT sound is selected in SoundFinder or the 16 Track Recorder, the CV pedal will regulate MIDI transmission of the SysCTRL’s selected MIDI controller.

Editing MIDI-Related Settings

SoundFinder’s MIDI Channel

Whenever you play a sound in SoundFinder that belongs to any SoundFinder category other than MIDI-OUT, the ZR-76 transmits the notes you play and the controllers you use via MIDI. The MIDI channel that carries these messages is called the base MIDI channel. (Selecting a MIDI-OUT sound after pressing the Select Sound, Split or Layer buttons allows you to transmit MIDI on other channels.)

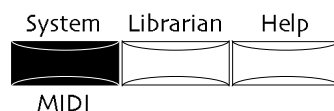
The ZR-76 also allows you to play SoundFinder sounds from an external MIDI device—such as a keyboard controller or sequencer—whenever the Select Sound LED is lit, as long as a non-MIDI-OUT sound was selected after pressing the Select Sound button. SoundFinder—including split and layer sounds—responds to MIDI messages received on the ZR’s base MIDI channel. MIDI Bank Select and MIDI Program Change messages are also received on the base MIDI channel, affecting only the sound chosen with the Select Sound button. If split and/or layer are on, sending a MIDI Bank Select or MIDI Program Change message to your ZR-76 on the base MIDI channel will turn them off. (If a MIDI-OUT sound is selected, incoming MIDI is sent to the 16 Track Recorder. You can still receive incoming MIDI in SoundFinder when you use MIDI-OUT sounds for splits or layers, however; only the associated split or layer will ignore incoming MIDI.)

You can select any MIDI channel from 1-16 as the base MIDI channel using the Base MIDI Channel parameter.

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Set the Base MIDI Channel

1. Press the System button.



- Turn the Parameter knob until the display shows:



- Press Yes if you'd like to change the current MIDI settings. Press No if you'd like to cancel the procedure.
- Turn the Parameter knob until the display shows:



The current base MIDI channel

- Turn the Value knob or press the up/down arrow buttons to set the Base MIDI Channel to the channel on which you'd like SoundFinder to receive MIDI.

Synchronizing the ZR-76 to MIDI

The ZR-76 generates a timing reference created by the tempo of the Drum Machine or 16 Track Recorder (depending on whether you're in SoundFinder or the 16 Track Recorder, respectively). This timing reference accessed by elements of ZR-76 sounds, and by the ZR effects:

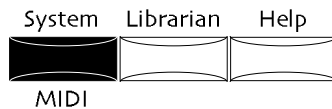
- Many ZR-76 sounds use Low Frequency Oscillators (LFOs) and noise generators as a means of creating vibrato and other rhythmic sonic changes. These LFOs and noise generators can be synchronized to the Drum Machine and 16 Track Recorder.
- Some of the ZR's effects contain LFOs and delays that can be synchronized to the Drum Machine and 16 Track Recorder.

The Drum Machine and 16 Track Recorder can themselves be synchronized to MIDI clocks received from some external source (such as a computer sequencer or drum machine). The 16 Track Recorder also responds to received MIDI Song Position Pointer messages when it's synchronized to MIDI clocks.

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Determine the ZR's Master Timing Source

- Press the System button.

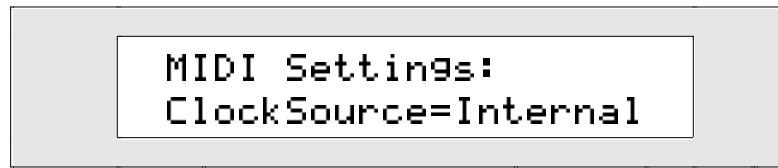


- Turn the Parameter knob until the display shows:



- Press Yes if you'd like to change the current system MIDI settings. Press No if you'd like to cancel the procedure.

- Turn the Parameter knob until the display shows:



↑
The current Clock Source value

The ClockSource parameter can be set to:

- Internal—to use either the ZR's Drum Machine or 16 Track Recorder as the master clock source
 - MIDI—to use external MIDI clocks as the timing source, and to enable the 16 Track Recorder's response to MIDI Song Position Pointer messages
- Turn the Value knob to set Tempo ClockSrc to the desired setting.

Note: Whenever ClockSource is set to MIDI, the tempo and sequence location displays in the Drum Machine and 16 Track Recorder show that the ZR is synchronized to an external MIDI device.

Synchronizing Other MIDI Devices to Your ZR-76

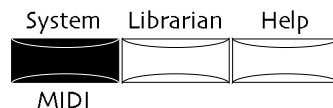
The ZR-76 is capable of transmitting MIDI clocks to other MIDI devices, so that you can use your ZR as the master timing reference in your setup. When this feature is enabled, the ZR-76 will transmit MIDI Song Position Pointer, Start, Stop and Continue messages when you press the appropriate button in the 16 Track Recorder.

You can turn this feature on or off using the Xmit MIDI Clocks parameter.

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Control Whether MIDI Synchronization Data is Transmitted from the ZR

- Press the System button.



- Turn the Parameter knob until the display shows:



- Press Yes if you'd like to change the current MIDI settings. Press No if you'd like to cancel the procedure.
- Turn the Parameter knob until the display shows:



↑
The current Xmit MIDI Clocks value

The Xmit MIDI Clocks parameter controls whether or not the ZR-76 will send out MIDI clocks, as well as MIDI Song Position Pointer, Start, Stop and Continue messages. This parameter may be set to:

- Off—the ZR-76 will not send out MIDI clocks or MIDI Song Position Pointer, Start, Stop or Continue messages.
 - On—the ZR-76 will send out MIDI clocks and MIDI Song Position Pointer, Start, Stop or Continue messages.
5. Turn the Value knob or use the up/down arrow buttons to set the Xmit MIDI Clocks parameter to the desired value.

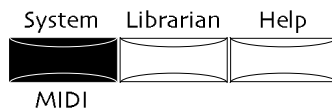
Setting the Global Reception of MIDI Bank Selects and Program Changes

The ZR-76 allows you to enable or disable its reception of MIDI Bank Selects and Program Changes on a system-wide basis. The global Bank&ProgChgRecv System parameter functions as a master switch that can turn off the ZR-76's reception of Bank Selects and Program Changes regardless of the ProgramChngRecv and Bank Select Recv parameter settings in SoundFinder or the 16 Track Recorder. When Bank&ProgChgRecv is set to On, the SoundFinder or track settings determine whether SoundFinder or the 16 Track Recorder track will respond to or ignore Bank Select and Program Change messages. When Bank&ProgChgRecv is set to Off, the ZR-76 will ignore MIDI Bank Select and Program Changes completely.

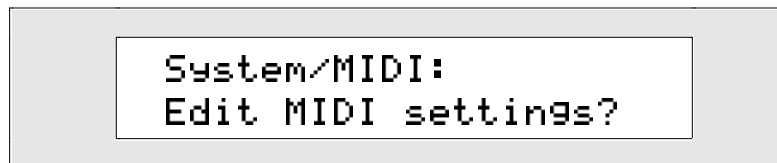
When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Set Reception of Bank Selects and Program Changes

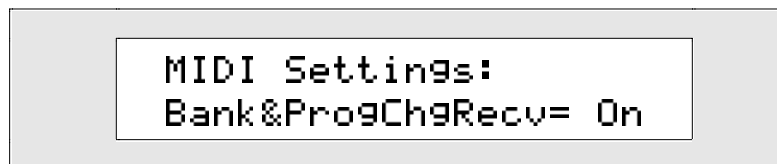
1. Press the System button.



2. Turn the Parameter knob until the display shows:



3. Press Yes if you'd like to change the current system MIDI settings. Press No to cancel the procedure.
4. Turn the Parameter knob until the display shows:



↑
The current Bank&ProgChgRecv value

The Bank&ProgChgRecv parameter can be set to:

- On—MIDI Bank Selects and Program Changes will be responded to according to the settings of the ProgramChngRecv and Bank Select Recv SoundFinder and 16 Track Recorder track parameters
 - Off—the ZR-76 will ignore MIDI Bank Selects and Program Changes
5. Turn the Value knob to set Bank&ProgChgRecv to the desired value.

Responding to MIDI “Panic” Messages

Occasionally MIDI devices get confused. As a result, some MIDI products are able to send out “panic” messages to quickly bring MIDI chaos under control.

The ZR-76 responds to the following messages:

- Reset All Controllers (MIDI controller #121)
- All Notes Off (MIDI controller #123)
- All Sounds Off (MIDI controller #120)

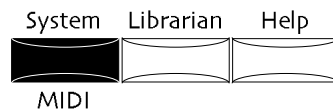
Receiving Reset All Controllers MIDI Messages

The ResetControlRecv System parameter allows you to determine how the ZR-76 will respond to Reset All Controllers MIDI messages. When it's set to On, and SoundFinder or a track in the 16 Track Recorder receives a Reset All Controllers message on its MIDI channel, the ZR will return all of its real-time controllers and any parameters that respond to MIDI controllers to their default values, clearing up any hung values or unexpected settings. When ResetControlRecv is set to Off, SoundFinder and 16 Track Recorder tracks will not respond to Reset All Controllers messages. For more information on the ZR-76's response to Reset All Controllers messages, see "Reset All Controllers (MIDI controller 121) Reception Behavior" in *Chapter 13—Supplemental Information*.

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Set the Response to Reset All Controllers Messages

1. Press the System button.



2. Turn the Parameter knob until the display shows:



3. Press Yes if you'd like to change the current system MIDI settings. Press No if you'd like to cancel the procedure.
4. Turn the Parameter knob until the display shows:



The current ResetControlRecv value

The ResetControlRecv parameter can be set to:

- Off—the ZR-76 will ignore Reset All Controllers MIDI messages.
 - On—when SoundFinder or any 16 Track Recorder track receives a Reset All Controllers message on its MIDI channel all of its real-time controllers and parameters that respond to MIDI controllers will be reset to their default values.
5. Turn the Value knob to set ResetControlRecv to the desired value.

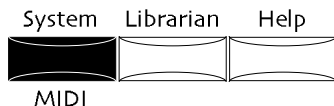
Setting the Response to All Notes Off MIDI Messages

The ZR-76 can respond to All Notes Off and All Sounds Off MIDI control messages. When SoundFinder or a 16 Track Recorder track receives either of these on its MIDI channel, any of its notes that are currently sounding are silenced. The AllNotesOff Recv System parameter is a combined filter for both messages. When it's set to On, the ZR-76 will respond to them—when set to Off, it will ignore them.

When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Set the Response to MIDI All Notes Off Messages

1. Press the System button.



2. Turn the Parameter knob until the display shows:



3. Press Yes if you'd like to change the current system MIDI settings. Press No if you'd like to cancel the procedure.
4. Turn the Parameter knob until the display shows:



↑
The current AllNotesOff Recv value

This AllNotesOff Recv parameter is a combined All Notes Off (MIDI control #123) and All Sounds Off (MIDI control #120) reception filter. It can be set to:

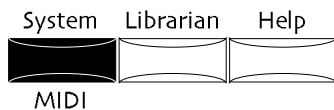
- Off—the ZR-76 will ignore the All Notes Off and All Sounds Off MIDI messages.
 - On—when SoundFinder or any 16 Track Recorder track receives an All Notes Off and/or All Sounds Off MIDI message on its MIDI channel, all of its currently sounding notes will be silenced.
5. Turn the Value knob to set AllNotesOff Recv to the desired value.

Using SysEx Device IDs

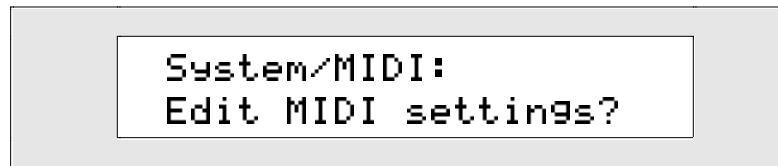
The ZR-76 can use MIDI System Exclusive (or “SysEx”) messages to communicate with computers—the Unisyn sound editing software uses this form of communication. SysEx data is a special kind of MIDI data that doesn’t require a specific MIDI channel. Every MIDI product has its own SysEx identity—but what if you’ve got several ZR-76s connected at the same time? Each one of them can be assigned its own SysEx Device ID number, from 000 to 127. In this way, each ZR-76 can identify the MIDI SysEx data that it’s meant to receive. Of course, it’s vital that no two ZR-76s share the same SysEx Device ID number.

To Set the ZR-76’s SysEx Device ID Number

1. Press the System button.



- Turn the Parameter knob until the display shows:



- Press Yes if you'd like to change the current system MIDI settings. Press No if you'd like to cancel the procedure.
- Turn the Parameter knob until the display shows:



The current SysEx Device ID value

The SysEx Device ID parameter can be set to any number from 000 to 127.

Warning: Make sure to take note of the SysEx Device ID number you choose. If you perform a SysEx dump from the librarian (see *Chapter 9*), this ID is included in the data. When you send the dump back to your ZR-76, you must have this parameter set to the same ID number, or the data will not successfully load back in.

- Use the Value knob to select the SysEx Device ID number you want to use for this ZR-76.

Setting Up New Real-Time Controllers

The ZR-76 can generate, respond to and transmit the following real-time MIDI controllers and messages:

- Data Entry Slider
- Pitch Bend Wheel
- Mod Wheel
- Foot Pedal
- Sustain/Sostenuto pedals
- MIDI Volume messages
- MIDI Pan messages
- MIDI Expression messages

In addition, the ZR-76 allows you to define four additional real-time MIDI controllers: CTRL1, CTRL2, CTRL3 and CTRL4. These can be assigned to any legitimate MIDI controller number, and used to modulate the ZR-76's sounds or effects. See *Chapter 8* to learn how to use one of the CTRLs as a real-time effect modulator.

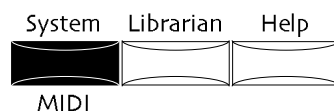
Tips: A CTRL can be assigned to the CV pedal and transmitted via MIDI when a MIDI-OUT sound is selected. When incoming MIDI is received, the CTRLs can be used to provide ZR response to any MIDI controller message.

SoundFinder and the 16 Track Recorder tracks offer filters that determine whether or not response to the CTRLs will be enabled or disabled. See *Chapter 4* or *Chapter 7* for details.

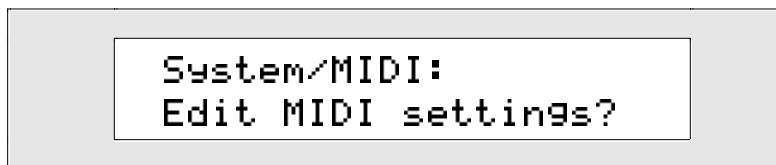
When you change any system setting, ZR-76 operations will pause momentarily to store your settings into FLASH memory.

To Set Up the Four Special Controllers

- Press the System button.



- Turn the Parameter knob until the display shows:



- Press Yes if you'd like to change the current system MIDI settings. Press No if you'd like to cancel the procedure.
- Turn the Parameter knob until the display shows the name of the system controller you'd like to use:
 - CTRL1 • CTRL2 • CTRL3 • CTRL4
- After selecting one of the four special controllers, use the Value knob to locate the MIDI controller number you'd like to assign to the system controller you've selected.

Note: If more than one system controller is assigned to the same MIDI controller number, only the lower-numbered system controller will respond to the MIDI controller.

When the ZR-76 is shipped from the factory:

- CTRL1 is assigned to Breath Controller (MIDI controller #002).
- CTRL2 is assigned to FXControl1 (MIDI controller #012).
- CTRL3 is assigned to PatchSelct (MIDI controller #070).
- CTRL4 is assigned to Timbre (MIDI controller #071).

Entering GM Mode

Using the ZR-76 with General MIDI

General MIDI (GM) is an agreed-upon set of sounds and protocols which aims to ensure that, no matter what brand or model General MIDI instrument you use to play General MIDI sequences, the music is guaranteed to sound as its arranger intended. For a more detailed description of General MIDI, see "What Is General MIDI?" found in *Chapter 13—Supplemental Information*.

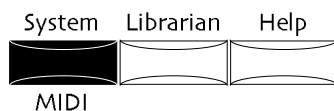
The ZR-76 can play General MIDI music in either of two ways:

- You can load General MIDI Standard MIDI Files from floppy disk into your ZR-76. Once loaded into the 16 Track Recorder, you can play them back, edit them, and/or add your own new tracks.
- You can play GM files on an external device—such as a computer or stand-alone sequencer—and use the ZR's complete set of GM sounds.

The ZR-76 GM mode reconfigures your ZR-76 for General MIDI music. Once in GM Mode, the 16 Track Recorder will be prepared to play GM Standard MIDI Files loaded from floppy or to act as a 16-channel General MIDI sound source.

To Use the ZR-76 for General MIDI Music

- Press the System button.



- Turn the Parameter knob until the display shows:



- If you'd like to continue, press Yes. If not, press No.

You can now load a GM Standard MIDI File from floppy disk into any sequence location. To learn how to load Standard MIDI Files, see *Chapter 7*.

If you're using an external sequencer to play back GM music, your ZR-76 will function perfectly as a high-quality GM sound source. (*Chapter 2* describes the MIDI connections you'll need to make.)

ZR-76 General MIDI Details for the Curious

General MIDI is designed to be extremely easy to use, requiring no background technical knowledge of its workings. However, for ZR-76 users who are interested, here's what happens when you "Enter GM mode."

- The ZR-76 moves into its song memory any song currently in the Song Editor.
- The ZR-76 creates a new song, selects sequence A in bank 1 and selects track 1 in sequence A.
- Tracks 1-16 are set to MIDI channels 1-16, respectively.
- Each track in the 16 Track Recorder is set to select sounds from the ZR-76's bank of General MIDI sounds.
- Each track's Bank&ProgChgRecv is set to On so that the ZR-76 can respond to General MIDI program changes.
- Bank Select Recv parameter for each track is disabled in the event that the GM sequence being played contains Bank Select messages on the track—this guarantees that program changes will only select sounds from the ZR's GM sound bank. Track 10 is set to select sounds only from the ZR's GM drum kit bank.
- Each track's PitchBendMode is set to Prog so that its GM sounds respond to MIDI Pitch Bend data in accordance with the General MIDI rules.
- The system AutoSelect FXBus parameter is set to Off to allow General MIDI Effect Change messages to control the ZR's chorus and reverb.
- The system Track ParamReset parameter is set to Off to prevent the various track parameters preset for General MIDI from being inadvertently changed.
- The system ResetControlRecv and AllNotesOff Recv parameters are set to On so that the ZR-76 can respond to MIDI panic messages.
- The system SysEx Recv parameters is set to On so that you can return the ZR-76 to its original General MIDI settings any time you like, via a General MIDI On SysEx message.

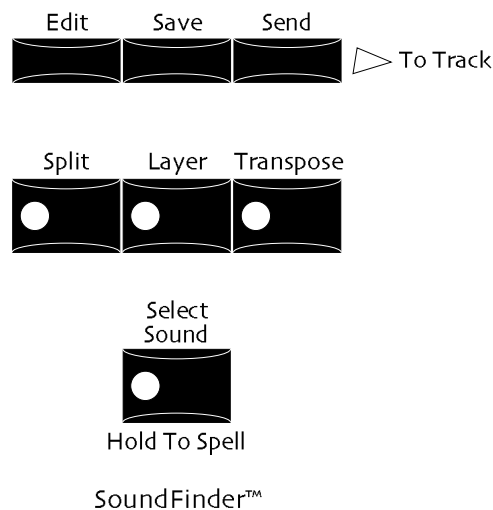
Note: When you're done using the ZR-76 as a GM sound source, you may want to reset the following system parameters, which are described elsewhere in this chapter: AutoSelect FXBus, Track ParamReset, ResetControlRecv, AllNotesOff Recv and SysEx Recv.

Chapter 4

SoundFinder™

Sound Central

At the heart of the ZR-76 are the hundreds of terrific sounds it contains. ENSONIQ's SoundFinder™ makes it easy to find just the right one. SoundFinder also provides the means to customize these sounds in many useful ways.



SoundFinder's Select Sound, Split, Layer and Transpose buttons contain LEDs that provide helpful provide information at a glance:

- When the Select Sound LED is lit, you're in SoundFinder.
- When the Split LED is lit, SoundFinder's split feature is enabled: the ZR's keyboard can play two different sounds in two different areas of the keyboard. You can set where one area ends and the other begins.
- When the Layer LED is lit, SoundFinder's layer feature is enabled: two sounds of your selection will play at once when you press a key on the keyboard. Layers are described in detail in "Layering ZR-76 Sounds" later in this chapter.

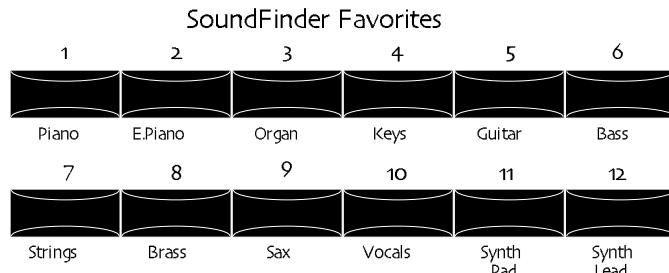
Note: SoundFinder can have a split and a layer at the same time. When this is the case, the sound played in the lower part of the keyboard is heard by itself; the upper area of the keyboard plays two sounds at once.

- When the Transpose LED is lit, SoundFinder's transpose feature is enabled: the pitch produced as you play notes on the keyboard is shifted upward or downward by the number of semitone steps that you determine. The ZR's transpose capabilities are described in detail in "Transposing the ZR's Keyboard in SoundFinder" later in this chapter.

Choosing Sounds

The SoundFinder Favorites Buttons

The SoundFinder Favorites buttons—located beneath the ZR display—provide one-button access to your favorite sounds.



The Favorites buttons are programmed by ENSONIQ to select sounds corresponding to their labels:

<i>Favorites button:</i>	<i>selects:</i>	<i>Favorites button:</i>	<i>selects:</i>
1 (Piano)	PerfectPno	7 (Strings)	Dyn Marcato
2 (E. Piano)	Suitcase EP	8 (Brass)	StereoBrass
3 (Organ)	Fuller B3	9 (Sax)	BreathyTenr
4 (Keys)	ChatterClav	10 (Vocals)	Oooohhhs
5 (Guitar)	Dbl 6-String	11 (Synth Pad)	Phase Sweep
6 (Bass)	Switch Pop1	12 (Synth Lead)	Atomic Lead

The buttons are completely programmable, so you can assign your own favorite sounds to any or all of the buttons, regardless of their labels. See below for details.

To Select Sounds Using the Favorites Buttons

1. Press any Favorite button—that’s all there is to it! The sound programmed for that button is now selected and can be played from the keyboard.

There are six additional “hidden” favorites positions.

2. To access the additional six favorites positions, hold down an upper Favorites button while pressing the button directly beneath it, or vice versa.

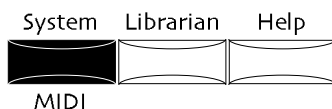
These six positions are programmed by ENSONIQ to select (these can also be re-programmed):

<i>Favorites pair:</i>	<i>selects:</i>	<i>Favorites pair:</i>	<i>selects:</i>
1 and 7	Nylon Pad	4 and 10	Live Kit 1
2 and 8	Vibraphone	5 and 11	RainMan
3 and 9	Airy Flute	6 and 12	Big AnaLead

You can program foot switches to select any of the Favorites positions when you want to keep your hands on the keys. To do this, you’ll first need to program your foot switch(es) for this purpose.

To Set Up and Use Foot Switches for the Selection of Favorites

1. Press the System button.



- Turn the Parameter knob until the display shows:



- Press Yes, or press No if you'd like to cancel the procedure.
There are four foot switch parameters, each of which represents one of the four foot switch pedals:
 - FtSw 1L—the left pedal of foot switch 1
 - FtSw 2L—the left pedal of foot switch 2
 - FtSw 1R—the right pedal of foot switch 1
 - FtSw 2R—the right pedal of foot switch 2
- Turn the Parameter knob until the pedal you're programming is shown at the left of the display.
Each pedal can be programmed with one of two favorites functions:
 - PrevFavorite—pressing the pedal will select the previous favorite sound from the group of 18 favorites. When the first favorite is selected, tapping the pedal again will select the 18th favorite.
 - Next Favorite—pressing the pedal will select the next favorite sound from the group of 18 favorites. When the last favorite is selected, tapping the pedal again will select the first favorite.
- Turn the Value knob to choose the desired favorites function for the selected pedal.
- If you've got a dual foot switch, repeat Steps 4 and 5 to set up your other pedal.

Tip: You might find it handy to program a left foot pedal to select the next-lowest favorite, and the right pedal to select the next-highest.

- When you've finished programming your foot switch(es), tap the appropriate pedals to select Favorites.

Programming Favorites Overview

The Favorites buttons can be programmed in any of three ways. You can select the method most convenient for you. You can set a button (or pair) by:

- holding it down and selecting the desired sound in SoundFinder (as described in “To Locate Sounds by Type” below). This method is most handy when you're setting up the Favorites buttons as a group.
- holding down the SoundFinder Select Sound button with the desired sound displayed and pressing the intended Favorites button, or pair of buttons. This method is useful when you've come across a SoundFinder sound you really like and want to quickly assign it to a Favorites button.
- holding down the SoundFinder Select Sound button with the desired sound displayed and pressing a foot switched programmed to select favorites. This method will be popular with musicians who like to use their feet.

Tip: The sound programmed as the first favorite—assigned to Favorites Button 1—is selected when you power up your ZR. This lets you set the ZR's wake-up sound.

Tip: You can assign a MIDI-OUT sound (described later in this chapter) as a favorite—when it's selected, its Bank Select and Program Changes values will be transmitted from the ZR.

To Program a Favorite Starting at the Favorites Button

- Press and hold down the Favorites button you want to program.
- While holding down the button, turn the Sound/Rhythm Type knob to select the category of the sound you want to assign to the button, and turn the Sound/Rhythm Name knob to select the sound itself.
- Release the Favorites button—it's now programmed to select the sound you've assigned to it.

To Program Favorites Starting at the Select Sound Button

- Select a sound in SoundFinder using either technique described in “How to Find Sounds” below.
- Press and hold down the Select Sound button.
- Press the desired Favorites button—it's now programmed to select your SoundFinder sound.

Programming the Favorites Buttons Using Foot Switches

1. Set up a foot pedal or two for the selection of favorites following the steps in “To Set Up and Use Foot Switches for the Selection of Favorites” earlier in this section.
2. Select a sound in SoundFinder using either technique described in “How to Find Sounds” below.
3. Press and hold down the Select Sound button.
4. Tap the foot pedal that selects the last or next Favorites position from the one currently selected.

Tip: If you want to mentally keep track of which favorites position is currently selected without having to press a Favorites button, you might find it handy to assign the sound “Silence” to the 18th favorites position. This would provide a recognizable landmark as you step through your favorites.

Tip: If one pedal is set to PrevFavorite and another to NextFavorite, pressing both together will cause the ZR to jump to the first favorites position.

Making Favorites Permanent

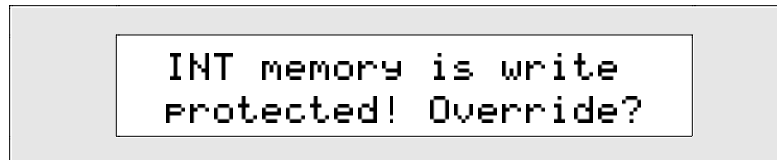
Favorites assignments are backed up in FLASH memory. When you power up the ZR, they’re copied into RAM, from which they’re selected when you press the Favorites buttons or select favorites using foot switches. (ZR memory is described in *Chapter 9*). This scheme allows you to set up favorites for a particular situation, and to quickly restore your permanent favorites by simply turning the ZR off and back on.

To make your favorites assignments permanent, you must save them to FLASH memory (you can also save favorites to floppy disk—see *Chapter 9* to learn how).

To Save Favorites Assignments to FLASH Memory

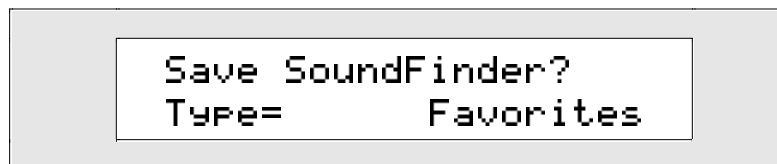
1. Press the button.

If the System Write Protect parameter is set to Prompt, the display will show:



This display is offered as a double-check for you, to make sure you really want to save your sound. If you’d like to avoid this prompt in the future, see “Protecting the ZR’s Memory” in *Chapter 3*.

2. If you’d like to cancel the operation, press the No button. If you’d like to proceed, press the Yes button.
3. Turn the Value knob until the display shows:



4. Press the Yes button.

How to Find Sounds

The ZR-76 offers two methods of locating sounds:

- You can locate sounds by sound type
- You can immediately access any sound if you know its name

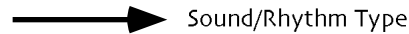
To Locate Sounds By Sound Type

1. Locate the SoundFinder section on the ZR’s front panel.
2. Press the Select Sound button.

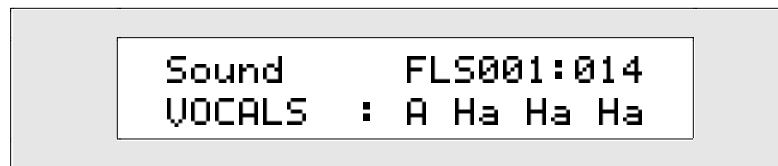


The Select Sound button's LED lights.

- Turn the left-hand Sound/Rhythm Type knob on the ZR's front panel clockwise or counter-clockwise.



As you turn the Sound Type knob, you'll see different sound categories appear in the lower left part of the ZR's display.



The currently selected sound type

- Find a sound type category that interests you.
- Turn the Sound/Rhythm Name knob clockwise or counter-clockwise to choose a sound of the selected type.



Sound names appear on the lower right-hand portion of the display:



The name of the currently selected sound

- Play some music on the keyboard to hear the sound you've selected.
- To select other sounds, use the same method: turn the Sound/Rhythm Type knob to locate the type of sound you want to hear, and the Sound/Rhythm Name knob to pick an individual sound.

How SoundFinder Works

SoundFinder is a database of all the sounds in your ZR-76. The power of a database lies in its ability to let you to view information in a manner of your choosing. SoundFinder keeps a list of all the sounds available in your ZR-76, and shows them to you in logical, musically convenient categories called *sound types*.

SoundFinder sound types show you sounds by instrument family—vocals or bells, for example—or by a number of other useful criteria, including the location in the ZR's memory where they reside. There's a special SoundFinder category that you can use when you want the ZR-76 to transmit MIDI data and Bank

Select and Program Change messages for receipt by an external MIDI module (see “SoundFinder MIDI” later in this chapter). SoundFinder also keeps track of presets, which are sound combinations—presets are used in the construction of split and layer sounds. The ALL-SND category is especially useful, since it shows all of the ZR-76 sounds arranged in alphabetical order.

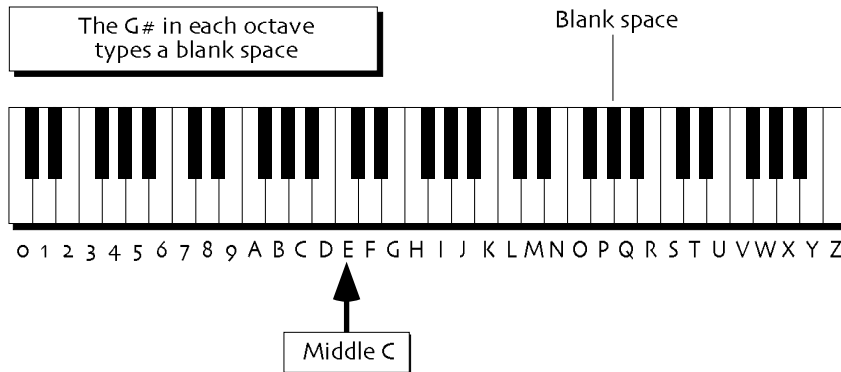
You can also search for a sound by name by typing its name on the ZR’s keyboard, as described below. You’ll find a complete list of all the ZR-76 sounds in *Chapter 13*.

To Locate a ZR-76 Sound By Name

1. Locate the SoundFinder section on the ZR’s front panel.
2. Press the Select Sound button, and hold it down.



Each white key on the ZR’s keyboard from the C two octaves below Middle C to the B nearly three octaves above has been assigned a number or letter, printed on the ZR’s front panel just above the key. The G# in each octave types a blank space.



Note: The keys outside of the range shown above are not used for the selection of sounds.

3. While continuing to hold the Select Sound button down, use the keyboard to type the name of the sound you’re looking for.
By watching the ZR’s display, you’ll see SoundFinder continually narrowing the search as you type each letter. Sometimes just the first few letters is enough to identify a sound if no other sound shares those letters.



↑
The name of each sound you find is shown here

If you can only recall the beginning of a sound’s name, and SoundFinder locates more than one sound matching what you’ve typed, it will display the alphabetically first sound. To access the other matches, turn the Sound Name knob clockwise.

Transposing the ZR's Keyboard In SoundFinder

Transposing the ZR-76 Keyboard In SoundFinder

The ZR-76 keyboard transpose function allows you to easily change the key in which your music is heard without actually changing where you place your fingers on the ZR's keyboard. You can set the amount of transposition by holding the Transpose button and pressing a key on the ZR's keyboard—its semitone distance above or below Middle C will determine the number of semitones by which your music will be transposed. You can also determine the transposition amount by using the Value knob. In either case, the ZR's display will provide visual confirmation of the keyboard transpose amount.

Note: The transpose function affects the behavior of the ZR-76 keyboard itself—the sounds you play are not internally altered. When you turn Transpose off, they'll return to their programmed pitches.

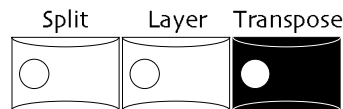
The Transpose LED

The Transpose LED is lit whenever the ZR-76 keyboard is being transposed.

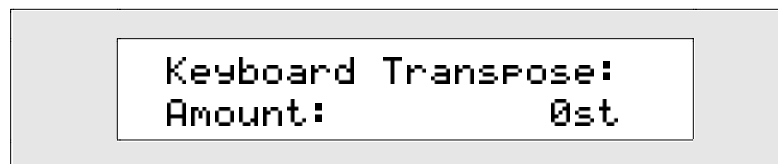
Note: If the Keyboard Transpose Amount is set to 0st (for “0 semitone steps”), the Transpose LED will not light, since no keyboard transposition occurs at that setting.

To Transpose the Keyboard By Pressing a Key

1. Press and hold the Transpose button.



The display will show:



The number of semitone steps by which the keyboard is currently transposed

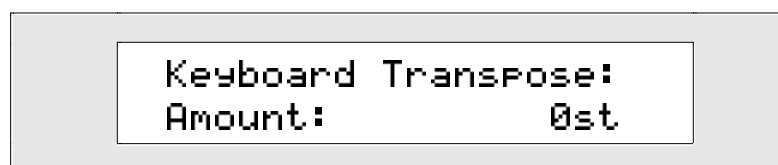
The keyboard pitch can be shifted by as many as 24 semitone steps downward (-24st) and 24 steps upward (+24st). A value of 0st means that the keyboard is not transposed.

You can change this value by pressing a key on the keyboard while the Transpose button is held down. Middle C will select 0st. Each key up or down from middle C will select a value one semitone higher or lower than the original pitch.

2. While still holding the Transpose button, press a key on the keyboard to select the desired transpose value.

To Transpose Your Music by Dialing In a Semitone Value

1. Press the Transpose button. The display will show:



The number of semitone steps by which the keyboard is currently transposed

The keyboard pitch can be shifted by as many as 24 semitone steps downward (-24st) and 24 steps upward (+24st). A value of 0st means that the keyboard is not transposed.

You can change this value by turning the Value knob or pressing the up/down arrow buttons.

2. Turn the Value knob or press the up/down arrow buttons to select the desired transpose value.

To Turn the Transpose Function Off

1. If transpose is currently on, the Transpose LED will be lit. If it is, press the Transpose button to turn the function off.

You can repeatedly press the Transpose button to toggle keyboard transposition on and off—your transposition amount setting will be retained until you change it or power your ZR-76 off.

Understanding ZR-76 Sounds

The ZR-76 contain two types of sounds: standard sounds and drum kit/percussion kit sounds. Both types of sound are constructed from high-quality digital sound waves resident in the permanent memory of the ZR-76 or on ENSONIQ EXP Series Wave Expansion Boards. The explanations and procedures in this chapter apply to both types of sounds, except as noted.

All ZR-76 sounds take advantage of the ZR's powerful 24-bit effects processor. To learn how the ZR-76 effects work, see *Chapter 8*.

ZR-76 Standard Sounds

Standard ZR-76 sounds employ up to 16 layers of sound waves, placed on top of each other. Each layer in a standard sound has an assortment of editable parameters that allow you to shape the sonic characteristics of its sound wave.

Tip: You can construct special hybrid sounds that have more than 16 layers. See “Saving Splits and Layers” later in this chapter.

ZR-76 Drum Kit and Percussion Kit Sounds

Drum kit and percussion kit sounds can have up to 64 different standard sounds assigned to individual keys from the B two octaves below Middle C (B1) to the D three octaves above (D7). Note that these are not just sound waves, but rather complete ZR sounds! Though these are most commonly drum and percussion sounds, you can use any kind of sound you'd like in a drum or percussion kit. Each key, or *drum key*, in a drum or percussion kit has its own volume, pan, effect routing and tuning settings.

Note: When you assign a sound to a drum key, the drum key makes note of the location of the sound in the ZR's memory. When you play the drum key, it looks to that location and uses the sound it finds there. If you edit the drum key's sound or replace it, the drum key will play the edited version or the sound you've replaced it with. If you've assigned a sound to a drum key, and then erased the sound—or pointed a drum key to an expansion board sound, and removed the expansion board—the drum key will be unable to locate its sound and will produce silence when played.

The arrangement of sounds up and down the keyboard in a drum or percussion kit is called a *drum* or *percussion map*. The ZR-76 drum kit and percussion kit sounds programmed by ENSONIQ adhere to two types of drum map keyboard layouts, so as to ensure that the sounds function correctly in two specific contexts:

- drum kit or percussion kit sounds that are used by the ZR-76 Drum Machine conform to an ENSONIQ drum/percussion map optimized for that purpose
- drum kit or percussion kit sounds that are used for General MIDI music conform to the General MIDI/GS percussion key map

Note: You can program drum kit or percussion kit sounds using your own keyboard layout; however, such sounds will produce unpredictable results when used by the ZR's Drum Machine, or for General MIDI music.

The drum kit and percussion kit sounds programmed by ENSONIQ are located in these SoundFinder categories:

- DRUM-KIT—drum kits that use the ENSONIQ drum map keyboard layout
- PERC-KIT—percussion kits that use the ENSONIQ drum map keyboard layout
- DRMKITGM—drum kits that use the General MIDI/GS percussion map keyboard layout

The ENSONIQ Drum Map

The ZR-76 Drum Machine rhythms are sets of highly realistic patterns recorded by top-notch professional drummers performing on MIDI drum pads. The ENSONIQ drum map was designed to be used with these rhythms. The map provides a standardized set of rules that lay out which set of keys on the keyboard should represent which portion of a real kit. The result is that any drum kit sound that adheres to the ENSONIQ drum map can be expected to work at least reasonably well with any Drum Machine rhythm. Of course, the rhythms—and the kits themselves—cover such a broad range of musical styles that a certain degree of unpredictability is inevitable when mixing and matching rhythms to kits (though surprisingly pleasing combinations abound).

In order to faithfully reproduce the subtle nuances of the original performances on which the rhythms are based, the ENSONIQ drum map takes advantage of the 64-drum-key drum/percussion kit architecture by offering numerous expressive shadings for each element of a drum or percussion kit. The drum map is divided into eight *zones*, one for each drum kit element, or in the case of percussion kit sounds, each percussion family. You can design your own drum or percussion kit for use with the Drum Machine by following the drum or percussion map layout you'll find in *Chapter 13*.

If you're using the Drum Machine and would like to modify the drum or percussion kit currently being used by the rhythm you've got selected, you can edit the currently selected rhythm's kit key-by-key in SoundFinder, or edit it zone by zone in the Drum Machine. *Chapter 5* provides instructions for editing kits zone-by-zone.

You can use the drum or percussion kit currently being used by the Drum Machine as a starting point in the construction of a new kit which can be used in any way you like. Select the RthmEditKit using one of the sound selection methods described at the beginning of this chapter. (The RthmEditKit is located in the *CUSTOM SoundFinder category.) See "Editing ZR-76 Drum and Percussion Kits" later in this chapter for an explanation of the special editing techniques used for ENSONIQ's powerful drum and percussion kits, or skip right to "Editing a Drum or Percussion Kit You've Selected" for step-by-step instructions.

The General MIDI/GS Drum Kit Maps

There are a number of General MIDI/GS percussion key maps named after particular types of drum or percussion kits. Each map describes in detail what sound shall be mapped to which key in order to be in compliance with the General MIDI/GS standards. Any drum or percussion kit using the General MIDI/GS map will work correctly with General MIDI or GS-mapped sequences.

You can design your own drum or percussion kit for use with General MIDI by following the percussion map layout you'll find in *Chapter 13*.

If you're currently using a GM drum/percussion kit and would like to modify it for your purposes or make a new drum/percussion kit sound based on it, select a kit from the DRMKITGM SoundFinder category using one of the sound selection methods described at the beginning of this chapter. See "Editing ZR-76 Drum and Percussion Kits" later in this chapter for an explanation of the special editing techniques used for ENSONIQ's powerful drum and percussion kits, or skip right to "Editing a Drum or Percussion Kit you've Selected" for step-by-step instructions.

Which Map to Use?

As you customize a drum or percussion kit sound—or create one based on a pre-existing kit—consider how you'll be using it: stick with an ENSONIQ map if your new kit will need to work with the Drum Machine. Use the General MIDI/GS map if you'll be using it for General MIDI purposes. If your plans for your new drum kit or percussion sound don't include either of these uses—perhaps you'll simply be playing the sound from the keyboard and recording it into the 16 Track Recorder—feel free to put any sound on any drum key.

General Sound-Editing Techniques

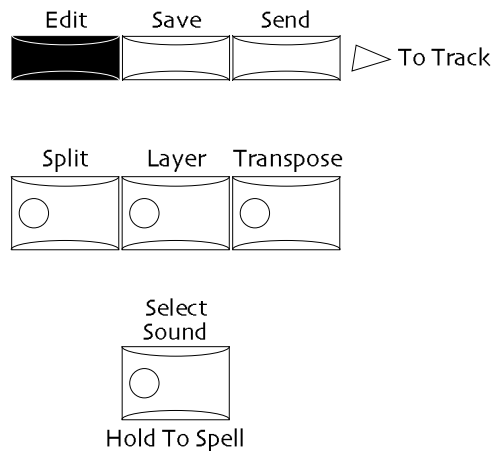
Every ZR-76 sound has a full suite of options that you can use to customize the sound for your purposes. Each of these options is called a *parameter*. When you alter a parameter's setting, you are editing its *value*.

Note: When you edit a SoundFinder parameter, the changes you make to the currently selected sound become permanent only when you save the sound to the ZR's FLASH or RAM memory. See "Saving ZR-76 Sounds" later in this chapter. After you've saved your edited sound to the ZR's internal memory, you'll probably want to store it on a floppy disk (see *Chapter 9* to learn how).

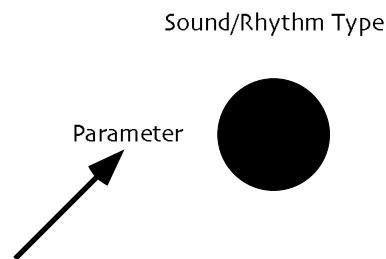
If you've got a computer, you can create your own sounds from scratch using the supplied Unisyn editing software (*Chapter 12* describes the Unisyn sound parameters).

To Edit a Sound

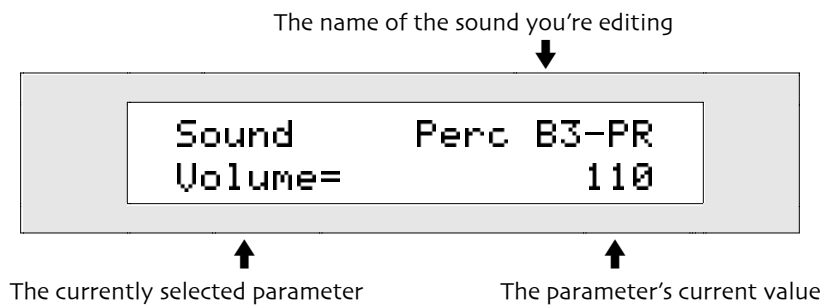
1. Use either of the sound-selection methods described at the beginning of this chapter to select the sound you'd like to edit.
2. Press the SoundFinder Edit button.



3. Turn the Parameter knob clockwise or counter-clockwise to select the parameter you'd like to edit.

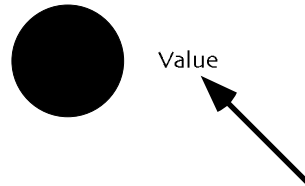


The ZR-76 displays provide helpful information:



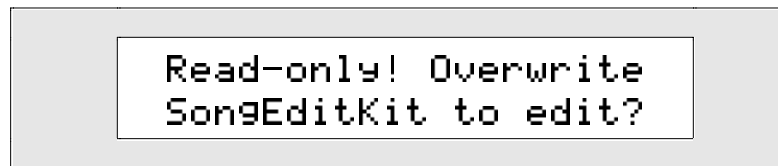
- Turn the Value knob clockwise or counter-clockwise to change the parameter's setting.

Sound / Rhythm Name



- If you're editing a standard ZR-76 sound, you can now set the selected parameter to any value you like. For a full description of the editing options available for the ZR-76 sounds, see "Working with the SoundFinder Parameters" later in this chapter.

If the sound you're editing is a drum kit sound, the following message may appear:



- If you'd like to proceed, press the Yes button and set the selected parameter's value to any setting you wish. If you're unclear about what the displayed question means, pause a moment and see "Editing ZR-76 Drum Kit Sounds," later in this chapter.

Note: SoundFinder can respond to incoming MIDI, and can generate outgoing MIDI data for use in controlling external MIDI devices. These capabilities are described in "SoundFinder MIDI," later in this chapter. Many of the ZR-76 SoundFinder parameters may also be edited via MIDI—see the parameter descriptions and procedures later in this chapter for details.

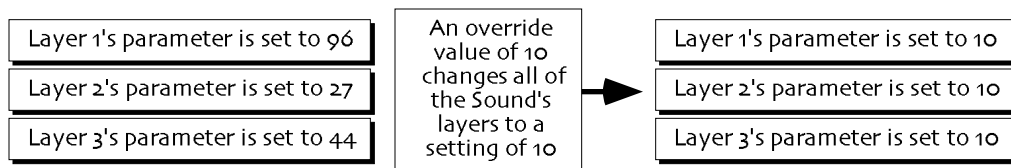
Working with the SoundFinder Parameters

What the SoundFinder Parameters Do

Each ZR-76 sound is programmed on a computer using the supplied Unisyn editing software. This software allows the programming of the individual layers within each sound (see *Chapter 12* for details). The SoundFinder parameters let you quickly alter this programming in two ways. The parameters offer:

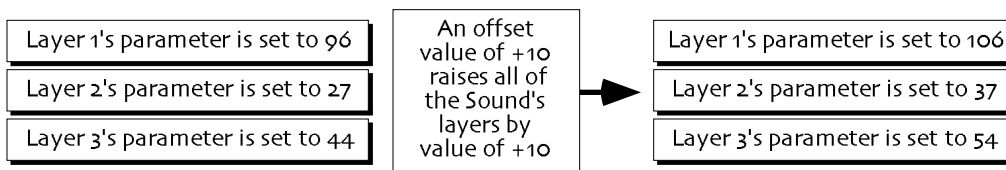
- overrides, which set all of the layers in the currently selected sound to the absolute value you set
- offsets, which raise or lower the programmed values by the amount you set

A SoundFinder parameter is an override when its typical use would be to set all of a sound's layers to the same absolute value.



When an override parameter is set to "Prog," the originally programmed setting for each layer is retained. A few parameters have system-wide counterparts whose settings can be applied to a sound or track—setting such a parameter to "Sys" will cause it to use the system-wide setting.

A SoundFinder parameter is an offset when it would typically be used to affect all of a sound's layers at once while retaining their different settings in relation to one other. Offset parameters offer values that have positive/negative aspects (denoted with a "+" or "-"). When an offset is set to "0," the originally programmed value for each layer is in effect.



Note: SoundFinder offsets adjust layer parameters only within the parameters' legitimate ranges—offsets will not force them beyond those limits. If a SoundFinder offset parameter appears to be having no effect, it's likely that the layer parameter has already reached its maximum or minimum setting.

Editing Sounds on 16 Track Recorder Tracks

All of the edit parameters available to sounds in SoundFinder are also available to sounds on tracks in the 16 Track Recorder. Each track in the 16 Track Recorder provides these same parameters for any sound it uses—when you adjust any of them, your edits become part of the track. All of the parameter explanations in this chapter, therefore, pertain to sounds in SoundFinder as well as to sounds on tracks in the 16 Track Recorder.

Controlling a Sound's Loudness

The ZR-76 provide three parameters for controlling a sound's loudness:

- Volume determines the maximum loudness of the sound.
- Mix (Expression) allows you to lower the sound's loudness or raise it up to the maximum set by Volume. By using Volume and Mix (Expression) together, you can set an acceptable loudness ceiling for a sound, and then adjust its level without worrying that it will ever become too loud. The Mix (Expression) parameter can be adjusted with the Parameter and Value knobs, or through the use of the Mix knob in the ZR's FX/Mixdown area (see *Chapter 8* for details).
- Vol/Mix Polarity allows you to invert the ZR's response to Volume and Mix (Expression) changes, so that greater values for either parameter lower the ZR's loudness, and vice versa. This can be useful, for instance, when you'd like one sound to fade in as a result of Volume or Expression messages generated by the optional ENSONIQ CVP-1 CV Pedal, while another fades out from the very same messages.

When the following parameter is edited in a drum kit, all of the sounds in the drum kit are affected simultaneously by the changes you make.

To Set a Sound's Maximum Volume

The Volume parameter allows you to override the loudness ceiling programmed into the currently selected sound. A Volume setting of 127 will leave the sound's level set as it was programmed. Lower values will reduce the sound's loudness—down by 96dB at a value of 0.

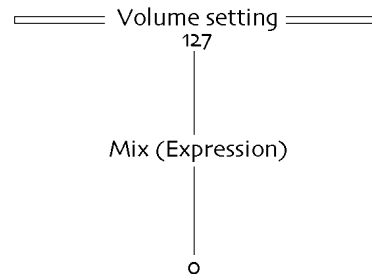
1. If you're using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you're using the 16 Track Recorder, select the track whose sound you'd like to edit.
2. Turn the Parameter knob until the display shows "Volume=."
3. Turn the Value knob from 0 to 127 to adjust the sound's loudness ceiling.

This parameter also responds to MIDI Controller #7 values received via MIDI. The ZR's display will reflect volume changes made via MIDI just as if you'd made them from the front panel.

When the following parameter is edited in a drum kit, all of the sounds in the drum kit are affected simultaneously by the changes you make.

To Adjust the Relative Loudness of a Sound

Mix (Expression) can raise or lower the currently selected sound's level, but only up to the maximum set by Volume.



This allows you to set an acceptable loudness ceiling for a sound, and to adjust its level without worrying that it will ever become too loud.

1. If you're using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you're using the 16 Track Recorder, select the track whose sound you'd like to edit.
2. Turn the Parameter knob until the display shows "Mix (Expression)=."
3. Turn the Value knob from 0 to 127 to adjust the sound's Mix (Expression).

Note: You can quickly access the Mix (Expression) parameter by turning the FX/Mixdown Mix knob. Whenever the Select Sound LED is lit, turning the Mix knob adjusts this parameter for the sound selected in SoundFinder. When the Select Song LED is lit, the Mix knob edits the currently selected track's Mix (Expression) parameter.

This parameter also responds to Controller #11 values received via MIDI. In addition, you can edit Mix (Expression) using an NRPN LSB value of 034. See "Using RPNs and NRPNs to Edit SoundFinder Parameters" at the end of this chapter. The ZR's display will reflect (Mix) Expression changes made via MIDI just as if you'd made them from the front panel.

When the following parameter is edited in a drum kit, all of the sounds in the drum kit are affected simultaneously by the changes you make.

To Invert the Response of Volume and Mix (Expression)

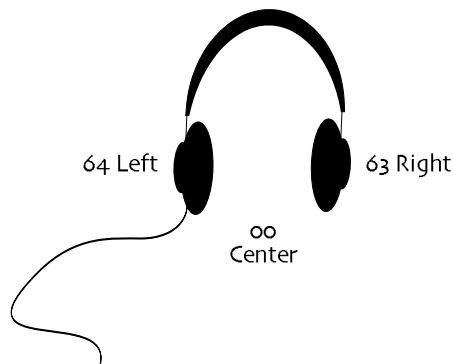
The Vol/MixPolarity parameter reverses the manner in which a sound will respond to Volume and Mix (Expression) settings or changes received via MIDI. When set to +Pos, the sound will respond normally: Higher Volume and Mix (Expression) values will result in greater loudness. When it's set to -Neg, higher Volume and Mix (Expression) values will lower the level of the sound.

1. If you're using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you're using the 16 Track Recorder, select the track whose sound you'd like to edit.
2. Turn the Parameter knob until the display shows "Vol/MixPolarity=."
3. Turn the Value knob to set the sound's Volume/Mix polarity as you prefer.

Adjusting a Sound's Position In the Stereo Field

ZR-76 sounds are programmed to "appear" in specific places in the left/right stereo field. By adjusting the pan setting, you can offset the stereo placement of the currently selected sound. A value of Center 00 will leave the sound panned as it was programmed. Lower values will shift it to the left, and higher values will move it to the right. A pan value of Left -64 shifts a sound hard left, while Right +63 shifts it hard right. If components within the sound are panned differently, their relative positions will be maintained as the pan

value shifts the sound in either direction.



If components within the sound are panned differently, their relative positions will be maintained as the pan value shifts the sound in either direction.

When the following parameter is edited in a drum kit, all of the sounds in the drum kit are affected simultaneously by the changes you make.

To Adjust a Sound's Stereo Panning

1. If you're using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you're using the 16 Track Recorder, select the track whose sound you'd like to edit.
2. Turn the Parameter knob until the display shows "Pan=."
3. Turn the Value knob to select a location within the stereo field for the sound.

Note: You can quickly access the Pan parameter by turning the FX/Mixdown Pan knob. Whenever the Select Sound LED is lit, turning the Pan knob adjusts this parameter for the sound selected in SoundFinder. When the Select Song LED is lit, the Pan knob edits the currently selected track's Pan parameter.

This parameter may also be edited via MIDI Controller #10 received via MIDI. The ZR's display will reflect Pan changes made via MIDI just as if you'd made them from the front panel.

Controlling a Sound's Pitch Bend

The pitch-bend wheel is the spring-loaded wheel located to the far left of the ZR-76 keyboard. It's most commonly used to bend the pitch of notes up or down by pushing the wheel forward (up) or pulling it back (down).

The ZR-76 offer two parameters—Pitch Bend Up and Pitch Bend Down—that allow you to separately set how you want each sound to respond to the pitch bend wheel when it's pushed in either direction, or when Pitch Bend messages are received via MIDI.

Tip: Each sound has a filter—the Pitch Bend Recv parameter—that you can use to disable or enable the sound's response to movements of the ZR's pitch bend wheel or to Pitch Bend messages received via MIDI. This setting of this filter also determines whether or not the ZR will transmit Pitch Bend messages while the sound is selected. See "Sound controller Filters" later in this chapter.

The following parameter is not present when the sound being edited is a drum kit.

To Change a Sound's Response to Upward Pitch Bends

1. If you're using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you're using the 16 Track Recorder, select the track whose sound you'd like to edit.
2. Turn the Parameter knob until the display shows "Pitch Bend Up=."

Pitch Bend Up can be set to:

- 1-12dn or 1-12up—to lower or raise the pitch of the sound by 1 to 12 equal-temper semitones when the pitch bend wheel is pushed all the way forward, or when maximum Pitch Bend messages are received via MIDI
 - Prog—to respond to upward pitch bend values according to the response programmed into the sound
 - Sys—to use the global system Pitch Bend Up value (see *Chapter 3* for details)
 - Off—to ignore forward movement of the pitch bend wheel or Pitch Bend Up messages received via MIDI.
4. Turn the Value knob to select the Pitch Bend Up value you prefer.

Note: When you select a new sound in SoundFinder, Pitch Bend Up will be reset to Prog. Selecting a new sound for a track in the 16 Track Recorder will also reset this parameter if the system Track ParamReset parameter is set to On (see *Chapter 3*).

This parameter may also be edited via MIDI. It responds to an RPN LSB value of 000 and an NRPN LSB value of 022. See “Using RPNs and NRPNs to Edit SoundFinder Parameters” at the end of this chapter. The ZR’s display will reflect Pitch Bend Up changes made via MIDI just as if you’d made them from the front panel. The Pitch Bend Up parameter will have no effect if the Pitch Bend Recv parameter is set to Off.

The following parameter is not present when the sound being edited is a drum kit.

To Change a Sound’s Response to Downward Pitch Bends

1. If you’re using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you’re using the 16 Track Recorder, select the track whose sound you’d like to edit.
2. Turn the Parameter knob until the display shows “Pitch Bend Down=.”
Pitch Bend Down can be set to:
 - 1-12dn or 1-12up—to lower or raise the pitch of the sound by 1 to 12 equal-temper semitones when the pitch bend wheel is pulled all the way back, or when minimum Pitch Bend messages are received via MIDI
 - Prog—to respond to backward pitch bend movements according to the response programmed into the sound
 - Sys—to use the global system Pitch Bend Down value (see *Chapter 3* for details)
 - Off—to ignore backward movement of the pitch bend wheel or Pitch Bend Down messages received via MIDI
3. Turn the Value knob to select the Pitch Bend Down value you prefer.

Note: When you select a new sound in SoundFinder, Pitch Bend Down will be reset to Prog. Selecting a new sound for a track in the 16 Track Recorder will also reset this parameter if the system Track ParamReset parameter is set to On (see *Chapter 3*).

This parameter may also be edited via MIDI. It responds to an RPN LSB value of 000 and an NRPN LSB value of 023. See “Using RPNs and NRPNs to Edit SoundFinder Parameters” at the end of this chapter. The ZR’s display will reflect Pitch Bend Down changes made via MIDI just as if you’d made them from the front panel.

Retuning a Sound

On a global level, the overall tuning of the ZR-76 can be adjusted with the system Fine Tuning parameter (see *Chapter 3* for details). This parameter retunes all of the sounds in the ZR simultaneously. You can also re-tune individual standard (non-drum/ percussion kit) sounds with the SoundFinder Octave Tuning, Coarse Tuning and Fine Tuning parameters.

The following parameter is not present when the sound being edited is a drum kit.

To Re-Tune a Sound By Octaves

1. If you're using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you're using the 16 Track Recorder, select the track whose sound you'd like to edit.
2. Turn the Parameter knob until the display shows "Octave Shift=."
3. Use the Value knob to retune the sound in octave steps, if desired.

A setting of 0oct means the sound will use its programmed octave tuning value. You can tune the sound up or down by a maximum of four equal-temper octaves.

This parameter may also be edited via MIDI. It responds to an NRPN LSB value of 011. See "Using RPNs and NRPNs to Edit SoundFinder Parameters" at the end of this chapter. The ZR's display will reflect Octave Shift changes made via MIDI just as if you'd made them from the front panel.

The following parameter is not present when the sound being edited is a drum kit.

To Re-Tune a Sound By Semitones

1. If you're using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you're using the 16 Track Recorder, select the track whose sound you'd like to edit.
2. Turn the Parameter knob until the display shows "Semitone Shift=."
3. Use the Value knob to set the semitone tuning for the sound.

A setting of 0st means the sound will use its programmed semitone tuning value. You can tune the sound upward by a maximum of 63 keyboard equal-temper semitones or downward by a maximum of 64.

This parameter may also be edited via MIDI. It responds to an RPN LSB value of 002. See "Using RPNs and NRPNs to Edit SoundFinder Parameters" at the end of this chapter. The ZR's display will reflect Semitone Shift changes made via MIDI just as if you'd made them from the front panel.

The following parameter is not present when the sound being edited is a drum kit.

To Fine-Tune a Sound

1. If you're using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you're using the 16 Track Recorder, select the track whose sound you'd like to edit.
2. Turn the Parameter knob until the display shows "Fine Tuning=."
3. Use the Value knob to set the fine tuning for the sound.

A setting of 0cents means the sound will use its programmed fine tuning value. You can lower or raise the sound's fine tuning by -50 to +49 cents. 100 cents equals one semitone.

This parameter may also be edited via MIDI. It responds to an RPN LSB value of 001. See "Using RPNs and NRPNs to Edit SoundFinder Parameters" at the end of this chapter. The ZR's display will reflect fine tuning changes made via MIDI just as if you'd made them from the front panel.

Using Special Pitch Tables

Sounds can use special tunings, or *pitch tables*—and the ZR-76 provide a large assortment of them. With the proper software, you can also design your own pitch table on a computer, and transmit it to your ZR-76 via MIDI. "About RAM Pitch Tables" in *Chapter 13* provides detailed information on creating your own pitch tables. *Chapter 3* contains details on setting a system-wide, or global, pitch table for the ZR-76 that can be accessed by any sound.

The following parameter is not present when the sound being edited is a drum kit.

To Assign a Sound to a Special Pitch Table

1. If you're using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you're using the 16 Track Recorder, select the track whose sound you'd like to edit.

Tip: The ZR-76 allow you to assign the sound on each track in a sequence to its own pitch table—you can use up to 16 different pitch tables at a time!

2. Turn the Parameter knob until the display shows “PitchTbl=.”

PitchTbl can be set to:

- Prog—to use the PitchTbl value programmed into the sound
- Sys—to use the global system PitchTbl (see *Chapter 3* for details)
- One of the special pitch tables built into the ZR’s memory

Chapter 13 provides a list of the ZR-76 ROM pitch tables.

3. Turn the Value knob to select the PitchTbl value you prefer.

This parameter may also be edited via MIDI. It responds to an NRPN LSB value of 021. See “Using RPNs and NRPNs to Edit SoundFinder Parameters” at the end of this chapter. The ZR’s display will reflect PitchTbl changes made via MIDI just as if you’d made them from the front panel.

Determining Whether a Sound Will Glide

It can be desirable for the notes in a sound to glide from one to the next as you play them. By setting the SoundFinder Glide Mode parameter to On, the sound will be endowed with this gliding capability. Some of the ZR-76 sounds are already programmed with components that glide between notes—if you’d like, you can disable the glide built into such a sound by setting its Glide Mode parameter to Off. If you’d like the sound to operate as programmed, you can choose the Prog value for the parameter. Gliding can be turned on or off by using the ZR’s front-panel controls, or via MIDI.

The following parameter is not present when the sound being edited is a drum kit.

To Turn Glide Mode On or Off Using the ZR’s Controls

1. If you’re using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you’re using the 16 Track Recorder, select the track whose sound you’d like to edit.
2. Turn the Parameter knob until the display shows “Glide Mode=.”
You can set the Glide Mode to:
 - Prog—the sound will use its own programmed glide mode setting
 - Off—the sound will not glide from note to note
 - On—the sound will glide from note to note
3. Turn the Value knob to set the parameter to the value you desire.

Note: When you select a new sound in SoundFinder, glide mode will be reset to Prog if you’ve changed it by using the ZR’s front-panel controls. Selecting a new sound for a track in the 16 Track Recorder will also reset this parameter if the system Track ParamReset parameter is set to On (see *Chapter 3*).

Using MIDI to Determine Whether a Sound Will Glide

The ZR-76 support the use of MIDI Controller #65 as a switch for turning a sound’s glide—or *portamento*—on and off (with no Prog option; see above). Some MIDI control devices allow you to accomplish this with a foot switch. Since the Glide Mode parameter in the ZR-76 has three options—Prog, On and Off—and MIDI Controller #65 supports only two settings (a simple On and Off switch), Glide Mode in the ZR is a bit more complex than other SoundFinder parameters. The two-way MIDI Controller #65 is supported behind the scenes, while the three-way ZR control is accessible through the Glide Mode parameter and display. The two methods for turning glide mode on and off overlap in function, and therefore, a particular methodology is required when using Controller #65 to switch glide on and off.

The following parameter is not present when the sound being edited is a drum kit.

To Turn Glide Mode On or Off Via MIDI

1. If you’re using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you’re using the 16 Track Recorder, select the track whose sound you’d like to edit.

2. Turn the Parameter knob until the display shows “Glide Mode=.”
3. Using the Value knob, set Glide Mode to Off.

If either the hidden two-way Controller #65 switch or the visible three-way parameter are set to On, glide mode will remain On. By setting the visible three-way parameter to Off, you allow the sound to respond to MIDI Controller #65 without any unintended interference from the visible parameter.

4. Send a MIDI Controller #65 value of 64 or higher to turn glide mode on.
At this point, glide mode will be enabled, though the display remains unchanged (it still shows “Off”).
5. Send a MIDI Controller #65 value of 63 or lower to turn glide mode off.

If you’ve enabled glide via MIDI, the ZR keyboard’s Value knob will have no effect on the glide mode setting until the two-way Controller #65 switch has been set to Off via MIDI, following the same logic discussed above in step 4—neither switch can be on if you’d like to turn glide mode to Off or Prog.

Note: When you select a new sound in SoundFinder, glide mode will be reset to Prog if neither the visible three-way parameter or hidden two-way switch are set to On. Selecting a new sound for a track in the 16 Track Recorder will also reset this parameter if the system Track ParamReset parameter is set to On (see *Chapter 3*).

This parameter also responds to an NRPN LSB value of 031. See “Using RPNs and NRPNs to Edit SoundFinder Parameters” at the end of this chapter.

Setting a Sound’s Glide Time

When a sound in a ZR-76 is set to glide—as a result of its original programming or the Glide Mode parameter—you can adjust the speed at which its notes will glide from one to the next. This is accomplished by adjusting the glide time of the sound—the higher the setting, the longer the length of time it takes to get from one note to another. A glide time of 0 means that the sound will glide at its programmed speed. If the sound is gliding only as a result of the Glide Mode parameter, it probably has no glide time programmed into it at all, and therefore won’t glide since it will have a glide time setting of 0. Higher glide time values slow the sound’s glide, and lower values cause it to speed up.

The following parameter is not present when the sound being edited is a drum kit.

To Set a Sound’s Glide Time

1. If you’re using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button.
If you’re using the 16 Track Recorder, select the track whose sound you’d like to edit.
2. Turn the Parameter knob until the display shows “Glide Time=.”
3. Turn the Value knob to set the glide time to the rate you prefer.

Note: When you select a new sound in SoundFinder, glide time will be reset to 0. Selecting a new sound for a track in the 16 Track Recorder will also reset this parameter if system Track ParamReset=On (see *Chapter 3*).

This parameter may also be edited via MIDI. It responds to MIDI controller 5 values, or an NRPN LSB value of 032. See “Using RPNs and NRPNs to Edit SoundFinder Parameters” at the end of this chapter. The ZR’s display will reflect glide time changes made via MIDI just as if you’d made them from the front panel.

Delaying Sounds

The Delay Offset parameter can be used to increase the amount of time it will take for a sound to be heard after it receives a key down (or MIDI Note On) message. If a sound has a delay time already programmed into it, the delay offset will lengthen that delay by up to 2500 milliseconds (ms). If a sound has no programmed delay time, the Delay Offset parameter can delay it up to 2500ms. If the delay offset is set to 0ms, no delay time will be added to the sound.

The following parameter is not present when the sound being edited is a drum kit.

To Change a Sound's Delay Time

1. If you're using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you're using the 16 Track Recorder, select the track whose sound you'd like to edit.
2. Turn the Parameter knob until the display shows "Delay Offset=."
3. Turn the Value knob to select the delay offset value you prefer.

Note: When you select a new sound in SoundFinder, the delay offset will be reset to 0ms. Selecting a new sound for a track in the 16 Track Recorder will also reset this parameter if the system Track ParamReset parameter is set to On (see *Chapter 3*).

This parameter may also be edited via MIDI. It responds to an NRPN LSB value of 024. See "Using RPNs and NRPNs to Edit SoundFinder Parameters" at the end of this chapter. The ZR's display will reflect delay offset changes made via MIDI just as if you'd made them from the front panel.

Customizing Sound LFOs

LFOs—low frequency oscillators—and noise generators are two important programming devices used in the creation of ZR-76 sounds. They're both rhythm-oriented sound modulators. Some of the LFOs and noise generators in ZR-76 sounds are programmed to be synchronized (or "sync'd") to the currently selected rhythm if you're in SoundFinder, or to the currently selected sequence's tempo if you're in the 16 Track Recorder (the Drum Machine and 16 Track Recorder can themselves be synchronized to MIDI clocks received from an external source). By setting the SyncLFO&Noise SoundFinder parameter to Normal, you can convert a sound's sync'd LFOs and noise to the normal, unsynchronized variety. You can also use this parameter to alter the relationship of a sound's sync'd LFOs and noise to the relevant timing reference by setting them to a division of the reference tempo, from 1/1 to 1/32, including triplets.

You can also set a sound's normal LFOs rates, depth and delay time with the Normal LFO Rate, LFO Depth and LFO Delay Time SoundFinder parameters.

The following parameter is not present when the sound being edited is a drum kit.

To Un-Sync Synchronized LFOs and Noise

1. If you're using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you're using the 16 Track Recorder, select the track whose sound you'd like to edit.
2. Turn the Parameter knob until the display shows "SyncLFO&Noise=." The SyncLFO&Noise parameter can be set to:
 - Prog—to leave the sync'd LFOs and noise as they're programmed into the sound
 - Normal—to convert the sync'd LFOs and noise to unsync'd LFOs and noise
 - 1/1 to 1/32T—to set the rhythmic relationship of the sync'd LFOs and noise to the Drum Machine's or the 16 Track Recorder's tempo—a "T" following a number signifies a triplet value
3. Turn the Value knob to set the SyncLFO&Noise parameter to Normal.

Note: When you select a new sound in SoundFinder, SyncLFO&Noise will be reset to Prog. Selecting a new sound for a track in the 16 Track Recorder will also reset this parameter if the system Track ParamReset parameter is set to On (see *Chapter 3*).

This parameter may also be edited via MIDI. It responds to an NRPN LSB value of 25. See "Using RPNs and NRPNs to Edit SoundFinder Parameters" at the end of this chapter. The ZR's display will reflect SyncLFO&Noise changes made via MIDI just as if you'd made them from the front panel.

The following parameter is not present when the sound being edited is a drum kit.

To Change the Rate of a Sound's Sync'd LFOs and Noise

1. If you're using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button.

If you're using the 16 Track Recorder, select the track whose sound you'd like to edit.

2. Turn the Parameter knob until the display shows "SyncLFO&Noise=."

The SyncLFO&Noise parameter can be set to:

- Prog—to leave the sync'd LFOs and noise as they're programmed into the sound
 - Normal—to convert the sync'd LFOs and noise to unsync'd LFOs and noise
 - 1/1 to 1/32T—to set the rhythmic relationship of the sync'd LFOs and noise to the Drum Machine's or the 16 Track Recorder's tempo—a "T" following a number signifies a triplet value
3. Turn the Value knob to set the SyncLFO&Noise parameter to the desired fractional value of the Drum Machine's or the 16 Track Recorder's tempo.

Note: When you select a new sound, SyncLFO&Noise will be reset to Prog. Selecting a new sound for a track in the 16 Track Recorder will also reset this parameter when the system Track ParamReset parameter is set to On (see *Chapter 3*).

This parameter may also be edited via MIDI. It responds to an NRPN LSB value of 25. See "Using RPNs and NRPNs to Edit SoundFinder Parameters" at the end of this chapter. The ZR's display will reflect SyncLFO&Noise changes made via MIDI just as if you'd made them from the front panel.

The following parameter is not present when the sound being edited is a drum kit.

To Change a Sound's Normal (Unsynchronized) LFO Rates

1. If you're using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you're using the 16 Track Recorder, select the track whose sound you'd like to edit.
2. Turn the Parameter knob until the display shows "Normal LFO Rates=."
The Normal LFO Rates parameter can be set from -64 to +63. A value of 0 means the sound will use its own programmed LFO rate. A value other than 0 will be added to or subtracted from the sound's programmed rate.
3. Turn the Value knob to set the normal LFO rates offset to the desired amount.

Note: This parameter will only have an effect if the sound contains unsynchronized LFOs, or if its SyncLFO&Noise parameter is set to Normal.

This parameter may also be edited via MIDI. It responds to MIDI Controller #75 or an NRPN LSB value of 008. See "Using RPNs and NRPNs to Edit SoundFinder Parameters" at the end of this chapter. The ZR's display will reflect changes made via MIDI just as if you'd made them from the front panel.

The following parameter is not present when the sound being edited is a drum kit.

To Change a Sound's LFO Depth

1. If you're using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you're using the 16 Track Recorder, select the track whose sound you'd like to edit.
2. Turn the Parameter knob until the display shows "LFO Depth=."
The LFO Depth parameter can be set from -64 to +63. A value of 0 means the sound will use its own programmed LFO depth. A value other than 0 will be added to or subtracted from the sound's programmed depth.
3. Turn the Value knob to set the LFO depth offset to the desired amount.

Note: When you select a new sound in SoundFinder, LFO Depth will be reset to 0. Selecting a new sound for a track in the 16 Track Recorder will also reset this parameter when the system Track ParamReset parameter is set to On (see *Chapter 3*).

This parameter may also be edited via MIDI. It responds to an NRPN LSB value of 009. See "Using RPNs and NRPNs to Edit SoundFinder Parameters" at the end of this chapter. The ZR's display will reflect LFO depth changes made via MIDI just as if you'd made them from the front panel.

The following parameter is not present when the sound being edited is a drum kit.

To Change a Sound's LFO Delay

1. If you're using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you're using the 16 Track Recorder, select the track whose sound you'd like to edit.
2. Turn the Parameter knob until the display shows "LFO Delay Time=."
The LFO Delay Time parameter can be set from -64 to +63. A value of 0 means the sound will use its own programmed LFO delay time. A value other than 0 will be added to or subtracted from the sound's programmed LFO delay time.
3. Turn the Value knob to set the LFO delay time offset to the desired amount.

Note: When you select a new sound in SoundFinder, LFO Delay will be reset to 0. Selecting a new sound for a track in the 16 Track Recorder will also reset this parameter when the system Track ParamReset parameter is set to On (see *Chapter 3*).

This parameter may also be edited via MIDI. It responds to an NRPN LSB value of 010. See "Using RPNs and NRPNs to Edit SoundFinder Parameters" at the end of this chapter. The ZR's display will reflect LFO delay changes made via MIDI just as if you'd made them from the front panel.

Controlling the Shape of Sounds

Most of the sounds in the ZR-76 use envelopes to shape the volume and frequency content of their components. The ZR-76 provide a selection of SoundFinder parameters that allow you to adjust these envelopes to suit your needs. These parameters subtract from or add to the programmed values of the envelopes programmed into a sound. This preserves the relationship between all the various envelopes that may exist in a sound while still giving you a great degree of control over the sound's volume and timbral contours. The ZR's envelopes are described in detail in *Chapter 12*.

The SoundFinder parameters which refer only to volume, amplitude or shaping are:

- Amp Env Attack
- Amp Env Decay
- Amp Env Release

The parameters which affect only the filtering of the sound's frequency content are:

- Filter Cutoff—this adjusts the sound's low-pass filter cutoff settings
- Filt Env Attack
- Filt Env Decay
- Filt Env Release

Many envelopes in the ZR-76 sounds respond to the amount of velocity with which keys on the keyboard are struck, or to velocity values received via MIDI. The Amp&Filt Env Vel parameter allows you to subtract from or add to the velocity sensitivity programmed into the amplitude and filter envelopes of a sound.

The following parameter is not present when the sound being edited is a drum kit.

To Adjust a Sound's Volume Envelope Attack Time

1. If you're using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you're using the 16 Track Recorder, select the track whose sound you'd like to edit.
2. Turn the Parameter knob until the display shows "Amp Env Attack=."
The Amp Env Attack parameter can be set from -64 to +63. A value of 0 will leave the sound's various attack times at their programmed settings. A value other than 0 will be added to or subtracted from the sound's programmed settings.
3. Turn the Value knob to set the Amp Env Attack offset to the desired amount.

Note: When you select a new sound in SoundFinder, Amp Env Attack will be reset to 0. Selecting a new sound for a track in the 16 Track Recorder will also reset this parameter if the system Track ParamReset parameter is set to On (see *Chapter 3*).

This parameter may also be edited via MIDI. It responds to MIDI Controller #73 or an NRPN LSB value of 014. See “Using RPNs and NRPNs to Edit SoundFinder Parameters” at the end of this chapter. The ZR’s display will reflect Amp Env Attack changes made via MIDI just as if you’d made them from the front panel.

The following parameter is not present when the sound being edited is a drum kit.

To Adjust a Sound’s Volume Envelope Decay Times

1. If you’re using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you’re using the 16 Track Recorder, select the track whose sound you’d like to edit.
2. Turn the Parameter knob until the display shows “Amp Env Decay=.”
The Amp Env Decay parameter can be set from -64 to +63. A value of 0 will leave the sound’s various decay times at their programmed settings. A value other than 0 will be added to or subtracted from the sound’s programmed settings.
3. Turn the Value knob to set the Amp Env Decay offset to the desired amount.

Note: When you select a new sound in SoundFinder, Amp Env Decay will be reset to 0. Selecting a new sound for a track in the 16 Track Recorder will also reset this parameter if the system Track ParamReset parameter is set to On (see *Chapter 3*).

This parameter may also be edited via MIDI. It responds to MIDI controller 76 or an NRPN LSB value of 015. See “Using RPNs and NRPNs to Edit SoundFinder Parameters” at the end of this chapter. The ZR’s display will reflect Amp Env Decay changes made via MIDI just as if you’d made them from the front panel.

The following parameter is not present when the sound being edited is a drum kit.

To Adjust a Sound’s Volume Envelope Release Time

1. If you’re using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you’re using the 16 Track Recorder, select the track whose sound you’d like to edit.
2. Turn the Parameter knob until the display shows “Amp Env Release=.”
The Amp Env Release parameter can be set from -64 to +63. A value of 0 will leave the sound’s various release times at their programmed settings. A value other than 0 will be added to or subtracted from the sound’s programmed settings.
3. Turn the Value knob to set the Amp Env Release offset to the desired amount.

Note: When you select a new sound in SoundFinder, Amp Env Release will be reset to 0. Selecting a new sound for a track in the 16 Track Recorder will also reset this parameter if the system Track ParamReset parameter is set to On (see *Chapter 3*).

This parameter may also be edited via MIDI. It responds to MIDI Controller #72 or an NRPN LSB value of 016. See “Using RPNs and NRPNs to Edit SoundFinder Parameters” at the end of this chapter. The ZR’s display will reflect Amp Env Release changes made via MIDI just as if you’d made them from the front panel.

The following parameter is not present when the sound being edited is a drum kit.

To Adjust a Sound’s Filter Cutoff

1. If you’re using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you’re using the 16 Track Recorder, select the track whose sound you’d like to edit.
2. Turn the Parameter knob until the display shows “Filter Cutoff=.”
The Filter Cutoff parameter can be set from -64 to +63. A value of 0 will leave the sound’s various filter cutoffs at their programmed settings. A value other than 0 will be added to or subtracted from the sound’s programmed settings.
3. Turn the Value knob to set the filter cutoff offset to the desired amount.

Note: When you select a new sound in SoundFinder, Filter Cutoff will be reset to 0. Selecting a new sound for a track in the 16 Track Recorder will also reset this parameter if the system Track ParamReset parameter is set to On (see *Chapter 3*).

This parameter may also be edited via MIDI. It responds to MIDI Controller #74 or an NRPN LSB value of 012. See “Using RPNs and NRPNs to Edit SoundFinder Parameters” at the end of this chapter. The ZR’s display will reflect filter cutoff changes made via MIDI as if you’d made them from the front panel.

The following parameter is not present when the sound being edited is a drum kit.

To Adjust a Sound’s Filter Envelope Attack Time

1. If you’re using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you’re using the 16 Track Recorder, select the track whose sound you’d like to edit.
2. Turn the Parameter knob until the display shows “Filt Env Attack=.”
The Filt Env Attack parameter can be set from -64 to +63. A value of 0 will leave the sound’s various filter attack times at their programmed settings. A value other than 0 will be added to or subtracted from the sound’s programmed settings.
3. Turn the Value knob to set the Filt Env Attack offset to the desired amount.

Note: When you select a new sound in SoundFinder, Filt Env Attack will be reset to 0. Selecting a new sound for a track in the 16 Track Recorder will also reset this parameter if the system Track ParamReset parameter is set to On (see *Chapter 3*).

This parameter may also be edited via MIDI. It responds to an NRPN LSB value of 017. See “Using RPNs and NRPNs to Edit SoundFinder Parameters” at the end of this chapter. The ZR’s display will reflect Filt Env Attack changes made via MIDI just as if you’d made them from the front panel.

The following parameter is not present when the sound being edited is a drum kit.

To Adjust a Sound’s Filter Envelope Decay Times

1. If you’re using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you’re using the 16 Track Recorder, select the track whose sound you’d like to edit.
2. Turn the Parameter knob until the display shows “Filt Env Decay=.”
The Filt Env Decay parameter can be set from -64 to +63. A value of 0 will leave the sound’s various filter decay times at their programmed settings. A value other than 0 will be added to or subtracted from the sound’s programmed settings.
3. Turn the Value knob to set the Filt Env Decay offset to the desired amount.

Note: When you select a new sound in SoundFinder, Filt Env Decay will be reset to 0. Selecting a new sound for a track in the 16 Track Recorder will also reset this parameter if the system Track ParamReset parameter is set to On (see *Chapter 3*).

This parameter may also be edited via MIDI. It responds to an NRPN LSB value of 018. See “Using RPNs and NRPNs to Edit SoundFinder Parameters” at the end of this chapter. The ZR’s display will reflect Filt Env Decay changes made via MIDI just as if you’d made them from the front panel.

The following parameter is not present when the sound being edited is a drum kit.

To Adjust a Sound’s Filter Envelope Release Time

1. If you’re using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you’re using the 16 Track Recorder, select the track whose sound you’d like to edit.
2. Turn the Parameter knob until the display shows “Filt Env Release=.”
The Filt Env Release parameter can be set to -64 to +63. A value of 0 will leave the sound’s various filter release times at their programmed settings. A value other than 0 will be added to or subtracted from the sound’s programmed settings.

3. Turn the Value knob to set the Filt Env Release offset to the desired amount.

Note: When you select a new sound in SoundFinder, Filt Env Release will be reset to 0. Selecting a new sound for a track in the 16 Track Recorder will also reset this parameter if the system Track ParamReset parameter is set to On (see *Chapter 3*).

This parameter may also be edited via MIDI. It responds to an NRPN LSB value of 019. See “Using RPNs and NRPNs to Edit SoundFinder Parameters” at the end of this chapter. The ZR’s display will reflect Filt Env Release changes made via MIDI just as if you’d made them from the front panel.

The following parameter is not present when the sound being edited is a drum kit.

To Adjust the Volume and Filter Envelopes’ Velocity Response

1. If you’re using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you’re using the 16 Track Recorder, select the track whose sound you’d like to edit.
2. Turn the Parameter knob until the display shows “Amp&Filt Env Vel=.”
The Amp&Filt Env Vel parameter can be set to -64 to +63. A value of 0 will leave the envelopes’ sensitivity to keyboard or MIDI velocity at their programmed settings. A value other than 0 will be added to or subtracted from their programmed settings.
3. Turn the Value knob to set the Amp&Filt Env Vel offset to the desired amount.

Note: When you select a new sound in SoundFinder, Amp&Filt Env Vel will be reset to 0. Selecting a new sound for a track in the 16 Track Recorder will also reset this parameter if the system Track ParamReset parameter is set to On (see *Chapter 3*).

This parameter may also be edited via MIDI. It responds to an NRPN LSB value of 020. See “Using RPNs and NRPNs to Edit SoundFinder Parameters” at the end of this chapter. The ZR’s display will reflect Amp&Filt Env Vel changes made via MIDI just as if you’d made them from the front panel.

Changing a Sound’s Key Range

Each sound in the ZR-76 can be set to respond only to notes played within a specified region of the ZR-76 keyboard or via MIDI. A sound’s key range is defined by setting its lowest note with the Key Range Lo SoundFinder parameter, and its highest with the Key Range Hi SoundFinder parameter.

Tip: You can silence notes on a 16 Track Recorder track—including the rhythm track—by limiting the key range of the sound the track uses.

To Change a Sound’s Keyboard Range

1. If you’re using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you’re using the 16 Track Recorder, select the track whose sound you’d like to edit.
2. Turn the Parameter knob until the display shows “Key Range Lo=.”
The low end of a sound’s key range can be any note you desire, from A0 to C8.
3. On the ZR’s keyboard, press the key you would like to be the low end of the key range for the currently selected sound. You can also turn the Value knob to change this parameter.
Middle C is C4 (some MIDI controller manufacturers refer to Middle C as C3—if you are using an external controller or sequencer with the ZR-76, check the controller’s or sequencer’s manual to see if that’s the case).
4. Turn the Parameter knob until the display shows “Key Range Hi=.”
The high end of a sound’s key range can be any note you desire, from A0 to C8.
5. On the ZR’s keyboard, press the key you would like to be the high end of the key range for the currently selected sound. You can also turn the Value knob to change this parameter.
If you want to reset the range, simply reselect these parameters and repeat the process.

Note: A sound’s Key Range Lo value should not be set above its Key Range Hi setting, nor should its Key Range Hi value be set below its Key Range Lo setting.

These parameters may also be edited via MIDI. Key Range Lo responds to an NRPN LSB value of 026, and Key Range Hi responds to an NRPN LSB value of 27. See “Using RPNs and NRPNs to Edit SoundFinder Parameters” at the end of this chapter. The ZR’s display will reflect Key Range Lo and Hi changes made via MIDI just as if you’d made them from the front panel.

Setting Sound Velocity Ranges

Sounds can be programmed so that they are only heard at specified velocities played on the keyboard or received via MIDI.

When the following parameter is edited in a drum kit, all of the sounds in the drum kit are affected simultaneously by the changes you make.

To Set a Sound’s Velocity Window

1. If you’re using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you’re using the 16 Track Recorder, select the track whose sound you’d like to edit.
2. Turn the Parameter knob until the display shows “VelocityRange Lo=.”
The low boundary of a sound’s velocity window can range from 0 to 127.
3. Turn the Value knob to set the VelocityRange Lo parameter to the desired value.
4. Turn the Parameter knob until the display shows “VelocityRange Hi=.”
The high boundary of a sound’s velocity window can range from 0 to 127.
5. Turn the Value knob to set the VelocityRange Hi parameter to the desired value.

Note: A sound’s VelocityRange Lo value should not be set above its VelocityRange Hi setting, nor should its VelocityRange Hi value be set below its VelocityRange Lo setting.

These parameters may also be edited via MIDI. VelocityRange Lo responds to an NRPN LSB value of 028, and VelocityRange Hi responds to an NRPN LSB value of 29. See “Using RPNs and NRPNs to Edit SoundFinder Parameters” at the end of this chapter. The ZR’s display will reflect VelocityRange Lo and Hi changes made via MIDI just as if you’d made them from the front panel.

Isolating Velocity-Dependent Components of Sounds

Many of the sounds in the ZR-76 are designed to respond musically to varying velocities played on the keyboard or received via MIDI. It’s not uncommon for different components of sounds to be revealed only at particular velocities. The ZR-76 provides a way to alter sounds so you can reliably produce these values and, therefore, the sound components the values produce. This lets you easily extract favorite velocity-dependent aspects of ZR-76 sounds. When the Velocity Mode parameter is set to any value other than Normal, velocities that fall within the sound’s velocity window (see “Setting Velocity Ranges” above) are automatically converted to the velocity set with the Velocity Mode parameter.

When the following parameter is edited in a drum kit, all of the sounds in the drum kit are affected simultaneously by the changes you make.

To Extract Favorite Velocity-Dependent Sound Components

1. If you’re using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you’re using the 16 Track Recorder, select the track whose sound you’d like to edit.
2. Turn the Parameter knob until the display shows “Velocity Mode=.”
The Velocity Mode parameter can be set to:
 - Normal—to allow the sound’s velocity response to function normally.
 - 0 to 127—to convert any velocity value that falls within the sound’s velocity window to the value selected. (See “To Set a Sound’s Velocity Window” above.)
3. Turn the Value knob to set the Velocity Mode parameter to the desired velocity value.
This parameter may also be edited via MIDI. It responds to an NRPN LSB value of 035. See “Using RPNs and NRPNs to Edit SoundFinder Parameters” at the end of this chapter.

Setting a Sound's Response to Keyboard Pressure

The ZR-76 keyboard produces channel pressure—if a sound is programmed to respond to pressure, pressing down any key on the keyboard affects all of the notes being heard. The ZR-76 also supports key pressure—referred to in some other ENSONIQ products as “PolyKey™” pressure—when it's received via MIDI. Key pressure affects just those notes that are being pressed down. The PressureMode parameter allows you to determine if a sound will respond to both types of pressure, only to channel pressure, only to key pressure, or will not respond to pressure at all.

When the following parameter is edited in a drum kit, all of the sounds in the drum kit are affected simultaneously by the changes you make.

To Set a Sound's Pressure Response

1. If you're using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you're using the 16 Track Recorder, select the track whose sound you'd like to edit.
3. Turn the Parameter knob until the display shows “Pressure Mode=.”

The Pressure Mode parameter can be set to:

- Off—so that the sound will not respond to keyboard pressure. If pressure is assigned as an insert effect modulation source, that modulation is also disabled.
 - Auto—so that the sound responds to both channel pressure generated by the ZR's keyboard and channel and key pressure received via MIDI.
 - Channel—so that the sound will only respond to channel pressure.
 - Key—so that the sound will only respond to key pressure.
4. Turn the Value knob to set the PressureMode parameter to the desired value.

Note: When you select a new sound in SoundFinder, PressureMode will be reset to Auto. Selecting a new sound for a track in the 16 Track Recorder will also reset this parameter if the system Track ParamReset parameter is set to On (see *Chapter 3*).

This parameter may also be edited via MIDI. It responds to an NRPN LSB value of 030. See “Using RPNs and NRPNs to Edit SoundFinder Parameters” at the end of this chapter.

Sound Controller Filters

The ZR-76 provides controller filters that allow you to enable or disable a sound's response to a selection of the ZR's controllers. These filters also turn on or off the sound's response to various controller messages received via MIDI, and determine whether or not such messages will be transmitted when the sound is played. All of the filters are on/off switches.

The controller filter parameters are:

- ProgramChnge Recv—enables or disables response to Program Change messages received via MIDI
- Bank Select Recv—enables or disables response to Bank Select messages received via MIDI
- Data Entry Recv—enables or disables the sound's response to Data Entry messages received via MIDI
- Pitch Bend Recv—enables or disables the sound's response to changes in the position of the ZR's pitch bend wheel, to Pitch Bend messages received via MIDI, and determines whether or not the sound will transmit Pitch Bend data when the ZR's pitch bend wheel is moved
- Mod Wheel(1)Recv—enables or disables the sound's response to changes in the position of the ZR's mod wheel, to Mod Wheel (Controller #1) messages received via MIDI, and whether or not the sound will transmit Mod Wheel data when the ZR's mod wheel is moved
- FootPedal(4)Recv—enables or disables the sound's response to both foot pedal (Controller #4) messages generated by a CV pedal installed in the ZR's CV Pedal jack and set to ModPedal#004 (see *Chapter 3*), and to Controller #4 data received via MIDI; also determines whether or not Controller #4 data will be transmitted if an installed CV pedal set to ModPedal#004 (see *Chapter 3*) is moved when a MIDI-OUT sound is selected
- Volume(7)Recv—enables or disables the sound's response to both Volume (Controller #7) messages generated by a CV pedal installed in the ZR's CV Pedal jack and set to Volume #007 (see *Chapter 3*), and to Controller #7 data received via MIDI; also determines whether or not Controller #7 data will be transmitted if an installed CV pedal set to Volume #007 (see *Chapter 3*) is moved when a MIDI-OUT sound is selected

- **Pan(10)Recv**—enables or disables the sound's response to Pan (Controller #10) messages received via MIDI; also determines whether or not turning the Pan knob will transmit Controller #10 data when a MIDI-OUT sound is selected
- **Expressn(11)Recv**—enables or disables the sound's response to Expression (Controller #11) messages received via MIDI; also determines whether or not turning the Mix knob will transmit Controller #11 data when a MIDI-OUT sound is selected
- **Sustain/SostRecv**—enables or disables the sound's response to sustain and sostenuto values produced by a foot switch plugged into one of the ZR's foot switch jacks and set to Sustain or Sostenuto (see *Chapter 3*), and to Sustain (Controller #64) and Sostenuto (#66) messages received via MIDI; also determines whether or not pressing a foot switch assigned to Sustain or Sostenuto will transmit Controller #64 or Controller #66 values, respectively, when a MIDI-OUT sound is selected
- **SysCTRL1 Recv**—enables or disables the sound's response to the controller selected for use by the first system CTRL (see *Chapter 3*) when received via MIDI; also determines whether or not the controller will be transmitted when a MIDI-OUT sound is selected and a CV pedal assigned to SysCTRL1 is moved
- **SysCTRL2 Recv**—enables or disables the sound's response to the controller selected for use by the second system CTRL (see *Chapter 3*) when received via MIDI; also determines whether or not the controller will be transmitted when a MIDI-OUT sound is selected and a CV pedal assigned to SysCTRL2 is moved
- **SysCTRL3 Recv**—enables or disables the sound's response to the controller selected for use by the third system CTRL (see *Chapter 3*) when received via MIDI; also determines whether or not the controller will be transmitted when a MIDI-OUT sound is selected and a CV pedal assigned to SysCTRL3 is moved
- **SysCTRL4 Recv**—enables or disables the sound's response to the controller selected for use by the fourth system CTRL (see *Chapter 3*) when received via MIDI; also determines whether or not the controller will be transmitted when a MIDI-OUT sound is selected and a CV pedal assigned to SysCTRL4 is moved

Note: When a MIDI-OUT sound is selected as the primary sound in SoundFinder, incoming MIDI data on the base MIDI channel will be ignored. When a MIDI-OUT sound is selected on a track in the 16 Track Recorder, incoming MIDI data on the track's MIDI channel will be ignored.

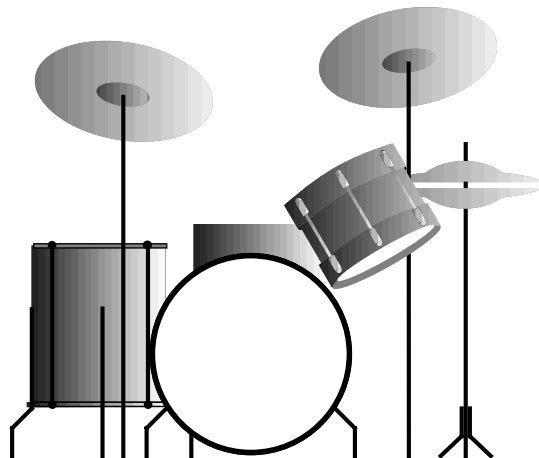
When the following parameter is edited in a drum kit, all of the sounds in the drum kit are affected simultaneously by the changes you make.

To Set the Sound Controller Filters

1. If you're using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you're using the 16 Track Recorder, select the track whose sound you'd like to edit.
 2. Turn the Parameter knob until the display shows the sound controller filter you want to set:
 - ProgramChnge Recv
 - Bank Select Recv
 - Data Entry Recv
 - Pitch Bend Recv
 - Mod Wheel(1)Recv
 - FootPedal(4)Recv
 - Volume(7)Recv
 - Pan(10)Recv
 - Expressn(11)Recv
 - Sustain/SostRecv
 - SysCTRL1 Recv
 - SysCTRL2 Recv
 - SysCTRL3 Recv
 - SysCTRL4 Recv
- Any of these parameters can be set to:
- **On**—to enable response to and/or transmission of the selected controller.
 - **Off**—to disable response to and/or transmission of the selected controller.
3. Turn the Value knob to set the selected controller filter to the desired value.

Note: When these filter parameters are edited, wherever relevant, their controllers are reset to their default values to prevent any unintentionally hung notes on the ZR-76, or in external MIDI modules.

Editing ZR-76 Drum and Percussion Kits



Drum and percussion kits can have up to 64 different standard sounds assigned to individual keys from the B two octaves below Middle C (B1) to the D three octaves above (D7). Drum and percussion kit sounds have a number of parameters which affect the entire kit at once. These are detailed in “Working with SoundFinder Parameters” earlier in this chapter (the description for each parameter notes whether or not it’s applicable to drum and percussion kits). Drum and percussion kits also offer individual-key parameters, which are accessed as described in this section. The parameters are detailed in “Working with Special Drum/Percussion Kit Parameters” below.

The SongEditKit

The powerful sounds-inside-of-another-sound nature of ZR-76 drum/percussion kits requires a special location within the ZR’s memory where they can be edited. There is one such location available in every ZR-76 song so that you can always have just the drum kit sound you need in each song. This special area is an *edit buffer*, which appears in the form of a unique drum/percussion kit called the *SongEditKit*.

There’s always an active song in the ZR-76—even if you haven’t recorded or loaded any music, or created a song playlist—and there’s always a SongEditKit available. You’ll find it in the *CUSTOM SoundFinder category (and via MIDI at bank 010, program 000). Once selected, you can use the SongEditKit just as you would any other sound, and you can edit any of its parameters.

Note: In the *CUSTOM SoundFinder category, you’ll also find the RthmEditKit—see below.

The SongEditKit behaves just like any other drum or percussion kit sound—except that it’s the only one whose unique drum key parameters can be edited directly. Any other ZR-76 drum or percussion kit sound must be moved into this special location—or, to put it another way, must become the SongEditKit—before its drum key parameters can be altered.

Drum/percussion kit sounds also possess many standard parameters that affect the entire kit, as opposed to individual drum keys, and which may be edited without having to convert the sound into a SongEditKit. These are the parameters described in “Working with SoundFinder Parameters” earlier in this chapter.

When you’ve finished working on a SongEditKit, you can save the results as a normal drum or percussion kit sound that you can use again however you’d like. Though each song has a single *editable* drum/percussion kit—the SongEditKit—it can employ as many drum or percussion kit sounds as you need. You can edit each of these kits by designating it as the SongEditKit for as long as you need to work on it, and then save it as a new drum or percussion kit sound when you’re done. This frees up the SongEditKit to be re-used for the editing of other kits used in your song.

Using the RthmEditKit in SoundFinder

Each Drum Machine rhythm uses a drum kit that’s appropriate for the music it plays. When you select a rhythm, its kit becomes available in SoundFinder as the RthmEditKit. The RthmEditKit can be found in the *CUSTOM SoundFinder category (or via MIDI at bank 010, program 001). When you use the Drum Machine’s zone-by-zone editing capabilities to customize the kit, your edits will be reflected in the

RthmEditKit in SoundFinder. The only time the RthmEditKit in SoundFinder will differ from the kit played by the currently selected rhythm is when you assign a new kit to the rhythm in the Drum Machine, and then, without editing the new kit, go immediately to the RthmEditKit in SoundFinder. In that case, the RthmEditKit will be the kit the rhythm originally used. When you return to the Drum Machine, the RthmEditKit in SoundFinder will be updated.

Tip: You can augment a rhythm with additional drum or percussion notes by selecting the RthmEditKit in SoundFinder, playing along with the rhythm, and sending the whole thing from the Idea Pad to the 16 Track Recorder. The rhythm will go on the selected sequence's rhythm track and the additional notes you play will go on a track of your choosing. Once your idea is in the 16 Track Recorder, you can also use the rhythm track to record even more drum or percussion notes using the rhythm's kit.

The RthmEditKit can be used in the same way that you'd use a normal drum kit sound: you can play it on the keyboard or use it in the 16 Track Recorder. You can also edit the RthmEditKit key-by-key in the same manner as the SongEditKit, using standard SoundFinder drum kit editing techniques.

Note: When you've edited the RthmEditKit in SoundFinder, or if you're using it in a sequence or for any other purpose, make sure to save it as a new drum kit sound before returning to the Drum Machine. The moment you press any Drum Machine button, the kit belonging to the currently selected rhythm will become the new RthmEditKit, wiping away the RthmEditKit you were using and any edits you've made to the kit in SoundFinder.

If you've edited the RthmEditKit and saved it as a new kit, you can use it as you would any other sound. You can also assign it to a rhythm in the Drum Machine—including the rhythm it originally came from—using the technique described in “Selecting a New Drum Kit for a Rhythm” in *Chapter 5*. There's a certain element of unpredictability to building your own kit key-by-key for use with a Drum Machine rhythm, since you may find it a bit difficult to correctly anticipate how a rhythm will use your newly created kit—on the other hand, sometimes it's fun to experiment.

Tip: You can take advantage of the RthmEditKit to utilize the Drum Machine's zone-by-zone editing capabilities for the editing of any drum kit sound. In the Drum Machine, assign the kit you'd like to edit to a rhythm, edit the kit's zones, go back to SoundFinder, and then save your newly edited kit as a new drum kit sound. See *Chapter 5* to learn how to assign rhythm kits and edit kit zones.

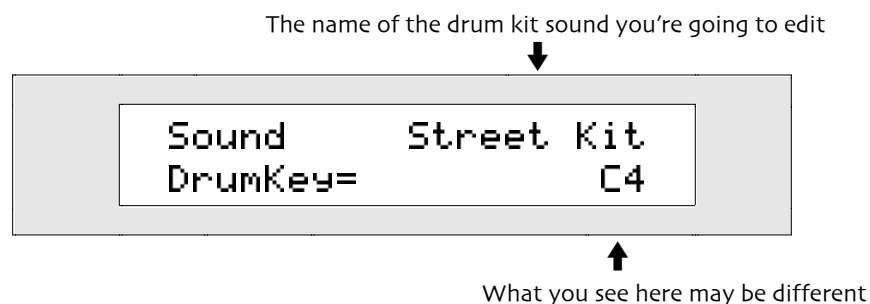
Preparing to Edit Drum or Percussion Kits

There are three ways to edit a drum or percussion kit sound's drum key parameters. You can:

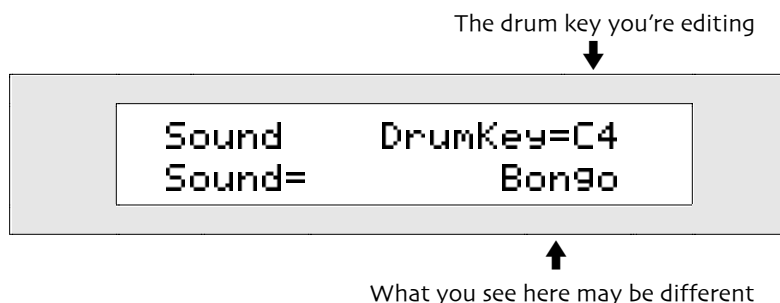
- Select a pre-existing drum or percussion kit sound and convert it into the SongEditKit so that you can customize its special drum key parameters
- Directly select the current song's SongEditKit and edit its drum key parameters
- Directly select the current rhythm's RthmEditKit and edit its drum key parameters

To Edit a Drum or Percussion Kit Sound You've Selected

1. If you're using SoundFinder, select the sound you want to edit and press the SoundFinder Edit button. If you're using the 16 Track Recorder, select the track whose sound you'd like to edit.
2. Turn the Parameter knob until the ZR shows “DrumKey=” on the bottom left of its display:

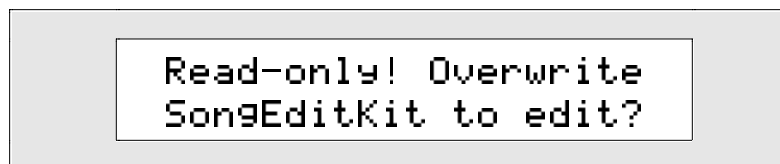


3. Press a key on the keyboard to select a drum key to edit. If you prefer, you may also select a drum key by dialing in the desired key with the Value knob (Middle C is C4). Drum kits can go from the B two octaves below Middle C (B1) to the D three octaves above it (D7).
4. Turn the Parameter knob until the ZR shows “Sound=” on the bottom left of its display:



Note: If the sound assigned to a drum key has been erased from the ZR's memory—or if an expansion-board sound has been assigned to a Drum Key and the board has been removed—the sound displayed here will be ****EMPTY****.

5. Turn the Value knob to select a new sound for this key.
The display changes to:



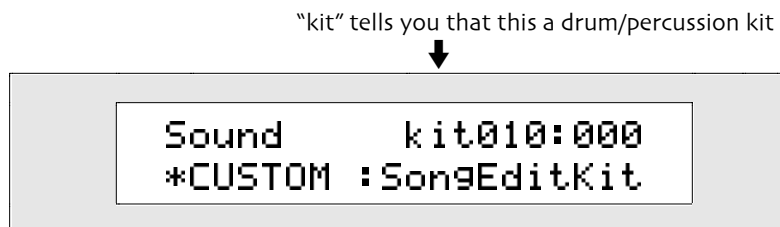
The ZR-76 is offering to convert the drum/percussion kit sound you've selected into the SongEditKit for the currently selected song.

6. If you'd like to continue editing this drum or percussion kit—and make it the current song's SongEditKit—press Yes. If you'd rather not continue, press No.
Once you've pressed Yes, you can edit the drum or percussion kit using the Parameter knob to select parameters, and the Value knob to change their values. For a full description of the editing options available for the ZR-76 sounds, see “Working with the SoundFinder Parameters” later in this chapter.

To Edit the SongEditKit or RthmEditKit

1. If you're using SoundFinder, use the Sound Name and Sound Type knobs to select the currently selected song's SongEditKit, located in the *CUSTOM SoundFinder category (or accessible via MIDI at bank 010, program 000), and press the SoundFinder Edit button.

If you're using the 16 Track Recorder, select any track, press the Enter button and use the Sound Name and Sound Type knobs to select the SongEditKit or the RthmEditKit, both located in the *CUSTOM SoundFinder category.



2. Turn the Parameter knob to find the drum/percussion kit parameter you want to alter and use the Value knob to change its setting. For a full description of the editing options available for the ZR-76 sounds, see “Working with the SoundFinder Parameters” later in this chapter.

Working with Special Drum/Percussion Kit Parameters

The powerful nature of ENSONIQ drum and percussion kits requires some special editing techniques, described in “Editing ZR-76 Drum and Percussion Kits,” earlier in this chapter.

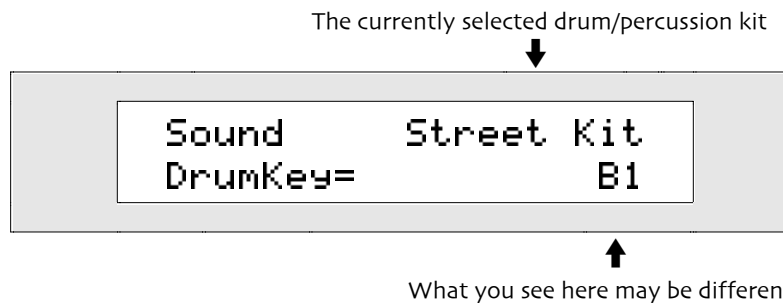
Selecting a Drum Key For Editing

You can edit ZR-76 drum and percussion kits one drum key at a time. To edit a drum or percussion kit one key at a time, you’ll need to select each drum key you want to edit.

The following parameter is present only when the sound being edited is a drum or percussion kit.

To Select a Drum Key For Editing

1. Use either of the sound-selection methods described at the beginning of this chapter to select the drum or percussion kit sound you’d like to edit.
2. Use one of the two methods described in “Preparing to Edit Drum or Percussion Kits” earlier in this chapter to begin editing the selected drum or percussion kit.
3. If you’re working in SoundFinder, press the SoundFinder Edit button.
4. Turn the Parameter knob until the display shows:



5. Press a key on the keyboard to select a drum key to edit. If you prefer, you may also select a drum key by dialing in the desired key with the Value knob (Middle C is C4). Drum kits can go from the B two octaves below Middle C (B1) to the D three octaves above it (D7).

Changing the Source of a Drum Key’s Sound

Each key in a drum or percussion kit can use a sound from any of these SoundFinder sound type categories.

- EXP—sounds from expansion boards, if there are any installed, except for drum/percussion kits
- DRM—single drum or percussion sounds in the ZR’s ROM, RAM or FLASH memory
- GM—General MIDI sounds
- ROM—all of the sounds in the ZR’s ROM memory, except for drum/percussion kits
- ALL—this category includes all of the above. The ALL sound type can be especially handy, since it lists all of the sounds currently available in your ZR-76 alphabetically, except for drum/percussion kits

Note: The ZR-76 will only offer single, non-drum/percussion kit sounds for use by a drum key. You can’t use a kit within a kit!

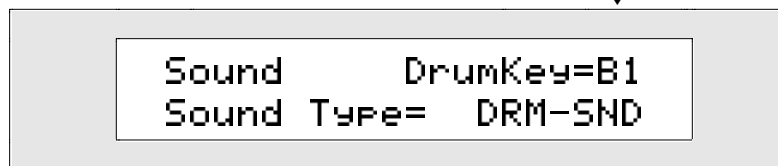
The following parameter is present only when the sound being edited is a drum or percussion kit.

To Change the Sound Type Used By a Drum Key

1. Select a Drum Key to edit (see “Selecting a Drum Key for Editing” above).

- Turn the Parameter knob until the display shows:

This show the currently selected drum key



You may see a different SoundFinder category here

Each Drum Key can be set to use a sound from the SoundFinder categories described above:

- EXP
- GM
- ALL
- DRM
- ROM

- Turn the Value knob to select a new SoundFinder category from which you can select a new sound for the selected Drum Key.

Tip: If you'd like to work on another Drum Key, select it on the keyboard—the upper right-hand corner of the ZR's display will show the new Drum Key you've selected.

Changing a Drum Key's Sound

You can select a new sound for a drum key from the SoundFinder category chosen with the sound type parameter, described earlier.

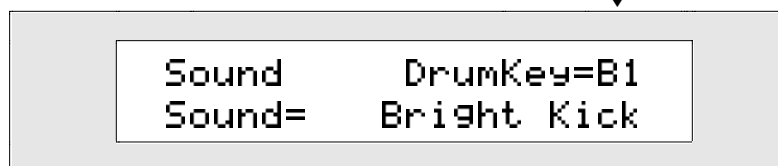
Note: The ZR-76 will only offer standard, non-drum/percussion kit sounds for use by a Drum key. You can't use a kit within a kit!

The following parameter is present only when the sound being edited is a drum or percussion kit.

To Change a Drum Key's Sound

- Select a drum key to edit (see "Selecting a Drum Key for Editing" above).
- Turn the Parameter knob until the display shows:

This show the currently selected drum key



You may see a different sound here

- Turn the Value knob to select a new sound for the currently selected drum key.

Tip: If you'd like to work on another drum key, select it on the keyboard—the upper right-hand corner of the ZR's display will show the new drum key you've selected.

Changing a Drum Key's Volume

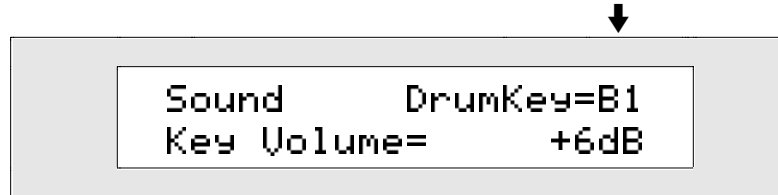
You can offset the programmed loudness of the sound each drum key uses in a drum or percussion kit, measured in decibel increments.

The following parameter is present only when the sound being edited is a drum or percussion kit.

To Change a Drum Key's Volume

1. Select a drum key to edit (see “Selecting a Drum Key for Editing” above).
2. Turn the Parameter knob until the display shows:

This show the currently selected drum key



What you see here may be different

Each drum key's Volume may be set from -50 to +14 dB (decibels).

3. Turn the Value knob to change the volume of the currently selected drum key to the desired level.

Tip: If you'd like to work on another drum key, select it on the keyboard—the upper right-hand corner of the ZR's display will show the new drum key you've selected.

Changing a Drum Key's Panning

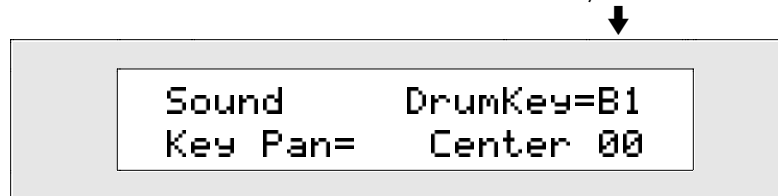
You can offset the programmed stereo panning of the sound each drum key uses in a drum or percussion kit, from Left -64 to Right +63. If the drum key is using a stereo sound, both sides of the sound will shift proportionally, retaining their stereo separation.

The following parameter is present only when the sound being edited is a drum or percussion kit.

To Change a Drum Key's Panning

1. Select a drum key to edit (see “Selecting a Drum Key for Editing” above).
2. Turn the Parameter knob until the display shows:

This show the currently selected drum key



What you see here may be different

Each drum key's stereo position may be set from Left -64 to Right +63.

3. Turn the Value knob to change the panning of the currently selected drum key to the desired position in the stereo field.

Tip: If you'd like to work on another drum key, select it on the keyboard—the upper right-hand corner of the ZR's display will show the new drum key you've selected.

Changing a Drum Key's Effect

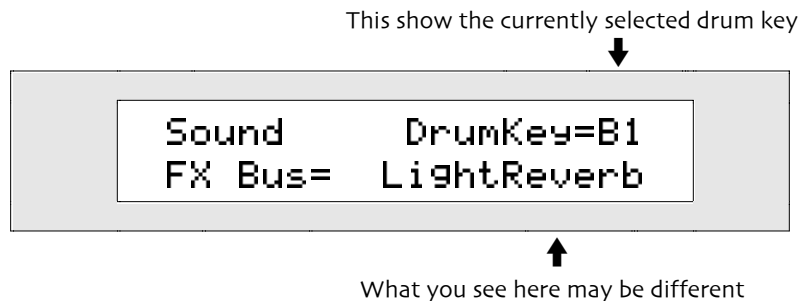
Each drum key in a drum or percussion kit has its own effect bus assignment so that it can be sent to any of the ZR's stereo effect busses:

- Insert
- Chorus
- LightReverb
- MediumReverb
- WetReverb
- Dry

The following parameter is present only when the sound being edited is a drum or percussion kit.

To Change a Drum Key's Effect

1. Select a drum key to edit (see “Selecting a Drum Key for Editing” above).
2. Turn the Parameter knob until the display shows:



Each drum key can be sent to any of the ZR's effects busses: Insert, Chorus, LightReverb, MediumReverb, WetReverb or Dry. For an explanation of the ZR-76 effects, see *Chapter 8*.

3. Turn the Value knob to select the desired effect bus for the currently selected drum key.

Tip: If you'd like to work on another drum key, select it on the keyboard—the upper right-hand corner of the ZR's display will show the new drum key you've selected.

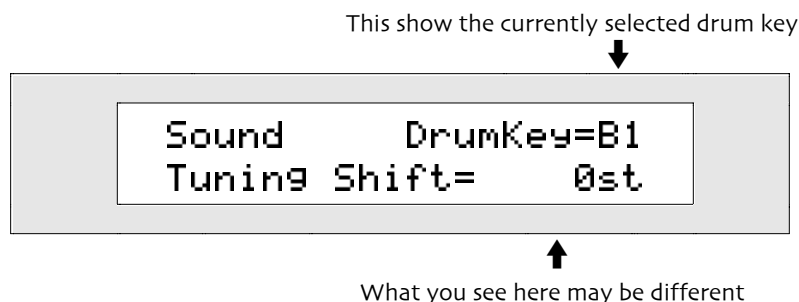
Changing a Drum Key's Tuning

The pitch of each drum key's sound can be adjusted through the use of the Tuning Shift parameter. This parameter can shift the pitch of a drum key's sound up or down by a semitone's distance on the keyboard. The amount of re-tuning you'll be able to do depends on the tuning scheme programmed into each sound. Some sounds only change by tiny amounts as you move up and down the keyboard—this is especially useful for the sounds in the DRM SoundFinder category, where a little re-tuning goes a long way: Since you can use any ZR-76 sound in a drum kit—except for other drum/percussion kits, of course—there will be some variety in how individual sounds respond to tuning shift adjustments.

The following parameter is present only when the sound being edited is a drum or percussion kit.

To Change a Drum Key's Tuning

1. Select a drum key to edit (see “Selecting a Drum Key for Editing” above).
2. Turn the Parameter knob until the display shows:



Each drum key sound's pitch can be shifted by as many as 64 keyboard steps downward (-64st) or 63 steps upward (+63st).

3. Turn the Value knob to select the desired amount of Tuning Shift for the currently selected drum key.

Tip: If you'd like to work on another drum key, select it on the keyboard—the upper right-hand corner of the ZR's display will show the new drum key you've selected.

Saving ZR-76 SoundFinder Sounds

Why and Where Sounds Are Saved

This section details the methods for saving SoundFinder sounds to the ZR's internal memory.

After you've made changes to a ZR-76 sound in SoundFinder, you'll want to save it back to the ZR's FLASH or RAM memory. (*Chapter 9* contains an explanation of these two types of memory). You can save a sound to its original location, or to a spot you find more convenient. Sounds you save to the ZR's FLASH or RAM memory will appear in the INT SoundFinder category and the category to which you assign the sound.

You can also save a single sound or a bank of sounds to a DOS-formatted HD or DD floppy disk. See *Chapter 9* to learn how.

Saving Sounds that Use Insert Effects

When you save a standard sound that's assigned to the insert effect bus, the sound's insert effect will be saved with the sound. When you save a drum or percussion kit sound, if any drum key is routed to the Insert FX Bus, the Insert Effect will be saved with the Sound, with one exception: when the only drum keys routed to the insert effect are using the sound "Silence," the insert effect won't be saved with the sound.

A sound bank can contain up to a total of 361 sound layers. If you try to save a sound to a bank in which there are not enough free layers left, the ZR will display: "Too few free layers to save as a sound!" You can use the librarian to delete sounds you don't need to free up layers, or you may gain enough free layers by saving your new sound to a location containing an unwanted sound.

To Save a Sound to the ZR's FLASH or RAM Memory

1. Press the SoundFinder Save button.



If the System Write Protect parameter is set to Prompt, the display will show:

```
INT memory is write
protected! Override?
```

This display is offered as a double-check for you, to make sure you really want to save your sound. If you'd like to avoid this prompt in the future, see "Protecting the ZR's Memory" in *Chapter 3*.

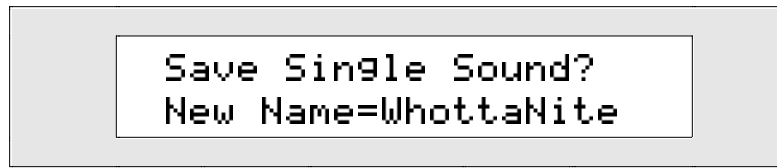
2. If you'd like to cancel the operation, press the No button. If you'd like to proceed, press the Yes button. The display now asks you how you'd like to save the sound:

```
Save SoundFinder?
Type=   Single Sound
```

Whenever you've been using SoundFinder and neither the Split or Layer LEDs is on, the setting shown above is the one you want. (Splits and Layers are discussed later in this chapter.)

3. Press the Yes button.

The display now allows you to name your sound:

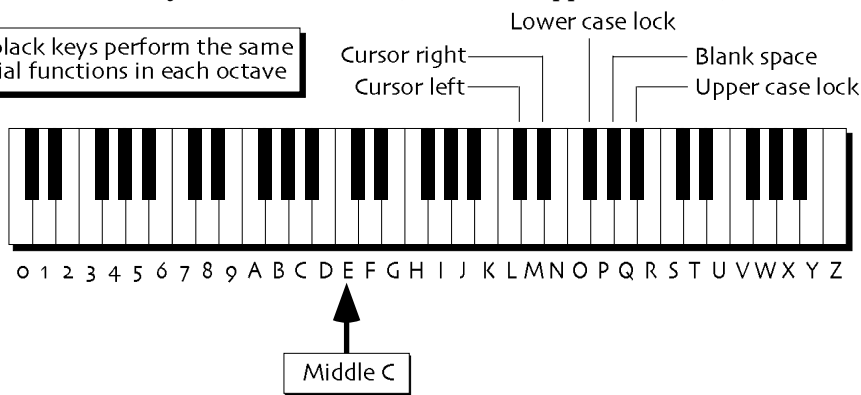


What you see here may be different

You can name your sound in one of two ways:

- You can spell the sound's name on the keyboard—the character associated with each key is printed above the key on the ZR's front panel. The C# and D# keys in each octave move the cursor forward and back on the display (the character selected for editing is underlined on the display). The F# is always a lower case lock, the A# an upper case lock, while the G# types a blank space.

The black keys perform the same special functions in each octave



Note: The keys outside of the range shown are not used for the naming of sounds.

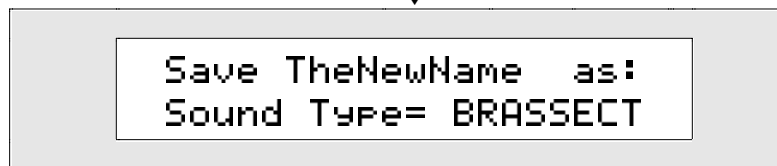
- You can also name your sound using the front panel controls. The up/down arrow buttons are used to select the character position within the name. The up arrow moves the location to the right, and the down arrow moves it to the left. The underlined character is selected and may be changed with the Value knob.

Tip: The Value knob provides access to characters unavailable on the keyboard.

4. When you've named your sound, press the Yes button.

The display shows:

The name you've just given your sound



What you see here may be different

5. Use the Value knob to select a SoundFinder type for your sound. For a complete list of SoundFinder types, see *Chapter 13*.
6. When you've selected a SoundFinder type, press the Yes button.

The display shows the memory location to which your new sound will be saved.



The ZR-76 has two areas of ZR-76 memory to which you can save a sound:

- FLASH—the more permanent type of ZR memory, which remains intact until you erase it
- RAM—a temporary memory that lasts only until you turn your ZR-76 off.

If you've created a RAM sound bank in your ZR, you can turn the Sound Type knob to select FLASH or RAM. If you haven't created a RAM sound bank, FLASH is the only setting available. To learn about FLASH and RAM, see *Chapter 9*.

7. Select the desired area of memory.

The display shows:



The area of memory you've chosen



The sound residing in the currently selected location

When you save your new sound, it will replace the sound that's currently displayed. You can use the Value knob to select a new destination for your sound.

8. If you'd like to, turn the Value knob to select a new location for your sound.
9. When you've selected a location for your sound, press the Yes button.

When you save a sound to FLASH memory, the ZR re-saves the contents of the FLASH sound and preset banks to optimize its use of FLASH memory. This can take a few moments.

Warning: If you've saved a sound to the ZR's RAM sound bank, make sure to save it to floppy before turning off your ZR-76—powering down clears RAM memory. The Save LED in the Disk/Global area will flash to remind you to save your RAM sound bank to floppy. *Chapter 9* describes how to save single sounds and sound banks to floppy.

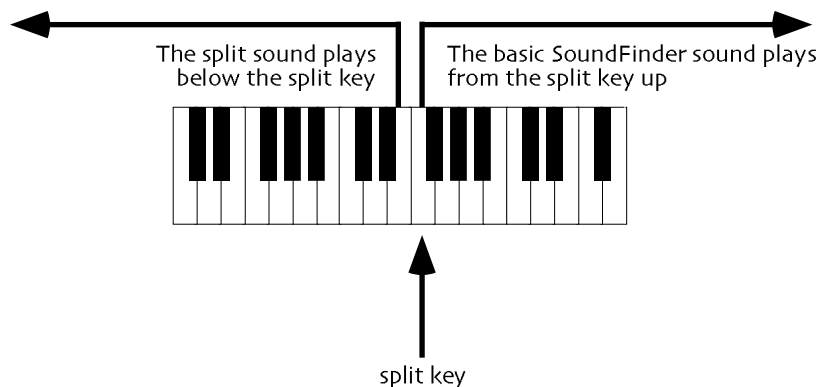
Copying, Moving, Renaming and Re-Categorizing Sounds

You can copy a sound to a new location in memory by using the procedure described above in "To Save a Sound to the ZR's FLASH or RAM Memory." The same procedure can be used to rename a sound, or assign it a new SoundFinder category.

Splitting the ZR-76 Keyboard

Creating and Working with Keyboard Splits

The ZR-76's keyboard can be split into two areas, with each area using its own sound.



There can be one split at a time in SoundFinder. Its upper sound is selected by pressing the Select Sound button and choosing a sound using one of the methods described at the beginning of this chapter. The upper sound's effect is used by both sounds in the split. The split sound (the lower sound on the keyboard) is selected by pressing the Split button to turn the split function on, and choosing a sound using the Sound Type and Sound Name knobs.

Once you've created a split, you can edit the split sound using the full suite of SoundFinder parameters, or change it to another sound altogether. The FX/Mixdown section allows you to set the effect routing for your split sound, or alter its Mix (Expression) or Pan settings. You can also adjust the *split key*—the location that marks the beginning of the upper area on the keyboard. When you've perfected your split, you can save it as an editable preset containing both of the sounds in the split. You can also save a split as a single sound, though once saved in this form, the two areas of the keyboard can no longer be edited separately. See “Saving Splits and Layers” later in this chapter to learn about saving splits.

Tip: You can select a sound from the MIDI-OUT category as your split sound to use the split area of the keyboard as a controller for remote MIDI devices. See “SoundFinder MIDI” later in this chapter to learn more about using MIDI with SoundFinder.

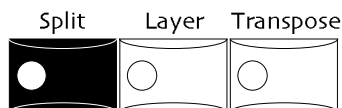
The Split LED

The LED in the Split button lets you know the current state of the SoundFinder split. If:

- the LED isn't lit, the split function is turned off
- the LED is lit, the split function is turned on.

To Create a Split

1. Press the Select Sound button and use one of the sound-selection methods described at the beginning of this chapter to select the sound you'd like to have in the upper area of the split. If this sound uses an insert effect, the effect can be used by both sides of the split.
2. Press and hold the Split button.



The Split button's LED will light, and the display will show you the current split key—the location that

marks the beginning of the upper zone on the keyboard. Middle C is C4.



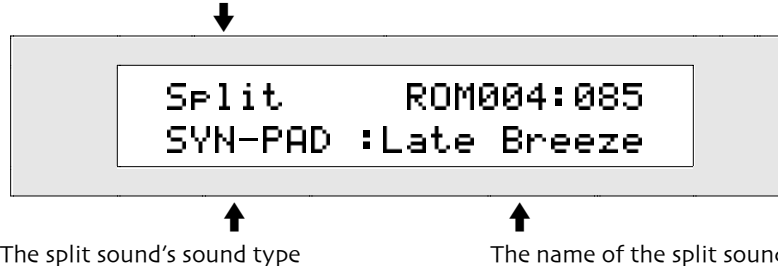
Some MIDI manufacturers refer to Middle C as “C3”—if you’re using another controller or sequencer with your ZR-76, check the controller’s or sequencer’s manual to see if that’s the case.

You can select a different split key by pressing the desired key on the keyboard.

3. If you’d like to, select a new split key on the keyboard—the display will change to show the selection.
4. Release the Split button.

The display will show you the currently selected split sound.

“Split” tells you that you’re working with the split sound



All of the keys on the keyboard below the split key will play this sound.

You can change the split sound by turning the Sound Type and Sound Name knobs. Any of the ZR-76 sounds can be selected as a split sound, including other single-sound splits or layers.

The ZR-76 can automatically select the effect bus for split sounds as you select them. See “Enabling or Disabling Automatic Effect Routing” in *Chapter 3*.

Note: You can create a split that uses a drum kit, but splits of this type can only be saved as presets, not single sounds.

5. Turn the Sound Type and Sound Name knobs to select the split sound you’d like to use.
6. If you’d like to edit any of the split sound’s SoundFinder parameters, press the SoundFinder Edit button, use the Parameter knob to select parameters and the Value knob to edit them.
7. If you’d like to turn the split off, press the Split button. The Split LED goes out.

Tip: The upper zone in a split can be a layer. This is accomplished by creating a layer and a split at the same time (see “Creating and Working with Layers,” later in this chapter).

To Turn the Split Function Off

1. If the split sound is not displayed, press the Split button twice. The LED will go out.
2. If the split sound is displayed, press the Split button once. The LED will go out.

Saving Splits

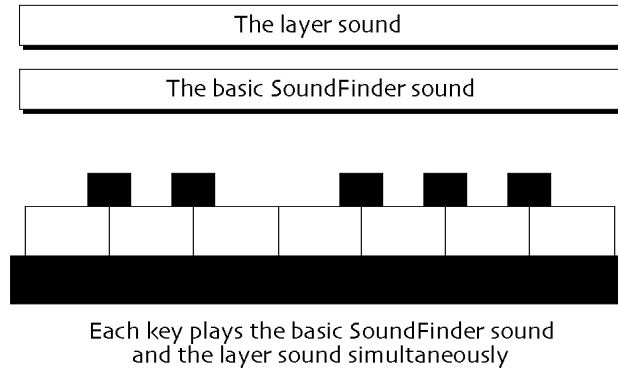
To make a split permanent, it must be saved to the ZR’s internal memory. Splits may be saved as a preset or as a single sound. Each option has its advantages and disadvantages. See “Saving Splits and Layers” later in this chapter to learn how to save a split.

Tip: After you’ve saved your split to the ZR’s internal memory, you’ll probably want to store it on a floppy disk (see *Chapter 9* to learn how).

Layering ZR-76 Sounds

Creating and Working with Layers

The ZR-76's keyboard can play two sounds at once, stacked on top of each other, so that pressing any key plays them both.



There can be one layer at a time in SoundFinder. Its primary sound is selected by pressing the Select Sound button and choosing a sound using one of the methods described at the beginning of this chapter. This sound's effect can be used by both sounds in the layer. The layer sound is selected by pressing the Layer button to turn the layer function on, and choosing a sound using the Sound Type and Sound Name knobs.

Once you've created a layer, you can edit the layer sound using the full suite of SoundFinder parameters, or change it to another sound altogether. The FX/Mixdown section allows you to set the effect routing for your layer sound, or alter its Mix (Expression) or Pan settings. When you've perfected your layer, you can save it as an editable preset containing both of its sounds. You can also save a layer as a single sound, though once saved in this form, its two sounds can no longer be edited separately. See "Saving Splits and Layers" later in this chapter to learn about saving splits.

Tip: You can select a sound from the MIDI-OUT category as your layer sound to use it for controlling remote MIDI devices. See "SoundFinder MIDI" later in this chapter to learn more about using MIDI with SoundFinder.

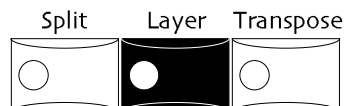
The Layer LED

The LED in the Layer button lets you know the current state of the SoundFinder layer function. If:

- the LED isn't lit, the layer function is turned off
- the LED is lit, the layer function is turned on

To Create a Layer

1. Press the Select Sound button and use one of the sound-selection methods described at the beginning of this chapter to select the sound that will be heard underneath the layer sound. This sound's insert effect can be used by both of the sounds in the layer.
2. Press the Layer button.



The Layer button's LED will light.

Advantages

When you work with a preset, you can press the Select Sound, Split or Layer button to select new sounds for any of the three components. You can press the SoundFinder Edit button to edit any of their SoundFinder parameters. You can use the FX/Mixdown Routing button to access and change their effect routings. You can also re-do your split key selection if the preset contains a split. The preset may be re-edited and re-saved as many times as you want.

If you'd like to use a preset for controlling an external MIDI device, you can assign a MIDI-OUT sound to any of its components.

Disadvantages

Presets cannot be used in the 16 Track Recorder. Though the Idea Pad records your playing when you use a preset, when it sends the idea to the 16 Track Recorder, everything it captured will be played by the basic SoundFinder sound.

Presets cannot be selected via MIDI. If SoundFinder receives a Bank Select and Program Change message, it will select a sound, not a preset. If the Split or Layer LEDs are lit when such messages are received, the ZR will turn them—and the functions they represent—off.

You can have a maximum of 32 presets in the ZR's memory at a time.

Presets are, in a sense, frameworks that point to and use single sounds in the ZR's FLASH or RAM memory. If any of these sounds has been erased, or is otherwise unavailable, the preset will not sound as it should.

When you save a preset to floppy, you have to make sure that any sounds it depends on have also been saved, so that they can be re-loaded when the preset needs them.

Split/Layer Single Sounds

What They Are

A split/layer single sound is when the split and/or layer sounds are merged into the underlying SoundFinder sound. Since any sound can have up to 16 layers, a split/layer single sound can wind up with as many as 48.

Note: Sounds with more than 16 layers cannot be edited using the Unisyn editing software.

Split/layer single sounds are most useful for recording.

You can have as many split and/or layer single sounds as the FLASH and RAM sound banks will hold.

Advantages

Splits and/layers saved as split/layer single sounds can be used on a track in the 16 Track Recorder.

They can be selected via MIDI using Bank Select and Program Change messages.

Split/layer single sounds are self-contained. They don't rely on other sounds that may or may not be currently available in FLASH or RAM memory.

Since they're completely self-contained, saving them to floppy is always a one-step process.

Disadvantages

Once a split and/or layer has been saved as a split/layer single sound, its split and layer elements are no longer distinct, separate elements—they can no longer be edited without affecting the entire sound, nor can they be edited using the Unisyn sound editing software if they have over 16 layers. All of the elements of your split and/or layer, from sound choice to all of the parameters, are permanently locked in place. The only way to change any of a split/layer single sound's settings is to completely re-do it.

Split and layer elements cannot have their sound-wide parameter settings—they share the settings of the underlying sound.

Split and layer elements don't have their own effect routings—they share the underlying sound's effect.

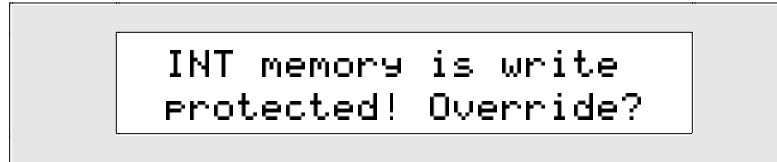
All of the components of a split and/or layer single sound are set to the same pitch table—equal temperament—though their common tuning may be altered with the SoundFinder PitchTbl parameter.

To Save a Split and/or Layer as a Preset

1. Press the SoundFinder Save button.

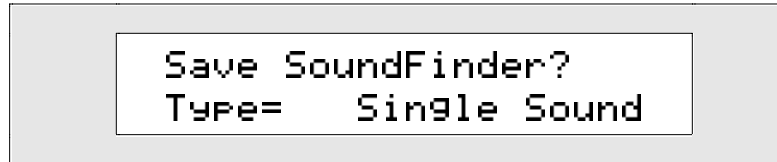


If the System Write Protect parameter is set to Prompt, the display will show:



This display is offered as a double-check for you, to make sure you really want to save the current SoundFinder split/layer configuration as a preset. If you'd like to avoid this prompt in the future, see "Protecting the ZR's Memory" in *Chapter 3*.

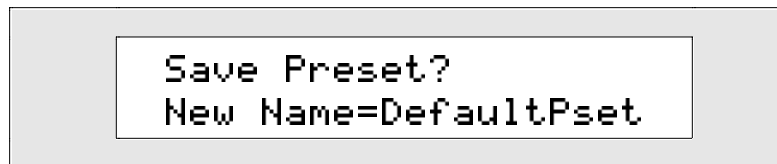
2. If you'd like to cancel the operation, press the No button. If you'd like to proceed, press the Yes button. The display now asks you how you'd like to save the current SoundFinder configuration:



What you see here may be different

The ZR-76 allows you to save the SoundFinder configuration as a preset or a single sound.

3. Turn the Value knob to select "Preset."
4. Press the Yes button. The display now allows you to name your preset:

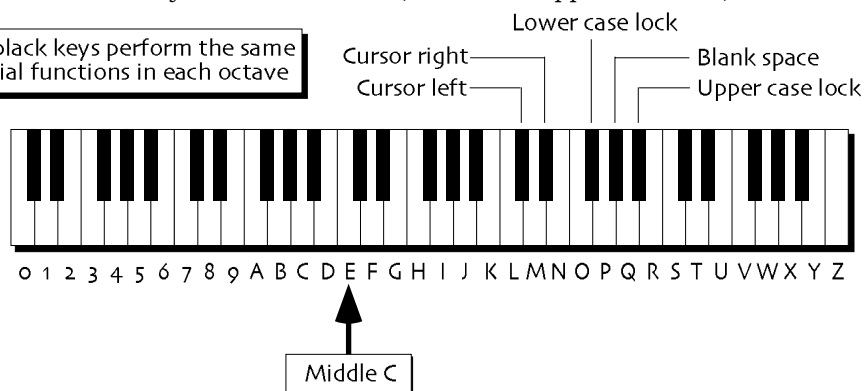


What you see here may be different

You can name your preset in one of two ways:

- You can spell the preset's name on the keyboard—the character associated with each key is printed above the key on the ZR's front panel. The C# and D# keys in each octave move the cursor forward and back on the display (the character selected for editing is underlined on the display). The F# is always a lower case lock, the A# an upper case lock, while the G# types a blank space.

The black keys perform the same special functions in each octave



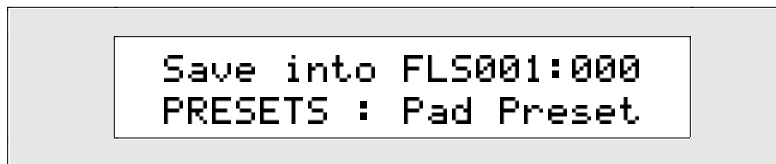
Note: The keys outside of the range shown above are not used for the naming of presets.

- You can also name your preset using the front panel controls. The up/down arrow buttons are used to select the character position within the name. The up arrow moves the location to the right, and the down arrow moves it to the left. The underlined character is selected and may be changed with the Value knob.

Tip: The Value knob provides access to characters unavailable on the keyboard.

- When you've named your preset, press the Yes button.

The display shows:



The preset residing in the currently selected location

This display allows you to choose a location for your preset. You can select any location in the preset FLASH bank from 000 to 031 by turning the Value knob or pressing the up/down arrow buttons. When you save your preset, it will replace the preset that's currently displayed. If the selected location is empty, you'll see "***EMPTY***" in the bottom right-hand portion of the display.

- If you'd like, turn the Value knob to select a new location for your preset.
- When you've selected a location for your preset, press the Yes button.

To most efficiently utilize its FLASH memory, the ZR re-shuffles its FLASH sound and preset memory when you save a preset. This can take a SoundFinder few moments.

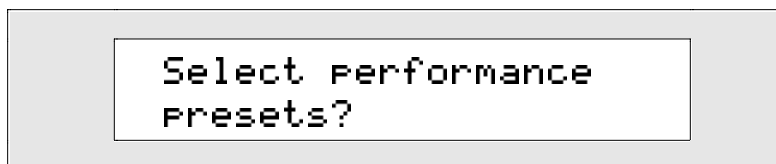
Tip: After you've saved your split and/or layer as a preset, you'll probably want to store the preset on a floppy disk (see *Chapter 9* to learn how). When you save your preset to floppy, make sure that the sound banks containing the sounds the preset uses are also saved on a floppy disk. When you re-load the preset into the ZR's memory, it will look for those sounds. If they're no longer in memory, you'll be able to re-load them from floppy.

To Select a Preset

- Press the Select Sound button.



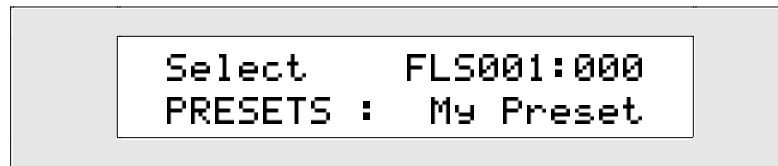
- Turn the Sound Type knob clockwise all the way, so that the display shows:



This display is asking you if you would like to select from a list of all the presets in your ZR's internal memory.

- Press Yes to continue and select a preset, or press No if you'd like to cancel.

If you press Yes, the display will show:



The preset residing in the selected location

This display allows you to select any preset in your ZR's FLASH or ROM memory by turning the Sound Name knob. The Split and Layer LEDs will show whether the selected preset includes a Split, a Layer or both.

4. Turn the Sound Name knob to select the desired preset.

Note: In addition to the presets you create, you can select any of the 33 useful presets permanently stored in your ZR's ROM memory. They're listed in *Chapter 13*.

To Edit a Preset

1. If you'd like to change a split's split key, hold down the split button and play the desired split key on the keyboard. Then let go of the key and button.
2. Press the Select Sound, Split or Layer button to select the portion of the preset you'd like to work with. The ZR's display will show you the preset component you've chosen.

"Split" tells you that you're working with the split sound



The split sound's sound type

The name of the split sound

- "Sound" means that the basic SoundFinder sound is the selected preset component.
 - "Split" means that the split is the selected preset component.
 - "Layer" means that the layer is the selected preset component.
3. To change the selected component's sound, use the Sound Type and Sound Name knobs to select a new sound. The ZR-76 can automatically select the effect bus for split and layer sounds as you select them. See "Enabling or Disabling Automatic Effect Routing" in *Chapter 3*.

To edit the component's SoundFinder parameters, press the Edit button, select the desired parameter with the Parameter knob, and adjust its setting with the value knob.

To change the component's effect routing, press the Routing button, turn the Parameter knob to locate the FX Bus parameter, and choose the desired setting with the Value knob

You can also turn the Mix and/or Pan knobs to adjust those settings for the selected component

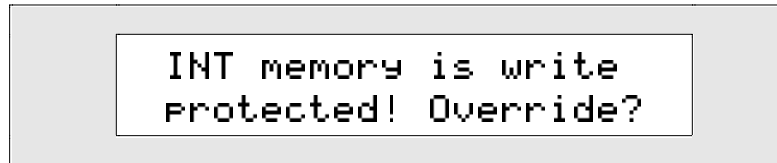
A sound bank can contain up to a total of 361 sound layers. If you try to save a sound to a bank in which there are not enough free layers left, the ZR will display: "Too few free layers to save as a sound!" You can use the librarian to delete sounds you don't need to free up some layers, or you may gain enough free layers by saving your new sound to a location that contains a sound you wouldn't mind losing.

To Save a Split and/or Layer as a Split/Layer Single Sound

1. Press the SoundFinder Save button.

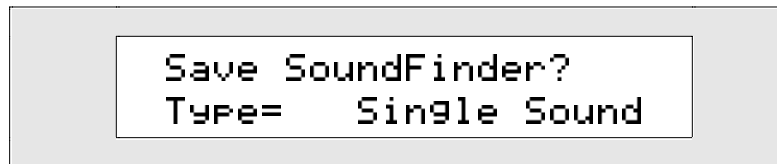


If the System Write Protect parameter is set to Prompt, the display will show:



This display is offered as a double-check for you, to make sure you really want to save your split and/or layer. If you'd like to avoid this prompt in the future, see "Protecting the ZR's Memory" in *Chapter 3*.

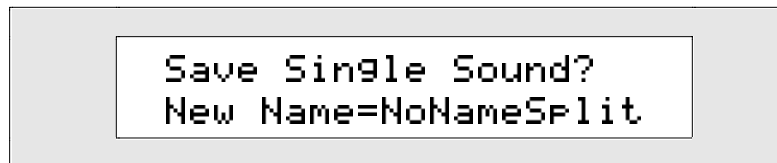
2. If you'd like to cancel the operation, press the No button. If you'd like to proceed, press the Yes button. The display now asks you how you'd like to save the split and/or layer:



The ZR-76 allows you to save a split and/or layer as a single sound or a preset.

Note: If your split or layer uses a MIDI-OUT sound, the "Single Sound" option will not be available on this display.

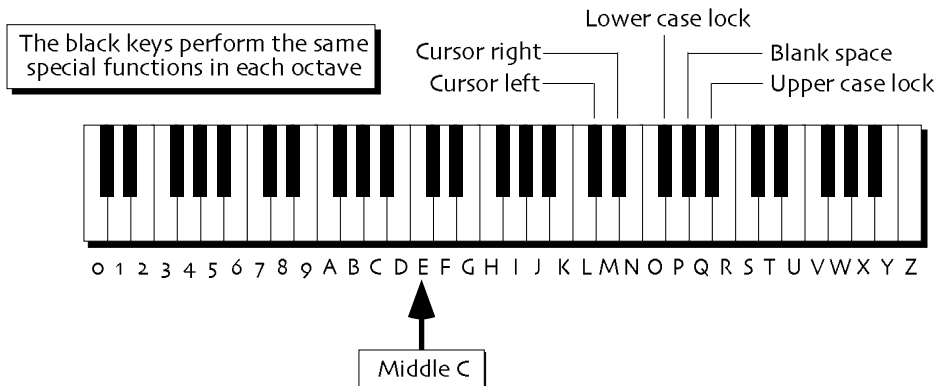
3. Turn the Value knob to select "Single Sound," if necessary.
4. Press the Yes button. The display now allows you to name your split and/or layer single sound:



What you see here may be different

You can name your new split/layer single sound in one of two ways:

- You can spell the sound's name on the keyboard—the character associated with each key is printed above the key on the ZR's front panel. The C# and D# keys in each octave move the cursor forward and back on the display (the character selected for editing is underlined on the display). The F# is always a lower case lock, the A# an upper case lock, while the G# types a blank space.



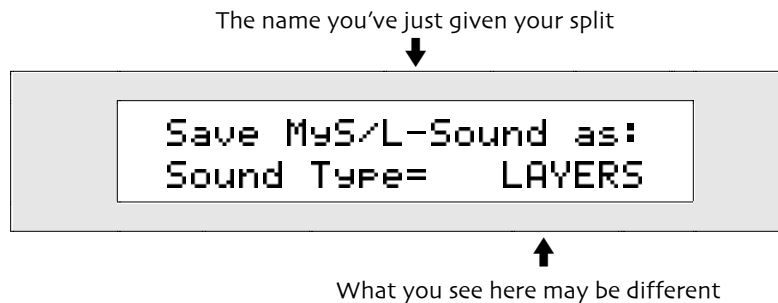
Note: The keys outside of the range shown above are not used for the naming of sounds.

- You can also name your sound using the front panel controls. The up/down arrow buttons are used to select the character position within the name. The up arrow moves the location to the right, and the down arrow moves it to the left. The underlined character is selected and may be changed with the Value knob.

Tip: The Value knob provides access to characters unavailable on the keyboard.

- Use the front panel controls or the keyboard to name your sound.
- When you've named your split, press the Yes button.

The display shows:



- Use the Value knob to select a SoundFinder type for your sound. For a complete list of SoundFinder types, see *Chapter 13*.
- When you've defined a SoundFinder type, press the Yes button.

The display shows the memory location to which your new sound will be saved.



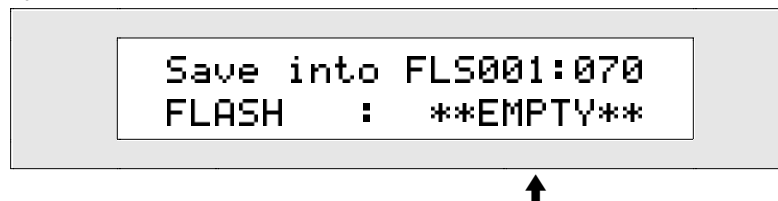
The ZR-76 has two areas of ZR-76 memory to which you can save a sound:

- FLASH—the more permanent type of ZR memory, which remains intact until you erase it
- RAM—a temporary memory that lasts only until you turn your ZR-76 off.

If you've created a RAM sound bank in your ZR, you can turn the Sound Type knob to select FLASH or RAM. If you haven't created a RAM sound bank, FLASH is the only setting available. To learn about FLASH and RAM, see *Chapter 9*.

- Select the desired area of memory by turning the left knob.

The display shows:



If a sound is residing in the currently selected location, it's name appears here

When you save your single sound to a location that already contains a sound, it will replace the sound that's shown on the bottom line of the display. You can use the Value knob to select a new destination for your sound.

- If you'd like to, turn the Value knob to select a new location for your sound.
- When you've selected a location for your sound, press the Yes button.

When you save a sound to FLASH memory, the ZR re-saves the contents of the FLASH sound and

preset banks to optimize its use of FLASH memory. This can take a few moments.

Warning: If you’ve saved a sound to the ZR’s RAM sound bank, make sure to save it to floppy before turning off your ZR-76—powering down clears RAM memory. The Save LED in the Disk/Global area will flash to remind you to save your RAM sound bank to floppy. *Chapter 9* describes how to save single sounds and sound banks to floppy.

Moving a Sound to the 16 Track Recorder

Using SoundFinder Sounds for Recording

The sounds in SoundFinder are great for performance, exploration, or just plain fun. You can also send them to the 16 Track Recorder, where they can be used in the recording of your music. When you send a sound to the 16 Track Recorder, any edits you’ve made in SoundFinder will be faithfully reproduced in the 16 Track Recorder. If the sound uses an insert effect, you can send the effect along with the sound—the track to which you send your sound will become the sequence’s insert control track, and the sound’s effect will become the insert effect that the sequence uses.

Special Cases: Splits and/or Layers and Transposed Sounds

If you’re working with a split and/or layer:

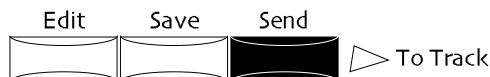
- you’ll need to save it as a split/layer single sound in order to move it over to the 16 Track Recorder. (see “Saving Splits and Layers” earlier in this chapter.)

If you’ve been playing a sound using the transpose function:

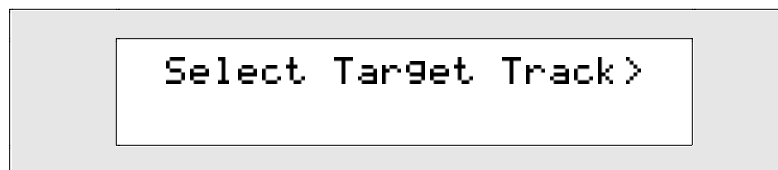
- the sound will be sent to the 16 Track Recorder in its un-transposed state. Once the sound is placed on a 16 Track Recorder track, you can edit its Semitone Shift parameter to re-create the SoundFinder transposition (the Semitone Shift parameter is described earlier in this chapter in “Retuning a Sound.”)

To Move a Sound Into the 16 Track Recorder For Recording

1. Press the Select Sound button and use the Sound Type and Sound Name knobs to select the sound you would like to send to the 16 Track Recorder.
2. Press the SoundFinder Send To Track button.

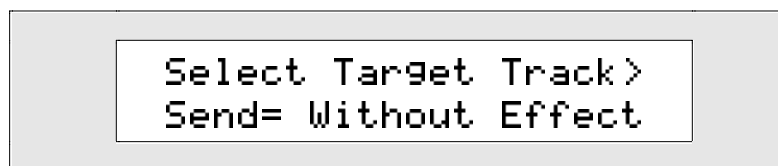


If the selected sound uses the global chorus or global reverb as its effect, the display will show:



4. If the bottom line of the display is empty (as shown above), you’re ready to select a track for your sound. To do so, press the desired 16 Track Recorder track button. (To learn about recording in the ZR-76, see *Chapter 7*.)

If the selected sound uses an insert effect, the display will show:



What you see here may be different

If the bottom line of the display begins with “Send=,” you can use the Value knob to select whether or not you’d like the sound’s insert effect to be installed along with the sound into the current 16 Track

Recorder sequence. You can set the Send parameter to:

- Without Effect—so that the sound is sent to a track in the 16 Track Recorder without its effect, and the track is routed to the sound's Alt. effect bus (the Alt. effect bus is explained in *Chapter 8*)
 - With Effect—so that the sound is sent to the 16 Track Recorder, the track to which it's sent becomes the insert control track, and the sound's insert effect becomes the sequence's insert effect
3. Turn the Value knob to select either value.
 4. If you'd like to send the sound somewhere other than the sequence that's currently selected, press the Bank and Sequence A-H buttons to select the desired sequence location (*Chapter 7* describes using the Bank and Sequence buttons).
 5. Press the track button in the 16 Track Recorder to which you'd like to send the sound.

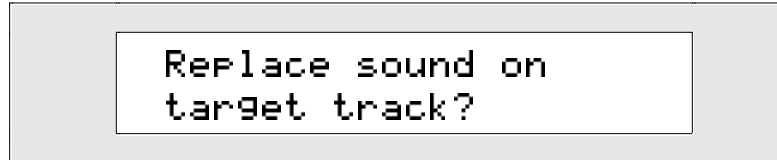
Tip: If you prefer, you can press the Yes button to send the sound to the lowest numbered track that doesn't already have a sound on it. Pressing No cancels the procedure.

If you're sending the sound into a Standard MIDI File that hasn't yet had its tracks re-ordered to correspond to their MIDI channels, the display will show:



Answering Yes to this question will organize the Standard MIDI File's tracks into numerical order according to their MIDI channels, and add a set of ZR parameters to the track to which you're sending the sound. *Chapter 7* describes working with Standard MIDI Files.

6. If you'd like to proceed, press the Yes button. If you'd like cancel the procedure, press No. If you've selected a track to which a sound has already been assigned, the display will show:



7. If you'd like to proceed, press the Yes button. If you'd like cancel the procedure, press No.

SoundFinder MIDI

The Out and Ins of MIDI in SoundFinder

SoundFinder can both transmit and respond to MIDI note and controller data, including Bank Select and Program Change messages.

Tip: If you're unfamiliar with MIDI, see "What Is MIDI" in *Chapter 13*.

Transmitting MIDI from the ZR-76

SoundFinder always transmits MIDI note and controller data when you play the ZR's keyboard, in order to make it simple to play external MIDI devices from your ZR-76.

The ZR-76 provides sound controller filters that let you enable or disable a sound's transmission of MIDI controller data. See "Sound Controller Filters" earlier in this chapter.

In addition, SoundFinder offers a special category of MIDI-OUT sounds, which are particularly useful when constructing presets to be used in performance.

MIDI-OUT Sounds

MIDI-OUT sounds are designed for situations in which you want to transmit MIDI data—without playing local ZR-76 sounds. MIDI-OUT sounds may be selected after pressing the Select Sound button, or as the split and/or layer component of a preset. Whenever such a preset is selected, the Bank Select and Program Changes values associated with each MIDI-OUT sound are transmitted, calling up the appropriate sound in any external MIDI modules being controlled by your ZR-76.

Tip: A MIDI-OUT sound offers functionality similar to LOCAL-OFF in some other synthesizers, allowing you to send MIDI from SoundFinder into an external sequencer as the sequencer accesses the sounds on tracks in the ZR's 16 Track Recorder. See “Using the ZR as a Master Controller for External Sequencing” in *Chapter 7* to learn more.

Each MIDI-OUT sound allows you to choose:

- the MIDI channel on which data will be transmitted.
- the Bank Select value that will be transmitted when the sound is selected
- the Program Change value that will be transmitted when the sound is selected

When a MIDI-OUT sound is selected, turning the Mix knob causes Expression (Controller #11) data to be transmitted on the MIDI-OUT sound's MIDI channel. Turning the Pan knob transmits Pan (Controller #10) data.

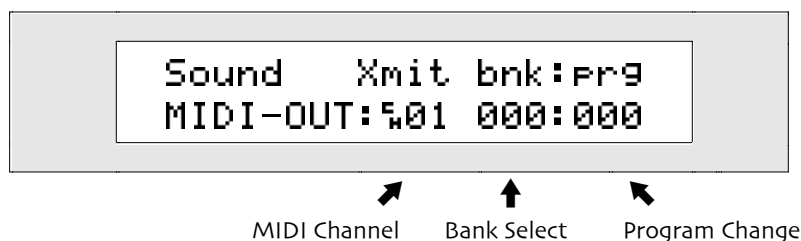
Tip: You can use MIDI-OUT sounds in conjunction with the foot switches or CV-pedal connected to your ZR-76 to transmit any MIDI controller. Use the system “Set up foot controls?” procedure to assign a foot switch or pedal to one of the ZR's four assignable CTRLs, and then use the system “Edit MIDI settings?” procedure to assign the desired MIDI controller number to the selected CTRL. These procedures are described in *Chapter 3*.

Tip: You can assign a MIDI-OUT sound as a favorite (described at the beginning of this chapter)—so that its pre-programmed Bank Select and Program Changes values will be immediately transmitted from the ZR when the favorite is selected.

If your ZR-76 is connected to an external MIDI device while you set up your MIDI-OUT sounds, MIDI Bank Select and Program Change messages will be transmitted as you change their settings in the sound.

To Use the ZR-76 to Control a MIDI Device

1. Press the Select Sound, Split or Layer button.
2. Turn the Sound Type knob until the display shows:



A MIDI-OUT sound has three settings.

- MIDI transmission channel
- Bank Select value
- Program Change value

The up and down arrow buttons allow you to select any of these settings for editing—the one that's currently selected will flash. Once a setting has been selected, you can use the Value knob to change its value.

- Press the up/down arrow buttons to select the MIDI channel area of the display if it isn't already flashing.



The MIDI-OUT sound's MIDI transmission channel

- Turn the Value knob to select the MIDI channel on which the MIDI-OUT sound will transmit MIDI data.

Note: Make sure your external MIDI device is configured to receive on the same MIDI channel you select here.

- Use the up/down arrow buttons to select the MIDI Bank Select setting, so that it flashes.



The MIDI Bank Select number that will be transmitted

- Turn the Value knob to select the MIDI Bank Select value that the ZR-76 will transmit.
- Use the up/down arrow buttons to select the MIDI Program Change setting, so that it flashes.



The MIDI Program Change number that will be transmitted

- Turn the Value knob to select the MIDI Program Change value that the ZR-76 will transmit.

Tip: You can also use the split and/or layer to control an external MIDI device, by selecting MIDI-OUT as the sound for the split and/or layer.

Using the ZR as a Master Controller for External Sequencing

The MIDI-OUT sound has another important special talent: when it's selected as the basic SoundFinder sound, all incoming MIDI is sent over to the 16 Track Recorder. This allows you to use your ZR-76 as both a master controller and a multi-timbral sound source when sequencing on an external sequencer. MIDI travels out of the ZR from SoundFinder, to a track in the external sequencer, and then back to a track or tracks in the ZR's 16 Track Recorder. This is especially helpful when you start a sequence on your ZR-76 and move it, on floppy, to your computer sequencer—you can continue to record data into the sequencer using the ZR's keyboard, and the sequencer can continue using the ZR's sounds via the 16 MIDI channels on which the 16 Track Recorder can receive. This provides a function that's similar to local-off in other synths and samplers. (MIDI reception is described a little later in this chapter.)

Receiving MIDI on the ZR-76

The ZR-76 can respond to received MIDI data in SoundFinder or the 16 Track Recorder in the following ways:

- In SoundFinder—when the Select Sound LED is lit—the ZR-76 responds to a single MIDI channel (poly mode). This channel is called the *base MIDI channel*, and you can set it to any MIDI channel (the procedure for doing this is described below). If you’ve selected a preset, all of its components respond to the base MIDI channel.
- In the 16 Track Recorder—when the Select Song LED is lit—Tracks 1-16 always receive MIDI data on MIDI channels 1-16.

The ZR-76 provides sound controller filters that let you enable or disable a sound’s response to MIDI controller data and MIDI Bank Select and Program Change messages. See “Sound Controller Filters” earlier in this chapter.

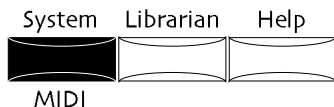
MIDI Bank Select and Program Change messages received on the base MIDI channel affect only the sound chosen with the Select Sound button. If split and/or layer are on, any received a Bank Select or Program Change message will turn them off.

In SoundFinder, when a MIDI-OUT sound is selected as the basic—that is, not the split or layer—sound, SoundFinder will not respond to incoming MIDI data at all. All incoming MIDI data will be routed to the 16 Track Recorder, an important feature—see “Using the ZR as a Master Controller for External Sequencing” above.

If SoundFinder’s basic sound is not a MIDI-OUT sound, but a split and/or layer uses one, that split and/or layer will not respond to received MIDI data, though the rest of SoundFinder will.

To Set the MIDI Base Channel for SoundFinder MIDI Reception

1. Press the System button.



2. Turn the Parameter knob until the display shows:



3. Press the Yes button.
4. Turn the Parameter knob until the display shows:



The currently selected base channel

You can use the Value knob or the up/down arrow buttons to change the base MIDI channel—the MIDI channel to which SoundFinder will respond.

3. Turn the Value knob, or use the up/down arrow buttons to set the base MIDI channel to the desired value.

Using RPNs and NRPNs to Edit Parameters

MIDI allows for a special category of controllers called RPNs (for “Registered Parameter Numbers”) and NRPNs (for “Non-Registered Parameter Numbers”). Many sound parameters can be edited via RPNs and NRPNs. If this is the case, the parameter’s description found in this chapter will list the appropriate RPN or NRPN. If a parameter is displayed while being edited via MIDI, the display will reflect the changes you make.

RPN MIDI messages must adhere to a specific structure in order to be properly understood by receiving devices such as the ZR-76. They must include the following components:

- A continuous controller status byte for the appropriate MIDI channel—in SoundFinder this will be the ZR’s base channel (see *Chapter 3*); in the 16 Track Recorder, this will be the MIDI channel of the selected track (see *Chapter 7*)
- MIDI controller 101—the RPN MSB—with a value of 000
- MIDI controller 100—the RPN LSB—with the RPN value listed in the description of the relevant parameter
- MIDI controller 006—Data Entry—with the value to which you’d like to set the parameter. The values displayed for each parameter correspond to one of 128 possible MIDI values (which run from 000 up to 127). You can count the parameter values displayed on the ZR-76, beginning from 000, to locate the corresponding Data Entry value you’ll want to send to the ZR.

NRPN MIDI messages must also adhere to a specific structure in order to be properly understood by receiving devices such as the ZR-76. They must include the following components:

- A continuous controller status byte for the appropriate MIDI channel—in SoundFinder this will be the ZR’s base channel (see *Chapter 3*); in the 16 Track Recorder, this will be the MIDI channel of the selected track (see *Chapter 7*)
- MIDI controller 099—the NRPN MSB—with a value of 000
- MIDI Controller 098—the NRPN LSB—with the NRPN value listed in the description of the relevant parameter
- MIDI Controller 006—Data Entry—with the value to which you’d like to set the parameter. The values displayed for each parameter correspond to one of 128 possible MIDI values (which run from 000 up to 127). You can count the parameter values displayed on the ZR-76, beginning from 000, to locate the corresponding Data Entry value.

Tip: For a complete listing of the RPNs and NRPNs to which the ZR-76 responds, see “Registered and Non-Registered Parameters (RPN/NRPN)” in *Chapter 13*.

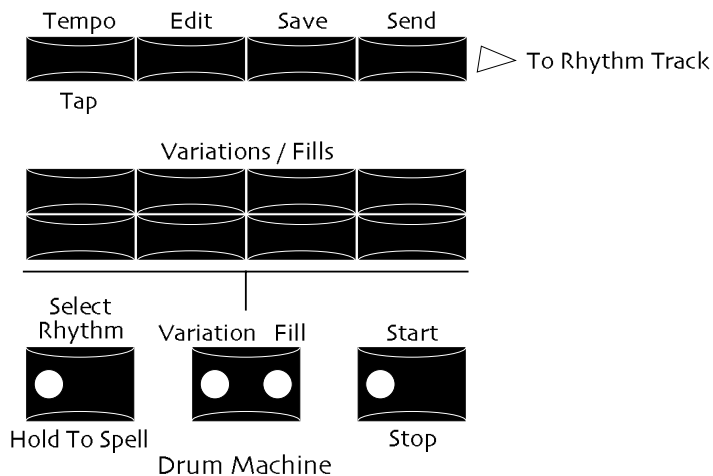
Chapter 5

The Drum Machine

One of the most enjoyable components of the ZR-76 is the Drum Machine. The Drum Machine offers a number of uniquely musical features that make it an exceptionally useful tool in songwriting or performing, or for having a lot of fun when you're in the mood to explore new musical ideas. Here are some of the Drum Machine's terrific features:

- New rhythm variations and fills are heard the moment you select them—most drum machines make you wait for the current pattern to end before switching to something new. This means that the ZR-76 Drum Machine can create much more realistic-sounding accompaniments than other drum machines.
- You can mix and match musical phrases contained in the many rhythms provided—use a bass drum pattern from here, a hihat from there.
- Each drum kit used by the Drum Machine can be edited to suit your needs, and you can make your changes as the Drum Machine is playing.
- Your Drum Machine music can be sent to the ZR's 16 Track Recorder, where it can be incorporated into sequences and songs.
- Even after you've sent your Drum Machine music to the 16 Track Recorder, you can continue to try out new variations and fills as your song develops, and the 16 Track Recorder will record your selections for you.
- When you've sent a Drum Machine rhythm to the 16 Track Recorder, you can add new elements to the rhythm by playing along on the keyboard and recording your performance.

In spite of its sophistication, the Drum Machine is easy to use. The Drum Machine area of your ZR's front panel contains all of its controls.



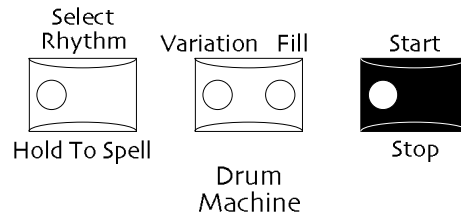
Tip: Whenever the red and green LEDs located on either side of the ZR display are flashing, your ZR-76 is asking you a question which may be answered by pressing the No or Yes buttons.

Playing the Drum Machine

Playing the Drum Machine is as simple as hitting Start and Stop.

To Play the Drum Machine

1. Press the Drum Machine Start/Stop button.
Its LED lights, and the Drum Machine starts playing.



To Turn Off the Drum Machine

1. Press the Drum Machine Start/Stop button again.
The Drum Machine stops, and the Start/Stop button's LED turns off.

Selecting Rhythms

The ZR-76 Rhythms

Your ZR-76 is loaded with a selection of rhythms. Each ZR-76 rhythm is actually a collection of 16 musically-related drum or percussion patterns.

- There are eight looped patterns called *variations* which play continuously until you select another variation or fill, a new rhythm, or press Start/Stop
- There are eight unlooped patterns called *fills* which play through once and return you to the last-selected variation

Each rhythm uses a stylistically appropriate drum kit. Many use kits that can be selected in SoundFinder for non-Drum Machine use.

Tip: You can choose a new kit for a rhythm, or alter its current kit. See “Selecting a New Drum Kit for a Rhythm” or “Editing the Sounds in a Rhythm’s Kit,” later in this chapter.

You can select rhythms in two ways:

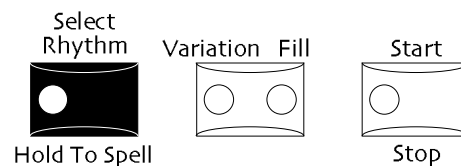
- If you'd like to browse for a new rhythm, you can use the Rhythm Type knob to select a rhythm category, and the Rhythm Name knob to select a individual rhythm from that category.
- If you know the name of a rhythm, you can spell its name on the ZR's keyboard, and your ZR-76 will find it for you.

Once you've selected a rhythm, you can press the Drum Machine Start/Stop button to hear it.

Note: When you select a new rhythm while another rhythm is playing, the rhythm that's currently playing will stop.

To Select a Rhythm by Category

1. Locate the Drum Machine section on the ZR's front panel.
2. Press the Select Rhythm button.

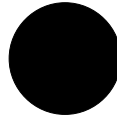


The Select Rhythm button's LED lights.

- Turn the left-hand Sound/Rhythm Type knob on the ZR's front panel clockwise or counter-clockwise.

→ Sound/Rhythm Type

Parameter



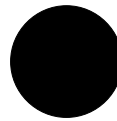
As you turn the Rhythm Type knob, you'll see different rhythm categories appear in the lower left part of the ZR's display.



The currently selected rhythm type

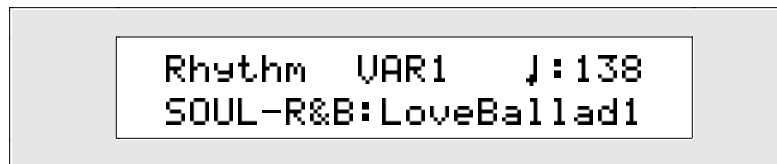
- Find a rhythm type category that interests you.
- Turn the Sound/Rhythm Name knob clockwise or counter-clockwise to choose a rhythm of the selected type.

← Sound / Rhythm Name



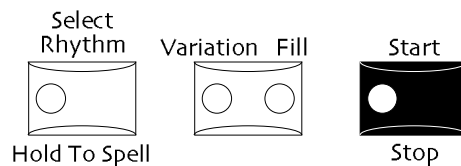
Value

Rhythm names appear on the lower right-hand portion of the display:



The name of the currently selected rhythm

- Press the Drum Machine Start/Stop button to hear the rhythm you've selected, and press it again to stop the Drum Machine.



- To select other rhythms, use the same method: turn the Sound/Rhythm Name knob to locate the type of rhythm you want to hear, and the Sound/Rhythm Name knob to pick an individual rhythm.

Tip: Your ZR-76 remembers the last rhythm you selected in each RhythmFinder category, and offers you that rhythm as a first choice whenever you return to the category.

RhythmFinder

RhythmFinder is a special database of all the rhythms in your ZR-76, sorted into helpful categories called *rhythm types*. Most of the rhythm types are musical groupings that allow you to locate rhythms according

to style. Rhythms can also be sorted on the basis of where in your ZR’s memory they reside. To see which rhythms live in permanent memory, select the ROM rhythm type. To learn which rhythms are in FLASH—or RAM, if you’ve created a RAM rhythm bank—dial up the INT rhythm type (FLASH and RAM rhythm banks are discussed in *Chapter 9*). Especially useful is the conveniently alphabetized ALL category, which shows all of the ZR-76 rhythms currently in memory.

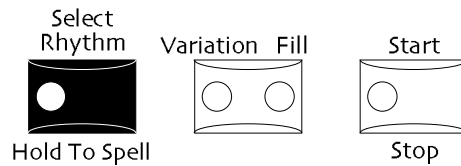
Tip: Repeated presses of the Select Rhythm button toggle between the currently selected rhythm’s style-based RhythmFinder category and its location in the ZR’s memory.

You can also search for a rhythm by name by typing the name on the ZR’s keyboard, as described below. You’ll find a complete list of all the ZR-76 rhythms in *Chapter 13*.

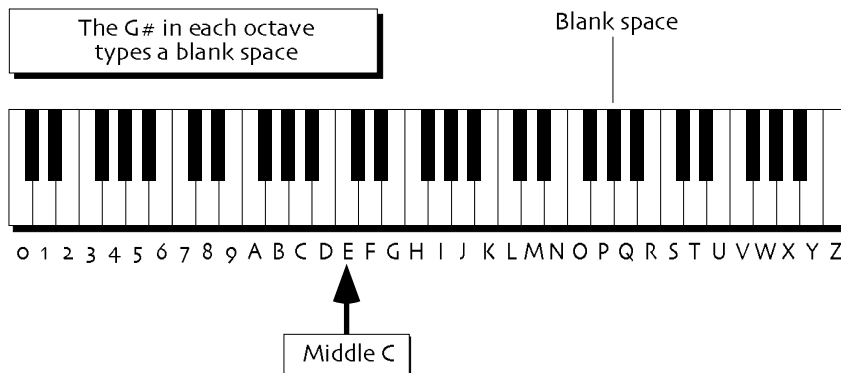
Tip: There’s a special rhythm in the *UTILITY category called ClickTracks that can be used as a simple, generic metronome for playing along with in SoundFinder.

To Locate a ZR-76 Rhythm By Name

1. Locate the Drum Machine section on the ZR’s front panel.
2. Press the Select Rhythm button, and hold it down.



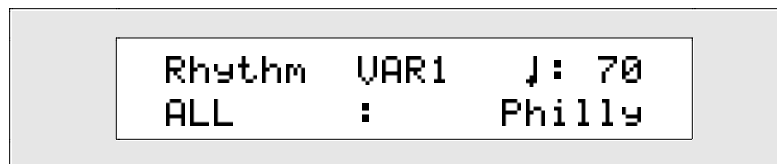
Each white key on the ZR’s keyboard from the C two octaves below Middle C to the B nearly three octaves above has been assigned a number or letter, printed on the ZR just above the key. The G# in each octave types a blank space.



Note: The keys outside of the range shown above are not used for the selection of rhythms.

3. While continuing to hold the Select Rhythm button down, use the keyboard to type the name of the rhythm you’re looking for.

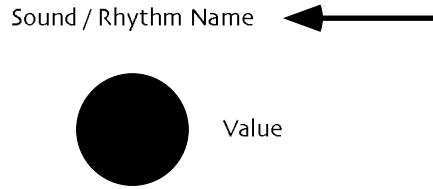
By watching the ZR’s display, you’ll see RhythmFinder continually narrowing the search as you type each letter. Sometimes just the first few letters are enough to identify a rhythm if no other rhythm shares those letters.



The name of each rhythm you find is shown here

If you can only recall the beginning of a rhythm’s name, and RhythmFinder locates more than one

rhythm matching what you've typed, it will display the alphabetically first rhythm. To access the other matches, turn the Rhythm Name knob clockwise.



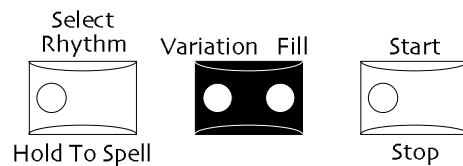
Note: When you select a new rhythm, the Drum Machine stops playing.

Choosing Variations

Rhythm variations can be selected at any time, whether the Drum Machine is running or not. If the Drum Machine is stopped, the variation will play when you press Start/Stop. If the Drum Machine is playing, each variation will play as soon as it's selected. Variations play over and over until you pick a new one, choose a fill, select a new rhythm, or press Start/Stop to turn the Drum Machine off.

To Select a Variation

1. Locate the Variation Fill button.



To select a variation, the Variation LED in the Variation Fill button must be lit.

2. If the Variation LED—the yellow LED—is not lit, press it once.
The Variation LED will light.



When the Variation LED on the Variation Fill button is lit, each of the eight Variations/Fills buttons can be used to select a different variation of the current rhythm.

3. Press one of the Variations/Fills buttons to select a variation.
If the Drum Machine is already playing, you will immediately hear the variation you've selected. It will continue to play until you press the Start/Stop button, or until you select a fill, a new variation, or a new rhythm.
4. If the Drum Machine is stopped, press the Start/Stop button to turn the Drum Machine on and hear the variation you've selected.

Tip: Variations can be modified to play patterns from other variations, including those in other rhythms, as long as they share the same time signature and length. See "Arranging Your Own Variations and Fills" below.

Choosing Fills

Rhythm fills can be chosen at any time with the Drum Machine playing or stopped. If the Drum Machine is stopped, the fill will play when you press Start/Stop. If the Drum Machine is playing, each fill will play as it's selected.

Fills play through once and then return the Drum Machine to the last variation that was selected.

To Select a Fill

1. Locate the Variation Fill button.



To select a fill, the Fill LED in the Variation Fill button must be lit.

2. If the Fill LED—the red LED—is not lit, press it once.
The Fill LED will light.



When the Fill LED on the Variation Fill button is lit, each of the eight Variations/Fills buttons can be used to select one of the current rhythm's fills.

3. Press one of the Variations/Fills buttons to select a fill.
If the Drum Machine is already playing, you will immediately hear the fill you selected.

Note: When a fill is selected in the last beat of a measure, it will wait for the first beat of the next measure to begin playing.

The fill will play through once, and then the Drum Machine will return to the last variation that was selected.

4. If the Drum Machine is stopped, press the Start/Stop button to turn the Drum Machine on and hear the fill you selected. When the fill has played through, it will return the Drum Machine to the last variation that was selected.

Tip: Fills can be modified to play patterns from other fills, including those in other rhythms, as long as they share the same time signature and length. See “Arranging Your Own Variations and Fills” later in this chapter.

Setting the Rhythm Tempo

Each rhythm can be set to any tempo from 25 quarter notes per minute to 350 quarter notes per minute. The ZR-76 provides two simple methods for altering the Drum Machine's tempo:

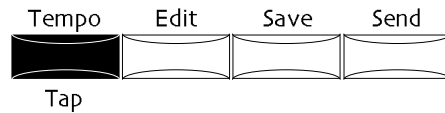
- You can tap in time on the Drum Machine tempo button and the Drum Machine will follow your beat
- You can dial in the desired tempo as a value for the Rhythm Tempo parameter

If you've changed a rhythm's tempo and want the change to become permanent, you'll need to save the rhythm to the ZR's memory. See “Saving Rhythms” for details. It's a good idea to save your rhythm to floppy as well (see *Chapter 9* to learn how).

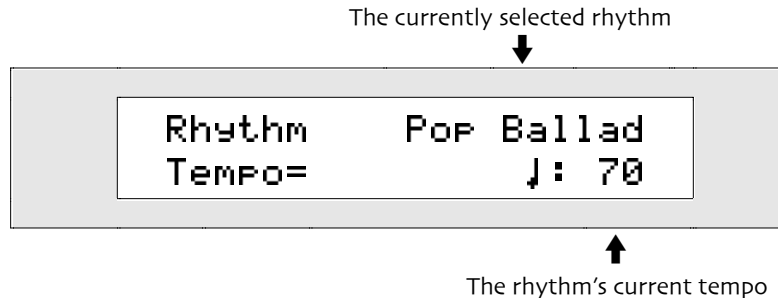
Tip: If the system Clock Source parameter is set to Internal (see *Chapter 3* for information on this parameter), the Drum Machine tempo provides a timing reference for synchronized elements of SoundFinder sounds—such as tempo-synchronized LFOs and noise—and for synchronized LFOs and DDLs in the ZR's effects.

To Tap Out a Tempo for the Drum Machine to Follow

1. Press the Drum Machine Start/Stop button to play the currently selected rhythm.
2. Tap the Drum Machine Tempo button at whatever speed you'd like the current rhythm to play, with each tap representing a quarter note.



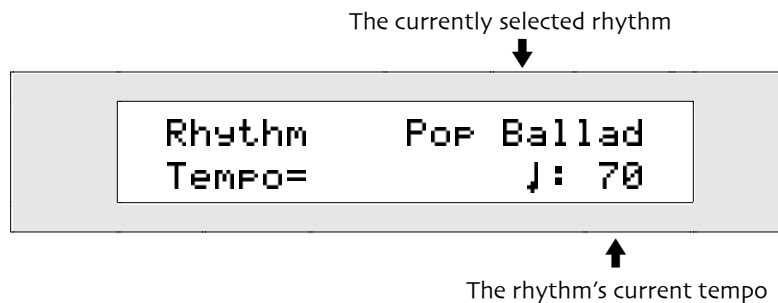
The Drum Machine will speed up or slow down to match your tapping speed, and the display will show:



The tempo value will change to show the new speed of the rhythm in quarter notes per minute.

To Enter a New Drum Machine Tempo Value

1. Press the Drum Machine Tempo button—you can do this with the Drum Machine running or stopped. The display will show:



You can use the Value knob (right) or the up/down arrow buttons to set the Tempo parameter to any value from 25 to 350 quarter notes per minute.

2. Use the Value knob or the up/down arrow buttons to set the Tempo parameter to the desired value.

General Drum Machine Editing Techniques

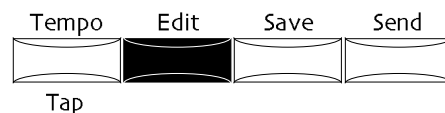
The Drum Machine's Edit button provides access to a number of options for customizing the currently selected rhythm. These options allow you to:

- change the loudness of the rhythm
- learn the time signature and length of the rhythm
- select a new drum kit for the rhythm
- edit the sounds in the rhythm's drum kit
- alter the rhythm's variations and fills

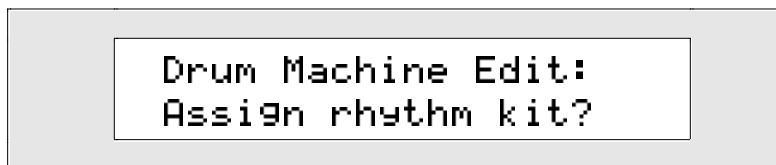
Each of these procedures is discussed in detail below. This section describes in general the method by which all of these tasks are accomplished. All rhythm edits may be made while the Drum Machine is playing or when it's stopped.

To Edit the Currently Selected Drum Machine Rhythm

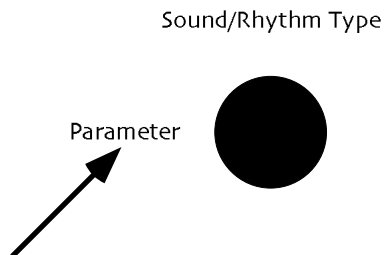
1. Press the Drum Machine Edit button.



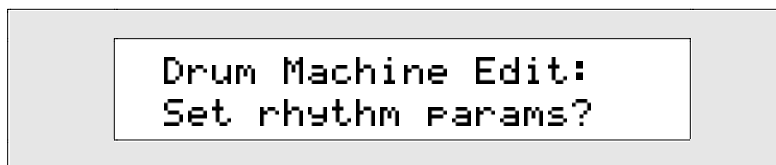
The No and Yes LEDs will begin to flash, and the display will show:



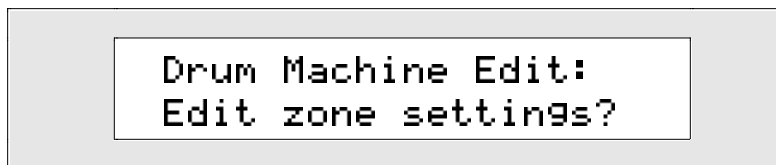
2. Turn the Parameter knob.



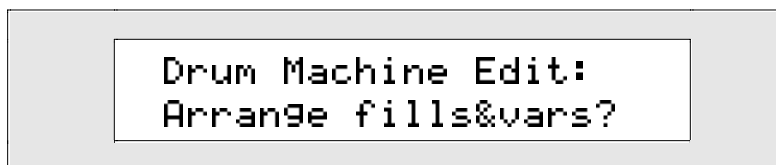
The display now shows:



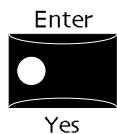
or:



or:



The rhythm editing options are conveniently grouped into four areas, each of which may be accessed by pressing the Yes button in response to the appropriate question.



When you answer “yes” to:

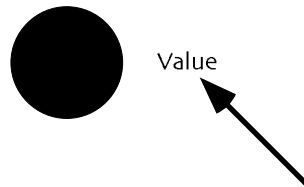
- “Assign rhythm kit?” you can select a new drum kit sound for the currently selected rhythm by using the Sound Type knob to select a type of drum kit, and the Sound Name knob to select a specific kit.
 - “Set rhythm params?” you can change the loudness of the rhythm, or learn its time signature and length by viewing two read-only displays
 - “Edit zone settings?” you can change the sound settings in each of the zones within the rhythm’s drum kit
 - “Set Fill/Var tracks?” you can change the rhythm’s variations and fills
- Each of these procedures is described in detail later in this chapter.

3. Press the Yes button in response to the appropriate question.

Note: If you've selected "Edit Zone Settings," a message will appear asking you if you'd like to copy the kit to the RthmEditKit. Answer Yes if you'd like to proceed (the RthmEditKit is described in "The RthmEditKit" later in this chapter).

4. Use the Parameter knob to select the setting you'd like to alter.
5. Use the Value knob to change the selected parameter's value.

Sound / Rhythm Name



Tip: You can quickly return to the top-level edit questions by pressing the Drum Machine Edit button.

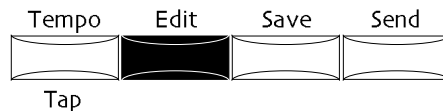
Selecting a New Drum Kit for a Rhythm

Each rhythm uses one of the ZR-76 drum kit sounds, or a specially customized version of one them. The kits in the SoundFinder DRUM-KIT category are designed for use with the Drum Machine, and you can assign any of them to any rhythm. Since the drum kits cover a broad range of styles and sounds, there is a fair degree of unpredictability when mixing and matching kits to rhythms—experimentation can lead to some surprising combinations. You can pick a new kit while a rhythm is playing, or when the Drum Machine is stopped.

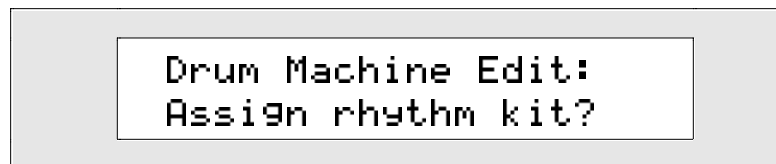
Note: If you've chosen a new drum kit for a rhythm, and would like to make that selection permanent, you'll need to save the rhythm—along with its new kit—to the ZR's memory. See "Saving Rhythms" later in this chapter for details. It's a good idea to save your rhythm to floppy as well (see *Chapter 9* to learn how).

To Choose a Different Kit for the Currently Selected Rhythm

1. Press the Drum Machine Edit button.



2. Turn the Parameter knob until the display shows:



3. Press Yes to continue with the procedure, or No if you want to cancel the operation.
If you press Yes, you will be able to select a new drum kit with the Sound Type and Sound Name knobs. The Sound Type knob (left) is used to select a type of drum kit, and the Sound Name knob (right) is used to select a kit from within the current type. You can select any drum kit sound in the DRUM-KIT or *CUSTOM SoundFinder categories.
4. Use the Sound Type and Sound Name knobs to select a new drum kit for the currently selected rhythm.

Tip: If you've been trying out new kits for the selected rhythm, and haven't yet edited any of them using the "Edit zone settings?" procedure, you can easily return to the rhythm's original kit by selecting the RthmEditKit from the *CUSTOM SoundFinder category. This can be especially handy if you've already customized that original kit and would like to retrieve it, complete with your edits. See "The RthmEditKit" later in this chapter to learn more about this special kit.

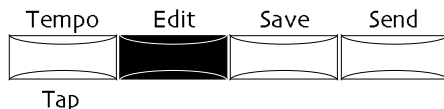
Changing a Rhythm's Loudness

Rhythm Mix (Expression)

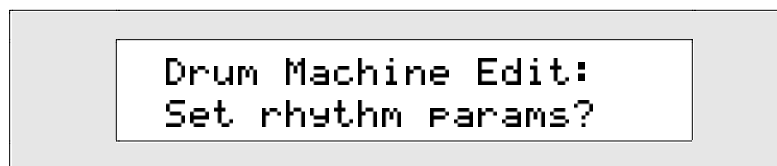
When taking advantage of the great variety of sounds in the ZR-76, there may be times when you'll want to make a particular rhythm louder or softer in volume, relative to the sounds you're using. Each rhythm has its own Mix (Expression) setting that can be adjusted to taste, allowing you to raise or lower the overall loudness of the rhythm.

To Change the Loudness of the Currently Selected Rhythm

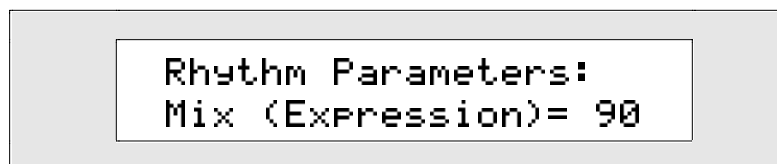
1. Press the Drum Machine Edit button.



2. Turn the Parameter knob until the display shows:



3. Press Yes if you'd like to continue the procedure, or No if you'd like to cancel. If you press Yes, the display will show:



The Mix (Expression) parameter controls the loudness of the currently selected rhythm. By turning the Value knob or pressing the up/down arrow buttons, you can set this parameter anywhere from 0 to 127. All of the rhythms that come with your ZR-76 have this parameter initially set to 90.

4. Turn the Value knob or press the up/down arrow buttons to set the Mix (Expression) parameter to the desired value.

Learning a Rhythm's Time Signature and Length

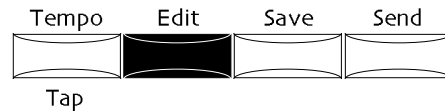
Time Signatures and Variation Loop Lengths

When arranging your own variations and fills, you can mix and match patterns between rhythms that use the same time signature and whose variations loop after the same number of measures. The ZR-76 protects you from creating unworkable matches; however, it may still be useful at times to know the time signature of a rhythm, as well as the length of its variation loops. The Drum Machine provides this information in two read-only displays. Rhythm time signatures and variation loop lengths can't be changed.

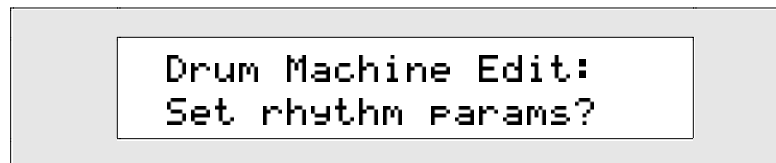
Tip: On all ZR-76 displays, editable parameters are followed by an “=” character. Read-only parameters are followed by a colon (“:”).

To View the Time Signature or Length of a Selected Rhythm

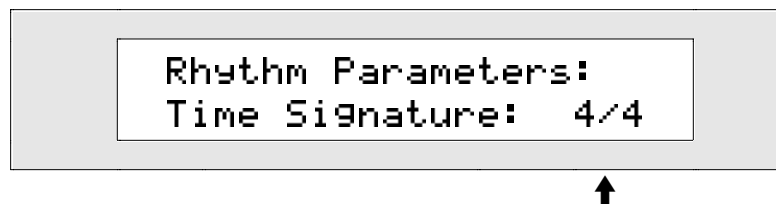
1. Press the Drum Machine Edit button.



2. Turn the Parameter knob until the display shows:



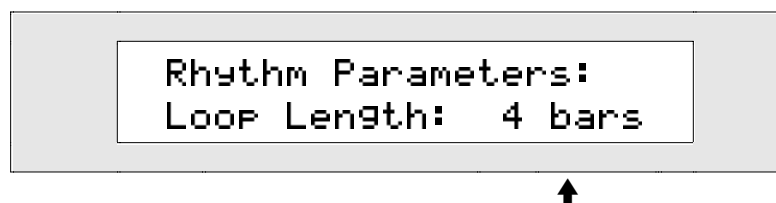
3. Press Yes if you'd like to continue the procedure, or No if you'd like to cancel.
4. If you'd like to see the time signature of the currently selected rhythm, turn the Parameter knob until the display shows:



Time signature of the currently selected rhythm

This display shows you the time signature of the currently selected rhythm. This value is read-only and cannot be changed.

5. If you'd like to see the loop length of the currently selected rhythm, turn the Parameter knob until the display shows:



Loop length of the currently selected rhythm

This display shows you the number of bars that makes up one repetition of the currently selected rhythm. This value is read-only and cannot be changed.

Editing the Sounds Within a Rhythm's Kit

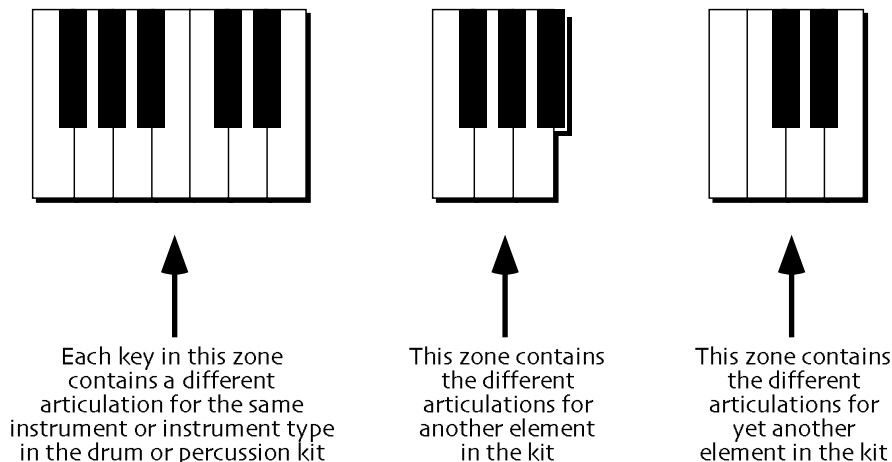
Drum Kits and Zones

The ZR-76 drum and percussion kits are extremely powerful. While standard ZR-76 sounds can use as many as 16 sound waves apiece, each drum or percussion kit uses one of those standard sounds for each one of its 64 keys! (Drum and percussion kits run from the B two octaves below Middle C to the D three octaves above.) If you'd like, you can have a different sound on each key in a ZR-76 drum or percussion kit—64 distinct standard sounds within a single drum or percussion kit sound. Drum and percussion kits can be created and edited key-by-key in SoundFinder (see *Chapter 4*).

The drum kits created by ENSONIQ—and located in the DRUM-KIT SoundFinder category—use a special

keyboard layout designed for use with the Drum Machine. One of the primary goals of the Drum Machine was to provide ZR-76 owners with exceptionally realistic rhythms. For this reason, ENSONIQ commissioned some of the music industry's top drummers to record the Drum Machine's rhythms using velocity- and location-sensitive drum pads.

Drum kit sounds that could faithfully give voice to these digital performances would have to provide an unusually diverse spectrum of articulations for each element of the kit. Every instrument or type of instrument in drum kit was therefore allocated a region of the keyboard which would provide a different version of that instrument (or type of instrument) on each key. These regions are called *zones*—every drum kit layout has eight of them.



The zones vary in size, according to the number of articulations needed for the instrument or instrument type they represent. You can find a diagram of the ENSONIQ drum map in *Chapter 13*.

The Zone Names

Drum kit zones are always named after the components of a standard drum kit:

- KICK
- SNARE
- HATS
- CYMBL
- TOMS
- PERC1
- PERC2
- PERC3

The ZR-76 drum kits encompass such a huge variety of percussion sounds that the creation of meaningful percussion zone names would be impossible.

Editing Drum Kit Zones

The ZR-76 provides a way for you to customize the kit used by the currently selected rhythm, zone-by-zone. When you edit a zone, you edit all of the shadings of a single drum kit instrument (or instrument type). This allows you to modify the instrument (or instrument type), and not have to worry about making sure that all of its articulations will still work together, since they'll all be changed at the same time and in the same way.

The RthmEditKit

The powerful sounds-inside-of-another-sound nature of ZR-76 drum and percussion kits require special locations within the ZR's memory where they can be edited. To allow for the customization of the drum kits used by rhythms, there is one such location available to the Drum Machine. This special area is an *edit buffer*, which actually appears in the form of an editable drum kit called the *RthmEditKit*.

Some rhythms use kits that are available in the DRUM-KIT SoundFinder category. When a rhythm of this sort is selected, the RthmEditKit is turned into a copy of the rhythm's kit. This provides a means of easily returning to this original kit should you change your mind after trying out different kits for the rhythm, as long as you haven't edited any of the newly selected kits. Other rhythms use modified versions of the kits in the DRUM-KIT category. When one of these rhythms is selected, its kit is re-constructed using the RthmEditKit—and the rhythm plays the RthmEditKit itself.

The RthmEditKit is the only editable drum kit that's available for use by the Drum Machine. When a

rhythm uses a kit from the DRUM-KIT category, and you edit the kit using the Drum Machine’s “Edit zone setting?” procedure, the first step is to convert the RthmEditKit into a copy of the rhythm’s kit—if this needs to be done, the ZR’s display will tell you so. Once this has been taken care of, the rhythm plays the RthmEditKit so that you can hear your zone edits as you make them. When a rhythm plays the RthmEditKit to begin with, there’s no conversion necessary.

An additional benefit of the RthmEditKit is that you can edit a rhythm’s kit, try out new kits for the rhythm, and, as long as you haven’t edited any of the newly selected rhythms, return to your edited kit by selecting it from the *CUSTOM SoundFinder category using the “Assign rhythm kit?” procedure.

You can access the current rhythm’s RthmEditKit in SoundFinder—you’ll find it in the *CUSTOM sound category, or you can select it via MIDI with bank select 10 and program change 001. The RthmEditKit can be played from the keyboard or MIDI in the same manner as any other SoundFinder sound.

Tip: You can augment a rhythm by selecting its RthmEditKit in SoundFinder, press the Drum Machine Start/Stop button and playing along—the Idea Pad will capture both the rhythm and your performance. You can then send the idea to the 16 Track Recorder, where your playing will be placed on the track you select, and the rhythm will be sent to the rhythm track.

The currently selected rhythm’s RthmEditKit can be borrowed for non-Drum Machine use, though you’ll want to make sure to save it as a new drum or percussion kit sound—otherwise, when you pick a new rhythm in the Drum Machine, the new rhythm’s RthmEditKit will replace the one you’ve been using (saving sounds to the ZR’s internal memory is described in *Chapter 4*). If you’d like, you can also use the RthmEditKit as the basis for your own Drum Machine kit by selecting it in SoundFinder, using standard SoundFinder drum kit editing procedures to customize it key-by-key, saving the edited kit as a new drum or percussion kit sound, and then assigning the new kit to a rhythm using the Drum Machine’s “Assign rhythm kit?” procedure. If you plan to try this, be careful—any kit resulting from key-by-key editing will produce unpredictable results when used by a rhythm.

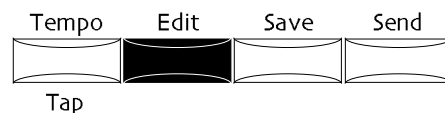
Selecting a Zone to Edit

When you edit the RthmEditKit from within the Drum Machine, you make changes to one zone—one drum kit instrument or type of instrument—at a time. The Zone parameter allows you to select the element of the kit you’d like to edit. For an explanation of zones, see “Drum Kits and Zones” above. If you like to make any of your changes a permanent part of a rhythm, you’ll need to save the edited rhythm to the ZR’s memory (see “Saving Rhythms” later in this chapter). It’s a good idea to save your rhythm to floppy as well (see *Chapter 9*).

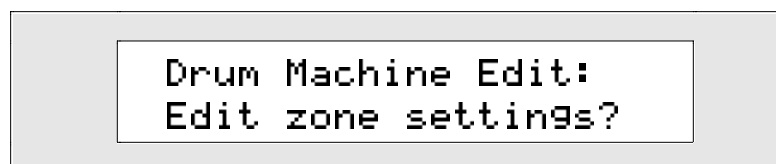
Note: When you edit a zone, any changes you make will be heard in all of the currently selected rhythm’s variations and fills.

To Select a Zone for Editing

1. Press the Drum Machine Edit button.



2. Turn the Parameter knob until the display shows "Edit zone settings?"



3. Press Yes if you’d like to continue the procedure, or No if you’d like to cancel.

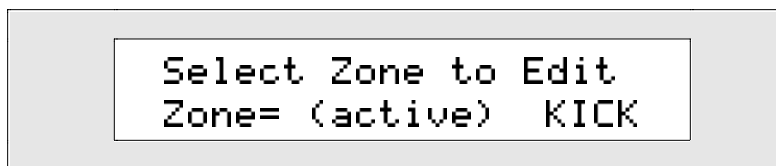
The display may show:



This display appears whenever the selected rhythm is playing a drum kit that’s available in the SoundFinder DRUM-KIT category. In order to edit such a kit, it must first be copied into the RthmEditKit. (The RthmEditKit is explained in “The RthmEditKit” earlier in this chapter.)

If this display does not appear, you’ll already be seeing the display shown in step 5. Skip to step 5.

4. If you’d like to continue editing this drum kit, press Yes. If you’d rather not continue, press No.
5. If you press Yes—or if the “Zones not editable” display did not appear—the display will now show:



↑
↑

You may see (muted) here
The currently selected zone

This display shows which zone is selected, and whether it is muted or active. (you can only edit a zone when it is active). You can select any of the eight drum kit zones by turning the Value knob.

6. Turn the Value knob to select the zone you would like to edit.
7. If the word “muted” appears on the bottom line of the display, press the up arrow button to set the currently selected zone to active.

When the currently selected zone is active, you can edit it by using the Parameter knob to select parameters, and the Value knob to change their values. A full description of the editing options available for the ZR-76 drum kit zones can be found below.

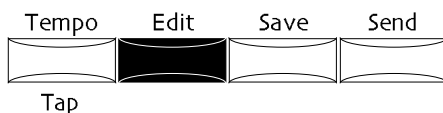
Muting a Drum Machine Zone

Each zone in the current rhythm’s kit can be silenced individually, and turned on again any time you like. When a zone is audible, it’s *active*. When it’s silenced, it’s *muted*.

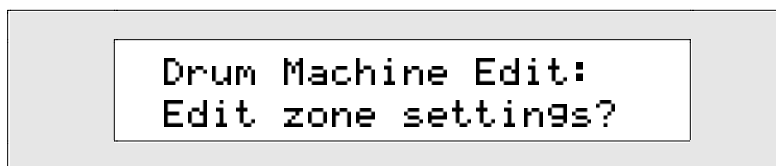
Note: When you edit a zone, any changes you make will be heard in all of the currently selected rhythm’s variations and fills.

To Mute or Unmute a Zone

1. Press the Drum Machine Edit button.



2. Turn the Parameter knob until the display shows "Edit zone settings?"



3. Press Yes if you’d like to continue the procedure, or No if you’d like to cancel.

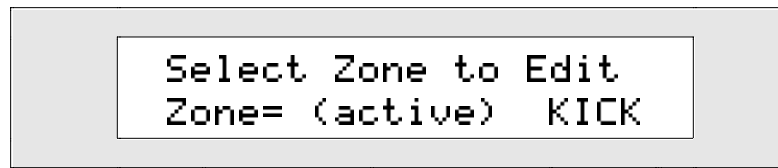
The display may show:



This display appears whenever the selected rhythm is playing a drum kit that's available in the SoundFinder DRUM-KIT category. In order to edit such a kit, it must first be copied into the RthmEditKit. (The RthmEditKit is explained in "The RthmEditKit" earlier in this chapter.)

If this display does not appear, you'll already be seeing the display shown in step 5. Skip to step 5.

4. If you'd like to continue editing this drum kit, press Yes. If you'd rather not continue, press No.
5. If you press Yes, the display will show:



↑
↑

You may see (muted) here
The currently selected zone

This display shows which of the drum kit's zones is selected, and whether it is currently muted or active. You can select any of the eight zones by turning the Value knob.

6. Turn the Value knob to select the zone you would like to mute or unmute. You can use the up/down arrow buttons to mute and unmute the currently selected zone. If the zone is muted, pressing the up arrow button will make it active. If the zone is active, pressing the down arrow button will mute it.
7. Use the up/down arrow buttons to mute or unmute the zone as desired.

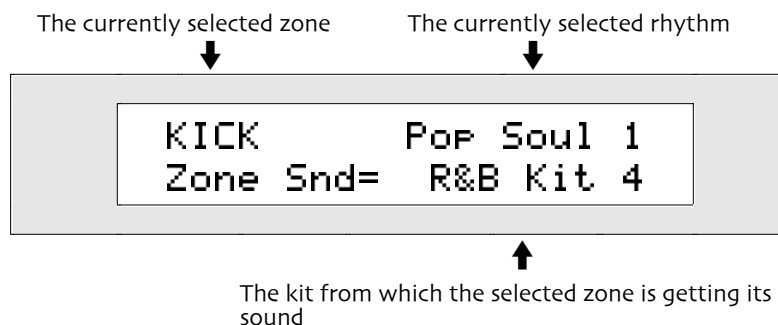
Changing the Sound Used by a Drum Machine Zone

You can easily replace the sound (or sounds) used in any Drum Machine kit zone. The Zone Snd parameter allows you to dial in another ZR-76 drum kit—and the zone you're editing will play whatever the selected kit plays for that zone.

Note: When you edit a zone, any changes you make will be heard in all of the currently selected rhythm's variations and fills.

To Pick a New Sound for a Zone

1. Use the method described in "Selecting a Zone to Edit" to choose the zone whose sound you'd like to change.
2. Turn the Parameter knob until the display shows "Zone Snd=."

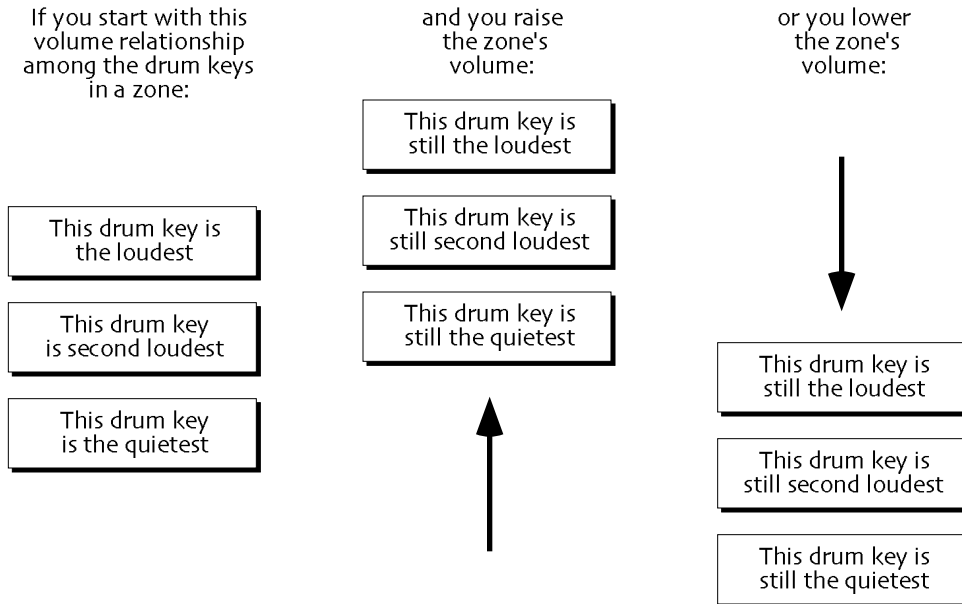


By turning the Value knob, you can select any of the drum kits in the DRUM-KIT category. The zone you are editing will get its new sound from its counterpart in the drum kit you select.

3. Turn the Value knob or press the up/down arrow buttons to select the drum kit you would like to use as the source for the zone's new sound.

Changing the Loudness of a Drum Machine Zone

You can alter the volume of each zone in the currently selected drum kit. The Drum Machine Volume parameter allows you to raise or lower the overall loudness of each zone while retaining the volume interrelationships among its individual drum keys.

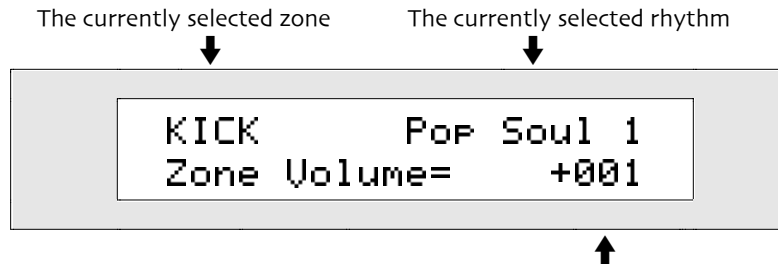


the keys remain in the same position relative to each other.

Note: When you edit a zone, any changes you make will be heard in all of the currently selected rhythm's variations and fills.

To Change a Zone's Volume

1. Use the method described in "Selecting a Zone To Edit" to select the zone whose overall loudness you'd like to change.
2. Turn the Parameter knob until the display shows "Zone Volume=."



The amount by which the zone's programmed volume is being raised or lowered

Using the Value knob or the up/down arrow buttons, you can set the Volume parameter anywhere from -64 to +64. The value you select will be added to or subtracted from the volume setting of each key in the zone, so that all keys will retain their loudness relative to each other.

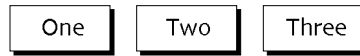
3. Turn the Value knob or use the up/down arrow buttons to set the Volume parameter to the desired value.

Note: If any sounds in the selected zone are already set to their maximum volume setting, increasing the setting of the Zone Volume parameter will produce no audible effect.

Changing the Stereo Placement of a Drum Machine Zone

The Zone Pan parameter allows you to change the stereo location of each zone. Editing this parameter's value shifts the entire zone at once while retaining the stereo positions of its drum keys in relation to each other.

If you start with three keys in a zone arranged like this in the stereo field



and move the zone to the left



or move it to the right

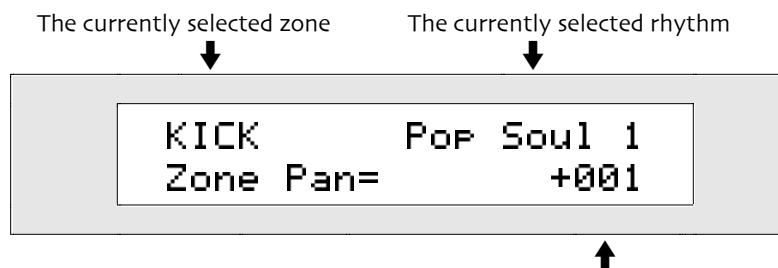


the keys remain in the same position relative to each other.

Note: When you edit a zone, any changes you make will be heard in all of the currently selected rhythm's variations and fills.

To Change a Zone's Stereo Position

1. Use the method described in "Selecting a Zone To Edit" to select the zone whose stereo positioning you'd like to change.
2. Turn the Parameter knob until the display shows "Zone Pan=."



The amount being added to or subtracted from the zone's programmed pan setting

Using the Value knob or the up/down arrow buttons, you can set the Pan parameter anywhere from -127 (hard left) to +127 (hard right). The value you select will be added to or subtracted from the programmed pan value of each key in the zone, so that all keys will retain their stereo positioning relative to each other.

3. Turn the Value knob or use the up/down arrow buttons to set the Pan parameter to the desired value.

Note: If any sounds in the selected zone are already set to their minimum or maximum pan setting, decreasing or increasing, respectively, the setting of the Zone Pan parameter may produce no audible effect.

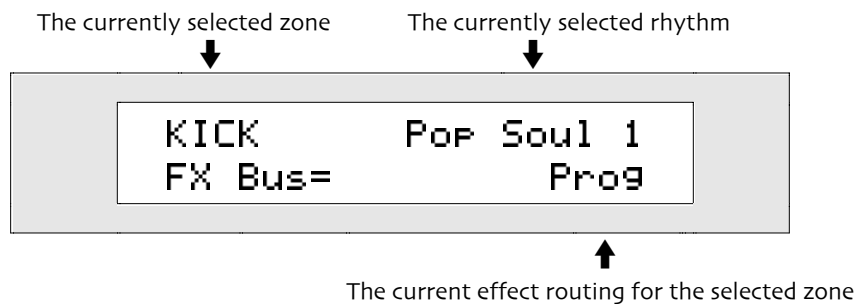
Assigning a Drum Machine Zone to an Effect

Each zone in a ZR-76 drum kit can be routed to the effect of your choice. This is accomplished by using the FX Bus parameter to select the appropriate effect for each zone. (Effects are explained in *Chapter 8*.)

Note: When you edit a zone, any changes you make will be heard in all of the currently selected rhythm's variations and fills.

To Assign a Zone to an Effect

1. Use the method described in "Selecting a Zone to Edit" to select the zone you'd like to assign to an effect.
2. Turn the Parameter knob until the display shows "FX Bus=."



Using the Value knob or the up/down arrow buttons, you can set the zone's FX Bus to:

- Prog—each key in the zone will use its programmed FX Bus setting
- Insert—each key in the zone will use the current insert effect
- Chorus—each key in the zone will use the global chorus
- LightReverb—each key in the zone will be heard with a minimal amount of global reverb
- MediumReverb—each key in the zone will be heard with an average amount of global reverb
- WetReverb—each key in the zone will be heard with the maximum amount of global reverb
- Dry—each key in the zone will remain un-effected

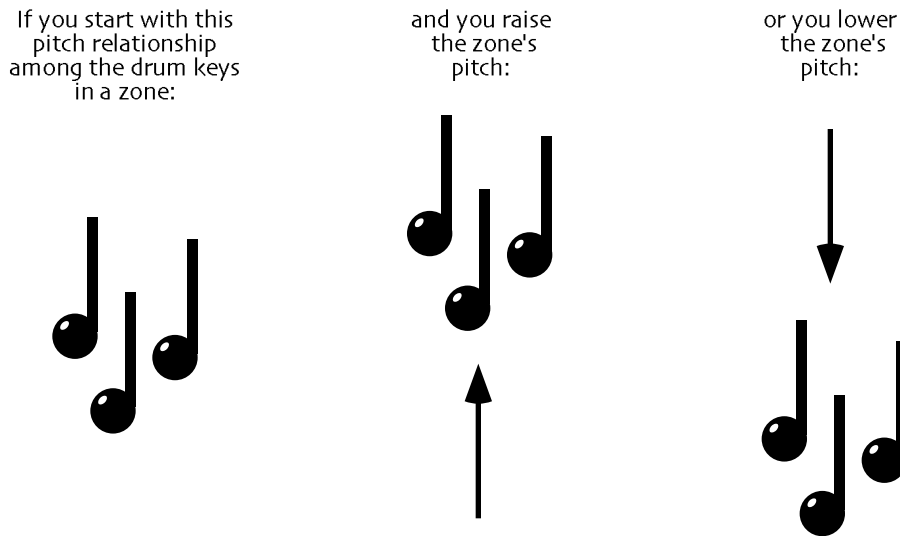
Note: The current insert effect, chorus and reverb can be edited to taste. See *Chapter 8* for a full description of the ZR-76 effects.

3. Turn the Value knob or use the up/down arrow buttons to set the FX Bus parameter to the desired value.

Tip: The zones in some of the rhythms programmed by ENSONIQ—and found in its ROM or on the ZRD-100 floppy—are assigned to the insert effect. You can identify these rhythms by the word "Insert" in their names. As you play such a rhythm, try experimenting with different insert effects (see *Chapter 8* to learn how to select insert effects).

Changing a Zone's Tuning

The Tuning Shift parameter allows you to raise or lower the pitch of each zone in a Drum Machine kit. Adjusting the Tuning Shift parameter allows you to re-tune the entire zone at once—and any tuning differences between its keys will be maintained.

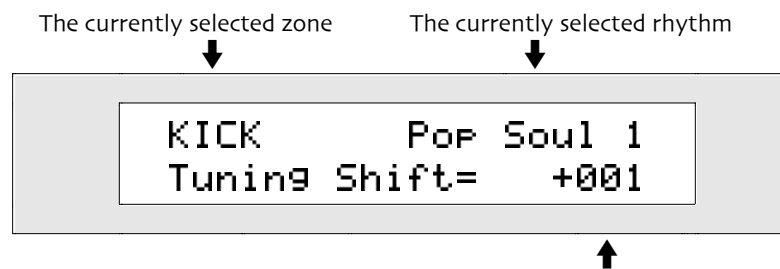


the keys remain the same pitch intervals apart.

Note: When you edit a zone, any changes you make will be heard in all of the currently selected rhythm's variations and fills.

To Tune a Zone

1. Use the method described in "Selecting a Zone to Edit" to select the zone whose pitch you'd like to change.
2. Turn the Parameter knob until the display shows "Tuning Shift=."



The amount being added to or subtracted from the zone's programmed tuning

Using the Value knob or the up/down arrow buttons, you can set the Tuning Shift parameter anywhere from -127 to +127 semitones on the keyboard. The value you select will be added to or subtracted from the programmed pitch value of each key in the zone, so that all keys will retain their pitch relative to each other.

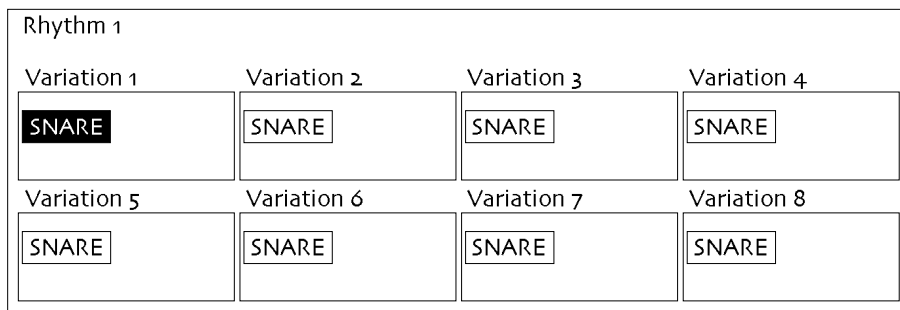
3. Turn the Value knob or use the up/down arrow buttons to set the Tuning Shift parameter to the desired value.

Note: If any sounds in the selected zone are already set to their minimum or maximum pitch setting, decreasing or increasing, respectively, the setting of the Tuning Shift parameter may produce no audible effect.

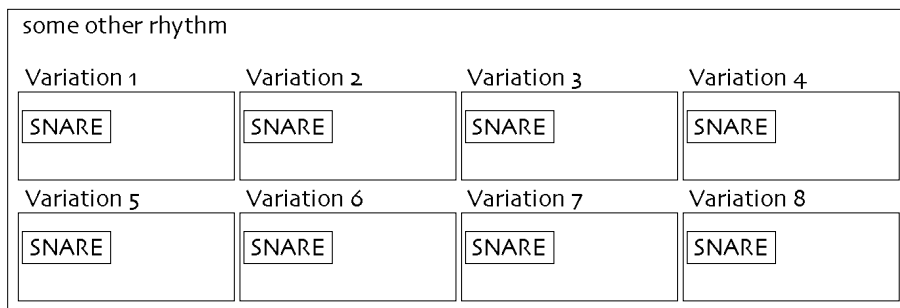
Arranging Your Own Variations and Fills

The ZR-76 Drum Machine is a very flexible device—it allows you to assemble your own variations and fills, even while the Drum Machine is playing. Each zone in every variation and fill can use a musical phrase played by its counterpart in other variations or fills—including those in other rhythms that have the same time signature and whose variations loop after the same number of measures (this is referred to as a rhythm’s *loop length*).

For example, the SNARE zone in a variation can use the musical phrase played by the SNARE zone in any other variation in the rhythm.



It can also use the musical phrase played by the SNARE zone in any variation in any other rhythm with the same time signature and loop length.



In the same manner, the SNARE zone in a fill can use the phrase played by the SNARE zone in any fill from any rhythm with the same time signature and loop length.

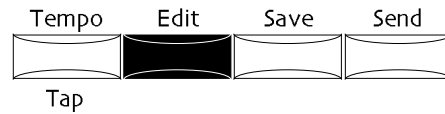
Tip: Your ZR-76 protects you from creating impossible mismatches by allowing you to select only those musical phrases that will work with the rhythm you’ve selected. Even so, if you’d like to find out the time signature or loop length of a rhythm you’re working with, see “Learning a Rhythm’s Time Signature and Length,” earlier.

By mixing and matching drum and percussion lines in this manner, you can alter pre-existing variations and fills to create brand-new ones. These new variations and fills can be used in the same way as the variations and fills built into your ZR-76. If you’d like to make your new variations and fills permanent, you can save them as a new rhythm. See “Saving Rhythms” later in this chapter.

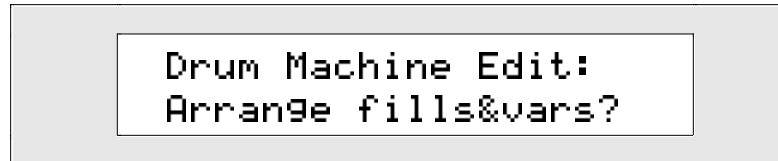
Tip: If you’ve got a PC-compatible computer, you can create your own rhythms from scratch using ENSONIQ’s free RhythmBuilder utility. You can download RhythmBuilder from <http://www.ensoniq.com/binary/rhythmbuilder.exe>.

To Customize a Variation

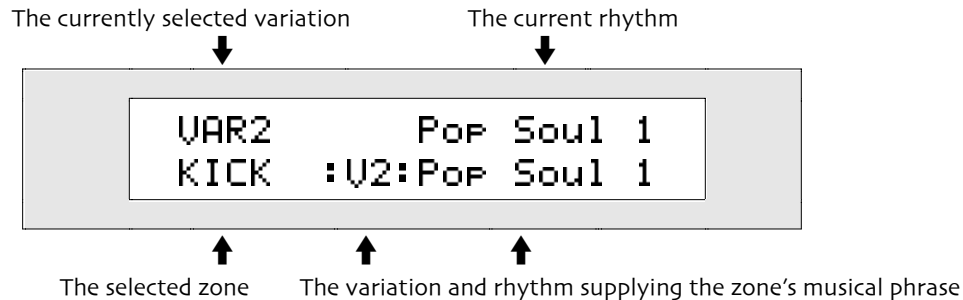
1. Press the Drum Machine Edit button.



2. Turn the Parameter knob until the display shows: "Arrange fills&vars?"



3. Press Yes if you'd like to continue the procedure, or No if you'd like to cancel. If you press Yes, the display will show:



The top line shows you the currently selected fill or variation and the currently selected rhythm.

Note: If "(m)" appears in the top line of the display, the displayed zone is muted in the selected variation.

4. If the display shows "FILL" followed by a number in the top left part of the display, press the Variation Fill button once so that its Variation LED lights.
5. Select the variation you'd like to edit by pressing the appropriate Variations/Fills button. The display will show the variation you've selected in its upper left corner. The bottom left-hand parameter shows the currently selected zone—the zone whose musical phrase you'll be changing. You can select any of the eight zones by turning the Parameter knob.
6. Select the zone you'd like to change by turning the left knob. The currently selected zone is getting its drum or percussion phrase from a variation belonging to the rhythm shown in the bottom right-hand corner of the display. You can use the right knob to select any rhythm that has the same time signature and loop length as the rhythm you're working on. The zone you are customizing can use the musical phrase played by its counterpart in any variation of the rhythm you choose.

Tip: Occasionally, you may find that a particular rhythm—that is, one that has the correct time signature and length—is not available for selection. In such cases, the rhythm you're looking for has nothing of its own to offer, since it's playing a musical phrase belonging to some other rhythm. See "Examining a Rhythm to Learn the Source of Its Music," later in this chapter.

7. Turn the right knob to select the rhythm you want to use as the source for what the zone will play. The currently selected zone is getting its drum or percussion phrase from the variation shown in the center of the bottom line on the display. The "V" stands for "variation," and the number tells you which variation is being used from the rhythm displayed to its right. You can use the up/down arrow buttons to choose one of the variations in the rhythm shown on the right.
8. Press the up/down arrow buttons to select a variation. The zone you are customizing will play the musical phrase used by its counterpart in the variation you select.

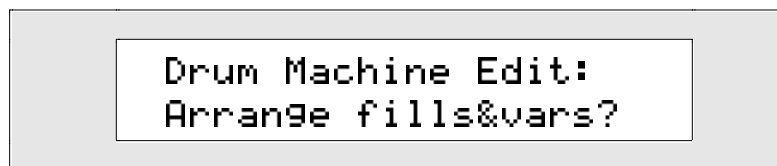
Tip: If you'd like to silence the selected zone in the variation you're arranging, you can easily do so by pressing the Enter/Yes button—an "m" will appear in parentheses on the top line of the display to show that the zone is muted. To turn the zone on, press Enter/Yes again.

9. Repeat steps 6 and above for each of the zones in the variations you'd like to arrange.
10. If you're pleased with your work, save it to FLASH or RAM memory to make the musical phrases you've selected a permanent component of your new rhythm. See "Saving Rhythms," later in this chapter. It's also a good idea to store the rhythm on a floppy disk (see *Chapter 9*).

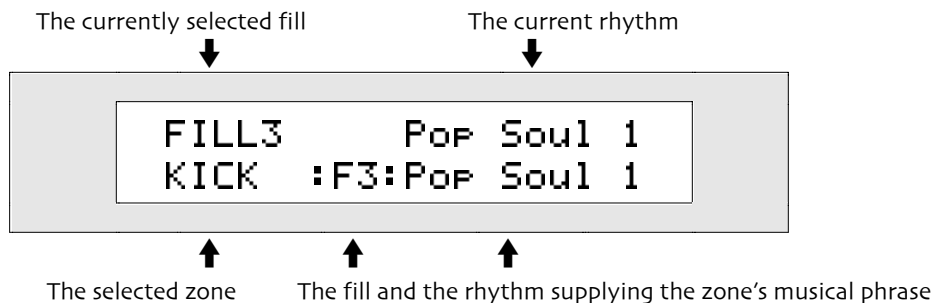
Note: If a zone in a variation is programmed to play a musical phrase from a FLASH or RAM rhythm that's no longer in memory, the zone will be silent, and will show "***EMPTY**" when viewed on the Arrange fills&vars display.

To Customize a Fill

1. Press the Drum Machine Edit button.
2. Turn the Parameter knob until the display shows: "Arrange fills&vars?"



3. Press Yes if you'd like to continue the procedure, or No if you'd like to cancel. If you press Yes, the display will show:



The top line shows you the currently selected fill or variation and the currently selected rhythm.

Note: If "(m)" appears in the top line of the display, the displayed zone is muted in the selected variation.

4. If the display shows "VAR" followed by a number in the top left part of the display, press the Variation Fill button once so that its Fill LED lights.
5. Select the Fill you'd like to edit by pressing the appropriate Variations/Fills button. The display will show the fill you've selected in its upper left corner.
The bottom left-hand parameter shows the currently selected zone—the zone whose musical phrase you'll be changing. You can select any of the eight zones by turning the Parameter knob.
6. Select the zone you'd like to change by turning the left knob.

The currently selected zone is getting its drum or percussion phrase from a fill belonging to the rhythm shown in the bottom right-hand corner of the display. You can use the right knob to select any rhythm that has the same time signature and loop length as the rhythm you're working on. The zone you are customizing can use the musical phrase played by its counterpart in any variation of the rhythm you choose.

Tip: Occasionally, you may find that a particular rhythm—that is, one that has the correct time signature and length—is not available for selection. In such cases, the rhythm you're looking for has nothing of its own to offer, since it's playing a musical phrase belonging to some other rhythm. See "Examining a Rhythm to Learn the Source of Its Music," later in this chapter.

7. Turn the right knob to select the rhythm you want to use as the source for what the zone will play.

The currently selected zone is getting its drum or percussion phrase from the fill shown in the center of the bottom line on the display. The “F” stands for “fill,” and the number tells you which fill is being used from the rhythm displayed to its right.

You can use the up/down arrow buttons to choose one of the fills in the rhythm shown on the right.

- Press the up/down arrow buttons to select a fill. The zone you are customizing will play the musical phrase used by its counterpart in the fill you select.

Tip: If you’d like to silence the selected zone in the fill you’re arranging, you can easily do so by pressing the Enter/Yes button—an “m” will appear in parentheses on the top line of the display to show that the zone is muted. To turn the zone on, press Enter/Yes again.

- Repeat steps 6 and above for each of the zones in the fills you’d like to arrange.
- If you’re pleased with your work, save it to FLASH or RAM memory to make the musical phrases you’ve selected a permanent component of your new rhythm. See “Saving Rhythms,” later in this chapter. It’s also a good idea to store the rhythm on a floppy disk (see *Chapter 9*).

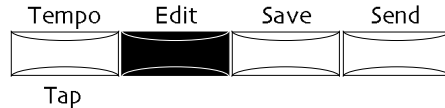
Note: If a zone in a fill is programmed to play a musical phrase from a FLASH or RAM rhythm that’s no longer in memory, the zone will be silent, and will show “***EMPTY**” when viewed on the Arrange fills&vars display.

Examining a Rhythm to Learn the Source of Its Music

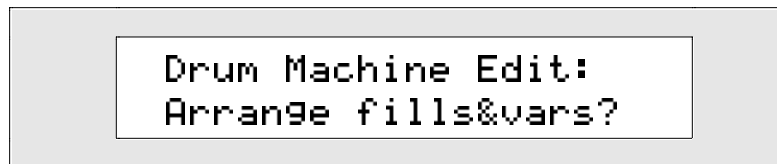
Many of the rhythms in the ZR-76 are self-contained: the musical phrases that their variations and fills play are actually part of the rhythm. However, it’s not uncommon for a rhythm’s variations and fills to use patterns that actually belong to another rhythm. When arranging your own variations and fills, you may want to grab a musical phrase from just such a rhythm—if you do, you’ll need to know the source of the rhythm’s music.

To Learn the Source of a Selected Rhythm’s Music

- Press the Drum Machine Edit button.

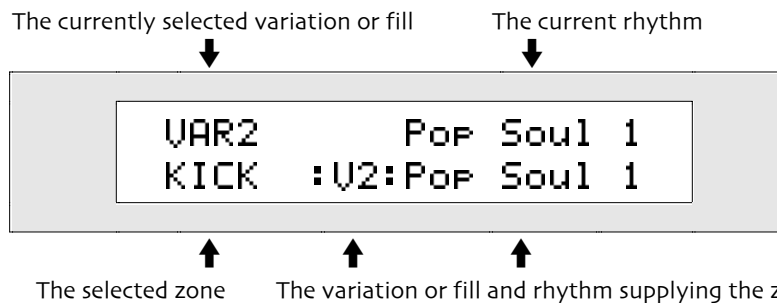


- Turn the Parameter knob until the display shows: "Arrange fills&vars?"



- Press Yes if you’d like to continue the procedure, or No if you’d like to cancel.

If you press Yes, the display will show:



The display shows “VAR” or “FILL” followed by a number in the top left part of the display. This is the currently selected fill or variation.

- If you’d like to inspect a variation, press the Variation Fill button until the Variation LED lights. If you’d like to inspect a fill, press the Variation Fill button until the Fill LED lights.

5. Select the specific variation or fill you'd like to examine by pressing the appropriate Variations/Fills button. The display will show the variation you've selected in its upper left corner.
The bottom left-hand parameter shows the currently selected zone. You can select any of the eight zones by turning the Parameter knob.
6. Select the zone you'd like to examine by turning the left knob.
The remainder of the bottom line shows the name of the rhythm—and the specific variation or fill—from which the selected zone is deriving its music.

Saving Your Rhythms

Rhythm Storage

Once you've edited a rhythm, or constructed a new one by creating your own sets of variations and fills, you'll want to save your work. Rhythms can be saved to the ZR's internal FLASH rhythm bank, or to a RAM rhythm bank, if you've created one (see *Chapter 9* to learn more about FLASH and RAM rhythm banks).

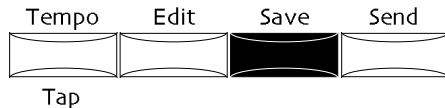
Tip: The ZR-76 provides a special memory-management tool called the librarian, described in *Chapter 9*.

Individual rhythms, as well as entire FLASH and RAM rhythm banks, can also be stored on 3.5" HD or DD floppy disks. See *Chapter 9* to learn how.

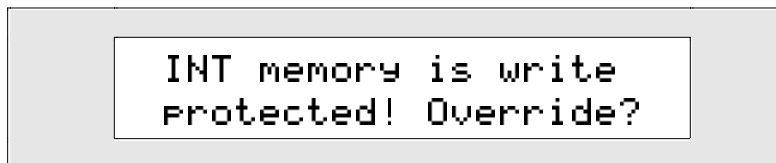
Warning: It's always a good idea to immediately save a new or edited rhythm to floppy as a back-up. This provides a safeguard against accidental erasure or the removal from FLASH or RAM of any other rhythms the new rhythm may be depending on for musical phrases.

To Save an Edited Rhythm to FLASH or RAM Memory

1. Press the Drum Machine Save button.

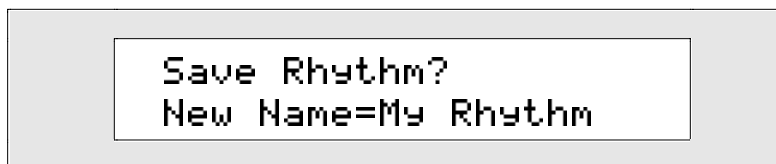


If the System Write Protect parameter is set to Prompt, the display will show:



This display is offered as a double-check for you, to make sure you really want to save your rhythm. If you'd like to avoid this prompt in the future, see "Protecting the ZR's Memory" in *Chapter 3*.

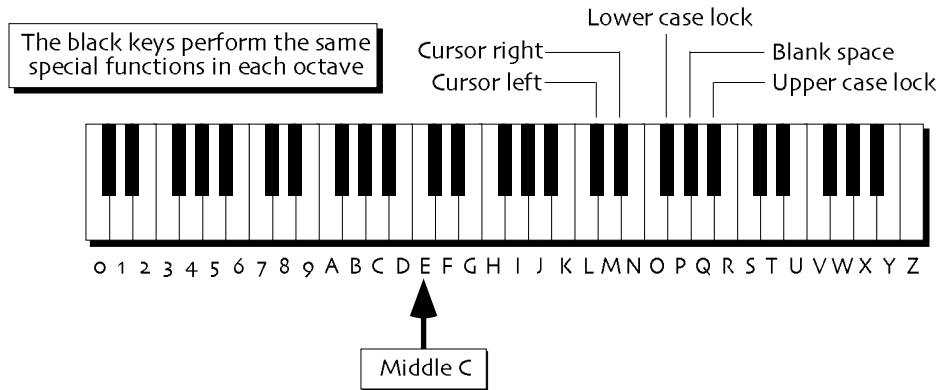
2. If you'd like to cancel the operation, press the No button. If you'd like to proceed, press the Yes button. The display now allows you to name your rhythm:



What you see here may be different

You can give your rhythm an 11-character name in one of two ways:

- You can spell the rhythm's name on the keyboard—the character associated with each key is printed above the key on the ZR's front panel. The C# and D# keys in each octave move the cursor forward and back on the display (the character currently selected for editing is underlined). The F# is always a lower case lock, the A# an upper case lock, while the G# types a blank space.



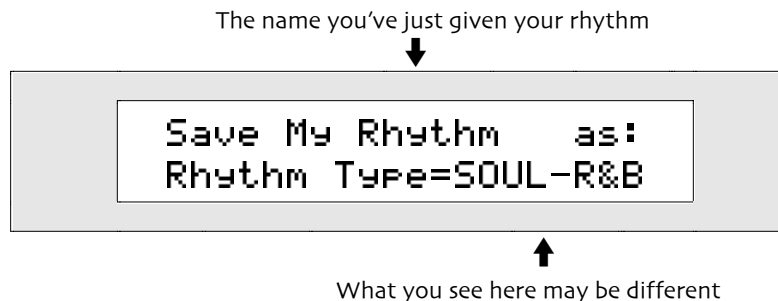
Note: The keys outside of the range shown above are not used for the naming of rhythms.

- You can also use the front panel controls. The up/down arrow buttons are used to select the character position within the name. The up arrow moves the location to the right, and the down arrow moves it to the left. The underlined character is selected and may be changed with the Value knob.

Tip: You can use the Value knob to access characters unavailable on the keyboard.

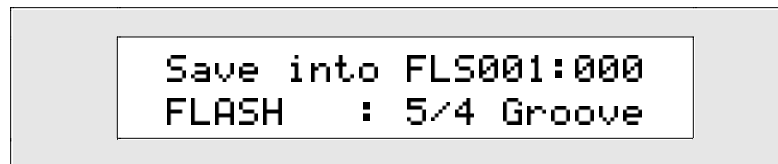
- Use the front panel controls or the keyboard to name your rhythm.
- When you've named your rhythm, press the Yes button.

The display shows:



- Use the Value knob to select a rhythm type for your rhythm, so that you'll be able to easily locate it later on using RhythmFinder. For a complete list of rhythm types, see *Chapter 13*.
- When you've defined a rhythm type, press the Yes button.

The display shows a memory location to which your new rhythm can be saved.



There are two areas of ZR-76 memory to which you can save a rhythm:

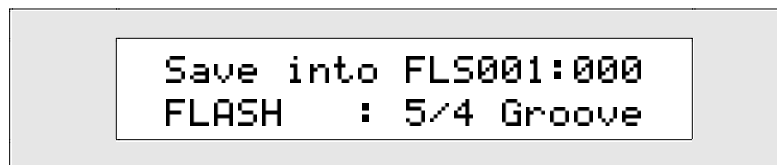
- FLASH—the more permanent type of memory, which remains intact until you erase it
- RAM—a temporary area of memory that's cleared when you turn your ZR-76 off.

Note: Due to the more permanent nature of FLASH memory, saving a rhythm to FLASH may take a few extra moments.

If you've created a RAM rhythm bank in your ZR, you can turn the Rhythm Type knob to select FLASH or RAM. If you haven't created a RAM sound bank, FLASH is the only setting available. To learn about FLASH and RAM, and creating a RAM rhythm bank, see *Chapter 9*.

- Select the desired area of memory by turning the left knob.

The display shows:



The rhythm residing in the currently selected location

You can save your rhythm to an already-occupied location, replacing the rhythm that's saved there, or you can select an unused location by turning the Value knob until you see "***EMPTY**" in the lower right-hand corner of the display.



8. If you'd like to, turn the Value knob to select a new location for your rhythm.
9. When you've selected a location for your rhythm, press the Yes button.

The display momentarily confirms the successful completion of your command, and then selects the newly-saved rhythm.

Warning: When a rhythm is saved to RAM, it's a good idea to save it to floppy as well. The Save LED in the ZR's Disk/Global area will flash as a reminder to save your RAM rhythm bank to floppy before powering down. When your ZR is turned off, it clears its RAM memory, erasing anything you've stored there.

Copying or Renaming a Rhythm, or Changing Its Rhythm Type

If you'd like to keep a spare copy of a FLASH or RAM rhythm as a backup while you edit the original, you can use the procedure described in "To Save an Edited Rhythm to FLASH or RAM Memory," above, to create a safety copy of the rhythm stored in its own memory location (ROM rhythms don't require a backup, since they're permanently stored in the ZR's memory). You can also use this procedure to copy individual rhythms to new locations if you need to re-organize your FLASH or RAM rhythm banks.

You can rename a rhythm by making a copy of it and assigning a new name to the copy.

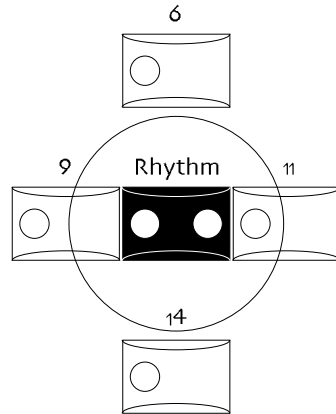
If you'd like to re-categorize a rhythm, you can change its rhythm type by making a copy of the rhythm and assigning a different rhythm type to the copy.

Sending a Rhythm to the 16 Track Recorder

Recording with Drum Machine Rhythms

The ZR-76 Drum Machine rhythms—which are so useful in performance and provide so much fun when you're jamming—can also be the foundation upon which your ZR-76 16-track recordings are built. The ZR's 16 Track Recorder can play Drum Machine rhythms, allowing you to record tracks around them to create fully realized arrangements for your compositions.

When a sequence in the 16 Track Recorder uses a Drum Machine rhythm, it utilizes track 10 of the sequence as the rhythm track (to learn what a sequence is, see *Chapter 7*). As you can see on your ZR's front panel, track 10 is actually labeled as "Rhythm" for this reason.



You can use the 16 Track Recorder rhythm track to record your selections of variations and fills throughout a sequence, allowing you to “perform” the perfect drum part by pressing the Variations/Fills buttons as you desire, and capturing that “performance” on the 16 Track Recorder’s rhythm track. You can also add additional drum or percussion phrases you play on the keyboard, using the sounds in the rhythm’s kit. *Chapter 7* describes working with the 16 Track Recorder rhythm track in detail.

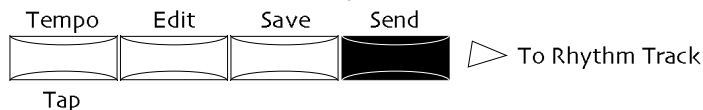
Rhythms can be sent over to the rhythm track in the 16 Track Recorder in one of two ways. They can be sent:

- as part of an idea captured in the Idea Pad (see *Chapter 6* to learn how to send an idea to the 16 Track Recorder)
- directly from the Drum Machine into the current song or into a freshly-created song that uses the rhythm’s time signature and tempo

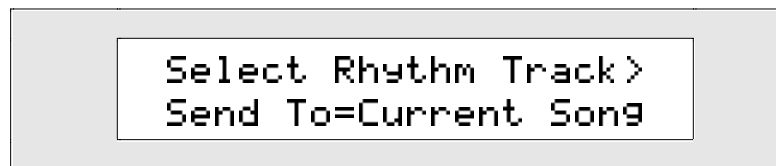
Note: When you edit a rhythm, or create a new one, it must be saved to the ZR’s FLASH or RAM memory before it can be used by the 16 Track Recorder. There’s one exception to this rule: the rhythm’s current Mix (Expression) setting can be sent with the rhythm to the 16 Track Recorder without first saving the rhythm.

To Send a Drum Machine Rhythm to the 16 Track Recorder

1. Select the rhythm you’d like to send to the rhythm track in the 16 Track Recorder using either rhythm-selection method described at the beginning of this chapter.
2. Press the Drum Machine Send To Rhythm Track button.



The display shows:



What you see here may be different

You can set the Send To parameter to:

- Current Song—so that the Drum Machine rhythm is sent to the Rhythm track in the currently selected sequence
 - New Song—so that your ZR-76 stores the current song in memory, creates a new song, and sends the selected rhythm to the rhythm track in sequence A in bank 1
3. Turn the Value knob to select Current Song or New Song.
 4. If you’d like to send the rhythm somewhere other than the sequence that’s currently selected, press the bank and sequence A-H buttons to select the desired sequence location (*Chapter 7* describes using

the Bank and Sequence A-H buttons).

5. Press the Rhythm button in the 16 Track Recorder to send the rhythm to the 16 Track Recorder's rhythm track.

Rhythm



Tip: You can press the Yes button instead of the Rhythm button, if you prefer. Pressing No cancels the procedure.

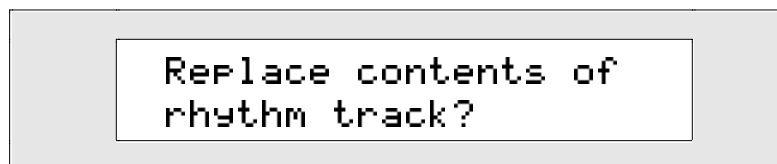
6. If you've selected New Song, skip to step 9.
If you're sending a rhythm into a sequence containing a Standard MIDI File that hasn't yet been converted into a ZR-76 sequence, the No/Yes LEDs will flash, and the display will show:



Answering Yes to this question will organize the Standard MIDI File's tracks into numerical order according to their MIDI channels, and add a set of ZR parameters to the track to which you're sending the rhythm. *Chapter 7* describes using Standard MIDI Files in the ZR-76.

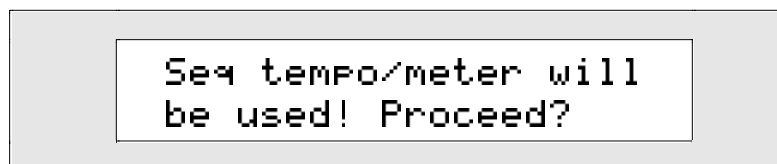
6. Press the Yes button to convert the Standard MIDI File into a ZR sequence, or No to cancel the operation.

If you're sending a rhythm into a sequence where track 10 is already in use—for normal tracks, or a previous rhythm track—the No/Yes LEDs will flash, and the display will show:



7. Press the Yes button to send the rhythm to track 10, erasing anything currently on the track, or No to cancel the operation.

If you're sending a rhythm into a sequence where any tracks—or a prior rhythm track—have already been recorded, the No/Yes LEDs will flash, and the display will show:



Since tracks already exist in this sequence, it already has a time signature and tempo. If you choose to continue with this operation, the rhythm you're sending to the 16 Track Recorder will be converted to the sequence's time signature and tempo.

8. Press the Yes button to complete the procedure, or No to cancel.
9. Press the 16 Track Recorder Play button to hear the rhythm. If the rhythm track is the first track in the sequence, the rhythm will continue playing until the 16 Track Recorder Stop button is pressed.

Note: If you performed the Send To Rhythm Track procedure with a fill selected in the Drum Machine, the fill will be heard when you press the 16 Track Recorder Play button. After the fill has played through, the rhythm track will play the last-selected Drum Machine variation for the current rhythm.

To learn about recording tracks in the 16 Track Recorder, and to learn more about using the rhythm track, see *Chapter 7*.

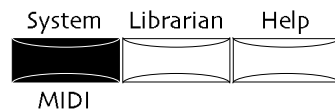
Using MIDI to Play the Drum Machine

Synchronizing the Drum Machine to MIDI Clocks

The ZR-76 Drum Machine can be synchronized to any external MIDI device that can transmit MIDI clocks—most MIDI sequencers and drum machines have this capability.

To Control the Drum Machine from an External MIDI Device

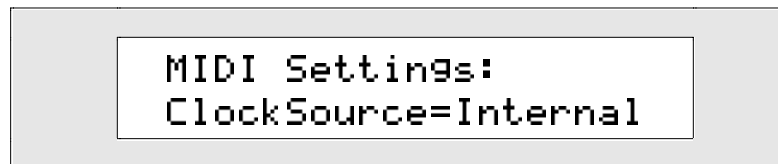
1. Connect the MIDI output of the external device to the ZR's rear-panel MIDI In jack.
2. Set the external device to transmit MIDI clocks.
3. Select the desired Drum Machine rhythm any technique described at the beginning of this chapter.
4. Press the ZR's System button.



5. Turn the Parameter knob until the display shows:



6. Press the Yes button.
7. Turn the Parameter knob until the display shows:



What you see here may be different

8. Turn the Value knob to set ClockSource to MIDI.
-
- Note:** When ClockSource is set to MIDI, the Drum Machine Start/Stop button is disabled, and the current rhythm's tempo is displayed as "MIDI."
-
9. Press the Select Rhythm button so that the ZR saves its new system setting.
 10. Start your external sequencer or drum machine—the ZR-76 Drum Machine will follow along.

Note: To return to normal Drum Machine operation, the system ClockSource setting must be reset to "Internal."

MIDI Starting, Stopping and Continuing

The ZR-76 Drum Machine is designed so that rhythms always play from the beginning when the Drum Machine Start/Stop button is pressed. As a result, when the Drum Machine is being controlled from an external MIDI device, it starts and stops as expected; however, sending a MIDI continue message from the external device restarts the selected rhythm, just as if the Drum Machine's own Start/Stop button had been pressed. If you'd like to control a rhythm via MIDI with full response to start, stop and continue messages, you can send the rhythm to a rhythm track in the 16 Track Recorder, and synchronize the 16 Track Recorder to MIDI clocks. This provides the added advantage of allowing you to record different variation and fill selections, as well as additional drum notes, on the rhythm track (*Chapter 7* describes working with the rhythm track).

Chapter 6

The Idea Pad

The Inspiration Catcher

The Idea Pad is the answer to a songwriter’s dream: a device that catches those fleeting flashes of musical magic that all too often evaporate as suddenly as they appear. The Idea Pad “looks over your shoulder” as you play the ZR-76, quietly recording everything you play, and capturing those musical surprises that often become favorite songs.

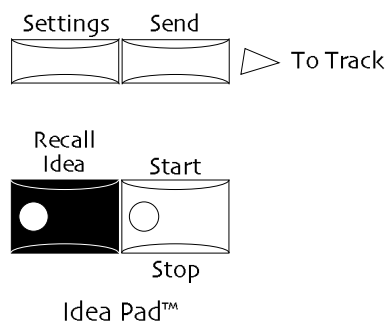
Using the Idea Pad is simplicity itself—you never even have to turn it on, since it’s always listening to what you play. When you’ve played something you’d like to hear, simply press the Idea Pad’s Recall Idea button to hear it played back. If you played something a few moments earlier that you’d like to check out, you can choose it from the Idea Pad’s menu, and then play it back.

Listening To The Last Thing You Played

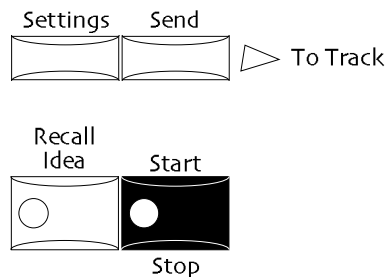
The Idea Pad is designed for those “what was that?” moments. When you want to hear what you just played, the Recall Idea button can play it for you.

To Hear What You Just Played

1. Press the Recall Idea button.



2. To hear the idea again, press the Idea Pad Start/Stop button.



Note: You can set up your Idea Pad so that playback of ideas only occurs when you press the Start/Stop button. See “Enabling and Disabling Automatic Playback of Ideas in the Idea Pad” later in this chapter for details.

Listening to Other Ideas in the Idea Pad

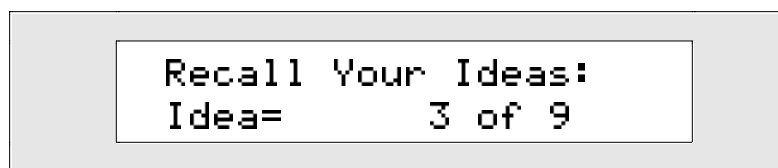
The Idea Pad can hold many ideas. Pressing the Recall Idea button reveals a menu of the musical ideas currently in the Idea Pad.

To Select and Listen to the Ideas In The Idea Pad

1. Press the Recall Idea button to view the menu of ideas currently in the Idea Pad. The Recall Idea LED lights.

Note: If the Auto-Start parameter is set to On, the most recently-recorded idea will play (see “Enabling and Disabling Automatic Playback of Ideas in the Idea Pad” later in this chapter).

The display will show:



The currently selected idea The number of ideas in the Idea Pad

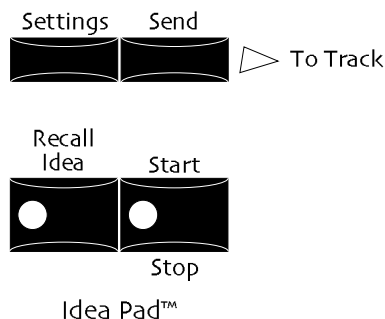
Each idea is assigned a number as it’s recorded. The higher the number of the idea, the more recent it is.

You can use the up/down arrow buttons or the Value knob to select the idea you’d like to hear. If the Idea Pad’s Auto-Play parameter is set to On, selecting an idea with the up or down button will cause it to automatically begin playing (see “Enabling and Disabling Automatic Playback of Ideas in the Idea Pad” below).

2. Use the Value knob or the up/down arrow buttons to select a idea.
3. Press the Start/Stop button to begin playback of the idea.
4. Press the Start/Stop button to end playback of the idea.

How the Idea Pad Works

There are four Idea Pad buttons:



Technically, the Idea Pad is a MIDI recorder—a *sequencer*—that’s always recording, capturing your ideas temporarily into its own area of the ZR’s memory.

How the Idea Pad Works with SoundFinder

The Idea Pad records everything you play on the keyboard, making note of the sounds you use. When you listen to your ideas played back, they sound exactly as they did when you first performed them.

While you’re enjoying the sounds in SoundFinder, your ideas are recorded faithfully without a metronome timing reference. When you send an idea to the 16 Track Recorder, you can use ENSONIQ’s exclusive delta quantizing feature to lock your playing into a perfect tempo (delta quantizing is described in *Chapter 7*). To learn how to send an idea to the 16 Track Recorder, see “Sending Ideas to the 16 Track Recorder” later in this chapter.

Note: SoundFinder presets are designed primarily as performance tools and, as such, are not sent over to the 16 Track Recorder from the Idea Pad. When an idea using a preset is captured by the Idea Pad and sent over to the 16 Track Recorder, its note and controller data are sent; however, only the preset's first sound—the sound that had been selected after pressing the Select Sound button—will be heard on the resulting track. If you'd like to use a split and/or layer in the 16 Track Recorder, you can save it as a single sound, capture your playing in the Idea Pad and send your idea over to the 16 Track Recorder (you can also send the split/layer single sound directly from SoundFinder). See *Chapter 4* to learn about saving splits and layers as single sounds.

How the Idea Pad Works with the Drum Machine

When you're playing along with the Drum Machine, the Idea Pad keeps track of the rhythm you're using and anything you play on the keyboard. It keeps track of when your idea occurred within the rhythm so that as you play back your idea, everything falls correctly into place. You can select different variations and fills for your rhythm, and the Idea Pad will record those selections as well, allowing you capture a Drum Machine "performance" (*Chapter 5* describes using the Drum Machine).

Note: If you've been editing the rhythm you're working with, but have not yet saved those edits (see *Chapter 5*), the Idea Pad will play back the unedited version of the rhythm.

When you send your idea to the 16 Track Recorder for further development, the music you've played on the keyboard goes to a track of your choosing, and the rhythm—including your variation and fill selections—goes to a special rhythm track in the selected sequence. *Chapter 7* describes working with this rhythm track in detail.

Tip: You can augment a rhythm with additional drum or percussion notes by selecting a drum or percussion kit sound in SoundFinder, playing along with the rhythm, and sending the whole thing from the Idea Pad to the 16 Track Recorder. The rhythm will go on the selected sequence's rhythm track and the additional notes you play will go on a track of your choosing. If you'd like to add notes using the same kit as the rhythm uses, select the rhythm you want to use, and then select the RthmEditKit sound in SoundFinder as your drum kit sound (you'll find it in the *CUSTOM SoundFinder category). Once your idea is in the 16 Track Recorder, you can also use the rhythm track to record even more drum or percussion notes using the rhythm's kit.

How the Idea Pad Works with the 16 Track Recorder

You can play along with a sequence you've already created—or loaded from floppy—by selecting a track in the 16 Track Recorder and letting the Idea Pad capture new musical ideas as you work them out.

When the Idea Pad plays an idea recorded while playing along with the 16 Track Recorder, it conveniently starts playing the idea immediately, even if it originally occurred somewhere in the middle of the sequence. When you send the idea to a track in the 16 Track Recorder, it's placed into its original rhythmic context within the selected sequence.

The Idea Pad as an Archive of 16 Track Recorder Performances

While recording tracks in the 16 Track Recorder, you may find yourself recording some tracks over and over again as you refine your performance. As you record each take, the Idea Pad captures your playing. The 16 Track Recorder Undo function allows you to undo the most recent take—and yet, you may find that you wish to return to a performance that occurred several takes back. No problem: the Idea Pad is more than likely to hold that earlier take and a host of others from which you can select your best work. The number of previous performance held by the Idea Pad is determined by a few factors, discussed below in "How Big Is the Idea Pad?"

To retrieve any take from the Idea Pad, simply select it and send it to the desired track in the 16 Track Recorder. See "Sending Ideas to the 16 Track Recorder" later in this chapter to learn how this is done.

How the Idea Pad Knows When A New Idea Has Begun

An idea is simply a piece of music you've played. The Idea Pad is smart: it can tell when you've begun a new one. It accomplishes this by paying attention to what you do:

- When you select a new sound, the Idea Pad knows the next music you play will be a new idea.
- When you're playing the keyboard all by itself, pausing lets the Idea Pad know that the next music you play will be a new idea. (The length of this pause can be adjusted—see "Setting the Pause Length Between Separate Ideas" later in this chapter.)
- When you're playing along with the Drum Machine and you select a new rhythm, the Idea Pad knows that the next music you play will be a new idea.
- When you select a new 16 Track Recorder sequence, or press the Play button in the 16 Track Recorder, the Idea Pad knows that the next music you play on the keyboard will be a new idea.

How Big Is the Idea Pad?

Since the Idea Pad uses memory dynamically, the answer to this question varies. Filling up the Idea Pad is not linked to any predictable length of time, but rather to the number of notes you play and the amount of controller activity you generate (using controllers such as the ZR's pitch bend and mod wheels, and so on). The nature of your music determines how many ideas the Idea Pad can hold, regardless of the Idea Pad's actual size. There are two possible Idea Pad sizes: 16k and 31k. Even the smaller size can hold dozens and dozens of ideas. You can use the ZR's librarian to choose either size, as described in "Re-Sizing the Idea Pad" later in this chapter.

What Happens When The Idea Pad Is Filled Up

When the Idea Pad buffer is full, it keeps recording your new ideas, erasing the oldest ideas as it needs to free up memory. It's a good idea to stop every now and again to see what you've captured in the Idea Pad. Before some new idea takes its place in the Idea Pad, you'll want to extract the music you'd like to keep by sending it over to a sequence in the 16 Track Recorder and then saving the sequence to floppy disk. Sending ideas to the 16 Track Recorder is described later in this chapter. Saving sequences to disk is described in *Chapter 9*.

What Happens to an Idea's Effect In the 16 Track Recorder

When an idea in the Idea Pad is based on a sound using an insert effect, and you send the idea to a track in the 16 Track Recorder, you can choose whether or not to send the insert effect along with the idea over to the 16 Track Recorder.

- If you choose to send the idea to a track with its insert effect, the track to which you send it will be routed to the Insert FX Bus.
- If you choose to send the idea without its insert effect, the track to which you send the idea will be routed to the Alt. FX bus of the sound upon which the idea is based (the Alt. FX bus is explained in *Chapter 8*).
- When you send an idea based on a sound that doesn't use an insert effect to a track, the track will be set to the effect bus routing currently being used in SoundFinder.

Note: After you've sent the idea to a track in the 16 Track Recorder, you can manually change the track's effect bus as you please.

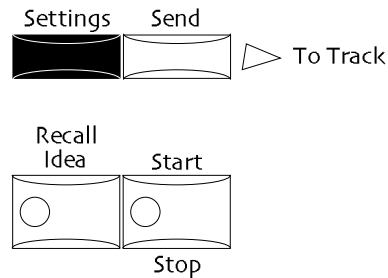
Customizing the Idea Pad

Enabling and Disabling Automatic Playback of Ideas in the Idea Pad

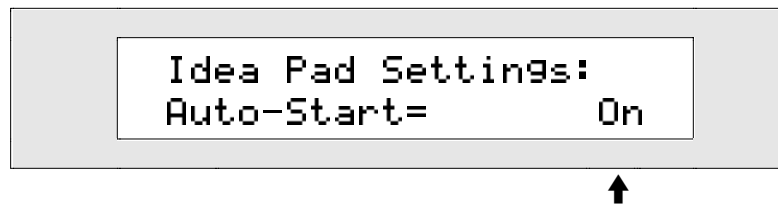
The Auto-Start parameter allows you to set the Idea Pad to automatically play your ideas as you select them from the Recall Idea menu by pressing the Recall Idea or up and down arrow buttons. If you select an idea with the Value knob, it won't play until you press the Idea Pad Start/Stop button. When Auto-Start is turned off, ideas will only play when you press the Idea Pad Start/Stop button.

To Determine Whether or Not Ideas Will Play Automatically

1. Press the Settings button.



2. Turn the Parameter knob until the display shows “Auto-Start=.”



What you see here may be different

The Auto-Start parameter may be set to:

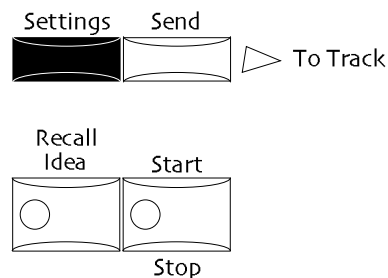
- Off—ideas will not automatically begin playing when they are selected with the up/down arrow buttons or when the Recall Idea button is pressed
 - On—ideas will automatically begin playing when they are selected with the up/down arrow buttons or when the Recall Idea button is pressed
3. Use the Value knob or the up/down arrow buttons to set the Auto-Start parameter.

Setting the Pause Length Between Separate Ideas

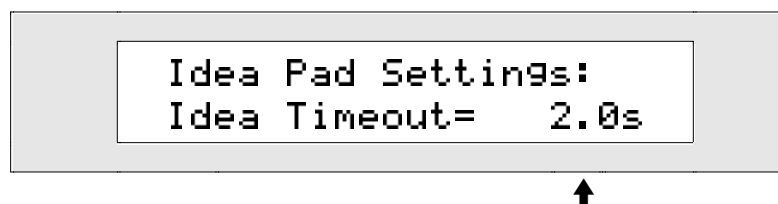
When the Drum Machine and 16 Track Recorder are not in use, the Idea Pad can ascertain when you've started playing a new idea by the silence between musical phrases. The Idea Timeout parameter determines the length of time that has to pass before the Idea Pad considers the last idea ended, and prepares to capture the next one.

To Specify the Period of Silence That Signifies a New Idea

1. Press the Settings button.



2. Turn the Parameter knob until the display shows:



What you see here may be different

The Idea Timeout parameter may be set from 1.0 seconds (1.0s) to 5.0 seconds (5.0s).

- Use the Value knob or the up/down arrow buttons to set Idea Timeout parameter to the desired value.

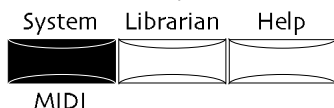
Re-Sizing the Idea Pad

The Idea Pad uses the ZR’s RAM memory, which it shares with the 16 Track Recorder and Song Editor, and with any RAM sound or rhythm banks you may have created. *Chapter 9* provides an in-depth discussion of how the ZR’s memory works. The Idea Pad can be set to two different sizes: 16k and 31k. The Idea Pad was set to its smaller size when your ZR-76 was shipped from the factory.

Warning: When you re-size the Idea Pad, anything that it currently holds will be lost, as will anything else in RAM, including sequences. Make sure that you send any ideas that you don’t want to lose over to a sequence in the 16 Track Recorder, and that you then save the sequence to floppy disk for safekeeping before re-configuring the ZR’s RAM. Sending ideas to the 16 Track Recorder is discussed later in this chapter; saving a sequence to floppy is described in *Chapter 9*.

To Change the Size of the Idea Pad

- Press the Librarian button in the Disk/Global section of the ZR’s front panel.



The No and Yes LEDs will begin to flash, and the display will show:

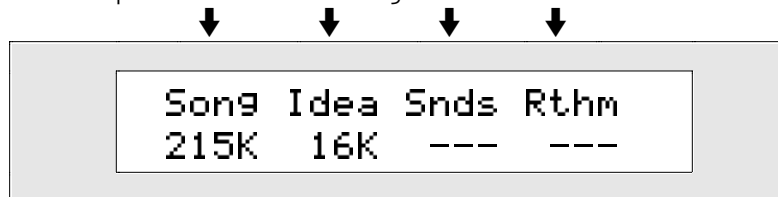


What you see on the bottom line may be different

- Turn the Parameter knob until the display looks as shown above. The red/green No/Yes flashers begin to flash.
- Press Yes if you’d like to continue, or No if you’d like to cancel.

If you press Yes, the display will show:

The top line shows the four things for which RAM can be used



The bottom line shows how the ZR’s RAM is currently allocated

On this display:

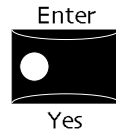
- “Song” refers to the 16 Track Recorder and Song Editor
- “Idea” refers to the Idea Pad
- “Snds” refers to a RAM sound bank
- “Rthm” refers to a RAM rhythm bank

When your ZR-76 is shipped from the factory, its RAM memory is allocated to the 16 Track Recorder/Song Editor and the Idea Pad, as shown above. There is no RAM allocated for RAM sound or rhythm banks.

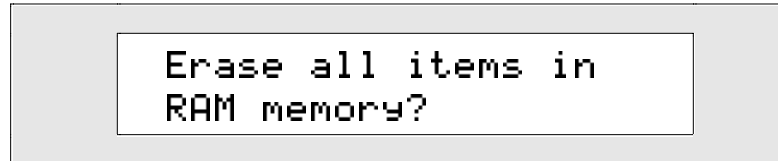
- Turn the Value knob to allocate the ZR’s RAM as you desire.

You'll see the allocation of the ZR's RAM memory shift as you turn the Value knob. The Idea Pad will always be either 16k or 31k in size; the difference between the various proportions you'll encounter relates to whether or not RAM is set aside for sounds or rhythms, and to the size of the ZR's 16 Track Recorder/Song Editor memory.

- When you've selected the desired setting, press the Yes button.



The display will show:



In order to reconfigure its RAM, the ZR must clear out anything currently stored there. Make sure that there's nothing in the Idea Pad you want to keep, and that you've saved any sequences, songs, RAM sound or RAM rhythm banks to floppy before continuing with this procedure. Saving to floppy disk is described in *Chapter 9*.

Tip: Whenever you've added anything to a RAM sound or rhythm bank, sequence or song that has not yet been saved to floppy disk, the Save LED in the ZR's Disk/Global section flashes. This tells you at a glance whether or not you've got any sounds, rhythms, sequences or songs in RAM that haven't yet been stored on a floppy for safekeeping.

- Press the Yes button if you'd like to complete the re-sizing of the Idea Pad, or press the No button to cancel the operation.

Using the Idea Pad with the 16 Track Recorder

Moving Ideas from the Idea Pad to the 16 Track Recorder

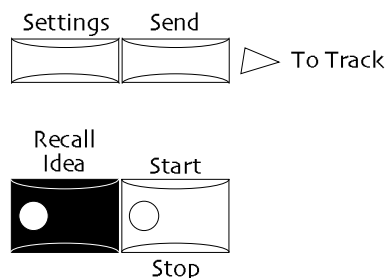
An idea captured in the idea pad may spark the creation of a new song, or it may have a place in a sequence or song that already exists in the 16 Track Recorder. In either event, the first step in the process of developing your idea is to send it to the 16 Track Recorder for further work.

Using an Idea as the Basis of a New Song

Using an idea as the foundation of a new song is as simple as moving it from the Idea Pad to the 16 Track Recorder. If your idea is based on a sound that uses an insert effect, the effect will travel along with your idea to the 16 Track Recorder.

To Create a New Song From an Idea

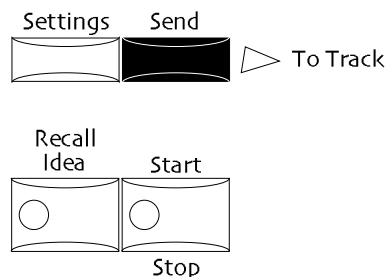
- Press the Recall Idea button to view the menu of ideas currently in the Idea Pad.



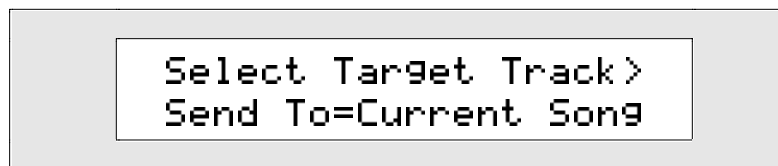
Note: If the Auto-Start parameter is set to On, the most recently-recorded idea will play (see "Enabling and Disabling Automatic Playback of Ideas in the Idea Pad" earlier in this chapter).

You can use the up/down arrow buttons or the Parameter knob to select another idea to send to the 16 Track Recorder. If the Idea Pad's Auto-Play parameter is set to On, selecting an idea with the up or down button will cause it to automatically begin playing (see "Enabling and Disabling Automatic Playback of Ideas in the Idea Pad" earlier in this chapter).

2. If the Recall Idea button doesn't play the idea you want to send, use the up/down arrow buttons or the Value knob to select the idea you'd like to use.
3. Press the Idea Pad Send to Track button.



The Recall Idea, Yes and No LEDs begin to flash, and the display shows:



What you see here may be different

You can set the Send To parameter to:

- Current Song—so that the idea is sent to a track in the currently selected sequence
 - New Song—so that your ZR-76 stores the current song in memory, creates a new song, sends your idea to a track in sequence A in bank 1, designates the selected track as the sequence's insert control track, and the insert effect the idea uses becomes the sequence insert effect (the insert control track and effects are explained in *Chapter 8*).
4. Turn the Value knob to select New Song.
 5. If you'd like to send the idea to a sequence other than sequence A in bank 1, press the Bank and Sequence A-H buttons to select the desired sequence location (*Chapter 7* describes using the Bank and Sequence buttons).
 6. Select the track to which you'd like to send your idea by pressing its button in the 16 Track Recorder.

Tip: You can press the Yes button instead of the track button, if you prefer, to send your idea to track 1. Pressing No cancels the procedure.

Note: If the idea uses a Drum Machine rhythm, the rhythm will be sent to the rhythm track in the selected destination sequence.

7. Press the 16 Track Recorder's Play button to hear your idea in the 16 Track Recorder. To learn about using the 16 Track Recorder, see *Chapter 7*.

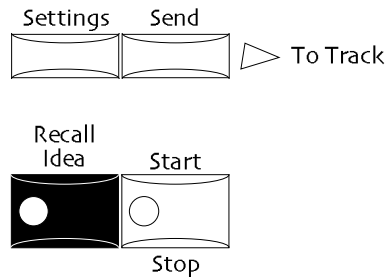
Moving A New Idea Into A Pre-Existing Song

The Idea Pad can be useful as a way to work out new ideas for a song or sequence already existing in the 16 Track Recorder. While the recorder's playing, you can improvise and capture ideas in the Idea Pad. When you've got one you like, you can use the Send to Track button to incorporate your new idea into the already-recorded arrangement.

Tip: If your idea is based on a sound that uses an insert effect, the effect can be sent to the 16 Track Recorder along with the idea.

To Incorporate an Idea Into a Pre-Existing Song

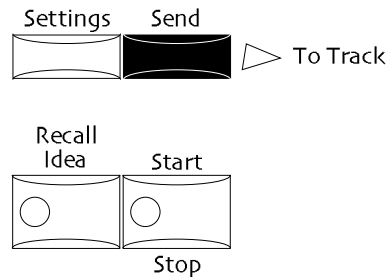
1. Press the Recall Idea button to view the menu of ideas currently in the Idea Pad.



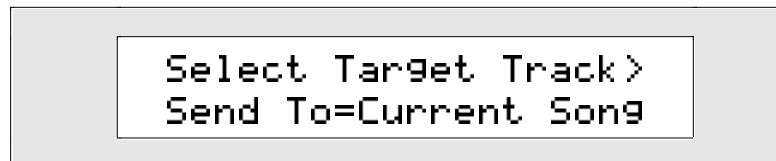
Note: If the Auto-Start parameter is set to On, the most recently-recorded idea will play (see “Enabling and Disabling Automatic Playback of Ideas in the Idea Pad” below).

You can use the up/down arrow buttons or the Value knob to select the idea you’d like to use. If the Idea Pad’s Auto-Play parameter is set to On, selecting an idea with the up or down button will cause it to automatically begin playing (see “Enabling and Disabling Automatic Playback of Ideas in the Idea Pad”).

2. Use the up/down arrow buttons or the Value knob to select the idea you’d like to use.
3. Press the Idea Pad Send to Track button.



The Recall Idea, Yes and No LEDs begin to flash, and the display shows:

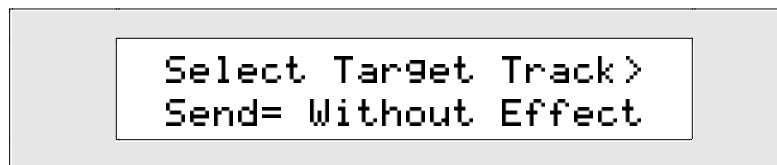


What you see here may be different

You can set the Send To parameter to:

- Current Song—so that the idea is sent to a track in the currently selected sequence
 - New Song—so that your ZR-76 stores the current song in memory, creates a new song, and sends the idea to a track in sequence A in bank 1
4. Turn the Value knob to select Current Song.
 5. If you’d like to send the idea to a sequence other than the one that’s currently selected, press the Bank and Sequence A-H buttons to select the desired location (*Chapter 7* describes using the Bank and Sequence buttons).

6. Turn the Parameter knob clockwise so that the display shows:



What you see here may be different

If the bottom line shown above does not appear on the display, the sound on which the idea is based does not use an insert effect, and you can skip to step 8.

If the Send parameter is available, as above, you can set it to:

- Without Effect—so that the idea is sent to the 16 Track Recorder, but the insert effect it uses is not sent
 - With Effect—so that the idea is sent to a track in the currently selected sequence, the track is designated as the sequence's insert control track, and the insert effect the idea uses becomes the sequence insert effect (the insert control track and effects are explained in *Chapter 8*).
7. Turn the Value knob clockwise to select the desired setting.
8. Select the track to which you'd like to send your idea by pressing its button in the 16 Track Recorder.

Tip: You can press the Yes button instead of the track button, if you prefer, to send your idea to the lowest-numbered empty track. Pressing No cancels the procedure.

Note: If your idea uses a Drum Machine rhythm, the rhythm will be sent to the rhythm track in the selected destination sequence.

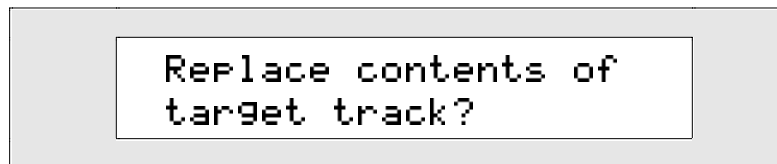
If you're sending the idea into a sequence containing a Standard MIDI File that hasn't yet had its tracks re-ordered to correspond to their MIDI channels, the No/Yes LEDs will flash, and the display will show:



Answering Yes to this question will organize the Standard MIDI File's tracks into numerical order according to their MIDI channels, and add a set of ZR parameters to the track to which you're sending your idea—they'll also be added to the sequence's rhythm track if your idea uses a rhythm. *Chapter 7* describes using Standard MIDI Files in the ZR-76.

9. Press the Yes button to proceed, or No to cancel the operation.

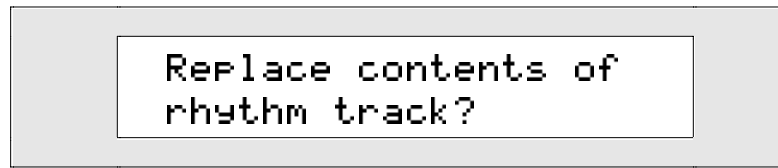
If you're sending an idea to a track that's already being used, the No/Yes LEDs will flash, and the display will show:



10. Press the Yes button to replace the contents of the selected track with your idea, or No to cancel the operation.

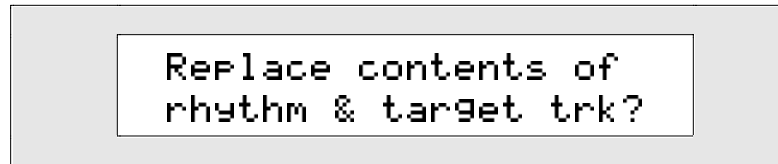
If your idea uses a rhythm, and the selected sequence's rhythm track is already in use—for normal

tracks, or a previous rhythm track—the display will show:



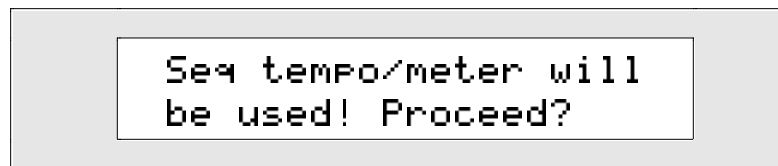
11. Press the Yes button to send the idea's rhythm to track 10, erasing anything currently on the track, or No to cancel the operation.

If your idea uses a rhythm, and the both the track you've selected for your idea and the rhythm track are already in use, the display will show:



12. Press the Yes button to send the idea to the selected track, and the rhythm to track 10, erasing anything currently on either track, or No to cancel the operation.

If you're sending an idea into a sequence where any tracks—or a prior rhythm track—have already been recorded, the No/Yes LEDs will flash, and the display will show:



Since tracks already exist in this sequence, it already has a time signature and tempo. If you choose to continue with this operation, the idea you're sending to the 16 Track Recorder will be converted to the sequence's time signature and tempo.

13. Press the Yes button to complete the procedure, or No to cancel.
14. Press the 16 Track Recorder's Play button to hear your idea in the 16 Track Recorder.

To learn about using the 16 Track Recorder, see *Chapter 7*.

Erasing Ideas from the Idea Pad

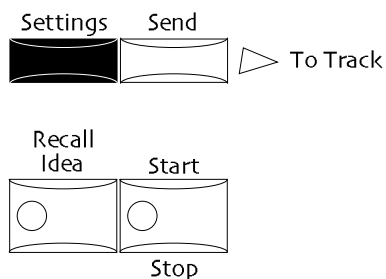
Removing a Single Idea from the Idea Pad

There may be times when you'd like to erase an idea from the Idea Pad. The "Erase this idea?" command will delete a single idea you've selected from the Recall Idea menu.

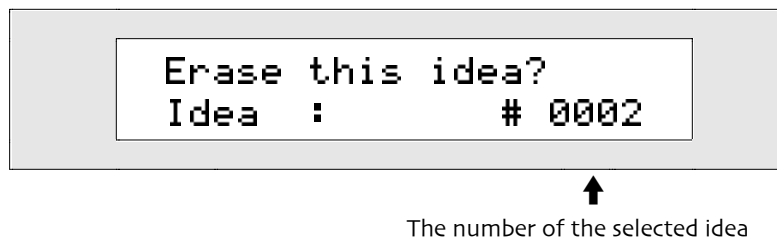
To Erase A Single Idea From The Idea Pad

1. Press the Recall Idea button to view the menu of ideas currently in the Idea Pad.
You can use the up/down arrow buttons or the Value knob to select the idea you'd like to erase. If the Idea Pad's Auto-Play parameter is set to On, selecting an idea with the up or down button will cause it to automatically begin playing (see "Enabling and Disabling Automatic Playback of Ideas in the Idea Pad" above). Pressing Recall Idea also causes the most recently recorded idea to play.
2. Use the up/down arrow buttons or the Value knob to select the idea you'd like to erase.

3. Press the Settings button.



4. Turn the parameter knob until the display shows:



If there are no ideas in the Idea Pad to be erased, the display will tell you so.

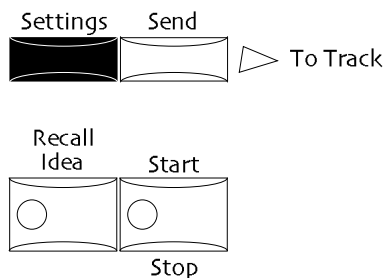
5. Press Yes to erase the idea or No to return the Recall Idea menu.

Clearing the Idea Pad

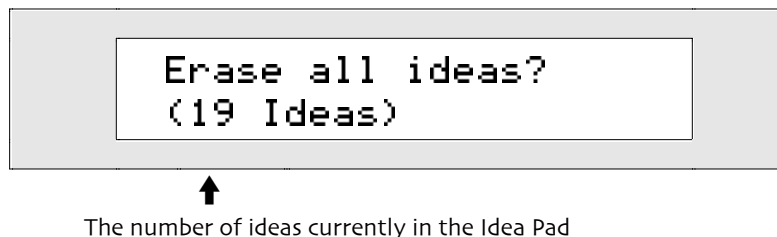
Like any good scratch pad, the Idea Pad can be cleared. Use the Erase All Ideas command to erase all of the music from the Idea Pad at once.

To Clear the Idea Pad

1. Press the Settings button.



2. Turn the Parameter knob until the display shows:



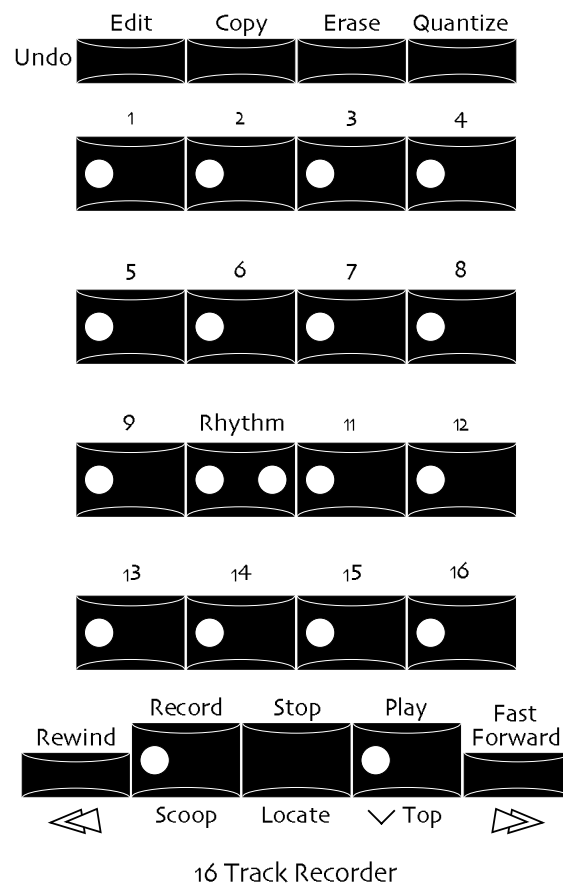
This display will only appear if there's more than one idea currently in the Idea Pad.

3. Press Yes to erase all of the ideas, or No to return to the Recall Idea menu.

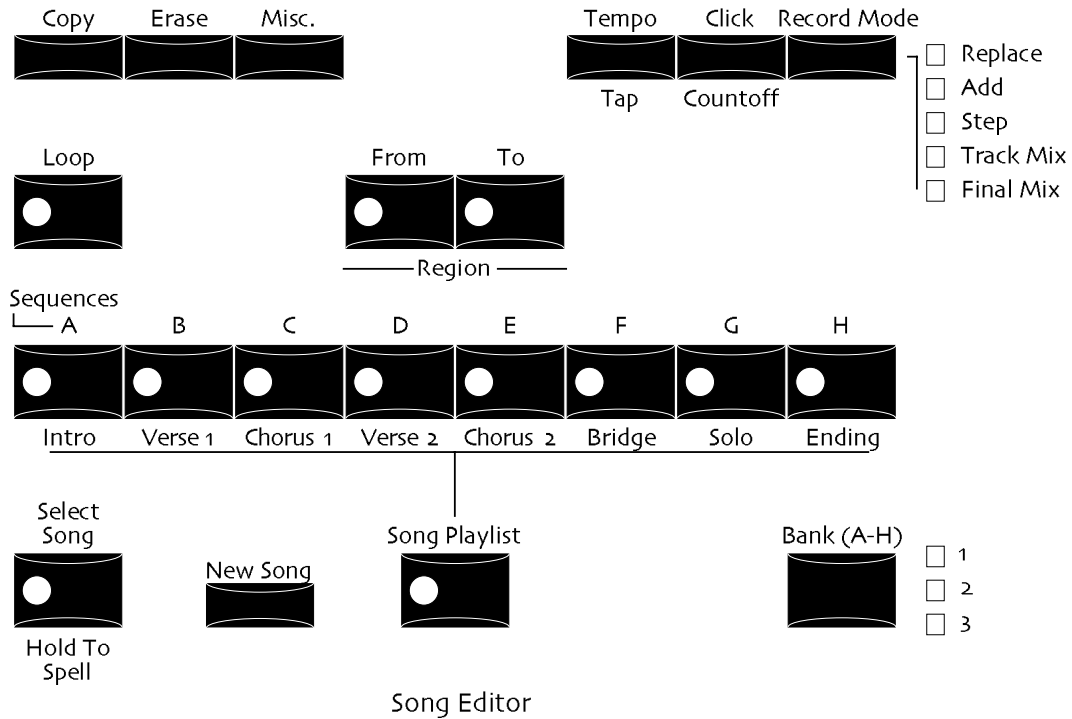
Chapter 7

Recording

The ZR-76 provides a complete MIDI recording environment in which you can transform your ideas into fully-realized songs. You'll find all of the tools you need in two areas of the ZR's front panel. The actual recording of your music occurs primarily in the 16 Track Recorder.



As you record the sections of your new compositions, you'll want to be able to control certain aspects of them, be able to listen to them, and be able to edit them in various ways. Eventually, you'll string the sections together into complete songs structures. All of these operations occur in the Song Editor, shown on the next page.



Tip: All of the tracks in the 16 Track Recorder can be mixed—and can be sent to the ZR’s effects—in the FX/Mixdown section (see *Chapter 8*).

ZR-76 Recording Concepts

How the ZR-76 Records Your Music

The ZR-76 16 Track Recorder is a *MIDI sequencer*, recording the MIDI information generated by the keys on the ZR’s keyboard, by the various ZR controllers, and by the Drum Machine. When the sequencer plays this data back, it sends it to the areas within your ZR-76 that produce its sounds and effects, and your music is faithfully reproduced. If your ZR-76 is set up to transmit MIDI, the sequencer will send the appropriate data out of the ZR’s MIDI Out jack, as well.

Note: If you’d like to learn more about MIDI, see “What Is MIDI?” in *Chapter 13*.

Each musical event the 16 Track Recorder records takes up space in the ZR’s memory. Unlike conventional recording media such as tape, when there’s no musical activity—during rests between notes, for example, or when you’re holding a long note—no data is required and no memory is used. For this reason, the 16 Track Recorder’s capacity is gauged in terms of bytes, as opposed to recording time. The 16 Track Recorder shares memory with the Idea Pad and, if you’ve allocated memory to them, the RAM sound bank and RAM rhythm bank (*Chapter 9* explains the workings of the ZR’s memory). You can adjust the allocation of the ZR’s RAM memory, as described in *Chapter 9*.

Tracks

Each musical performance that you record is recorded on a *track*. A track stores the MIDI data representing the notes that you played, and remembers the sound you used when you made the recording. It also contains a collection of sound and effect settings that you can use to shape the track’s sound to your taste. The 16 Track Recorder also offers a suite of tools for honing each track to perfection.

The 16 Track Recorder, as its name implies, allows you to record 16 tracks that can be played back at the same time, synchronized with each other so that they sound as if they were all recorded at once. Heard together in this way, your tracks can add up to a completely realized musical arrangement.

The ZR-76 16 Track Recorder records at a resolution of 384 ppq (for “pulses per quarter note”). With every

quarter note subdivided into 384 segments—called *clocks*—the 16 Track Recorder faithfully captures all of your most subtle rhythmic nuances.

Tracks can be muted—silenced. The can also be soloed—every track except for the selected track is silenced to allow you to listen to that track isolated from the other instruments in the sequence. Muting and soling tracks is described in *Chapter 8*.

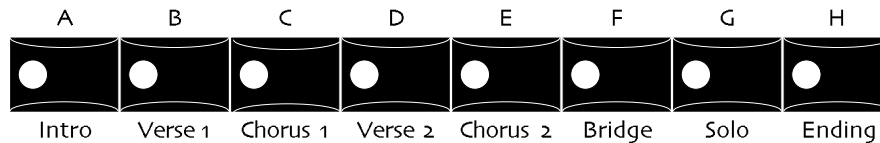
Track Effects

Each track has its own effect routing setting, so that every instrument in your musical arrangement can be assigned just the right effect. The ZR-76 effects are described in *Chapter 8*.

Everything pertaining to tracks can be found in the 16 Track Recorder.

Sequences

A set of up to 16 tracks of recorded MIDI data is called a *sequence*. A sequence generally contains the music for one section of a composition, such as a verse, bridge or chorus. The ZR-76 can have up to 24 active sequences at a time. Every sequence has its own sequence button in the ZR's Song Editor so that it can be easily accessed. The sequence locations are organized into three banks of eight sequences, with each set of eight being labeled with letters, A through H.



Under each sequence button, you can see the name of a section of a song. These are provided as an easy-to-remember device to help you organize your sequences. By putting your verse sequences in verse locations, chorus sections in chorus locations, and so on, you can simply glance at the buttons to easily recall which sequence is where. If you prefer not to take advantage of these handy labels, you don't have to put a verse in a sequence location named "Verse 1," for example. You can actually put any sequence anywhere.

Selecting sequences is described later in this chapter.

The three banks of eight sequences are referred to as Bank 1, 2 and 3. To switch among them, press the Bank button. The Bank LEDs tell you which bank is currently selected—it's the one that's lit.



Note: The state of the Song Playlist LED tells you whether you're listening to or editing a song or single sequence. When it's on, you're working with a song. When it's off, you're working with a sequence.

Sequence Effects

Each ZR-76 sequence can have its own insert effect. The ZR-76 effects are described in *Chapter 8*.

Everything pertaining to sequences can be found in the Song Editor.

Song Playlists and Songs

In the ZR-76, a composition is constructed by making a list of its component sections—each one a sequence—in the order that you’d like to hear them. This list is called a *song playlist*. Once a song playlist has been assembled, pressing the 16 Track Recorder’s Play button causes the sequences in the list to play, one after the other, in the order you’ve chosen. The Song Playlist button provides access to the playlist creation process, and also selects the current song’s playlist for playback or editing, if you’ve created one.

Song Playlist



In the ZR-76, a *song* is the collection of materials that make up your composition, including:

- a song playlist, if you’ve created one (in musical terms, this is what you might think of as a song)
- three sequence banks containing sequences that can be used in your song playlist
- a global chorus and global reverb setup

The state of the Song Playlist LED tells you whether you’re listening to or editing a song playlist or single sequence. When it’s on, you’re working with a song playlist. When it’s off, you’re working with a sequence.

Tip: Whenever you record new music, or edit anything in a song, the Disk/Global Save LED flashes to remind you that your ZR’s song memory contains data that hasn’t yet been saved to floppy. Since songs are created in RAM memory, it’s important to save your songs to floppy before powering off your ZR-76—RAM memory is erased when your ZR is turned off.

Song Playlist Effects

Each song playlist also has its own global chorus and global reverb setup that can be utilized by the sequences it plays. (Each sequence within a song playlist has its own insert effect.) The ZR-76 effects are described in *Chapter 8*.

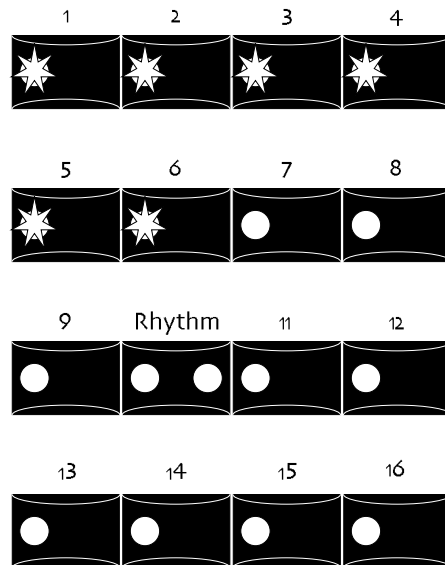
Everything pertaining to songs can be found in the Song Editor.

Understanding the Recording LEDs

Many of the buttons in the 16 Track Recorder and Song Editor contain LEDs that provide information at a glance when you're recording in the ZR-76.

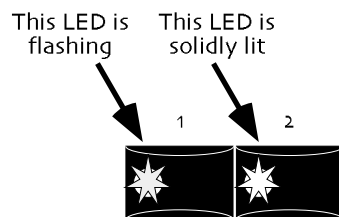
The Track LEDs

In the 16 Track Recorder, when a track contains data—that is, you've recorded something on the track—its LED lights solidly.



In this illustration, you can see that tracks 1 through 6 contain recorded information, since their LEDs are lit.

Whenever you work in the 16 Track Recorder, there is always a track selected for recording or editing. To select a track, press its button. When a track is selected, its LED flashes.

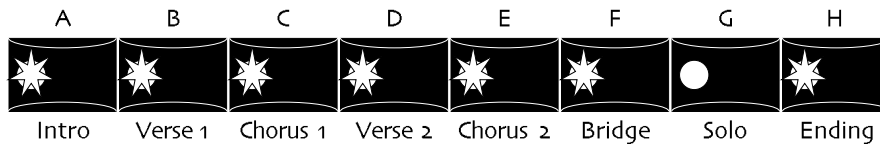


In this illustration, track 1 is selected for recording or editing, since its LED is flashing.

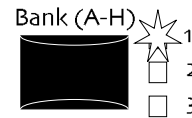
Track 2, whose LED is solidly lit, contains recorded information.

The Sequence LEDs

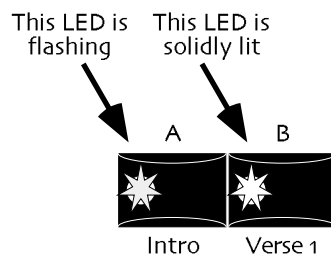
In the Song Editor, when a sequence location contains recorded data, its LED solidly lights.



In this illustration, all of the sequence locations in Bank 1 are in use except for G, the only sequence location whose LED is not lit.



To select a sequence, press its button. The LED of the currently selected sequence flashes.



In this illustration, Sequence A is selected, since its LED is flashing.

You can see that Sequence B contains recorded information because its LED is solidly lit.

The Song Playlist LED

When the Song Playlist LED is on, the current song playlist is active, and pressing the 16 Track Recorder Play, Rewind or Fast Forward buttons will play, rewind or fast-forward the song playlist. The Song Editor Erase and Misc. buttons will offer song and song playlist editing options.



When the Song Playlist LED is off, all of the 16 Track Recorder and Song Editor buttons will pertain to tracks and sequences.

Introducing the 16 Track Recorder

Since the ZR-76 provides such a flexible songwriting environment, you may be coming to the 16 Track Recorder from one of several directions:

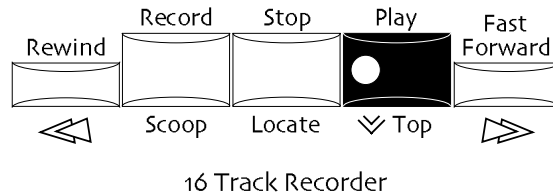
- You may have been playing sounds—perhaps improvising along with the Drum Machine—and you’ve captured something you like in the Idea Pad. You’ve sent that music over to the 16 Track Recorder and would like to listen to it, and maybe add some new elements to its arrangement. *Chapter 6* describes sending an idea from the Idea Pad to the 16 Track Recorder.
- You may have loaded a pre-existing Standard MIDI File from floppy and would like to hear it, and perhaps add some music of your own on top of it. (See “Working with Standard MIDI Files [SMFs]” later in this chapter.)
- You may have recorded some new music right into the 16 Track Recorder
- You haven’t recorded anything on your ZR-76 yet, and want to learn how

This chapter will allow you to take control of the ZR’s recording facilities. If one of the first three

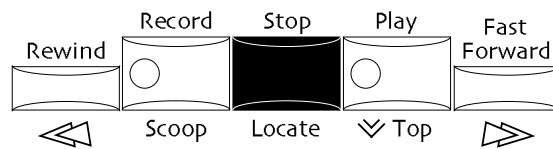
possibilities describes you, see the “To Play Back Music in the 16 Track Recorder” section immediately following this one. If you’re starting with a completely clean slate, you may want to jump ahead to “Starting from Scratch.” To most fully understand recording in the ZR-76, you’ll want to read “ZR-76 Recording Concepts” at the start of this chapter, if you haven’t already read it.

To Play Back Music in the 16 Track Recorder

1. Press the Play button.



2. Press Stop if you’d like your idea to stop playing before it has played all the way through.



When the 16 Track Recorder gets to the end of your music, it will stop.

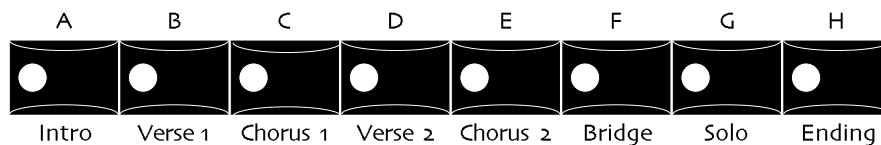
Recording Tracks

The following section provides step-by-step methods for the important basic recording techniques. The ZR-76 offers numerous advanced recording possibilities as well, and many options for setting up the sequence you’re using so that it suits the way you like to work—these are all described fully later on in this chapter. For the purposes of this section, use your ZR’s default settings as you get comfortable recording with your ZR-76.

If you already have some tracks in your sequence—perhaps you’ve sent them over from the Idea Pad or they belong to a Standard MIDI File you’ve loaded from disk—you’ll probably want to skip ahead to “To Record Another Track” below.

To Create a New Sequence

1. Press a sequence button whose LED is not lit. This will ensure that the sequence location you select is empty, and you won’t be recording over music you don’t mean to erase.



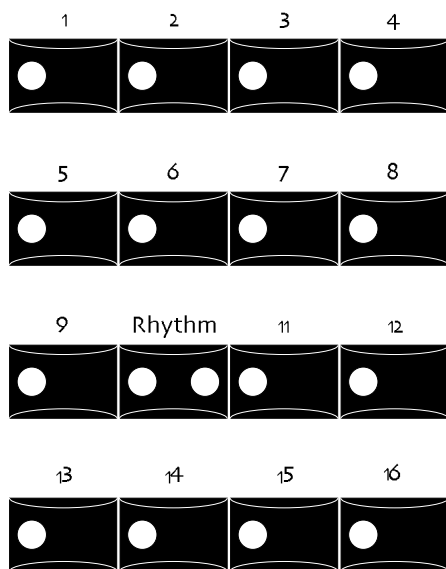
The song section labels underneath the sequence buttons are offered as a convenient way for you to remember which sequence is where. You can use any sequence location you like.

Selecting Tracks

Each track in the 16 Track Recorder is selected individually for recording and editing.

To Select a Track

1. Press the desired track's button.



Tip: Whenever you'd like to return to a track's main display, press its button.

Selecting Sounds for Tracks

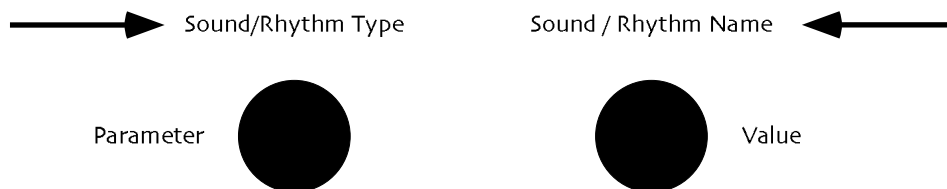
The first step in recording a track is to pick a sound to record with. This choice doesn't need to be permanent—you can change the track's sound at any time you like, even after you've recorded your performance (see "Changing the Sound on a Recorded Track" below). The method below can be used for sending a sound to any track in a sequence, at any stage in the recording process.

To Assign a Sound to a Track With or Without its Effect

1. Press the Select Sound button.

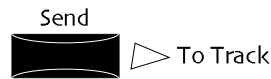


2. Use the Sound Type and Sound Name knobs to select the sound you would like to assign to a track.

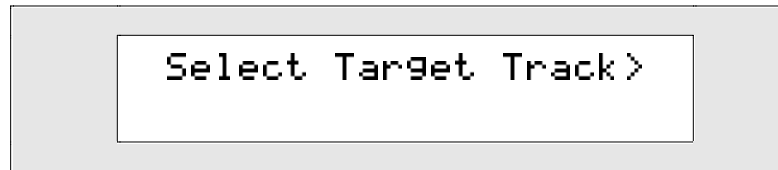


You can also select a sound by holding down the Select Sound button and spelling the desired sound's name on the ZR's keyboard.

3. Press the SoundFinder Send To Track button.

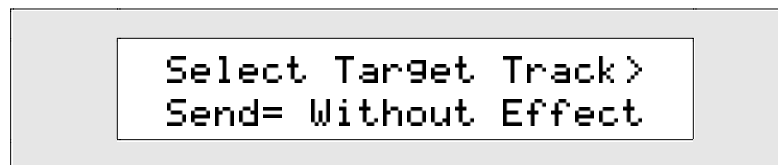


If the selected sound uses the global chorus or global reverb as its effect, or no effect at all, the display will show:



If the bottom line of the display is empty, you're ready to select a destination track for your sound. You can skip ahead to step 5.

If the selected sound uses an insert effect, the display will show:



If the bottom line of the display begins with "Send=," you can use the Value knob to select whether or not you'd like the sound's insert effect to be installed along with the sound into the current 16 Track Recorder sequence. (For an explanation of the ZR-76 effects, see *Chapter 8*.)

4. If you'd like to send the insert effect to the current 16 Track Recorder sequence along with the sound, select "With Effect."
- If you'd like to send the sound without the insert effect, select "Without Effect."
5. To send the sound and any SoundFinder edits you've made to a track—with or without its insert effect—press the desired 16 Track Recorder track button. If you like, you can press the Yes button, and the sound you've selected will automatically be sent to the lowest-numbered empty track in the current sequence

Tip: You can also begin recording a track without stopping to send a sound to the 16 Track Recorder—simply begin to record (see "Recording Your First Track" below to learn how). This shortcut is especially helpful when the sound you want to work with doesn't use an insert effect.

Recording Your First Track

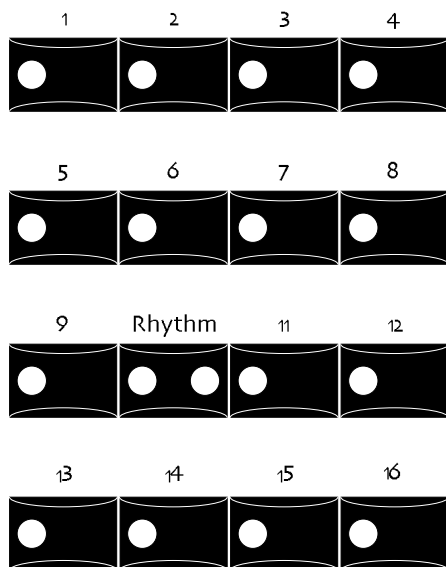
Once you've selected a sequence location, you're ready to begin recording on one of its tracks.

Note: The following steps utilize a shortcut method for choosing a sound for a track in order to get you recording as quickly as possible. You can also send a sound to a track as described above in "To Assign a Sound to a Track With or Without its Insert Effect." The shortcut method does not bring the sound's effect into the 16 Track Recorder from SoundFinder.

To Record the First Track of a New Sequence

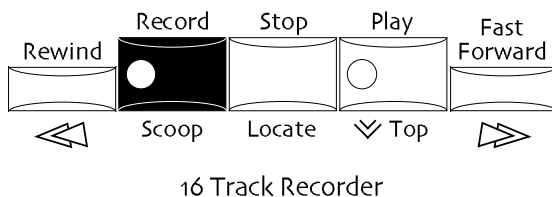
1. Select a sound in SoundFinder that you'd like to use for your recording.
You can use the Sound Type knob to select the kind of sound you want to use, and the Sound Name knob to select the specific sound. You can also hold down SoundFinder's Select Sound button and spell the name of the desired sound on the keyboard.

2. Press any track button.

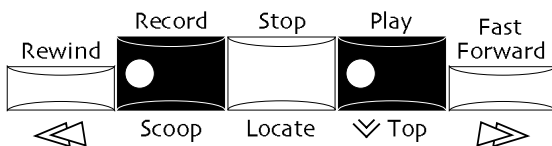


The LED in the track button you've pressed will begin to flash to show that it's selected for recording. When you begin recording, you'll immediately hear a four-beat countoff. At the first beat after the countoff, the 16 Track Recorder will begin recording—that's your cue to start playing some music on the keyboard.

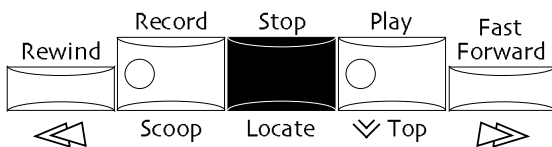
3. Press and hold the Record button.



4. While still holding the Record button, press the Play button to begin recording.

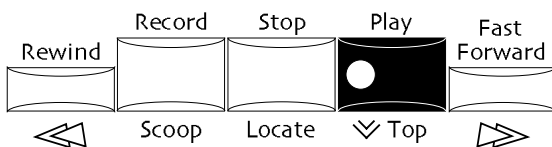


5. When you've finished recording, press the 16 Track Recorder Stop button.

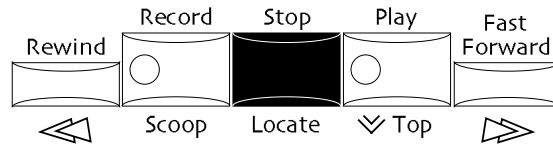


To Play Back Your Recording

1. Press the Play button.



2. Press Stop if you'd like your new recording to stop playing before it has played all the way through.



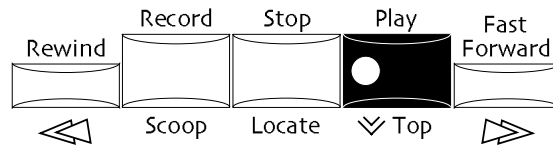
When the 16 Track Recorder gets to the end of your music, it will stop.

Re-Starting the Sequence Without Stopping It

You can re-press the Play button at any time to return to the top of a sequence without stopping playback.

To Return to the Beginning of a Sequence While it's Playing

1. If the sequence is not playing, press the 16 Track Recorder Play button.



2. At any point while the sequence is playing, press the Play button again. The sequence will start playing again from its beginning.

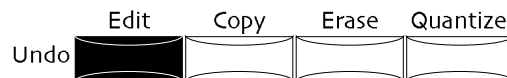
Track Undo

The ZR-76 allows you to undo your last recording, or track copy, erase or quantize procedure. When you undo a track, whatever was on the track prior to the last recording or procedure is restored. (Sound selection and parameter edits are not restored using the Undo feature.) Undo retains your track until you power down, record or perform a procedure on another track, erase a sequence or song, create a new song or load a sequence, song, collection of songs, ALL-RAM file or a SESSION file from floppy.

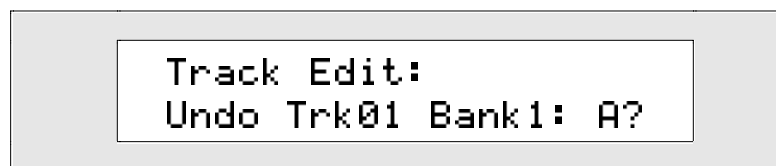
Tip: If you do multiple takes of a performance, they'll all be captured in the ZR's Idea Pad. This gives you a catalog of takes to draw from. If you want to retrieve a take from the Idea Pad, simply send it to the desired track in the 16 Track Recorder using the Idea Pad's Sent to Track button. See *Chapter 6* to learn how.

To Undo a Recording or Track Editing Command

1. Press the 16 Track Recorder Edit button.



The display will show:



This will show the currently selected track, bank and sequence

This display shows you the last track on which you recorded. You can return the displayed track to its previous state by pressing the Yes button.

Note: If you have not yet recorded anything, or performed any track copy, erase or quantize procedures in the current song, the display will indicate that there is nothing to undo.

2. If you'd like to undo the last recording or procedure on the displayed track, press the Yes button. If you'd rather not continue, press No.

Note: When you've taken advantage of the undo function, the undo itself becomes the last performed track operation. You can undo this event just like any other, using the same process. This is useful if you'd like to compare two versions of a track, to hear the effect of changes you made.

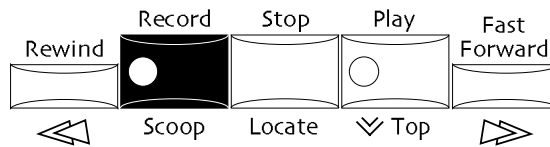
To Record Another Track

1. Press SoundFinder's Select Sound button and use the Sound Type and Sound Name knobs to select the sound you would like to use on your new track. You can hold down the Select Sound button and spell the name of the desired sound on the keyboard.
2. Press a 16 Track Recorder track button whose LED is not lit. This will ensure that the track you select for recording is empty, and you won't be recording over music you've already created.

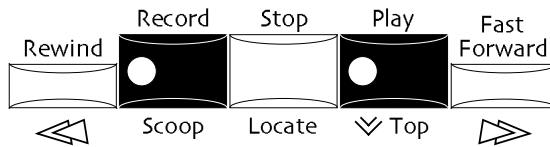
Tip: To find out if a track with a flashing LED already contains recorded data, select another track temporarily—if the track you're interested in is empty, its LED will not light.

When you begin recording, you'll immediately hear a four-beat countoff. At the first beat after the countoff, the 16 Track Recorder will begin recording—that's your cue to start playing the keyboard.

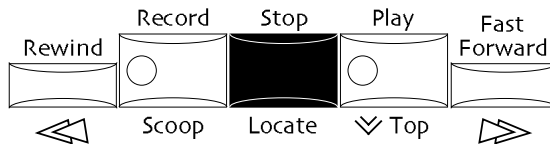
3. Press and hold the Record button.



4. While still holding the Record button, press the Play button to begin recording.



5. When you've finished recording, press the 16 Track Recorder Stop button.

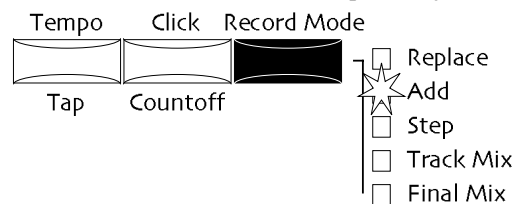


Overdubbing on a Track

The ZR-76 allows you to add music on top of music already recorded on a track—this is called *overdubbing*. This can be a handy tool when building up a percussion part, or filling out chords in a string arrangement, for example. The overdubbing process utilizes one of the ZR's recording modes, which are described in detail later in this chapter in "Recording Modes."

To Overdub a Track

1. Select the track you'd like to overdub by pressing its button.
2. Press the Song Editor Record Mode button repeatedly until the Add LED is lit.



3. Press and hold the Record button.
4. While still holding the Record button, press the Play button to begin recording. Everything you play

once recording starts will be added to what's already on the track.

- When you're finished recording, press the 16 Track Recorder Stop button.

Tip: In using Add record mode, it is often useful to loop the sequence, or a section of the sequence. This allows you to keep adding music continuously, without having to manually play the sequence over and over. For details on looping and setting a region, see "Using Regions" and "Looping Sequences" later in this chapter.

When you've finished overdubbing, it's a good idea to press the Record Mode button again until the Replace LED is lit. Replace is the normal recording mode, wherein everything you record replaces what was previously on the track, instead of being added to the earlier data.

Moving On

You can continue recording tracks in your sequence until there are no empty tracks left. (The ZR-76 provides methods for combining tracks to free up room for more music should the need arise—see "The Copy Button: Replace, Append and Merge" later in this chapter.) The rest of this chapter contains information on the many powerful features of the 16 Track Recorder and Song Editor.

Track Tools and Techniques

For a conceptual introduction to ZR-76 tracks, see "ZR-76 Recording Concepts" above.

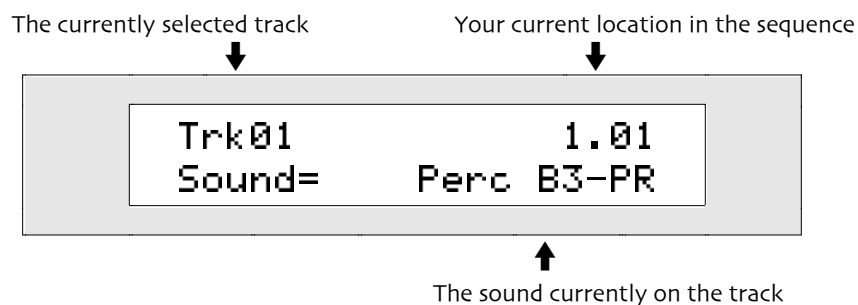
Changing the Sound on a Track and Assigning a Sound to a New Track

You can change the sound on a track at any time. The music you've already recorded on the track will play using the new sound. The following method can also be used to select a sound for a new track.

Tip: Your ZR-76 can automatically select an appropriate effect for each sound as you select it for use by a track. See "Enabling or Disabling Automatic Effect Routing" in *Chapter 3*.

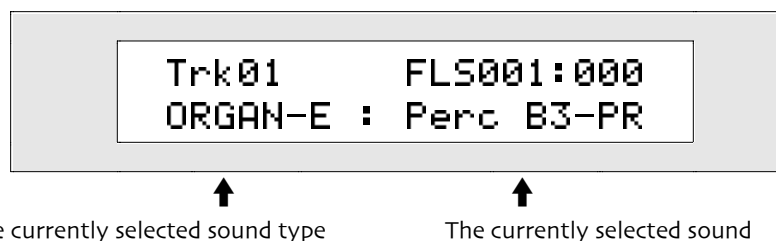
To Change the Sound on a Track

- Press a track button to select the track whose sound you'd like to change. The display will show:



Note: Every recorded track will show a sound name on its bottom line—if "***UNDEFINED***" is displayed, a sound has not yet been assigned to the track. If "Empty" appears on the top line of the display, the track has not yet been used for recording.

- Press the Enter button. The display will show:



This display is much like the display used to select sounds in SoundFinder. You can use the Sound

Type knob (left) to select any of the SoundFinder sound categories. You can use the Sound Name knob (right), or the up/down arrow buttons, to choose a sound from the currently selected sound type.

Note: The above display will initially show the sound type of the track's current sound, if it has one. This is so that you can easily try out sounds in the same family of instruments just by turning the Value knob—especially handy if you're trying to find, for instance, the perfect piano sound for your track.

3. Use the Sound Type and Sound Name knobs to select a new sound for the track.
4. When you have selected a new sound, press the Enter button to return to the track page. The display will show the name of the new sound you selected.

Note: If you change a sound on a recorded track while the sequence is playing, the 16 Track Recorder will stop when you press Enter.

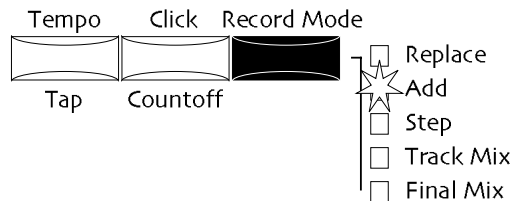
Scooping Notes From a Track

The ZR-76 allows you to easily remove, or *scoop*, individual notes out of tracks you've recorded. This can be done while the 16 Track Recorder is playing or when it's stopped. In both cases, you can identify the note you want to remove by playing it on the keyboard.

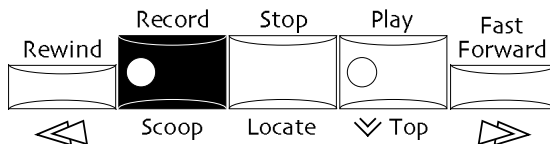
The ZR-76 can undo the following track procedure. See "Track Undo" earlier in this chapter for details.

To Scoop Out Notes from a Track as it Plays

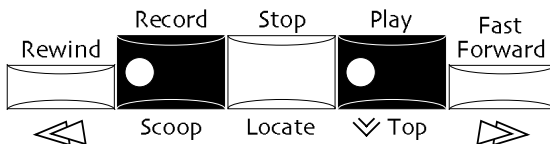
1. Select the track you would like to scoop notes from by pressing its button.
2. Press the Song Editor Record Mode button repeatedly, until the Add LED is lit.



3. Press and hold the Record button.



4. While still holding the Record button, press Play, and then immediately release both buttons. The sequence will begin recording in Add mode (to learn how to use Add mode, see "Overdubbing on a Track" earlier in this chapter).



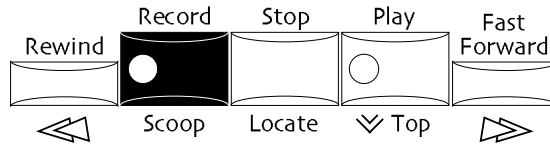
5. As the sequence plays, press and hold the Record button.
6. While still holding the Record button, press the key on the keyboard that plays the note you would like to scoop out. For as long as you hold the key down, any occurrences of that note will be erased.
7. You can continue to hold the Record button and press single keys on the keyboard to erase them as they occur on the track.
8. When you are finished scooping notes from the track, press the 16 Track Recorder Stop button.

Note: When you are scooping notes using Add record mode, it is often useful to loop the sequence, or a region of the sequence. This allows you to erase several notes without having

to play the sequence over and over. For details on looping and setting a region, see “Looping Sequences” and “Using Regions” below.

To Scoop Out Notes from a Track that’s Not Playing

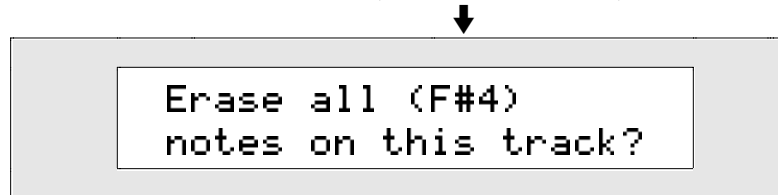
1. Select the track you would like to scoop notes from by pressing its button.
2. Press and hold the Record button.



3. While still holding the Record button, press the key on the keyboard that plays the note you would like to scoop.

The Yes/No LEDs will flash, and the display will show:

The note you selected on the keyboard



This display is asking if you are sure you want to scoop out the note you selected. You can change the note to be erased by turning the Value knob, or pressing the up/down arrow buttons.

Press the Yes button to continue the procedure and erase all occurrences of the displayed note from the track—if you’d rather not continue, you can press No.

4. Press the Yes button if you want to continue, or press No if you want to cancel the procedure.

Editing Track Sounds

The 16 Track Recorder provides an assortment of parameters for customizing sounds assigned to tracks. These parameters are identical to those offered in SoundFinder. For a description of each parameter, see *Chapter 4*. When you edit the sound on a track, all changes you make are part of the track, not the sound itself. You’ll find that if you select the sound for another track, or choose it in SoundFinder, it will still be in its original, unedited form. To permanently alter a sound, you must edit it in SoundFinder and save it.

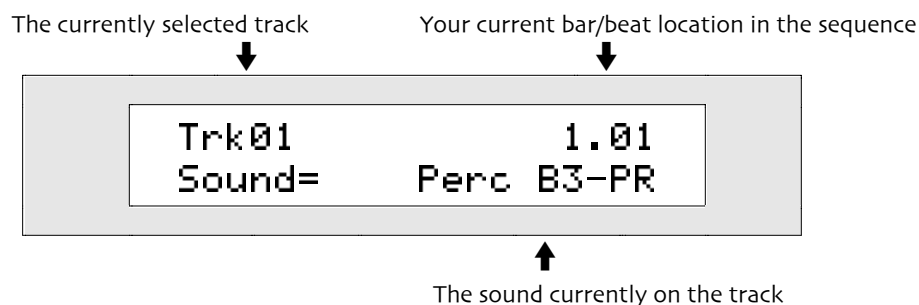
The FX/Mixdown section provides quick access to three of the most frequently used track parameters:

- the track’s Mix (Expression) setting can be changed by turning the Mix knob while the track is selected
- the track’s Pan setting can be changed by turning the Pan knob while the track is selected
- when the track is selected, the track’s effect routing is accessed by pressing the Routing button and turning the Parameter knob until the FX Bus parameter is displayed; while it’s being displayed, it can be edited with the Value knob

Chapter 8 describes the workings of the FX/Mixdown strip in detail.

To Edit the Sound on a Track

1. Press a track button to select the track whose sound you would like to edit—the display will show:

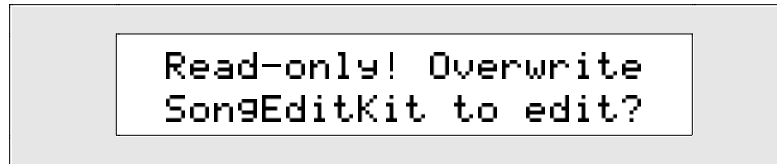


Note: If the track you've selected does not already have a sound on it, you'll see “*UNDEFINED*” on the bottom line of the display. To assign a sound to this track, see “Selecting Sounds for Tracks.”

When this display is showing, you can turn the Parameter knob to select the parameter you'd like to edit, and the Value knob to change the setting of the currently selected parameter.

2. Use the Parameter knob to select the desired parameter.
3. Use the Value knob to change the selected parameter's setting.
4. If you're editing a standard ZR-76 sound, you can now set the selected parameter to any value you like. For a full description of the editing options available for the ZR-76 sounds, see “Working With The SoundFinder Parameters” in *Chapter 4*.

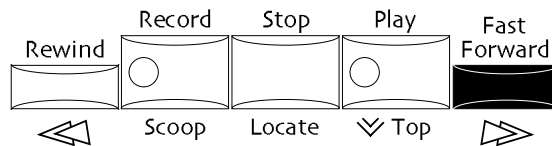
If the sound you're editing is a drum kit sound on any track other than the rhythm track—since kits on the rhythm track are only edited in the Drum Machine—the following message will appear:



5. If you'd like to proceed, press the Yes button and set the selected parameter's value to any setting you wish. If you're unclear about what the displayed question means, see “Editing ZR-76 Drum Kit Sounds” in *Chapter 4*.

Tip: When you select a new sound for a track, any edited parameters will be reset to their default value for the new sound. You can disable this feature by setting the System parameter Track ParamReset to Off (see *Chapter 3*).

The Fast Forward Button



The 16 Track Recorder Fast Forward button has a few special talents. It can:

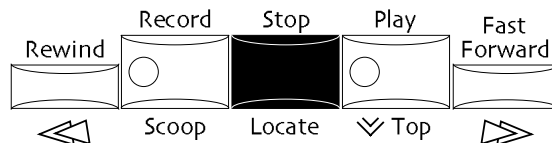
- move through the sequence a measure at a time while the sequence is stopped
- move to the next beat while the 16 Track Recorder is playing—you can hear your music playing at high speed as the fast-forward function occurs

Tip: Both functions will speed up if the Fast Forward button is held down.

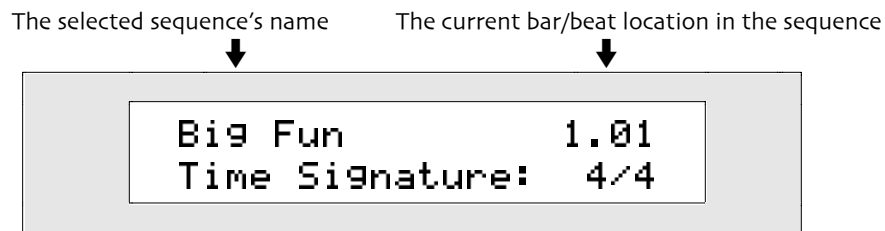
- work in conjunction with the Record button to quickly erase music from a specified point in the track all the way to the end

To Fast Forward a Measure at a Time

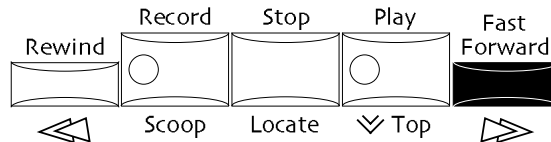
1. If the sequence you'd like to fast forward is playing, press the 16 Track Recorder Stop button.



The sequence counter will be in the top right corner of the display.



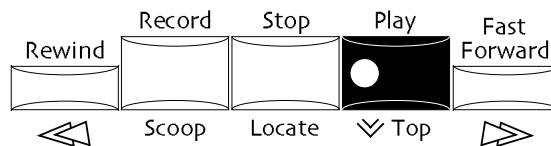
2. Press and hold the Fast Forward button to move to the beginning of the next measure in the sequence.



The counter will move forward measure by measure for as long as you hold the button down. If Region To is off, you can fast forward until the end of the sequence; if Region To is on, you can fast forward until you reach the Region To location.

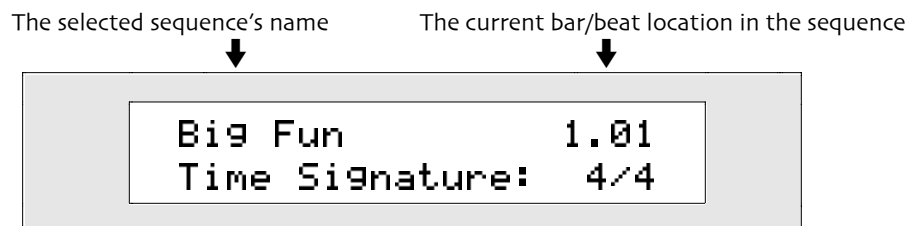
To Fast Forward One Beat at a Time

1. If the sequence you'd like to fast forward is stopped, press the 16 Track Recorder Play button.

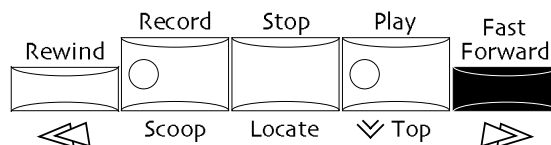


The sequence will begin playing.

The sequence counter will be in the top right corner of the display.



2. Press the Fast Forward button once to move to the next beat of the sequence.



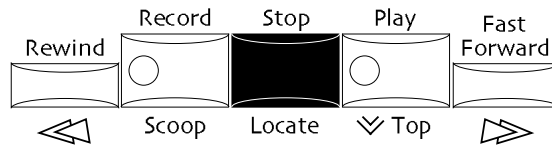
The sequence will jump ahead and play the next beat, and the counter will show where you are.

3. If you'd like to fast forward several beats ahead, you can press and hold the Fast Forward button. The sequence will jump ahead beat by beat for as long as you hold the button down. If Region To is off, you can fast forward all the way to the end of the sequence; if Region To is on, you can fast forward up to the Region To location. The fast forward speed will accelerate as you hold down the button.

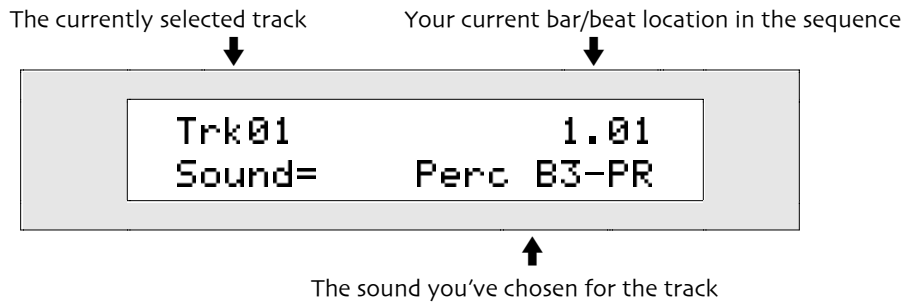
The ZR-76 can undo the following track command. See "Track Undo" earlier in this chapter for details.

The Fast Forward/Record Shortcut for Erasing a Track

1. If a sequence is playing, press the 16 Track Recorder Stop button.



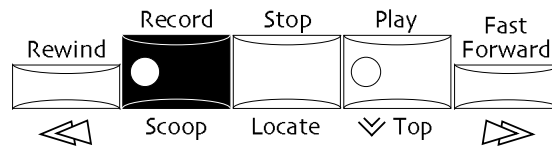
2. Select the track you would like to erase by pressing its button. The display will show:



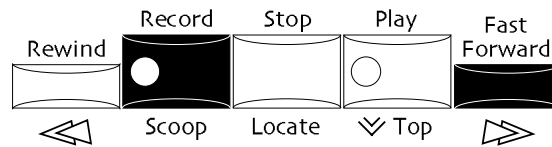
Note: If there's nothing recorded on the track you selected, you'll see "Empty" in the top line of the display. If you haven't assigned a sound to the track, you'll see *UNDEFINED* on the bottom line of the display.

The 16 Track Recorder counter appears in the upper right-hand part of the display, and shows you where you are in the sequence.

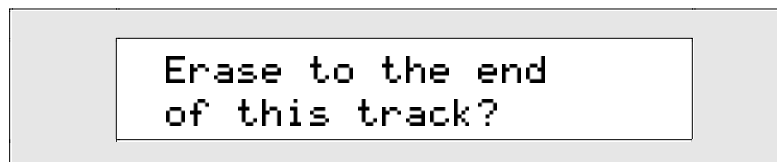
3. Use the Rewind or Fast Forward button—or the Locate function—to set the counter to the point in the sequence where you would like to start erasing. You can return to the beginning of the sequence to clean off the entire track, if you like. All of your notes and controller data will be erased from the point you select to the end of the track.
4. Press and hold the Record button.



5. While holding the Record button, press the Fast Forward button.



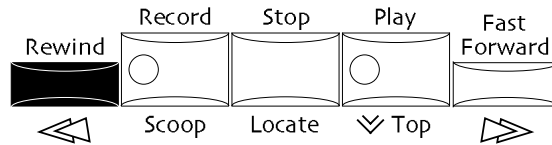
The display will show:



This display is asking you if you're sure you'd like to erase all note and controller data in the track from the location you've selected. Pressing Yes will continue the procedure and pressing No will cancel.

- If you'd like to erase all of the music from the current counter location to the end of the track, press Yes. If you'd rather not continue, press No.

The Rewind Button

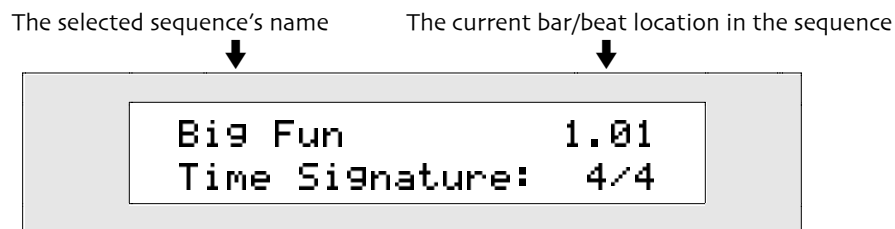


The 16 Track Recorder Rewind button has several special talents. It can:

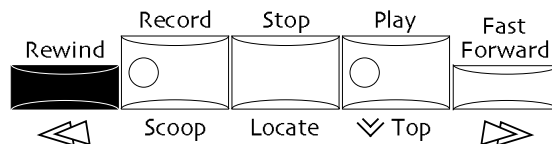
- move to the beginning of the sequence when the 16 Track Recorder is stopped
- move to the beginning of the current measure while the 16 Track Recorder is playing
- jump to the region From location if From is turned on—see “Using Regions” below
- when held down, Rewind will move to the beginning of each measure in the current sequence if the 16 Track Recorder is stopped

To Rewind to the Beginning of the Current Sequence

- If the sequence you would like to rewind is playing, press the 16 Track Recorder Stop button. The sequence counter will be in the top right corner of the display.



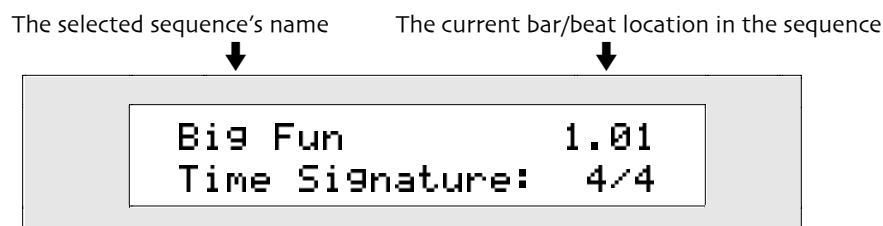
- Make sure the Region From LED is off.
If the From LED is on and the From page is showing, press the From button once to turn it off.
If the From LED is on and the From page is not showing, press the From button twice to turn it off.
- Press the Rewind button once to move to the beginning of the current sequence.



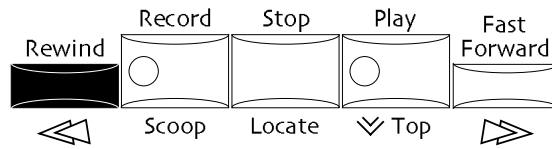
The counter will update to show where you are.

To Rewind One Measure at a Time While the Sequence Plays

- If the sequence you'd like to rewind is stopped, press the 16 Track Recorder Play button. The sequence will begin playing.
The sequence counter will be in the top right corner of the display.



- To rewind to the beginning of the current measure, tap the Rewind button once.



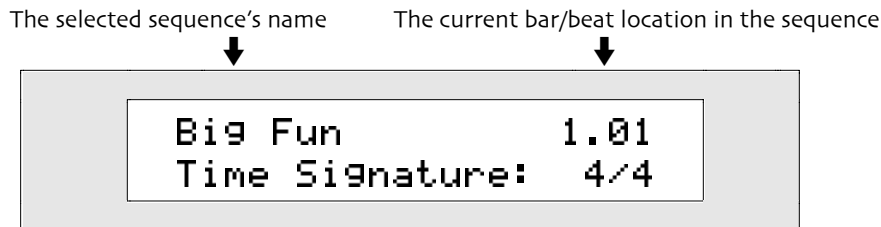
The sequence will play from the beginning of the current measure, and the counter will update to show where you are.

- If you'd like to move back several measures, press and hold the Rewind button. The counter will move back measure by measure for as long as you hold the button down. If Region From is off, you can rewind all the way to the beginning of the sequence; if Region From is on, you can rewind to the Region From location. The rewind speed will accelerate as you hold down the button.

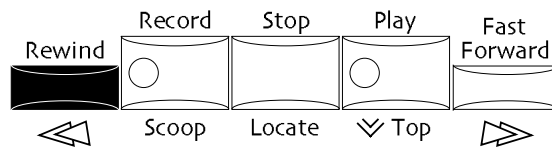
Tip: You can disable the rewinding sound if you like. See “The 16 Track Recorder Rewind Sound” in *Chapter 3*.

To Rewind One Measure at a Time with the Sequence Stopped

- If the sequence you'd like to rewind is playing, press the 16 Track Recorder Stop button. The sequence counter will be in the top right corner of the display.



- To rewind one measure at a time, press *and hold* the Rewind button.



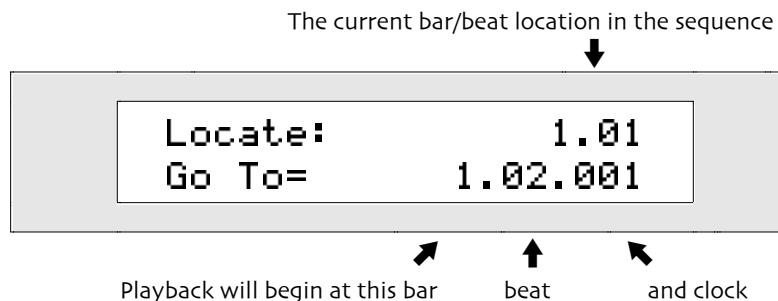
The counter will move to the beginning of the current measure, and then back one measure at a time. If Region From is off, you can rewind all the way to the top of the sequence; if Region From is on, you can rewind to the Region From location. The rewind speed will accelerate as you hold down the button.

Jumping to Any Location in a Sequence

There may be times when you'll want to start playback of your sequence from somewhere in the middle. The ZR-76 provides an easy-to-use locate function for this purpose.

To Locate to Any Point in a Sequence

- If the sequence is playing, press and release the 16 Track Recorder Stop button.
- Press and hold down the 16 Track Recorder Stop button. The display will show:



This display will show for as long as you hold the Stop button down. When you release the button, the counter will jump to the location indicated by the Go To value. You can:

- turn the Parameter knob clockwise to move to the beginning of the next measure, and counter-clockwise to move to the beginning of the current measure (or to the beginning of the previous measure if the beat value is 01 and the clock value is 001).
 - press the up arrow button to move to the beginning of the next beat, and the down arrow button to move to the beginning of the current beat (or to the beginning of the previous beat if the clock value is 001).
 - turn the Value knob clockwise to move to the next clock value, and counter-clockwise to move to the previous clock value.
3. Use the knobs and the up/down arrow buttons to set the Go To value to the desired location. When you release the Stop button, the counter will jump to the location indicated by the Go To value.
 4. Release the Stop button to move to the location you selected as the Go To value.
 5. Press the Play button to play the sequence from the point you've selected.

Tip: When you're re-recording a region that begins somewhere in the middle of a sequence, you can use this feature to create a *pre-roll* by jumping to a location before the region begins. This allows you to play along with your music before recording begins. To learn how to set regions, see "Using Regions" later in this chapter.

Tip: You can also use the Region From and To buttons to jump to pre-determined locations within a sequence. See "Using Regions" later in this chapter.

Punching In on a Track

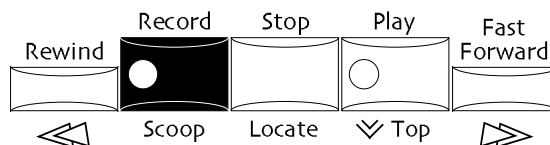
The ZR-76 provides two ways to start recording in the middle of a track as it plays, allowing you to correct portions of your performance without re-recording the entire track. This process is called *punching in*. The 16 Track Recorder allows you to punch in by:

- Using the 16 Track Recorder controls.
- Using a foot switch.

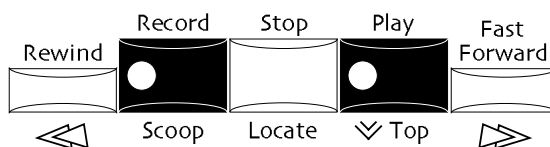
The ZR-76 can undo the following track command. See "Undo" earlier in this chapter for details.

To Punch In Using the 16 Track Recorder Buttons

1. Select the track you'd like to fix.
2. Use the Rewind or Fast Forward buttons—or the "Go To" feature described in "Jumping to Any Location in a Sequence," above—to move to a place in the sequence prior to when you'd like to start recording.
3. Press the 16 Track Recorder Play button.
4. Before the point where you'd like to start recording, press and hold the 16 Track Recorder Record button.



5. While continuing to hold the Record button, press the 16 Track Recorder Play button at the point where you'd like to start recording.



The sequencer starts recording immediately, and whatever you play is recorded.

6. To punch out, press the Stop button.

The ZR-76 can undo the following track command. See “Undo” earlier in this chapter for details.

To Punch In Using a Foot Switch

1. Connect a foot switch to one of the foot switch jacks on your ZR’s rear panel (see “Using Foot Switches” in *Chapter 3* for details).
2. Using the system “Set up foot control?” procedure, set the foot switch to RecPlay/Stop (see “To Assign a Function to a Foot Switch” in *Chapter 3* to learn how).
3. Select the track you’d like to fix.
4. Use the Rewind or Fast Forward buttons—or the “Go To” feature described in “Jumping to Any Location in a Sequence,” above—to move to a place in the sequence prior to when you’d like to start recording.
5. Press the 16 Track Recorder Play button.
6. At the point where you’d like to start recording, press down the pedal you’ve set up for the task. The sequencer starts recording immediately, and whatever you play is recorded.
7. To punch out, press the foot switch again, or press the Stop button.

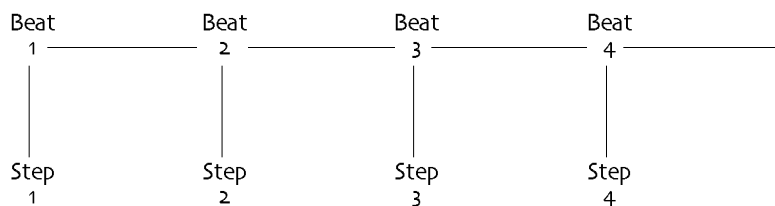
Step Recording in the 16 Track Recorder

Step Recording Concepts

The Step recording mode allows you to easily record notes on a track by entering them, via the keyboard, at your own pace, regardless of your sequence’s eventual tempo.

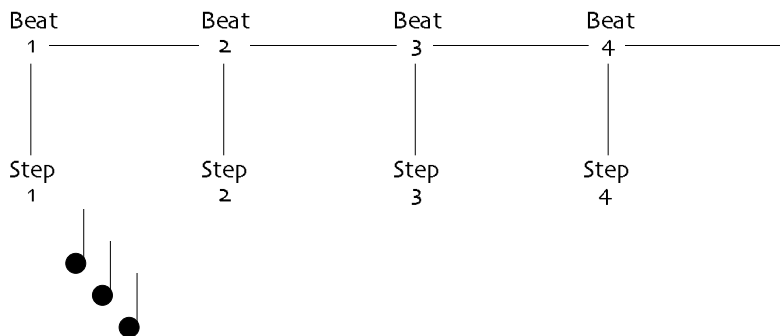
When you step record a track, the track is divided up into divisions of a beat, called “steps.” With the sequence at rest, you enter notes and sustain/sostenuto pedal presses at their desired locations.

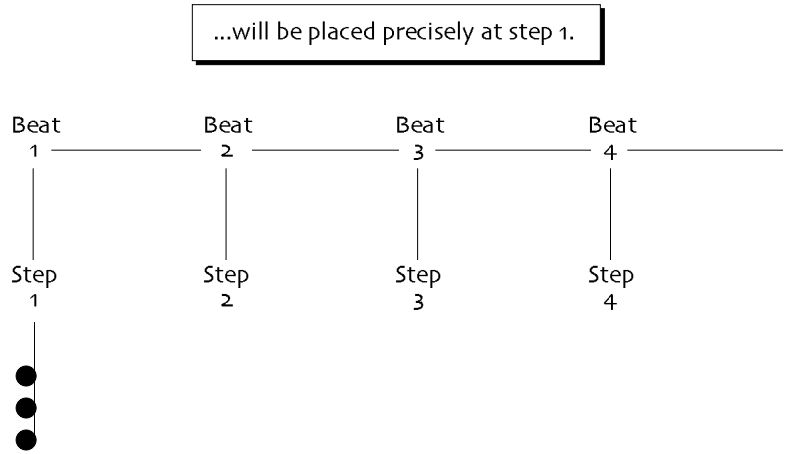
If, for example, a 4/4 track is divided into 1/4 steps...



...there will be four steps in each measure.

When the 16 Track Recorder is set to record at step 1, any notes played...





You proceed to advance step by step through the track, placing the desired notes, chords or sustain/sostenuto pedal presses at the appropriate steps.

Notes are recorded at the velocity with which they're played on the keyboard. By paying attention to the velocities at which you play your notes, you can help simulate a natural sound.

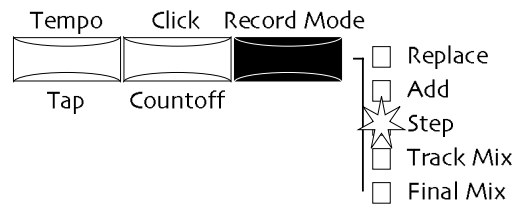
Chords can be recorded by playing all of the notes in the chord simultaneously or one at a time.

During playback, a step-recorded track plays at the sequence's normal tempo, causing all the notes and pedal presses you've entered to sound as if they were performed normally. Step recording is ideal for impossible-to-play passages, or for times when a not-quite-human-sounding performance is desired.

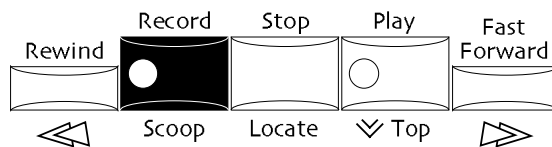
The ZR-76 provides a number of options for customizing the step-recording experience to suit your way of working. These options are accessed during the step-recording process itself.

To Record a Track Using the Step Recording Feature

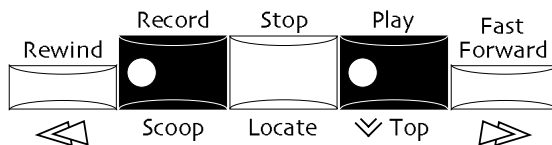
1. Select the track you'd like to record.
2. Press the Record Mode button in the ZR's Song Editor section repeatedly until the Step LED is lit.



3. Hold down the 16 Track Recorder Record button.



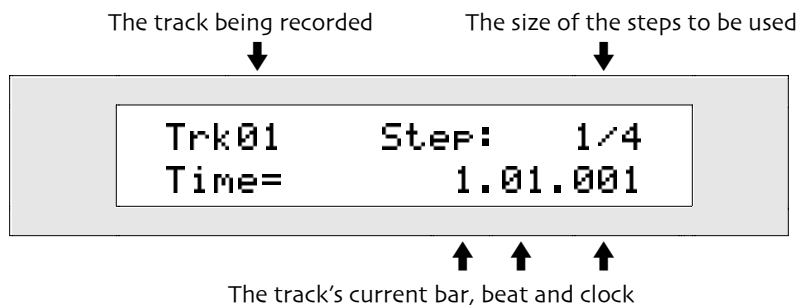
4. While continuing to hold down the Record button, press the Play button.



- Let go of both buttons.

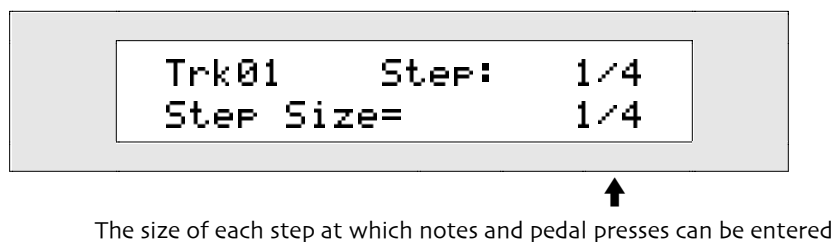
At this point, the 16 Track Recorder is in step-record mode, ready to record notes played on the keyboard. However, it's best to set up all of the step-record options before actually playing any notes on the keyboard or pressing the sustain or sostenuto pedal. For this tutorial, don't play your keyboard until instructed to do so! (If you already have, press the Stop button, the 16 Track Recorder Edit button, Yes, and then return to Step 3.)

The display shows:



The Time display shows the location in the track at which any notes played on the keyboard will be entered. As recording progress, the Time value will increase as you make your way through the track, as we shall see.

- Turn the Parameter knob until the display shows:



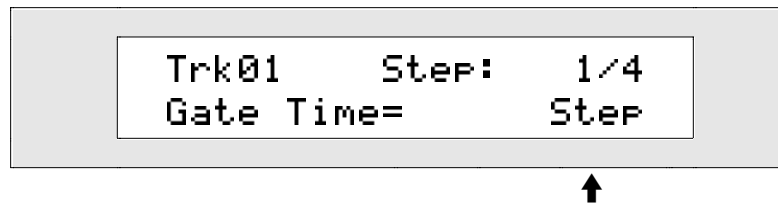
When this display is shown, you can set the step size for your recording. You can select any of the following note values:

- | | |
|------------------------------------|-------|
| 1/1 | 1/8T |
| 1/1T ("T" signifies a triplet) | 1/16D |
| 1/2D ("D" signifies a dotted note) | 1/16 |
| 1/2 | 1/16T |
| 1/2T | 1/32D |
| 1/4D | 1/32 |
| 1/4 | 1/32T |
| 1/4T | 1/64D |
| 1/8D | 1/64 |
| 1/8 1/64T | |

- Turn the Value knob to select the desired step size.

Tip: The Step Size setting—as well as all of the settings below—can be changed as you make your way through the track. This allows you to vary the nature of the notes you enter so that you're not locked in to using only one type of note for your entire track.

8. Turn the Parameter knob until the display shows:



The length of each note entered during step recording

Tip: If you'd find it more convenient to press a button than turn the Parameter knob, you can press the No button to move forward through the Step Record parameter pages.

When this display is shown, you can set the length of each note entered from the keyboard. You can select:

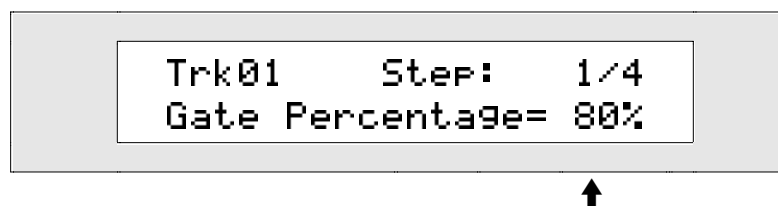
1/1	1/8T
1/1T ("T" signifies a triplet)	1/16D
1/2D ("D" signifies a dotted note)	1/16
1/2	1/16T
1/2T	1/32D
1/4D	1/32
1/4	1/32T
1/4T	1/64D
1/8D	1/64
1/8 1/64T	

Step—With this setting, the duration of each note you enter will equal the current step size.

Note: The Gate Percentage parameter, described below, allows you to fine-tune the note's length in relation to the selected Gate Time value.

Held—With this setting, each note's length will be set by holding down the desired key or keys, advancing the track's Time value, and releasing the key at its desired ending time. (The Gate Percentage setting has no effect when Gate Time=Held.)

9. Turn the Value knob to select the Gate Time value.
10. Turn the Parameter knob until the display shows:



This shows for what percentage of the selected Gate Time each note will last

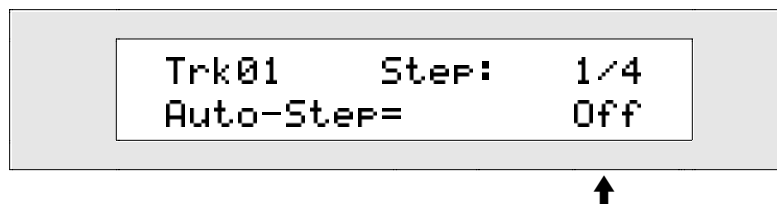
If you've set Gate Time to Held (see Steps 8 and 9), skip to Step 12 (the setting of the Gate Percentage parameter will have no effect).

When this display is shown, you can shorten the length of each note by reducing the selected Gate Time value by percentage.

Tip: A Gate Percentage setting of 80% provides an approximation of the way notes would sound had they been played into the 16 Track Recorder in a standard, non-step recording mode. Higher settings will make notes sound more legato, while lower settings will cause the notes to be more staccato.

11. Turn the Value knob to fine-tune the duration of each note.

12. Turn the Parameter knob until the display shows:



This shows whether the 16 Track Recorder will advance automatically when notes are played

The Auto-Step function allows you to set the 16 Track Recorder so that it will automatically move forward in time, step-by-step, after each note or chord is played.

13. Set Auto-Step to the desired value.

Tip: The 16 Track Recorder will interpret notes played close together—within 100 milliseconds of each other—to be a chord. When Auto-Step is on, notes played further apart will be interpreted as belonging to separate steps, and will cause the track to advance. If you'd like to play the notes in a chord one-by-one, set Auto-Step to Off. This will allow you to play as many notes as you like before advancing the track manually—all of the notes will be recorded at the same step, and will play back simultaneously as a chord.

Having now set all of the step-record options as you'd like them, you're now ready to record.

14. Turn the Parameter knob counterclockwise until the Time display is once again visible.



The Time field on the lower line shows where you are in the track.

15. If you'd like to record a note or chord at the displayed time location, play it on the keyboard. If Auto-Step is off, you can play multiple notes that will be recorded onto the track at the displayed time location, and which will be heard as a chord when played back. (If Auto-Step is on, you can record a chord by playing all the notes at once.)

If you've set Auto-Step to On, the 16 Track Recorder will advance to the next step, as shown on the display.

Sustain and sostenuto pedal presses are recorded by holding down the appropriate pedal at the step at which you'd like the pedal press to begin, and keeping the pedal depressed until you reach the step at which you'd like the pedal press to end.

If you'd like to place your first note(s) further into the track, skip to Step 17.

16. If Auto-Step is off, press the Enter button to advance the track to the next step—the display will reflect the movement. If you'd like to advance to the next beat—as opposed to the next step—press the Play button. You can press the Fast Forward button to advance the track to the next measure.

Regardless of the Auto-Step setting, you can always move forward through a track by pressing the Enter, Play or Fast Forward buttons.

Note: Just as in life, you cannot move backward in time (as far as we know so far).

17. If you'd like the music to begin somewhere past the first step in your track, press the Enter button repeatedly to reach the desired step.

Note: Advancing through the steps in a track during step recording erases the data located at those steps.

18. Repeat Steps 14-16 until you've finished entering all of the notes, chords and/or sustain/sostenuto pedal presses you'd like to record on the track.

19. Press the Stop button.
Your track has now been step-recorded.
20. Press Play to hear the new recording.

The Copy Button: Replace, Append and Merge

The 16 Track Recorder provides three ways to copy tracks within sequences.

You can attach the beginning of one track to the end of another using the Append copy method:

When you append one track to another,

the beginning of one track

is attached to the end of

another track

resulting in a longer track:

The original destination track | The track you've appended to it

When using the Replace and Merge copy methods, you can copy a complete track or a specific element of a track, such as:

- track parameters only—this includes the sound chosen for the track, as well as any edits made to the sound
- track data only—this includes the note data as well as the controller data generated by devices such as the pitch bend or mod wheels
- within region—you can select a time period within the track.

When you've selected what part of a track you want to copy, you can then decide how you want to paste the data you've chosen into the destination track you'll select:

- You can paste it so that it replaces any data already present on the destination track.

When you copy using the Replace setting,
and there is

data in the destination location

it will be replaced by

the track element you've chosen

- You can merge the data with any data already present on the destination track.

When you merge one track with another,

the track element you've chosen

is combined with

any data on the destination track

resulting in a track that contains:

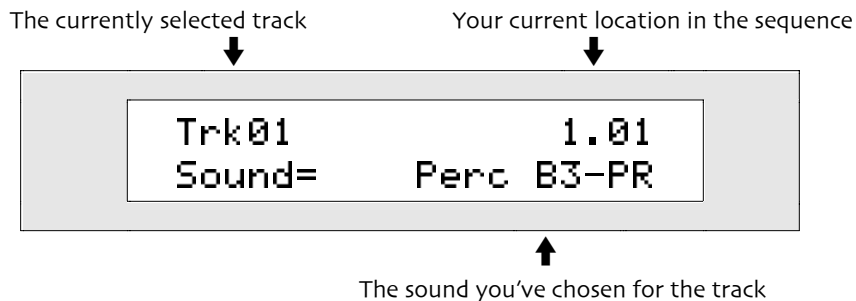
the data on the destination track
and
the track element you've chosen

The ZR-76 can undo the following track command. See "Track Undo" earlier in this chapter for details.

To Use the Track Copy Functions: Append, Replace and Merge

1. Select the track you'd like to work with.

The display will show:

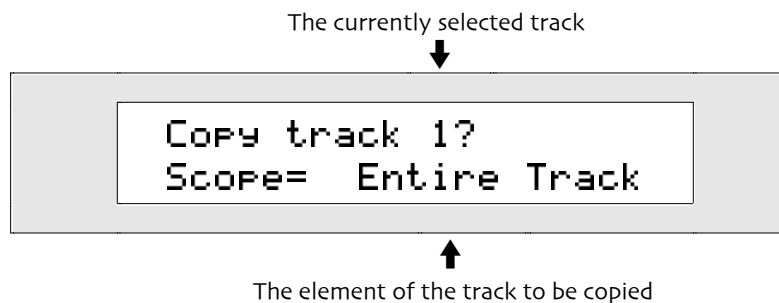


Note: If there's nothing recorded on the track you selected, you'll see "Empty" in the top line of the display.

2. Press the 16 Track Recorder Copy button.



The display will show:



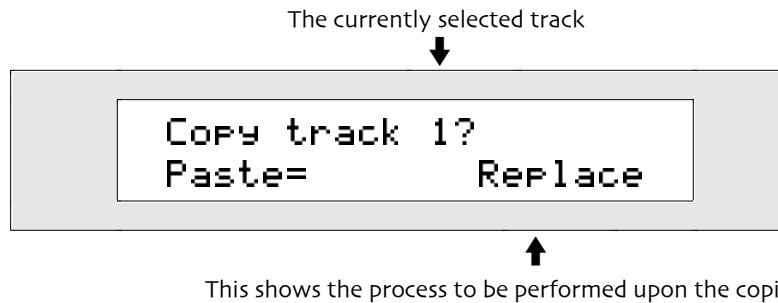
You can turn the Value knob or press the up/down arrow buttons to set the Scope parameter to the desired setting. The Scope parameter controls what element of the track you're copying, and may be set to:

- Within Region—to copy the note and controller data found within the currently selected region. This setting is only available if Region From or To is on (for more information on regions, see "Using Regions" later in this chapter).
- Trk Data Only—to copy the notes and controller data from the whole track
- TrkParams Only—to copy the track's sound and any edits you've made to the sound

Note: You can append only entire tracks—if you plan to use this feature, don't select Within Region, Trak Data Only or TrkParams Only. Also, track parameters from one track can't be merged with another track—if you plan to use the merge feature, avoid TrkParams Only.

- Entire Track—to copy the sound and sound edits, as well as the notes and controller data from the whole track
3. Turn the Value knob, or press the up/down arrow buttons to set the Scope parameter to the desired choice.

- Turn the Parameter knob so the display shows:



Note: This parameter will not appear if the Scope parameter is set to “TrkParams Only.”

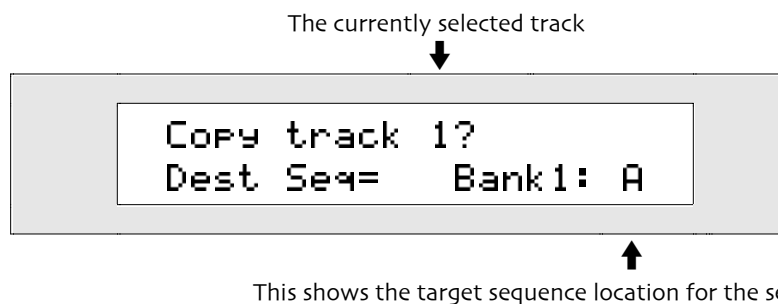
The Paste parameter allows you to control how the note data you are copying will interact with data found at the track location you’ll choose as your destination for this process. You can turn the Value knob, or press the up/down arrow buttons to set the Paste parameter to:

- Append—to paste the currently selected track to the end of the destination track
- Replace—to replace any existing data on the destination track with the data you are copying. Use this option when you’re copying an entire track to a new location. If there’s anything recorded on the destination track, it will be replaced by the track data you’re copying.
- Merge—to combine the data you are copying with the data on the destination track

Note: If you’ve set Scope to TrkParams Only, the Append and Merge options will not be visible. If you’ve selected Within Region or Trk Data Only, Append will not be available.

- Turn the Value knob or use the up/down arrow buttons to set the Paste parameter to the desired value.
- Turn the Parameter knob.

If the Paste parameter is set to “Append” or “Replace,” the display will show:

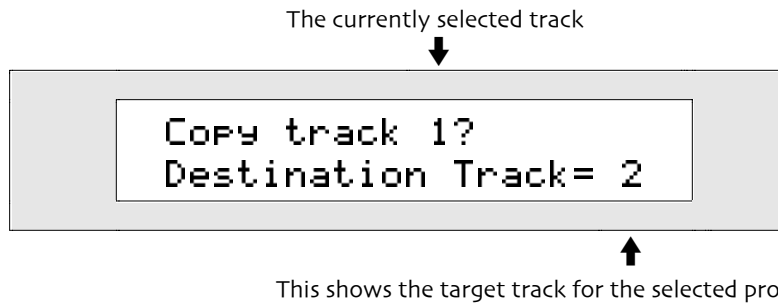


Note: If Paste=Merge, this display will not appear. Tracks can be merged only with other tracks in their sequence.

The Destination parameter lets you select the sequence into which your track will be copied.

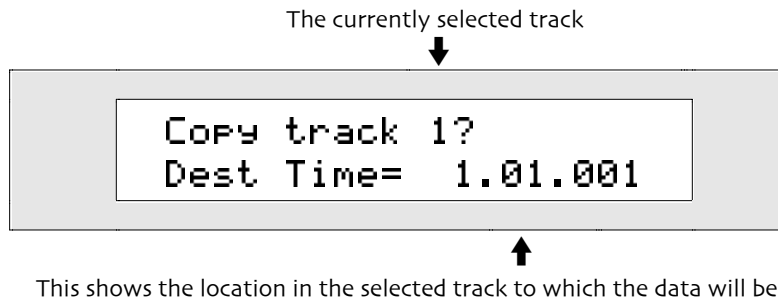
- Select the destination sequence location by pressing its Bank and Sequence buttons (see “Selecting a Sequence” later in this chapter). If you prefer, use the Value knob or the up/down arrow buttons to select the sequence to which you’d like to send the selected data.

- Turn the Parameter knob until the display shows:



The Destination Track parameter sets which track within the selected sequence will receive the data.

- Select the destination track by pressing its button in the 16 Track Recorder. If you prefer, use the Value knob or the up/down arrow buttons to set the Destination parameter to any of the selected sequence's 16 tracks.
- If Paste is set to Replace or Merge, skip to Step 12.
If Paste is set to Append, turn the parameter knob until the display shows:



The ZR-76 can position your data anywhere in the destination track.

- Use the Parameter knob to select the measure, beat or clock setting and turn the Value knob to change the Dest Time parameter to the desired value.
- Press Yes to execute the selected process, or No if you'd like to cancel.

Erasing a Track

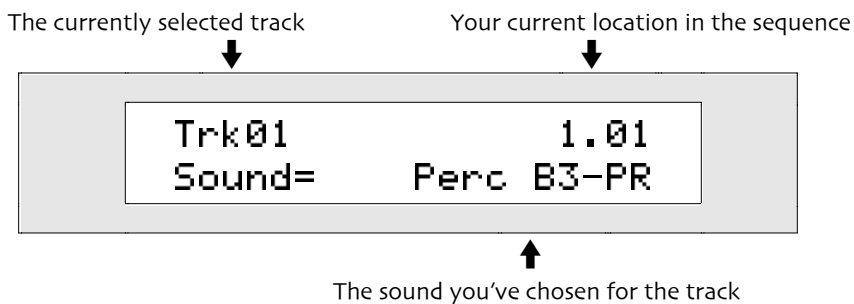
The 16 Track Recorder allows you to delete an entire track, including any music it contains, as well as its sound assignment and track settings.

The ZR-76 can undo the following track command. See "Track Undo" earlier in this chapter for details.

To Erase an Entire Track

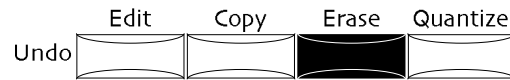
- Select the track that you would like to erase.

The display will show:

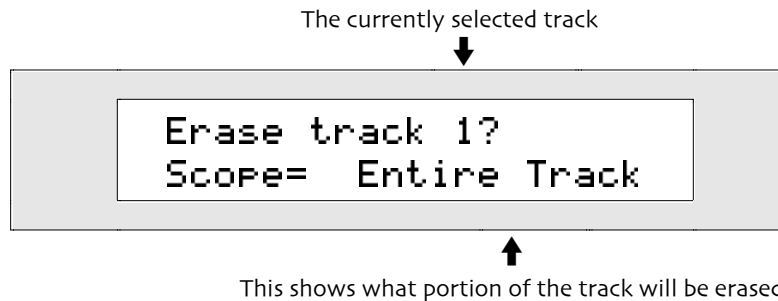


Note: If there's nothing recorded on the track you selected, you'll see "Empty" in the top line of the display.

- Press the 16 Track Recorder Erase button.



The display will show:



The Scope parameter controls what aspects of the track are erased. You can turn the Value knob or use the up/down arrow buttons to set the Scope parameter to:

- Within Region—to erase a specific kind of data from the portion of the track defined by the region settings. This setting is only available if Region From or To is on (for more information on regions, see "Using Regions")
 - Trk Data Only—to erase a specific kind of data from the whole track
 - Entire Track—to remove the track's sound and track parameter settings and erase all note and controller data from the whole track
- Turn the Value knob, or use the up/down arrow buttons to set the Scope parameter to Entire Track.
 - Press Yes to erase the entire track, or No if you'd like to cancel the procedure.

The ZR-76 can undo the following track command. See "Track Undo" earlier in this chapter for details.

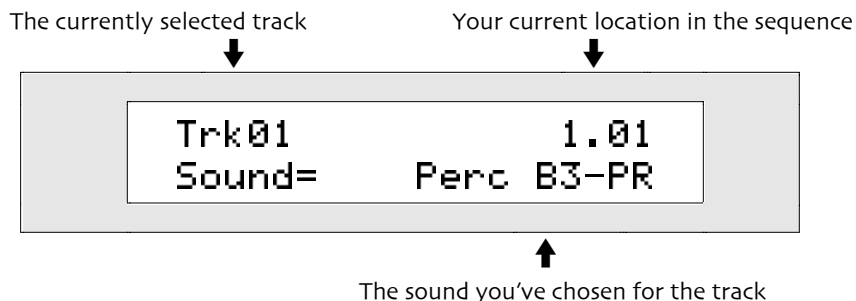
Erasing Specific Elements of a Track

The 16 Track Recorder allows you to select, with considerable specificity, the elements of a track that you'd like to erase.

To Erase a Pitch Range from a Track

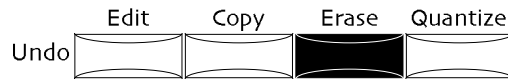
- Select the track that you would like to erase.

The display will show:

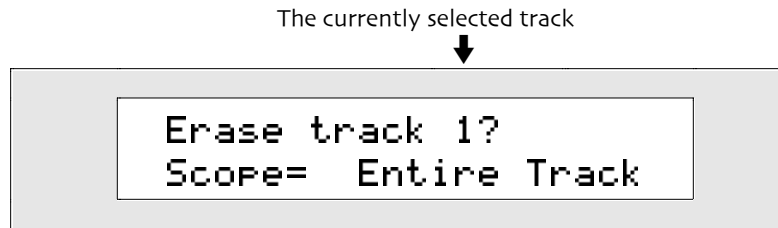


Note: If there's nothing recorded on the track you selected, you'll see "Empty" in the top line of the display.

- Press the 16 Track Recorder Erase button.



The display will show:



↑
This shows what portion of the track will be erased

The Scope parameter determines what aspects of the track will be erased. You can turn the Value knob or use the up/down arrow buttons to set the Scope parameter to:

- Within Region—to erase a selectable type of data from a portion of the track as defined by the region settings. This setting is only available if Region From or To is on (for more information on regions, see “Using Regions” later in this chapter).
 - Trk Data Only—to remove a selectable type of data from the entire track
 - Entire Track—to erase the track altogether, including all of its note and controller data, as well as its sound assignment and settings
3. Turn the Value knob, or use the up/down arrow buttons to set the Scope parameter to either Trk Data Only or Within Region.
 4. If you’d like to continue the procedure, press Yes. If you’d rather not continue, press No.

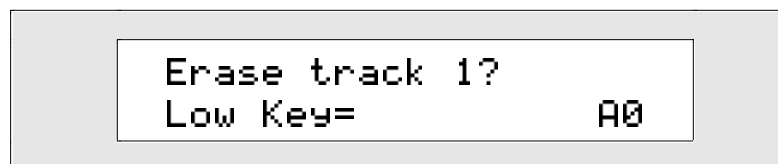
If you press Yes, the display will show:



↑
This shows what type of data will be erased from the track

The Event parameter allows you to select the type of data be erased from the portion of the track you selected with the Scope parameter—either a region within the track or the whole track. You can turn the Value knob or use the up/down arrow buttons to set the Event parameter to:

- All Types—to erase all notes and controllers
 - Pitch Bend—to erase pitch bend events
 - Pressure—to erase channel and key pressure events
 - Bank&Program—to erase bank and program changes
 - Controller—to erase events of a particular controller number that you select
 - Note Range—to erase notes that fall within an area of the keyboard that you specify
5. Turn the Value knob or use the up/down arrow buttons to set the Scope parameter to Note Range.
 6. Press the Yes button. The display shows:



↑
The lowest note to be erased

The Low Key parameter represents the bottom of the note range—any note that falls between the Low

Key value and the High Key value will be erased. The Low Key parameter can be set to any value below the High Key from A0 to C8. C4 is middle C on the ZR's keyboard.

7. Set the Low Key value by pressing the desired key on the keyboard—the key you select will become the Low Key value. If you prefer, you can turn the Value knob or press the up/down arrow buttons to set the Low Key value.
8. Press the Yes button. The display shows:



↑
The highest note to be erased

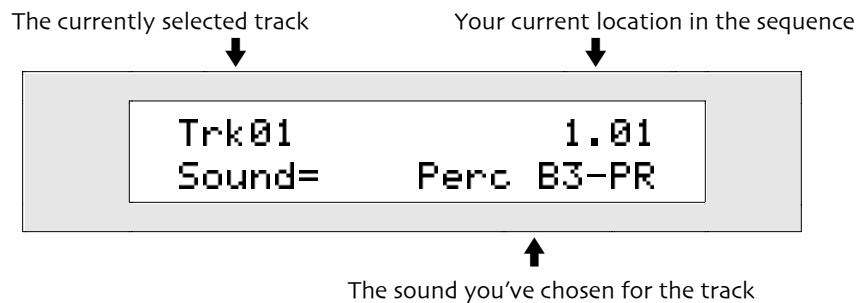
The High Key parameter represents the top of the note range—any note that falls between the Low Key value and the High Key value will be erased. The High Key parameter can be set to any value above the Low Key from A0 to C8.

9. Press the desired key on the keyboard, turn the Value knob or press the up/down arrow buttons to set the High Key parameter to the desired value.
10. Press Yes to erase the notes within the note range you selected, or press No to cancel.

The ZR-76 can undo the following track command. See "Track Undo" earlier in this chapter for details.

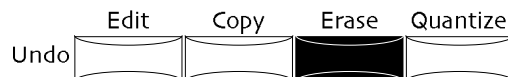
To Erase a Specific Numbered Controller

1. Select the track that you would like to erase—the display will show:

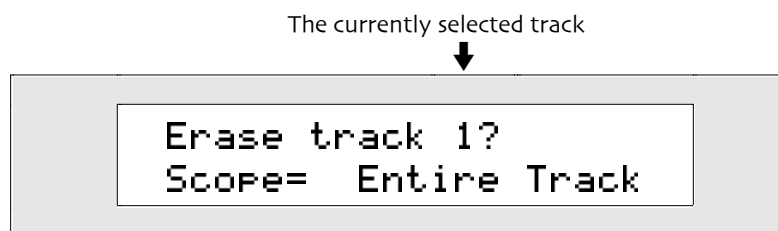


Note: If there's nothing recorded on the track you selected, you'll see "Empty" in the top line of the display.

2. Press the 16 Track Recorder Erase button.



The display will show:



↑
This shows what portion of the track will be erased

The Scope parameter controls what aspects of the track are erased. You can turn the Value knob or use the up/down arrow buttons to set the Scope parameter to:

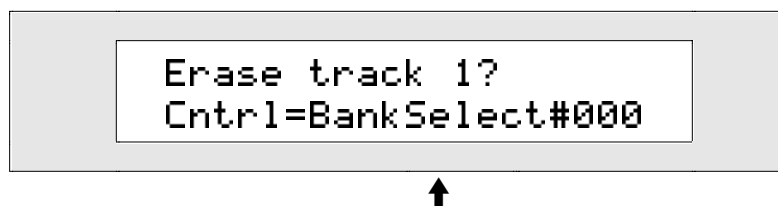
- Within Region—to erase a selectable type data from a portion of the track as defined by the region settings. This setting is only available if Region From or To is on (for more information on regions, see “Using Regions” later in this chapter).
 - Trk Data Only—to remove a selectable type of data from the entire track
 - Entire Track—to erase the track altogether, including all of its note and controller data, as well as its sound assignment and settings
3. Turn the Value knob or use the up/down arrow buttons to set the Scope parameter to either Trk Data Only or Within Region.
 4. If you’d like to continue the procedure, press Yes. If you’d rather not continue, press No. If you press Yes, the display will show:



This shows what type of data will be erased from the track

The Event parameter allows you to select what kind of data will be erased from the portion of the track selected with the Scope parameter. You can turn the Value knob or use the up/down arrow buttons to set the Event parameter to:

- All Types—to erase all notes and controllers
 - Pitch Bend—to erase pitch bend events
 - Pressure—to erase channel and key pressure events
 - Bank&Program—to erase bank and program changes
 - Controller—to erase events of a particular controller number that you select
 - Note Range—to erase notes that fall within an area of the keyboard that you specify
5. Turn the Value knob or use the up/down arrow buttons to set the Scope parameter to Controller.
 6. Press the Yes button. The display shows:



This shows the kind of controller data to be erased

The Cntrl parameter can be set anywhere from MIDI controller #000 to MIDI controller #120, using the Value knob or the up/down arrow buttons.

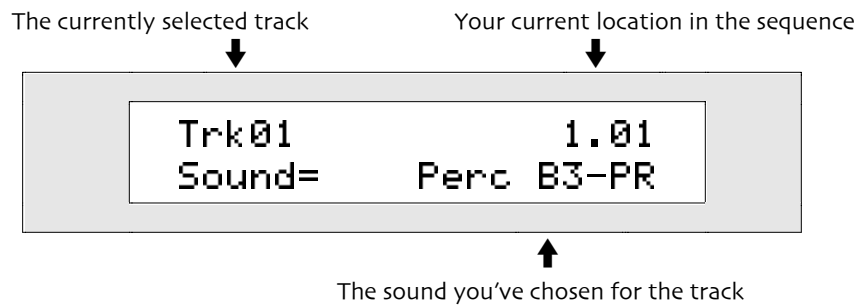
7. Turn the Value knob or press the up/down arrow buttons to set the Cntrl parameter to the desired value.
8. Press Yes to complete the procedure, erasing events of the controller number you specified, or press No to cancel the procedure.

The ZR-76 can undo the following track command. See "Track Undo" earlier in this chapter for details.

To Erase Various Types of Data From a Track

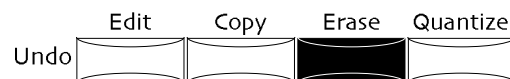
1. Select the track that you would like to erase.

The display will show:

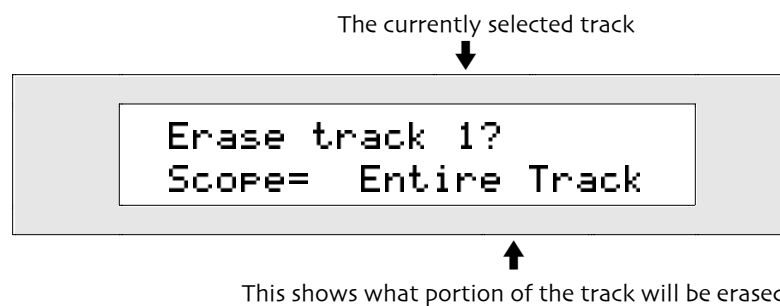


Note: If there's nothing recorded on the track you selected, you'll see "Empty" in the top line of the display.

2. Press the 16 Track Recorder Erase button.

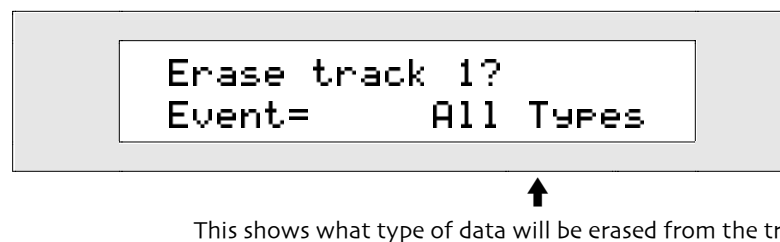


The display will show:



The Scope parameter controls what aspects of the track are erased. You can turn the Value knob or use the up/down arrow buttons to set the Scope parameter to:

- Within Region—to erase a selectable type data from a portion of the track as defined by the region settings. This setting is only available if Region From or To is on (for more information on regions, see "Using Regions" later in this chapter).
 - Trk Data Only—to remove a selectable type of data from the entire track
 - Entire Track—to erase the track altogether, including all of its note and controller data, as well as its sound assignment and settings
3. Turn the Value knob, or use the up/down arrow buttons to set the Scope parameter to either Trk Data Only or Within Region.
 4. If you'd like to continue the procedure, press Yes. If you'd rather not continue, press No. If you press Yes, the display will show:



The Event parameter allows you to select what kind of data will be erased from the portion of the track selected with the Scope parameter. You can turn the Value knob or use the up/down arrow buttons to set the Event parameter to:

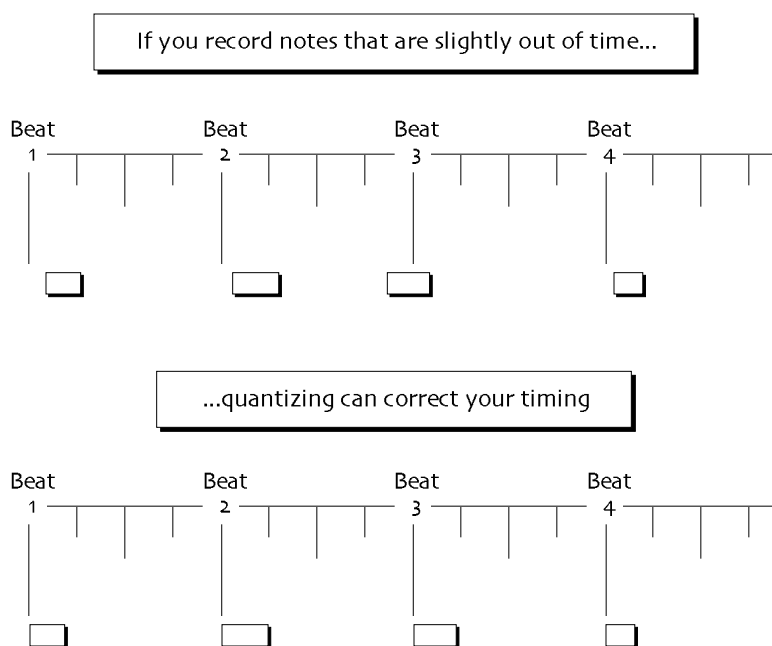
- All Types—to erase all notes and controllers
- Pitch Bend—to erase pitch bend events

- Pressure—to erase channel and key pressure events
 - Bank&Program—to erase bank and program changes
 - Controller—to erase events of a particular controller number that you select
 - Note Range—to erase notes that fall within an area of the keyboard that you specify
5. Turn the Value knob or use the up/down arrow buttons to set the Event parameter to the desired value (if you'd like to erase a range of notes or controllers from the track, see the previous how-to's).
 6. Press Yes to erase events of the type you selected, or press No to cancel the procedure.

Quantizing Tracks Conceptual Overview

The ZR-76 provides powerful tools for refining the timing of any recorded track through *quantizing*. This section explains quantization in the ZR-76. The “Quantizing Tracks” section immediately following this one offers step-by-step instructions for using the ZR-76 quantization tools.

When you quantize the notes you've recorded on a track, you shift them in time to correspond with specified rhythmic divisions of the sequence's tempo.



This illustration represents an extremely simple example of quantization. Your ZR-76 contains a full complement of advanced quantizing tools that work together in useful ways. These are described below.

Templates

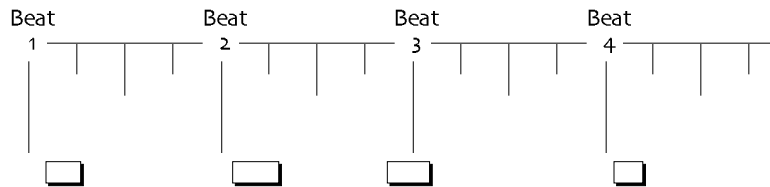
Since the many ZR-76 quantize options all work together, you may find that you're using certain combinations and settings frequently. You can save any of these quantization setups as a *template*. Once you've created a template, selecting it automatically puts all of your quantize settings in place for you. Your ZR provides four of these user-definable templates that can be stored in its FLASH memory so that they're there whenever you need them—you can also use them as starting points for new setups. Your ZR-76 also has a selection of templates pre-programmed for your use.

Note: When a template has been changed and has not yet been saved as a user template, it's name will be displayed as “**EDITED**.”

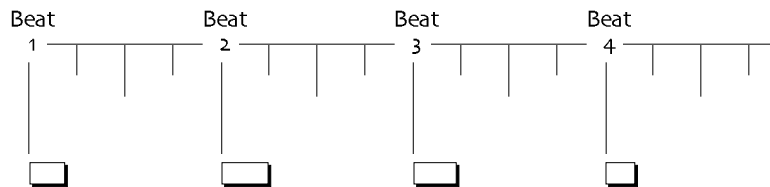
Quantize To

The Quantize To parameter determines a division of the current sequence's tempo. This forms the basic metric grid to which the notes on the selected track will be aligned.

If you record notes that are slightly out of time...



...setting Quantize To to 1/4 notes can line up the beginning of each note you played to a quarter note in the sequence



The Quantize To parameter can be set to the following divisions of the sequence's tempo:

- 1/1—whole notes
- 1/2—half notes
- 1/4—quarter notes
- 1/8—eight notes
- 1/16—sixteenth notes
- 1/32—thirty-second notes
- 1/64—sixty-fourth notes
- 1/1T—whole-note triplets
- 1/2T—half-note triplets
- 1/4T—quarter-note triplets
- 1/8T—eight-note triplets
- 1/16T—sixteenth-note triplets
- 1/32T—thirty-second-note triplets
- 1/64T—sixty-fourth-note triplets

Note: The quantize parameters work together, affecting the manner in which each parameter ultimately behaves.

Quantize Methods

The ZR-76 offers two distinctly different methods of quantization:

- Normal—traditional quantization
- Delta—an exclusive ENSONIQ method for quantizing tracks recorded without a rhythmic reference

Normal, traditional quantization is the process of moving the beginning of each note on a track to the nearest occurrence of the metric value selected with the Quantize To parameter. This method works best when the music you've recorded is only somewhat out of time—if it's completely off, you may have trouble fixing it with normal quantization. The ZR-76 offers a suite of sophisticated quantizing parameters that allow you to perform normal quantization in ways both powerful and subtle. Each time you quantize a track, this full palette of quantization tools works together in the service of your music. As you set each parameter, you refine exactly what will occur when you finally execute the quantization command.

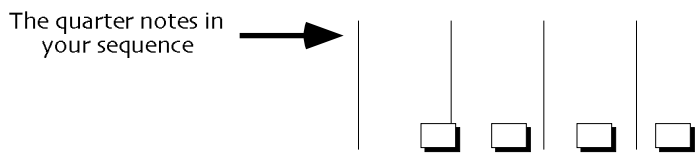
- Strength
- Random
- quantize key range
- QuantizeNoteOffs
- Swing
- Shift
- quantize window
- Move Note Offs

Each of these parameters is explained below. The normal quantize parameters work together, affecting the manner in which each parameter ultimately behaves.

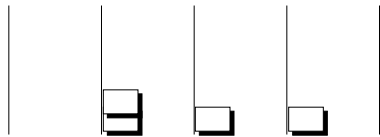
The ZR-76 offers a powerful new quantizing option called “*delta quantize*.” This revolutionary feature allows you to quantize music you’ve recorded “wild”—that is, without using the Drum Machine or 16 Track Recorder click as a timing reference. It’s also handy if you’ve drifted out of time when adding a track to a sequence—what you played makes rhythmic sense on its own, but doesn’t fit the timing in already recorded tracks.

When you use delta quantization, your ZR-76 starts from the beginning of the track and examines the space—or *delta*—between the beginning of the sequence and the first note. The ZR re-sizes the delta up or down to the nearest multiple of the value chosen with the Quantize To parameter, and shifts all of the later notes in the track so that they still hold their position relative to the first note. This process is then repeated for the delta between the first note and the second note, and so on, until all of the notes in the track are correctly quantized. This method ingeniously corrects any timing mistakes even as it protects and preserves the internal rhythmic integrity of what you’ve recorded.

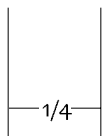
For example, say you've recorded a track that makes sense rhythmically but doesn't fit correctly in your sequence



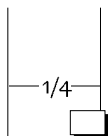
If you'd selected a Quantize To 1/4 note value, conventional, or normal, quantizing would move the beginning of each note to its nearest quarter note, ruining what you played



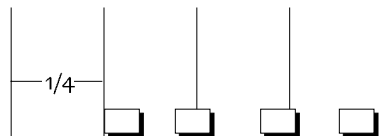
Delta quantize would determine the size of a 1/4 note space...



...examine the space between the beginning of the sequence and the first note



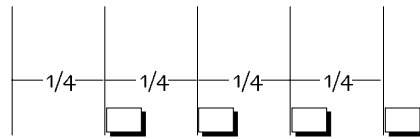
...and align the note to the nearest multiple of the 1/4 note space, moving all the later notes as well...



...and then do the same for the space between the first note and the second...



...and so on, until your quarter notes line up with the quarter notes in the sequence



When you select the delta method of quantization, the following parameters are unavailable—though you can always use them after performing the delta quantize.

The following parameter is available only during normal quantization.

Strength

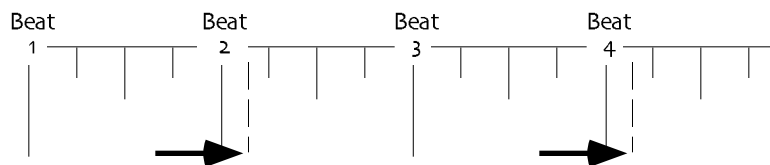
The Strength parameter determines to what degree the notes in the track will be aligned to the Quantize To value. This parameter allows you to correct the timing of the music on a track to the extent that you desire, without necessarily making it absolutely—some might say “unnaturally”—perfect. Sometimes, a little quantizing help is all that a performance needs. The Strength parameter is expressed in percentages. A value of 100% will line up the beginning of the notes in the track exactly to the division of the beat chosen with the Quantize To value. A Strength setting of 0% will leave the notes unaffected.

The following parameter is available only during normal quantization.

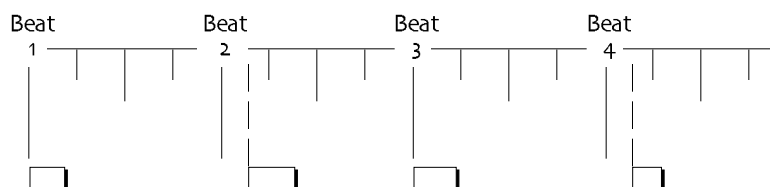
Swing

The ZR-76 allows you to add a “swing” feel to your quantized tracks. Every other occurrence of the type of note set by the Quantize To parameter is altered to sit slightly behind the beat. When the notes in your track are aligned to the resulting combination of even and slightly lagging notes, a swing feel is achieved.

Swing makes every other appearance of the metric value you've selected lag slightly



...and your notes are lined up with that altered rhythmic reference



The Swing parameter can be set from 50%—for no swing—where each of the Quantize To notes occurs precisely halfway between the note before it and the note after, to 74%, where every other note is pushed nearly halfway towards the following note.

The following parameter is available only during normal quantization.

Random

The Random parameter allows you to add aesthetically pleasing timing irregularities to a track as you quantize it. This can help simulate the small rhythmic fluctuations likely to be present in a naturally occurring performance. The irregularities provided by the ZR's randomizing function are intelligently created. They don't jump erratically ahead of or behind the beat note by note—instead, randomized notes occur in slightly rushed or lagging groups, as would be the case with a real musician playing around a rigid tempo. The Random parameter can be set from 0%—for no randomization—to 50%, where randomized notes may be as much as half of the Quantize To value ahead of or behind the beat.

The following parameter is available only during normal quantization.

Shift

The Shift parameter allows you to move all of the music on a track ahead or back in time by as much as the Quantize To value. A Shift setting of 0% will not shift the music. A setting of -100% will move it earlier in time by the amount set with the Quantize To parameter; +100% will move it later by the same amount.

The following parameter is available only during normal quantization.

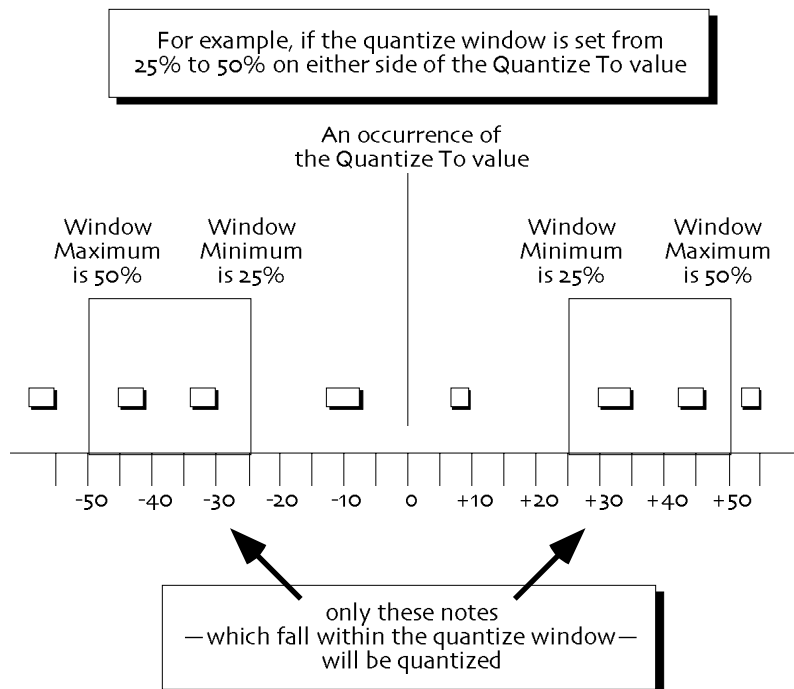
Low Key/High Key

The Low Key and High Key parameters allow you to select a note range to be quantized. All notes outside of this range will be left unaltered when you execute the quantize command. The Low Key parameter determines the lowest note that will be quantized, and the high Key parameter determines the highest.

The following parameter is available only during normal quantization.

Window Minimum and Window Maximum

The Window Minimum and Window Maximum parameters let you to set by how much notes must deviate from the Quantize To value before they're subjected to quantization. This allows you to correct only the objectionable notes in a track without affecting the others. The parameters are expressed as percentages of deviation from the Quantize To value, and may be set from 0%—no deviation—to 50%, or halfway to the next occurrence of the value selected with the Quantize To parameter. The window created applies to notes that fall both ahead of and behind each occurrence of the value set with the Quantize To parameter.

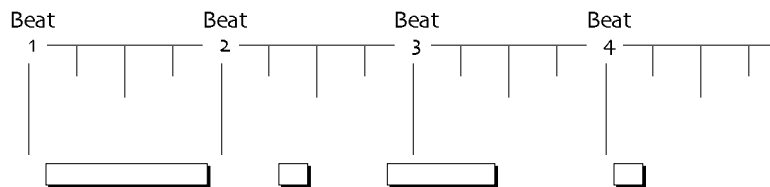


The following parameter is available only during normal quantization.

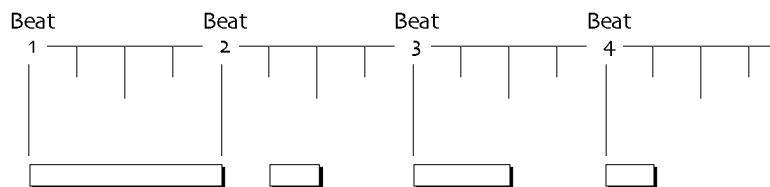
QuantizeNoteOffs

Quantizing typically affects the beginning of each note—the note-on. In the ZR-76, you can also quantize the ends of notes to the value set with the Quantize To parameter. This has the effect of changing the durations of the notes on the track to the length set with the Quantize To parameter. The QuantizeNoteOffs parameter may be switched on or off.

If, for example, you quantize note-offs with Quantize To set to eighth notes



...each note will start at the eighth note nearest to its beginning and conclude at the eighth note nearest to its end



Move Note Offs

When you quantize the notes on a track, the beginning of each note is lined up to the Quantize To value. If the Move Note Offs parameter is set to On, the entire note will be moved according to the various quantizing parameters—and will remain the same length. If this parameter is switched off, only the beginning of the notes will be moved. The ends of the notes will be unchanged, and, therefore, the length of quantized notes will likely change as only their beginnings are moved to new positions.

Quantizing Tracks in the 16 Track Recorder

The ZR-76 provides sophisticated tools for correcting the timing of your music. “Quantizing Tracks Conceptual Overview” above explains the ZR-76 quantization tools. This section provides step-by-step instructions for using them.

The ZR-76 can undo the following track command. See “Track Undo” earlier in this chapter for details.

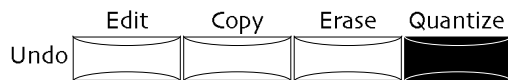
Using a Quantization Template

The ZR-76 offers a large selection of frequently-used quantization setups as templates. you can also make your own templates. “Quantizing Tracks Conceptual Overview” explains ZR-76 templates.

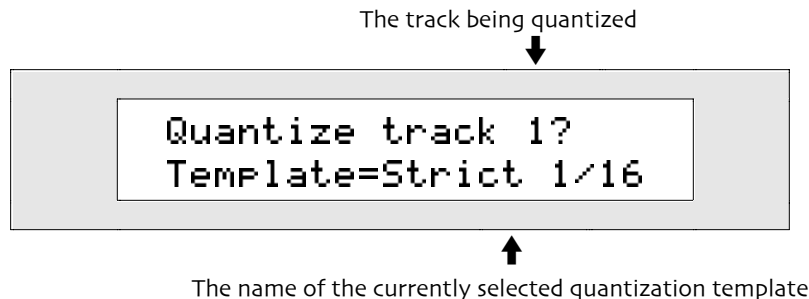
Tip: If the Region From or To LED is lit, only notes within the selected region will be quantized (for more information on regions, see “Using Regions” later in this chapter). If you want to quantize the entire track, make sure that the Region From and Region To LEDs are off.

To Quantize Using a Template

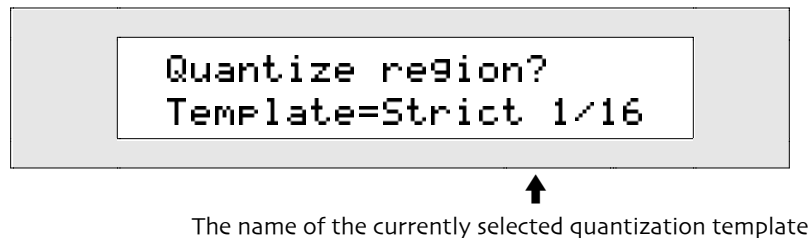
1. Select the track you'd like to quantize.
2. Press the Quantize button.



The display will show:



If Region From or To is on, the display will show:



(For more information on regions, see “Using Regions” later in this chapter.)

You can turn the Value knob to select any of the available quantize templates, including the four user-defined templates.

- ****EDITED****—sets all quantize parameters to the most recently used values. Use this template when you want to repeat the last kind of quantizing you did. When you first turn on your ZR-76, the values in the ****EDITED**** template are the same as the values used in the Strict 1/16 template.
- **USER TEMP 1, 2 3 and 4**—four user-definable templates for storing your favorite quantize settings (to learn about creating your own template, see “Making your Own Quantization Template” later in this chapter).
- **Strict 1/4**—this template aligns each note precisely with the nearest quarter note.
- **Strict 1/8**—this template aligns each note precisely with the nearest eighth note.
- **Strict 1/16**—this template aligns each note precisely with the nearest 16th note.
- **Strict 1/8T**—this template aligns each note precisely with the nearest triplet eighth note.
- **Tighten 1-Tighten 4**—these templates move each note to the nearest eighth note, with varying degrees of precision. The higher the number of the template in this group, the more closely each note will be aligned to the nearest eighth note. You can use these templates if you want to make your track a little more rhythmically accurate without making it “too perfect.”
- **Tighten 5-Tighten 8**—these templates move each note to the nearest sixteenth note, with varying degrees of precision. The higher the number of the template in this group, the more closely each note will be aligned to the nearest sixteenth note. You can use these templates if you want to make your track a little more rhythmically accurate without making it “too perfect.”
- **Randomize 1-Randomize 2**—these templates move each note to the nearest eighth note, but use a small amount of random variation in how the notes are placed. The higher the number of the template in this group, the greater the degree of randomness. Use these templates to add a “human” feel to a track that may be too rhythmically accurate.
- **Randomize 3-Randomize 4**—these templates move notes to the nearest sixteenth note, but use a small amount of random variation in how the notes are placed. The higher the number of the template in this group, the greater the degree of randomness. Use these templates to add a

- “human” feel to a track that may be too rhythmically accurate.
- Note Offs 1—this template aligns each note off precisely with the nearest eighth note.
 - Note Offs 2—this template aligns each note off precisely with the nearest sixteenth note.
 - Swing 1-Swing 3—these templates add varying amounts of sixteenth note swing feel to a track. The higher the number of the template in this group, the greater the degree of swing.
 - Humanize 1—this template moves notes to the nearest sixteenth note, using a small amount of random variation in how each note is placed, and adding a small amount of swing feel. Use this template to add a “human” feel to a track that may be too rhythmically accurate.
 - Delta 1/8—this template uses the ZR’s delta quantizing feature, and adjusts the time between notes to the nearest multiple of eighth notes.
3. Turn the Value knob to select the template you’d like to use.
 4. Press the Yes button if you’d like to quantize the track, or the selected region, using the selected quantize template. Press the No button if you’d like to cancel.

The ZR-76 can undo the following track command. See “Track Undo” earlier in this chapter for details.

Using a Quantization Template as a Starting Point

The ZR-76 offers a large selection of frequently-used quantization setups as templates. Whenever you quantize a track, you start with one of these templates. “Quantizing Tracks Conceptual Overview” explains ZR-76 templates.

Tip: If the Region From or To LED is lit, only notes within the selected region will be quantized (for more information on regions, see “Using Regions” later in this chapter). If you want to quantize the entire track, make sure that the Region From and Region To LEDs are off.

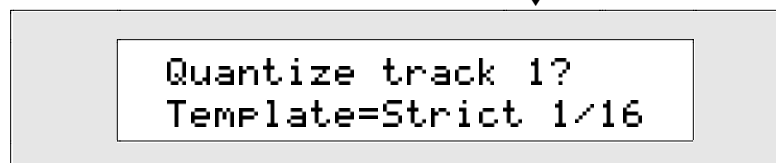
To Use a Template as a Starting Point

1. Select the track you’d like to quantize.
2. Press the Quantize button.



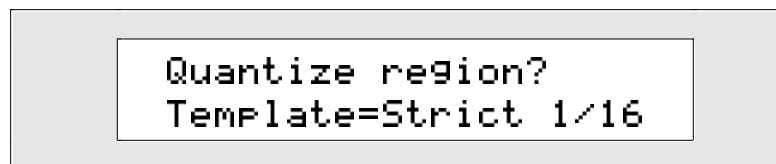
The display will show:

The track being quantized



The name of the currently selected quantization template

If Region From or To is on, the display will show:



The name of the currently selected quantization template

(For more information on regions, see “Using Regions” later in this chapter.)

You can turn the Value knob to select any of the available quantize templates, including the four user-defined templates.

3. Turn the Value knob to select the template you'd like to use (see "To Quantize Using a Template" above for descriptions of the available templates).

You can now fine-tune the template you selected by changing the values of the quantize parameters.

4. Use the Parameter knob and the Value knob to change any of the quantize parameter values.
5. When you've adjusted the quantize settings to your liking, press the Yes button to quantize the track using the current settings. Press the No button if you'd like to cancel.

Tip: When you alter a template's settings, your changes are stored in the ****EDITED**** template. You can use the ****EDITED**** template for applying your quantize settings to any of the tracks in your sequences. Your settings will be retained until you alter them or power down your ZR-76. You can save these quantize settings as one of the USER quantize templates. See "Making Your Own Quantize Template" later in this chapter.

The ZR-76 can undo the following track command. See "Undo" earlier in this chapter for details.

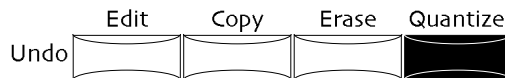
Using Normal Quantization

The ZR-76 provides powerful tools for performing track quantization. "Quantizing Tracks Conceptual Overview" explains ZR-76 quantization.

Tip: If the Region From or To LED is lit, only notes within the selected region will be quantized (for more information on regions, see "Using Regions" later in this chapter). If you want to quantize the entire track, make sure that the Region From and Region To LEDs are off.

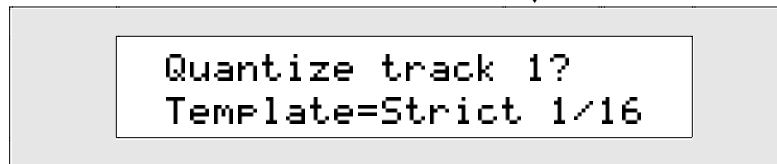
To Quantize a Track Using Normal Quantization

1. Select the track you would like to quantize.
2. Press the Quantize button.



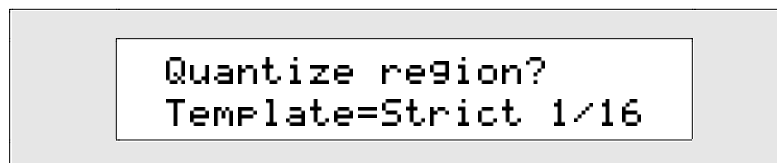
The display will show:

The track being quantized



The name of the currently selected quantization template

If Region From or To is on, the display will show:

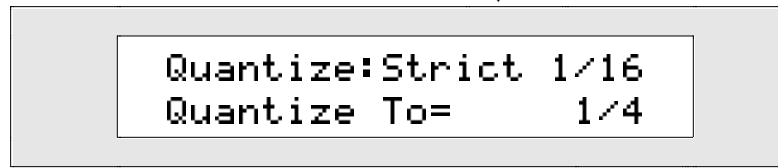


The name of the currently selected quantization template

(For more information on regions, see "Using Regions" later in this chapter.)

3. Turn the Parameter knob until the display shows "Quantize To=":

The current quantization template



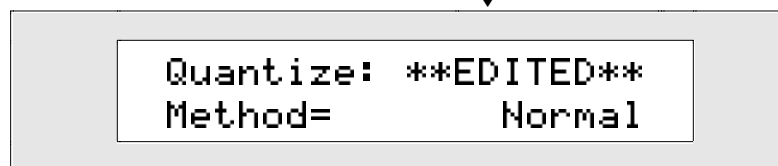
The currently selected division of the sequence's tempo

Each note you quantize will move to the nearest occurrence of the metric division you select here.

The Quantize To parameter can be set anywhere from 1/1 (whole notes) to 1/64T (64th note triplets). The "T" after the number indicates a triplet value.

4. Turn the Value knob to set the Quantize To parameter as desired.
5. Turn the Parameter knob until the display shows "Method=":

The current quantization template



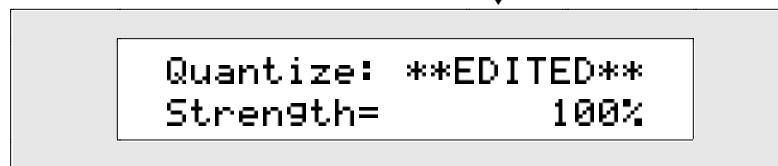
The currently selected quantization method

In addition to its selection of conventional quantizing tools, the ZR-76 also offers ENSONIQ's unique delta quantization. (See the how-to following this one to learn how to use delta quantization.)

The Method parameter allows you to decide if you'd like to use the ZR's delta quantizing feature.

6. Turn the Value knob to set the Method parameter to Normal.
7. Turn the Parameter knob until the display shows "Strength=":

The current quantization template



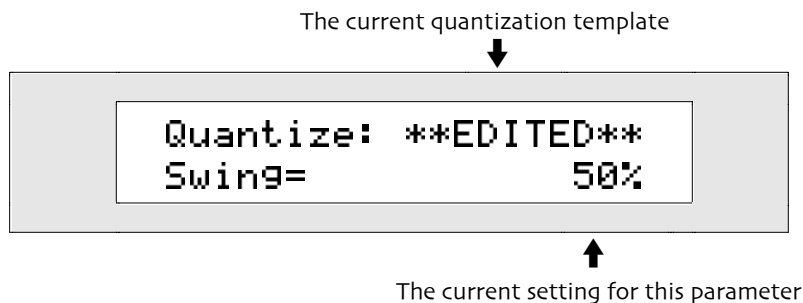
The current setting for this parameter

The Strength parameter determines how strictly each note will be quantized. The value is a percentage of the distance each note has to move to its new quantized position.

The Strength parameter may be set anywhere from 0% to 100%. A setting of 100% means each note will be moved all the way to its new position; a setting of 50% means each note will be moved halfway to its new position. A setting of 0% means each note will not be moved at all.

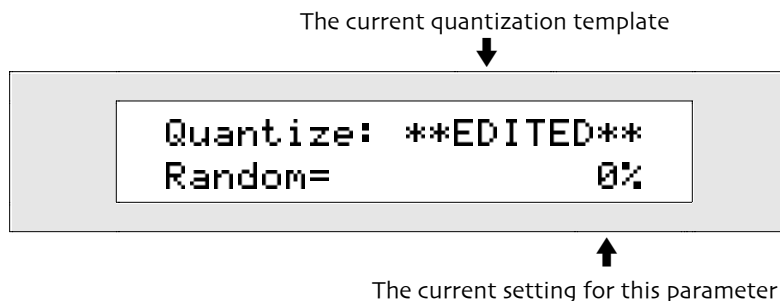
8. Turn the Value knob to set the Strength parameter to the desired value.

- Turn the Parameter knob until the display shows “Swing=”:



The Swing parameter lets you add swing to a musical phrase by delaying every other occurrence of the metric division set with the Quantize To value. A setting of 50% provides no swing at all. Higher settings will increase the amount of swing.

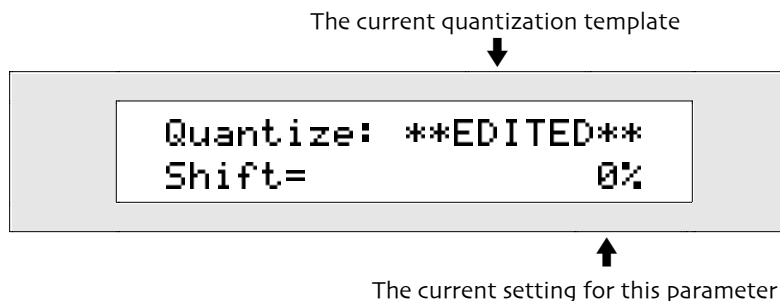
- Turn the Value knob to set the Swing parameter to the desired value.
- Turn the Parameter knob until the display shows “Random=”:



The Random parameter allows you to add some random variation in the way notes are placed when they are quantized.

The Random parameter can be set anywhere from 0% to 50%, and determines the size of the range over which the placement of quantized notes can vary. This range extends both before and after each Quantize To metric division. A setting of 50% means the size of this range will be half of the Quantize To value, ahead and behind the note’s new position. A setting of 0% means quantized notes will be placed without any random variation.

- Turn the Value knob to set the Random parameter to the desired value.
- Turn the Parameter knob until the display shows “Shift=”:

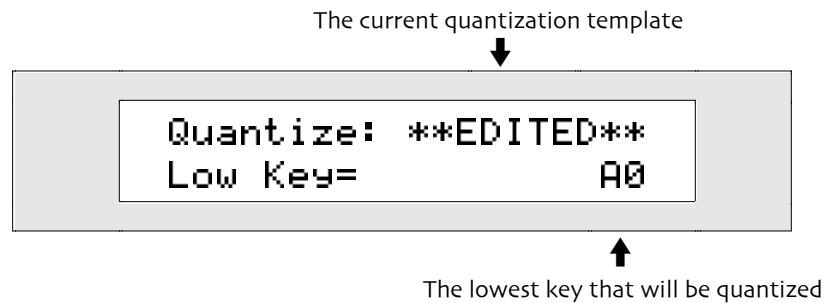


The Shift parameter allows you to move all notes by the same amount forward or backward in relation to their new quantized—or current unquantized—positions.

The Shift parameter can be set anywhere from -100% to +100% and determines how far notes will be moved. A setting of -100% means that notes will be moved earlier in time by an amount equal to the Quantize To value. A setting of +100% means that notes will be moved later in time by an amount equal to the Quantize To value. A setting of 0% means that notes will not be shifted.

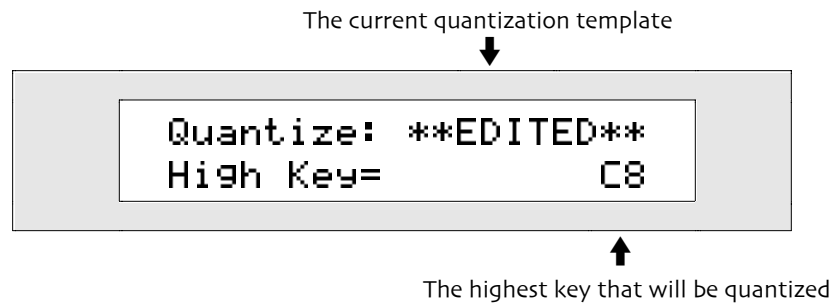
Note: The setting of the Shift parameter affects all the notes on the track (or in the currently selected region), regardless of the setting of the Low Key and High Key parameters.

14. Turn the Value knob to set the Shift parameter to the desired value.
15. Turn the Parameter knob until the display shows “Low Key=”:



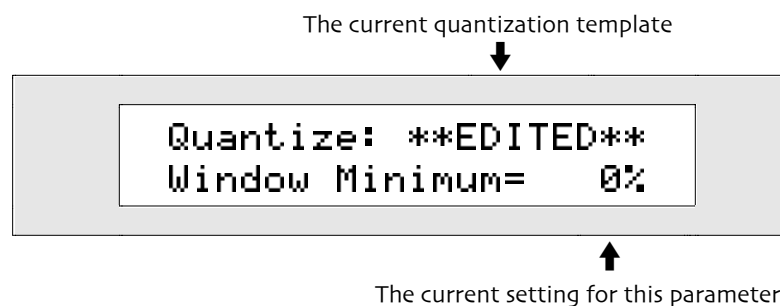
The Low Key parameter—along with the High Key parameter—allows you to set a range of notes on the keyboard to be quantized. Notes that are above the Low Key value and below the High Key value will be quantized according to your settings; notes that do not fall within this range will be unaffected. The Low Key parameter can be set anywhere below the High Key value from A0 to C8.

16. Press the key on the keyboard that’s the lowest key you want to quantize. If you prefer, you can turn the Value knob to set the Low Key parameter to the desired value instead.
17. Turn the Parameter knob until the display shows “High Key=”:



The High Key parameter—along with the Low Key parameter—allows you to set a range of notes on the keyboard to be quantized. Notes that are above the Low Key value and below the High Key value will be quantized according to your settings; notes that do not fall within this range will be unaffected. The High Key parameter can be set anywhere above the Low Key value from A0 to C8.

18. Press the key on the keyboard that’s the highest key you want to quantize. If you prefer, you can turn the Value knob to set the High Key parameter to the desired value instead.
19. Turn the Parameter knob until the display shows “Window Minimum=”:

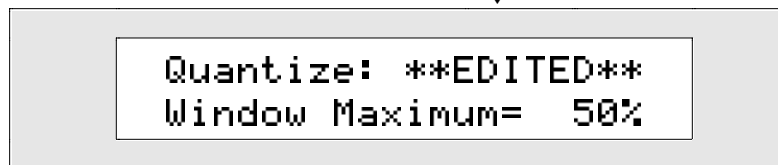


The Window Minimum parameter—along with the Window Maximum parameter—allows you to specify how near to an occurrence of the Quantize To value a note has to be for it to be quantized. Notes that fall after the Window Minimum and before the Window Maximum will be quantized according to your settings; notes that fall outside of this range will be unaffected.

The Window Minimum value is a percentage of the distance between occurrences of the metric division set with the Quantize To parameter.

20. Turn the Value knob to set the Window Minimum parameter to the desired value.
21. Turn the Parameter knob until the display shows “Window Maximum=”:

The current quantization template



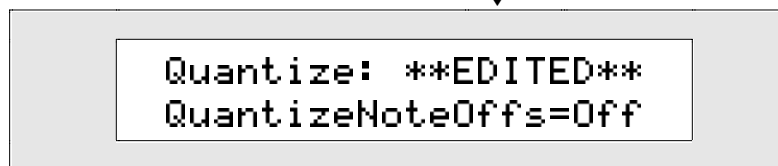
The current setting for this parameter

The Window Maximum parameter—along with the Window Minimum parameter—allows you to specify how near to an occurrence of the Quantize To value a note has to be for it to be quantized. Notes that fall after the Window Minimum and before the Window Maximum will be quantized according to your settings; notes that fall outside of this range will be unaffected.

The Window Maximum value is a percentage of the distance between occurrences of the metric division set with the Quantize To parameter.

22. Turn the Value knob to set the Window Maximum parameter to the desired value.
23. Turn the Parameter knob until the display shows “QuantizeNoteOffs=”:

The current quantization template



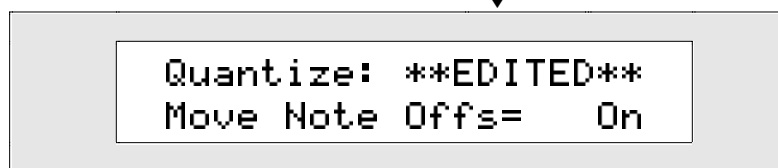
The current setting for this parameter

The QuantizeNoteOffs parameter allows you to control whether note offs will be moved according to your quantize settings. You can set it to:

- Off—note offs will not be affected by the current quantize settings.
- On—note offs will be affected by the current quantize settings.

24. Turn the value knob to set the QuantizeNoteOffs parameter to the desired value.
25. Turn the Parameter knob until the display shows “Move Note Offs=”:

The current quantization template



The current setting for this parameter

The Move Note Offs parameter determines whether the note off of each quantized note will be moved, such that each note’s duration is maintained. You can set it to:

- Off—note offs of quantized notes will not be moved.
- On—note offs of quantized notes will be moved and quantized notes will retain their current durations

26. Turn the Value knob to set the Move Note Offs parameter to the desired value.
27. When all the quantize parameters are set as you’d like them, press Yes to continue the procedure and quantize the track, or No if you’d like to cancel.

The ZR-76 can undo the following track command. See "Track Undo" earlier in this chapter for details.

Using Delta Quantization

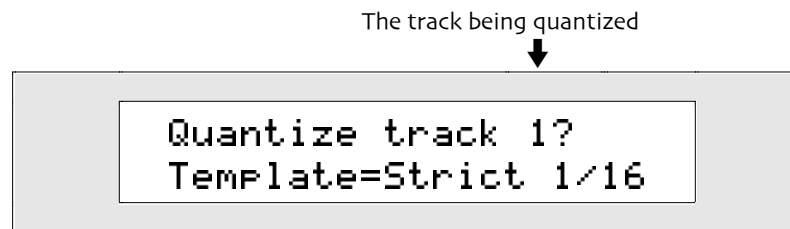
The ZR-76 provides an exciting new form of quantization called *delta quantization*. "Quantizing Tracks Conceptual Overview" explains what it can do for your recordings.

To Quantize a Track Using Delta Quantizing

1. Select the track you would like to quantize.
2. Press the Quantize button.

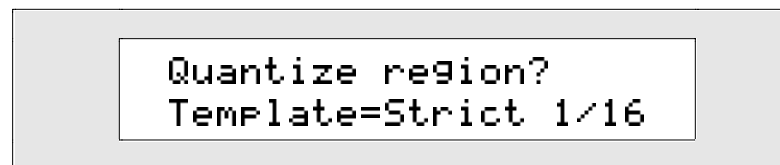


The display shows:



↑
The name of the currently selected quantization template

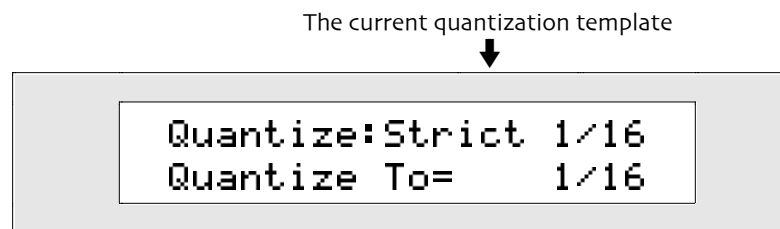
If Region From or To is on, the display will show:



↑
The name of the currently selected quantization template

(For more information on regions, see "Using Regions" later in this chapter.)

3. Turn the Parameter knob until the display shows "Quantize To=":

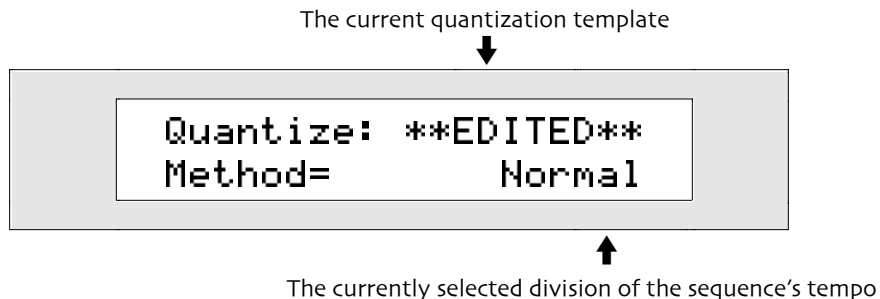


↑
The currently selected division of the sequence's tempo

The time between the notes on the track you quantize will be adjusted to the nearest multiple of the value you select here. For best results, you should try to pick the metric value that in the current sequence tempo most closely matches the smallest metric division on the track you're quantizing.

The Quantize To parameter can be set anywhere from 1/1 (whole notes) to 1/64T (64th note triplets). The "T" after the number indicates a triplet value.

4. Turn the Value knob to set the Quantize To parameter as desired.
5. Turn the Parameter knob until the display shows "Method=":



6. Turn the Value knob to set the Method parameter to “Delta.”

Note: When using the Delta 1/8 template, all of the other quantize parameters will be unavailable. This is to prevent other quantize settings from affecting the delta quantizing process, in order to help ensure that your music is most likely to be interpreted correctly.

7. Press the Yes button if you'd like to continue and quantize the selected track, or press No if you'd like to cancel.
8. Once you've quantized with delta quantizing, you should listen to the track to see if your playing was interpreted correctly.

In some cases, it may be necessary to repeat the above process using a different Quantize To value that more closely matches the notes you played. If so, you should use the Undo function to return the track to its previous unquantized state.

9. If you would like to quantize the track again with a different Quantize To value, press the 16 Track Recorder Edit button.

The display will show:



10. Press Yes if you'd like to revert to the track's previous unquantized state, or press No if you'd like to cancel.
11. Repeat this how-to using a different Quantize To value until the track sounds the way you want it.

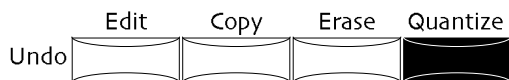
Tip: If you're using delta quantizing on a track that came from the Idea Pad, you can adjust the sequence tempo to approximate the average tempo of the idea, and re-send the idea to this sequence. This can make it easier to find a Quantize To value that works with what's recorded on the track you're trying to quantize.

Making Your Own Quantization Template

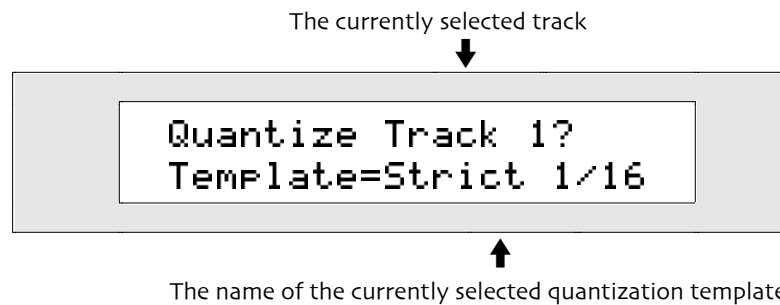
The ZR-76 allows you to save quantization setups that you expect to use over and over again as templates. Your templates are stored in the ZR's FLASH memory, and are therefore retained even when your ZR-76 is turned off. “Quantizing Tracks Conceptual Overview” explains quantization templates.

To Save Your Settings as a Template

1. Press the Quantize button.

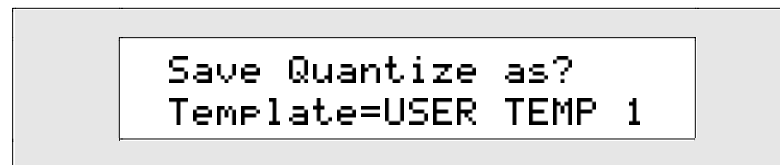


The display will show:



This shows the quantize template that's currently in place. If you see the ****EDITED**** on the display, your ZR-76 is telling you that you've changed some of the quantization settings. If not, the currently installed template is either one of your user templates that you've already saved into memory, or it's one of the templates supplied by ENSONIQ.

2. Turn the Parameter knob until the display shows:



You can save the current quantize settings as USER TEMP 1, USER TEMP 2, USER TEMP 3 or USER TEMP 4.

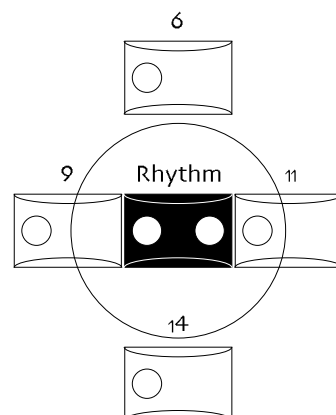
3. Turn the Value knob to select the name for your quantize template.
4. When you've selected a name, press the Yes button to continue the procedure and save the current quantize settings as a template. If you'd like to cancel, press the No button.

Working with the Rhythm Track

The 16 Track Recorder Rhythm Track

In addition to being a great tool for capturing music you play on the keyboard, the 16 Track Recorder can also play Drum Machine rhythms. This means that you can incorporate rhythms from the Drum Machine into your own music, using them to create realistic sounding drum parts that work perfectly with your compositions.

When the 16 Track Recorder plays a Drum Machine rhythm, it uses track 10 as the *rhythm track*. As you can see on your ZR's front panel, track 10 is labeled "Rhythm."



When you use the rhythm track to play a Drum Machine rhythm, the rhythm actually becomes part of the sequence. You can loop it, define a region, fast forward, rewind, mute it, solo it, and control its loudness and panning. The rhythm track will always stay in time with the other music in the 16 Track Recorder.

You can also use track 10 just as you would any other track in the 16 Track Recorder—to record music you play on the keyboard. But when you use it to play Drum Machine rhythms, you unlock the unique features that make it a powerful tool for adding drums to your music.

Rhythm Track: Two Tracks in One

You can use the rhythm track in two ways:

- to record the variations and fills you select throughout a sequence
- to record notes you play on the keyboard using the rhythm’s drum kit sound

Recording Variation and Fill selections

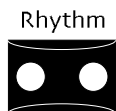
The rhythm track will record which variations and fills you select throughout a sequence, allowing you to create a drum part simply by pressing the Drum Machine’s Variations/Fills buttons as you record. The rhythm track captures the selections you make, and plays them back when you play the sequence. You can put all the power and flexibility of the Drum Machine on a single track in your sequence.

Adding to the Rhythm

The rhythm track will also record what you play on the keyboard, using the rhythm’s drum kit sound. This allows you to add your own drum or percussion playing to the rhythm, or even to replace a section of the rhythm with something you play on the keyboard. You can quantize notes on the rhythm track just as you would quantize notes on any non-rhythm track.

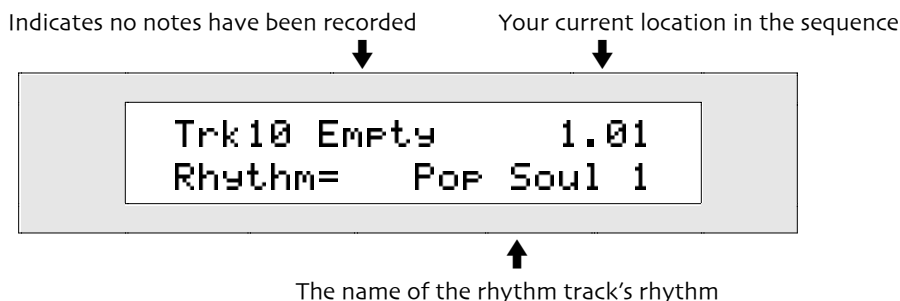
The Rhythm Track Display and LEDs

Because you can use the rhythm track in two ways, its button has two LEDs, yellow on the left and red on the right.



- The yellow LED works in the same manner as the all of the other track button LEDs—when the rhythm track has notes recorded on it, its yellow LED lights solidly. When the rhythm track is selected, its yellow LED flashes.
- The red LED shows you if there is a rhythm on the rhythm track. If there is, the red LED lights solidly. If there’s no Drum Machine rhythm on the track, the red LED is not lit.

When you select the rhythm track, the display shows you what, if anything, is on it.



If the rhythm track is using a rhythm, the rhythm’s name will appear on the bottom line of the display. If you haven’t recorded any notes on the rhythm track, the display will show “Empty” on the top line.

Putting a Rhythm on the Rhythm Track

There are two ways to put a rhythm on the 16 Track Recorder’s rhythm track. You can send a Drum Machine rhythm to the rhythm track:

- as part of an idea captured in the Idea Pad (see *Chapter 6* to learn how to send an idea to the 16 Track Recorder)
- directly from the Drum Machine into the current song or into a freshly-created song that uses the

rhythm's time signature and tempo (see *Chapter 5* to learn how to send a rhythm from the Drum Machine)

Changing the Rhythm Track's Rhythm

Once you've put a rhythm on the rhythm track, you may decide you'd like to change its kit sound, edit its variations and fills, or even assign it an entirely different rhythm. You can send a new rhythm to the rhythm track at any time, and it will replace the rhythm currently there.

If you need to make changes to the rhythm or to the kit the rhythm uses, you should do so in the Drum Machine—that way, you can take advantage its full range of advanced editing capabilities. Once you've edited the rhythm to your liking in the Drum Machine, simply save it as a new rhythm, and send it to the rhythm track.

You can make any number of changes to the rhythm track's rhythm this way, including:

- selecting a new drum or percussion kit for the rhythm to use
- editing the drum or percussion kit zone by zone
- editing the rhythm's variations and fills

All of these editing procedures are described in detail in *Chapter 5*.

Note: When you send a new rhythm to the rhythm track, it will erase the entire track, including any drum notes you may have recorded. Before you re-send a rhythm to the rhythm track, make sure it doesn't contain anything that you want to keep.

Editing Rhythm Track Settings

The ZR-76 provides sound editing parameters that can be used to adjust the rhythm track to your liking. These parameters affect the entire rhythm track—both the rhythm and any notes you may have recorded. They're the same parameters offered on non-rhythm tracks that use a drum kit sound. (Editing track parameters is described in “Editing Track Settings” earlier in this chapter.)

The FX/Mixdown Mix and Pan knobs can also be used in conjunction with the rhythm track—the Mix knob raises or lowers the loudness of the rhythm, and the Pan knob shifts the stereo positioning of the entire kit. (To learn about using the Mix and Pan knobs with a track, see “Mixing with the 16 Track Recorder Mixdown Strip” in *Chapter 8*.)

There are also some parameters on the rhythm track that affect individual drum keys within the drum kit sound itself—these are the *drum key parameters*. Since editing these settings could create some unpredictable results, they are read-only and can't be changed from the rhythm track. (If you'd like to edit the drum kit sound that's on the rhythm track, see “Changing the Rhythm Track's Rhythm,” found earlier in this chapter.)

Playing a Drum Machine Rhythm in the 16 Track Recorder

Once you've put a rhythm on the rhythm track, the rhythm becomes part of the sequence—pressing Play will play the rhythm, as well as any other tracks in the sequence.

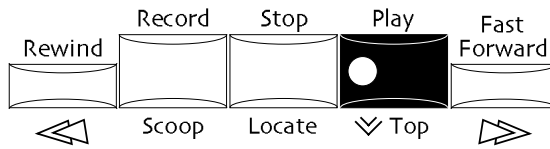
When the rhythm track is selected, pressing the Variations/Fills buttons will select variations and fills as the sequence plays. This allows you to try out different variations and fills, and hear how they might sound in context with the rest of your music. (If you'd like, you can make these selections permanent—see “Recording Variation and Fill Selections” later in this chapter.)

Note: If the rhythm track is the only track in the sequence with music on it, the sequence and rhythm will keep playing until you press the 16 Track Recorder Stop button. If any tracks in the sequence other than the rhythm track have music on them, the rhythm will be heard until those tracks finish playing.

To Play a Rhythm

1. If you haven't already done so, use either of the methods mentioned in “Putting a Rhythm on the Rhythm Track” earlier in this chapter to assign a rhythm to the rhythm track of a sequence.

2. Press the 16 Track Recorder Play button.

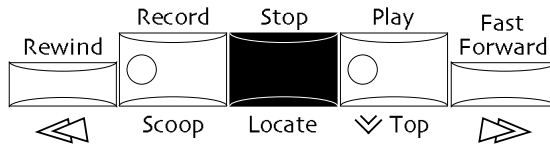


The sequence and its rhythm will begin playing.

3. If the rhythm track is not already selected, press the 16 Track Recorder Rhythm button to select it.
4. Use the Drum Machine's Variations/Fills buttons to select different variations and fills as you desire. When you select a new variation or fill, the rhythm will begin playing it immediately. (To learn how to select variations and fills, see *Chapter 5*.)

Note: Variations and fills can only be selected for the rhythm track when it's selected. Pressing one of the Variation/Fills buttons when another track is selected will bring you out of the 16 Track Recorder and over to the Drum Machine.

5. When you want to stop the sequence, press the 16 Track Recorder Stop button.



Note: If the rhythm you've selected for a rhythm track has been removed from the ZR's memory, the rhythm track will play one of the ZR's ROM rhythms instead.

Recording Variation and Fill Selections

The rhythm track can record your selections of variations and fills. This makes it easy to create a drum part that works with music you've already recorded, or to lay down a rhythmic foundation around which you can record additional tracks. By recording which Drum Machine Variations/Fills buttons you press, and when, the rhythm track records what you play, and makes it part of the sequence. You can record variation and fill selections in either Replace or Add record mode (recording modes are discussed in "Recording Modes" later in this chapter).

Note: Variation and fill selections cannot be quantized.

To Record Variation and Fill Selections

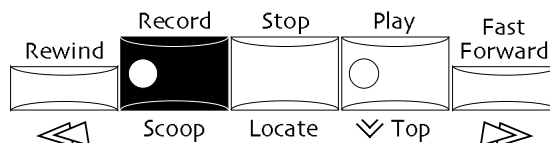
1. Select the recording mode you'd like to use. (See "Overdubbing on a Track" earlier in this chapter.)

Tip: When you record on the rhythm track in Replace mode, you will erase previously recorded variation and fill selections along with any notes you may have recorded on the rhythm track. If you're recording in Replace mode, make sure the rhythm track doesn't contain anything you want to keep. If it does, you may want to record variation and fill selections using Add mode.

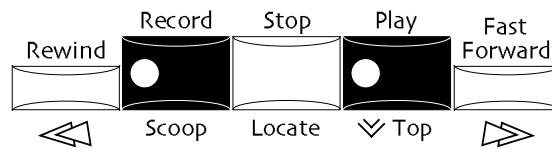
2. If the rhythm track is not already selected, select it by pressing the 16 Track Recorder Rhythm button.



3. Press and hold the Record button.



4. While still holding the Record button, press the Play button to begin recording.



After the countoff—if you’ve enabled the countoff feature—the sequence and the rhythm will begin playing. You can use the Drum Machine Variations/Fills button to select different variations and fills. Whenever you select a new variation or fill, the rhythm track will start playing it immediately.

5. Use the Variations/Fills buttons and the Fill Variation button to select variations and fills as you desire.
6. When you’ve finished recording, press the 16 Track Recorder Stop button.
7. Press play to hear your Drum Machine “performance.”

Tip: If you make a mistake while recording variation and fill selections, or if you’re simply not happy with what you recorded, you can undo the recording using the 16 Track Recorder Edit button. The Undo function is discussed in “Track Undo” earlier in this chapter.

Recording Your Own Drum or Percussion Notes

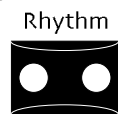
The rhythm track will also record notes you play on the keyboard, using the rhythm’s drum kit sound. This allows you to add extra drum or percussion phrases to the rhythm, or to replace a section of the rhythm with something you play on the keyboard—perfect if you’d like to mix and match the ZR’s rhythms with rhythmic material you create. Once you’ve recorded notes on the rhythm track, their timing can be corrected in the same manner as on any other non-rhythm track, using the quantizing methods described earlier in this chapter. You can record notes in either Replace or Add record mode (record modes are discussed in “Recording Modes” later in this chapter).

To Record Notes on the Rhythm Track

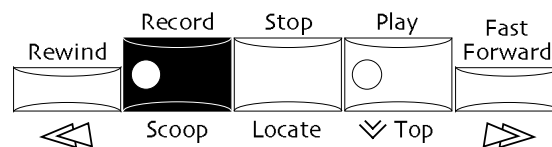
1. Select the recording mode you’d like to use. (See “Overdubbing on a Track” earlier in this chapter.)

Note: When you record on the rhythm track in Replace mode, you will erase previously recorded variation and fill selections along with any notes you may have recorded on the rhythm track. If you’re recording in Replace mode, make sure the rhythm track doesn’t contain anything you want to keep. If it does, you may want to record notes using Add mode.

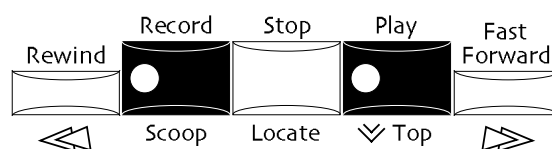
2. If the rhythm track is not already selected, select it by pressing the 16 Track Recorder Rhythm button.



3. Press and hold the Record button.



4. While still holding the Record button, press the Play button to begin recording.



After the—if you’ve enabled the countoff feature—the sequence and the rhythm will begin playing.

4. Use the keyboard to play along with the rhythm.
5. When you've finished recording, press the 16 Track Recorder Stop button.
6. Press Play to hear the drum or percussion notes you've added to the rhythm track.

Tip: If you make a mistake while recording, or if you're simply not happy with what you recorded, you can undo the recording using the 16 Track Recorder Edit button. The Edit button is discussed in "Track Undo" earlier in this chapter.

Stopping the Rhythm During a Sequence

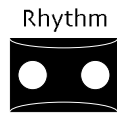
You may decide you'd like the rhythm to stop at a certain point in the sequence while the other tracks keep playing. Perhaps you want a measure of silence in the sequence, or maybe your composition has a softer section where you don't want the rhythm to play—it could be that you'd like to replace a portion of the rhythm with your own playing. You can press the Drum Machine Stop button while recording, and the rhythm track will record the button-press (it won't record a Drum Machine Start button press after the Stop, since there would be no way of locking the sequence and rhythm timing together). When the sequence plays back, the rhythm will stop playing at that point.

To Stop the Rhythm During a Sequence

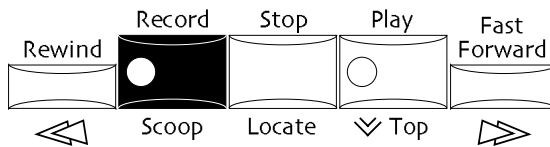
1. Select the recording mode you'd like to use. (See "Overdubbing on a Track" earlier in this chapter.)

Note: When you record on the rhythm track in Replace mode, you will erase previously recorded variation and fill selections along with any notes you may have recorded on the rhythm track. If you're recording in Replace mode, make sure the rhythm track doesn't contain anything you want to keep. If it does, you may want to record using Add mode.

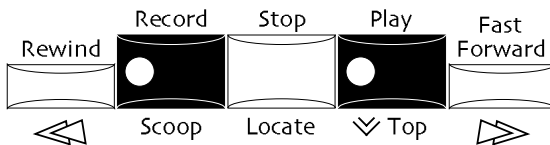
2. If the rhythm track is not already selected, select it by pressing the 16 Track Recorder Rhythm button.



3. Press and hold the Record button.

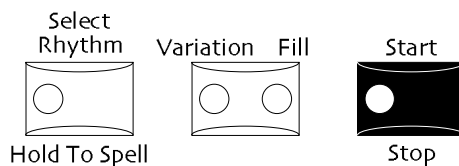


4. While still holding the Record button, press the Play button to begin recording.



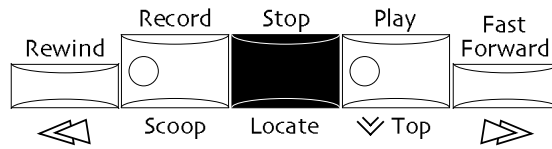
After the countoff—if you've enabled the countoff feature—the sequence and the rhythm will begin playing.

5. At the point in the sequence where you'd like the rhythm to stop playing, press the Drum Machine Start/Stop button.



The rhythm will stop, and the sequence will keep playing.

- When you've finished recording, press the 16 Track Recorder Stop button.



To Replace Part of the Rhythm with New Rhythmic Material

- Use the procedure described in “To Stop the Rhythm During a Sequence” above to stop the rhythm at the point you'd like your playing to take over.
- Move to the point in the sequence at which you'd like to start recording new rhythmic material, using either the Rewind and/or Fast Forward buttons, or the Locate function. (These methods are described earlier in this chapter.)
- Use the methods described in “Recording Your Own Drum or Percussion Notes” to record new rhythmic material onto the rhythm track.

Copying the Rhythm Track

Once you've created the perfect rhythm track, you can use it in other sequences. The 16 Track Recorder Copy command allows you to move the whole rhythm track—including variation and fill selections, notes you've recorded, and mix and pan information—to the rhythm track of another sequence. You can then leave it just as it is, or use it as a starting point to create a new rhythm track.

The ZR-76 can undo the following track command. See “Undo” earlier in this chapter for details.

To Copy the Entire Rhythm Track to Another Sequence

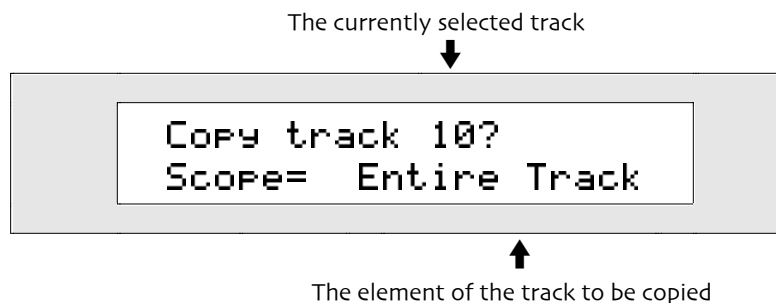
- Press the 16 Track Recorder Rhythm button to select the rhythm track for copying.



- Press the 16 Track Recorder Copy button.

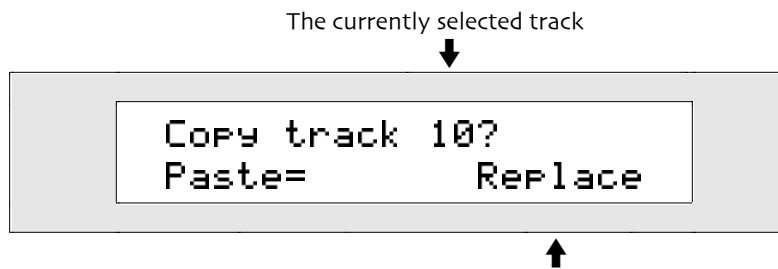


The display will show:



This display confirms that you're copying the whole rhythm track.

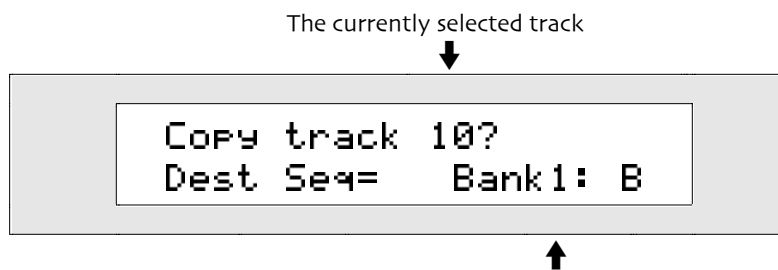
- Turn the Parameter knob so the display shows “Paste=”:



This shows what the rhythm will do to any data on the track to which it's being copied

This display confirms that the rhythm track you are copying will replace whatever may be on the destination track.

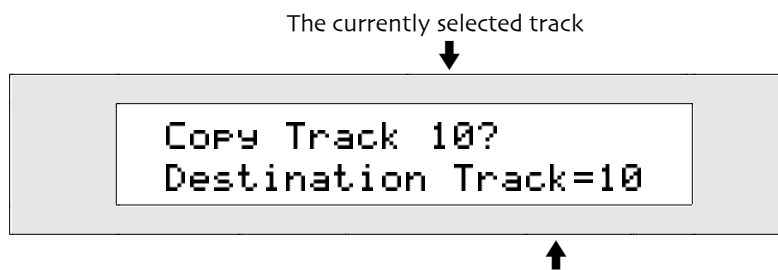
- Turn the Parameter knob so the display shows:



This shows the target sequence location for the rhythm track

The Destination parameter determines the sequence to which the rhythm track will be copied. You can copy the rhythm track to any sequence.

- Press the Bank and A-H Sequence buttons to selected the destination sequence. If you prefer, use the Value knob or the up/down arrow buttons to select the sequence to which you'd like to send the rhythm track.
- Turn the Parameter knob until the display shows:



This shows the target track for the copied rhythm track

This display confirms that you are copying the rhythm track to the rhythm track of the destination sequence.

- Press Yes to copy the rhythm track to the new location, or No if you'd like to cancel.

Transmitting the Rhythm Track Into an External Sequencer

The 16 Track Recorder can transmit a rhythm track—a rhythm and any notes you've added—via MIDI to an external sequencer. This allows you to play and edit the rhythm as a normal MIDI track in the external sequencer. To accomplish this, create and perfect the rhythm track to your liking. When you've finished, send a MIDI-OUT sound to the rhythm track from SoundFinder (see *Chapter 4*). When you play the 16 Track Recorder, all of the rhythm's track music will be transmitted as MIDI data on the channel selected in the MIDI-OUT sound.

Erasing the Rhythm Track

The ZR-76 allows you to erase part or all of the rhythm track. You can completely erase the rhythm track, so that it no longer has a rhythm, or you can erase just the variation and fill selections along with any notes you may have recorded, and leave the rhythm there.

Tip: If you'd like to erase just the notes you have recorded on the rhythm track and leave the variation and fill selections intact, you can use the Scoop feature described in "Scooping Notes from a Track" earlier in this chapter.

The ZR-76 can undo the following track command. See "Undo" earlier in this chapter for details.

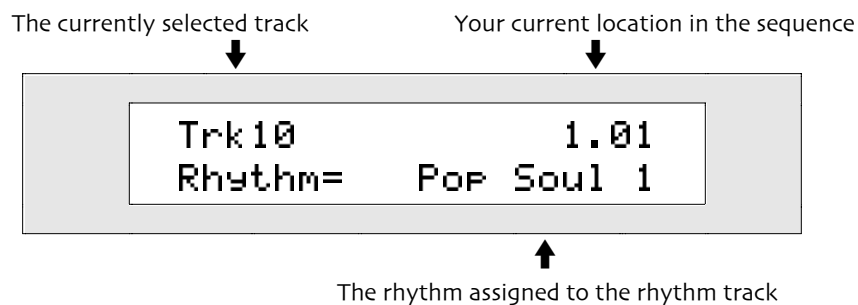
To Erase Some or All of the Rhythm Track

1. Press the 16 Track Recorder Rhythm button to select the rhythm track for erasure.

Rhythm

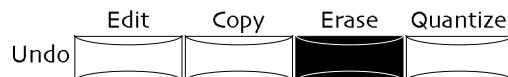


The display will show:

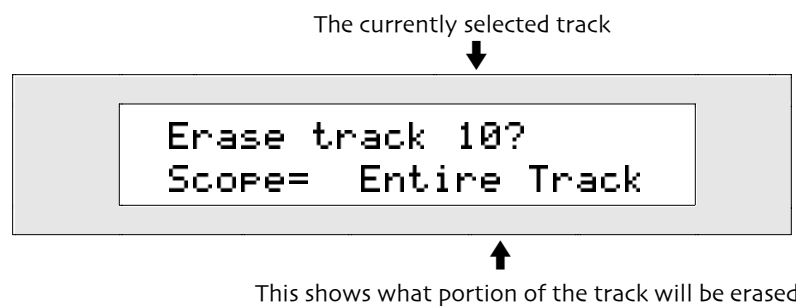


Note: If there's nothing recorded on the track you selected, you'll see "Empty" in the top line of the display. If you haven't assigned a rhythm to the track, you'll see *UNDEFINED* on the bottom line of the display.

2. Press the 16 Track Recorder Erase button.



The display will show:



The Scope parameter controls what aspects of the track are erased. When you're erasing a rhythm track, you can turn the Value knob or use the up/down arrow buttons to set the Scope parameter to:

- Trk Data Only—to erase variation and fill selections, and any notes you may have recorded, leaving the rhythm on the rhythm track
- Entire Track—to erase variation and fill selections, along with any notes you may have recorded,

and remove the rhythm from the rhythm track

3. Turn the Value knob, or use the up/down arrow buttons to set Scope to the desired setting.
4. Press Yes to erase the elements of the track you've chosen, or No if you'd like to cancel the procedure.

Tip: The shortcut for erasing a track using the Fast Forward and Record buttons can be used to remove variation and fill selections and notes from a specified point in the track to its end. See “The Fast Forward/Record Shortcut for Erasing a Track” earlier in this chapter.

Sequence Tools and Techniques

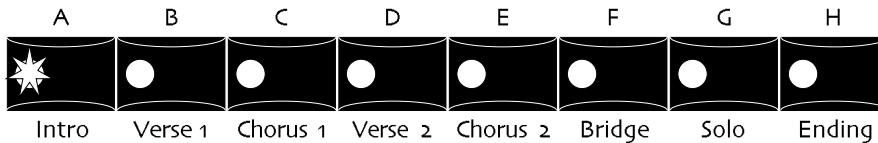
For an introduction to ZR-76 sequences, see “ZR-76 Recording Concepts” above.

Selecting a Sequence

Each song in your ZR-76 can contain up to 24 sequences. The sequences are grouped into three sets of eight sequences each. Each of these sets is called a *bank*. The sequence locations in each bank are lettered from “A” to “H.” When a sequence already contains music, its LED will light whenever the bank it belongs to is selected. When you select a sequence, its LED flashes.

To Select a Sequence

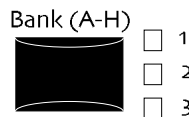
1. Press a Sequence button.



Tip: Whenever you'd like to return to the main sequence display, press the sequence's button.

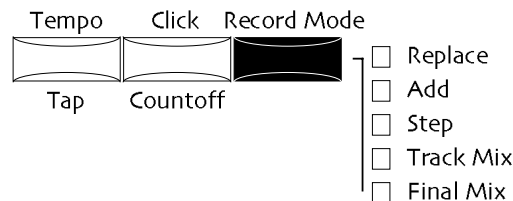
To Select a Bank

1. Press the Bank (A-H) button repeatedly until the LED for the bank number you desire is lit.



Recording Modes

The 16 Track Recorder can record using several different *recording modes*. Each recording mode offers a different way of recording, or records one type of data or another. You can select a record mode by using the Song Editor's Record Mode button.

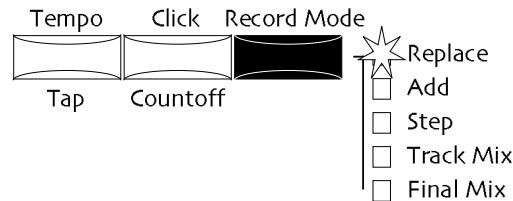


You can select one of the following record modes:

- **Replace**—As you record, the music you play will take the place of anything that's currently on the track. This is the default recording mode, and is most useful when you're recording something for the first time, or when you want to record over an entire track or a section of a track.
- **Add**—Music you record will be merged with whatever is currently on the track. This mode is great for creating complicated tracks without having to play everything at once—you can use it to create a whole percussion section one instrument at a time, or to add notes to a string section that needs filling out.

- **Step—Step** mode, allows you to record the notes of a track one-by-one or a chord at a time, at your own pace. During playback, notes play at the sequence’s normal tempo. Step recording is described earlier in this chapter.
- **Track Mix**—Track Mix allows you to record real-time Mix and Pan changes into a track. With the Track Mix mode, you can automate the mixing of each track in your sequence. The procedure for using Track Mix mode can be found in *Chapter 8*, in “Mixing with the 16 Track Recorder Mixdown Strip.”
- **Final Mix**—Final Mix allows you to record real-time volume changes for multiple tracks. This can be useful when creating sequence fadeouts. The procedure for mixing multiple tracks can be found in *Chapter 8*, in the section “Mixing with the 16 Track Recorder Mixdown Strip.” Final Mix can also be used for the recording of sequence tempo changes, described later in this chapter in “Recording Automated Sequence Tempo Changes.”

You can easily tell which recording mode you’re using—the LED for the selected mode will be lit.



In this illustration, the Replace recording mode is selected.

To Select a Recording Mode

1. Press the Record Mode button repeatedly until the mode you want is selected. The currently selected Record Mode will not change until you press the Record Mode button, or create a new song. When you create a new song, Replace mode is automatically selected.

Tip: Earlier in this chapter, “Overdubbing on a Track” describes Add mode’s primary use.

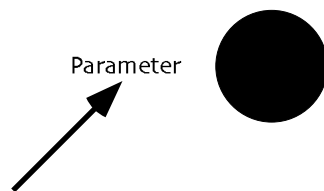
Sequence Parameters and Values

Each sequence offers various options that allow you to create a setup suitable for the music you’ll be recording. Each of these setup options is called a *parameter*. When you alter a parameter’s setting, you are editing its *value*.

To Edit a Parameter

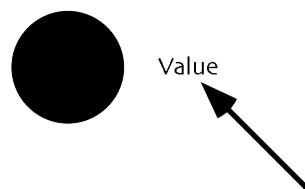
1. Press the button associated with the parameter you’d like to edit (a full description of each of the recording parameters is available later in this chapter).
2. Use the Parameter knob to select the parameter you’d like to edit.

Sound/Rhythm Type



3. Turn the Value knob to change the parameter’s setting to the desired value.

Sound / Rhythm Name



Setting the Sequence Tempo

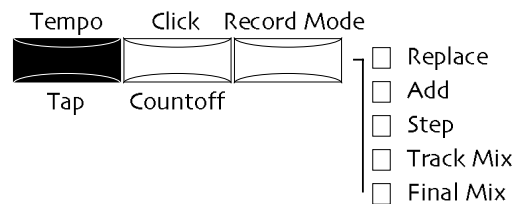
The ZR-76 provides two methods for setting the tempo of the currently selected sequence. You can:

- Set the tempo manually using the Tempo parameter
- Perform the tempo that you want the sequence to use by tapping on the Song Editor Tempo button

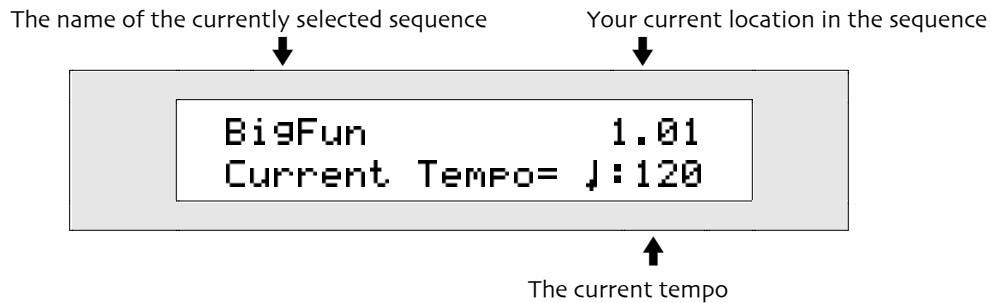
Note: If you attempt to set a sequence’s tempo when the Song Playlist LED is lit, the words “Current Tempo” will be followed by a colon, indicating that the tempo value is read-only and cannot be changed. This is also the case when the system ClockSource parameter is set to MIDI (the current tempo value will be “MIDI”). If you want to change the tempo of a sequence, make sure the Song Playlist LED is off and the system ClockSource parameter is set to Internal. (For details on the song playlist, see “Creating a Song Playlist” later in this chapter. For details on the system ClockSource parameter, see *Chapter 3*.)

To Manually Set the Tempo of the Current Sequence

1. Press the Song Editor Tempo button.



The display will show:



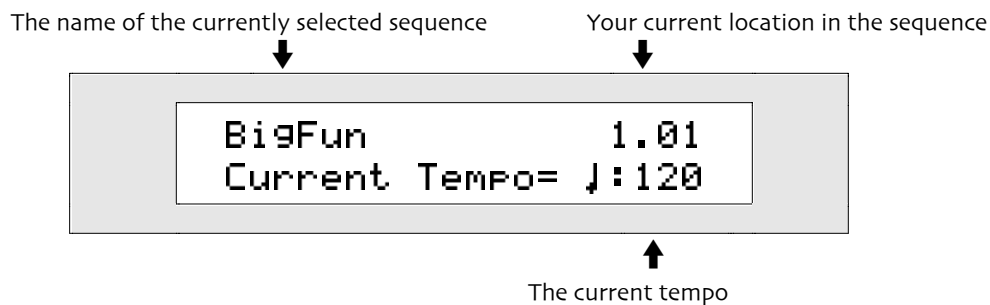
You can use the Value knob and the up/down arrow buttons set the Tempo value to the desired number of quarter notes per minute.

2. Turn the Value knob or use the up/down arrow buttons to set the Tempo to the desired value.

To Tap Out a Sequence Playback Tempo

1. Tap the Song Editor Tempo button at whatever speed you’d like the current sequence to use, with each tap representing a quarter note.

The display will show:



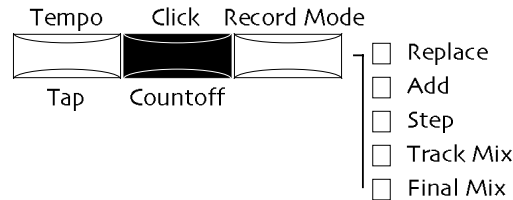
The Tempo value will change as you tap, to show the new speed of the sequence in quarter notes per minute.

The ZR-76 Metronome Click

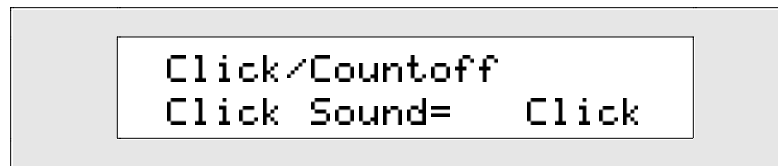
The ZR-76 provides a metronome—also called the *click*—as a rhythmic reference when you’re recording or listening back to tracks. The metronome can be set to any division of the current time signature. You can also determine the sound it uses, its loudness and stereo placement—it can even be run through the ZR-76 effects.

To Set What Sound the Metronome Click Will Use

1. Press the Click/Countoff button.



2. Turn the Parameter knob until the display shows:



This tells you what sound the metronome will use

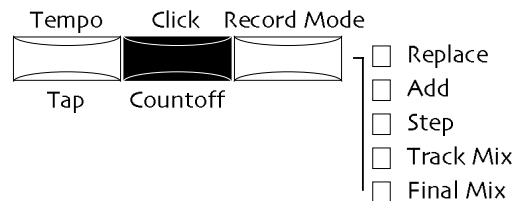
The Click Sound parameter may be set to:

- Click—to use a standard click sound
 - Vocal—to use spoken numbers (one, two, three, four)
 - VoClk—to use spoken numbers (one, two, three, four) and the standard click sound
 - Stick—to use the sound of drumsticks being hit together
3. Turn the Value knob or use the up/down arrow buttons to set the Click Sound parameter to the desired value.

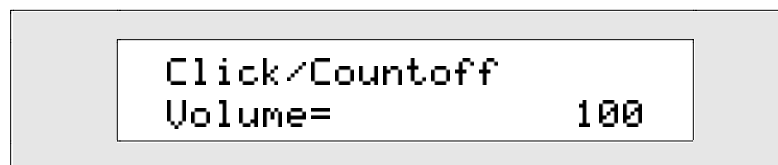
Note: If the time signature of a sequence has more than four beats and you’ve set the click to use the spoken numbers, the ZR-76 will use spoken numbers for the first four beats, and fill in the rest with clicks.

To Set the Metronome Volume

1. Press the Click/Countoff button.



2. Turn the Parameter knob until the display shows:



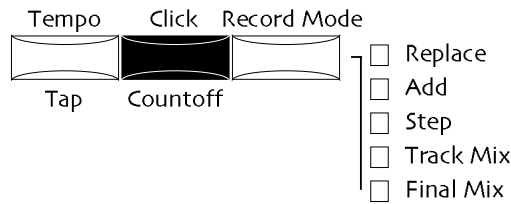
This tells you the currently volume of the metronome

The Click Volume parameter may be set anywhere from 0 to 127.

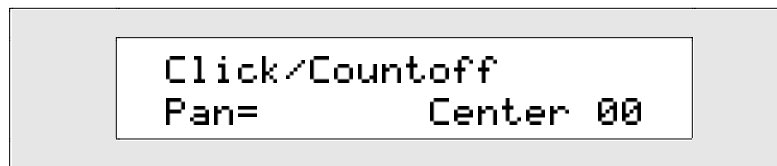
3. Turn the Value knob or use the up/down arrow buttons to set the Click Volume parameter to the desired value.

To Set the Stereo Position of the Metronome

Press the Click/Countoff button.



2. Turn the Parameter knob until the display shows:



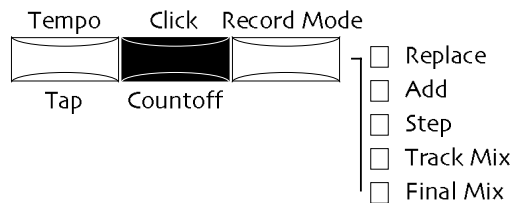
This shows the stereo position of the metronome's sound

The Click Pan parameter may be set anywhere from -64 (hard left) to +63 (hard right).

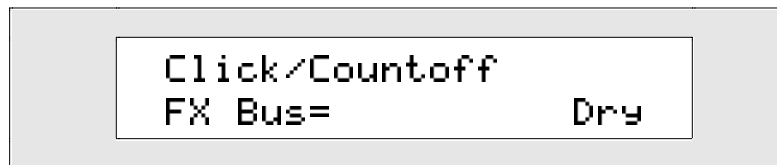
3. Turn the Value knob or use the up/down arrow buttons to set the Click Pan parameter to the desired value.

To Send the Metronome Through an Effect

1. Press the Click/Countoff button.



2. Turn the Parameter knob until the display shows:



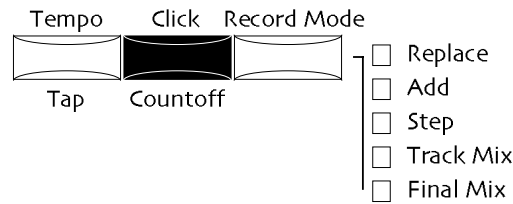
This shows which effect, if any, will be applied to the metronome's sound

The Click FX Bus parameter may be set to:

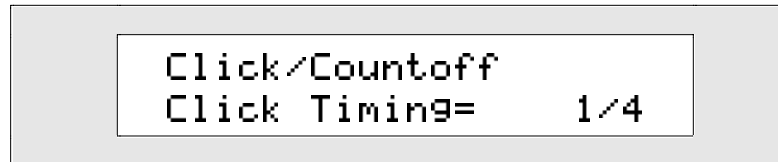
- Insert—to hear the click through the insert effect of the sequence you're working with
 - Chorus—to hear the click through the Global Chorus bus
 - LightReverb—to hear the click through the LightReverb bus
 - MediumReverb—to hear the click through the MediumReverb bus
 - WetReverb—to hear the click through the WetReverb bus
 - Dry—to hear the click through the Dry bus
3. Turn the Value knob or use the up/down arrow buttons to set the Click FX Bus parameter to the desired value.

To Determine the Beat of the Metronome

1. Press the Click/Countoff button.



2. Turn the Parameter knob until the display shows:



This shows the current meter of the metronome

The Click Timing parameter may be set anywhere from 1/2 (a click on every half note) to 1/32T (a click on every 32nd note triplet). The “T” indicates triplet notes of the displayed numeric value.

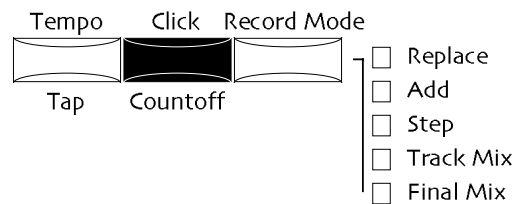
3. Turn the Value knob or use the up/down arrow buttons to set the Click Timing parameter to the desired value.

Countoff

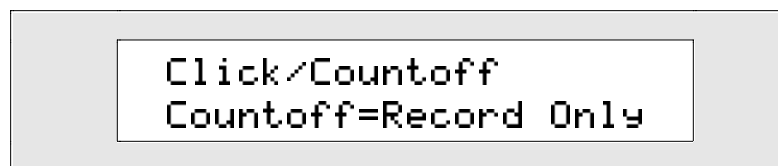
The ZR-76 offers a number of options for the rhythmic reference that comes before the first beat of any track you record. Several sounds are available for this task, and you can set the countoff to be from 1 to 16 measures in length. The countoff counts according to the setting of the Click Timing parameter, discussed above, so that it always agrees rhythmically with the metronome.

To Set When the Countoff Will Be Heard

1. Press the Click/Countoff button.



2. Turn the knob until the display shows “Countoff” in the lower left area of the display:



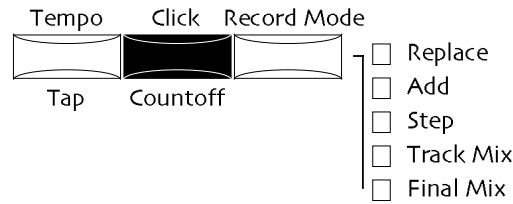
This tells you the circumstance in which the countoff will be heard

The Countoff parameter may be set to:

- Off—to never play the countoff
 - Record Only—to play the countoff only when you record a sequence
 - Play Only—to play the countoff only when you play a sequence
 - Record/Play—to play the countoff when you record or play a sequence
3. Use the Value knob or the up/down arrow buttons to set the Countoff= parameter to the desired value.

To Set What Sound the Countoff Will Use

1. Press the Click/Countoff button.



2. Turn the knob until the display shows “Countoff Sound” in the lower left area of the display:



This tells you what sound the countoff will use

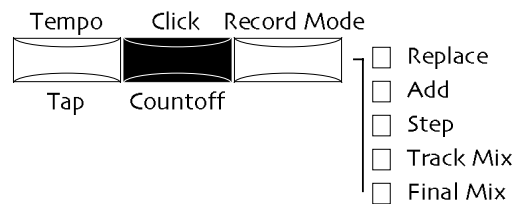
The Countoff Sound may be set to:

- Quiet—to cause the countoff to be seen on the display, but not heard
 - Click—to use a standard click sound
 - Vocal—to use spoken numbers (one, two, three, four)
 - VoClk—to use spoken numbers (one, two, three, four) and the standard click sound
 - Stick—to use the sound of drumsticks being hit together
3. Turn the Value knob or use the up/down arrow buttons to set the Countoff Sound parameter to the desired value.

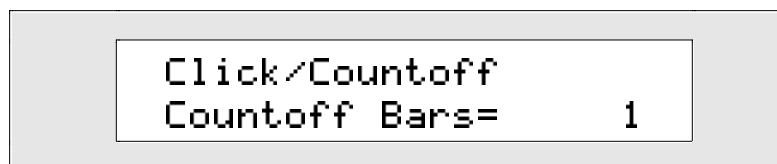
Note: If the time signature of the sequence has more than four beats and you’ve set the countoff to use spoken numbers, the ZR-76 will use spoken numbers for the first four beats, and fill in the rest with clicks.

To Set the Length of the Countoff

1. Press the Click/Countoff button.



2. Turn the Parameter knob until the display shows “Countoff Bars=”:



This tells you how many bars the countoff will last before the first beat of the sequence

The Countoff Bars parameter may be set anywhere from a 1-bar countoff to a 16-bar countoff.

3. Turn the Value knob or use the up/down arrow buttons to set the Countoff Bars parameter to the desired value.

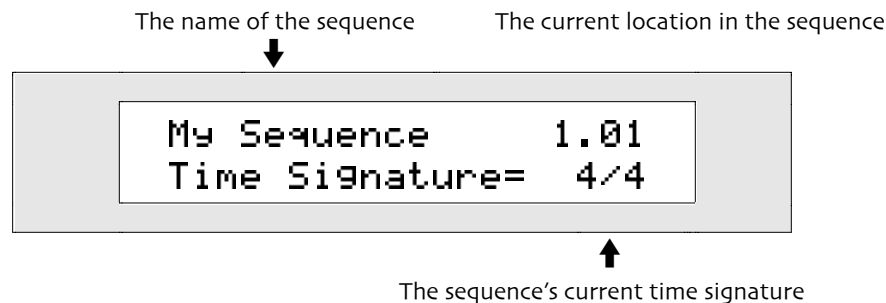
Setting a Sequence's Time Signature

Each sequence has its own time signature that can be edited whenever the 16 Track Recorder is stopped. When you select a new sequence, its default time signature is 4/4. You can change its time signature before you start recording. You can edit a sequence's time signature even after you've already recorded on its tracks—this won't change the way the music sounds, only the way it's rhythmically interpreted by the 16 Track Recorder's counter.

Note: For your convenience, when you edit a sequence's time signature, the Click Timing parameter (discussed earlier in this chapter) is automatically set to match the time signature's denominator (the number on the right). For instance, if you set the time signature to 6/8, the click and countoff will automatically be set to sound every eighth note—this means that the sequence's click and countoff will always be rhythmically appropriate for the music you're recording.

To View a Sequence's Time Signature

1. Press the A-H Sequence button of the sequence whose time signature you'd like to view. The display will show:

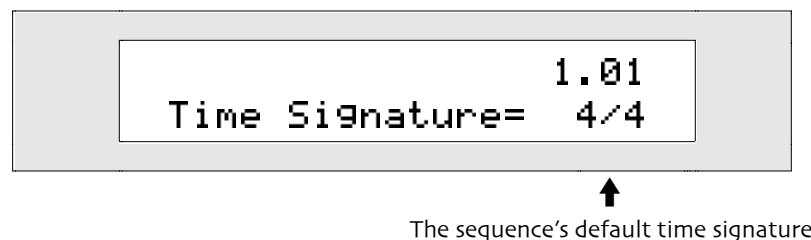


You'll see the sequence's time signature in the bottom right-hand corner of the display.

Note: If the sequence you're working with is a Standard MIDI File that uses several different time signatures, the bottom line of the display will read "Time Signature: 4/4." The colon indicates that this time signature is read-only and can't be changed.

To Set the Time Signature of a New Sequence

1. Select a new sequence by pressing one of the A-H Sequence buttons (the LEDs of sequences that are empty are not lit). The display will show:



This display shows you the sequence's current time signature. You can select the part of the time signature you'd like to change by turning the Parameter knob, and you can change the currently selected number by turning the Value knob. The number that's flashing is the one that's currently selected.

The numerator (the number on the left), which controls how many beats are in each measure, can be set anywhere from 1 to 99. The denominator (the number on the right), which controls which metric value is equal to one beat, can be set anywhere from 1 (whole notes) to 64 (64th notes).

2. Turn the Parameter knob until the number you'd like to change is flashing.
3. Turn the Value knob to set the selected number to the value you desire.
4. Repeat steps 2 and 3 until the time signature is what you want it to be.

Once you've set a time signature for the new sequence, you can begin recording—the click and countoff will play appropriately for the time signature you've chosen. If you'd like to cancel the time signature setting, select another sequence.

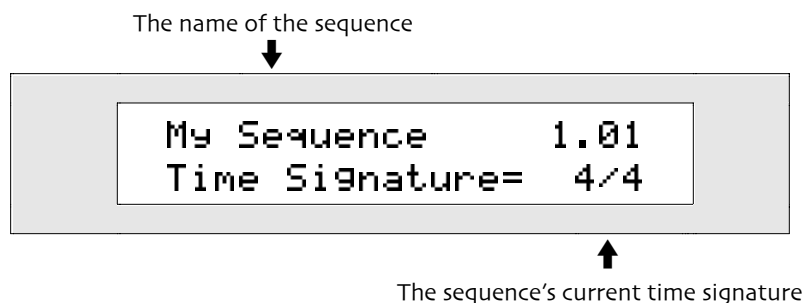
Note: For your convenience, when you edit a sequence's time signature, the Click Timing parameter (discussed earlier in this chapter) is automatically set to match the time signature's bottom number. For instance, if you set the time signature to 6/8, the click and countoff will automatically be set to sound every eighth note—this means that the sequence's click and countoff will always be rhythmically appropriate for the music you're recording.

5. Begin recording if you'd like to keep the time signature you've chosen, or select another sequence if you'd like to cancel the changes you've made.

To Change the Time Signature of a Sequence

1. Select the sequence whose time signature you'd like to change by pressing one of the A-H Sequence buttons. Make sure you select a sequence whose LED is lit to ensure that it contains music. (If you'd like to set the time signature of a new sequence, see "To Set the Time Signature of a New Sequence" above.)

The display will show:

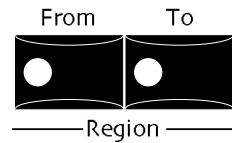


This display shows you the sequence's current time signature.

Note: If the sequence you're working with is a Standard MIDI File that uses several different time signatures, the bottom line of the display will read "Time Signature: 4/4." The colon indicates that this time signature is read-only and can't be changed.

2. If the sequence is currently playing, press the 16 Track Recorder Stop button to stop it.
3. Press the Enter button make the time signature editable.
One of the numbers in the time signature will begin to flash to show that it's selected for editing. You can select the part of the time signature you'd like to change by turning the Parameter knob, and you can change the currently selected number by turning the Value knob. The number that's flashing is the one that's currently selected.
The numerator (the number on the left), which controls how many beats are in each measure, can be set anywhere from 1 to 99. The denominator (the number on the right), which controls which metric value is equal to one beat, can be set anywhere from 1 (whole notes) to 64 (64th notes).
4. Turn the Parameter knob until the number you'd like to change is flashing.
5. Turn the Value knob to set the selected number to the value you desire.
6. Repeat steps 2 and 3 until the time signature is what you want it to be.
Once you've set the time signature to your liking, pressing any track button will apply it to the sequence. When you play or record, the click, countoff and sequence counter will all reflect the changes you've made.
7. Press any track button to apply the new time signature to the sequence.

Using Regions



The ZR-76 allows you to select a specific section within a sequence—called a *region*. When you set a region within a sequence, it will:

- be what you hear when you play the sequence
- be selected as an area that can be affected by the track and sequence editing commands
- play over and over again when you loop the sequence
- set up two locator points for quick playback

Note: Song playlists don't use regions. To change region settings, the Song Playlist LED must be off.

Setting a region involves setting the region's start point—the *From* setting— and/or its end point—the *To* setting. You don't have to use both the From and To settings: you can set a region to be in the middle of a sequence, to start at its From setting and continue until the end of the sequence or to start at the top of the sequence and continue until the To setting.

Tip: You can use region From function to start your song with a pickup—a few notes that precede the first beat of the first real measure of the song. Record an extra measure including the pickup prior to the start of the first measure of the song's first sequence. On playback, set region From for the sequence to start at the pickup.

The region settings are very precise. When setting the From or To, you select the desired measure, beat and clock (each beat is divided into 384 clocks).

There are two ways to determine From and To:

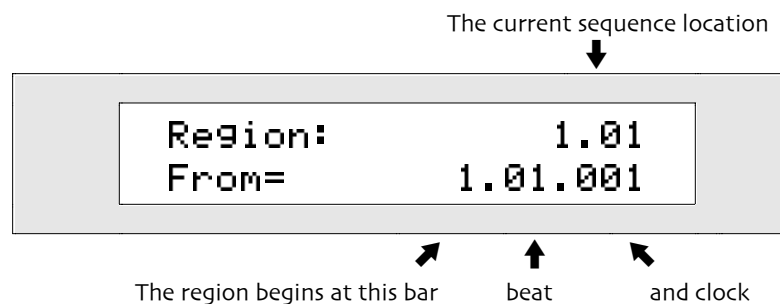
- You can set them by entering numerical values
- You can set the From and To to the nearest beat while your sequence is stopped or as it plays by double-clicking on the From or To button.

Note: Each sequence remembers its From and To region settings. You can tell if the sequence has an active region—if it does, the From and/or To LEDs will be lit. When a sequence that uses regions is part of a song playlist, you'll see the Region From and/or To LEDs light during the song steps in which the sequence appears.

To Set Region From by Entering Numerical Values

1. If the From page is not showing, press the From button.

The display will show:



Both knobs and the up/down arrow buttons are used to set the beginning of the region from setting:

- Turn the Parameter knob clockwise to move to the beginning of the next measure, and counter-clockwise to move to the beginning of the current measure (or to the beginning of the previous measure if the beat value is 01 and the clock value is 001).
- Press the up arrow button to move to the beginning of the next beat, and the down arrow button to

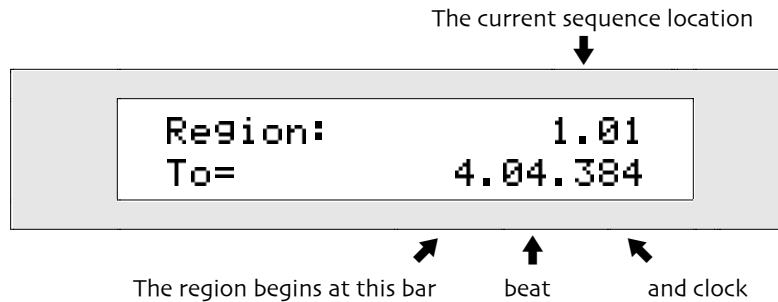
move to the beginning of the current beat (or to the beginning of the previous beat if the clock value is 001).

- Turn the Value knob clockwise to move to the next clock value, and counter-clockwise to move to the previous clock value.
2. Use the knobs and the up/down arrow buttons to set the From value as desired.
 3. Press the Region From button to turn its LED—and the From function—on.

Note: If the From value is set later than the To value by making a change to its measure value or beat value—the To value will jump 1 measure past the From value, minus one clock.

To Set Region To by Entering Numerical Values

1. If the Region To page is not showing, press the To button.
The display will show:



Note: If you have just recorded the first track of a new sequence, or if you've just sent an idea to a new sequence from the Idea Pad, the To value will automatically be set to the end of the last measure of the track.

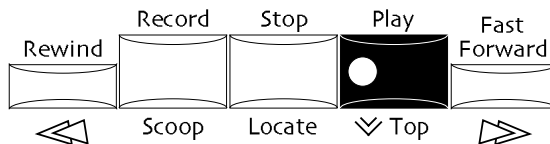
You can use both knobs and the up/down arrow buttons to set the end of the Region:

- Turn the Parameter knob counter-clockwise to move to the end of the previous measure, and clockwise to move to the end of the next measure, (or to the end of the current measure if you're not already there).
 - Press the up arrow button to move to the end of the next beat, and the down arrow button to move to the end of the previous beat.
 - Turn the Value knob clockwise to move to the next clock value, and counter-clockwise to move to the previous clock value.
2. Use the knobs and the up/down arrow buttons to set the To value as desired.
 3. Press the To button to turn its LED—and the To function—on.

Note: If To is set before From by measure value or by beat value—From jumps to 1 measure before To value.

To Set the Region From Value by Double-Clicking

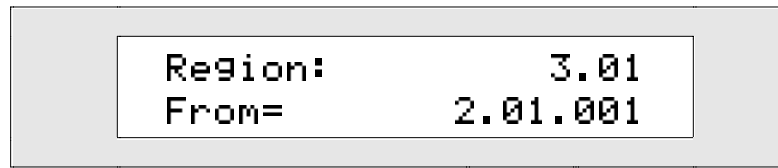
1. If the sequence whose From value you'd like to set is not already playing, press the Play button.



2. At the point in the sequence where you would like the region to begin, double-click the From button.

Tip: If you prefer, you can stop the sequence at the location you'd like to use as the beginning of the region, and then double-click the From button.

The display will show:



The measure and beat number at which you double-clicked

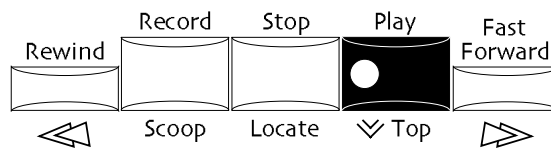
The From value will automatically be set to the beat at which you double-clicked the From button.

3. Press the From button if you'd like to turn the From function on and make the displayed sequence location the beginning of the region.

You can fine-tune the From value using the Parameter knob, the up/down arrow buttons, and the Value knob.

To Set the Region To Value by Double-Clicking

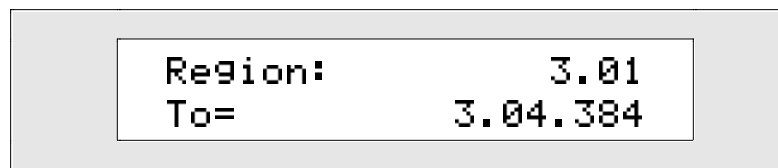
1. If the sequence whose To value you'd like to set is not already playing, press the Play button.



2. At the point in the sequence where you would like the region to end, double-click the To button.

Tip: If you prefer, you can stop the sequence at the location you'd like to select as the end of the region, and then double-click the To button.

The display will show:



The measure and beat number at which you double-clicked

The To value will automatically be set to the last clock before the beat at which you double-clicked.

3. Press the To button if you'd like to turn the To function on and make the displayed sequence location the end of the region.

You can fine-tune the To value using the Parameter knob, the up/down arrow buttons, and the Value knob.

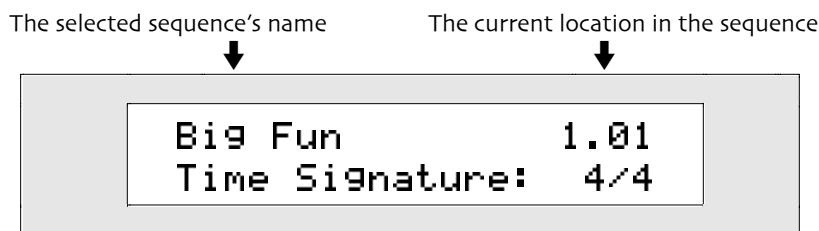
Jumping to the Beginning of a Region

You can use the 16 Track Recorder's Rewind button to quickly move to the beginning of a region—its Region From location.

To Get to the Start of a Region Using the Rewind Button

1. If the sequence is playing, press the 16 Track Recorder Stop button.

The sequence counter will be in the top right corner of the display.



2. Make sure the Region From LED is on:
 If the From LED is off and the From page is showing, press the From button once to turn it on.
 If the From LED is off and the From page is not showing, press the From button twice to turn it on.
3. Press the Rewind button once to jump to the From location. The counter will update to show where you are.

Shortcut for Trimming a Sequence

The ZR-76 provides a shortcut that allows you to quickly trim the beginning and/or end of the selected sequence. If your Region From and To values are already set as you'd like them, simply hold one of the Region buttons as you press the Song Editor Erase button. The Region button you're holding is automatically turned on, and the sequence is trimmed according to its setting. If the other Region LED is on when you do this, that portion of the sequence is trimmed as well.

Tip: If you'd like to audition the effect of trimming your sequence, turn on the region From and To LEDs to hear how your sequence will sound trimmed.

To Quickly Trim a Sequence According to the Region Settings

1. Select the sequence you'd like to trim.
2. If you'd like to trim the beginning of the sequence according to the Region From value, press and hold the Region From button. If you'd like to trim the end of the sequence according to the Region To value, press and hold the Region To button.

Note: If the LED of the Region button you're not holding is on, the sequence will be trimmed according to its value. If the LED of the Region button you're not holding is off, its value will be ignored. Be sure the other Region button is set as desired before you complete the command

3. Press the Song Editor Erase button.



The display confirms the completion of the command.

Using the Region From and To Settings as Locator Points

The 16 Track Recorder provides the ability to easily start playback from the Region From and To locations. This is especially useful when the From and To LEDs are unlit, signifying that the 16 Track Recorder's Region capabilities are not currently in use. In such a case, the From and To times can be set to handy starting locations—perhaps areas within a sequence upon which you need to lavish special attention—and used solely for that purpose. Since a sequence always remembers its From and To settings, these locator points will be available whenever you work with the sequence.

To Set Up Playback from Pre-Determined Locations

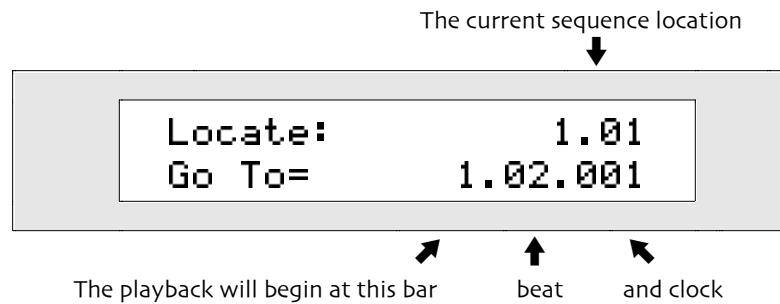
1. Set the sequence's From and/or To value to the place (or places) within the sequence from which you'd like to begin playback. (See earlier in this section to learn how to set the From and To values.)
2. Make sure that the relevant From and/or To LED is switched off. If it's on, press the appropriate From or To button repeatedly until it's unlit.

Note: If either the From or To LEDs is lit, that function will be in use for determining the beginning or end of the sequence's playback region, and will be unavailable for use as a locator point.

To Start Playback at the From or To Location

1. If the sequence is playing, press and release the 16 Track Recorder Stop button.
2. Press and hold down the 16 Track Recorder Stop button.

The From and To LEDs will light, and the display will show:



This display will appear for as long as you hold the Stop button down.

3. To select the From location, press the From button once—you will see its time location installed as the new Go To value.

To select the To location, press the To button once—its time location will be installed as the Go To value.

4. Release the Stop button—the 16 Track Recorder will jump to that location.
5. Press the Play button to play the sequence from the locator point you've selected.

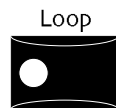
Looping Sequences

When working with sequences, it's often handy to have them play over and over as you study or work on them. The ZR-76 loop function enables sequence looping. If the region From button is on, its setting will determine the start of the loop. If the region To button is on, its setting will determine the end of the loop.

Tip: You can also use the loop feature in conjunction with the 16 Track Recorder's Add recording mode—doing so will allow you to record new notes on a track as it loops around and around.

To Loop a Sequence

1. Press the Loop button.



Its LED will light, showing that the loop function is active.

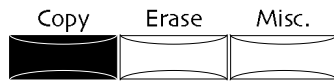
2. To un-loop a looped sequence, press the Loop button to turn off the loop—its LED will go out.

Copying a Sequence

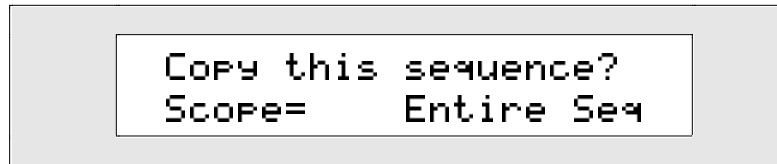
The ZR-76 allows you to copy any sequence you've recorded to a new sequence location. This allows you to create a spare copy of a sequence before making changes; perhaps you'd like to use one sequence as the basis for another. In addition, when you want to create a totally different section of music using the same settings you used in a sequence, you can copy the settings to a new location without copying the music the sequence contains. By utilizing the ZR's disk drive, you can also copy sequences from one song to another.

To Copy a Sequence to a Location in the Current Song

1. Select the sequence you'd like to copy to another location.
2. Press the Song Editor Copy button.



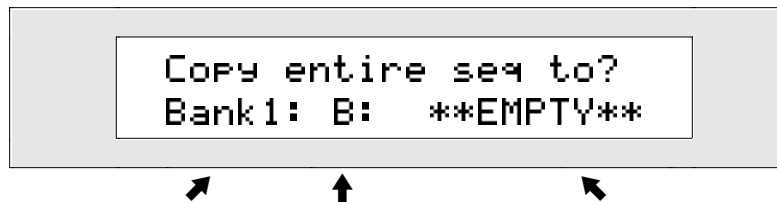
The display will show:



The Scope parameter controls what aspects of the selected sequence will be copied to the new location. You can set it to:

- Entire Seq—to copy the track sounds, track parameters, insert effect, region settings, and sequence tempo, as well as the actual music recorded on the tracks
 - SeqParams Only—to copy the track sounds, track parameters, insert effect, region settings, and sequence tempo only
3. Turn the Value knob to set the Scope parameter as desired.
 4. Press the Yes button if you'd like to continue and choose a destination for the sequence, or press the No button if you'd like to cancel.

If you press Yes, the display will show:



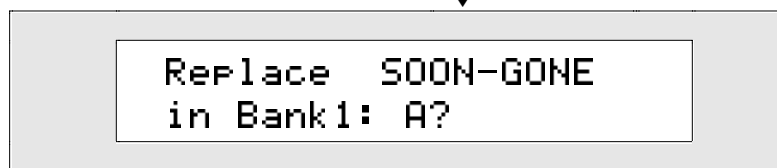
The selected target bank, sequence location and name, if there's a sequence there

You can now choose a destination for the sequence you're copying. The display will initially show you the lowest empty sequence location, but you can select any sequence location in the current song by pressing the Bank and A-H Sequence buttons for the desired location. If you'd prefer, you can to choose a different sequence location by turning the Value knob.

The display also shows you the contents of the currently selected destination, or ****EMPTY**** if it contains no recorded material.

5. Turn the Value knob or use the Bank and A-H Sequence buttons to select a destination for the sequence you're copying.
6. Press the Yes button if you'd like to continue the copying procedure, or the No button to cancel. If the sequence location you selected as a destination already has music recorded in it, the display will show:

The name of the sequence in the destination location

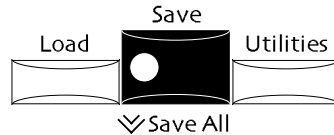


The destination location

7. Press the Yes button if you'd like to replace the displayed sequence with the sequence you're copying. Press the No button if you'd like to cancel.

To Copy a Sequence from One Song to Another

1. Select the sequence you'd like to copy to another song.
2. Insert a formatted floppy into the ZR's disk drive (See *Chapter 9* for information on formatting floppies and using the disk drive.)
3. Press the Disk/Global Save button.



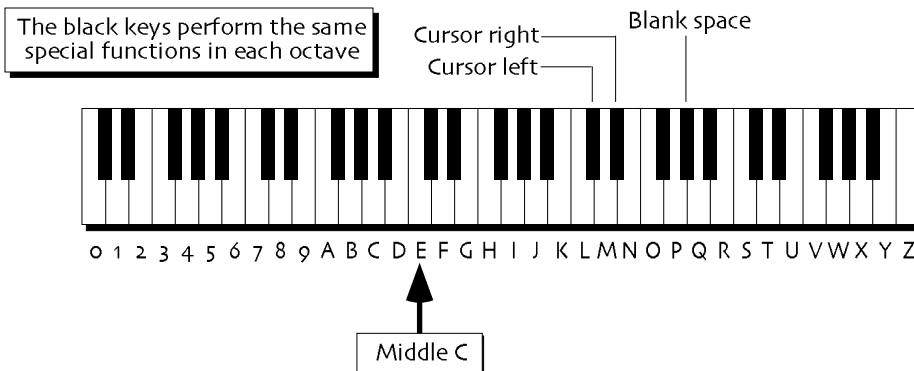
4. Each sequence is saved to floppy disk as a MIDI-FILE. Turn the Parameter knob until the display shows:



The name of the currently selected sequence

This display allows you to give your MIDI-FILE a DOS file name in one of two ways:

- You can spell the DOS file name on the keyboard as if it were a typewriter—the character associated with each key is printed above the key on the ZR's front panel. The C# and D# keys in each octave move the cursor forward and back on the display (the character currently selected for editing is underlined). The G# types a blank space.



Note: The keys outside of the range shown above are not used for the naming of disk files.

- You can also name your MIDI-FILE using the front panel controls. The up/down arrow buttons are used to select the character position within the name. The up arrow moves the location to the right, and the down arrow moves it to the left. The underlined character is selected and may be changed with the Value knob.

If you assign your file a name that's already been used for another disk file, the ZR will ask if you want to replace the earlier file with your new one. Respond by pressing the Yes or No buttons.

Tip: The Value knob provides access to characters unavailable on the keyboard.

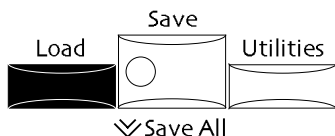
5. Use the front panel controls or the keyboard to name your MIDI file.
6. When you've named your MIDI-FILE, press the Yes button. The display confirms that your MIDI-FILE has been saved to floppy disk.

Warning: When saving data to a floppy disk, avoid removing the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory.

7. Select the song to which you'd like to copy the sequence, by selecting it from memory using the Select

Song button—if the song is not already in the ZR’s internal memory, load it from a floppy disk (for details on loading a song from disk, see *Chapter 9*).

8. Press the Disk/Global Load button.



9. Turn the Parameter knob until the display shows:

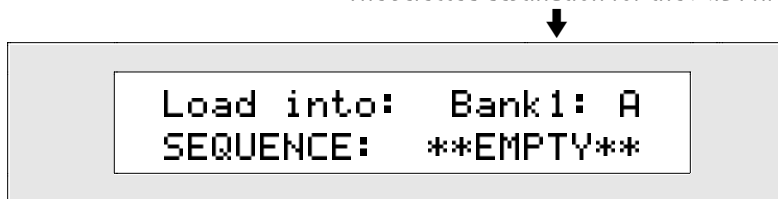


↑
What you see here may be different.

This display allows you to select the MIDI-FILE you’d like to load from the floppy.

10. Turn the Value knob or use the up/down arrow buttons to select the MIDI file you’re copying.
11. When you’ve selected your MIDI-FILE, press Yes.
The display will show:

The selected destination for the MIDI file



↑
The sequence that’s in the selected destination

This display allows you to select the sequence location into which your sequence—your MIDI-FILE—will be loaded. The bottom line shows you the name of the lowest-numbered empty sequence location in the currently selected song. You can select a new location by pressing the Bank and A-H Sequence buttons for the location you’d like to use, or by turning the Value knob.

12. Select the sequence location into which you’d like to load the sequence.
13. Press the Yes button to load the sequence into the location you’ve selected, or press the No button if you’d like to cancel.
The display momentarily confirms the successful completion of your command, and then selects the newly-loaded sequence.

The sequence is now part of the currently selected song.

Warning: When loading data from a floppy disk, avoid removing the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR’s internal memory.

Erasing a Sequence

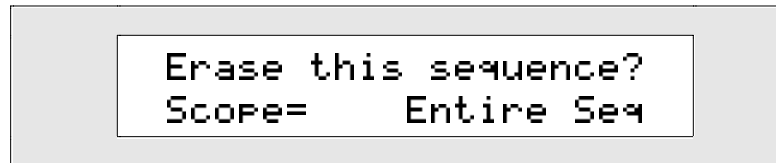
In the ZR-76, the Song Editor erase command can be used for deleting an entire sequence you’d like to remove from the ZR’s memory, or for trimming unwanted music from the beginning and/or end of a sequence.

To Erase an Entire Sequence

1. Select the sequence you would like to erase.
2. Press the Song Editor Erase button.



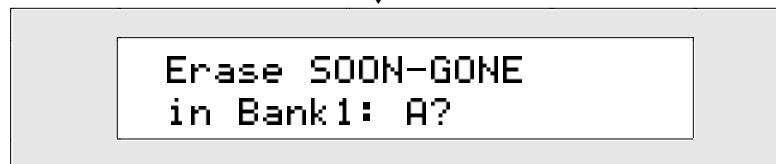
The display will show:



The Scope parameter allows you to choose which aspects of the sequence will be erased. If you'd like to erase the entire sequence, Scope should be set to Entire Seq.

3. If the Scope parameter is not already set to Entire Seq, turn the Value knob so that it is.
4. Press the Yes button to continue, or press the No button if you'd like to cancel.
5. If you press Yes, the display will show:

The name of the sequence to be erased



The sequence's location

This display is offered as a double-check, to make sure you'd like to erase the entire sequence.

6. If you'd like to continue and erase the entire sequence, press the Yes button. If you'd like to cancel, press the No button

To Trim the Beginning or End of a Sequence

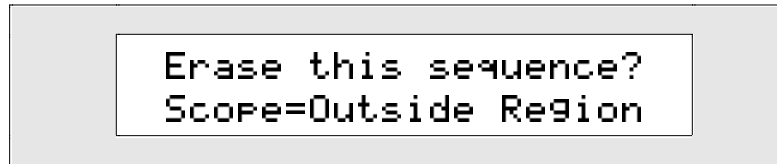
1. Select the sequence you'd like to trim.

You can use the Region From and To buttons to control which pieces of the sequence will be trimmed. If:

- Region From's LED is on and Region To's is off—you can erase only the portion of the sequence that comes before the Region From value. When you do, Region From will turn off and its value will be set to 1.01.001. The Region To value will still point to the same musical location it did before, but its value will be updated to reflect the new length of the sequence.
 - Region From's LED is off and Region To's is on—you can erase only the portion of the sequence that comes after the Region To value. When you do, Region To will turn off.
 - Region From's LED and Region To's are both on—you can erase only the portions of the sequence that come before the Region From value and after the Region To value. When you do, Region From will turn off and its value will be updated to 1.01.001. The Region To value will still point to the same musical location it did before, but its value will be updated to reflect the new length of the sequence.
 - Region From's LED and Region To's are both off—you can erase the entire sequence. When you do, Region From and Region To values will be updated to 1.01.001.
2. Adjust the Region From and Region To buttons and values to the appropriate settings, according to what parts of the sequence you'd like to trim. (If you'd like to know more about working with the Region From and To parameters, see "Using Regions," earlier in this chapter.)
 3. Press the Song Editor Erase button.



The display will show:



The Scope parameter allows you to choose which aspects of the sequence will be erased. If you'd like to trim the sequence according to the Region From and Region To settings, the Scope parameter should be set to Outside Region.

4. If the Scope parameter is not already set to Outside Region, turn the Value knob so that it is.

Note: If the Region From and Region To buttons are both off (their LEDs aren't lit), this value will not be available.

5. Press the Yes button to continue and trim the sequence according to the Region settings, or press the No button if you'd like to cancel.

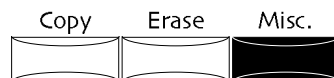
Renaming a Sequence

The ZR-76 allows you to rename a sequence at any time. Sequence names in the ZR-76 are up to 11 characters long in upper or lower case (including a selection of symbols). When you rename a ZR-76 sequence, you can actually use up to 20 characters, though only 11 will normally be displayed—use the remaining nine characters for a brief note about the sequence, or the date you recorded it, or perhaps a version number. You can see all 20 characters by holding down the sequence's button. Since some Standard MIDI files have names with even more characters, holding down the sequence button can actually display up to 40.

Note: When you save a sequence to disk as a MIDI file, it requires an eight-character DOS name. This file name is separate from the name you assign to the sequence in the ZR-76—sequence names can use more characters than DOS allows, and can employ both upper and lower cases.

To Rename a Sequence

1. Select the sequence you'd like to rename.
2. Press the Song Editor Misc. button.

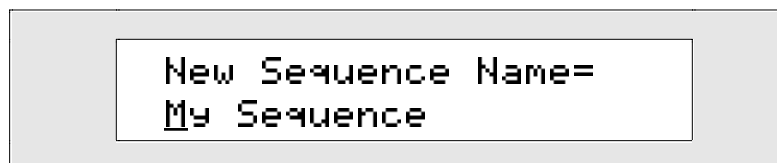


3. Turn the Parameter knob until the display shows:



4. Press the Yes button if you'd like to continue and choose a new name for your sequence, or press the No button if you'd like to cancel.

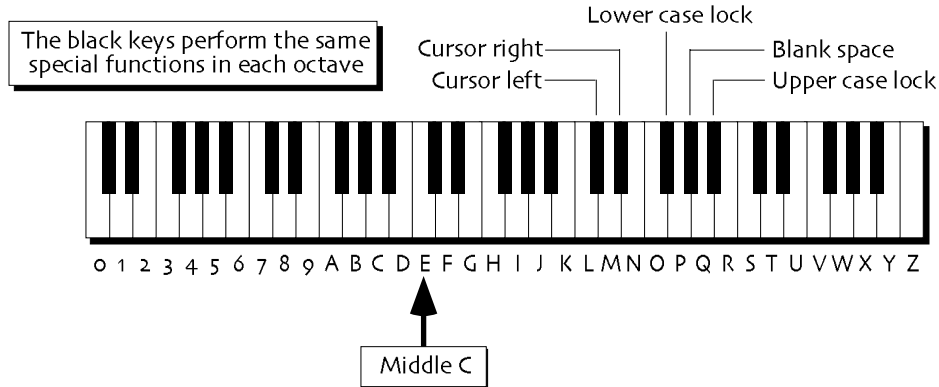
If you press Yes, the display will show:



The underline shows that you can select a character for this location on the display

This display allows you to give your sequence a new name in one of two ways:

- You can spell the sequence's name on the keyboard as if it were a typewriter—the character associated with each key is printed above the key on the ZR's front panel. The C# and D# keys in each octave move the cursor forward and back on the display (the character selected for editing is underlined on the display). The F# is always a lower case lock, the A# an upper case lock, while the G# types a blank space. The Value knob provides access to characters unavailable on the keyboard.



Note: The keys outside of the range shown above are not used for the naming of sequences.

- You can also name your sequence using the front panel controls. The up/down arrow buttons are used to select the character position within the name. The up arrow moves the location to the right, and the down arrow moves it to the left. The underlined character is selected and may be changed with the Value knob.

Tip: It's a good idea to give your sequence a name of no more than eleven characters—that's the number of characters visible on most sequence displays. You can use the additional nine spaces for a brief note about your sequence. Once you've named your sequence, you can see all of the characters by pressing and holding down the sequence button.

- Use the front panel controls or the keyboard to rename your sequence.
- When you've named your sequence, press the Yes button. If you'd like to cancel the renaming, press the No button.

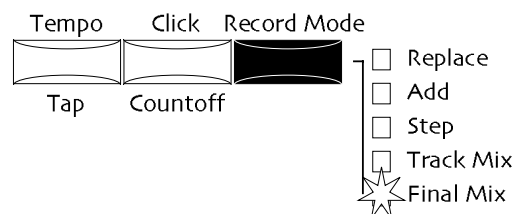
Recording Automated Sequence Tempo Changes

The ZR-76 Final Mix recording mode allows you to record tempo changes that occur over the course of a sequence, so that you can create automated ritardandi and accelerandi.

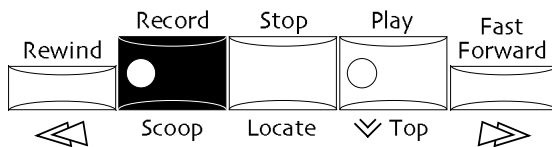
Note: You can undo Final Mix tempo changes in the same manner as you would undo any standard 16 Track Recorder recording.

To Record Automated Tempo Changes in a Sequence

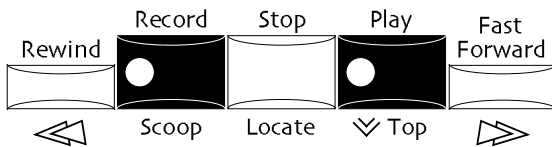
- Press the Record Mode button in the ZR-76 Song Editor repeatedly until the Final Mix LED is lit.



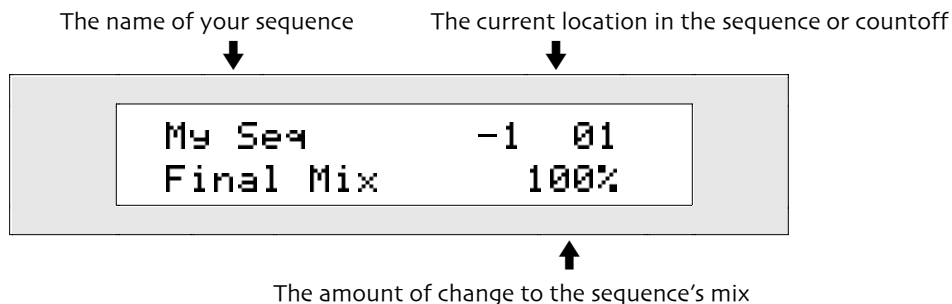
- Press the 16 Track Recorder Rewind button to go back to the beginning of the sequence.
- Hold down the 16 Track Recorder Record button.



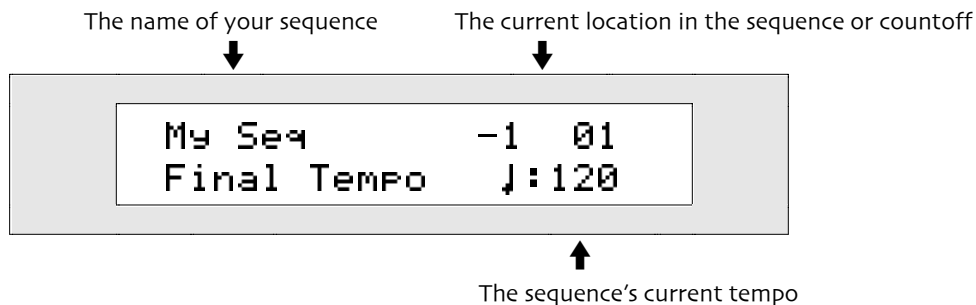
4. While continuing to hold down the Record button, press the Play button, and then let both buttons go.



The sequence will begin counting down to its starting point, and the display will show:



5. Press the Yes button or turn the Parameter knob clockwise so that the display shows:



6. Turn the Value knob or press the up or down arrow buttons to perform the tempo changes you'd like to record.

Tip: Holding down the up or down arrow button causes a natural-sounding acceleration or deceleration, respectively.

7. When you're done recording changes, press Stop, or continue until the end of the sequence.
8. To play back your work, press Play.
9. If you'd like to re-do your tempo changes, press the 16 Track Recorder Edit and Yes buttons to undo your work, and then return to Step 2.

Song Tools and Techniques

For an introduction to the ZR-76 concept of a song, see the discussion of song playlists and songs in “ZR-76 Recording Concepts” above.

Creating a New Song

Creating a new song in the ZR-76 is an extremely simple process. When you create a song, you create:

- 24 blank sequence locations that can be used for the sections of music you’ll use in your composition
- a new global chorus and global reverb setup using the current global chorus and global reverb settings

The new song appears in the ZR’s Song Editor, where it can be played or edited. It will be assigned a default name based on the number of songs in the ZR’s memory—each default is numbered consecutively—that way, you can keep track of all your songs.. If there’s already a song in the Song Editor, it will be moved into the ZR’s song memory. You can re-select any song located in the song memory.

To Create a New Song

1. Press the New Song button.



The display will show the first track of the first sequence of your newly created song. Track 1 of Sequence A of Bank 1 will automatically be selected. You can now begin creating sequences and recording tracks.

Creating a Song Playlist

When you’re ready to play the sections of your composition one after another as they’re meant to be heard, you create a *song playlist*. The song playlist, as its name implies, is a list of the sequences you want to hear in your song, arranged in the proper order. A song playlist contains as many steps as you require for the song you’re creating—you assign a sequence to each step. Once the song playlist is in place, pressing the Play button in the 16 Track Recorder will begin playback of your new song.

The song playlist is used for working with songs—when the Song Playlist LED is on, many of the commands and buttons that affect sequences will not be available. If you’d like to make any changes to a sequence, turn off the Song Playlist LED by pressing the Song Playlist button.

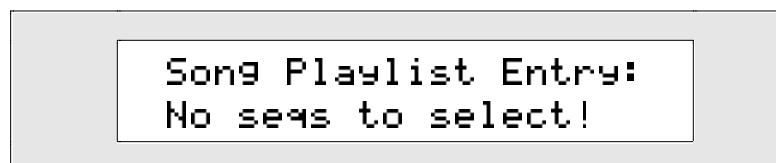
Note: When you create a song playlist, it replaces any previously existing song playlist, allowing you to quickly try out a new song playlist without having to erase an old one. You can also create a new song playlist by editing the steps of an existing one (use the method described in “Editing an Existing Song Playlist,” later in this chapter.)

To Create a Song Playlist

1. Press and hold the Song Playlist button.



If you haven’t recorded any sequences yet in the currently selected song, the display will show:



If you've recorded sequences in this song that can be used by the playlist, the display will show:



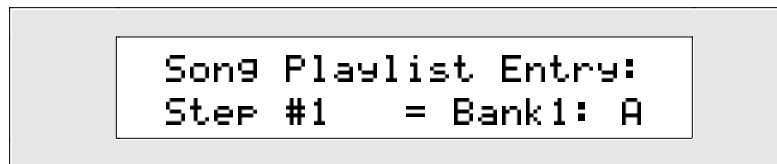
For as long as you hold the Song Playlist button, each time you press a sequence button you will add that sequence to the end of the playlist. You can select sequences from any of the three banks.

2. If the bank that contains the sequence you'd like to add to the playlist is not already selected, press the Bank button repeatedly until it is. The currently selected bank is the one whose LED is lit. Each press of the Bank button selects the next highest numbered bank. If Bank 3 is selected, pressing the Bank button will select Bank 1.

Note: The LEDs on the sequence buttons always reflect the status of the sequences in the currently selected bank. A sequence whose LED is solidly lit has music on it. A sequence whose LED is not lit is empty. A sequence whose LED is flashing is the currently selected sequence.

3. Without letting go of the Song Playlist button, select the sequence you'd like to use as the first sequence in the playlist by pressing its button.

The display will show:



The current step in the playlist



The selected bank and sequence for this step

Note: If the sequence you selected is empty, this display will not appear—only sequences that have music on them can be added to a playlist.

This display is showing the sequence letter and the bank number of the sequence that is now step #1—first in the playlist. You can continue to select sequences as long as you hold down the Song Playlist button. Each sequence you select will be added to the playlist.

4. While still holding the Song Playlist button, continue to select sequences in the order you'd like them to appear in the playlist. Each time you select a sequence, the display will update to show the new step number, bank number and sequence letter. When you have finished building your list of sequences, releasing the Song Playlist button will turn on the playlist, and you will be ready to play your song.
5. When you have finished creating the playlist, release the Song Playlist button to turn on the playlist. You can now press Play to listen to your new song.

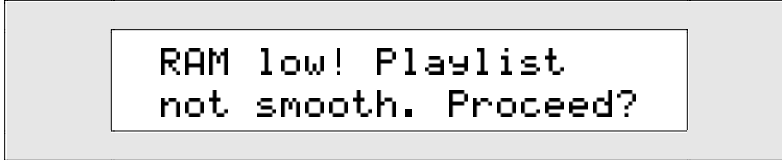
Tip: As a song playlist plays, the Bank and A-H Sequence button LEDs will light to show which sequence is currently being played. This allows you to see at a glance which sequence you're hearing.

6. To turn off the playlist, press the Song Playlist button. Its LED will turn off.

Note: If a sequence contains only a rhythm track, when it's used as a step in a song playlist, it plays for a single measure.

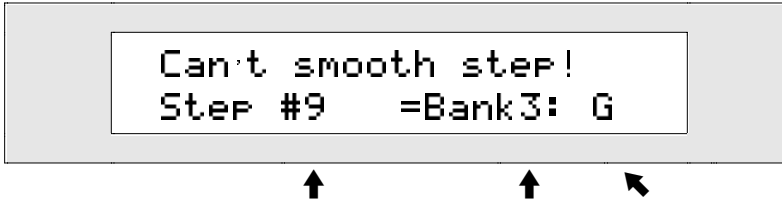
Smooth Playlist Playback

When you create a new song playlist—or when you select a song's playlist, or load a song from floppy that was saved with the song playlist selected—the ZR-76 examines the steps in the playlist and store certain information in RAM regarding the transitions between playlist steps, in order to help ensure smooth transitions. If there's not enough RAM memory to hold this information, the display will show:



RAM low! Playlist
not smooth. Proceed?

If this message is displayed you can press Yes to play the song playlist anyway, or press No to exit the playlist. If you press Yes, your ZR-76 will let you know when the transition into an upcoming step may not be perfect by showing a display looking something like this:



Can't smooth step!
Step #9 =Bank3: G

The step that may not start correctly The selected bank and sequence for this step

Playing a Song

When you want to hear your song—that is, all of your sequences strung together in the proper order, what you want to hear is your song playlist. (To learn how to create a song playlist, see “Creating a Song Playlist,” earlier in this chapter.)

Tip: Each sequence in a song playlist is automatically extended to the end of its final measure, even if that measure doesn't have music all the way through. If you want a sequence in your song playlist to end before the end of its last measure, use the Region To button to set the end of the sequence as desired (see “Using Regions” earlier in this chapter).

As your song playlist plays:

- pressing the Rewind button takes you to the beginning of the current playlist step.
- holding down the Fast Forward button moves to the end of the song playlist.
- pressing the Play button returns you to the beginning of the current playlist step.

When the song playlist is stopped, pressing the Rewind button brings you to the beginning of the song playlist.

Note: If you've created a song playlist, and you erase one of the sequences it uses, all of the steps that use that sequence are omitted, and the remaining steps are renumbered to reflect the changes. This prevents any “empty” steps in a song playlist.

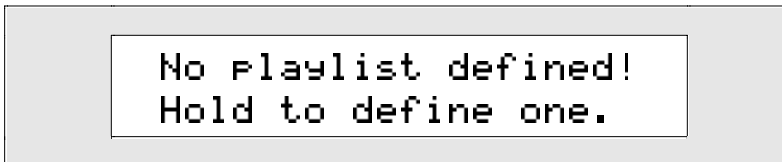
To Play a Song

1. If the Song Playlist LED is not lit, press and release the Song Playlist button to turn it on. Its LED will light.

Song Playlist



If you have not yet created a song playlist, the LED won't light, and the display will show:

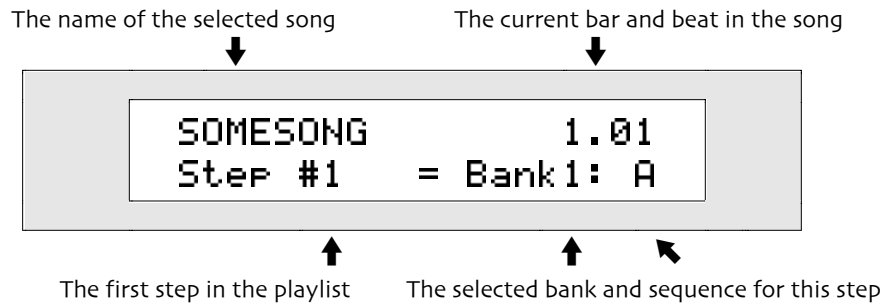


No playlist defined!
Hold to define one.

To learn how to create a song playlist, see “Creating a Song Playlist” earlier in this chapter.

2. Press the 16 Track Recorder Play button to start playing the song.

The display will show:



This display shows you the bank number and sequence letter of the first sequence in the playlist. As the song plays, the currently playing step and sequence will be displayed here.

Note: As a song playlist plays, the Bank and A-H Sequence button LEDs will light to show which sequence is currently being played. This allows you to see at a glance which sequence you're hearing, even when the above display isn't showing.

- To stop the song, press the 16 Track Recorder Stop button.

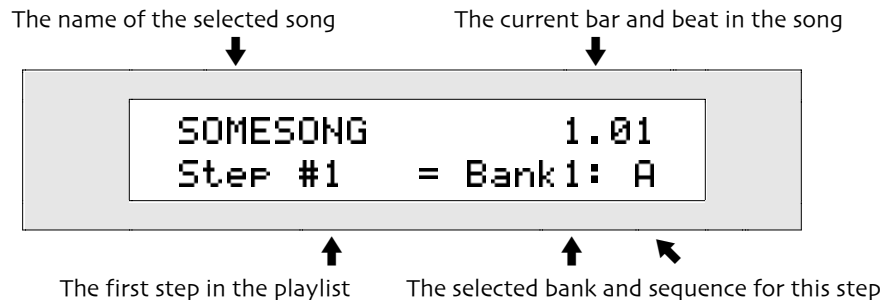
Tip: Whenever you'd like to return to the main song display, press the Song Playlist button.

To Move to a Step in the Song Playlist

- If the Song Playlist LED is lit and the display is not showing the playlist step page, press the Song Playlist button twice.

If the Song Playlist LED is not lit and the display is not showing the playlist step page, press the Song Playlist button once.

The display will show:



Note: If you have not already created a playlist, this display will not appear. For details on creating a playlist, see "Creating a Song Playlist" above.

This display shows the current step number and its sequence. You can change the current step number by turning the Parameter knob, and the display will update to show the new step number and sequence.

- Turn the Parameter knob to select the step you would like to move to.
- Press the 16 Track Recorder Play button to start playing the playlist at the step you selected.

Renaming a Song

When you create a new song, your ZR-76 assigns the song a default name based on the number of songs currently in memory. You can change this name at any time, assigning it an 11-character name utilizing upper and lower-case characters.

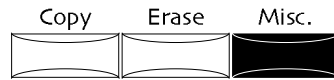
To Rename a Song with a Playlist

- If the Song Playlist LED is not already lit, press the Song Playlist button.

If the song you'd like to erase doesn't already have a playlist, create one by holding the Song Playlist

button and selecting a sequence that has music recorded in it. Make sure the Song Playlist LED is lit when you're done.

2. Press the Song Editor Misc. button.

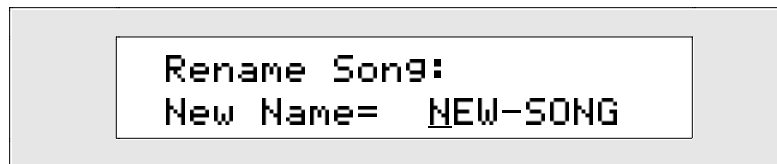


3. Turn the Parameter knob until the display shows:



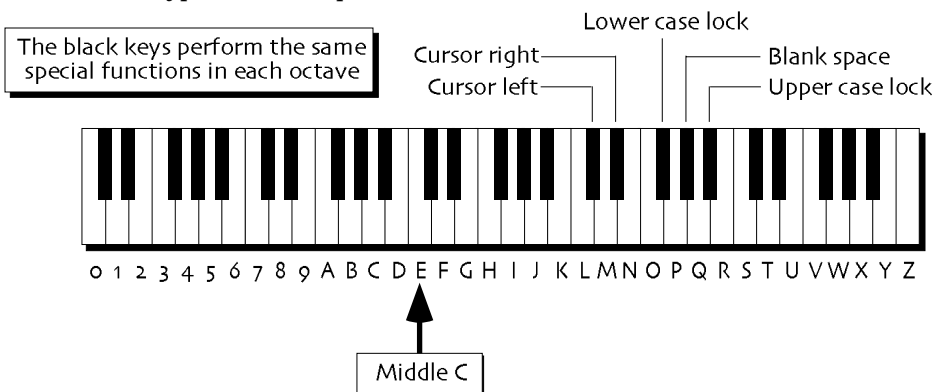
4. Press the Yes button if you'd like to continue and choose a new name for your song, or press the No button if you'd like to cancel.

If you press Yes, the display will show:



The underlined character can be changed

- You can spell the song playlist's name on the keyboard as if it were a typewriter—the character associated with each key is printed above the key on the ZR's front panel. The C# and D# keys in each octave move the cursor forward and back on the display (the character selected for editing is underlined on the display). The F# is always a lower case lock, the A# an upper case lock, while the G# types a blank space.



Note: The keys outside of the range shown above are not used for the naming of song playlists.

- You can also name your song playlist using the front panel controls. The up/down arrow buttons are used to select the character position within the name. The up arrow moves the location to the right, and the down arrow moves it to the left. The underlined character is selected and may be changed with the Value knob.

Tip: The Value knob provides access to characters unavailable on the keyboard.

5. Use the front panel controls or the keyboard to rename your song.
6. When you've named your song, press the Yes button. If you'd like to cancel the renaming, press the No button.

Editing an Existing Song Playlist

After you've created and listened to a song playlist, you may decide you'd like to make some changes—perhaps you'd like to reorder some sections, or substitute a different sequence for one of its steps. The Song Editor allows you to edit the steps of an existing song playlist without creating a new one.

To Edit an Existing Song Playlist

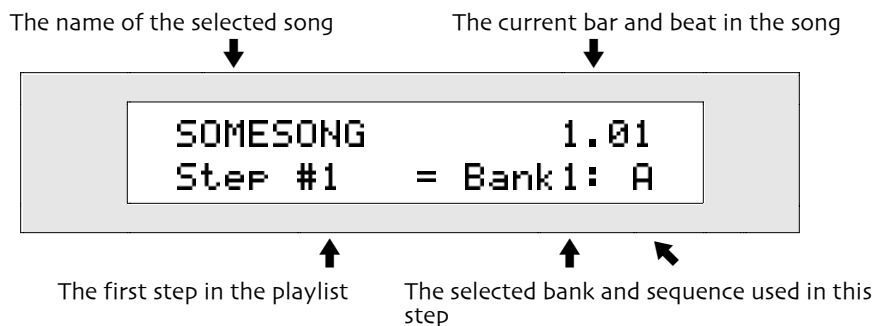
1. If the Song Playlist LED is not lit, press the Song Playlist button—its LED will light and the ZR will display the song playlist page.

Song Playlist



If the Song Playlist LED is lit and the display is not showing the song playlist page, press the Song Playlist button twice.

The display will show:



When this display is showing, you can edit the steps of the song playlist. Turning the left knob will select a step number, and turning the right knob will select a sequence for the currently selected step.

2. Turn the left knob to select the step number whose sequence you'd like to change.
3. Turn the right knob to select a sequence for the step to play. You can select any sequence that has music recorded in it.
4. Repeat steps 2 and 3 until the song playlist is the way you'd like it.
5. Press the 16 Track Recorder Play button to hear the new song playlist.

Selecting Another Song

The ZR-76 can hold as many songs as memory will allow. Each song can contain up to 24 sequences, a song playlist and its own global chorus and global reverb setup. There is always a song available for playing or editing in the ZR's Song Editor. When you create a new song, the song previously in the Song Editor is moved into the ZR's song memory. There are two ways to select a song in the ZR-76:

- selecting the desired song by dialing it in with the Value knob
- typing the desired song's name on the ZR's keyboard

When you select a song, its global chorus and global reverb settings, its sequences and its song playlist are all installed into the Song Editor. In addition, the setting of the Song Playlist button is restored—if you were most recently working with the song playlist, the Song Playlist LED will be lit; if you were working with an individual sequence, that sequence will be selected.

To Select a Song from the ZR's Song Memory

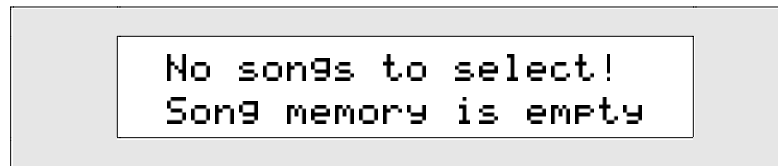
1. Press and hold down the Select Song button.

Select Song

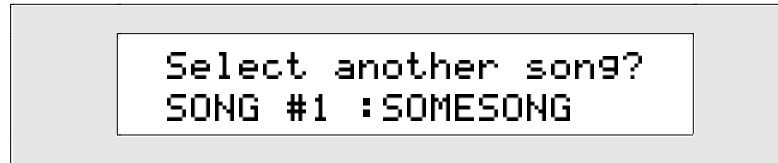


Hold To Spell

If the only song currently in your ZR-76 is already in the Song Editor, the display will show:



If there's a song stored in the ZR's song memory, the display will show:



The first song in the ZR's song memory

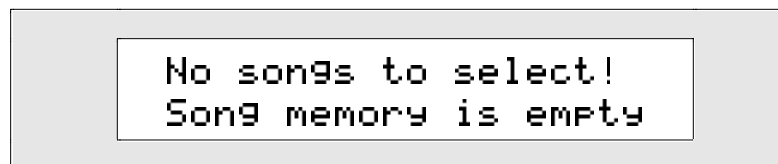
You can select any of the songs that have been created or loaded since you turned on the ZR 61 or ZR 76. As you turn the value knob, you will see the names of the available songs in the lower right-hand corner of the display.

2. Turn the Value knob or use the up/down arrow buttons to select the song you would like to use.
3. If you'd like to load the selected song's sequences into the Song Editor, replacing anything that's currently there, press Yes. The song you've selected will become the active song—if there was a song in the Song Editor, it will be moved into the ZR's song memory. If you'd rather not continue the procedure, press No.

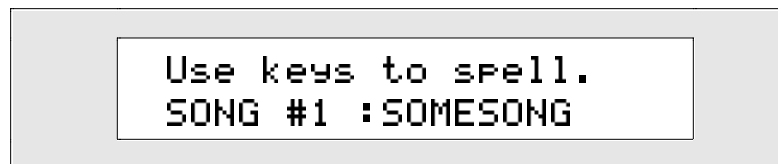
To Select a Song by Spelling Its Name on the Keyboard

1. Press and hold down the Select Song button.

If the only song currently in your ZR-76 is the active song—which is already selected—the display will show:

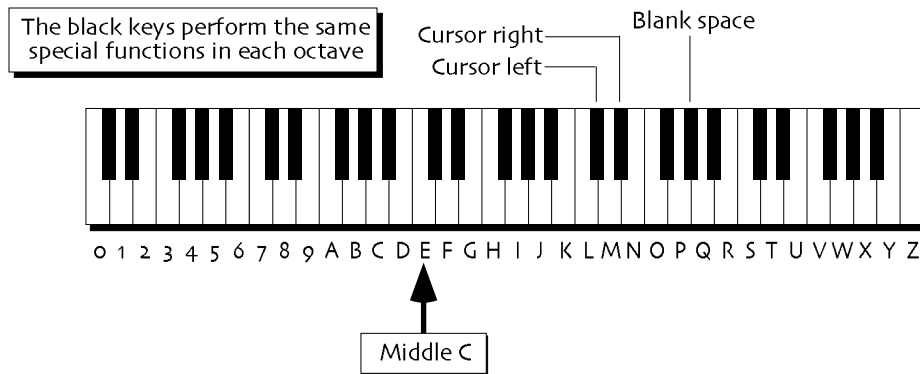


If there's a song stored in the ZR's song memory, the display will show:



The first song in the ZR's song memory

As long as you keep holding down the Select Song button, you can spell the song's name on the keyboard as if it were a typewriter—the character associated with each key is printed above the key on the ZR's front panel. The C# and D# keys in each octave move the cursor forward and back on the display. The G# types a blank space.



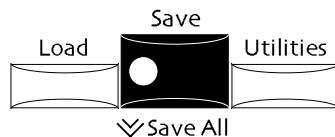
2. Type the desired song's name on the ZR's keyboard.
3. When you see the song you'd like to move into the Song Editor, let go of the Select Song button. The song you've selected will become the active song—if there was a song in the Song Editor, it will be moved into the ZR's song memory.

Copying a Song

Each ZR-76 song can have a song playlist. There may be times that you'd like to experiment with different song structures by setting up different playlists and listening to the various versions one after another. At such times, you'll want to have multiple copies of the same song in the ZR's Song Editor and song memory—this will allow you to compare the different song structures.

To Copy a Song

1. Insert a formatted floppy into the ZR's disk drive (See *Chapter 9* for information on formatting floppies and using the disk drive.)
2. Press the Disk/Global Save button.



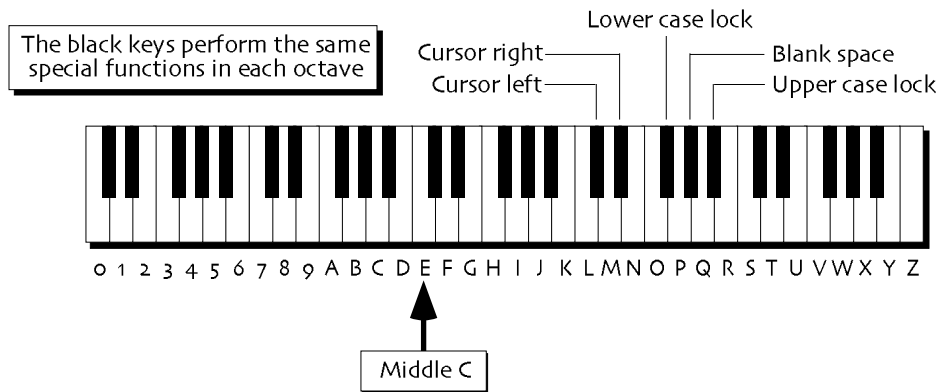
3. Turn the Parameter knob until the display shows:



The underline shows that the first character in this song's name is editable

This display allows you to give your song a new name in one of two ways:

- You can spell the song's name on the keyboard as if it were a typewriter—the character associated with each key is printed above the key on the ZR's front panel. The C# and D# keys in each octave move the cursor forward and back on the display (the character selected for editing is underlined on the display). The F# is always a lower case lock, the A# an upper case lock, while the G# types a blank space.



Note: The keys outside of the range shown above are not used for the naming of songs.

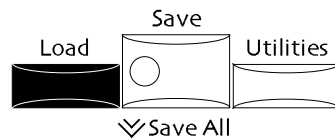
- You can also name your song using the front panel controls. The up/down arrow buttons are used to select the character position within the name. The up arrow moves the location to the right, and the down arrow moves it to the left. The underlined character is selected and may be changed with the Value knob.

Tip: The Value knob provides access to characters unavailable on the keyboard.

- Use the front panel controls or the keyboard to name your song.
- When you've named your song, press the Yes button. The display confirms that your song has been saved to floppy disk.

Warning: When saving data to a floppy disk, avoid removing the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory.

- Press the Disk/Global Load button.



- Turn the Parameter knob until the display shows:



↑
What you see here may be different.

This display allows you to select the song you'd like to load.

- Turn the Value knob or use the up/down arrow buttons to select the song you're copying.
- When you've selected your song, press Yes.

The copy of your song on the disk will be loaded into the Song Editor, and the copy that had been in the Song Editor is moved into the ZR's song memory. The display momentarily confirms the successful completion of your command.

Warning: When loading data from a floppy disk, avoid removing the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory.

Erasing a Song Playlist or an Entire Song

You can erase the song that’s currently in the ZR’s Song Editor to free up sequencer memory. There are three different possibilities:

- If the song has a song playlist, you can use the Song Editor to erase the entire song—sequences, song playlist, global chorus and global reverb setups. When the song is erased, a new empty song is created in the Song Editor using the current global chorus and global reverb settings.
- If the song has a song playlist, you can use the Song Editor to erase only the song playlist
- If the does not have a song playlist, you can use the ZR’s librarian to erase the song, including its sequences and global chorus and global reverb setups.

To Erase an Entire Song

1. If the Song Playlist LED is not already lit, press the Song Playlist button.

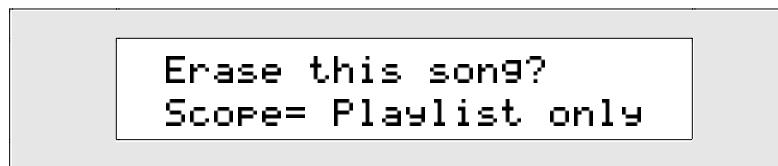
If the song you’d like to erase doesn’t already have a playlist, create one by holding the Song Playlist button and selecting a sequence that has music recorded in it. Make sure the Song Playlist LED is lit when you’re done.



2. Press the Song Editor Erase button.



The display will show:



This shows what will be erased

The Scope parameter allows you to decide if you’d like to erase the entire song, or just the song playlist. You can set it to:

- Playlist Only—to erase only the song playlist
 - Entire Song—to erase the entire song and all of its sequences
3. Turn the Value knob to set the Scope parameter to All.
 4. Press the Yes button if you’d like to continue, or the No button if you’d like to cancel.

If you press Yes, the display will show:

The song to be erased



This display is offered as a double-check to make sure you really want to erase the current song and all its sequences.

5. Press Yes if you’d like to continue and erase the entire song, or press No if you’d like to cancel.

To Erase a Song’s Playlist

1. If the Song Playlist LED is not already lit, press the Song Playlist button.

If the song you'd like to erase doesn't already have a playlist, create one by holding the Song Playlist button and selecting a sequence that has music recorded in it. Make sure the Song Playlist LED is lit when you're done.

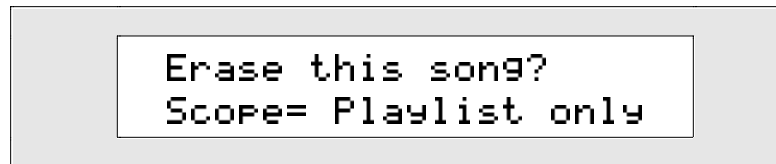
Song Playlist



2. Press the Song Editor Erase button.



The display will show:



This shows what will be erased

The Scope parameter allows you to decide if you'd like to erase the entire song, or just the song playlist. You can set it to:

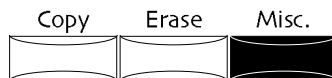
- Playlist Only—to erase only the song playlist
 - Entire Song—to erase the entire song and all of its sequences
3. Turn the Value knob to set the Scope parameter to Playlist Only.
 4. Press the Yes button if you'd like to continue and erase the song playlist, or No if you'd like to cancel.

To Rename a Song with a Playlist

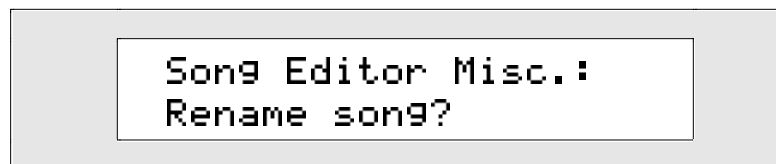
1. If the Song Playlist LED is not already lit, press the Song Playlist button.

If the song you'd like to erase doesn't already have a playlist, create one by holding the Song Playlist button and selecting a sequence that has music recorded in it. Make sure the Song Playlist LED is lit when you're done.

2. Press the Song Editor Misc. Button.

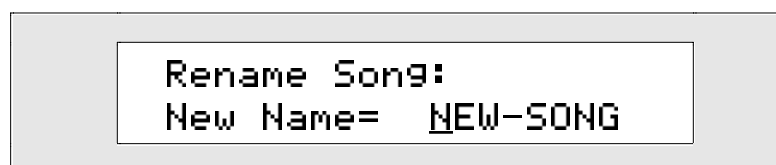


3. Turn the Parameter knob until the display shows:



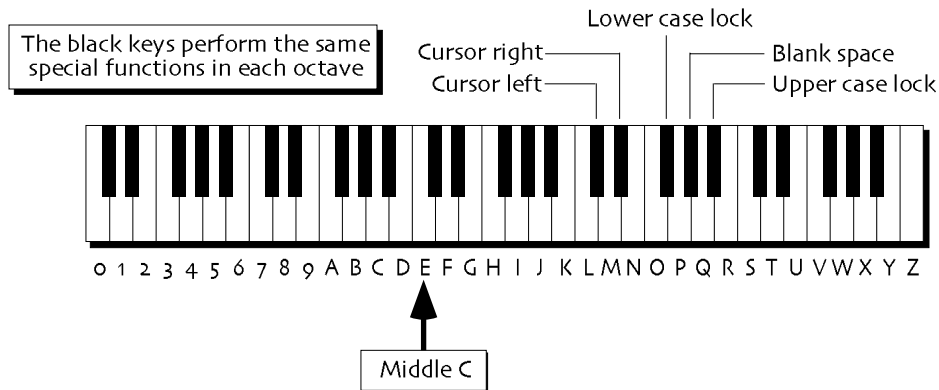
4. Press the Yes button if you'd like to continue and choose a new name for your song, or press the No button if you'd like to cancel.

If you press Yes, the display will show:



The underlined character can be changed

- You can spell the song playlist's name on the keyboard as if it were a typewriter—the character associated with each key is printed above the key on the ZR's front panel. The C# and D# keys in each octave move the cursor forward and back on the display (the character selected for editing is underlined on the display). The F# is always a lower case lock, the A# an upper case lock, while the G# types a blank space.



Note: The keys outside of the range shown above are not used for the naming of song playlists.

- You can also name your song playlist using the front panel controls. The up/down arrow buttons are used to select the character position within the name. The up arrow moves the location to the right, and the down arrow moves it to the left. The underlined character is selected and may be changed with the Value knob.

Tip: The Value knob provides access to characters unavailable on the keyboard.

- Use the front panel controls or the keyboard to rename your song.
- When you've named your song, press the Yes button. If you'd like to cancel the renaming, press the No button.

Working with Standard MIDI Files (SMFs)

What Are Standard MIDI Files?

A Standard MIDI File—also known as an “SMF”—is a sequence that adheres to a standardized data file format that allows it to be understood by software and hardware sequencers of different types, created by different manufacturers. There are two types of SMF. An SMF may be:

- a Type 1 Standard MIDI File—an SMF that contains multiple tracks, with each track using a single MIDI channel
- a Type 0 Standard MIDI File—an SMF with a single track; Type 0 files often contain multiple tracks with their own MIDI channels, merged into a single track

Your ZR-76 can play either type of Standard MIDI File. The ZR-76 can load SMFs of up to 215k in size.

The Standard MIDI File format is often used in the creation of General MIDI music, since GM is a form that's based on transportability from sequencer to sequencer. Not all SMFs contain General MIDI music, however—the Standard MIDI File format can be used for any kind of sequenced music, using any sound set whatsoever. All General MIDI sequences are SMFs, but not all SMFs are General MIDI sequences.

The sequence tracks in Standard MIDI Files usually contain Program Change values that call up the correct sound for each track—these are commonly General MIDI sounds, though they don't have to be. An SMF's track or tracks is also likely to contain values for various standard MIDI controllers, such as Volume (Controller #7) and Pan (Controller #10).

What Happens When You Load an SMF Into a ZR-76

Standard MIDI Files are loaded into the ZR-76 in the same manner that any other sequence files are loaded. *Chapter 9* describes the loading of single sequences and Standard MIDI Files from floppy disk.

Note: ZR-76 sequences are themselves Standard MIDI Files, and can be played by any Standard MIDI File-capable sequencer.

The first thing the ZR-76 does when you load an SMF is to take a moment to examine the file and learn if its tracks are arranged in numerical order according to the MIDI channels they use, and if the SMF contains 16 tracks or less. If both of these criteria are met, the track LEDs in the 16 Track Recorder corresponding to the tracks in the SMF will light as soon as the SMF finishes loading into the ZR.

If the tracks in the sequence are not in numerical order by MIDI channel, or if there are more than 16 tracks in the sequence, the 16 Track Recorder's track LEDs will remain unlit. Since this will certainly be true of Type 0 SMFs that contain multiple tracks merged into one, the track LEDs will always remain unlit immediately after loading a Type 0 Standard MIDI File.

In either event, you can press the Play button to hear your Standard MIDI File immediately after it's been loaded from floppy disk. If there are no Bank Select values on the SMF's tracks, all Program Change values on the tracks will invoke corresponding General MIDI sounds; and if the tracks contain controller data, the ZR will respond accordingly. You can set region From and To values for playback of the SMF, though they won't be remembered if you select another sequence and come back to the SMF (that ability can be added—see “The Two-Step Process of Converting an SMF into a ZR Sequence” below).

Note: If an SMF contains multiple time signatures, its meter will be shown as “Time Signature: 4/4.” The colon signifies that this time signature cannot be edited.

The Two-Step Process of Converting an SMF into a ZR Sequence

The ZR-76 allows you to play Standard MIDI Files as soon as they're loaded from floppy—there's no conversion process necessary when listening to a Standard MIDI File in your ZR-76. However, as you work with Standard MIDI Files in your ZR, they're converted, step-by-step, into ZR sequences. Though they'll always be perfectly transportable SMFs that play in any Standard MIDI File-compatible sequencer, they'll ultimately be able to take advantage of the ZR's sounds, effects, parameters, and songwriting tools.

Aligning Tracks

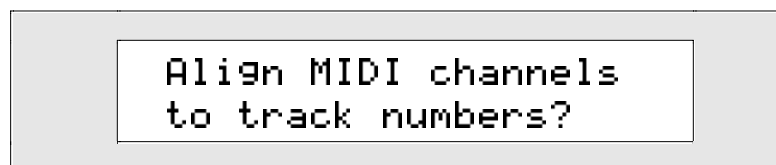
Since Standard MIDI Files come from so many sources, and since the format allows for so much flexibility, there's a tremendous variety in the way their tracks are used.

The ZR-76 approaches Standard MIDI Files in the 16 Track Recorder from the point of view that you should be able to easily use them in any other SMF sequencer after you've worked on them in your ZR-76, and that when you do this, you should be able to continue using the ZR's great sounds. The ZR's 16 Track Recorder makes for an excellent multi-timbral sound source when you're using an external sequencer—it can receive MIDI data on 16 channels at once, providing up to 16 different sounds at a time. Tracks 1 through 16 in the 16 Track Recorder always receive on MIDI channels 1 through 16. The best way, therefore, of preparing a sequence to use the ZR as a multi-timbral sound source is to set it up so that its tracks 1 through 16 are assigned to MIDI channels 1 through 16, respectively.

The first step in converting a foreign Standard MIDI File into a fully native ZR-76 Standard MIDI File is to arrange its tracks in numerical order, corresponding to the MIDI channels they use, if they're not already arranged in that manner. If your SMF's track are not yet aligned, and you:

- press any of the 16 Track Recorder track buttons
- press the Record button
- press the 16 Track Recorder Edit, Copy, Erase or Quantize button
- turn the Mix or Pan knobs
- attempt to change a track's effect routing after pressing the Routing button
- press the Mute or Solo button

...the ZR's display will show:



When you press the Yes button in response to this question, your ZR-76 will align the SMF's tracks according to their MIDI channels.

Note: If tracks contain more than one MIDI channel—as in Type 0 Standard MIDI Files—the ZR will automatically separate the track data according to MIDI channel so that the data associated with each channel can reside on a track whose number is the same as its MIDI channel. When multiple tracks use the same MIDI channel, they'll be merged into a single track; in this way, any SMF with more than 16 tracks will be converted into a 16-track sequence. If the SMF contains additional tracks with non-note/controller information on them—the sequence's name or arranging credit, or a System Exclusive data string, for example—those tracks will be merged into the hidden track 0 that's always part of a Standard MIDI File.

After your MR-61 or MR-76 aligns an SMF's tracks:

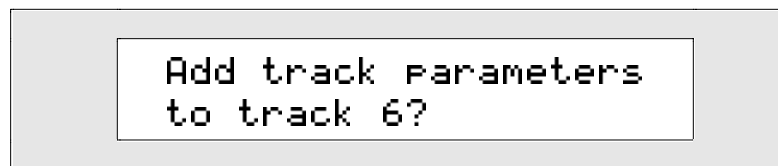


Note: When the ZR-76 aligns the tracks of an SMF, it also adds the ability to remember Region From and To and InsertCntrlTrack settings to the sequence.

Adding Track Parameters

The ZR-76 provides many options for customizing the sounds used in the 16 Track Recorder (see *Chapter 4*). Though the MIDI protocol provides for a number of sound-modifying controller messages that can be interpreted by most MIDI devices, the ZR-76 offers additional parameters that go beyond that set.

When you first load a Standard MIDI File into the ZR, each of its tracks may already contain MIDI controller values relating to the sound it uses. For a track to take advantage of the ZR's advanced sound-sculpting capabilities and tools, however, the ZR parameters must also be added to the track. This process is performed on a track-by-track basis, in the interest of preserving sequencing memory—parameters take up memory space, and so, they're only added to SMF tracks as you need them. If you attempt any operations requiring these parameters on a track that doesn't yet have them, your ZR-76 will ask you:



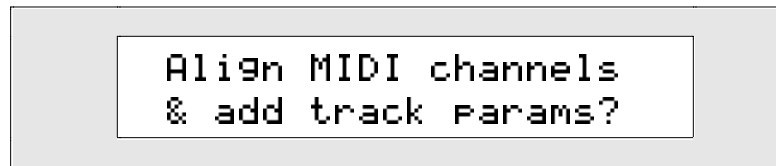
This will be the number of the currently selected track

When you press the Yes button in response, the ZR-76 parameters will be added to the selected track.

Send Sounds, Idea and Rhythms into SMFs Prior to Conversion

In the same way that your ZR-76 will ask you if you want to align an SMF's tracks and add ZR track parameters when you attempt an operation that requires doing so, the ZR will do the same if you attempt to send a sound from SoundFinder, a rhythm from the Drum Machine, or an idea from the Idea Pad to a track in a Standard MIDI File whose tracks haven't been aligned.

The display will show:



You can press the Yes button to re-arrange the order of the SMF's track according to MIDI channel, and to add track parameters for the track or tracks to which you're sending your sound, idea and/or rhythm. Press the No button to cancel the operation.

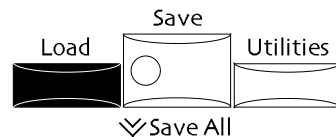
If You'd Like to Prepare Your SMF for Use Upon Loading It

You can align a Standard MIDI File's tracks and add its track parameters right after loading it, if you like, if you know you'll be adding tracks to it, choosing new sounds for it, adjusting its sound settings and/or re-working its effects.

In order to help ensure that your SMF plays properly, we recommend that you run the "Enter GM Mode?" command to set all of the 16 Track Recorder sound parameters to SMF-friendly defaults prior to loading your SMF from floppy disk.
See *Chapter 3* to learn how.

To Convert an Externally Created SMF Into a ZR SMF

1. Insert the DOS-formatted floppy disk containing your Standard MIDI File into the ZR's disk drive.
2. Press the Load button.



3. Turn the Parameter knob until 1-MIDIFILE appears in the lower-left portion of the display.

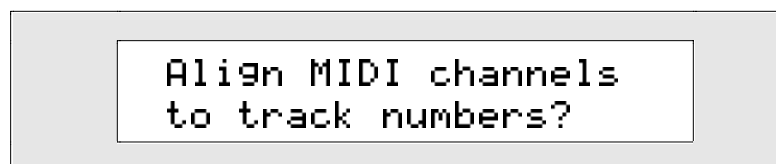


The type of file selected for loading

The first file of that type on the disk

4. Turn the Value knob to locate the Standard MIDI File you'd like to load.
5. When the desired file's name is displayed, press the Yes button.
In a few moments, your Standard MIDI File will be loaded and ready to play.
6. Press the Play button to hear your SMF.
7. If any of the 16 Track Recorder's track-button LEDs are lit, skip to step 9.
If no track-button LEDs are lit, press any track button.

The display will show:

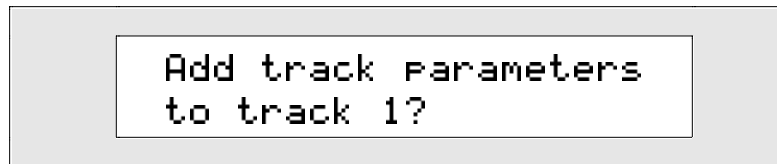


Your ZR-76 is asking you if you want to re-arrange the order of your Standard MIDI File's tracks so that they're in numerical order according to the MIDI channels they use. See "Aligning Tracks" above

for a fuller explanation of the question the ZR is posing.

8. Press the Yes button if you'd like to proceed, or the No button to cancel.
9. If you'd now like to add track parameters to each of the SMF's tracks, select any of those tracks.
10. Turn the Parameter knob one tick.

The display shows:



This will be the number of the currently selected track

11. Press the Yes button to add track parameters to the selected track.
12. Repeat steps 9-11 for each of the tracks in the sequence.

When you're done, your externally generated Standard MIDI File will be a ZR-76 Standard MIDI File.

16 Track Recorder MIDI

The Out and Ins of MIDI in the 16 Track Recorder

The 16 Track Recorder can both transmit and respond to MIDI note and controller data, including Bank Select and Program Change messages. The transmission and reception of MIDI data in the 16 Track Recorder both have their own features and characteristics.

Tip: If you're unfamiliar with MIDI, see "What Is MIDI" in *Chapter 13*.

Transmitting MIDI from 16 Track Recorder

In order for a track in the 16 Track Recorder to transmit MIDI data, it must be assigned a MIDI-OUT sound. MIDI-OUT sounds are selected for tracks in exactly the same manner as any other sound.

Each MIDI-OUT sound allows you to choose:

- the MIDI channel on which data will be transmitted.
- the Bank Select value that will be transmitted when the sound is selected
- the Program Change value that will be transmitted when the sound is selected

When a MIDI-OUT sound is selected, turning the Mix knob causes Expression (Controller #11) data to be transmitted on the MIDI-OUT sound's MIDI channel. Turning the Pan knob transmits Pan (Controller #10) data.

Tip: You can use MIDI-OUT sounds in conjunction with the foot switches or CV-pedal connected to your ZR-76 to transmit any MIDI controller. Use the system "Set up foot controls?" procedure to assign a foot switch or pedal to one of the ZR's four assignable CTRLs, and then use the system "Edit MIDI settings?" procedure to assign the desired MIDI controller number to the selected CTRL. Both of these procedures are described in *Chapter 3*.

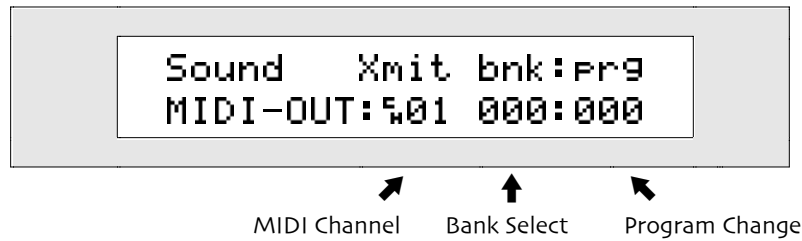
The ZR-76 provides sound controller filters that let you enable or disable a track's transmission of MIDI controller data. See "Sound Controller Filters" in *Chapter 4*.

If your ZR-76 is connected to an external MIDI device while you set up your MIDI-OUT sounds, MIDI Bank Select and Program Change messages will be transmitted as you change their settings in the sound.

To Set Up a Track to Transmit MIDI

1. Press the desired track's button.
2. Press the Enter button.

- Turn the Sound Type knob until the display shows “MIDI-OUT:”:

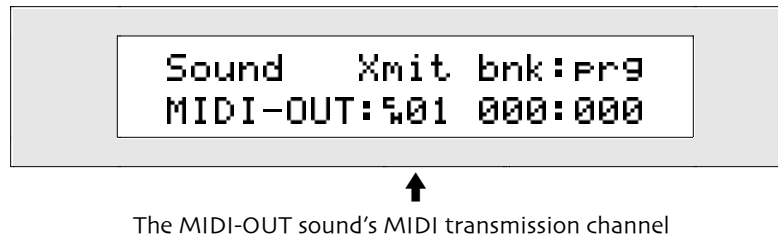


A MIDI-OUT sound has three settings.

- MIDI transmission channel
- Bank Select value
- Program Change value

The up and down arrow buttons allow you to select any of these settings for editing—the one that’s currently selected will flash. Once a setting has been selected, you can use the Value knob to change its value.

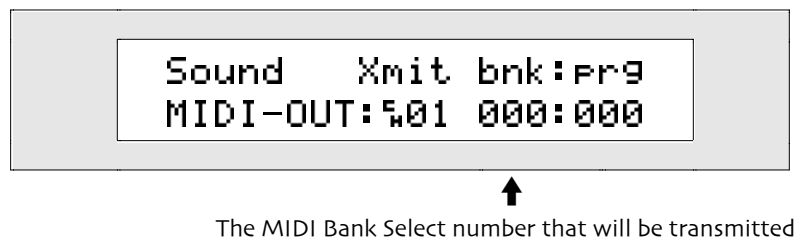
- Press the up/down arrow buttons to select the MIDI channel area of the display if it isn’t already flashing.



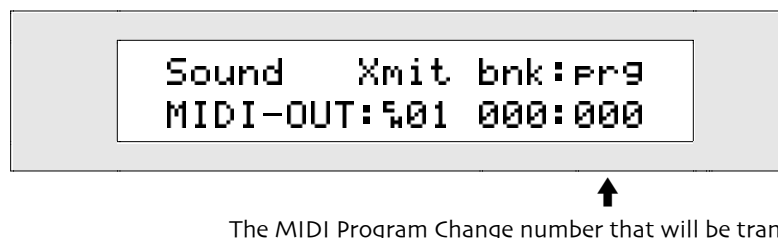
- Turn the Value knob to select the MIDI channel on which the MIDI-OUT sound will transmit MIDI data.

Note: Make sure your external MIDI device is configured to receive on the same MIDI channel you select here.

- Use the up/down arrow buttons to select the MIDI Bank Select setting, so that it flashes.



- Turn the Value knob to select the MIDI Bank Select value that the sound will transmit.
- Use the up/down arrow buttons to select the MIDI Program Change setting, so that it flashes.



- Turn the Value knob to select the MIDI Program Change value that the sound will transmit.
- Press Enter to complete the procedure.

Tip: If you prefer, you can set up your MIDI-OUT sound in SoundFinder and send it to a track in the 16 Track Recorder instead of using the procedure above. MIDI-OUT sounds may be assigned to as many tracks in the 16 Track Recorder as you like.

Receiving MIDI on the ZR-76

The ZR's 16 Track Recorder provides an excellent multi-timbral sound source when accessed via MIDI. Up to 16 of the ZR's CD-quality sounds can be used at once, on up to 16 simultaneously active MIDI channels. The ZR-76 provides sound controller filters that let you enable or disable a sound's response to MIDI controller data and MIDI Bank Select and Program Change messages. See "Sound Controller Filters" in *Chapter 4*.

Tip: When you'll be using MIDI Bank Selects and Program Changes to select sounds in the 16 Track Recorder via MIDI, you can take advantage of the ZR's ability to automatically select an appropriate effect bus for each sound. See "Enabling or Disabling Automatic Effect Routing" in *Chapter 3*.

The ZR-76 can respond to received MIDI data in SoundFinder or the 16 Track Recorder according to the following scheme:

- In SoundFinder—when the Select Sound LED is lit—the ZR-76 responds to a single MIDI channel (poly mode). This channel is called the *base MIDI channel*, and you can set it to be any of the 16 MIDI channels (the procedure for doing this is described below). If you've selected a preset, all of its components respond to the base MIDI channel.
- In the 16 Track Recorder—when the Select Song LED is lit—Tracks 1-16 always receive MIDI data on MIDI channels 1-16, respectively.

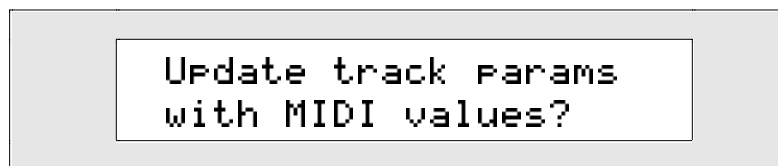
To activate the multi-timbral capabilities of the 16 Track Recorder, press any 16 Track Recorder or Song Editor button.

Tip: When a track uses a MIDI-OUT sound, it will not respond to received MIDI data. You can also disable a track's response to incoming MIDI by muting it (see *Chapter 8* to learn about muting tracks).

Updating The 16 Track Recorder's Track Settings Via MIDI

When the 16 Track Recorder responds to received MIDI Bank Selects, Program Changes and controllers, all of the changes they invoke occur immediately. Any defined tracks in the 16 Track Recorder that are displayed will show the new sounds selected by received Bank Select and Program Change messages. In order to provide the quickest possible response to large amounts of incoming MIDI data, the other track settings are not visibly updated as they're received. This allows you to use the ZR as a sound source without setting up any of its tracks—just press any button in the ZR's 16 Track Recorder or Song Editor and hit the Play button on your external sequencer to start making music. Your ZR-76 will operate flawlessly as a MIDI sound source without ever stopping to update its track settings.

If you'd like, you can have the 16 Track Recorder update these settings to reflect the MIDI data the tracks have received. Perhaps you'd like to select a track and adjust its effect routing. When you press a track button, start to change a track's effect routing, or turn the Mix or Pan knob while the 16 Track Recorder is selected, the display will show:



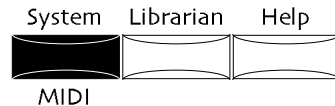
If you'd like the 16 Track Recorder's tracks to reflect the latest MIDI data they've received, press the Yes button. Once the tracks have been updated, you can save the current sequence to floppy as a MIDI reception set-up. If you don't want to update the track settings, press No.

Synchronizing the 16 Track Recorder with an External MIDI Sequencer

The ZR-76 16 Track Recorder can provide synchronization for, or be synchronized to, any external MIDI device that can receive and transmit MIDI clocks—most MIDI sequencers and drum machines have this capability.

To Synchronize an External Device to the 16 Track Recorder

1. Connect the ZR's MIDI output to the MIDI input of the device that you want to synchronize to the 16 Track Recorder.
2. Set the external device to receive MIDI clocks.
3. Press the System button.



4. Turn the Parameter knob until the display shows:



5. Press Yes if you'd like to change the current MIDI settings. Press No if you'd like to cancel the procedure.
6. Turn the Parameter knob until the display shows "Xmit MIDI Clocks=":



The current Xmit MIDI Clocks value

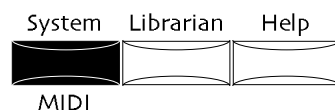
The Xmit MIDI Clocks parameter controls whether or not the ZR-76 will send out MIDI clocks, as well as MIDI Start, Stop and Continue messages. This parameter may be set to:

- Off—the ZR-76 will not send out MIDI clocks or MIDI Start, Stop or Continue messages.
- On—the ZR-76 will send out MIDI clocks and MIDI Start, Stop or Continue messages.

7. Turn the Value knob or use the up/down arrow buttons to set the Xmit MIDI Clocks parameter to On.
8. Select the ZR sequence you'd like to work with.
The ZR will save its system settings.
9. Press the 16 Track Recorder's Play button—the external device will follow along. The 16 Track Recorder also transmits MIDI Stop and Continue messages when you press the Stop button, and then the Play button.

To Synchronize the 16 Track Recorder to an External Device

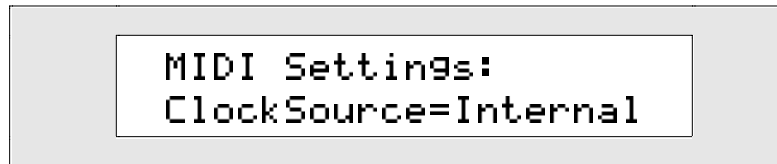
1. Connect the MIDI output of the external device to the ZR's rear-panel MIDI In jack.
2. Set the external device to transmit MIDI clocks.
3. Select the ZR sequence you'd like to work with.
4. Press the ZR's System button.



5. Turn the Parameter knob until the display shows:



6. Press the Yes button.
7. Turn the Parameter knob until the display shows:



What you see here may be different

8. Turn the Value knob to set ClockSource to MIDI.

Note: When ClockSource is set to MIDI, the current sequence's tempo is displayed as "MIDI."

9. Press the 16 Track Recorder Play button.

The ZR will save its new system parameter settings. When it's done, the display will show:

The name of the sequence

"MIDI Sync" flashes



"MIDI Sync" flashes in the upper right portion of the display to show that an external MIDI timing reference is being used.

10. You may now start your external sequencer or drum machine—the 16 Track Recorder will follow along.

Note: To return to normal operation, the system ClockSource setting must be reset to "Internal."

Recording Into the 16 Track Recorder From MIDI

Recording 16 Track Recorder Tracks from MIDI Sources

The ZR-76 16 Track Recorder can record music played into its tracks from a MIDI source, including MIDI controllers or external MIDI sequencers. The ZR-76 will faithfully capture all of the MIDI data it receives, including notes, controllers, program changes and Bank Select messages.

The 16 Track Recorder can record a single track from a single MIDI channel, or simultaneously record multiple tracks from multiple MIDI channels. By synchronizing the 16 Track Recorder to an external MIDI sequencer, you can transfer sequences from the external sequencer into the 16 Track Recorder.

Note: The MIDI inputs of the 16 tracks in the 16 Track Recorder are assigned to MIDI channels 1 through 16, respectively. Therefore, the MIDI channel you use to send MIDI data to the 16 Track Recorder determines onto which track the data will be recorded.

To Record a Single Track from MIDI without Synchronization

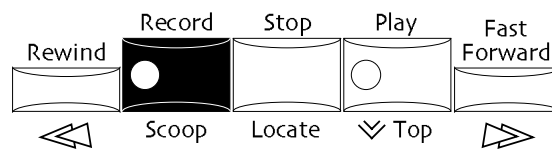
1. Press the Song Editor Record Mode button repeatedly until the Replace or Add LED is lit, depending on how you want to record (see “Recording Modes” earlier in this chapter).
2. Select the track in the 16 Track Recorder that has the same number as the MIDI channel you’ll be using.

Tip: If it’s more convenient for you to use some other track, you can select the other track and proceed. However, when recording ends, your ZR-76 will need to align the data so that it is placed onto the track corresponding to the MIDI channel you used. If there’s already data present on the track, it will be merged with your new recording.

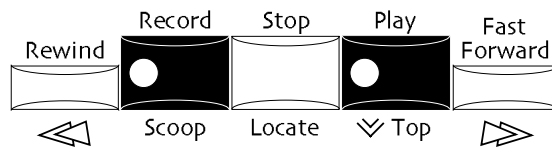
3. Using the standard method for assigning a sound to a track—see “Changing the Sound on a Track and Assigning a Sound to a New Track” earlier in this chapter—designate a ZR sound for the track you’re about to record.

Tip: If you’d like to send a program from your MIDI device to assign a sound to the track, send the appropriate program change and then press the track’s button. When your ZR-76 asks “Update track params with MIDI values?” respond by pressing the Yes button.

4. Hold down the 16 Track Recorder Record button.



5. While continuing to hold down the Record button, press the Play button, and then let both buttons go.



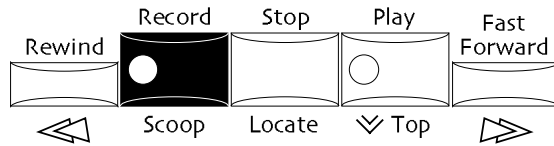
6. Send some MIDI data to the ZR from your MIDI device to record your track in the same way you would record a track played from the ZR’s keyboard.
7. Press Stop when you’re done.
8. Press Play to hear your recording.

To Record Multiple Tracks from MIDI without Synchronization

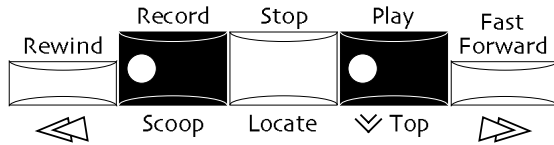
1. Press the Song Editor Record Mode button repeatedly until the Replace or Add LED is lit, depending on how you want to record (see “Recording Modes” earlier in this chapter).
2. Use the standard method for assigning a sound to a track—see “Changing the Sound on a Track and Assigning a Sound to a New Track” earlier in this chapter—to designate a ZR sound for the like-numbered track corresponding to each of the MIDI channels on which you’ll be sending data.

Tip: If you’d like to send program changes from your MIDI device(s) to assign sounds to the ZR’s tracks, send them (see your device’s manual to learn how), and then press any 16 Track Recorder button. When your ZR-76 asks “Update track params with MIDI values?” respond by pressing the Yes button.

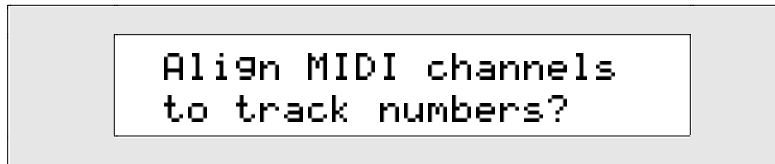
3. Select any track in the 16 Track Recorder.
4. Hold down the 16 Track Recorder Record button.



5. While continuing to hold down the Record button, press the Play button.



6. Play your MIDI controller.
7. Press the 16 Track Recorder's Stop button when you're done recording. The display shows:

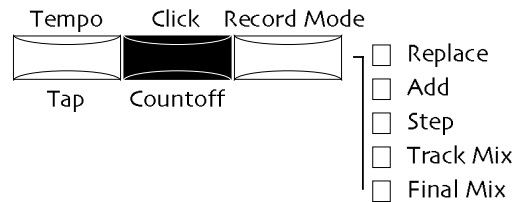


Your ZR-76 is telling you that it needs to align the data received on the MIDI channels you've used to their like-numbered tracks.

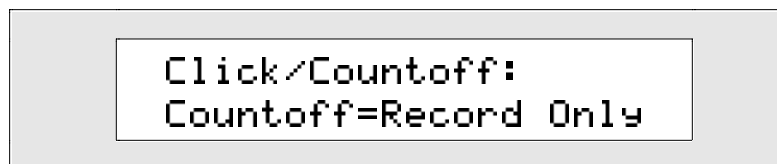
8. If you're ready to proceed, press the Yes button. If you'd like to leave the tracks unaligned—so that the sequence can be played and saved to floppy, but not edited or added to—press the No button.

To Record from an External MIDI Sequencer with Synchronization

1. Press the Song Editor Click button.



2. Turn the Parameter knob until the display shows the countoff setting:



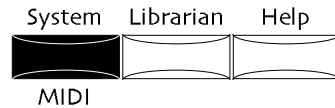
The current countoff setting

3. Turn the Value knob to set countoff to Off.
4. Use the standard method for assigning a sound to a track—see “Changing the Sound on a Track and Assigning a Sound to a New Track” earlier in this chapter—to designate a ZR sound for the like-numbered track corresponding to each of the MIDI channels on which you'll be sending data.

Tip: If you'd like to send program changes from your sequencer to assign sounds on the ZR's tracks, you can quickly start and stop your sequencer, and then press any 16 Track Recorder button on the ZR. When your ZR-76 asks "Update track params with MIDI values?" respond by pressing the Yes button.

If you're sending data to your ZR-76 from an ENSONIQ TS-10 or TS-12, you can set up the sounds for all of the tracks at once by re-selecting the sequence on the TS—the TS will send program changes for all of the tracks in the selected sequence. Press any of the ZR's track buttons, and answer "Yes" to the displayed question: "Update track params with MIDI values?"

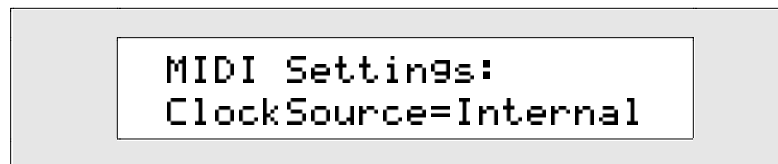
5. Press the System button.



6. Turn the Parameter knob until the display shows:

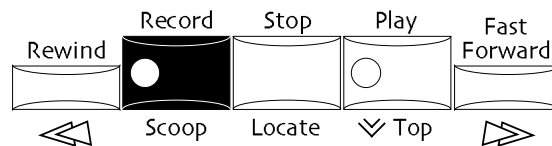


7. Press the Yes button.
8. Turn the Parameter knob until the display shows:

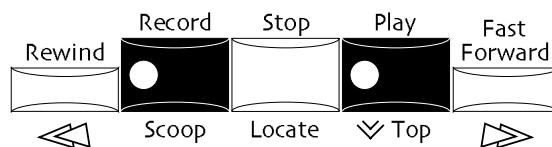


The currently selected timing source

9. Turn the Value knob to set ClockSource to "MIDI."
10. Press the Song Editor Record Mode button repeatedly until the Replace or Add LED is lit, depending on how you want to record (see "Recording Modes" earlier in this chapter).
11. Select an empty sequence location and set its time signature to match the external sequence's (see "Setting a Sequence's Time Signature" earlier in this chapter).
12. Select any track in the 16 Track Recorder.
13. Set your external sequencer to transmit MIDI clock Stop and Start messages.
14. Hold down the 16 Track Recorder Record button.

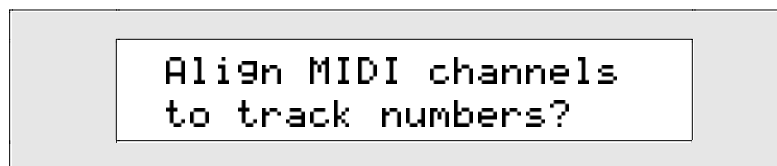


15. While continuing to hold down the Record button, press the Play button.



Your ZR-76 will wait for the external sequencer to start.

16. Start your external sequencer.
Your ZR-76 will start recording when the sequence begins playing.
17. Stop the external sequence when you're done recording.
The display shows:



Your ZR-76 is telling you that it needs to align the data received on the MIDI channels you've used to their like-numbered tracks.

18. If you're ready to proceed, press the Yes button.
If you'd like to leave the tracks unaligned—so that the sequence can be played and saved to floppy, but not edited or added to—press the No button.
19. Press the System button, and the Yes button, and turn the Value knob to reset the ZR's ClockSource to "Internal."
20. Press the Song Editor Tempo button and turn the Value knob to set the 16 Track Recorder's tempo so that it matches the tempo of the external sequence.

Using the ZR-76 with a Computer Sequencer

The ZR-76 is designed to be used in conjunction with an external sequencer—specifically, with a computer sequencer. Powerful as the ZR's 16 Track Recorder and Song Editor are, there's no denying that a software sequencer can offer MIDI and audio recording tools beyond those found in a keyboard workstation sequencer. At the same time, the ZR-76 offers sounds and effects that no computer can match. A ZR/computer synergy lies at the heart of many of the features in the ZR-76, including its utilization of DOS-formatted floppy disks, the 16 Track Recorder's 16-part multi-timbral capabilities, and its recognition of all MIDI controller messages.

ZR to Computer to ZR

Using the ZR-76 with a computer sequencing program could go something like this:

1. You play the ZR sounds and/or Drum Machine, and come across an idea for a song.
2. The Idea Pad captures your new musical fragment.
3. You send the idea over to the 16 Track Recorder, where you flesh out the idea's arrangement and record other sections for your song, taking advantage of the ZR's advanced sequencing tools.
4. You use the ZR's sound and effect parameters to program all of the sounds you're using so that they sound just the way you want them to.
5. You create a song playlist to hear how the pieces fit together.
6. You save each sequence to floppy disk.
7. You load the floppy into your computer, and load the ZR sequences into your software sequencer.
8. You connect the computer's MIDI out to the ZR's MIDI input, and vice versa.
9. You use the ZR's keyboard as your computer sequencer's master controller.
10. You continue to use the ZR's sounds and effects while working with your favorite sequencing program.
(To learn about the MIDI connections required for using your ZR-76 with a computer, see *Chapter 2*.)

The Transportability of ZR-76 Sequences

Since the ZR-76 was always intended to work hand-in-hand with a computer sequencer, their sequencer was designed with portability in mind. To start with, all ZR-76 sequences comply with the Standard MIDI File format. This allows them to be played by any Standard MIDI File-compatible sequencer. In addition, each track in a ZR sequence contains SysEx data that, when transmitted from a computer to your ZR-76, sets up all of the ZR's 16 Track Recorder track sound parameters—the sequences even contain data that sets the ZR's insert effects—so your music automatically sounds the same when played from a computer sequencer as it did in your ZR-76. If your sequence uses a rhythm, the rhythm track contains the SysEx data for playing the rhythm from the computer sequencer.

Using the ZR as a Master Controller for External Sequencing

A MIDI-OUT sound has another important special talent: when it's selected in SoundFinder (after pressing the Select Sound button), you can use your ZR-76 as both a master controller and a multi-timbral sound source when sequencing on a computer sequencer. MIDI travels out of the ZR from SoundFinder, to a track in the external sequencer, and then back into the ZR's 16 Track Recorder. A MIDI-OUT sound in SoundFinder provides a function that's similar to local-off in other synths and samplers. (MIDI reception is described a little later in this chapter.)

To Use the ZR-76 with a Computer Sequencer

1. Connect a MIDI cable to the ZR's MIDI Out jack on one end and your computer's MIDI In jack on the other.
2. Connect a MIDI cable to the computer's MIDI Out jack on one end and your ZR's MIDI In jack on the other.
3. Turn the power on for your computer and your ZR-76.
4. Save a ZR-76 sequence to floppy disk (see *Chapter 9* to learn how).
5. Press the Select Sound button.
6. Use the Sound Type and Sound Name knobs to select a MIDI-OUT sound.
7. If your computer sequencer doesn't automatically receive on all MIDI channels, press the up or down arrow buttons until the MIDI-OUT sound's MIDI channel field is selected, and use the Value knob to select the MIDI channel your sequencer is set up to receive.
If your sequencer requires you to do so, use the up and down arrow buttons and Value knob to assign a Bank Select and/or Program Change value for the MIDI-OUT sound.
8. Remove the floppy from the ZR's disk drive and insert it into your computer's floppy drive.
9. Launch your computer's sequencing program.
10. Open the floppy disk file containing your sequence.

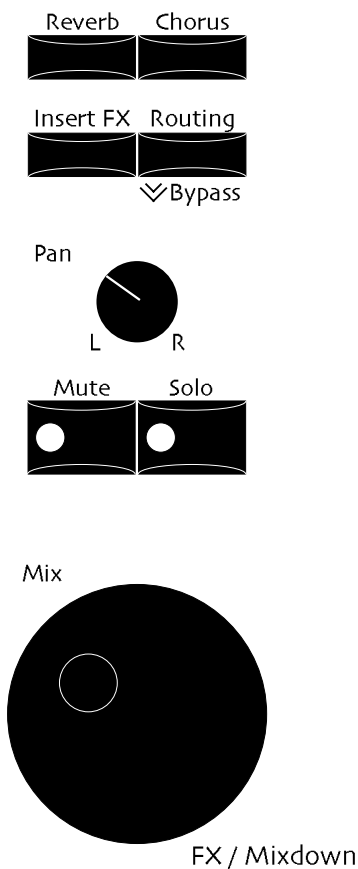
You can now play the sequence on your computer using the ZR's sounds and effects. You can also record additional tracks in your computer sequencer using the ZR's keyboard as your input device.

Chapter 8

FX/Mixdown

Mixing Your ZR-76 Music

No modern recording studio would be complete without a full suite of mixing tools—including high-quality effects. The ZR-76 provides everything you need to create great-sounding stereo mixes. You'll find the mixing console located in the FX/Mixdown strip on the ZR's front panel. Whether you're playing sounds in SoundFinder or working with the 16 Track Recorder, the FX/Mixdown strip offers all the mixing tools you need.



Use the Mix knob to adjust the loudness of your sound or tracks, and the Pan knob to place them in the appropriate locations within the stereo field. The four buttons at the top of the FX/Mixdown console access the ZR's 24-bit effects. The FX/Mixdown strip also provides mute and solo options for the tracks in the 16 Track Recorder.

This chapter provides a full description of each of these features.

Two Mixers In One

The ZR-76 is great for playing sounds, as well as being terrific all-in-one recording studios. To serve both of these purposes, the FX/Mixdown strip is actually two mixers in one. It's:

- a SoundFinder FX/Mixdown strip—When you're playing sounds in SoundFinder, the FX/Mixdown strip provides mix, pan and effect controls for the currently selected sound.
- a 16 Track Recorder FX/Mixdown strip—When you're using the 16 Track Recorder, the FX/Mixdown strip provides mix, pan and effect controls for each of the 16 tracks.

The ZR-76 watches what you do and automatically assigns the FX/Mixdown strip to the task at hand.

To Tell at a Glance What's Being Mixed

If you're viewing an FX/Mixdown parameter, and are unsure of whether you're mixing a SoundFinder sound or a track in the 16 Track Recorder, a quick glance at the SoundFinder Select Sound and Song Editor Select Song buttons will tell you what you're mixing:

- If the Select Sound LED is lit, you're mixing a sound in SoundFinder
- If the Select Song LED is lit, you're mixing a track in the 16 Track Recorder—the selected track's LED will be flashing

Note: Some of the FX/Mixdown parameter displays will also show the words "Sound" or "SoundFinder"—or the name of the track being edited—to help remind you of what's being mixed.

This chapter begins with the procedures used for SoundFinder and 16 Track Recorder mixing, followed by a discussion of the Mix and Pan knobs, and the powerful ZR-76 effects.

Mixing with the SoundFinder FX/Mixdown Strip

SoundFinder FX/Mixdown

The FX/Mixdown strip allows you to set the mix level, pan and effects for anything in SoundFinder, whether it's a single sound, a split, layer or a combination of split and layer. See *Chapter 4* for more information on SoundFinder.

Note: Each sound can use an insert effect, which can be manipulated in real-time through the use of various control devices. See "Modulating the Insert Effect in Real Time" later in this chapter.

To Use the FX/Mixdown Strip with SoundFinder Sounds

1. Press the Select Sound, Split or Layer button in SoundFinder to select the sound you want to work with.
2. Set up the SoundFinder sound, split or layer as you wish.
3. Turn the desired FX/Mixdown knob or press the desired FX/Mixdown button.

The Mix and Pan knobs and the ZR's effects are described in detail later in this chapter.

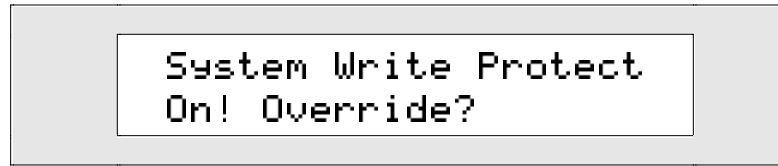
Saving SoundFinder FX/Mixdown Settings

When you've used the FX/Mixdown strip in conjunction with SoundFinder in the customizing of single sounds or presets, you may want to preserve those changes so that any time you select the sound or preset, your FX/Mixdown changes will be in place. When you save the sound or preset to a location in the ZR's memory, your FX/Mixdown work will become part of the sound or preset.

To Save SoundFinder Mixdown Settings into a Sound

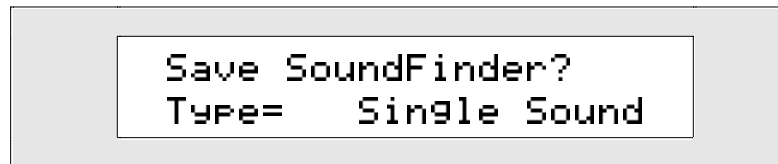
1. Press the SoundFinder Save button.
The red/green No and Yes LEDs begin to flash.

If the System Write Protect parameter is set to Prompt, the display will show:



This display is offered as a double-check for you, to make sure you really want to save your sound with its new FX/Mixdown settings. If you think you'd like to avoid this prompt in the future, see "Protecting the ZR's Memory" in *Chapter 3*.

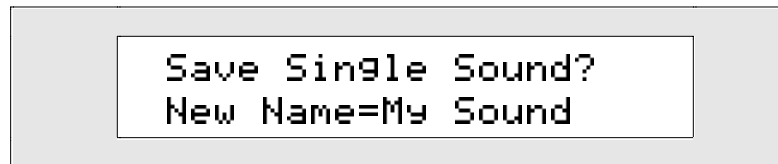
2. If you'd like to cancel the operation, press the No button. If you'd like to proceed, press the Yes button. The display now asks you what you'd like to save:



What you see here may be different

"Single Sound" is the correct setting for the Type parameter when you're saving a SoundFinder sound (If the Split and Layer LEDs are lit, the split and layer will become permanently integrated elements of the saved sound—see *Chapter 4* to learn more about saving splits and layers). If you need to, turn the Value knob counter-clockwise until the display looks as it does above.

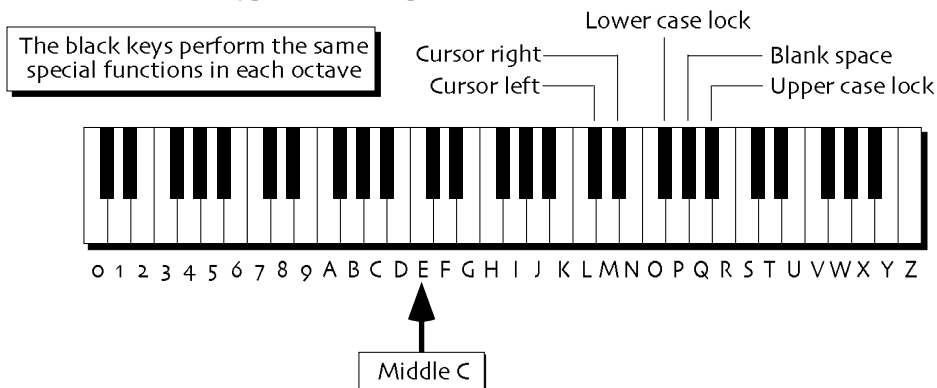
3. Press the Yes button—the display allows you to name your sound:



What you see here will be different

You can name your sound in one of two ways:

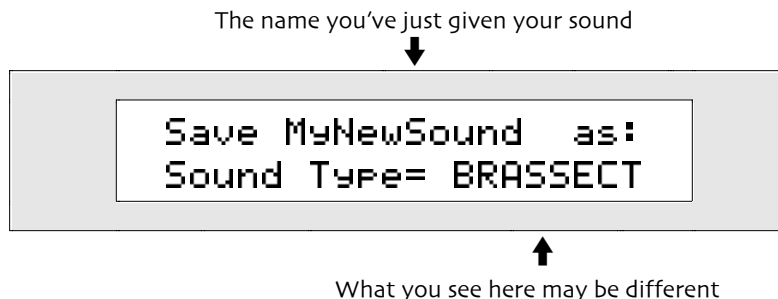
- You can spell the sound's new name on the keyboard as if it were a typewriter—the character associated with each key is printed above the key on the ZR's front panel. The C# and D# keys in each octave move the cursor forward and back on the display—the character selected for editing is underlined on the ZR's display. The F# is always a lower case lock, the A# an upper case lock, while the G# types a blank space.



Note: The keys outside of the range shown above are not used for the naming of sounds.

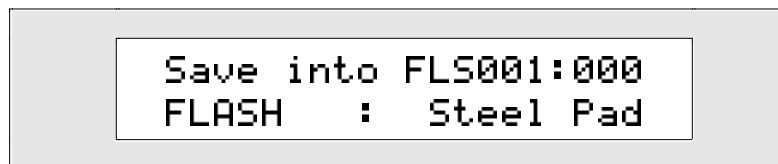
- You can also name your sound using the front panel controls. The up/down arrow buttons are used to select the character position within the name. The up arrow moves the location to the right, and the down arrow moves it to the left. The underlined character is selected and may be changed with the Value knob.
- When you've named your sound, press the Yes button.

The display shows:



- Use the Value knob to select a SoundFinder type for your sound. For a complete list of SoundFinder types, see *Chapter 13*.
- When you've defined a SoundFinder type, press the Yes button.

The display shows the memory location to which your new sound will be saved.



The ZR-76 has two areas of ZR-76 memory to which you can save a sound:

- FLASH—the more permanent type of ZR memory, which remains intact until you erase it
- RAM—a temporary memory that lasts only until you turn your ZR-76 off.

If you've created a RAM sound bank in your ZR, you can turn the Sound Type knob to select FLASH or RAM. If you haven't created a RAM sound bank, FLASH is the only setting available. To learn about FLASH and RAM, see *Chapter 9*.

- Select the desired area of memory.

The display shows:



The sound residing in the currently selected location

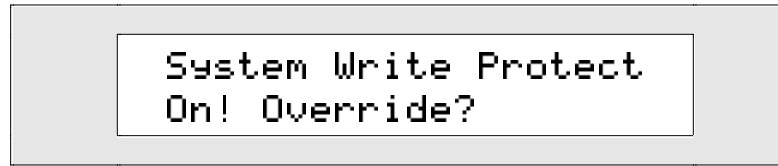
When you save your new sound, it will replace the sound that's currently displayed. You can use the Value knob to select a new destination for your sound.

- If you'd like to, turn the Value knob to select a new location for your sound.
- When you've selected a location for your sound, press the Yes button. The display momentarily confirms the successful completion of your command, and then selects the newly-saved sound.

To Save SoundFinder Mixdown Settings into a Preset

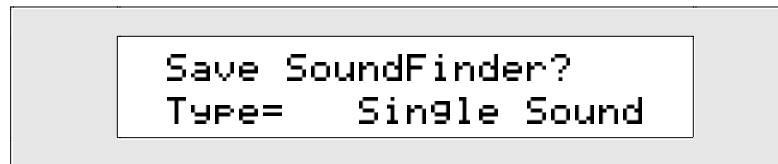
- Press the SoundFinder Save button. The red/green No and Yes LEDs begin to flash.

If the System Write Protect parameter is set to Prompt, the display will show:



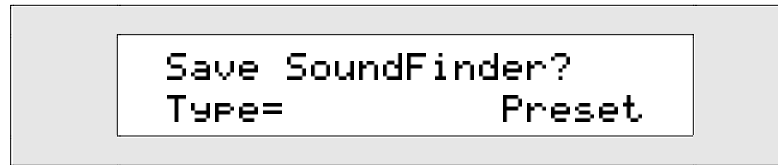
This display is offered as a double-check for you, to make sure you really want to save your sound with its new FX/Mixdown settings. If you think you'd like to avoid this prompt in the future, see "Protecting the ZR's Memory" in *Chapter 3*.

2. If you'd like to cancel the operation, press the No button. If you'd like to proceed, press the Yes button. The display now asks you what you'd like to save:



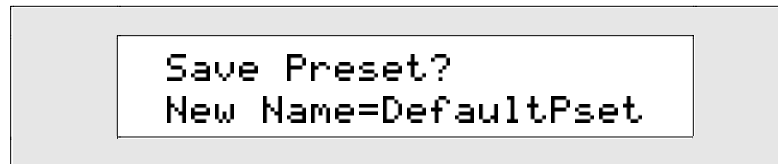
What you see here may be different

3. Turn the Value knob clockwise until the display shows:



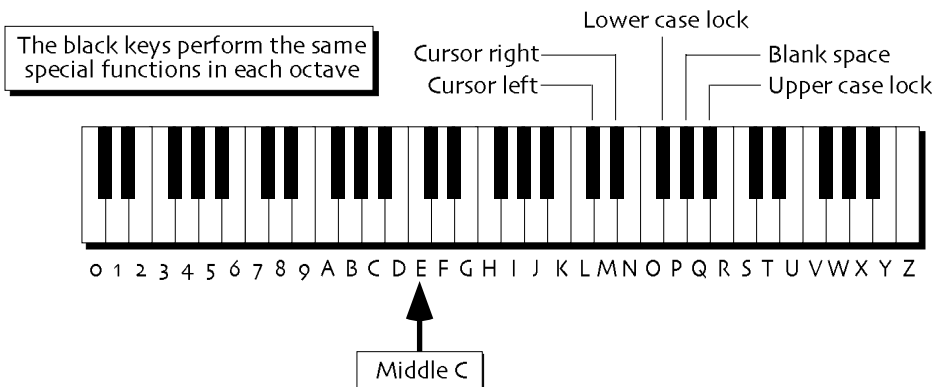
4. Press the Yes button.

The display now allows you to name your preset:



You can name your preset in one of two ways:

- You can spell the preset's new name on the keyboard as if it were a typewriter—the character associated with each key is printed above the key on the ZR's front panel. The C# and D# keys in each octave move the cursor forward and back on the display—the character selected for editing is underlined on the ZR's display. The F# is always a lower case lock, the A# an upper case lock, while the G# types a blank space.

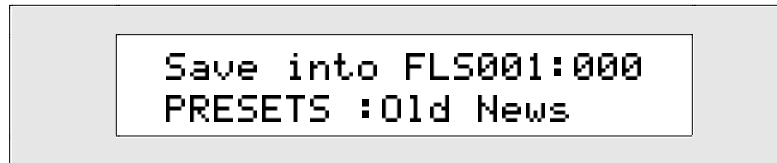


Note: The keys outside of the range shown above are not used for the naming of presets.

- You can also name your preset using the front panel controls. The up/down arrow buttons are used to select the character position within the name. The up arrow moves the location to the right, and the down arrow moves it to the left. The underlined character is selected and may be changed with the Value knob.
5. When you've named your preset, press the Yes button.
The display shows an empty preset memory location to which your new preset can be saved.



You can use the Value knob to select a new destination for your preset if you wish. If you choose a location that already contains a preset, you'll see the preset's name on the bottom line of the display.



The name of the preset already saved to this location

If you decide to use such a location, your new preset will replace the one whose name you see displayed.

6. If you'd like to, turn the Value knob to select a new location for your preset.
7. When you've selected a location for your preset, press the Yes button.
The display momentarily confirms the successful completion of your command, and then selects the newly-saved preset.

Mixing with the 16 Track Recorder FX/Mixdown Strip

16 Track Recorder FX/Mixdown

The FX/Mixdown strip allows you to set up each track in the 16 Track Recorder with the mix level, pan and effects you desire. (See *Chapter 7* for more information on the 16 Track Recorder.) In addition to these basic, static track settings, the ZR-76 also provides the opportunity to record, in real-time, changes you make with the Mix and Pan knobs while each sequence plays. This allows you to create fully automated, polished mixes, with the instruments in your musical arrangement rising and falling in volume—and/or moving around in stereo—as you see fit.

Each sequence contains an insert effect which can be manipulated in real-time as the sequence plays. See “Modulating the Insert Effect in Real Time” later in this chapter.

Note: The FX/Mixdown strip allows control over the individual sequences that comprise a song, not over the song as a whole. If a song playlist is active, the 16 Track Recorder FX/Mixdown strip is disabled.

Basic Mixing with the 16 Track Recorder FX/Mixdown Strip

The ZR-76 lets you set each track in a 16 Track Recorder sequence with its own mix and pan settings and its own effect routing. These settings can be adjusted when the 16 Track Recorder is stopped, playing or during recording in Replace and Add modes. There's no special “saving” procedure required for track settings—the sequence automatically remembers them. Whenever you select the sequence, these basic mix, pan and effect routing settings are put in place. If the dynamics of the musical performances on your tracks are well-executed—and you don't plan for your instruments to be moving around in stereo during the sequence—these basic mix and pan settings may be all you need.

To Create a Basic 16 Track Recorder Mix

1. Press the numbered button for the track that you want to mix.
2. Access the desired FX/Mixdown knob or button to set the track's basic mix, pan and effect settings. Mix, pan and the ZR-76 effects are fully explained later in this chapter.

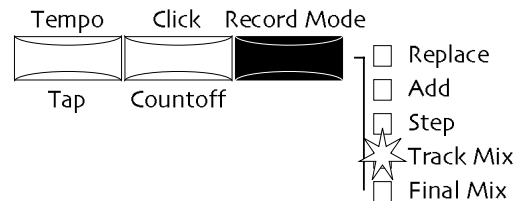
Note: If you've already recorded real-time changes in Mix and Pan using Track Mix, the basic Mix or Pan setting you choose here will only apply to the track settings at the beginning of the sequence.

Recording Real-Time Mix and Pan Changes in a Sequence

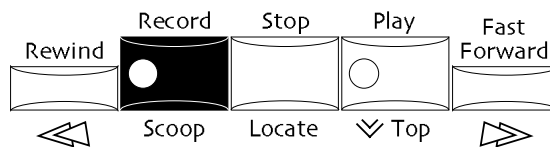
After establishing a basic mix, a musical arrangement may call for tracks to be made louder or softer during the course of a sequence, or to move around in the stereo field. The ZR-76 provides for the recording of such changes through the use of the *track mix* recording mode.

To Record Real-Time Mix and Pan Changes in a Sequence

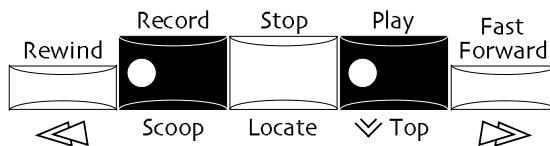
1. Establish a basic mix for the tracks in the sequence using the technique described in “To Create a Basic 16 Track Recorder Mix” above. These settings will be in place at the beginning of your sequence. They constitute the starting point for each of your tracks.
2. Press the Record Mode button in the ZR-76 Song Editor repeatedly until the Track Mix LED is lit.



3. Select the desired track.
4. Press the 16 Track Recorder Rewind button to go back to the beginning of the sequence.
5. Hold down the 16 Track Recorder Record button.



6. While continuing to hold down the Record button, press the Play button.



7. Turn the Mix or Pan knob to make the loudness or panning changes you desire.
8. When you're done mixing, press Stop, or continue mixing until the end of the sequence.
9. To play back your work, press Play.
10. If you'd like to perform your mix again, press the 16 Track Recorder Edit button, and the Yes button to undo your mix attempt.
11. Repeat steps 6 through 10 until you're satisfied with your mixdown performance.

Note: Pressing the Edit button after performing a real-time track mix allows you to undo your mix only until you perform another track procedure or record a new track—the Undo memory is always concerned with only the most recent operation. If you'd like to redo your track mix at a later time, you must first erase the current real-time mix from the track before recording new mix or pan changes. Use the 16 Track Recorder Erase button to erase a single controller: controller #11 if you'd like to erase Mix changes, or controller #10 if you'd like to erase Pan changes. For more help, see *Chapter 7*.

Recording Volume Changes for Multiple Tracks

The Final Mix recording mode allows you to record automated volume changes to an entire sequence, or to a group of tracks within a sequence. This is a great tool for automating fadeouts and recording whole-arrangement dynamic changes.

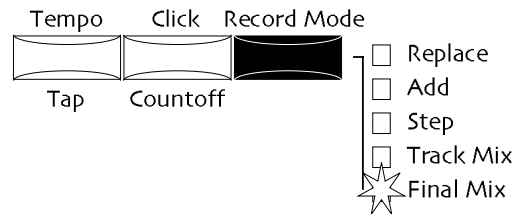
The Final Mix recording mode works only on those tracks that are currently audible—tracks which are muted will not be affected by Final Mix changes. This allows you to automate volume changes for subgroups of tracks by muting all but the desired tracks, and performing a mix. Only the non-muted tracks will be affected. In this way, you can adjust the level of a group of instruments in relation to the overall mix without changing the volume relationships within the group.

Since the Final Mix recording mode utilizes MIDI Volume messages, the dynamic changes that Final Mix produces can be recorded into an external MIDI sequencer when your 16 Track Recorder tracks use MIDI-OUT sounds.

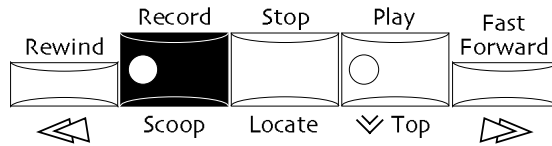
Note: There is no undo available for the recording of volume changes for multiple tracks during Final Mix. You can always re-perform your mix, but you may have trouble getting back to precisely where you started in terms of individual-track volume settings, especially when the tracks contain their own dynamic changes. It is highly recommended that you save a copy of the sequence to floppy before using Final Mix mode—you can always reload it to get back to the sequence’s original state.

To Record an Automated Fadeout or Overall Dynamic Change

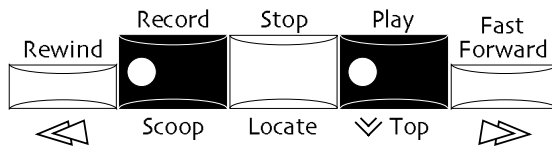
1. Establish a basic mix for the tracks in the sequence using the technique described in “Basic Mixing with the 16 Track Recorder FX/Mixdown Strip” earlier in this chapter. If you’d like, record any individual track level or pan changes you desire using the 16 Track Recorder’s Track Mix recording mode (as described in “Recording Real-Time Mix and Pan Changes in a Sequence,” earlier in this chapter).
2. Press the Record Mode button in the Song Editor repeatedly until the Final Mix LED is lit.



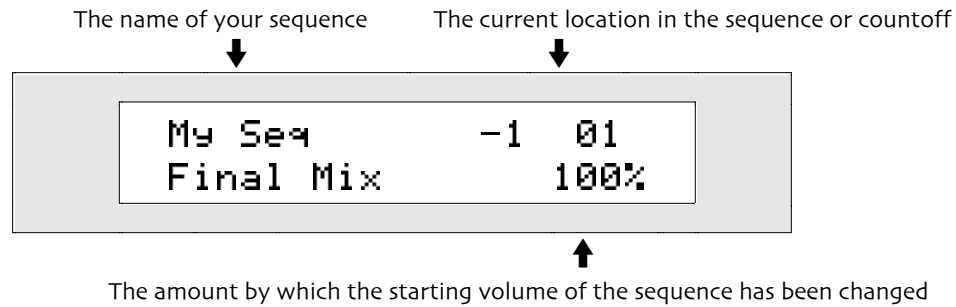
3. Press the 16 Track Recorder Rewind button to go back to the beginning of the sequence.
4. Hold down the 16 Track Recorder Record button.



5. While continuing to hold down the Record button, press the Play button.



The sequence will begin counting down to its starting point, and the display will show:



7. As the music plays, turn the Mix or Value knobs, or press the up/down arrow buttons, to record the volume changes you desire.
The display will show you the effect of your changes, expressed in a percentage of the sequence's original volume level settings:
8. When you're done mixing, press Stop, or continue mixing until the end of the sequence.
9. To play back your work, press Play.
10. If you'd like to perform your mix again, re-load the sequence from floppy and then return to Step 3.

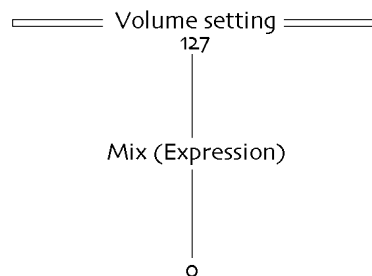
To Record Volume Changes for a Subgroup of Tracks

1. Mute all of the tracks except those you'd like to mix.
2. Follow the steps in "To Record an Automated Fadeout or Overall Dynamic Change," above.
3. Un-mute all of your tracks and press Play to hear your group mix.

Working with the Mix Knob

Understanding the Mix Knob

The Mix knob adjusts the Mix (Expression) parameter, adding to or subtracting from the Mix (Expression) value programmed into the currently selected sound in SoundFinder, or the sound being used by the selected track in the 16 Track Recorder. Mix (Expression) is a loudness control that can be lowered or raised up to a maximum set by each sound or track's Volume parameter. The Volume parameter sets what might be viewed as a loudness ceiling for a sound or track, and the Mix (Expression) parameter operates beneath that maximum setting. Mix (Expression) may be set from 0 to 127.



Note: Sounds and tracks in the ZR-76 default to a volume setting of 127, though you can set this ceiling to any value from 0 to 127. See *Chapter 4* to learn how to adjust the Volume parameter.

The Mix (Expression) parameter can also be accessed:

- in SoundFinder by pressing the Select sound, Split or Layer button, pressing the SoundFinder Edit button and turning the Parameter knob to locate the Mix (Expression) parameter.
- in the 16 Track Recorder by selecting the desired track and turning the Parameter knob to locate the Mix (Expression) parameter.

MIDI devices refer to the Mix (Expression) parameter as "Expression," and access it via MIDI Control #11. The ZR's Mix (Expression) parameter responds to such messages and to an NRPN LSB value of 034, as

well. See *Chapter 4* for details. In either case, the ZR's display will reflect (Mix) Expression changes made via MIDI just as if you'd made them from the front panel.

When a MIDI-OUT sound is selected in SoundFinder, or a track in the 16 Track Recorder that uses a MIDI-OUT sound is selected, changes made by turning the Mix knob will be transmitted via MIDI as Control #11 changes. Mix knob changes recorded on 16 Track Recorder tracks that use MIDI-OUT sounds will also be transmitted.

Note: If you're working with a Standard MIDI File that has not yet had its tracks re-ordered to correspond to their MIDI channels, turning the Mix knob will cause "Align MIDI channels to track numbers?" to be displayed. See *Chapter 7* to learn about working with Standard MIDI Files.

Using the Mix Knob

The Mix knob can be used to change the Mix (Expression) setting of a sound in SoundFinder or a track in the 16 Track Recorder.

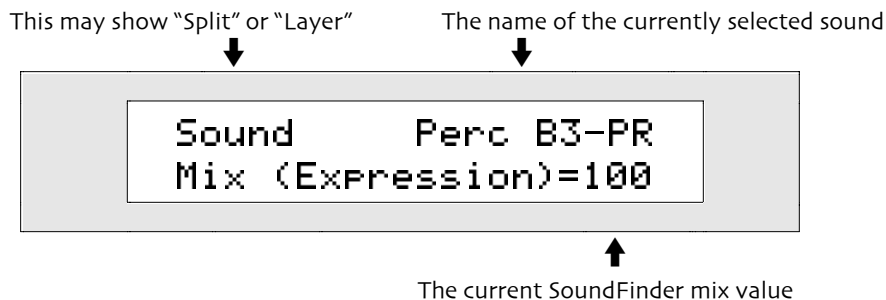
When the following parameter is edited in a drum kit, all of the sounds in the drum kit are affected simultaneously by the changes you make.

To Use the Mix Knob with a SoundFinder Sound

1. Press the Select Sound, Split or Layer button and use the Sound Type and Sound Name knobs to select the sound whose level you would like to change. If you'd like to change the Mix (Expression) setting of a split or layer sound, press the Split or Layer button.

The Mix knob can be used to change the loudness of the currently selected sound by setting it anywhere from 0 to 127. Turning it clockwise will increase the sound's loudness, turning it counter-clockwise will decrease it.

2. Turn the Mix knob to set the sound's mix level to the desired level. The display will show:



When the following parameter is edited in a track that uses a drum kit, all of the sounds in the drum kit are affected simultaneously by the changes you make.

To Use the Mix Knob with a 16 Track Recorder Track

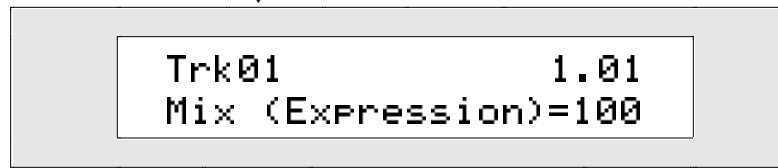
1. Press the 16 Track Recorder track button whose level you would like to change.

The Mix knob can be used to change the loudness of the currently selected track by setting it anywhere from 0 to 127. Turning it clockwise will increase the track's loudness, turning it counter-clockwise will decrease it.

2. Turn the Mix knob to set the track's mix level to the desired level.

The display will show:

The number of the currently selected track



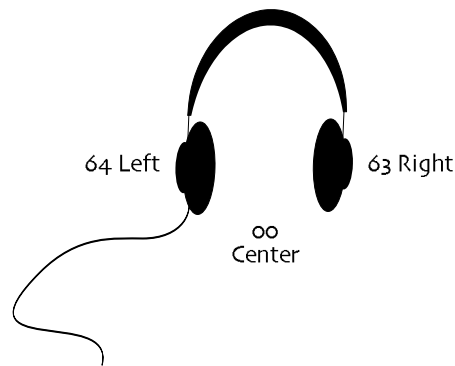
The track's current mix value

When the following parameter is edited in a track that uses a drum kit, all of the sounds in the drum kit are affected simultaneously by the changes you make.

Working with the Pan Knob

Understanding the Pan Knob

The Pan knob accesses the Pan parameter, adding to or subtracting from the Pan value programmed into the currently selected sound in SoundFinder, or the sound being used by the selected track in the 16 Track Recorder. This has the effect of shifting the sound or track to the left or right side of the stereo field. If the sound is itself stereo, that quality will be retained as the sound's entire stereo image is moved leftward or rightward. The range of this parameter is from -64 (hard left) to +63 (hard right).



The Pan parameter can also be accessed:

- in SoundFinder by pressing the SoundFinder Edit button and turning the Parameter knob to locate the parameter.
- in the 16 Track Recorder by turning the Parameter knob to locate the parameter.

MIDI devices access the Pan parameter via MIDI Control #10. The ZR's Pan parameter responds to such messages. See *Chapter 4* for details. The ZR's display will reflect Pan changes made via MIDI just as if you'd made them from the front panel.

When a MIDI-OUT sound is selected in SoundFinder, or a track in the 16 Track Recorder that uses a MIDI-OUT sound is selected, changes made by turning the Pan knob will be transmitted via MIDI as Control #10 changes. Pan knob changes recorded on 16 Track Recorder tracks that use MIDI-OUT sounds will also be transmitted.

Note: If you're working with a Standard MIDI File that has not yet had its tracks re-ordered to correspond to their MIDI channels, turning the Pan knob will cause "Align MIDI channels to track numbers?" to be displayed. See *Chapter 7* to learn about working with Standard MIDI Files.

Using the Pan Knob

The Pan knob can be used to change the pan setting of a sound in SoundFinder or a track in the 16 Track Recorder.

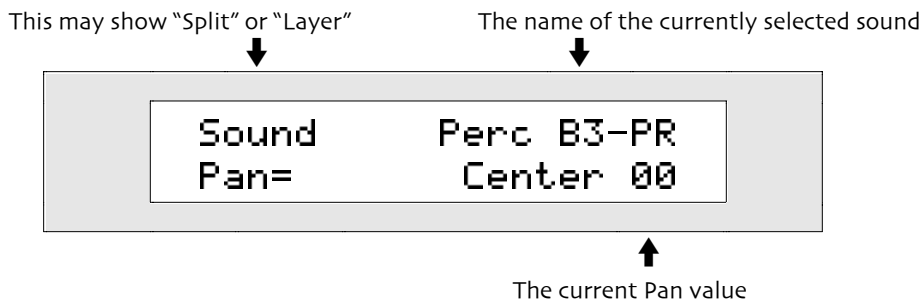
When the following parameter is edited in a drum kit, all of the sounds in the drum kit are affected simultaneously by the changes you make.

To Use the Pan Knob with a SoundFinder Sound

1. Press the Select Sound, Split or Layer button and use the Sound Type and Sound Name knobs to select the sound whose stereo placement you would like to change.

The Pan knob can be used to change the stereo placement of the currently selected sound by setting it from Left -64 to Right +63. Turning the knob all the way to the left will pan the sound hard left. Turning it all the way to the right will pan the sound hard right.

2. Turn the Pan knob to select a location within the stereo field for the currently selected sound. The display will show:



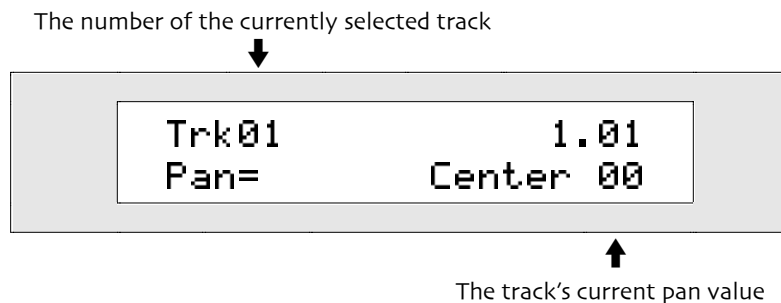
When the following parameter is edited in a track that uses a drum kit, all of the sounds in the drum kit are affected simultaneously by the changes you make.

To Use the Pan Knob with a 16 Track Recorder Track

1. Press the 16 Track Recorder track button whose stereo placement you would like to change.

The Pan knob can be used to change the stereo placement of the currently selected track by setting it from Left -64 to Right +63. Turning the knob all the way to the left will pan the track hard left. Turning it all the way to the right will pan the track hard right.

2. Turn the Pan knob to select a location within the stereo field for the currently selected track. The display will show:



Understanding How the ZR-76 Effects Work

The ZR-76 Effects

The ZR-76 contains ENSONIQ's powerful 24-bit ESP 2 effects chip. This next-generation chip produces effects of extremely high quality, and allows for routing options of considerable flexibility.

Nearly all of the ZR-76 sounds utilize the ZR's effects. If you'd like to customize the factory sounds, or if you'll be creating your own sounds and recordings in the ZR, you'll want to familiarize yourself with the way the effects work so that you can take full advantage of all they have to offer.

Your ZR-76 always has four effect possibilities available:

- an insert effect
- a global chorus
- a global reverb
- no effect, or *dry*

The Insert Effect

The most powerful type of effect offered by the ZR-76 is the insert effect. While the global reverb is always a high-quality reverb, and the global chorus is always a high-quality chorus, the insert effect may use any one of the 40 effects algorithms listed here:

01 Parametric EQ	15 Chorus→Rev	29 ResVCF→DDL
02 Hall Reverb	16 Flanger→Rev	30 Dist→VCF→DDL
03 Large Room	17 Phaser→Rev	31 Pitch Detuner
04 Small Room	18 EQ → Reverb	32 Chatter Box
05 Large Plate	19 Spinner →Rev	33 Formant Morph
06 Small Plate	20 DDL→Chorus	34 RotarySpeaker
07 NonLinReverb1	21 DDL→Flanger	35 Tunable Spkr
08 NonLinReverb2	22 DDL→Phaser	36 Guitar Amp
09 Gated Reverb	23 DDL→EQ	37 Dist→DDL→Trem
10 Stereo Chorus	24 Multi-Tap DDL	38 Comp→Dist→DDL
11 8-VoiceChorus	25 Dist→Chorus	39 EQ→Comp→Gate
12 Rev→Chorus	26 Dist→Flanger	40 EQ→Chorus→DDL
13 Rev→Flanger	27 Dist→Phaser	
14 Rev→Phaser	28 Dist→Auto Wah	

Note: Some of these effects are unique ENSONIQ creations, available only in the ZR-76, MR-61, MR-76, MR-Rack and ASR-X.

The insert effects are extremely programmable, and each has a full complement of parameters, described in *Chapter 11*. In addition, insert effects can be manipulated in real time, through the use of any number of ZR or MIDI controllers (the method for achieving real-time control of the insert effect is described later in this chapter). Many of the ZR-76 sounds use an insert effect.

Sounds and tracks are assigned to the insert effect by routing them to the insert FX bus (see “Understanding Effect Busses” later in this chapter for details).

You can also add global reverb or chorus to the insert effect, if you like, as described later in this chapter. The insert effect may be routed to either the ZR's Main or Aux Outs—this procedure is also described later in this chapter.

Global Chorus

The ZR-76 always provides a high-quality global chorus effect as part of the currently active song. You can customize the global chorus to suit your needs. The Global Chorus Preset parameter, described later in

this chapter, is used to select from a variety of chorus variations:

- ZR Chorus
- ZR Classic
- Fast & Wide
- Halleluiah
- Padmaker
- Slow & Deep
- Super Slow
- Thick
- Vintage
- Wide
- Slow Rotary
- Fast Rotary

Any sound in SoundFinder or track in a sequence may utilize the currently active song's global chorus. Sounds and tracks are assigned to the global chorus by routing them to the chorus FX bus (see "Understanding Effect Busses" later in this chapter for details).

The global chorus provides a parameter that allows you to add global reverb to the chorus. The global chorus can be routed to either the ZR's Main or Aux Outs. Both topics are discussed later in this chapter.

Global Reverb

There is always a high-quality global reverb effect available in the ZR-76 as part of the currently active song. You can edit the global reverb to suit your needs. The Global Reverb Preset parameter, described later in this chapter, is used to select from a selection of reverb variations:

- Smooth Plate
- Large Hall
- Small Hall
- Big Room
- Small Room
- Reflections
- Bright
- Huge Place

Any sound in SoundFinder or track in a sequence may utilize the currently active song's global reverb. Sounds and tracks are assigned to the global reverb by routing them to the reverb FX bus (see "Understanding Effect Busses" later in this chapter for details). The global reverb can be routed to either the ZR's Main or Aux Outs—this procedure is described later in this chapter.

Dry

Sounds in SoundFinder and sounds on tracks in the 16 Track Recorder don't have to go through any of the effects above—they can remain dry by selecting the dry effect option. Sounds and tracks remain dry when they're routed to the dry FX bus (see "Understanding Effect Busses" later in this chapter for details). Dry sounds can be routed to either the ZR's Main or Aux Outs—this procedure is described later in this chapter.

Understanding Effects Busses

A sound or track is assigned to an effect by assigning it to the *FX bus*—for "effect bus"—named after the desired effect. Your ZR-76 offers six of these stereo pathways:

- the Insert FX Bus
- the Chorus FX Bus
- the LightReverb FX Bus
- the MediumReverb FX Bus
- the WetReverb FX Bus
- the Dry FX Bus

The Insert FX Bus

When a sound or track is assigned to the insert effect bus, it is first routed to a wet/dry control. The wet/dry control determines the relative balance between the sound or track as it is before going through the insert effect (dry), and as it is after going through the insert effect (wet).

The insert effect mix may then be sent into the global reverb. It can also be routed to the global chorus, where it encounters a second wet/dry control. In this case, the "dry" component is the insert effect mix, and the "wet" is the insert effect mix after it's been through the chorus.

Any sounds or tracks assigned to the insert bus will use the ZR-76 outputs chosen by the system Insert FX Out parameter, described later in this chapter.

The Chorus FX Bus

The chorus bus accesses both global chorus and reverb. When a sound or track is assigned to the chorus bus, it is first routed to a wet/dry control. The wet/dry control determines the relative balance between the

sound or track as it is before going through the global chorus (dry), and as it is after the going through the chorus (wet). This chorus mix may then be sent to the global reverb.

Any sounds or tracks assigned to the chorus bus will use the ZR-76 outputs chosen by the system GlobalChorusOut parameter, described later in this chapter.

The Light, Medium and Wet Reverb FX Busses

For reverb, arguably the most important effect of all, the ZR-76 provides three separate busses for routing sounds and tracks to the global reverb. It's not uncommon to want some sounds or tracks to have a little reverb; others may require a bit more, and perhaps other sounds or tracks need a lot of reverb.

Your ZR-76 solves this potential dilemma by offering a LightReverb FX Bus for sounds and tracks requiring just a touch of reverb, a MediumVerb FX Bus for those wanting a bit more, and a WetVerb FX Bus for sounds and tracks that need an even greater amount of reverb. You can also determine how much reverb will be used by each of the busses, since each has its own send amount into the reverb effect (see "Setting the Reverb Amounts for the LightReverb, MediumReverb and WetReverb Effect Busses" later in this chapter.) Once you've set the busses to their desired send amounts, you can assign sounds and tracks to the appropriate bus.

Any sounds or tracks assigned to one of the three reverb busses will use the ZR-76 outputs chosen by the system GlobalReverbOut parameter, described later in this chapter.

The Dry Bus

Sounds and tracks assigned to the dry bus will not be processed by the insert effect, the global chorus or the global reverb—they'll go directly to the ZR-76 outputs chosen by the system Dry FX Bus Out parameter, described later in this chapter.

Understanding the Special Alt. FX Bus

ZR-76 sounds that use an insert effect are also assigned an alternate effect bus routing for situations in which the desired insert effect is unavailable. This bus comes in handy when you're already committed to using some other insert effect in a SoundFinder preset or a 16 Track Recorder sequence. For sounds that depend on an insert effect, the alternate effect bus, or *Alt. FX Bus*, provides a sensible "second-best" choice for those situations. The system AutoSelect FXBus parameter can be set so that the ZR automatically uses the Alt. FX Bus when a sound's insert effect is unavailable. The Alt. FX Bus setting for sounds that use an insert effect can be edited using the supplied Unisyn editing software.

Not all sounds use an insert effect. Each sound can be assigned instead to the global chorus, global reverb, or left dry, according to the setting of its FX Bus parameter. This parameter is accessed by pressing the Routing button in the FX/Mixdown section of the ZR's front panel. If you've set a sound's FX Bus parameter to Chorus, LightReverb, MediumReverb, WetReverb or Dry, when you save the sound to the ZR's memory, the settings are applied to its Alt. FX Bus. The Alt. FX Bus for each sound can be directly accessed using Unisyn editing software that came with your ZR (see *Chapter 12*).

Effects, Sounds, Sequences and Songs

Your ZR-76 was designed as the ideal tool for the composition and performance of songs. As a result, whether or not you've recorded any music—or loaded any from the floppy drive—there's always a song structure active in the ZR-76, even if it happens to contain no recorded music. Everything you do in your ZR-76 occurs within a song. Even when you're playing sounds in SoundFinder, you're still, in this sense, working within a song. This concept is important in understanding the ZR-76 effects.

With the entire creative process in mind, great care has been taken to ensure that the ZR-76 effects do what you want them to, whether you're hunting for musical ideas as you play and edit sounds in SoundFinder, or you're using those sounds to record music in the 16 Track Recorder as you create a song.

Some effect elements are attached to the ZR-76 sounds—it's part of why those sounds sound as great as they do. Each sound has its own FX Bus parameter for routing the sound to an effect. If a sound's FX Bus parameter is set to the insert FX bus, the sound will contain its own insert effect. If you add a split or layer to this sound, they can share this insert effect.

Each sound's FX Bus setting—and its insert effect if it has one—is stored in the sound when you save it to a location in the ZR's memory, or to floppy disk.

Other aspects of the effects address issues that arise in dealing with more than one sound at once, as you do in the 16 Track Recorder. You may want these aspects to change from sequence to sequence, and so,

each sequence contains:

- an insert effect
- the FX bus routings for each of its tracks
- the insert control track setting (the insert control track is described later in this chapter)

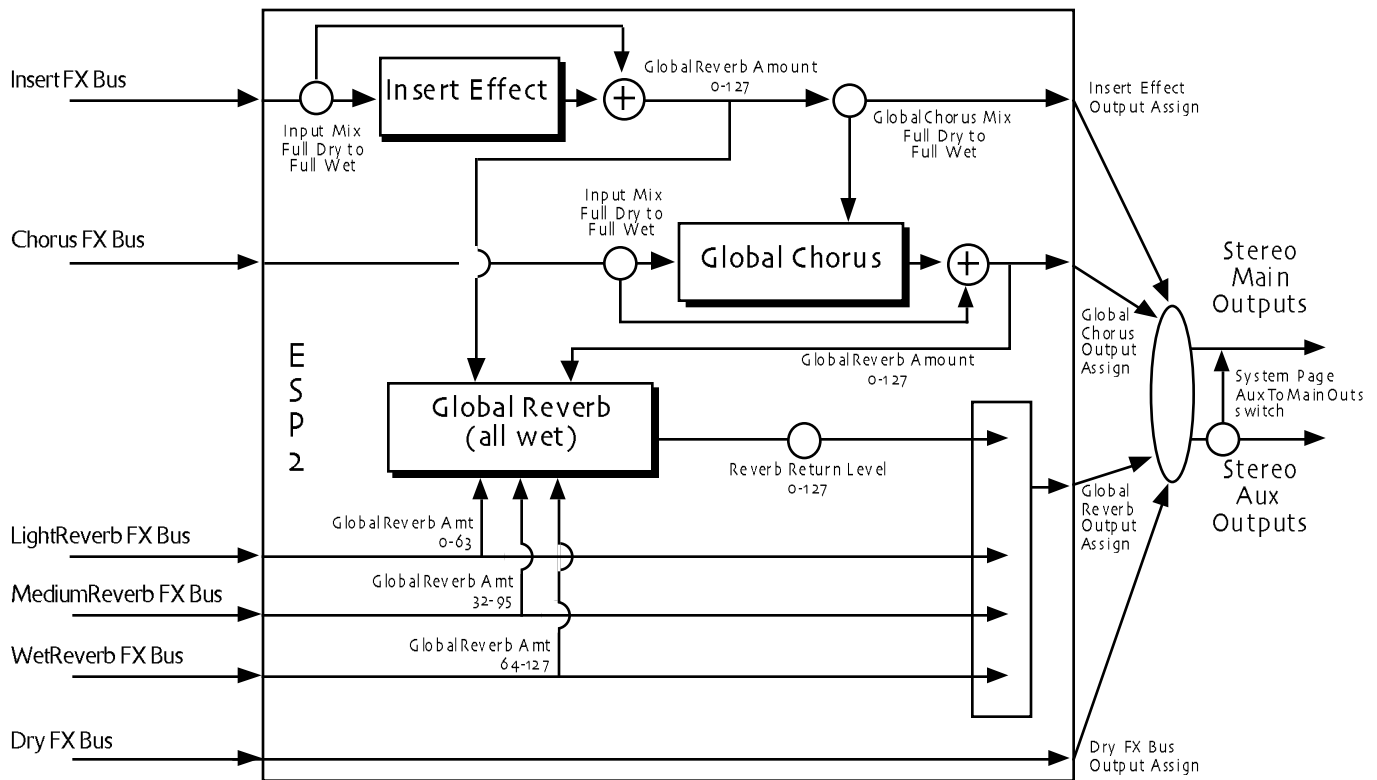
These elements are stored in each sequence.

Some effect elements remain constant throughout an entire song:

- a global reverb and its settings
- a global chorus and its settings
- settings for sending the insert, global reverb and global chorus effects to the Main or Aux output jacks on the ZR's rear panel

These elements are stored in each song.

A Diagram of the ZR-76 Effects



Note: In the above diagram, all arrows represent stereo signal paths. Hollow circles represent parameters that can be edited. The circle with a “+” means the signals are summed together. Arrows with a “bump” in them are not connected to the line that they cross. ESP 2 is the effects chip in the ZR-76.

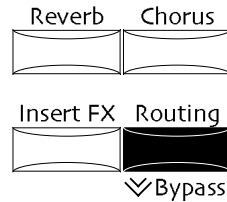
Applying an Effect to a Sound or Track

Assigning a SoundFinder Sound to an Effect

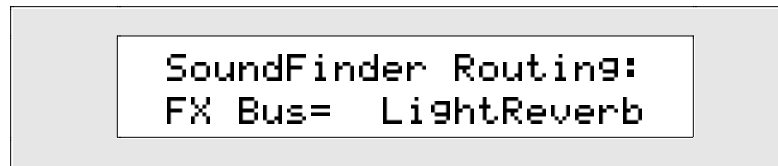
Each sound in SoundFinder may be assigned to any of the ZR's effect busses, and therefore, to any of the ZR's effects (or set up to use no effect at all). If the sound has been previously programmed to use an insert effect, it will install the insert effect when you select the sound.

To Assign a SoundFinder Sound to an Effect

1. Press the Select Sound button.
2. If you haven't already selected the sound you want to work with, use the Sound Type and Sound Name knobs to choose the sound you'd like to send to an effect.
3. Press the Routing button.



Turn the Parameter knob, if necessary, until the display shows “FX Bus” in its lower left-hand corner:



The currently selected FX bus

The sound may be routed to:

- the Insert Effect bus—to apply the current SoundFinder insert effect to the sound
 - the Global Chorus bus—to apply the global chorus to the sound
 - the LightReverb bus—to apply a minimum amount of global reverb to the sound
 - the MediumReverb bus—to apply an average amount of global reverb to the sound
 - the WetReverb bus—to apply the maximum amount of global reverb to the sound
 - the Dry bus—to apply none of the effects to the sound
4. Use the Value knob to select Insert, Chorus, LightReverb, MediumReverb, WetReverb, or Dry.

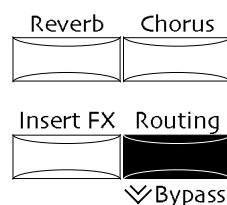
Assigning a Split or Layer Sound to an Effect

You can assign a split and/or layer sound to any ZR effect bus.

When a sound that contains its own insert effect is used as a split or layer sound, its insert effect is ignored. The ZR-76 provides a special feature for such situations that can help ensure that insert-effect-dependent sounds will sound good even when they can't take advantage of their programmed insert effects. Each sound that uses an insert effect is also programmed with an alternate effect bus—called the *Alt. FX Bus*—that constitutes a second-best effect choice (the Alt. FX Bus is described in the effects overview earlier in this chapter). Your ZR-76 can be set to automatically use this bus whenever the need arises. This feature is controlled by the system AutoSelect FXBus parameter. See *Chapter 3's* “Enabling or Disabling Automatic Effect Routing” for details.

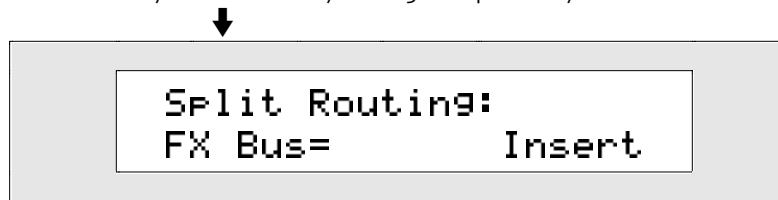
To Assign a Split or Layer Sound to an Effect

1. To assign the SoundFinder split sound to an effect, press the Split button. (If doing so turns the Split LED off, press the Split button again to light it.)
To assign the SoundFinder Layer sound to an effect, press the Layer button. (If doing so turns the Layer LED off, press the Layer button again to light it.)
2. Press the Routing button.



- Turn the Parameter knob, if necessary, until the display shows “FX Bus” in its lower left-hand corner:

This shows if you are currently editing the split or layer sound.



The currently selected FX bus

The split or layer sound may be routed to:

- the Insert Effect bus—to apply the current SoundFinder insert effect to the sound
 - the Global Chorus bus—to apply the global chorus to the sound
 - the LightReverb bus—to apply a minimum amount of global reverb to the sound
 - the MediumReverb bus—to apply an average amount of global reverb to the sound
 - the WetReverb bus—to apply the maximum amount of global reverb to the sound
 - the Dry bus—to apply none of the effects to the sound
- Use the Value knob to select Insert, Chorus, LightReverb, MediumReverb, WetReverb, or Dry.

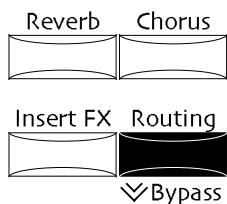
Assigning a 16 Track Recorder Track to an Effect

Each 16 Track Recorder track can be assigned to any of the ZR’s effects.

The ZR-76 provides a special feature that can automate the selection of effects for each track as you select the sounds that they’ll use. See “Enabling or Disabling Automatic Effect Routing” in *Chapter 3*.

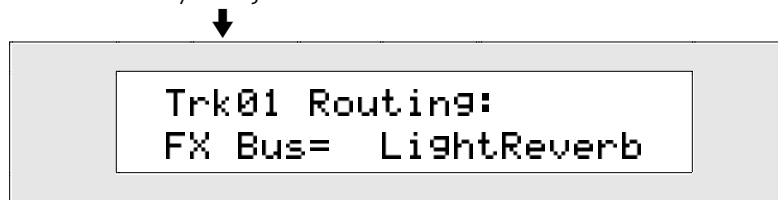
To Assign a 16 Track Recorder Track and Its Sound to an Effect

- Press the track button of the track you’d like to route to an effect.
- Press the Routing button.



Turn the Parameter knob, if necessary, until the display shows::

The track you’ve just selected



The currently selected FX bus

The track may be routed to:

- the Insert Effect bus—to apply the sequence’s insert effect to the track
- the Global Chorus bus—to apply the global chorus to the track
- the LightReverb bus—to apply a minimum amount of global reverb to the track
- the MediumReverb bus—to apply an average amount of global reverb to the track
- the WetReverb bus—to apply the maximum amount of global reverb to the track

- the Dry bus—to apply none of the effects to the track
3. Use the Value knob to select Insert, Chorus, LightReverb, MediumReverb, WetReverb, or Dry.

Using MIDI to Assign a Track to an FX Bus

Tracks that are not designated as the insert control track can be assigned to the chorus bus, one of the reverb busses or the dry bus via MIDI (the insert control track is described below, in “Using the 16 Track Recorder Insert Control Track”). If such a track receives MIDI controller 93 with a value of 1 or higher, it will be assigned to the chorus FX bus. If the track receives MIDI controller 93 with a zero value, it will be assigned to one of the reverb busses or the dry bus, as determined by the subsequent reception of MIDI controller 91 values according to the following scheme. If the track receives a controller 91 value of:

- 0, it will be set to the Dry bus.
- 1-40, it will be set to the LightReverb bus.
- 41-80, it will be set to the MediumReverb bus.
- 81-127, it will be set to the WetReverb bus.

Working with the Insert Effect

Insert effects may be used in SoundFinder or in the 16 Track Recorder.

An insert effect is selected in SoundFinder by:

- selecting a sound that uses an insert effect—if you’d like to find out if a sound uses an insert effect, you can press the Routing button and view the sound’s FX Bus setting. If it’s set to Insert, you can press the Insert FX button to learn precisely which insert effect the sound is using
- manually selecting a new insert effect—this method is described fully in “Manually Selecting an Insert Effect,” later in this chapter

An insert effect is selected for the 16 Track Recorder by:

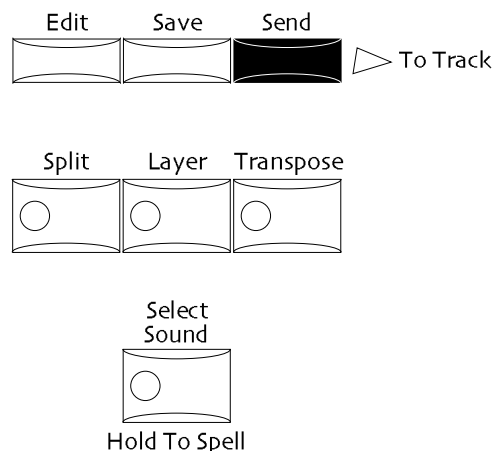
- using SoundFinder or the Idea Pad Send to Track buttons to send a sound that uses an insert effect to a track in the 16 Track Recorder—this method is described in “Sending a Sound with its Insert Effect to the 16 Track Recorder,” later in this chapter
- manually selecting a new insert effect—this method is described fully in “Manually Selecting an Insert Effect,” later in this chapter

Sending a Sound with its Insert Effect to a 16 Track Recorder Track

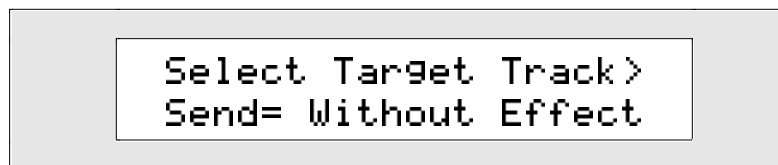
Often, the creative process starts with a sound in SoundFinder that you enjoy playing. Many of these sounds use an insert effect. You can move the sound you’re playing, along with its insert effect, to the 16 Track Recorder.

To Send a Sound and its Effect from SoundFinder to a Track

1. In SoundFinder, select the sound using an insert effect that you’d like to send to the 16 Track Recorder.
2. Press the SoundFinder Send To Track button.



The Select Sound, Yes and No LEDs begin to flash, and the display may show:



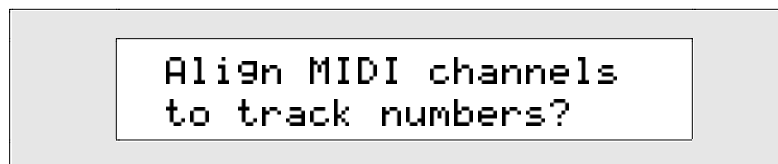
What you see here may be different

If the bottom line shown above does not appear on the display, the selected sound does not use an insert effect. You can set the Send parameter to:

- Without Effect—so that the sound is sent to a track in the 16 Track Recorder without its effect, and the track is routed to the sound's Alt. effect bus
 - With Effect—so that the sound is sent to the 16 Track Recorder, the track to which it's sent becomes the insert control track, and the sound's insert effect becomes the sequence's insert effect
3. Turn the Value knob to select "With Effect."
 4. If you'd like to send the sound somewhere other than the sequence that's currently selected, press the Bank and Sequence A-H buttons to select the desired sequence location (*Chapter 7* describes using the Bank and Sequence buttons).
 5. Press the track button in the 16 Track Recorder to which you'd like to send the sound.

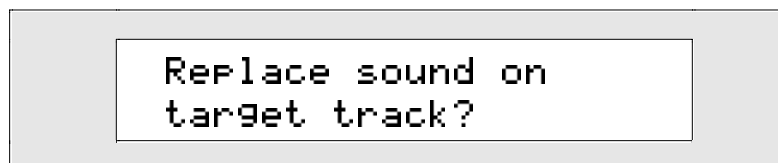
Tip: If you prefer, you can press the Yes button to send the sound to the lowest numbered track that doesn't already have a sound on it.

If you're sending the sound into a Standard MIDI File that hasn't yet had its tracks re-ordered to correspond to their MIDI channels, the display will show:



Chapter 7 describes working with Standard MIDI Files.

6. If you'd like to proceed, press the Yes button. If you'd like cancel the procedure, press No. If you've selected a track to which a sound has already been assigned, the display will show:



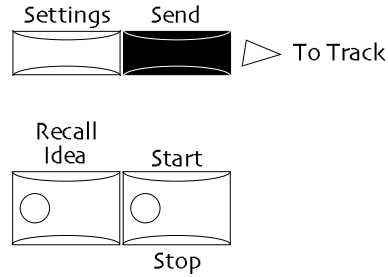
7. If you'd like to proceed, press the Yes button. If you'd like cancel the procedure, press No.

Sending an Idea with its Insert Effect to a 16 Track Recorder Track

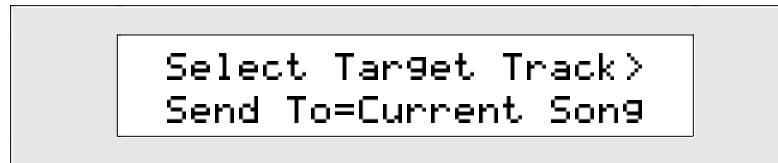
Many of the sounds in SoundFinder lead directly to musical ideas. When you've captured an idea you'd like to explore further in the 16 Track Recorder, you can send the idea over, along with its insert effect, if it uses one.

To Send an Idea with its Effect to a Track as a New Song

1. Select the idea you'd like to send to a track in the 16 Track Recorder by pressing the Recall Idea button and using either the up and down arrow buttons or the Value knob to select it.
2. Press the Idea Pad Send to Track button.



The Recall Idea, Yes and No LEDs begin to flash, and the display may show:



What you see here may be different

You can set the Send To parameter to:

- Current Song—so that the idea is sent to a track in the currently selected sequence
 - New Song—so that your ZR-76 stores the current song in memory, creates a new song, and sends the idea to a track in sequence A in bank 1
3. Turn the Value knob to select New Song.
 4. If you'd like to send the idea to a sequence other than sequence A in bank 1, press the Bank and Sequence A-H buttons to select the desired sequence location (*Chapter 7* describes using the Bank and Sequence buttons).
 5. Select the track to which you'd like to send your idea by pressing its button in the 16 Track Recorder.

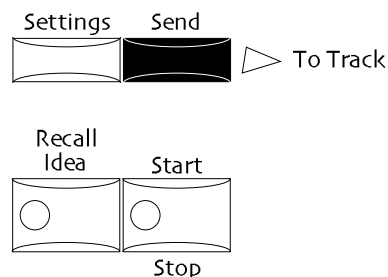
Tip: You can press the Yes button instead of the track button, if you prefer, to send your idea to track 1. Pressing No cancels the procedure.

Note: If the idea uses a Drum Machine rhythm, the rhythm will be sent to the rhythm track in the selected destination sequence.

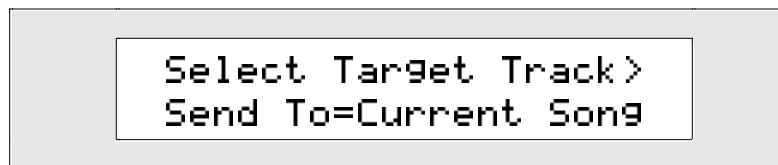
To learn about using the 16 Track Recorder, see *Chapter 7*.

To Send an Idea and its Effect to a Pre-Existing Sequence

1. Select the idea you'd like to send to a track in the 16 Track Recorder by pressing the Recall Idea button and using either the up and down arrow buttons or the Value knob to select it.
2. Press the Idea Pad Send to Track button.



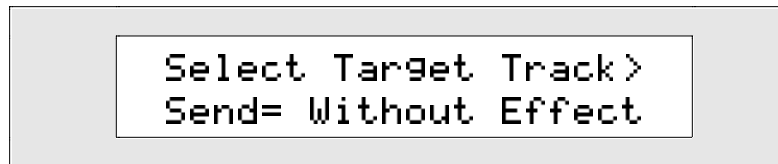
The Recall Idea, Yes and No LEDs begin to flash, and the display may show:



What you see here may be different

You can set the Send To parameter to:

- Current Song—so that the idea is sent to a track in the currently selected sequence
 - New Song—so that your ZR-76 stores the current song in memory, creates a new song, and sends the idea to a track in sequence A in bank 1
3. Turn the Value knob to select Current Song.
 4. If you'd like to send the idea to a sequence other than the one that's currently selected, press the Bank and Sequence A-H buttons to select the desired location (*Chapter 7* describes using the Bank and Sequence buttons).
 5. Turn the Parameter knob clockwise, so that the display shows:



What you see here may be different

If the bottom line shown above does not appear on the display, the selected sound does not use an insert effect.

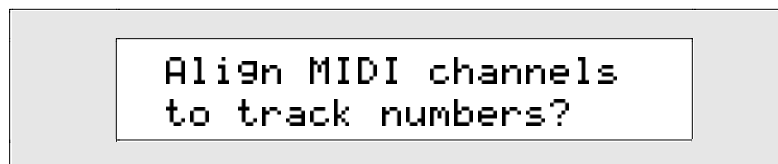
You can set the Send parameter to:

- Without Effect—so that the idea is sent to the 16 Track Recorder, but the insert effect it uses is not sent, and the track is routed to the sound's Alt. effect bus
 - With Effect—so that the idea is sent to a track in the currently selected sequence, the track is designated as the sequence's insert control track, and the insert effect the idea uses becomes the sequence's insert effect
6. Turn the Value knob clockwise to select With Effect.
 7. Select the track to which you'd like to send your idea by pressing its button in the 16 Track Recorder.

Tip: You can press the Yes button instead of the track button, if you prefer, to send your idea to the lowest-numbered empty track. Pressing No cancels the procedure.

Note: If the idea uses a Drum Machine rhythm, the rhythm will be sent to the rhythm track in the selected destination sequence.

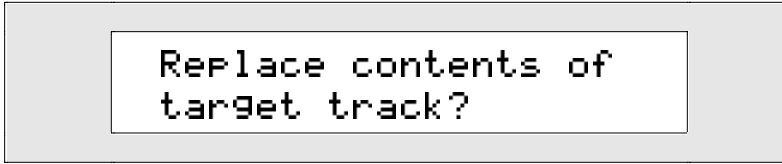
If you're sending the idea into a sequence containing a Standard MIDI File that hasn't yet had its tracks re-ordered to correspond to their MIDI channels, the No/Yes LEDs will flash, and the display will show:



Chapter 7 describes using Standard MIDI Files in the ZR-76.

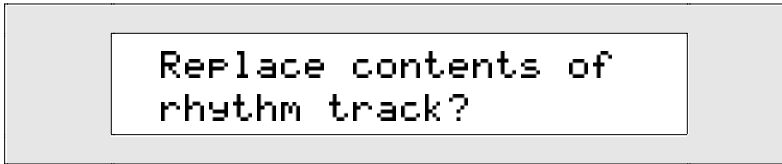
8. Press the Yes button to proceed, or No to cancel the operation.

If you're sending an idea to a track that's already being used, the No/Yes LEDs will flash, and the display will show:



Replace contents of
target track?

- Press the Yes button to replace the contents of the selected track with your idea, or No to cancel. If your idea uses a rhythm, and the selected sequence's rhythm track is already in use—for normal tracks, or a previous rhythm track—the display will show:



Replace contents of
rhythm track?

- Press the Yes button to send the idea's rhythm to track 10, erasing anything currently on the track, or No to cancel the operation.

If you're sending an idea into a sequence where any tracks—or a prior rhythm track—have already been recorded, the No/Yes LEDs will flash, and the display will show:



Seq tempo/meter will
be used! Proceed?

Since tracks already exist in this sequence, it already has a time signature and tempo. If you choose to continue with this operation, the idea you're sending to the 16 Track Recorder will be converted to the sequence's time signature and tempo.

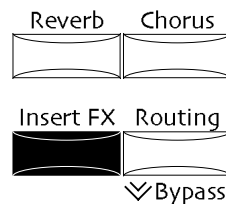
- Press the Yes button to complete the procedure, or No to cancel.

Selecting an Insert Effect

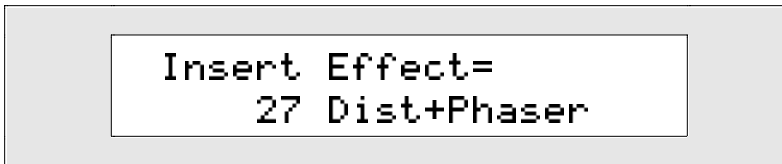
Whether you're in SoundFinder or the 16 Track Recorder, you can manually select an insert effect using the same procedure.

To Manually Select an Insert Effect

- Press the Insert FX button.



- Turn the Parameter knob until the display shows:



Insert Effect=
27 Dist+Phaser



The currently selected insert effect

You can now select any of the insert effects:

01 Parametric EQ	15 Chorus→Rev	29 ResVCF→DDL
02 Hall Reverb	16 Flanger→Rev	30 Dist→VCF→DDL
03 Large Room	17 Phaser→Rev	31 Pitch Detuner
04 Small Room	18 EQ → Reverb	32 Chatter Box
05 Large Plate	19 Spinner→Rev	33 Formant Morph
06 Small Plate	20 DDL→Chorus	34 RotarySpeaker
07 NonLinReverb1	21 DDL→Flanger	35 Tunable Spkr
08 NonLinReverb2	22 DDL→Phaser	36 Guitar Amp
09 Gated Reverb	23 DDL→EQ	37 Dist→DDL→Trem
10 Stereo Chorus	24 Multi-Tap DDL	38 Comp→Dist→DDL
11 8-VoiceChorus	25 Dist→Chorus	39 EQ→Comp→Gate
12 Rev→Chorus	26 Dist→Flanger	40 EQ→Chorus→DDL
13 Rev→Flanger	27 Dist→Phaser	
14 Rev→Phaser	28 Dist→Auto Wah	

- Use the Value knob to select the insert effect you'd like to use. Allow a moment for your ZR-76 to download the new insert effect you've chosen.

Note: If the insert effect is bypassed, you will not be able to hear it. See “Bypassing the ZR-76 Effects” later in this chapter to learn about bypassing and un-bypassing effects.

General Technique for Editing an Insert Effect

Each insert effect offers a wealth of programming options. All of the insert effect parameters are edited using the same technique. When you're done editing the insert effect in SoundFinder, you'll need to save your edits with the sound or preset with which you're working (see “Saving SoundFinder FX/Mixdown Settings” earlier in this chapter). If you're working in the 16 Track Recorder, your edits automatically become part of the currently selected sequence.

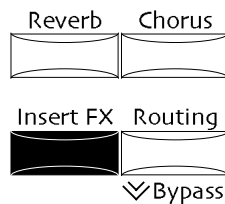
Tip: Since SoundFinder and each sequence in the 16 Track Recorder have a single insert effect at a time, remember that your edited insert effect may be shared by the split and layer sounds in SoundFinder, and any of the tracks in the 16 Track Recorder.

Tip: you can also edit insert effects using the supplied Unisyn editing software.

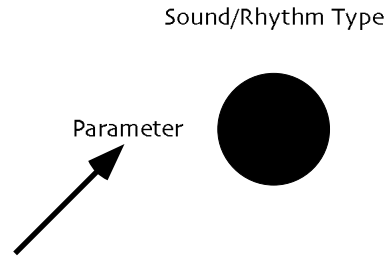
In order for a sound or track to use the insert effect, it must be routed to the insert FX bus (see “To Assign a SoundFinder Sound to an Effect,” “To Assign a Split or Layer Sound to an Effect” or “To Assign a 16 Track Recorder Track and Its Sound to an Effect” earlier in this chapter for details).

To Edit the Currently Selected Insert Effect

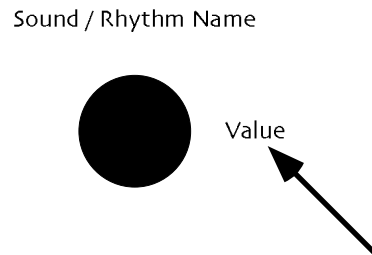
- Press the Insert FX button.



- Use the Parameter knob to locate the desired parameter.



3. Use the Value knob to edit the parameter's value.



For a complete descriptions of the many insert effect parameters, see *Chapter 11*. Certain parameters are common to all insert effects, and are described later in this chapter.

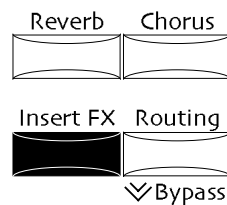
Note: If the insert effect is bypassed, you will not be able to hear it. See “Bypassing the ZR-76 Effects” later in this chapter to learn about bypassing and un-bypassing effects.

Selecting an Insert Effect Preset

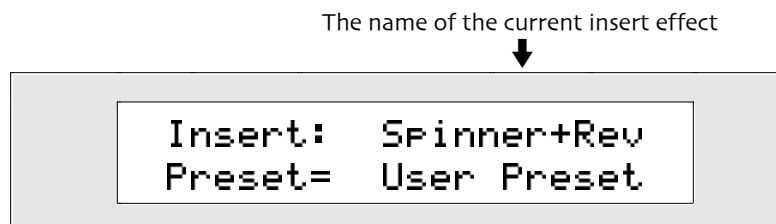
Each insert effect contains a number of presets. The insert effects are fully editable—these presets serve as helpful starting points. When you manually select a new insert effect, the effect's first preset is installed. The presets can also be manually chosen with the insert preset parameter.

To Select an Insert Effect Preset

1. Press the Insert FX button.



2. Turn the Parameter knob until the display shows:



Each insert effect has a number of presets that you can use or employ as starting points for your own insert effect editing.

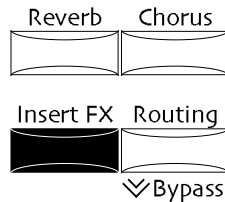
3. Turn the Value knob or use the up/down arrow buttons to select an insert effect preset you'd like to use.

Setting the Insert FX Bus Mix

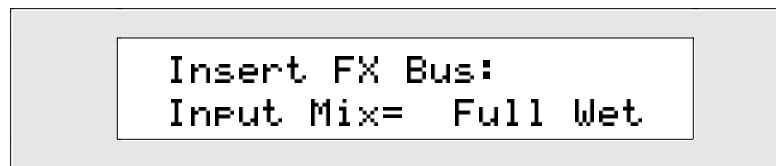
When a sound or track is assigned to the insert FX bus, it's first routed to a wet/dry mix control. The wet/dry control determines the relative balance between the sound or track as it is before going through the insert effect (dry), and as it is after the going through the insert effect (wet). The Insert FX Bus Input Mix parameter provides the wet/dry balance control.

To Set the Insert FX Bus Input Mix

1. Press the Insert FX button.



2. Turn the Parameter knob until the display shows:



The current value for this parameter

The insert bus wet/dry mix can be set anywhere from Full Dry (no Insert Effect) to Full Wet (all Insert Effect).

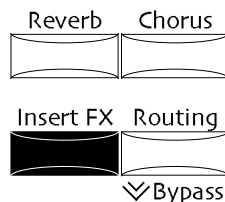
3. Turn the Value knob or use the up/down arrow buttons to set the Insert Effect FX Bus Input Mix as you prefer.

Adding Global Reverb to the Insert Effect

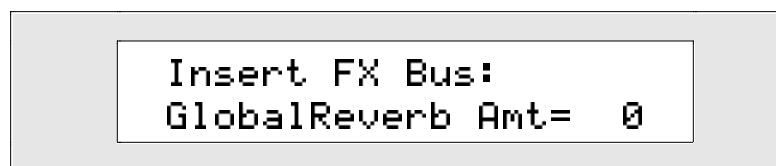
It may be desirable to add some reverb to the insert effect. The ZR-76 allows you to do this by sending some or all of the insert wet/dry input mix (described above) to the global reverb. This amount is determined by the Insert FX Bus Global Reverb Amount parameter.

To Add Global Reverb to the Insert Effect

1. Press the Insert FX button.



2. Turn the Parameter knob until the display shows:



The current value for this parameter

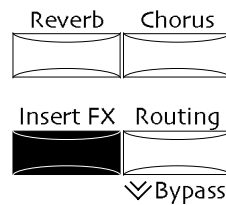
You can send any amount of the insert bus wet/dry mix to the global reverb, from 0 to 127.

3. Turn the Value knob or use the up/down buttons to set the Insert FX Bus GlobalReverb Amount.

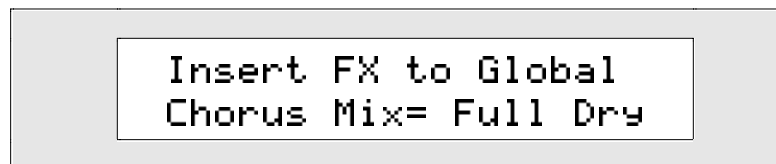
Adding Global Chorus to the Insert Effect

After a sound or track has been processed by the insert effect, it can be sent into the global chorus, via a wet/dry mix control. The wet/dry control determines the relative balance between the sound or track as it is after going through the insert effect—referred to, in the context of this mix, as “dry”—and as it is after going through the global chorus (wet). The Insert FX to Global Chorus Mix parameter provides the wet/dry balance control.

1. Press the Insert FX button.



2. Turn the Parameter knob until the display shows:



You can set the insert bus wet/dry mix anywhere from full dry (the insert effect with no chorus) to full wet (the insert effect completely chorused).

3. Turn the Value knob or use the up/down arrow buttons to set the Insert FX to Global Chorus Mix.

Modulating the Insert Effect in Real Time

All of the ZR-76 insert effects allow real-time control of their parameters. When you're using a sound in SoundFinder, any controller you employ can be used to change the characteristics of the insert effect. When you're working in the 16 Track Recorder, any controller used on the track designated as the insert control track can modulate the insert effect in real time (see “Using the 16 Track Recorder Insert Control Track” later in this section to learn how to designate an insert control track).

To set up an insert effect for real-time control, six things must be determined:

- Mod Src—for “modulation source,” this parameter allows you to select the controller you'd like to use to change an insert effect's parameter in real time
- Mod Src Min—for “modulation source minimum,” this parameter sets a threshold below which values generated by the Mod Src are ignored
- Mod Src Max—for “modulation source maximum,” this parameter sets a threshold above which values generated by from the Mod Src are ignored
- Dest—for “modulation destination,” this parameter chooses the insert effect parameter you'd like to control in real time
- Dest Min—for “modulation destination minimum,” this parameter sets the lowest value to which the destination parameter can be set by the real-time modulator
- Dest Max—for “modulation destination maximum,” this parameter sets the highest value to which the destination parameter can be set by the real-time modulator

Choosing a Real-Time Insert Effect Modulator

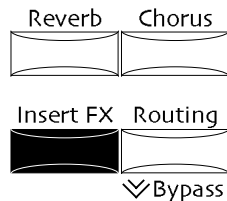
The ZR-76 allows you to use the following real-time effect modulators:

- Off—no effect modulation
- FullModAmt—sets the Mod Dest to its maximum amount
- Velocity—the Mod Dest responds to the quickness, or hardness, of keystrikes
- Vel+Pressure—the Mod Dest responds to the quickness, or hardness, of keystrikes combined with the

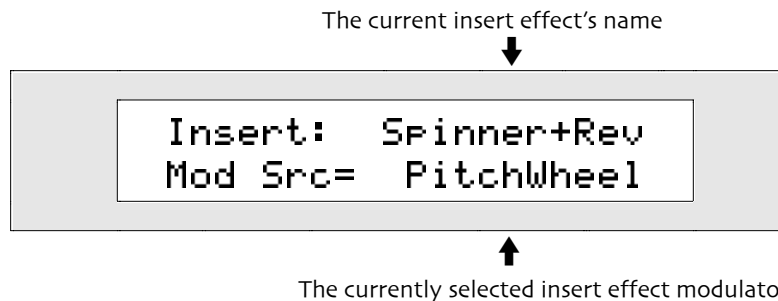
- force by which keys, once struck, are pressed down into the keyboard
- +PosMIDIkey#—the Mod Dest uses the most recent key’s note number as its value setting, from 0 for the lowest note of the MIDI pitch range to 127 for the highest note.
- NegMIDIkey#—the Mod Dest uses the most recent key’s note number as its value setting, from 127 for the lowest note of the MIDI pitch range to 0 for the highest note.
- Pressure—the Mod Dest responds to the force by which keys, once struck, are pressed down into the keyboard
- PitchWheel—the Mod Dest responds to the position of a pitch bend wheel, with a median modulation value produced by the wheel at rest in the middle, and with the wheel all the way forward producing the greatest modulation
- ModWheel—the Mod Dest responds to the up/down position of a modulation wheel, with the wheel all the way forward producing the greatest modulation
- Wheel+Press—the Mod Dest responds to the up/down position of a modulation wheel, combined with the force by which keys, once struck, are pressed down into the keyboard
- FootPedal—the Mod Dest responds to the up/down position of a foot pedal, with the pedal all the way forward producing the greatest modulation
- Sustain—a sustain pedal, most useful as an effects modulator when it’s used for a parameter that can be toggled on and off
- Sostenuto—a sostenuto pedal, most useful as an effects modulator when it’s used for a parameter that can be toggled on and off
- SysCTRL1—System Controller 1, a special real-time modulator that you can add to the ZR’s designated real-time modulators (see *Chapter 3* for further information)
- SysCTRL2—System Controller 2, a special real-time modulator that you can add to the ZR’s designated real-time modulators (see *Chapter 3* for further information)
- SysCTRL3—System Controller 3, a special real-time modulator that you can add to the ZR’s designated real-time modulators (see *Chapter 3* for further information)
- SysCTRL4—System Controller 4, a special real-time modulator that you can add to the ZR’s designated real-time modulators (see *Chapter 3* for further information)

To Assign a Real-Time Insert Effect Modulator

1. Press the Insert FX button.



2. Turn the Parameter knob until the display shows:



The Mod Src parameter can be set to any of the modulation sources listed above this “How-To.”

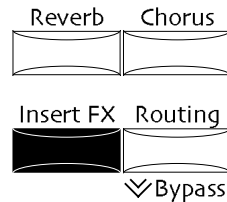
3. Turn the Value knob or use the up/down arrow buttons to select a Mod Src you’d like to use.

Setting the Real-Time Insert Effect Modulation Window

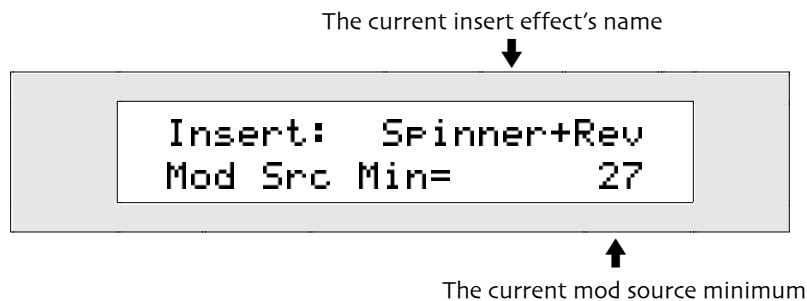
The insert effect can be set to ignore real-time modulation values that don't fall within a pre-determined range. The Mod Src Min and Max parameters allow you to set the low and high limits of that window. If the insert effect receives a modulation value higher than the Mod Src Max, it will respond if it had received the highest value within the determined range.

To Set the Insert Effect's Real-Time Modulation Window

1. Press the Insert FX button.

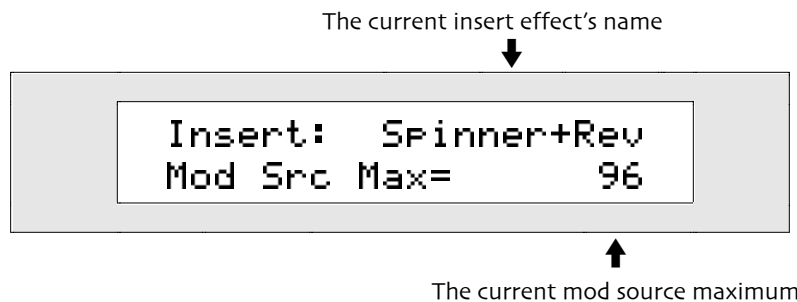


2. Turn the Parameter knob until the display shows:



The Mod Src Min parameter determines the modulation value below which the insert effect will ignore the modulation source. It can be set anywhere below the Mod Src Max, from 0 to 127.

3. Turn the Value knob or press the up/down arrow buttons to set the Mod Src Min parameter to the desired value.
4. Turn the Parameter knob until the display shows:



The Mod Src Max parameter determines the modulation value above which the Insert Effect will ignore the modulation source. It can be set anywhere above the Mod Src Min, from 0 to 127.

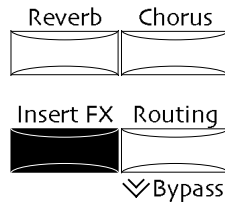
5. Turn the Value knob or press the up/down arrow buttons to set the Mod Src Max parameter to the desired value.

Setting the Insert Effect Parameter to be Modulated in Real Time

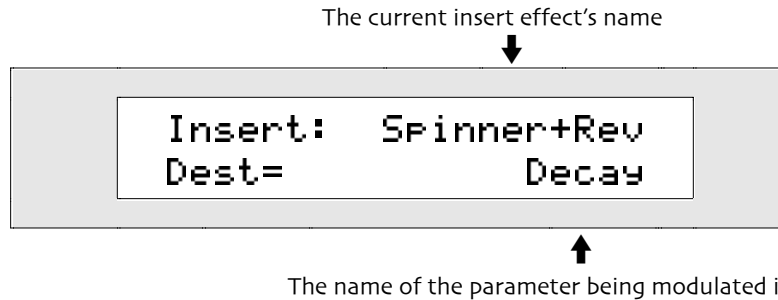
The ZR-76 allows you to modulate any of the current insert effect's parameters, with the exception of any LFO Rate and DDL Time parameters that are set to a division of the system clock tempo.

To Select an Insert Effect Parameter for Real-Time Modulation

1. Press the Insert FX button.



2. Turn the Parameter knob until the display shows:



Each insert effect has its own unique parameters, any of which can be selected for real-time modulation with the Dest parameter.

3. Turn the Value knob or press the up/down arrow buttons to select the insert effect parameter you want to modulate in real time.

Setting the Allowable Amount of Real-Time Modulation

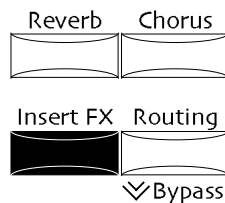
It's useful to be able to limit the amount of change a real-time modulator can impose on a parameter. You can use the Dest Min and Dest Max parameters to pre-determine the low and high limits to which the Dest parameter can be set by the Mod Src. The minimum modulation amount received from the Mod Src will never set the Dest parameter lower than the value set with the Dest Min parameter, nor will the maximum modulation received ever set it higher than the value established by Dest Max.

Real-time modulation can only set insert effect LFO Rates and DDL Times to their unsynchronized range of values.

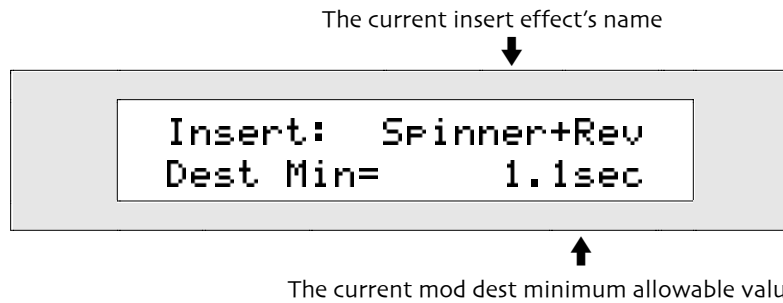
Note: If the Dest Min is set above the Dest Max, the modulation will be inverted, with higher modulation amounts lowering the parameter's values, and vice versa.

To Set the Allowable Insert Effect Modulation Amount

1. Press the Insert FX button.

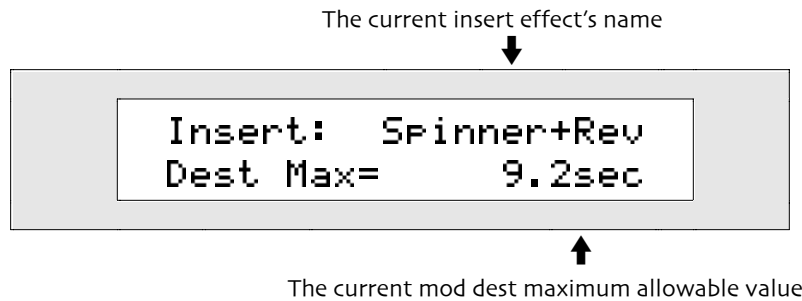


- Turn the Parameter knob until the display shows:



The Dest Min parameter determines the lowest value to which the Dest parameter can be set by the modulation source. It can be set anywhere from 0 to 127.

- Turn the Value knob or use the up/down arrow buttons to set the Dest Min parameter to the desired value.
- Turn the Parameter knob until the display shows:



The Dest Max parameter determines the highest value to which the Dest parameter can be set by the modulation source. It can be set anywhere from 0 to 127.

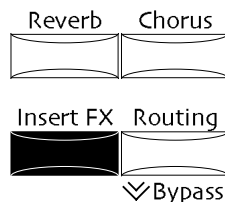
- Turn the Value knob or use the up/down arrow buttons to set the Dest Max parameter to the desired value.

Using the 16 Track Recorder Insert Control Track

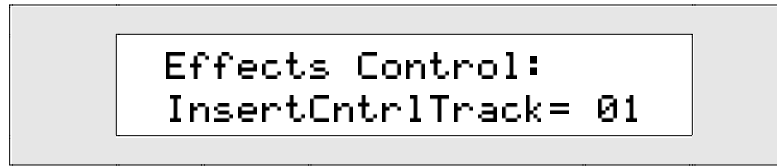
In each sequence, one track can be designated as the insert control track. The insert control track can be used for changing the characteristics of the sequence's insert effect in real time through the use of any controllers, including the ZR's pitch bend and mod wheels, foot controls, keyboard velocity, and so on. When the insert effect is programmed to respond to such real-time control, you can record the appropriate controller changes on the insert control track, thus automating manipulation of the insert effect. MIDI messages received on the insert control track's MIDI channel can be also used as a means of controlling the insert effect.

To Designate a Sequence's Insert Control Track

- Press one of the track buttons to let your ZR-76 know that you want to work with the 16 Track Recorder mixdown strip.
- Press the Routing button.



- If necessary, turn the Parameter knob until the display shows:



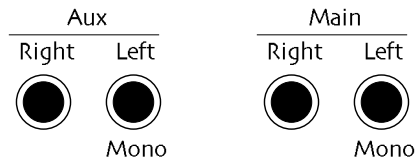
The currently selected insert control track

The InsertCntrlTrack parameter can be set to:

- Off—no track will cause the real-time modulation of the sequence’s insert effect
 - 01-16—the selected track will provide real-time control of the sequence’s insert effect
- Use the Value knob or the up/down arrow buttons to set the InsertCntrlTrack parameter to the desired value.

Determining Which Rear-Panel Outputs the Insert Effect Will Use

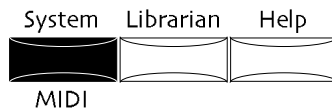
The insert effect can be routed to the ZR-76 rear-panel Main or Aux stereo output jacks.



The Aux jacks provide a way to isolate insert effect sounds or tracks to their own outputs.

To Set the Insert Effect’s Output Routing

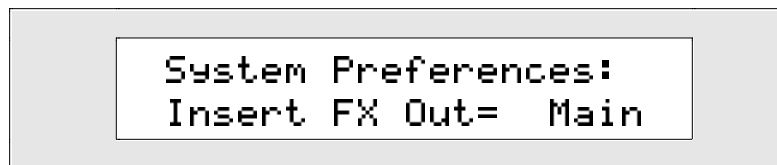
- Press the System button.



- Turn the Parameter knob until the display shows:



- Press the Yes button.
- Turn the Parameter knob until the display shows:



The insert effect’s currently selected rear-panel output jacks

The output of the insert effect can be routed to:

- Main—the output of the insert effect will be routed to the ZR’s stereo Main Outs
 - Aux—the output of the insert effect will be routed to the ZR’s stereo Aux Outs
- Use the Value knob or the up/down arrow buttons to set the routing of the insert effect’s output.

Working with the Global Chorus

General Technique for Editing the Global Chorus

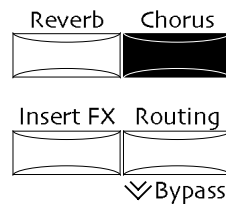
The ZR-76 global chorus features a host of parameters that allow you to adjust the global chorus to your taste. All of the global chorus parameters are edited using the same technique.

Any sound in SoundFinder or track in a sequence may utilize the currently active song's global chorus. Your edited chorus will be used by any sounds in SoundFinder or the 16 Track Recorder that are routed to the chorus effect bus.

In order for a sound or track to use the global chorus, it must be routed to the chorus FX bus (see “To Assign a SoundFinder Sound to an Effect,” “To Assign a Split or Layer Sound to an Effect” or “To Assign a 16 Track Recorder Track and Its Sound to an Effect” earlier in this chapter for details).

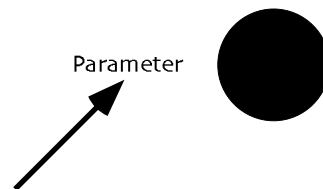
To Edit the Global Chorus

1. Press the Chorus button.



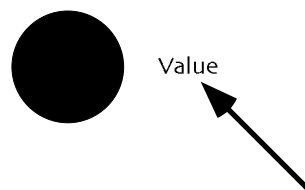
2. Use the Parameter knob to locate the desired parameter.

Sound/Rhythm Type



3. Use the Value knob to edit the parameter's value.

Sound / Rhythm Name



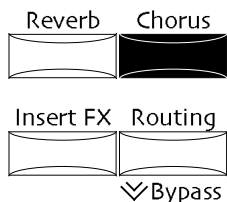
Note: If the global chorus is bypassed, you will not be able to hear it. See “Bypassing the ZR-76 Effects” later in this chapter to learn about bypassing and un-bypassing effects.

Selecting a Global Chorus Preset

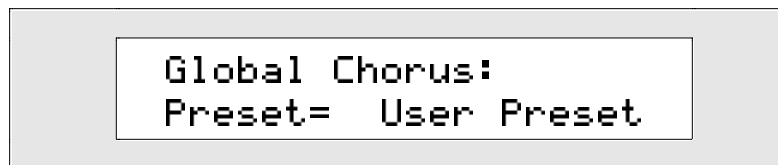
The ZR-76 provides a selection of global chorus presets. The chorus is quite editable—these presets can serve as starting points. The presets are chosen with the Global Chorus Preset parameter.

To Select a Global Chorus Preset

1. Press the Chorus button..



2. Turn the Parameter knob until the display shows:



The currently selected global chorus preset

When you first dial to the global chorus preset display, the user preset is selected—it contains the global chorus parameter settings that are in place in the current song.

The global chorus presets are:

- ZR Chorus
- ZR Classic
- Fast & Wide
- Halleluiah
- Padmaker
- Slow & Deep
- Super Slow
- Thick
- Vintage
- Wide
- Slow Rotary
- Fast Rotary

3. Turn the Value knob or press the up/down arrow buttons to select the desired global chorus preset you'd like to use.

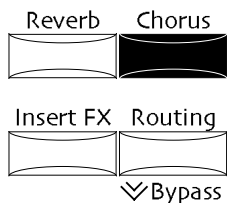
Allow a moment for your ZR-76 to download the new global chorus preset you've chosen.

Setting the Chorus Bus Input Mix

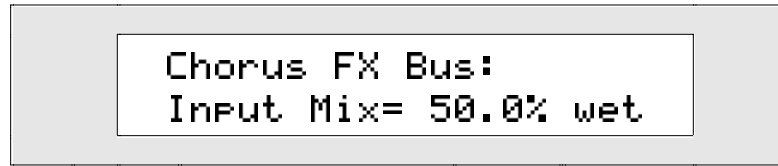
When a sound or track is assigned to the chorus bus, it's routed to a wet/dry mix control. The wet/dry control determines the relative balance between the sound or track as it is before going through the global chorus, and as it is after the going through the chorus. The Chorus FX Bus Input Mix parameter provides the wet/dry balance control.

To Set the Chorus FX Bus Input Mix

1. Press the Chorus button.



- Turn the Parameter knob until the display shows:



The currently selected value for this parameter

You can set the chorus FX bus wet/dry mix anywhere from Full Dry (no Chorus) to Full Wet (all Chorus).

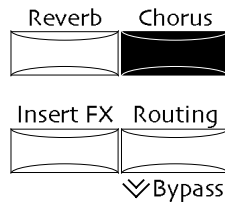
- Turn the Value knob or use the up/down arrow buttons to set the chorus FX bus input mix as you prefer.

Adding Reverb to the Global Chorus

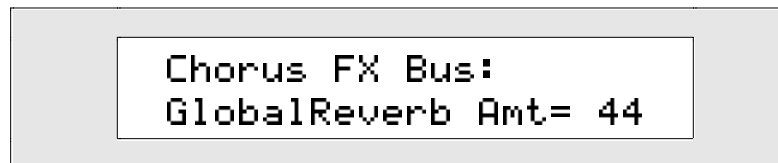
It may be desirable to add some reverb to a chorused sound or track. The ZR-76 allows you to do this by sending some or all of the chorus wet/dry mix (described above) to the global chorus. This amount is determined by the Chorus FX Bus Global Reverb Amount parameter.

To Add Global Reverb to the Global Chorus

- Press the Chorus button.



- Turn the Parameter knob until the display shows:



The currently selected value for this parameter

You can send any amount of the chorus bus wet/dry mix to the global reverb from 0 to 127.

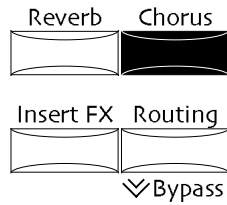
- Turn the Value knob or use the up/down arrow buttons to set the Chorus FX Bus Global Reverb Amt as you prefer.

Adjusting the Global Chorus LFO Rate

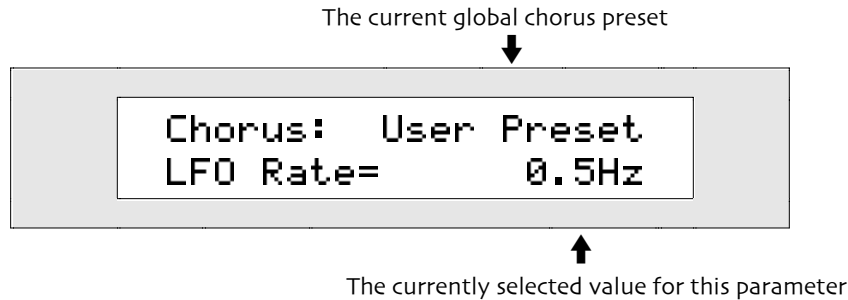
The global chorus creates two digital copies of sound coming into the chorus and then plays back the copies in stereo, slightly delayed, over the original unaffected sound (the copies generally play back at slightly different times, for a “fattening” effect). When the amount of time by which the copies are delayed is changed, the characteristic sweep of the chorus is heard. The Chorus LFO Rate sets how long it will take for the delay time to change from its shortest value to its longest value.

To Adjust the Global Chorus LFO Rate

1. Press the Chorus button.



2. Turn the Parameter knob until the display shows:



The LFO Rate parameter can be set anywhere from 0.0Hz to 20.0Hz.

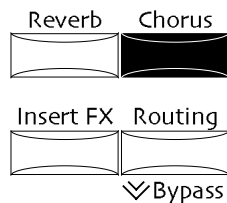
3. Turn the Value knob or use the up/down arrow buttons to set the chorus LFO rate as you prefer.

Adjusting the Global Chorus Depth

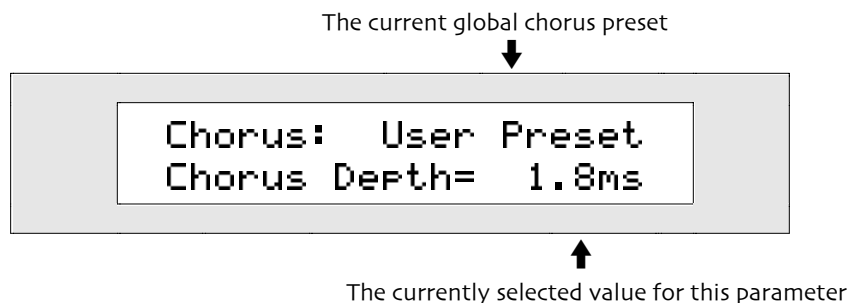
The global chorus creates two digital copies of sound coming into the chorus and then plays back the copies in stereo, slightly delayed, over the original unaffected sound (the copies generally play back at slightly different times, for a “fattening” effect). When the amount of time by which the copies are delayed is changed, the characteristic sweep of the chorus is heard. The Chorus Depth parameter determines how much the original delay time will be increased and decreased.

To Adjust the Global Chorus Depth

1. Press the Chorus button.



2. Turn the Parameter knob until the display shows:



The Chorus Depth parameter can be set anywhere from 0.0ms (milliseconds) to 25.0ms.

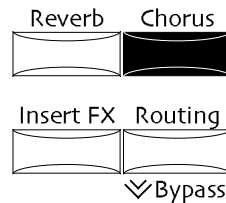
3. Turn the Value knob or use the up/down arrow buttons to set the chorus depth as you prefer.

Adjusting the Global Chorus Center

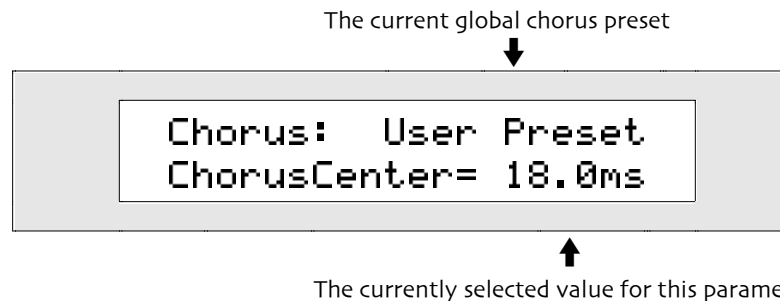
The global chorus creates two digital copies of sound coming into the chorus and then plays back the copies in stereo, slightly delayed, over the original unaffected sound (the copies generally play back at slightly different times, for a “fattening” effect). When the amount of time by which the copies are delayed is changed, the characteristic weep of the chorus is heard. The Chorus Center parameter sets the basic amount of delay time between the original unaffected sound and the copies.

To Adjust the Global Chorus Center

1. Press the Chorus button.



2. Turn the Parameter knob until the display shows:



The Chorus Center parameter can be set anywhere from 0.0ms (milliseconds) to 25.0ms.

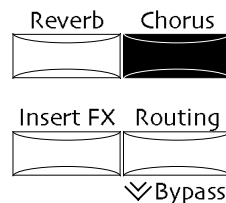
3. Turn the Value knob or use the up/down arrow buttons to set the chorus center as you prefer.

Adjusting the Global Chorus Spread

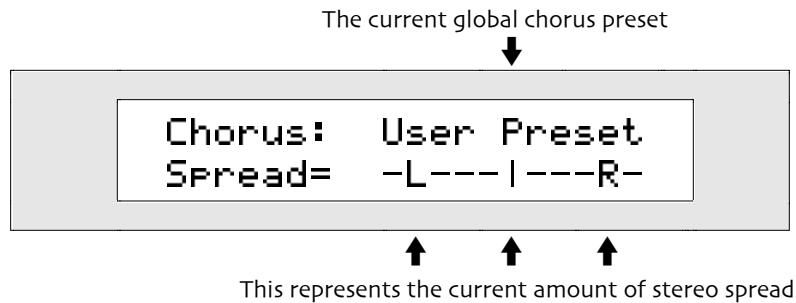
The global chorus is a stereo chorus. The Chorus Spread parameter allows you to decide just how pronounced you’d like the stereo effect to be.

To Adjust the Global Chorus Spread

1. Press the Chorus button.



2. Turn the Parameter knob until the display shows:



The chorus spread parameter is represented pictorially in the ZR-76. The line you see in the display represents the ZR's stereo field. Moving the “L” and the “R” further from the middle increases the amount of stereo separation in the global chorus, and moving them closer to the middle decreases it. When there is an “M” in the middle, there will be no stereo separation in the global chorus (“M” stands for “mono”).

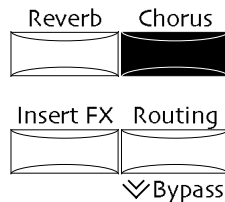
3. Turn the Value knob or use the up/down arrow buttons to set the chorus spread as you prefer.

Adjusting the Global Chorus Phase

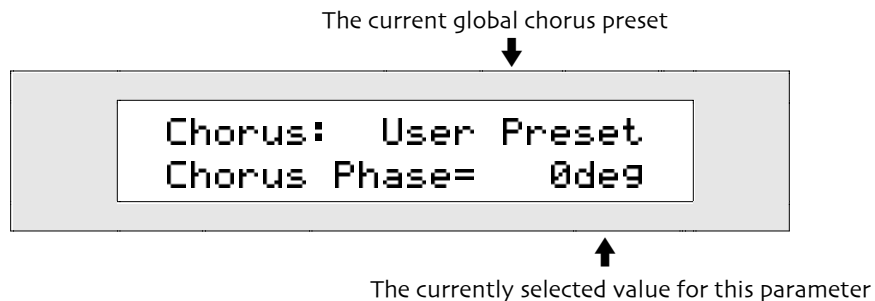
The global chorus creates two digital copies of sound coming into the chorus and then plays back the copies in stereo, slightly delayed, over the original unaffected sound (the copies generally play back at slightly different times, for a “fattening” effect). When the amount of time by which the copies are delayed is changed, the characteristic sweep of the chorus is heard. The Chorus Phase parameter determines whether the two copies’ delay times will change together, or 180 degrees out of sync with each other—as one copy’s delay time lengthens, the other’s will shorten, and vice-versa.

To Adjust the Global Chorus Phase

1. Press the Chorus button.



2. Turn the Parameter knob until the display shows:

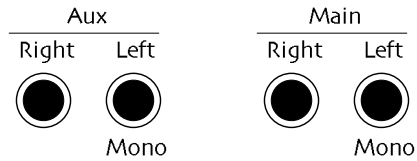


The Chorus Phase parameter can be set to:

- 0deg—the delay times of the left and right copies of the original unaffected sound will change together
 - -180deg—the delay times of the left and right copies of the original unaffected sound will change 180 degrees out of sync with each other
3. Turn the Value knob or use the up/down arrow buttons to set the Chorus Phase as you prefer.

Determining Which Rear-Panel Outputs the Global Chorus Will Use

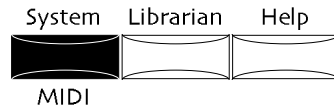
The global chorus can be routed to the ZR-76 rear-panel Main or Aux stereo output jacks.



The Aux jacks provide a way to isolate global chorus sounds or tracks to their own outputs.

To Set the Global Chorus's Output Routing

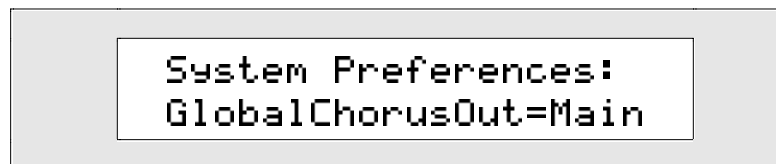
1. Press the System button.



2. Turn the Parameter knob until the display shows:



3. Press the Yes button.
4. Turn the Parameter knob until the display shows:



The Global Chorus's currently selected rear-panel output jacks

The output of the global chorus can be routed to:

- Main—the output of the global chorus will be routed to the ZR's stereo Main Outs
 - Aux—the output of the global chorus will be routed to the ZR's stereo Aux Outs
5. Use the Value knob or the up/down arrow buttons to route the global chorus's output to the ZR's rear-panel Main Outs or the Aux Outs.

Working with the Global Reverb

General Technique for Editing the Global Reverb

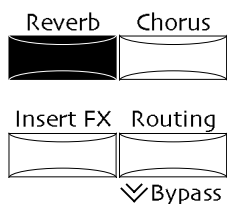
The ZR-76 global reverb offers a suite of parameters that allow you to customize the global reverb. All of the global reverb parameters are edited using the same technique.

Any sound in SoundFinder or track in a sequence may utilize the currently active song's global reverb. Your edited reverb will be used by any sounds in SoundFinder or the 16 Track Recorder that are routed to the reverb effect busses.

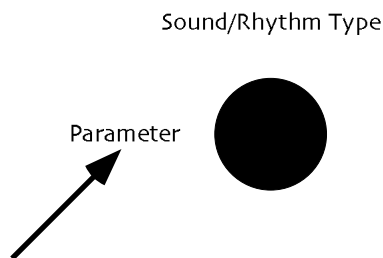
In order for a sound or track to use the global reverb, it must be routed to one of the three reverb FX busses (see “To Assign a SoundFinder Sound to an Effect,” “To Assign a Split or Layer Sound to an Effect” or “To Assign a 16 Track Recorder Track and Its Sound to an Effect” earlier in this chapter for details).

To Edit the Global Reverb

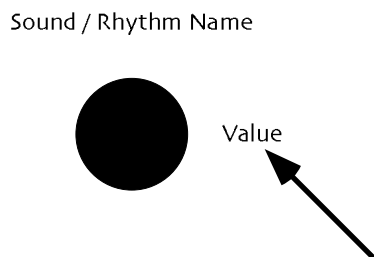
1. Press the Reverb button.



2. Use the Parameter knob to locate the desired parameter.



3. Use the Value knob to edit the parameter’s value.



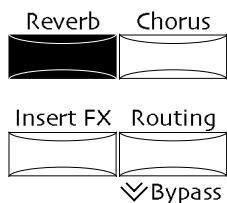
Note: If the global reverb is bypassed, you will not be able to hear it. See “Bypassing the ZR-76 Effects” later in this chapter to learn about bypassing and un-bypassing effects.

Selecting a Global Reverb Preset

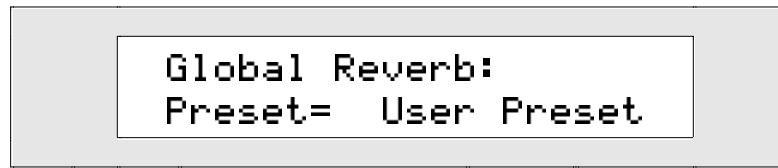
The ZR-76 provides a selection of global reverb presets. The reverb can be fully edited—these presets can serve as starting points. The presets are chosen with the Global Reverb Preset parameter.

To Select a Global Reverb Preset

1. Press the Reverb button.



- Turn the Parameter knob until the display shows:



The currently selected global reverb preset

When you first dial to the global reverb preset display, the user preset is selected—it contains the global reverb parameter settings that are in place in the current song.

The global reverb presets are:

- Smooth Plate
 - Large Hall
 - Small Hall
 - Big Room
 - Small Room
 - Reflections
 - Bright
 - Huge Place
- Turn the Value knob or press the up/down arrow buttons to select the global reverb preset you'd like to use.

Allow a moment for your ZR-76 to download the new global reverb preset you've chosen.

Setting Reverb Amounts for the Light, Medium and Wet Reverb Busses

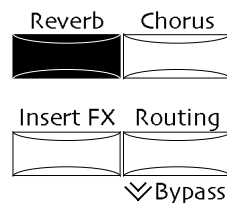
There are always three different amounts of global reverb available. While the overall volume of the global reverb effect is determined by the setting of the Reverb Return Level parameter (described later in this chapter) the ZR-76 provides three separate and customizable busses for sending sounds and tracks into the current song's global reverb effect:

- the LightReverb FX Bus—for sending minimal amounts of dry sound into the global reverb
- the MediumReverb FX Bus—for sending average amounts of dry sound into the global reverb
- the WetReverb FX Bus—for sending larger amounts of dry sound into the global reverb

The LightReverb, MediumReverb and WetReverb busses can each be set anywhere within their general ranges.

To Set the LightReverb Amount

- Press the Reverb button.



- Turn the Parameter knob until the display shows:



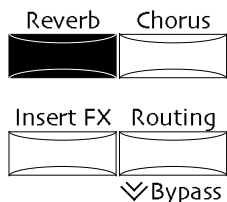
The currently selected value for this parameter

The LightReverb Global Reverb amount can be set anywhere from 0 to 63.

- Turn the Value knob or press the up/down arrow buttons to set the LightReverb Global Reverb amount to the desired value.

To Set the MediumReverb Amount

1. Press the Reverb button.



2. Turn the Parameter knob until the display shows:



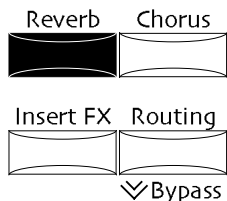
The currently selected value for this parameter

The MediumReverb Global Reverb amount can be set anywhere from 32 to 95.

3. Turn the Value knob or press the up/down arrow buttons to set the MediumReverb Global Reverb amount to the desired value.

To Set the WetReverb Amount

1. Press the Reverb button.



2. Turn the Parameter knob until the display shows:



The currently selected value for this parameter

The WetReverb Global Reverb amount can be set anywhere from 64 to 127.

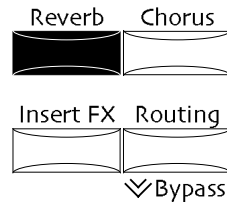
3. Turn the Value knob or press the up/down arrow buttons to set the WetReverb Global Reverb amount to the desired value.

Setting the Global Reverb's Overall Volume

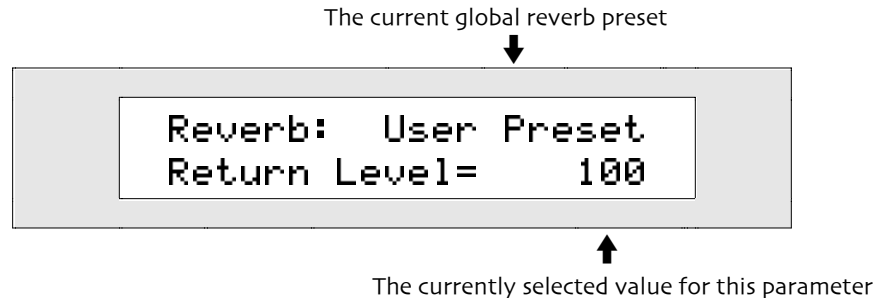
The ZR-76 offers three busses that allow a sound or track to be treated with varying degrees of global reverb. (See “Setting the Reverb Amounts for the Light, Medium and Wet Reverb Busses” above for details.) The overall volume of the global reverb is determined by the setting of the Reverb Return Level parameter. Though the three different amounts of dry sound sent into the global reverb by the three busses don't change when this parameter is adjusted, the volume of the global reverb itself does. This has the effect of raising and lowering the amount of reverb for all three busses at once.

To Set the Global Reverb's Overall Volume

1. Press the Reverb button.



2. Turn the Parameter knob until the display shows:



You can set the global reverb return level to any amount from 0 to 127.

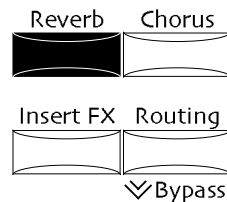
3. Turn the Value knob or use the up/down arrow buttons to set the global reverb return level.

Setting the Global Reverb's Decay Time

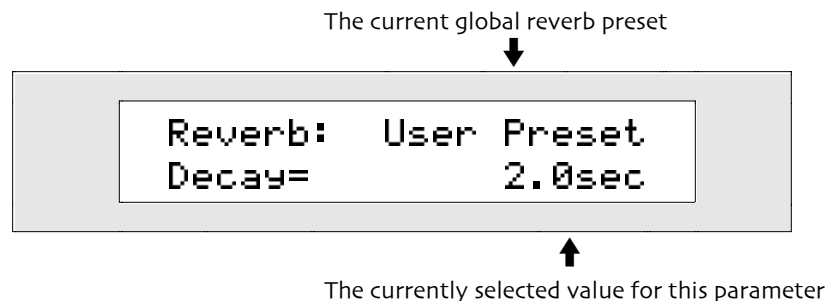
Reverb has the effect of making the sounds it processes seem to exist in a real (or sometimes, surreal) acoustic space. The size of that imaginary space is determined primarily by how long it takes for the reverb to fade away, or decay. The Reverb Decay parameter allows you to adjust the size of the imaginary space created by the global reverb by setting the decay time in fractions of seconds.

To Set the Global Reverb's Decay Time

1. Press the Reverb button.



2. Turn the Parameter knob until the display shows:



You can set the global reverb decay time to any amount from 0.0sec (seconds) to 10.0sec.

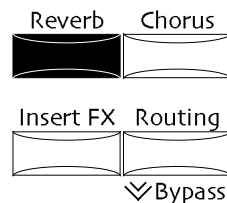
3. Turn the Value knob or use the up/down arrow buttons to set the global reverb decay time to the desired length.

Setting the Global Reverb's High-Frequency Damping

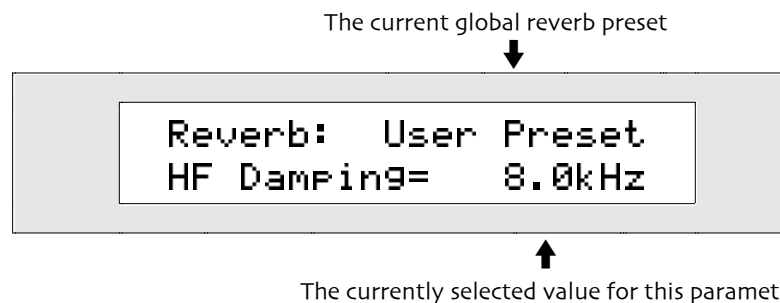
As the global reverb decays, HF (for “high frequency”) damping progressively decreases the volume of frequencies that occur above the value set with the Reverb HF Damping parameter. By setting the damping to a higher frequency, the global reverb appears more expansive, since its high-frequency content doesn't drop off before the reverb fades away. Lower values suggest a somehow more contained space as the decay becomes muffled as it rings off.

To Set the Global Reverb's HF Damping

1. Press the Reverb button.



2. Turn the Parameter knob until the display shows:



You can set the global reverb high-frequency damping to any amount from 100Hz to 21.2kHz

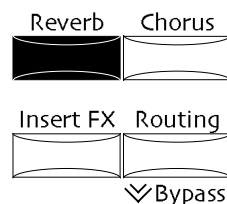
3. Use the Value knob or the up/down arrow buttons to set the reverb's HF Damping frequency.

Setting the Global Reverb's Brightness

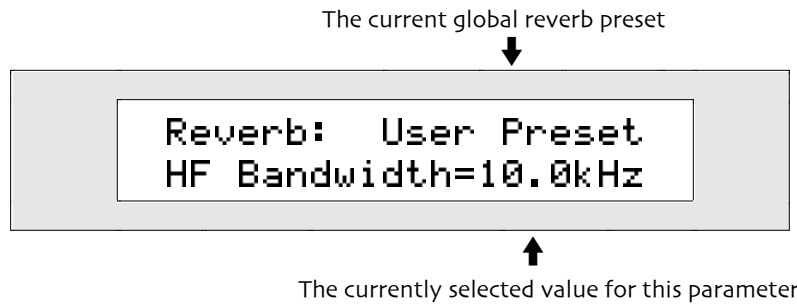
The global reverb's HF (for “High Frequency”) bandwidth parameter filters out frequencies that occur above the HF Bandwidth parameter's value. Set the HF bandwidth to a higher frequency to suggest hard reflective surfaces, and lower values to imply softer surfaces.

To Set the Global Reverb's HF Bandwidth

1. Press the Reverb button.



- Turn the Parameter knob until the display shows:



You can set the global reverb high-frequency bandwidth to any amount from 100Hz to 21.2kHz.

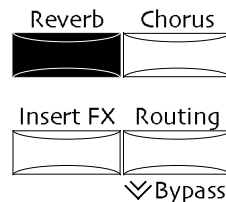
- Turn the Value knob or use the up/down arrow buttons to set the global reverb HF Bandwidth to the desired value.

Setting the Global Reverb's Diffusion

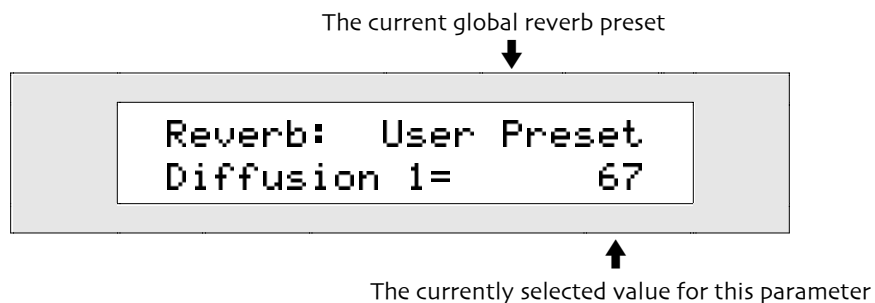
Quick, unusually loud bursts of sound—transients—may need some help to blend in pleasingly with the rest of the global reverb. The Reverb Diffusion 1 and 2 parameters offer a way to blur—or “smear”—these bursts when you don't want them to be perceived as such discrete events within the overall reverb. Diffusion 1 works on the higher-frequency components of such transients, while Diffusion 2 affects their lower-frequencies. Higher values for both of these parameters increase the smearing. Lower values leave the transients as more discernible individual reflections within the global reverb.

To Set the Global Reverb's High-Frequency Diffusion

- Press the Reverb button.



- Turn the Parameter knob until the display shows:

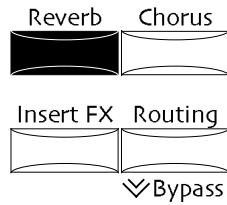


You can set the global reverb high-frequency diffusion to any amount from 0 to 100.

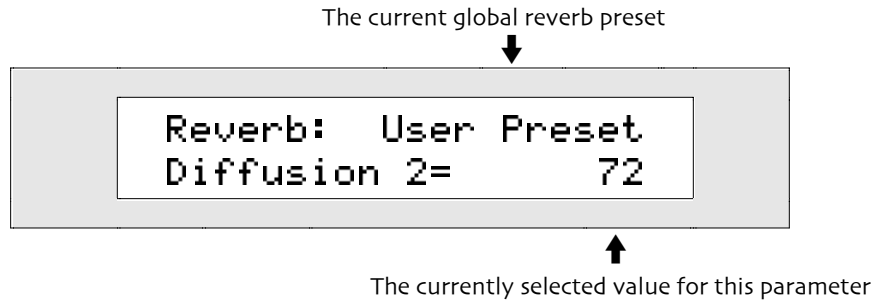
- Turn the Value knob or use the up/down arrow buttons to set the global reverb Diffusion 1 to the desired value.

To Set the Global Reverb's Low-Frequency Diffusion

1. Press the Reverb button.



2. Turn the Parameter knob until the display shows:



You can set the global reverb low-frequency diffusion to any amount from 0 to 100.

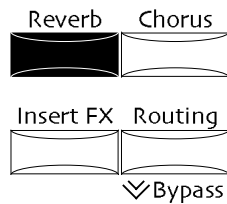
3. Turn the value knob or use the up/down arrow buttons to set the global reverb Diffusion 2 to the desired value.

Setting the Global Reverb's Definition

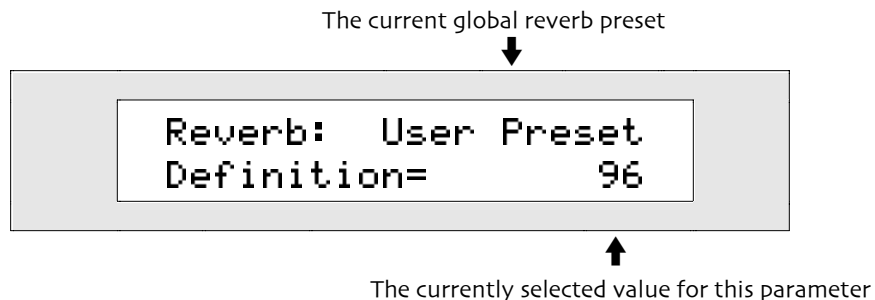
Reverb is achieved by creating many copies of an unaffected signal and playing back those copies one after the other, too close together in time to be perceived as separate copies, and decreasing in volume until silence is reached. As the copies fade away, they may occur closer together in time, acquiring a greater density. The reverb Definition parameter allows you to adjust how quickly this density will increase as the global reverb decays. Higher values cause the global reverb to “thicken” as it trails off. Lower values leave it with a more consistent sound as it fades away.

To Set the Global Reverb's Definition

1. Press the Reverb button.



2. Turn the Parameter knob until the display shows:

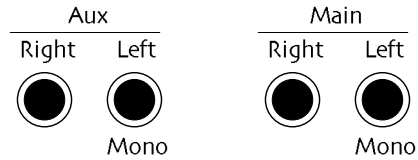


You can set the global reverb definition to any amount from 0 to 100.

- Turn the Value knob or use the up/down arrow buttons to set the global reverb definition to the desired value.

Determining Which Rear-Panel Outputs the Global Reverb Will Use

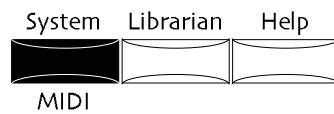
The global reverb can be routed to the ZR-76 rear-panel Main or Aux stereo output jacks.



The Aux jacks provide a way to isolate global reverb sounds or tracks to their own outputs.

To Set the Global Reverb's Output Routing

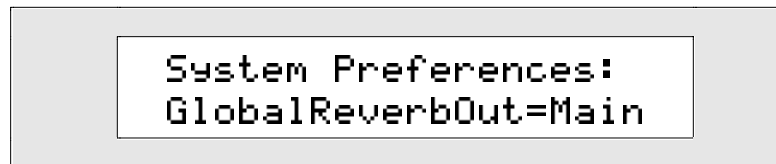
- Press the System button.



- Turn the Parameter knob until the display shows:



- Press the Yes button.
- Turn the Parameter knob until the display shows:



The Global Reverb's currently selected rear-panel output jacks

The output of the global reverb can be routed to:

- Main—the output of the global reverb will be routed to the ZR's stereo Main Outs
 - Aux—the output of the global reverb will be routed to the ZR's stereo Aux Outs
- Use the Value knob or the up/down arrow buttons to route the Global Reverb's output to the ZR's rear-panel Main Outs or the Aux Outs.

Working with Dry Sounds and Tracks

Sounds and tracks don't have to use the ZR-76 effects—they can be assigned to the dry FX bus. (See "To Assign a SoundFinder Sound to an Effect" or "To Assign a 16 Track Recorder Track and Its Sound to an Effect," above for details.)

Determining Which Rear-Panel Outputs Dry Sounds and Tracks Will Use

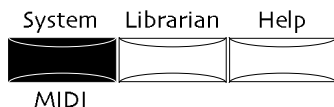
Any sound or tracks using the dry FX bus can be routed to the ZR-76 rear-panel Main or Aux stereo output jacks.



The Aux jacks provide a way to isolate dry sounds or tracks to their own outputs.

To Set the Output Routing for Dry Sounds and Tracks

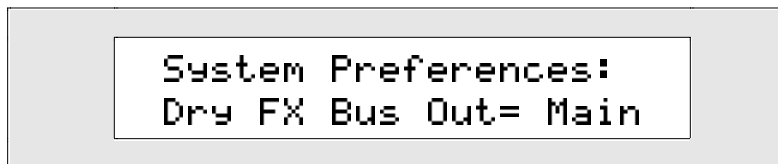
1. Press the System button.



2. Turn the Parameter knob until the display shows:



3. Press the Yes button.
4. Turn the Parameter knob until the display shows:



The currently selected rear-panel output jacks for dry sounds and tracks

Sounds and tracks using the dry FX bus can be routed to:

- Main—they will be routed to the ZR’s stereo Main Outs
 - Aux—they will be routed to the ZR’s stereo Aux Outs
5. Use the Value knob or the up/down arrow buttons to route and dry sound or tracks to the ZR’s rear-panel Main Outs or the Aux Outs.

Bypassing the ZR-76 Effects

There may be times when you’d like to temporarily turn an effect—or all of the effects—off in order to hear sounds or tracks in their uneffected, “dry,” state. This is accomplished by bypassing the effects. You can bypass an individual effect, pairs of them or all of them at once. The ZR-76 provides two ways to bypass the effects:

- Double-clicking the Routing/Bypass button to quickly bypass and un-bypass all of the effects at once
- Using the Effects Bypass parameter to bypass and un-bypass single effects, pairs of effects or all of the effects

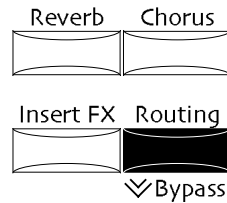
Note: When the insert effect is bypassed, it still responds to real-time modulation. Any real-time changes that occur while the effect is bypassed will be heard when it’s un-bypassed.

Quick Bypass/Unbypass of the ZR-76 Effects

The Routing button provides an instantaneous way to silence all of the ZR-76 effects so that any sound or tracks you’re working with will be heard without any effects.

To Quickly Bypass all of the Effects

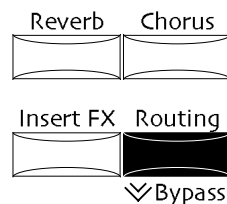
1. Double-click the Routing/Bypass button.



All of the ZR-76 effects will be bypassed, and *ALL-BYPASS* will appear on all effect-specific displays. (Displays which refer to FX Bus routing parameters will be unchanged.)

To Quickly Un-Bypass all of the Effects

1. Double-click the Routing/Bypass button.



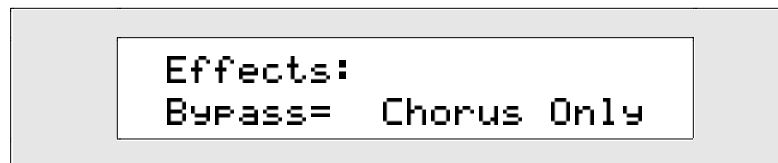
All of the ZR-76 effects will be un-bypassed, and all effect-specific displays will return to their normal, active state. (Displays which refer to FX Bus routing parameters will be unchanged.)

Using the Bypass Parameter to Selectively Bypass and Un-Bypass Effects

Use the bypass parameter whenever you'd like to turn off either the insert effect, global chorus, global reverb, or any pair of effects. This parameter can also be used to selectively turn effects back on.

To Bypass and Un-Bypass Effects Using the Bypass Parameter

1. Press the Routing button.
2. Turn the Parameter knob until the display shows:



This shows which effect or effects, if any, are bypassed

3. You can use the Value knob or the up/down arrow buttons to select which Effect or effects you'd like to turn off or on. The choices are:
 - None—none of the effects will be bypassed
 - Chorus Only—only the chorus will be bypassed
 - Reverb only—only the reverb will be bypassed
 - Chorus&Reverb—the global chorus and global reverb will be bypassed
 - Insert Only—only the insert effect will be bypassed
 - Insert&Chorus—the insert effect and the global chorus will be bypassed
 - Insert&Reverb—the insert effect and the global reverb will be bypassed
 - All Effects—all of the effects will be bypassed
4. Turn the Value knob or use the up/down arrow buttons to bypass or un-bypass any or all of the effects as you desire.

Muting and Soloing Tracks in the 16 Track Recorder

Mute/Solo

The FX/Mixdown section provides two methods for quickly controlling which of the 16 Track Recorder's tracks will be heard. Tracks can be:

- *muted*—to silence the selected track. Music recorded on the track is unaltered; you just can't hear it while it's muted
- *soloed*—to isolate the track from the other tracks in the sequence. While a track is soloed, all other tracks are silenced

The 16 Track Recorder remembers which tracks are muted—whenever you re-select the sequence, tracks that had been muted remain so. Mute-button presses can also be recorded. The 16 Track Recorder does not remember which tracks are soloed—when you reselect a sequence that had contained a soloed track, the track will no longer be soloed.

Tip: When a track is muted, you can still play its sound on the ZR's keyboard.

To Mute a Track

1. Select the track you'd like to silence.
2. Press the FX/Mixdown Mute button.

The red Mute LED will light, and the track will be silenced.

Tip: Whenever you'd like to learn if a track is muted, select the track—the Mute LED will light if the track is muted.

To Un-Mute a Track

1. Select the muted track.
2. Press the Mute button.

The red Mute LED will go out, and the track will once again be heard.

Tip: Whenever you'd like to learn if a track is muted, select the track—the Mute LED will light if the track is muted.

To Solo a Track

1. Select the track you'd like to hear by itself.
2. Press the FX/Mixdown Solo button.

The yellow Solo LED will light, and the only the selected track will be heard.

Tip: Whenever you'd like to learn if a track is soloed, select the track—the Solo LED will light if the track is soloed.

To Un-Solo a Track

1. Select the soloed track.
2. Press the Solo button.

The yellow Solo LED will go out, and all of the tracks in the selected sequence will once again be heard.

Tip: Whenever you'd like to learn if a track is soloed, select the track—the Solo LED will light if the track is soloed.

To Record Mute Button Presses

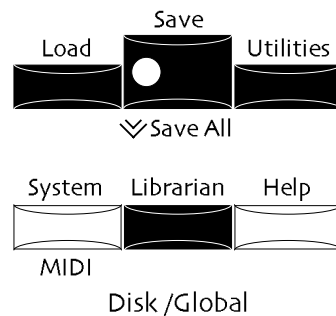
1. Select the track on which you'd like to record Mute button presses.
2. Begin recording the track in your choice of Replace, Add or Track mix recording mode.
3. Press the Mute button to mute or un-mute the track—your button presses will be recorded.

Chapter 9

Storing Your Music

This chapter describes how to best utilize your ZR's internal memory, and discusses the use of floppies and external MIDI storage devices for the safekeeping of your sounds, presets, rhythms, sequences, songs and some other special types of ZR data.

All of the ZR-76 memory and storage tools are found in the ZR's Disk/Global section:



Understanding ZR-76 Memory

Your ZR-76 stores its sounds, presets, rhythms, sequences and songs in one of two areas within its memory:

- ROM (for “Read Only Memory”)—a type of permanent memory that can never be erased, and whose contents can’t be altered. ROM holds some of the sounds and rhythms created by ENSONIQ.
- INT (for “Internal” memory)—writable memory that you can use for storing sounds, presets, rhythms, songs, sequences and system-wide settings. INT memory can be erased and re-used.

How the ZR’s INT Memory Works

The ZR-76 provides two types of INT memory meant to address two different kinds of storage needs. These two types of memory are named *FLASH* and *RAM*.

FLASH

FLASH memory is designed to hold the tools that you’d like to have at your disposal during the creative process. It’s the perfect place to store sounds, presets and rhythms that you use again and again and to which you want quick access. The system-wide parameter settings that you use to customize your ZR-76 are also automatically saved into FLASH (these parameters are described in *Chapter 3*). When you save a sound to FLASH, it’s stored in sound bank 001. FLASH rhythms are stored in rhythm bank 001. Each time you turn on your ZR-76, anything stored in FLASH is available, ready to help you realize your latest inspiration. Your ZR-76 was shipped from ENSONIQ with sounds and rhythms already stored in its FLASH memory.

Due to its permanent nature and ENSONIQ’s efficient use of the ZR’s onboard FLASH memory, saving sounds, rhythms and presets to FLASH can take a little bit of time. Each time a sound or preset is saved to FLASH, for example, you’ll see the ZR’s entire FLASH sound and preset memory being re-written. This is a perfectly normal optimization routine that your ZR-76 is performing, and nothing to be concerned about. Though a little patience is required when working with FLASH sounds and presets, overall it’s a good tradeoff, considering FLASH memory’s exceptional reliability.

Warning: In the unlikely event that you need to re-initialize, it’s a good idea to regularly save the sounds, rhythms and presets you store in FLASH to a floppy disk as a backup. Reinitializing is described at the end of *Chapter 1*.

RAM

The ZR's RAM memory—which, technically speaking, is DRAM memory—is similar to the type of memory that computers use. RAM is ideal for sounds and rhythms that go along with a particular song or project (presets are only stored in FLASH). It's also an extremely fast type of memory. When you're editing and saving sounds and rhythms—or when you're creating sounds using the supplied Unisyn editing software—RAM is the memory type of choice. RAM is also used for sequences and songs in the ZR-76.

When you turn off your ZR-76, its RAM memory is cleared—just as it would be in a personal computer. It's a good idea to save any sounds, rhythms, sequences or songs in RAM to floppy disk regularly so that they're not lost in the event of a power outage, or inadvertently when you turn your ZR off.

Tip: Whenever you've added anything to the ZR's RAM memory—new 16 Track Recorder data or a new sound, for example—the Save LED in the ZR's Disk/Global section flashes to remind you to that the sound bank, rhythm bank or song containing the new material has not yet been saved to floppy disk.

When your ZR-76 was shipped from the factory, all of its RAM was allocated to the 16 Track Recorder/Song Editor and the Idea Pad. You can easily create RAM sound or rhythm banks by allocating RAM memory for the purpose. The procedure for doing so can be found in “Setting Up the ZR's RAM Memory for Your Needs” later in this chapter. A RAM sound bank is referred to—and accessed via MIDI—as sound bank 002 (the FLASH sound bank is sound bank 001). RAM rhythms are stored in rhythm bank 002 (the FLASH rhythm bank is rhythm bank 001).

Using the ZR's RAM Memory Wisely

The ZR's RAM memory is where much of the creative action occurs. Sounds, rhythms, sequences, songs—even the Idea Pad—share the ZR's RAM memory. Your ZR-76 is configured to allow you to determine how you'd like to allocate its memory resources as your needs dictate. RAM memory is configured using the ZR's memory librarian.

Layers and Bytes

Any discussion of memory usage in the ZR-76 must include an understanding of the ways in which sounds, rhythms, sequences and songs use FLASH and RAM memory. (Preset memory is simpler: you always have room for 32 presets in your ZR-76.)

- A standard ZR-76 sound can have up to 16 layers. (Some special sounds have more than 16 layers, as discussed in *Chapter 4's* “Splitting the ZR-76 Keyboard” and “Layering ZR-76 Sounds.”) Each sound bank can have up to 361 layers total. The number of sounds that can be fit into a sound bank depends, therefore, on how many layers each sound has. For this reason, sound memory usage is expressed in numbers of layers.
- Rhythms, sequences and songs use memory in a more complex manner. Each rhythm or sequence event—including all of the notes and all of the controller data—consumes memory, as do the various rhythm and track settings. The amount of memory each rhythm, sequence or song uses depends on a great number of variables, including the length of the rhythm or sequence and the amount of activity it contains. In the case of songs, the number of sequences has an important impact on memory usage. Due to the dynamic way in which rhythms, sequences and songs consume memory, the only meaningful way to measure that use is in terms of raw memory: bytes.

ZR Memory Management

Introducing The Librarian

The ZR-76 librarian provides a full complement of memory management tools. Using the librarian, you can:

- allocate the ZR's RAM memory as you see fit
- find out how much free memory is available for sounds, rhythms and songs
- learn the names of any ENSONIQ EXP Series Wave Expansion Boards you've installed in your ZR-76
- erase all of the songs currently in RAM memory, erase FLASH sound, preset or rhythm banks, or RAM sound and rhythm banks
- erase individual sounds, presets or rhythms from FLASH, or individual sounds and rhythms from RAM

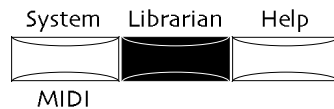
- transmit as MIDI SysEx data the current sound in SoundFinder, a 16 Track Recorder track's sound, all FLASH sounds, the current SongEditKit, the current RthmEditKit or your current system-wide settings for storage on an external MIDI storage device

General Technique for Using the Librarian

The librarian's functions are grouped into several categories of activity, accessed by answering "Yes" to the appropriate question posed on the ZR's display.

To Use the Librarian

- Press the Librarian button.



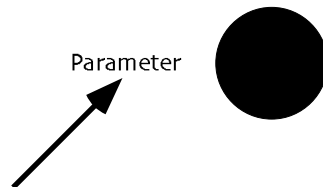
The No and Yes LEDs will begin to flash, and the display will show:



What you see on the bottom line may be different

- Turn the Parameter knob clockwise and counter-clockwise.

Sound/Rhythm Type



The display will show:



or:



or:



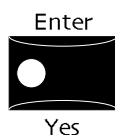
or:



or:



The librarian's memory management tools are conveniently grouped into six areas, each of which may be accessed by pressing the Yes button in response to the appropriate question.



When you answer “yes” to:

- “Set up RAM memory?” you can divide up the ZR’s RAM memory according to your needs. RAM can be allocated to the 16 Track Recorder and Song Editor, to the Idea Pad, and/or to the creation of RAM sound and rhythm banks.
 - “Show free memory?” you can learn how much memory is currently available for FLASH and RAM sounds and rhythms, and for songs in the 16 Track Recorder and Song Editor.
 - “Show expander names?” you can learn the names of all currently installed ENSONIQ EXP Series Wave Expansion boards.
 - “Erase memory banks?” you can delete all of the songs currently in the ZR’s memory, any FLASH sound, preset or rhythm bank, or any RAM sound and rhythm bank.
 - “Erase memory item?” you can delete any single sound, preset or rhythm from the ZR’s memory.
 - “Dump MIDI SysEx?” you can initiate a dump of MIDI System Exclusive data that will allow you to store the current sound in SoundFinder, the sound on the currently selected 16 Track Recorder track, all FLASH sounds, the current SongEditKit, or the current RthmEditKit on an external MIDI storage device.
3. Press the Yes button in response to the appropriate question.
Specific instructions for each task can be found below.

Tip: You can cycle through the top-level librarian questions by pressing the Librarian button again at any time.

Setting Up the ZR’s RAM Memory for Your Needs

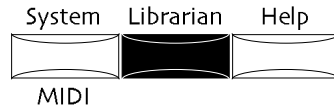
The librarian allows you to allocate the ZR’s RAM memory as you see fit. RAM can be used:

- by the 16 Track Recorder and Song Editor for the creation and editing of songs
- by the Idea Pad
- for a RAM sound bank
- for a RAM rhythm bank

Note: Whenever you change your ZR’s RAM setup, RAM is completely cleared out. If you have any sequences, songs, RAM sounds or RAM rhythms currently in your ZR-76, make sure you’ve saved them to floppy disk before reconfiguring the ZR’s RAM. Saving to floppy disk is described later in this chapter.

To Re-Allocate the ZR's RAM Memory

1. Press the Librarian button.



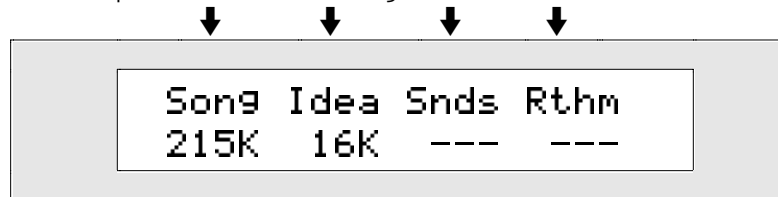
The No and Yes LEDs will begin to flash, and the display will show:



What you see on the bottom line may be different

2. Turn the Parameter knob until the display looks as shown above. The red/green No/Yes flashers begin to flash.
3. Press Yes if you'd like to continue, or No if you'd like to cancel. If you press Yes, the display will show:

The top line shows the four things for which RAM can be used



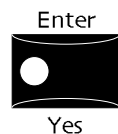
The bottom line shows how the ZR's RAM is currently allocated

On this display:

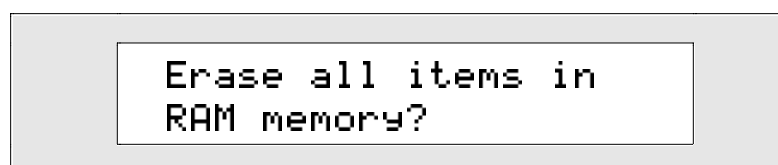
- “Song” refers to the 16 Track Recorder and Song Editor
- “Idea” refers to the Idea Pad
- “Snds” refers to a RAM sound bank
- “Rthm” refers to a RAM rhythm bank

When your ZR-76 is shipped from the factory, its RAM memory is allocated to the 16 Track Recorder/Song Editor and the Idea Pad, as shown above. There is no RAM allocated for RAM sound or rhythm banks. (The FLASH sound and rhythm banks are always available.)

4. Turn the Value knob to allocate the ZR's RAM as you desire.
5. Press the Yes button.



The display will show:



In order to reconfigure its RAM, the ZR must clear out anything currently stored there. Make sure that you've saved any sequences, songs, RAM sound or RAM rhythm banks saved to floppy before

continuing with this procedure. Saving to floppy disk is described later in this chapter.

Tip: Whenever you've changed anything in RAM that has not yet been saved to floppy disk, the Save LED in the ZR's Disk/Global section flashes. This tells you at a glance whether or not you've got anything in RAM that hasn't yet been stored on a floppy for safekeeping.

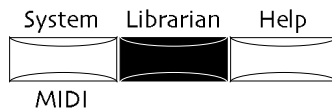
6. Press the Yes button if you'd like to complete the re-configuration of the ZR's RAM, or press the No button to cancel the operation.

Viewing the Amount of Free FLASH and RAM Memory

You can use the librarian to find out how much FLASH memory is currently available for sounds and rhythms, or how much RAM is available for sounds, rhythms and songs.

To Check the Amount of Free Sound, Rhythm or Song Memory

1. Press the Librarian button.



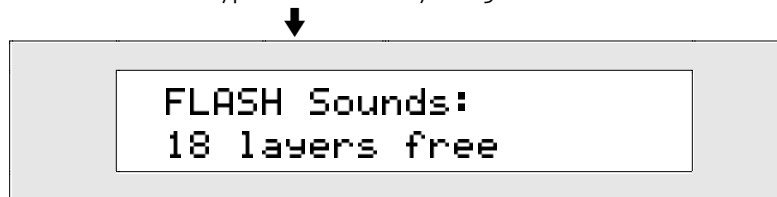
The red and green No and Yes LEDs begin to flash.

2. Turn the Parameter knob until the display shows:



3. Press Yes if you'd like to continue, or No if you'd like to cancel the procedure.
4. Turn the Parameter knob to display the amount of free memory available for sounds, rhythms and songs.

This shows the type of free memory being viewed



This shows the amount of free memory available for the selected type

You can see how much memory is available for:

- FLASH Sounds—This shows how much memory is available for saving sounds to the FLASH sound bank. Sound memory is expressed in the number of layers available.
- FLASH Rhythms—This shows how much memory is available for saving rhythms to the FLASH rhythm bank. Rhythm memory is expressed in bytes.
- RAM Sounds—This shows how much memory is available for saving sounds to the RAM sound bank. Sound memory is expressed in the number of layers available. If you have not created a RAM sound bank, the display will show “Not available” on the bottom line. To learn how to create a RAM sound bank, see “Setting Up the ZR’s RAM Memory for Your Needs.”
- RAM Rhythms—This shows how much memory is available for saving rhythms to the RAM rhythm bank. Rhythm memory is expressed in bytes. If you have not created a RAM rhythm bank, the display will show “Not available” on the bottom line. To learn how to create a RAM rhythm bank, see “Setting Up the ZR’s RAM Memory for Your Needs.”
- Songs—This shows how much memory is available for recording sequences and songs in the 16 Track Recorder and Song Editor. Song memory is expressed in bytes.

The amount of available memory is read-only—it can't be changed.

Note: The amount of memory available for sounds is displayed in layers, while the amount of memory available for rhythms and songs is displayed in bytes. To learn more about how memory usage is measured in the ZR-76, see “Layers and Bytes” earlier in this chapter.

Viewing the Names of Your Expansion Boards

Your ZR-76 can be expanded through the installation of up to three ENSONIQ EXP Series Wave Expansion Boards (the installation procedure is described in *Chapter 10*.) ENSONIQ EXP Series Wave Expansion Boards add new sound waves and sounds to your ZR-76. The librarian provides an easy way to learn the names of installed expansion boards.

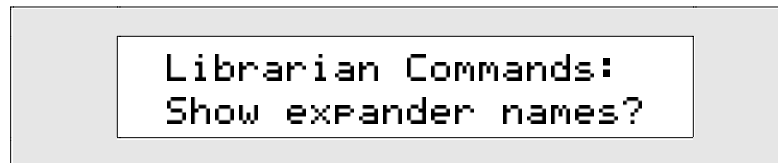
To See the Names of Installed Expansion Boards

1. Press the Librarian button.

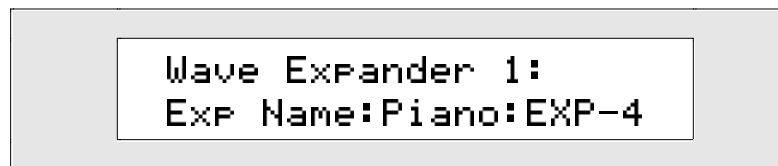


The red and green No and Yes LEDs begin to flash.

2. Turn the Parameter knob until the display shows:



3. Press Yes if you'd like to continue, or press No if you'd like to cancel the operation. If you press Yes, the display will show:



This will show the name of the first installed expansion board

The top line of the display shows one of the three expansion slots, and the bottom line shows the name of the expansion board in that slot. If the displayed slot has no expansion board, its name will read “**EMPTY**”.

4. Turn the left knob to select the expansion slot whose expansion board name you'd like to view.

Note: The ZR can hold up to three different ENSONIQ EXP Series Wave Expansion Boards (including the Perfect Piano™). To learn how to install expansion boards, see *Chapter 10*.

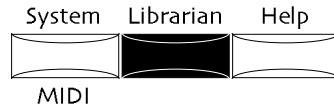
Erasing All Songs in Memory or a Sound, Preset or Rhythm Bank

The librarian provides the necessary tools for quickly clearing the ZR's song memory and its sound, preset and rhythm banks.

Note: Erasing a RAM sound or preset bank clears all sounds and rhythms from the bank. The bank itself, though empty, remains and still uses RAM.

To Erase All Songs or a Sound, Preset or Rhythm Bank

1. Press the Librarian button.

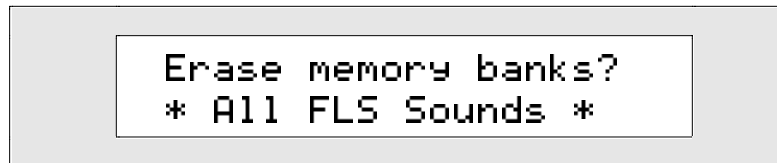


The red and green No and Yes LEDs begin to flash.

2. Turn the Parameter knob until the display shows:



3. Press Yes if you'd like to continue, or press No if you'd like to cancel. If you press Yes, the display will show:



What you see may be different

You can turn the right knob to select:

- All Songs—to erase all of the songs and sequences currently in the ZR's memory
 - All FLS Sounds—to erase the entire FLASH sound bank
 - ALL FLS Presets—to erase all of the ZR's presets
 - All FLS Rhythms—to erase the entire FLASH rhythm bank
 - All RAM Sounds—to erase the entire RAM sound bank
 - All RAM Rhythms—to erase the entire RAM rhythm bank
4. Turn the right knob to select the bank you'd like to erase.
 5. Press the Yes button if you'd like to erase the bank you've selected, or press No if you'd prefer to cancel.

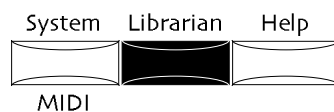
Note: Whenever a change is made to the FLASH sound or preset banks, the ZR re-saves both the FLASH sound and preset banks in their entirety in order to make most efficient use of that area of memory. The process may take a few moments.

Erasing Single Sounds, Presets or Rhythms

The librarian allows you to erase single sounds, presets or rhythms from FLASH and RAM memory.

To Erase a Single Sound, Preset or Rhythm

1. Press the Librarian button.

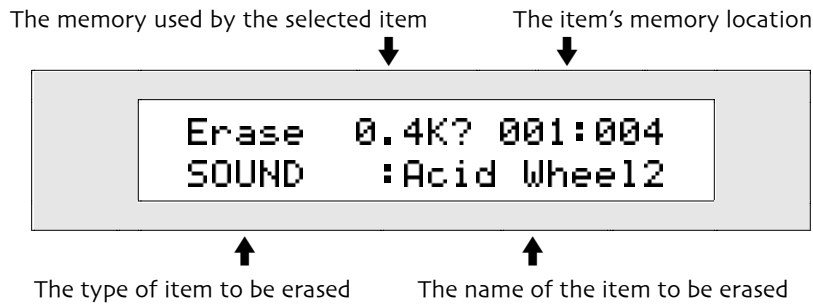


The red and green No and Yes LEDs begin to flash.

- Turn the Parameter knob until the display shows:



- Press Yes if you'd like to continue, or press No if you'd like to cancel. If you press Yes, the display will look something like this:



This display allows you to choose an item to erase. You can turn the left knob to select one of three types of items:

- Sounds—to erase a specific sound from RAM or FLASH.
 - Presets—to erase a specific preset
 - Rhythms—to erase a specific rhythm from RAM or FLASH
- Turn the left knob to select the type of item you'd like to erase. If there are no items of the type you've selected, "***EMPTY**" will be displayed on the bottom line, and the top line of the display will show "Erase memory item?"
 - Turn the right knob to select the name of the particular item you'd like to erase. Once you've selected a sound, preset or rhythm, the amount of memory it takes up is displayed in the center of the top line.
 - Press the Yes button if you'd like to erase the item you've selected, or press the No button if you'd like to cancel.

Note: Whenever a change is made to the FLASH sound or preset banks, the ZR re-saves both the FLASH sound and preset banks in their entirety in order to make most efficient use of that area of memory. The process may take a few moments.

Sending ZR Data to External Devices Via SysEx

There may be occasions when you'd like to store the sounds you're using, or your system setup, on an external MIDI device. This can be accomplished through the transmission of MIDI System Exclusive data (System Exclusive data is explained in "What Is MIDI?" in *Chapter 13*). The ZR-76 supports MIDI SysEx transmission of:

- the current SoundFinder sound
- the sound being used by the currently selected track in the 16 Track Recorder
- all FLASH sounds
- the current SongEditKit (*Chapter 4* describes the SongEditKit)
- the current RthmEditKit (*Chapter 5* describes the RthmEditKit)
- the ZR's system-wide settings (described in *Chapter 3*)

When performing SysEx dumps from the ZR-76, make note of your ZR's current SysEx Device ID number. This number is embedded in the SysEx data. Your ZR will need to be set to this ID number when you want to re-transmit the data back into the ZR. See "Using SysEx Device IDs in *Chapter 3—Global Settings*."

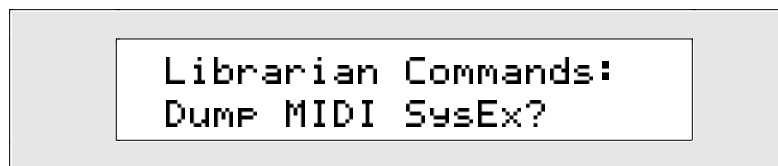
Transmitting ZR Data Via SysEx

1. Connect a MIDI cable from the ZR-76 MIDI Out to the MIDI In of the receiving unit (the one you will use to store SysEx information).
2. Set up the receiving unit to receive SysEx messages. Its manual should contain instructions on how to do this.
3. Press the Librarian button



The red and green No and Yes LEDs begin to flash.

4. Turn the Parameter knob until the display shows:



5. Press the Yes button if you'd like to continue and select an item to transmit via SysEx, or press No if you'd like to cancel.

If you press Yes, the display will look something like this:



What you see here may be different

You can initiate a SysEx dump of:

- the current sound in SoundFinder
- the sound used by the track currently selected in the 16 Track Recorder
- all FLASH sounds
- the current SongEditKit
- the current RthmEditKit
- your ZR's system-wide settings

6. Turn the right knob until the display shows the desired type of sound on its bottom line.
7. Press Yes if you'd like to transmit the current SoundFinder sound via SysEx, or press No if you'd like to cancel.

If you press Yes, the display will confirm the successful completion of your command.

8. Save the SysEx information in your receiving device as explained in its manual.

Returning SysEx Data Back to the ZR-76

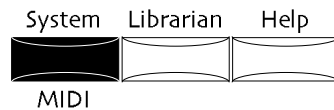
When you've stored sounds or system settings to an external MIDI storage device by sending the device a SysEx dump, you'll naturally want to return that data back into your ZR-76.

To Load SysEx Data Back Into the ZR-76

1. Connect a MIDI cable from the MIDI Out of the device containing the SysEx data to the MIDI In of your ZR-76.
2. Prepare the external device to transmit SysEx data. Its manual should contain instructions on how to do this.

You'll want to verify that your ZR-76 is set up to receive SysEx data.

3. Press the ZR's System button.



The red and green No and Yes LEDs begin to flash.

4. Turn the Parameter knob until the display shows:



5. Press Yes if you'd like to change the current system MIDI settings. Press No if you'd like to cancel the procedure.
6. Turn the Parameter knob clockwise until the display shows:



The current SysEx Device ID value

The SysEx Device ID parameter can be set to any number from 000 to 127.

7. Use the Value knob to set the ZR to the same device ID number to which it was set when you originally transmitted the SysEx data you now want to load back in.
8. Send the SysEx data to your ZR-76 from the external device as explained in its manual.

Working with Floppy Disks

About the ZR-76 Disk Drive

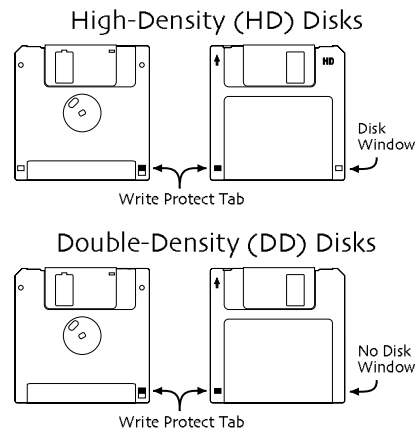
The ZR-76 has a built-in floppy disk drive, allowing ZR-76 sounds, presets, rhythms, sequences and songs to be stored on floppy disks. The ZR also offers a couple of special options that allow you to quickly save to floppy everything currently in RAM or everything in FLASH and RAM. If you've got a computer, and would like to use your favorite sequencing program to further develop sequences you've begun with your ZR-76, you can pop your ZR floppy into the computer's drive and load in your music. Any computer that can read a DOS-formatted disk—and that includes just about every recent type of computer—can read the song files on a ZR-76 floppy.

Care and Feeding of the Disk Drive

The ZR-76's built-in disk drive is a quad-density disk drive that allows you to store your ZR-76 data onto a DOS-formatted high-density (HD) or double-density (DD) 3.5" floppy disks.

Note: The ZR-76 will only format high-density disks. When formatting a DD floppy for use with the ZR-76, it's best to use the following DOS command to ensure that it will work successfully with your ZR-76: "format (alphanumeric character designation of your floppy drive): /F:720".

Floppy disks are enclosed in a protective plastic carrier with an automatic shutter to protect the diskette from physical damage. It is important not to alter this carrier in any way.



3.5" floppy disks have a sliding write-protection tab so that you can protect your data against accidental erasure. Sliding the write-protection tab in the lower left corner of the disk—so that the window is closed—will allow you to store information on the disk. Sliding the tab so that the window is open will protect the disk against being accidentally reformatted and will safeguard against the inadvertent deletion of disk files. High-density disks can be easily identified because they have an additional window located on the lower right corner of the disk.

Floppy disks are a magnetic storage medium and should be treated with the same care you'd give important audio tapes. Just as you would use high quality audio tapes for your important recording needs, we recommend using high-quality floppy disks for your ZR-76. Here are a few Do's and Don'ts concerning disks and the disk drive.

Do:

- use either high-density (HD) or double-density (DD) 3.5 inch floppy disks. Both types are available from most computer stores, and many music stores carry them as well.
- keep your disks and the disk drive clean and free of dust, dirt, liquids, etc.
- label your disks and keep a record of what is saved in each.

Don't:

- use single-sided (SSDD or SSSD) disks. These disks have not passed testing on both sides. While a single-sided disk might work successfully with the ZR-76, it is possible that you will eventually lose important data to a disk error if you try using single-sided disks.
- put anything other than a disk in the disk drive.
- transport the unit with a disk in the drive.
- expose disks to temperature extremes. Temperatures below 50° F and above 140° F can damage the plastic outer shell.
- expose your disks to moisture.
- subject disks to strong magnetic fields. Exposure to magnetic energy can permanently damage the information on the disk. Keep disks away from speaker cabinets, tape decks, power cables, airline x-ray equipment, power amplifiers, TV sets, and any other sources of magnetic energy.
- eject the disk while the drive is operating (i.e., when the disk drive light is on).

Floppy Disk Directories and Overall Disk Capacity

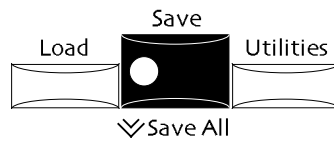
When using your ZR-76 DOS-formatted floppy disks on your computer, you may find it convenient to organize your disk files in sub-directories. The ZR-76 can read files three levels deep—the root directory and two layers down—in up to a total of 50 sub-directories. The files are displayed in the ZR-76 as a single series of files that can be viewed alphabetically (see “Viewing Disk Files Alphabetically” later in this chapter), if you so choose.

You can store up to 100 files on a ZR-76 floppy disk.

Saving Files to Floppy Disk

Pressing the Save button in the Disk/Global section of the front panel allows you to save data from the ZR-76 to a DOS-formatted floppy disk. For more information about formatting floppy disks, see

“Formatting a Floppy Disk” later in this chapter.



The disk storage system has been designed to allow maximum flexibility in saving, loading and organizing your sounds, rhythms, sequences and songs. Consequently, for each of these items, there are a number of different storage options:

Sounds

- When you select the RAM-SNDBANK storage option, all of the sounds in the RAM memory bank are saved as a SOUND-BANK file. SOUND-BANK files can be loaded into the ZR’s FLASH or RAM memory.
- When you select the FLS-SNDBANK storage option, all of the sounds in the FLASH memory bank are saved as a SOUND-BANK file. SOUND-BANK files can be loaded into the ZR’s FLASH or RAM memory.
- You can save a 1-SOUND file containing a single ZR-76 sound.

Presets

- You can save a PRESET-BANK containing all of the presets currently in the ZR-76.
- You can save a 1-PRESET file containing a single ZR-76 preset.

Rhythms

- When you select the RAM-RTMBANK storage option, all of the rhythms in RAM memory are saved as a RHYTHM-BANK file. RHYTHM-BANK files can be loaded back into the ZR’s FLASH or RAM memory.
- When you select the FLS-RTMBANK storage option, all of the rhythms in FLASH memory are saved as a RHYTHM-BANK file. RHYTHM-BANK files can be loaded back into the ZR’s FLASH or RAM memory.
- You can save a 1-RHYTHM containing a single Drum Machine rhythm (8 variations and 8 fills).

Sequences

- You can save a 1-MIDIFILE containing a single sequence.

Songs

- You can save an ALL-SONGS file containing all of the songs in the ZR-76.
- You can save a 1-SONG file containing a single song, including all of its sequences, its song playlist, if it has one, and its global chorus and global reverb settings.

Special File Types

- You can save your current Favorites buttons assignments as a FAVORITES file.
- You can save an ALL-RAM file containing all of the sounds, rhythms and songs currently in RAM.
- You can save an ALL-SESSION file containing all of the sounds, presets, rhythms and songs currently stored in FLASH and RAM.

All of the file types described above can be loaded back into your ZR-76.

Floppy Disk File Names

In order to allow you to use ZR-76 floppy disks in your computer, the ZR-76 uses a DOS disk format (see later in this chapter to learn how to format floppies.) While sounds, presets, rhythms, sequences and songs in the ZR-76 can have up to 11 lower and upper case characters, DOS files can only have a maximum of eight upper case characters. For this reason, whenever you save a sound, rhythm or preset file to floppy, you must assign it an eight-character name. This file name is independent of the name you give to the sound, preset, rhythm, sequence or song for use inside your ZR-76. When you load such a file back into your ZR-76, you’ll find the 11-character name restored. This means that, to change the inside-your-ZR name of a sound, preset, rhythm, sequence or song, you must name it as desired within your ZR-76 before storing it on a floppy. *Chapter 4* describes how to rename sounds and presets, *Chapter 5* describes renaming rhythms and *Chapter 7* discusses renaming sequences and songs.

Note: When loading files into the ZR-76, you can easily tell when a foreign disk file's name exceeds the DOS 8-character limit. If the file was named on a Macintosh, an exclamation point will appear at the beginning of the file's name; if it was named on a PC-compatible, the last two characters displayed will be an arrow and a number.

Saving Sound, Preset and Rhythm Banks

The ZR-76 allows you to save FLASH sound, preset and rhythm banks, as well as RAM sound and rhythm banks, to floppy disk by selecting the type of bank you'd like to save. You can select:

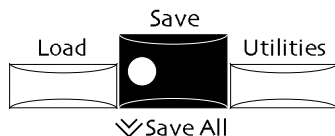
- RAM-SNDBANK—to save all of the sounds in RAM as a SOUND-BANK disk file.
- FLS-SNDBANK—to save all of the sounds in FLASH as a SOUND-BANK disk file.
- PRESET-BANK—to save all of the ZR's presets as a PRESET-BANK disk file.
- RAM-RTMBANK—to save all of the rhythms in RAM as a RHYTHM-BANK disk file.
- FLS-RTMBANK—to save all of the rhythms in FLASH as a RHYTHM-BANK disk file.

Sound and rhythm banks are saved as plain SOUND-BANK and RHYTHM-BANK files—with no reference to the area of memory from which they were saved—so that you can load them back into FLASH or RAM as your needs dictate.

Tip: You can move sound and rhythm banks back and forth between FLASH and RAM by saving the bank you want to move to floppy disk and then loading it back in to the desired area of memory.

To Save a Sound, Preset or Rhythm Bank to Floppy Disk

1. Insert a formatted floppy into the ZR's disk drive.
2. Press the Disk/Global Save button.



The red and green No and Yes LEDs begin to flash.

In the lower left corner of the display you'll see the type of file selected for saving to floppy disk.



The type of file selected for saving to disk

By turning the Parameter knob, you can select:

- RAM-SNDBANK—to save all of the sounds in RAM
- FLS-SNDBANK—to save all of the sounds in FLASH
- PRESET-BANK—to save all of the ZR's presets

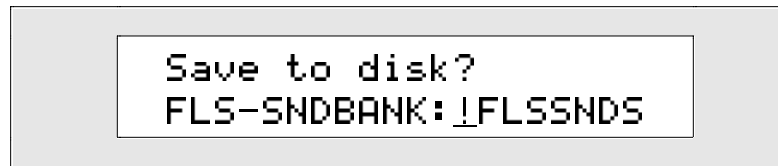
Note: Since presets utilize ROM, FLASH and RAM ZR-76 sounds, make sure that any FLASH and/or RAM sounds your presets use are also saved to floppy . When you reload your preset bank, you'll need to reload the sounds your presets depend on.

- RAM-RTMBANK—to save all of the rhythms in RAM
- FLS-RTMBANK—to save all of the rhythms in FLASH

Note: If you choose a bank that's currently empty, you'll see "N/A" displayed when the file type is selected, and the Yes and No LEDs will stop flashing.

3. Turn the Parameter knob clockwise or counter-clockwise to select the type of file you'd like to save to disk.

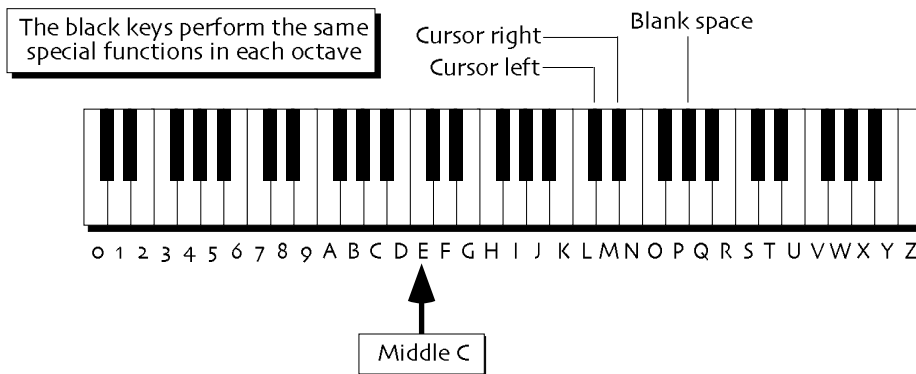
You'll see the display change as you select different items that can be saved. When you've found the desired type of file, the display will look something like this:



The type of bank you've chosen The default name for the selected type of bank

When viewing this display, you can give your sound, preset or rhythm bank a DOS file name (for an explanation of DOS file names, see “Floppy Disk File Names” earlier in this chapter). You can create a file name in one of two ways:

- You can spell the DOS file name on the keyboard as if it were a typewriter—the character associated with each key is printed above the key on the ZR's front panel. The C# and D# keys in each octave move the cursor forward and back on the display (the character currently selected for editing is underlined). The G# types a blank space.



Note: The keys outside of the range shown are not used for the naming of disk files.

- You can also name your file using the front panel controls. The up/down arrow buttons are used to select the character position within the name. The up arrow moves the location to the right, and the down arrow moves it to the left. The underlined character is selected and may be changed with the Value knob.

If you assign your file a name that's already been used for another disk file, the ZR will ask if you want to replace the earlier file with your new one. Respond by pressing the Yes or No buttons.

Tip: The Value knob provides access to characters unavailable on the keyboard.

- Using the ZR's keyboard and/or the front panel controls, name the file you'll be saving.
- When you've named your disk file, press the Yes button. The display confirms that your sound, preset or rhythm bank has been saved to floppy disk.

Warning: When saving data to a floppy disk, avoid removing the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory.

Saving a Single Sound, Preset, Rhythm, Sequence or Song to Floppy

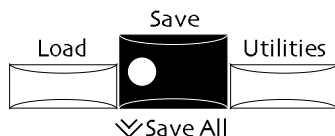
The ZR-76 allows you to save individual sounds, presets, rhythms, sequences and songs to floppy as the following file types:

- 1-SOUND—saves the currently selected sound in SoundFinder
- 1-PRESET—saves the currently selected preset in SoundFinder
- 1-RHYTHM—saves the currently selected Drum Machine rhythm
- 1-MIDIFILE—saves the currently selected sequence in the Song Editor
- 1-SONG—saves the currently selected song, all of its sequences, its song playlist if one has been

created, and its global chorus and global reverb settings

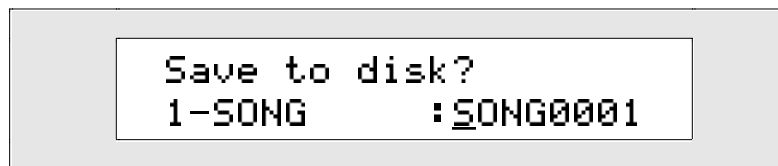
To Save a Sound, Preset, Rhythm, Sequence or Song to Floppy

1. Insert a formatted floppy into the ZR's disk drive.
2. Press the Disk/Global Save button.



The red and green No and Yes LEDs begin to flash.

In the lower left corner of the display you'll see the type of file that's currently selected for saving to floppy disk.



The type of file selected for saving to disk

By turning the Parameter knob, you can select:

- 1-SOUND—to save the sound currently selected in SoundFinder

Note: If split and layer in SoundFinder are on, the ZR will show an error message when you try to save a single sound. To save splits and layers to floppy, save them as presets.

- 1-PRESET—to save the preset currently selected in SoundFinder

Note: Since presets utilize ROM, FLASH and RAM ZR-76 sounds, make sure that any FLASH and/or RAM sounds your preset uses are also saved to floppy. When you reload your preset, you'll need to reload the sounds it depends on.

- 1-RHYTHM—to save the rhythm currently selected in the Drum Machine
- 1-MIDIFILE—to save the sequence currently selected in the Song Editor
- 1-SONG—saves the currently selected song, all of its sequences, its song playlist if it has one, and its global chorus and global reverb settings

Note: If you select 1-MIDIFILE when there's no sequence in the currently selected sequence location, or if you select 1-SONG when there are no sequences recorded, you'll see "N/A" displayed, and the Yes and No LEDs will stop flashing.

3. Turn the Parameter knob clockwise or counter-clockwise to select the type of file you'd like to save to disk.

You'll see the display change as you select different file types. When you've found the desired type of file, the display will look something like this:



The file type you've chosen

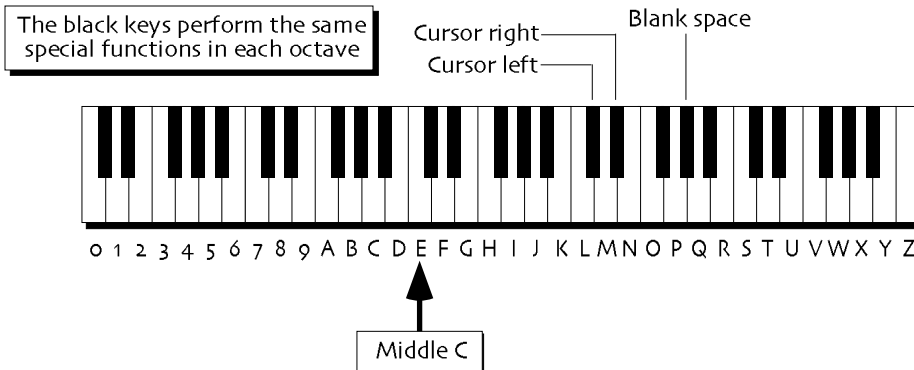


The first eight characters of the currently selected sound

When viewing this display, you can give your sound, preset, rhythm, sequence or song a DOS file name (for an explanation of DOS file names, see "Floppy Disk File Names" earlier in this chapter). You can create a file name in one of two ways:

- You can spell the DOS file name on the keyboard as if it were a typewriter—the character

associated with each key is printed above the key on the ZR's front panel. The C# and D# keys in each octave move the cursor forward and back on the display (the character currently selected for editing is underlined). The G# types a blank space.



Note: The keys outside of the range shown are not used for the naming of disk files.

- You can also name your file using the front panel controls. The up/down arrow buttons are used to select the character position within the name. The up arrow moves the location to the right, and the down arrow moves it to the left. The underlined character is selected and may be changed with the Value knob.

If you assign your file a name that's already been used for another disk file, the ZR will ask if you want to replace the earlier file with your new one. Respond by pressing the Yes or No buttons.

Tip: The Value knob provides access to characters unavailable on the keyboard.

- Using the ZR's keyboard and/or the front panel controls, name the file you'll be saving.
- When you've named your disk file, press the Yes button. The display confirms that your sound, preset, rhythm, sequence or song has been saved to floppy disk.

Warning: When saving data to a floppy disk, avoid removing the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory.

A Special Note About Saving Single Sounds

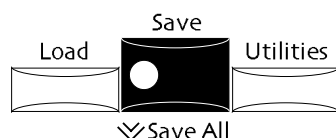
When you save a standard sound that's assigned to the insert effect bus, the sound's insert effect will be saved with the sound. When you save a drum or percussion kit sound, if any drum key is routed to the Insert FX Bus, the Insert Effect will be saved with the Sound, with one exception: when the only drum keys routed to the insert effect are using the sound called "Silence," the insert effect won't be saved with the sound.

Saving All of the Songs in the ZR's Memory as a Group

Each ZR-76 song consists of the sequences that comprise the song, its song playlist if you've created one, and the song's global chorus and global reverb settings. The ZR-76 can hold as many songs as memory allows. You can save all of the songs currently in your ZR-76 as a single ALL-SONGS disk file.

To Save All of the Songs in the ZR to Floppy Disk at Once

- Insert a formatted floppy into the ZR's disk drive.
- Press the Disk/Global Save button.



The red and green No and Yes LEDs begin to flash.

- Turn the Parameter knob. In the lower left corner of the display you'll see the type of file that's

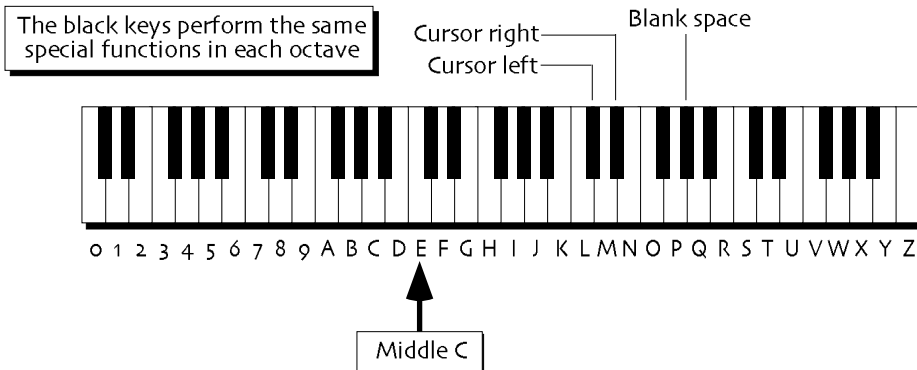
- currently selected for saving to floppy disk. The display will change as you select different file types.
4. Stop turning the Parameter knob when the display shows:



Note: If there are no songs currently in your ZR-76, you'll see "N/A" displayed when you select the ALL-SONGS file type, and the Yes and No LEDs will stop flashing.

While viewing the above display, you can give your collection of songs a DOS file name (for an explanation of DOS file names, see "Floppy Disk File Names" earlier in this chapter). You can create a file name in one of two ways:

- You can spell the DOS file name on the keyboard as if it were a typewriter—the character associated with each key is printed above the key on the ZR's front panel. The C# and D# keys in each octave move the cursor forward and back on the display (the character currently selected for editing is underlined). The G# types a blank space.



Note: The keys outside of the range shown are not used for the naming of disk files.

- You can also name your file using the front panel controls. The up/down arrow buttons are used to select the character position within the name. The up arrow moves the location to the right, and the down arrow moves it to the left. The underlined character is selected and may be changed with the Value knob.

If you assign your file a name that's already been used for another disk file, the ZR will ask if you want to replace the earlier file with your new one. Respond by pressing the Yes or No buttons.

Tip: The Value knob provides access to characters unavailable on the keyboard.

5. Using the ZR's keyboard and/or the front panel controls, name the file you'll be saving.
6. When you've named your disk file, press the Yes button. The display confirms that your songs have been saved to floppy disk.

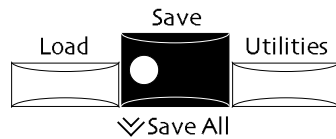
Warning: When saving data to a floppy disk, avoid removing the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory.

Saving Favorites Buttons Assignments to Floppy

The ZR-76 allows you to save all of your current Favorites buttons assignments to floppy in a group as a single FAVORITES disk file.

To Save Your Current Favorites Set to Floppy

1. Insert a formatted floppy into the ZR's disk drive.
2. Press the Disk/Global Save button.



The red and green No and Yes LEDs begin to flash.

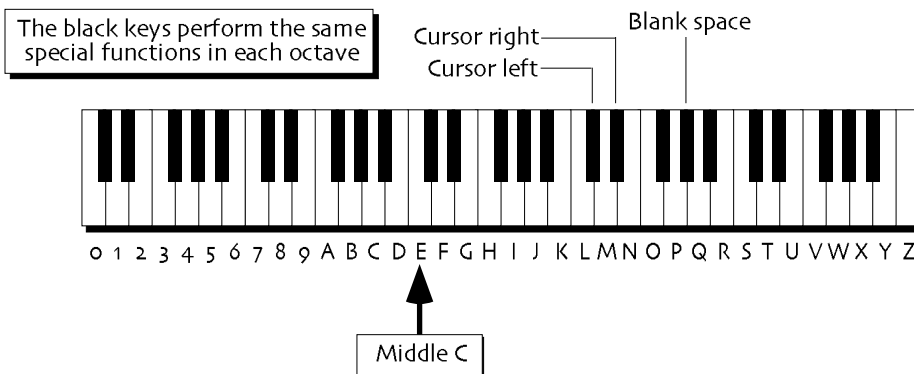
3. Turn the Parameter knob. In the lower left corner of the display you'll see the type of file that's currently selected for saving to floppy disk. The display will change as you select different file types.
4. Stop turning the Parameter knob when the display shows:



↑ The file type you've chosen ↑ The default name for the FAVORITES file type

While viewing the above display, you can give your favorites set a DOS file name (see “Floppy Disk File Names” earlier in this chapter). You can create a file name in one of two ways:

- You can spell the DOS file name on the keyboard as if it were a typewriter—the character associated with each key is printed above the key on the ZR's front panel. The C# and D# keys in each octave move the cursor forward and back on the display (the character currently selected for editing is underlined). The G# types a blank space.



Note: The keys outside of the range shown are not used for the naming of disk files.

- You can also name your file using the front panel controls. The up/down arrow buttons are used to select the character position within the name. The up arrow moves the location to the right, and the down arrow moves it to the left. The underlined character is selected and may be changed with the Value knob.

If you assign your file a name that's already been used for another disk file, the ZR will ask if you want to replace the earlier file with your new one. Respond by pressing the Yes or No buttons.

Tip: The Value knob provides access to characters unavailable on the keyboard.

5. Using the ZR's keyboard and/or the front panel controls, name the file you'll be saving.
6. When you've named your disk file, press the Yes button. The display confirms that your favorites have been saved to floppy disk.

Warning: When saving data to a floppy disk, avoid removing the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory.

Saving Everything in RAM to Floppy Disk at Once

The ZR-76 allows you to quickly save everything that's in RAM to a floppy—all at once. When you do this, the ZR saves everything currently in RAM as separate disk files, saving:

- the RAM sound bank as a SOUND-BANK disk file
- the RAM rhythm bank as a RHYTHM-BANK disk file
- all of the songs in ZR as an ALL-SONGS file

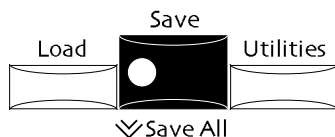
In addition, your ZR-76 creates a special ALL-RAM disk file. The ALL-RAM file takes a “snap-shot” of your ZR's RAM and enables you to reload everything you've saved back into its original RAM location.

The ZR-76 allows you to name the ALL-RAM disk file. The SOUND-BANK, RHYTHM-BANK and ALL-SONGS files that are saved along with the ALL-RAM file share this name.

Tip: All of the files saved using the ALL-RAM storage option can also be loaded back into your ZR-76 individually, as SOUND-BANK, RHYTHM-BANK and ALL-SONGS disk files.

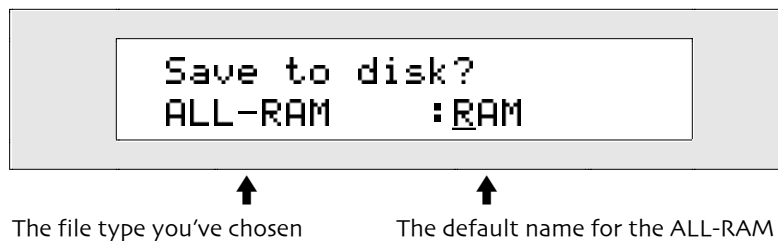
To Save the Entire ZR RAM Memory to Floppy Disk

1. Insert a formatted floppy into the ZR's disk drive.
2. Press the Disk/Global Save button.



The red and green No and Yes LEDs begin to flash.

3. Turn the Parameter knob. In the lower left corner of the display you'll see the type of file that's currently selected for saving to floppy disk. The display will change as you select different file types.
4. Stop turning the Parameter knob when the display shows:



The file type you've chosen

The default name for the ALL-RAM file type

If there's nothing currently in RAM, you'll see “N/A” displayed when you select the ALL-RAM file type, and the Yes and No LEDs will stop flashing.

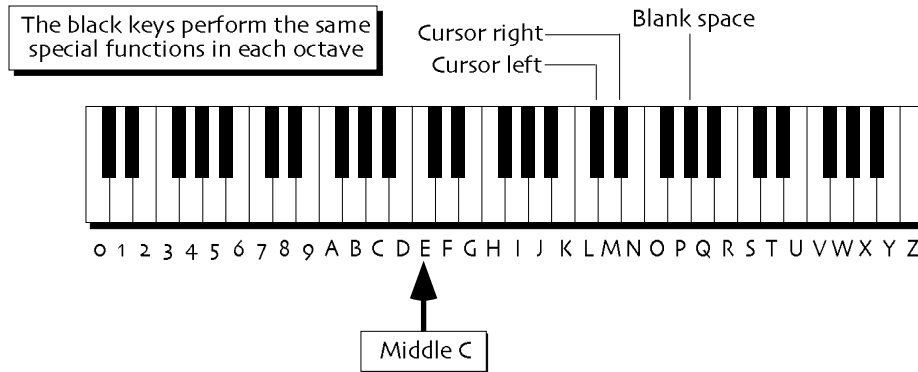
Tip: You can jump directly to this display by double-clicking the Disk/Global Save button when you want to save an ALL-RAM disk file.

While viewing the above display, you can give your ALL-RAM files a common DOS file name (for an explanation of DOS file names, see “Floppy Disk File Names” earlier in this chapter).

Note: Remember, every file that's saved to floppy disk during the ALL-RAM saving procedure will use this file name.

You can create a file name in one of two ways:

- You can spell the DOS file name on the keyboard as if it were a typewriter—the character associated with each key is printed above the key on the ZR's front panel. The C# and D# keys in each octave move the cursor forward and back on the display (the character currently selected for editing is underlined). The G# types a blank space.



Note: The keys outside of the range shown are not used for the naming of disk files.

- You can also name your file using the front panel controls. The up/down arrow buttons are used to select the character position within the name. The up arrow moves the location to the right, and the down arrow moves it to the left. The underlined character is selected and may be changed with the Value knob.

If you assign your file a name that's already been used for another disk file, the ZR will ask if you want to replace the earlier file with your new one. Respond by pressing the Yes or No buttons.

Tip: The Value knob provides access to characters unavailable on the keyboard.

- Using the ZR's keyboard and/or the front panel controls, name the file you'll be saving.
- When you've named your disk file, press the Yes button. The display will confirm the save.

Warning: When saving data to a floppy disk, avoid removing the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory.

Saving the Entire Contents of FLASH and RAM to Floppy at Once

Your ZR-76 allows you to save everything in its FLASH and RAM memory to a floppy all at once. When you do this, the ZR saves everything currently in FLASH and RAM as separate disk files, including:

- the FLASH sound bank as a SOUND-BANK disk file
- any RAM sound bank as a second SOUND-BANK disk file
- all of the presets in the ZR as a PRESET-BANK disk file
- the FLASH rhythm bank as a RHYTHM-BANK disk file
- any RAM rhythm bank as a second RHYTHM-BANK disk file
- all of the songs in ZR as an ALL-SONGS file

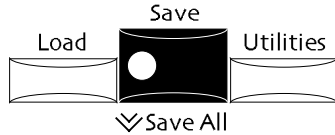
In addition, your ZR-76 creates a special ALL-SESSION disk file. The ALL-SESSION file takes a "snapshot" of your ZR's FLASH and RAM, enabling you to later reload everything you've saved back into its original FLASH or RAM location.

The ZR-76 allows you to name the ALL-SESSION disk file with a seven-character DOS file name. All of the files that are saved along with the ALL-SESSION file share this name. The ZR uses the eighth legal DOS character to show the source of the sound and rhythm banks. When you save an ALL-SESSION file, sound and rhythm banks that originated in FLASH memory are marked with an "F" affixed to the end of their ALL-SESSION name, and sound and rhythm banks from RAM are marked with an "R."

Tip: The files saved with the ALL-SESSION file type can also be loaded back into your ZR as individual SOUND-BANK, PRESET-BANK, RHYTHM-BANK and ALL-SONGS disk files.

To Save All of FLASH and RAM to Floppy Disk at Once

- Insert a formatted floppy into the ZR's disk drive.
- Press the Disk/Global Save button.



The red and green No and Yes LEDs begin to flash. The display will show:



What you see here may be different

If this display does not appear when you press the Disk/Global Save button, turn the Parameter knob counter-clockwise until it does. In the lower left corner of the display you'll see the type of file currently selected for saving to floppy disk.



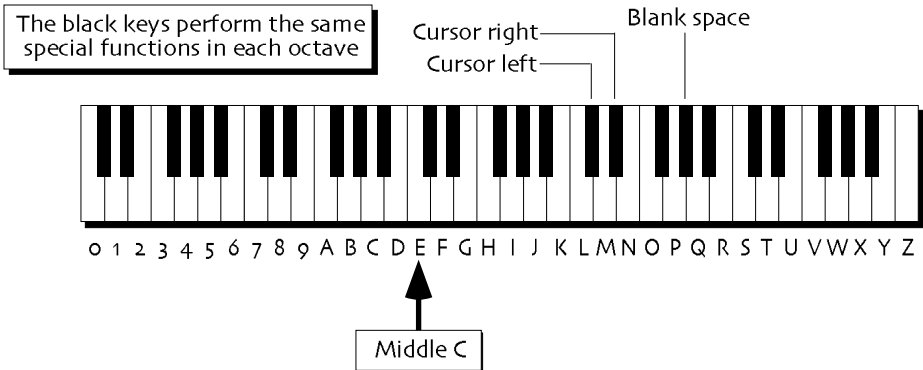
The selected file type The default name for the ALL-SESSION file type

While viewing the above display, you can assign your ALL-SESSION files a common seven-character DOS file name (for more on DOS file names, see "Floppy Disk File Names" earlier in this chapter).

Note: Remember, every file that's saved to floppy disk during the ALL-SESSION saving procedure will use this file name.

You can create a file name in one of two ways:

- You can spell the DOS file name on the keyboard as if it were a typewriter—the character associated with each key is printed above the key on the ZR's front panel. The C# and D# keys in each octave move the cursor forward and back on the display (the character currently selected for editing is underlined). The G# types a blank space.



Note: The keys outside of the range shown are not used for the naming of disk files.

- You can also name your file using the front panel controls. The up/down arrow buttons are used to select the character position within the name. The up arrow moves the location to the right, and the down arrow moves it to the left. The underlined character is selected and may be changed with the Value knob.

If you assign your file a name that's already been used for another disk file, the ZR will ask if you want to replace the earlier file with your new one. Respond by pressing the Yes or No buttons.

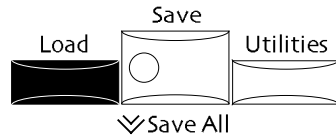
Tip: The Value knob provides access to characters unavailable on the keyboard.

- Using the ZR's keyboard and/or the front panel controls, name the file you'll be saving.
 - When you've named your disk file, press the Yes button. The display confirms that entire contents of your ZR's FLASH and RAM memory have been saved to floppy disk.
-

Warning: When saving data to a floppy disk, avoid removing the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory.

Loading Files from Floppy Disk

Pressing the Load button in the Disk/Global section of the front panel allows you to load data from any DOS-formatted HD or DD floppy disk.



The Load button in the Disk/Global section of the front panel allows you to load files from a DOS-formatted high-density or double-density floppy disk into the ZR-76. You can load the following types of ZR-76 files:

- SOUND-BANK—a bank of sounds
- 1-SOUND—a single sound
- PRESET-BANK—a bank of presets
- 1-PRESET—a single preset
- RHYTHM-BANK—a bank of Drum Machine rhythms
- 1-RHYTHM—a single Drum Machine rhythm
- 1-MIDIFILE—a single ZR-76 sequence, or an externally created Standard MIDI File of up to 215k in size (working with Standard MIDI Files is discussed in *Chapter 7*)
- ALL-SONGS—to load all of the songs that were in the ZR's memory when the selected file was saved
- 1-SONG—a single ZR songs, including its sequences, song playlist if it has one, and the song's global chorus and global reverb settings
- ALL-RAM—to load a set of files that constituted the entire contents of the ZR's RAM memory when the selected file was saved
- ALL-SESSION—to load a set of files that constituted the entire contents of the ZR's FLASH and RAM memory when the selected file was saved
- FAVORITES—to load a complete set of Favorites button assignments.

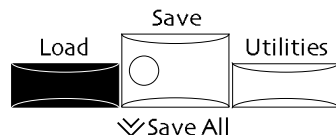
Note: When an MR-FLASH board has been installed in your ZR, you can also load .WAV- and .AIF-format samples (described later in this chapter).

Loading Sound Banks from Floppy

The ZR-76 allows you to load collections of sounds as sound banks. Each sound bank may be loaded into either FLASH or RAM memory, replacing any sounds previously stored there.

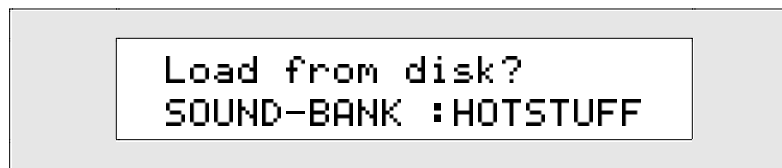
To Load a Bank of Sounds into RAM or FLASH

- Insert the floppy disk containing the sound bank you'd like to load into the ZR's disk drive.
- Press the Disk/Global Load button.



The red and green No and Yes LEDs begin to flash.

- Turn the Parameter knob until the display shows:



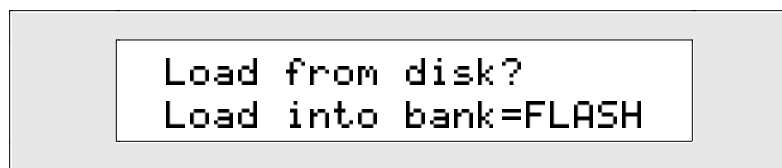
The type of file to be loaded The name of the first SOUND-BANK file on the disk

Note: If there are no SOUND-BANK files on the floppy disk, this display will not be available.

This display allows you to select the bank of sounds you'd like to load.

- Turn the Value knob or use the up/down arrow buttons to select the sound bank you'd like to load. As you turn the knob, you'll see the name of each SOUND-BANK file on the floppy.
- When you've selected a sound bank to load, press Yes.

The display will show:



The area of memory selected to receive the sound bank

This display allows you to select the area of memory into which you'd like to load your sound bank. The ZR-76 has two areas of memory to which you can load a sound:

- FLASH—the more permanent type of ZR memory, which remains intact until you erase it
- RAM—a temporary memory that's cleared when you turn your ZR-76 off.

Note: Whenever you load a FLASH sound bank, the ZR re-saves both the FLASH sound and preset banks in their entirety in order to make most efficient use of that area of memory. The process may take a few moments.

If you've allocated memory for a RAM sound bank in your ZR, you can turn the Parameter knob to select FLASH or RAM. If you haven't created a RAM sound bank, FLASH is the only setting available. To learn about FLASH and RAM, see "Understanding ZR-76 Memory" earlier in this chapter.

- Turn the Parameter knob to select the desired area of memory.
- Press the Yes button.

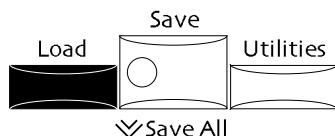
Warning: When loading data from a floppy disk, don't remove the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory!

Loading Single Sounds from Floppy

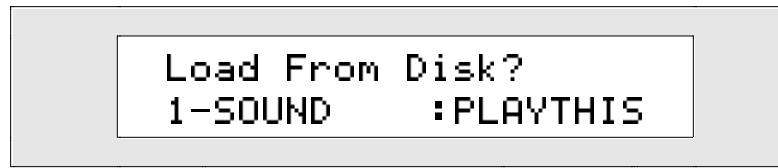
Single sounds are stored on floppy as 1-SOUND files. Each 1-SOUND file may be loaded into either FLASH or RAM memory, according to your needs.

To Load a Single Sound into the ZR-76

- Insert the floppy disk that contains the sound you'd like to load into the ZR's disk drive.
- Press the Disk/Global Load button.



- The red and green No and Yes LEDs begin to flash.
- Turn the Parameter knob until the display shows:



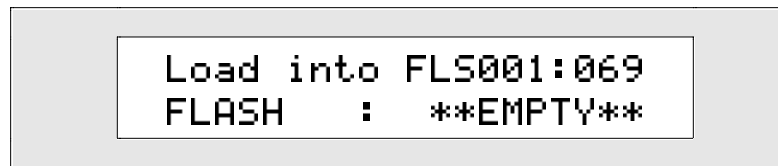
↑
The type of file to be loaded

↑
The name of the first 1-SOUND file on the disk

This display allows you to select the sound you'd like to load.

Note: If there are no single sounds on the floppy disk, this display will not be available.

- Turn the Value knob or use the up/down arrow buttons to select the sound you'd like to load. As you turn the knob, you'll see the name of each 1-SOUND file on the floppy.
- When you've selected a sound to load, press Yes.
The display will show:



↑
The lowest-numbered empty location will be shown here

This display allows you to select a memory location for the sound you're loading.

The ZR-76 has two areas of memory to which you can load a sound:

- FLASH—the more permanent type of ZR memory, which remains intact until you erase it
- RAM—a temporary memory that's cleared when you turn your ZR-76 off.

Note: Whenever you load a sound into a FLASH sound bank, the ZR re-saves both the FLASH sound and preset banks in their entirety in order to make most efficient use of that area of memory. The process may take a few moments.

If you've created a RAM sound bank in your ZR, you can turn the Parameter knob to select FLASH or RAM. If you haven't created a RAM sound bank, FLASH is the only setting available. To learn about FLASH and RAM, see "Understanding ZR-76 Memory" earlier in this chapter.

- Turn the Parameter knob to select the desired area of memory.
- Turn the Value knob to select a specific location within the FLASH or RAM bank you've selected. If there's currently a sound in any selected location, its name will show on the bottom line of the display. If the selected location is empty, the bottom line will show "***EMPTY**". You can select an empty memory location, or one that's occupied by a sound you don't want to keep.
- When you've selected a location for your sound, press the Yes button.

Warning: When loading data from a floppy disk, don't remove the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory!

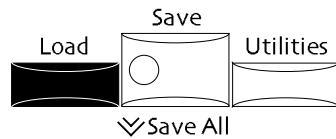
Loading Preset Banks from Floppy

The ZR-76 allows you to load collections of presets as preset banks.

Note: Since presets utilize ROM, FLASH and RAM ZR-76 sounds, make sure that the FLASH and/or RAM sounds your presets use are also loaded into the ZR to ensure that your presets sound as intended.

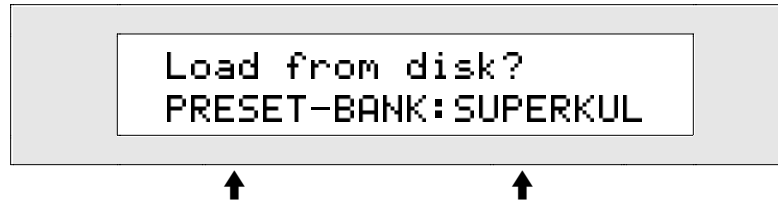
To Load a Preset Bank from Floppy

1. Insert the floppy disk that contains the preset bank you'd like to load into the ZR's disk drive.
2. Press the Disk/Global Load button.



The red and green No and Yes LEDs begin to flash.

3. Turn the Parameter knob until the display shows:



The type of file to be loaded The name of the first PRESET-BANK file on the disk

Note: If there are no PRESET-BANK files on the floppy disk, this display will not be available.

This display allows you to select the bank of presets you'd like to load.

4. Turn the Value knob or use the up/down arrow buttons to select the PRESET-BANK file you'd like to load. As you turn the knob, you'll see the name of each PRESET-BANK file on the floppy.

Note: Whenever you load a preset bank, the ZR re-saves both the FLASH sound and preset banks in their entirety in order to make most efficient use of that area of memory. The process may take a few moments.

5. When you've selected a file to load, press Yes.

Warning: When loading data from a floppy disk, don't remove the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory!

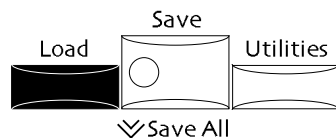
Loading Single Presets from Floppy

Single presets are stored on floppy, and reloaded back into the ZR, as 1-PRESET files.

Note: Since presets utilize ROM, FLASH and RAM ZR-76 sounds, make sure that any FLASH and/or RAM sounds your preset uses are also loaded into the ZR to ensure that it sounds as intended.

To Load a Single Preset From Floppy

1. Insert the floppy disk that contains the preset you'd like to load into the ZR's disk drive.
2. Press the Disk/Global Load button.



The red and green No and Yes LEDs begin to flash.

- Turn the Parameter knob until the display shows:



The type of file to be loaded

The name of the first 1-PRESET file on the disk

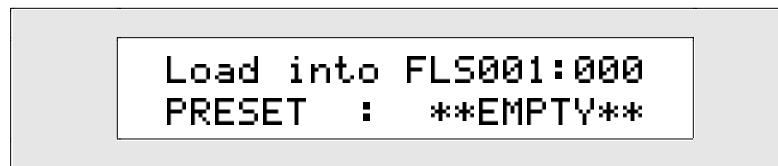
This display allows you to select the preset you'd like to load.

Note: If there are no presets on the floppy disk, this display will not be available.

- Turn the Value knob or use the up/down arrow buttons to select the preset you'd like to load. As you turn the knob, you'll see the name of each 1-PRESET file on the floppy.

Note: Whenever you load a preset into FLASH, the ZR re-saves both the FLASH sound and preset banks in their entirety in order to make most efficient use of that area of memory. The process may take a few moments.

- When you've selected a preset to load, press Yes.
The display will show:



The lowest-numbered empty location will be shown here

This display allows you to select a memory location for the preset you're loading by turning the right knob. If there's anything already in the currently selected location, its name will show on the bottom line of the display. If the currently selected location is empty, the bottom line will show "****EMPTY****".

Presets in the ZR-76 can only be loaded into FLASH memory (to learn about FLASH memory, see "Understanding ZR-76 Memory" earlier in this chapter.)

- Select the desired memory location and press the Yes button.

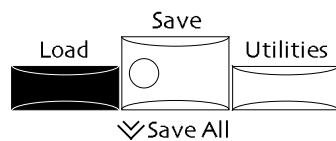
Warning: When loading data from a floppy disk, don't remove the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory!

Loading Rhythm Banks from Floppy

The ZR-76 allows you to load collections of rhythms as rhythm banks. Each rhythm bank may be loaded into either FLASH or RAM memory, replacing any rhythms previously stored there.

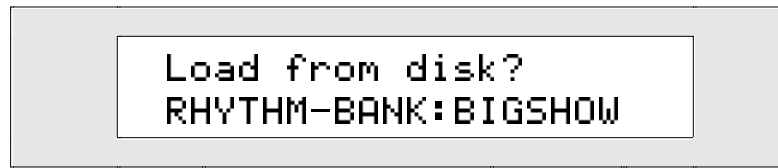
To Load a Bank of Rhythms into RAM or FLASH

- Insert the floppy disk containing the Drum Machine rhythm bank you'd like to load into the ZR's disk drive.
- Press the Disk/Global Load button.



The red and green No and Yes LEDs begin to flash.

3. Turn the Parameter knob until the display shows:



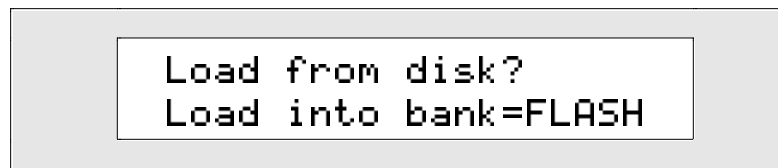
The type of file to be loaded The name of the first RHYTHM-BANK file on the disk

Note: If there are no RHYTHM-BANK files on the floppy disk, this display will not be available.

This display allows you to select the bank of rhythms you'd like to load.

4. Turn the Value knob or use the up/down arrow buttons to select the rhythm bank you'd like to load. As you turn the knob, you'll see the name of each RHYTHM-BANK file on the floppy.
5. When you've selected a rhythm bank to load, press Yes.

The display will show:



The area of memory selected to receive the rhythm bank

This display allows you to select the area of memory into which you'd like to load your rhythm bank. The ZR-76 has two areas of memory to which you can load a rhythm:

- FLASH—the more permanent type of ZR memory, which remains intact until you erase it
- RAM—a temporary memory that's cleared when you turn your ZR-76 off.

If you've allocated memory for a RAM rhythm bank in your ZR, you can turn the Parameter knob to select FLASH or RAM. If you haven't created a RAM rhythm bank, FLASH is the only setting available. To learn about FLASH and RAM, see "Understanding ZR-76 Memory" earlier in this chapter.

6. Turn the Parameter knob to select the desired area of memory.
7. Press the Yes button.

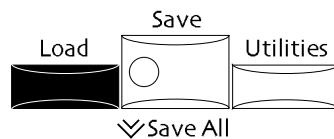
Warning: When loading data from a floppy disk, don't remove the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory!

Loading Single Drum Machine Rhythms from Floppy

Single rhythms are stored on floppy as 1-RHYTHM files. Each 1-RHYTHM file may be loaded into either FLASH or RAM memory, according to your needs.

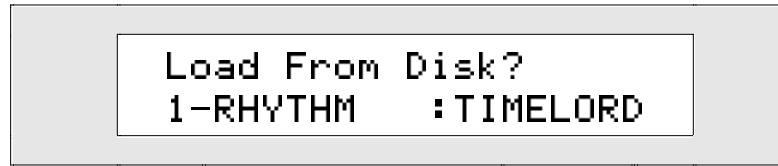
To Load a Single Drum Machine Rhythm from Floppy

1. Insert the floppy disk that contains the rhythm you'd like to load into the ZR's disk drive.
2. Press the Disk/Global Load button.



The red and green No and Yes LEDs begin to flash.

- Turn the Parameter knob until the display shows:



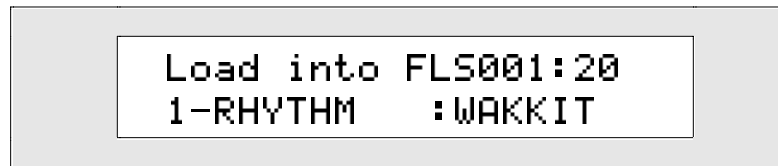
The type of file to be loaded

The name of the first 1-RHYTHM file on the disk

This display allows you to select the rhythm you'd like to load.

Note: If there are no single rhythms on the floppy disk, this display will not be available.

- Turn the Value knob or use the up/down arrow buttons to select the rhythm you'd like to load. As you turn the knob, you'll see the name of each 1-RHYTHM file on the floppy.
- When you've selected the rhythm you'd like to load from floppy, press Yes. The display will show:



The lowest-numbered empty location will be shown here

This display allows you to select a memory location for the rhythm you're loading.

The ZR-76 has two areas of memory to which you can load a rhythm:

- FLASH—the more permanent type of ZR memory, which remains intact until you erase it
- RAM—a temporary memory that's cleared when you turn your ZR-76 off.

If you've created a RAM rhythm bank in your ZR, you can turn the Parameter knob to select FLASH or RAM. If you haven't created a RAM rhythm bank, FLASH is the only setting available. To learn about FLASH and RAM, see "Understanding ZR-76 Memory" earlier in this chapter.

- Turn the Parameter knob to select the desired area of memory.
- Turn the Value knob to select a specific location within the FLASH or RAM bank you've selected. If there's currently a rhythm in any selected location, its name will show on the bottom line of the display. If the selected location is empty, the bottom line will show "***EMPTY***". You can select an empty memory location, or one that's occupied by a rhythm you don't want to keep.
- When you've selected a location for your rhythm, press the Yes button.

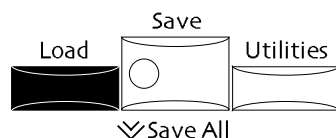
Warning: When loading data from a floppy disk, don't remove the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory!

Loading ZR-76 Sequences and Standard MIDI Files

ZR-76 sequences are saved and loaded as Standard MIDI Files. Standard MIDI Files created elsewhere can also be loaded as sequences into the ZR-76.

To Load a Single Sequence or Standard MIDI File From Floppy

- Insert the floppy disk containing the ZR sequence or Standard MIDI File you'd like to load into the ZR's disk drive.
- Press the Disk/Global Load button.



The red and green No and Yes LEDs begin to flash.

3. Turn the Parameter knob until the display shows:



↑
↑
 The type of file to be loaded The name of the first 1-MIDIFILE disk file

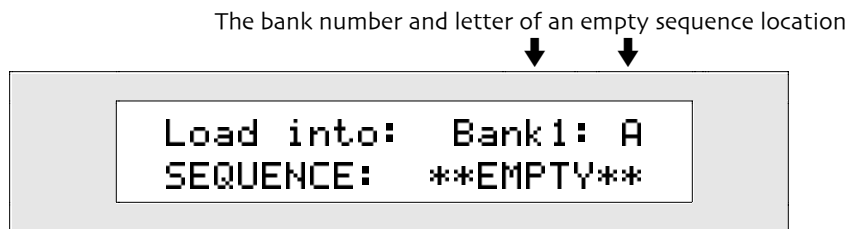
All ZR-76 sequences and Standard MIDI Files are read from floppy as MIDIFILES.

Note: If there are no MIDIFILES on the floppy disk, this display will not be available.

This display allows you to select the MIDIFILE you'd like to load.

4. Turn the Value knob or use the up/down arrow buttons to select the MIDIFILE you'd like to load. As you turn the knob, you'll see the name of each 1-MIDIFILE disk file on the floppy.
5. When you've selected a MIDIFILE to load, press Yes.

The display will show:



↑
If there was a sequence in this location, its name would appear here

This display allows you to select a location for the sequence or Standard MIDI File you're loading. If an empty sequence location is currently selected in the Song Editor, the ZR will offer you that location as a destination for the MIDIFILE you're loading. If the currently selected sequence contains data, the ZR will suggest the first empty sequence location as a destination. You can select a new location by:

- pressing the Song Editor Bank and A-H buttons to select a new location.
- dialing in a new location with the Value knob.

In either case, the display will reflect your choice. If you choose a location that already contains a sequence, its name will be shown on the bottom line of the displays.

6. Select the desired memory location and press the Yes button.

Chapter 7 describes working with Standard MIDI Files.

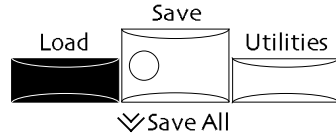
Warning: When loading data from a floppy disk, don't remove the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory!

Loading Collections of Songs from Floppy

The ZR-76 allows you to load groups of songs with a single loading operation. When these ALL-SONGS files are loaded into your ZR-76, they replace any songs and sequences currently in the ZR's memory.

To Load an ALL-SONGS Song Collection from Floppy

1. Insert the floppy disk that contains the ALL-SONGS file you'd like to load into the ZR's disk drive.
2. Press the Disk/Global Load button.



The red and green No and Yes LEDs begin to flash.

3. Turn the Parameter knob until the display shows:



The type of file to be loaded The name of the first ALL-SONGS file on the disk

Note: If there are no ALL-SONGS files on the floppy disk, this display will not be available.

This display allows you to select the collection of songs you'd like to load.

4. Turn the Value knob or use the up/down arrow buttons to select the ALL-SONGS file you'd like to load. As you turn the knob, you'll see the name of each ALL-SONGS file on the floppy.
5. When you've selected a file to load, press Yes.

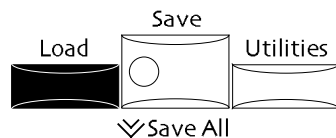
Warning: When loading data from a floppy disk, don't remove the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory!

Loading Individual Songs from Floppy

Single songs may be loaded into your ZR-76. A song contains sequences, a song playlist if there is one, and the song's global chorus and global reverb settings. When a single song file is loaded into your ZR, the song that had been previously selected is moved into the ZR's song memory.

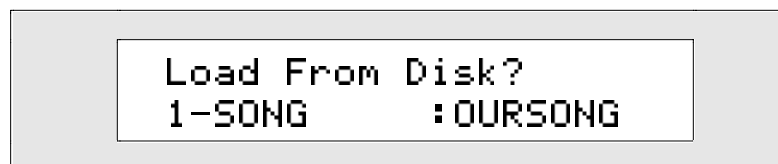
To Load a Single Song from Floppy

1. Insert the floppy disk that contains the song you'd like to load into the ZR's disk drive.
2. Press the Disk/Global Load button.



The red and green No and Yes LEDs begin to flash.

3. Turn the Parameter knob until the display shows:



The type of file to be loaded The name of the first 1-SONG file on the disk

This display allows you to select the song you'd like to load.

Note: If there are no single songs on the floppy disk, this display will not be available.

4. Turn the Value knob or use the up/down arrow buttons to select the song you'd like to load. As you

turn the knob, you'll see the name of each 1-SONG file on the floppy.

5. When you've selected the song you'd like to load from floppy, press Yes.

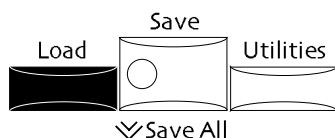
Warning: When loading data from a floppy disk, don't remove the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory!

Loading a Set of Favorites from Floppy

You can load a set of favorites into the ZR from floppy. After you've loaded the set, press the desired Favorites button—or tap the desired foot switch if you've programmed this function (see *Chapter 4*) to select the favorite you seek.

To Load a Set of Favorites from Floppy

1. Insert the floppy disk that contains the favorites set you'd like to load into the ZR's disk drive.
2. Press the Disk/Global Load button.



The red and green No and Yes LEDs begin to flash.

3. Turn the Parameter knob until the display shows:



↑
The type of file to be loaded
↑
The name of the first FAVORITES file on the disk

This display allows you to select the group of favorites you'd like to load.

4. Turn the Value knob or use the up/down arrow buttons to select the favorites you'd like to load. As you turn the knob, you'll see the name of each FAVORITE file on the floppy.
5. When you've selected the set you'd like to load from floppy, press Yes.

Warning: When loading data from a floppy disk, don't remove the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory!

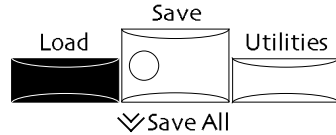
Loading an ALL-RAM File from Floppy

The ZR-76 allows you to quickly reload the “snapshot” of your ZR's RAM that you saved earlier as an ALL-RAM file (see “Saving Everything in RAM to Floppy Disk at Once” earlier in this chapter). The sounds, rhythms and songs that were in your ZR's RAM at that time were saved on the floppy disk as separate files sharing a common name. Your ZR also created an ALL-RAM file, which can be used to automatically reload all these files at once.

Note: If your ZR-76 had RAM memory allocated to sounds and/or rhythms when an ALL-RAM file was originally saved, you'll want to duplicate that memory scheme before you reload the file, so as to ensure that all of its sounds and/or rhythms have RAM memory space designated for their use.

To Load an ALL-RAM File from Floppy

1. Insert the floppy disk that contains the ALL-RAM file you'd like to load into the ZR's disk drive.
2. Press the Disk/Global Load button.



The red and green No and Yes LEDs begin to flash.

3. Turn the Parameter knob until the display shows:



The type of file to be loaded

The name of the first ALL-RAM file on the disk

Note: If there are no ALL-RAM files on the floppy disk, this display will not be available.

This display allows you to select the ALL-RAM disk file you'd like to load.

4. Turn the Value knob or use the up/down arrow buttons to select the ALL-RAM file you'd like to load. As you turn the knob, you'll see the name of each ALL-RAM file on the floppy.

Warning: Before you complete the loading of an ALL-RAM file, make sure there is nothing currently in RAM that you want to keep.

5. When you've selected a file to load, press Yes.

Since ALL-RAM files can contain a good deal of data, your file may take a few moments to load.

Warning: When loading data from a floppy disk, don't remove the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory!

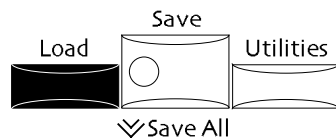
Loading an ALL-SESSION File from Floppy

The ZR-76 allows you to quickly reload the “snapshot” of its FLASH and RAM memory that you saved earlier as an ALL-SESSION file (see “To Save All of FLASH and RAM to Floppy Disk at Once”). The sounds, presets, rhythms and songs that were in your ZR's FLASH and RAM at that time were saved on the floppy disk as separate files sharing a common name. Your ZR also created an ALL-SESSION file, which can be used to automatically reload all these files at once.

Note: If your ZR-76 had RAM memory allocated to sounds and/or rhythms when an ALL-SESSION file was originally saved, you'll want to duplicate that memory scheme before you re-load the file, so as to ensure that all of its RAM sounds and/or rhythms have RAM memory space designated for their use.

To Load an ALL-SESSION File from Floppy

1. Insert the floppy disk that contains the ALL-SESSION file you'd like to load into the ZR's disk drive.
2. Press the Disk/Global Load button.



The red and green No and Yes LEDs begin to flash.

- Turn the Parameter knob until the display shows:



Note: If there are no ALL-SESSION files on the floppy disk, this display will not be available.

This display allows you to select the ALL-SESSION disk file you'd like to load.

- Turn the Value knob or use the up/down arrow buttons to select the ALL-SESSION file you'd like to load. As you turn the knob, you'll see the name of each ALL-SESSION file on the floppy.

Warning: Before you complete the loading of an ALL-SESSION file, make sure there is nothing currently in FLASH or RAM that you want to keep.

- When you've selected a file to load, press Yes.

Since ALL-SESSION files can contain a great deal of data, your file may take a little while to finish loading.

Warning: When loading data from a floppy disk, don't remove the disk from the drive until the disk drive light is no longer flashing—doing so may result in corrupted data on the disk and/or in the ZR's internal memory!

Loading and Using Samples In the ZR-76

Note: The loading of samples into a ZR-76 requires the installation of an MR-FLASH Sample Memory Board. The MR-FLASH package contains instructions for setting up an MR-FLASH board. The ZR-76 will recognize a single MR-FLASH board at a time—if multiple MR-FLASH boards are installed, only the lowest-numbered board will be accessible.

What Kind of Samples Can Be Loaded?

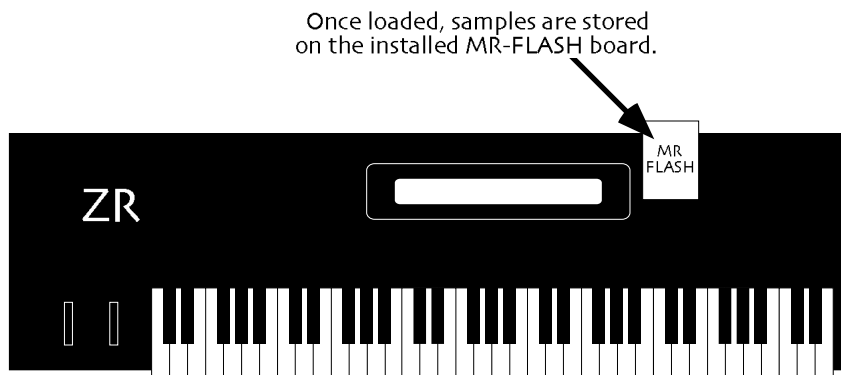
Once an MR-FLASH Expansion Board has been installed, the ZR-76 can load wavesample data in the following formats:

.WAV:	AIF:
8-bit PCM	8-bit PCM
16-bit PCM	16-bit PCM
a-Law	
u-Law	
IMA-ADPCM	

Note: The now-obsolete Microsoft .WAV ADPCM format is not supported.

Where Do Loaded Samples Go?

When the ZR-76 loads sample data from a floppy, the data is stored on the MR-FLASH board.



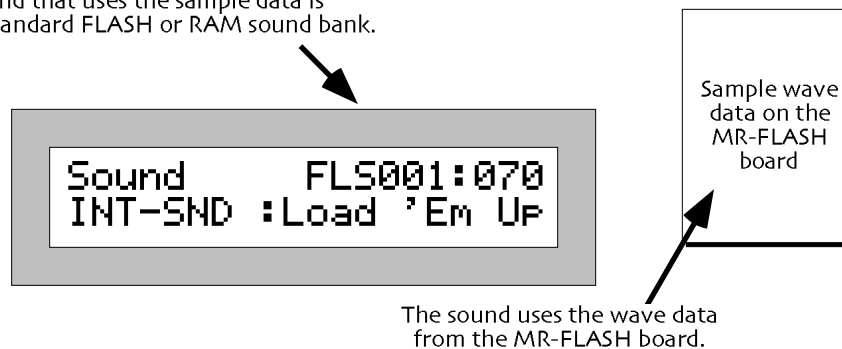
Once loaded, samples are stored on the installed MR-FLASH board.

An MR-FLASH Sample Memory Board provides 4 megabytes of non-volatile space, meaning that your sample data will remain safely stored there for as long as you desire. Memory permitting, there can be up to 128 samples stored on an MR-FLASH board.

How Are Samples Played?

The ZR-76 uses loaded sample data in a manner similar to the way in which they use onboard ROM wave data: it is not played directly; rather, it's incorporated into ZR sounds. When you load a sample into the FLASH board, your ZR-76 automatically creates a sound that uses the newly imported sample data—the sample data is accessed by playing this sound. The new sound, which uses the sample file's name as a default, will be assigned to the *CUSTOM and USER-SND SoundFinder categories. You can rename the sound, if you wish, and you can store the sound in any internal FLASH or RAM location.

The sound that uses the sample data is stored in a standard FLASH or RAM sound bank.



If the sample is a looped sample, its loop will still be in place after the sample has been loaded into your ZR-76. The sample will retain its root key, and will play throughout the ZR's 88-key range.

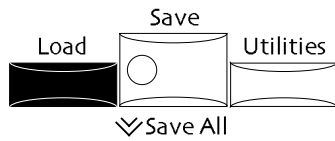
Loading Samples

.WAV and AIF samples may be loaded into a ZR-76 from any DOS-formatted floppy. Samples may reside in root or sub-directories—the ZR-76 will locate them automatically.

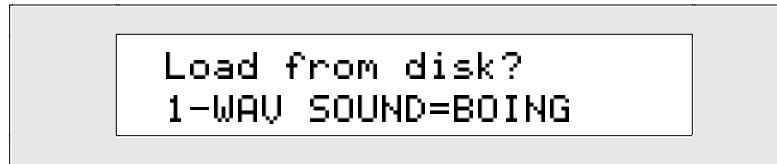
Note: Since the ZR-76 employs DOS disk file naming conventions, AIF files created on a Macintosh require the addition of a “.aif” extension attached to the end of the sample file's name. Without this suffix, your ZR-76 will not “see” the file on a floppy.

To Load a Sample Into the ZR-76

1. Insert the floppy containing the sample into the ZR's disk drive.
2. Press the Disk/Global Load button.

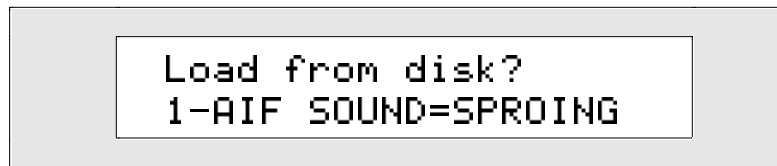


3. If you're loading a .WAV sample, turn the Parameter knob until the display looks something like this:



↑
↑
 The kind of sample to be loaded The name of the currently selected .WAV sample

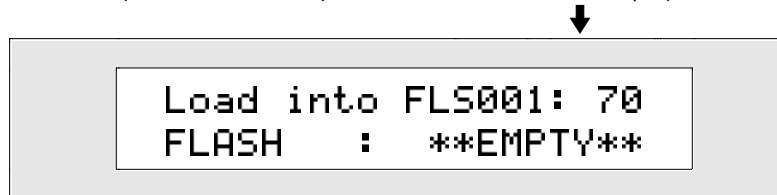
If you're loading an AIF sample, turn the Parameter knob until the display looks something like this:



↑
↑
 The kind of sample to be loaded The name of the currently selected .AIF sample

4. Turn the Value knob to select the specific sample you'd like to load.
5. When the desired sample file has been selected, press Yes. The display will show:

The memory location currently selected for the sound that plays the sample



↑
↑
 The selected sound bank The name of the sound currently in the selected location

6. If you'd like to store the sound that will play your new sample in the ZR's internal FLASH sound bank, you can turn the Value knob to select a new FLASH sound bank location if you like.
7. When you've selected the FLASH location into which you'd like to store the sound that will play your newly loaded sample, press the Yes button.
8. If you'd like to store the sound in a RAM sound bank—presuming you've created a RAM bank—turn the Parameter knob to select RAM.
9. Turn the Value knob to select the desired location in the RAM sound bank for the sound that will play your sample.
10. Press Yes to save the sound to the selected location.

Note: If you save a wavesample-based sound to a RAM sound bank location, make sure to immediately save a copy of the sound to floppy—otherwise, the sound will be cleared from the ZR's memory when you power down, leaving you unable to access the sample you've loaded.

When the floppy drive stops working, your new sample-playing sound will be selected, and you'll be ready to enjoy your newly loaded sample.

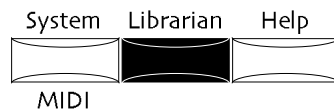
Erasing a Sample from the MR-FLASH Sample Memory Board

There may be occasions on which you'd like to erase an unwanted sample from the MR-FLASH board to free up memory.

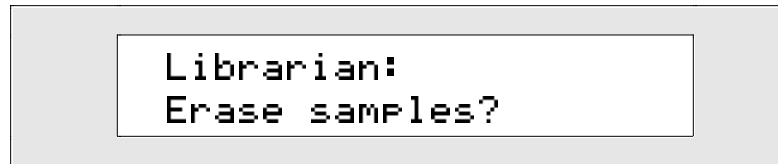
Note: The ZR-76 needs to utilize their onboard RAM memory during the process of erasing samples from the MR-FLASH Sample Memory Board. This requires the erasure of RAM as part of the sample-erasure process. Before erasing samples, make sure to save to floppy disk anything in RAM—a sound, rhythm, sequence or song—first.

To Erase a Single Sample

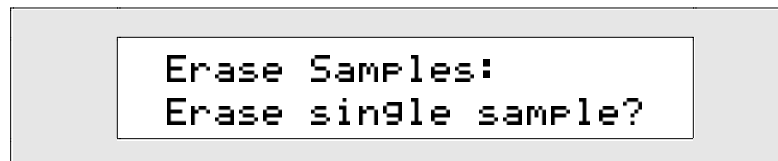
1. Press the Librarian button.



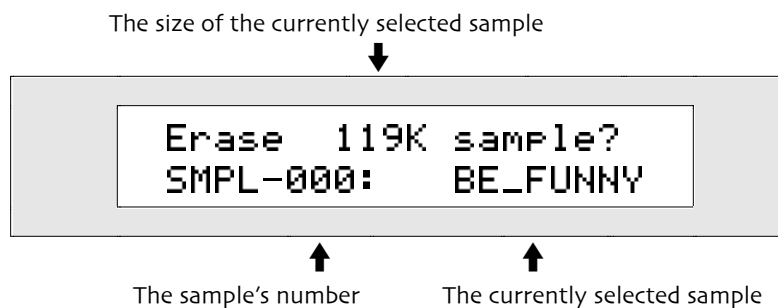
2. Turn the Parameter knob until the display shows:



3. Press the Yes button.
4. If necessary, turn the Parameter knob so that the display shows:



5. Press the Yes button.
The display shows:



6. Turn the Value knob to select the sample you'd like to erase.
The top line of the display will show how much memory will be regained by erasing the sample.
7. When you've selected the sample you'd like to delete, press the Yes button.

The display shows:



This display is a reminder that erasing a sample requires the erasure of everything currently in the ZR’s RAM memory.

8. If there’s nothing in RAM that you need to save to floppy, press the Yes button.
The sample and the sound that played it will be erased. If you’ve got something in the ZR’s RAM that needs to be saved to floppy, press the No button to cancel the erase procedure.

Erasing the Entire MR-FLASH Sample Memory Board

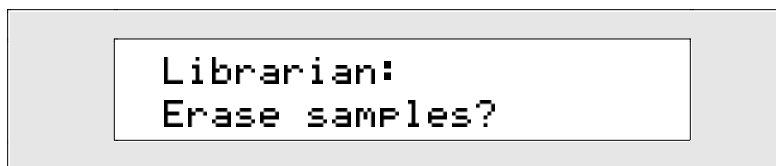
The ZR-76 allows you to erase all of the samples from your MR-FLASH Sample Memory board in a single operation. This is handy when you’d like to “wipe the slate clean,” or if you decide that your samples are behaving unexpectedly and need to be reloaded (all computer memory, including FLASH, can become corrupted). In either case, erasing the board completely—or “formatting” it—is the thing to do.

To Erase All of the Samples on the MR-FLASH Board

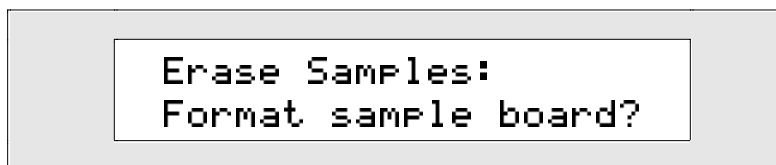
1. Press the Librarian button.



2. Turn the Parameter knob until the display shows:



3. Press the Yes button.
4. Turn the Parameter knob so that the display shows:



5. Press the Yes button. The display shows:

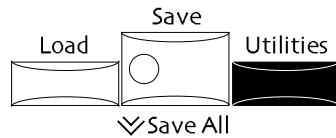


This is provided as a double-check to make sure you really want to erase all of your samples from the MR-FLASH board.

6. If you’re ready to format/erase the MR-FLASH board, press the Yes button.
If you’d like to cancel the procedure, press the No button.

Disk File Management

The ZR-76 offers a number of helpful utilities for working with files stored on a floppy disk. The Utilities button in the Disk/Global section of the front panel provides access to these file management tools.

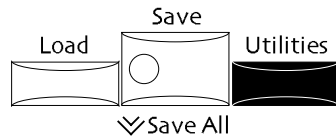


General Technique for Using the ZR Disk Utilities

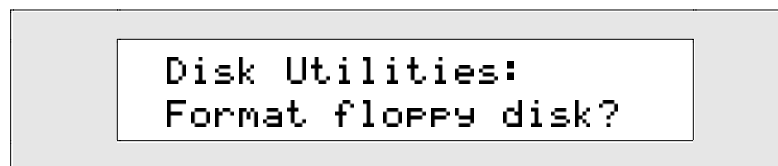
The disk utility functions are grouped into several categories of activity, accessed by answering “Yes” to the appropriate question posed on the ZR’s display.

To Use the Disk Utilities

1. Press the Utilities button.



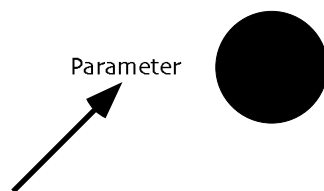
The No and Yes LEDs will begin to flash, and the display will show:



What you see on the bottom line may be different

2. Turn the Parameter knob clockwise and counter-clockwise.

Sound/Rhythm Type



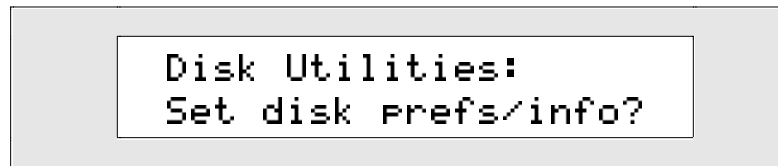
The display will show:



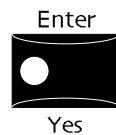
or:



or:



The disk file management tools are conveniently grouped into four areas, each of which may be accessed by pressing the Yes button in response to the appropriate question.



When you answer “yes” to:

- “Format floppy disk” you can format and erase a high-density floppy disk.
 - “Erase disk file?” you can remove an individual file from a floppy disk inserted in the ZR’s disk drive.
 - “Rename disk file?” you can give a new name to an individual file on the floppy disk in the ZR’s disk drive.
 - “Set disk prefs/info?” you can arrange to view all of the files on a floppy in either alphabetical order or the order in which they were saved to the disk. You can also learn how much free space is available on a floppy inserted into the ZR’s disk drive.
3. Press the Yes button in response to the appropriate question.
Specific instructions for each task can be found below.

Tip: You can cycle through the top-level disk utility questions by pressing the Utilities button again at any time.

Formatting a Floppy Disk

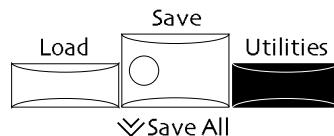
The ZR-76 can read and save files to DOS-formatted high-density (HD) and double-density (DD) floppy disks. Before a disk can be used by the ZR-76 to store data, it must be in DOS format—this is equally true for blank disks or disks already formatted to some other standard. You can use your ZR-76 to format HD floppy disks. You may format DD disks on any device capable of DOS formatting using the DOS command “format (the letter designator of your floppy drive): /F:720”.

Warning: Make sure that each disk you format doesn’t contain anything you want to keep. All data on a disk will be lost when the disk is formatted.

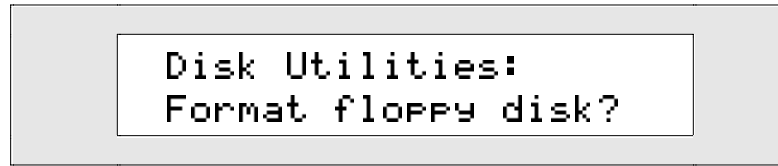
To Format a Floppy Disk

1. Insert a non-copy-protected, high density 3.5” floppy disk into the disk drive, with the label-side facing up, and the metal shutter facing away from you. Make sure the plastic write-protect tab is in the closed position (no light showing through the window).
2. Press the Utilities button.

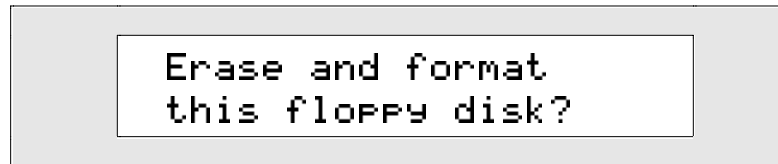
The red/green No and Yes LEDs begin to flash.



- Turn the Parameter knob until the display shows:



- Press Yes if you'd like to continue the procedure, or No if you'd like to cancel.
- If you press Yes, the display will ask if you're sure you want to format the floppy in the disk drive:



Warning: When you format a floppy, any information it currently contains will be erased. Make sure the disk doesn't contain any files you'd like to keep.

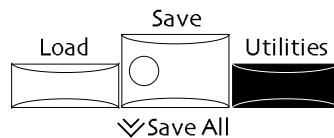
- If you're sure you'd like to format the floppy, press Yes. If you'd rather not continue, press No. If the floppy in the disk drive is copy protected, the ZR's display will indicate that it is unable to format the floppy. To format disk, take it out of the drive and move the copy-protect tab to the unprotected (closed-window) position. You may then start again from step 1.
- The ZR-76 will begin formatting the disk. This process takes a few minutes. The display will indicate that formatting is taking place, and the disk drive LED will light. When the process is complete, the display will indicate the disk has been successfully formatted.

Erasing Floppy Disk Files

The ZR-76 allows you to permanently erase any ZR-76 floppy disk file.

To Erase a Floppy Disk File

- Insert the floppy containing the file you'd like to erase into the ZR's floppy drive, with the label-side facing up, and the metal shutter facing away from you. Make sure the plastic write-protect tab is in the closed position (no light showing through the window).
- Press the Utilities button—the red/green No and Yes LEDs begin to flash.

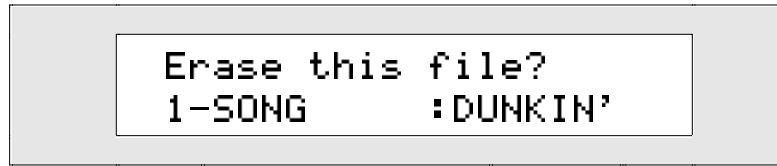


- Turn the Parameter knob until the display shows:



- Press Yes if you'd like to continue the procedure, or No if you'd like to cancel.

If you press Yes, the display will allow you to select the file you'd like to erase.



The type of file to be erased The name of the first file of the selected type on the disk

The Parameter knob will select different types of files. The Value knob will select files of the currently selected type.

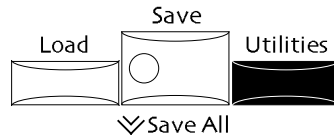
5. Turn the Parameter knob to select the type of the file you'd like to erase.
6. When you've selected a type of file, turn the Value knob to select the specific file you'd like to erase.
7. If you'd like to continue and erase the file you've selected, press Yes. To cancel, press No.
If you press Yes, the display will show that the file has been successfully erased.

Renaming Files

As your music progresses from initial idea to completed song, you may find that you'd like to rename files you've already saved to floppy. You assign it a new DOS file name of up to eight characters.

To Rename a Disk File

1. Insert the floppy containing the file you'd like to rename into the ZR's floppy drive, with the label-side facing up, and the metal shutter facing away from you. Make sure the plastic write-protect tab is in the closed position (no light showing through the window).
2. Press the Utilities button—the red/green No and Yes LEDs begin to flash.



3. Turn the Parameter knob until the display shows:



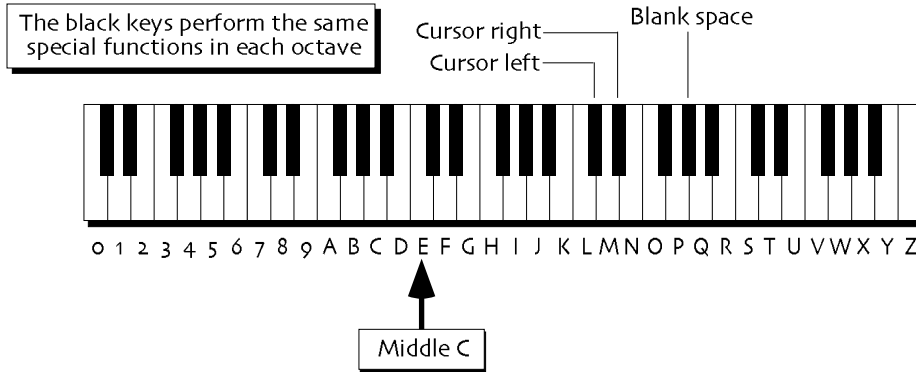
4. Press Yes if you'd like to continue the procedure, or No if you'd like to cancel.
If you press Yes, the display will allow you to select the file you'd like to rename.



The type of file to be renamed The name of the first file of the selected type on the disk

The Parameter knob will select different types of files.

5. Turn the Parameter knob to select the type of the file you'd like to rename.
6. When you've selected a file type, turn the Value knob to select the file you'd like to rename.
 - You can now rename the file you've selected using the keyboard. The character associated with each key is printed above the key on the ZR's front panel. The C# and D# keys in each octave move the cursor—indicated by an underline on the ZR's display—forward and back. When a character is underlined, it can be changed. The G# types a blank space.



Note: The keys outside of the range shown are not used for the renaming of disk files.

- You can also give your file a new name using the front panel controls. The up/down arrow buttons are used to select the character position within the name. The up arrow moves the location to the right, and the down arrow moves it to the left. The underlined character is selected and may be changed with the Value knob.

If you assign your file a name that's already been used for another disk file, the ZR will tell you that it can't complete the renaming procedure, since two files can't have the same name.

Tip: The Value knob provides access to characters unavailable on the keyboard.

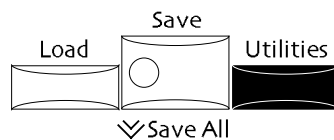
- Using the ZR's keyboard and/or the front panel controls, rename your file.
- When you've finished renaming the file, press the Yes button to complete the process.

Finding Out How Much Free Space is Available on a Floppy Disk

The ZR-76 can tell you how much free space is left on a floppy disk, expressed in bytes. A blank, formatted high-density disk has about 1,400 free bytes; a double-density around 720 bytes.

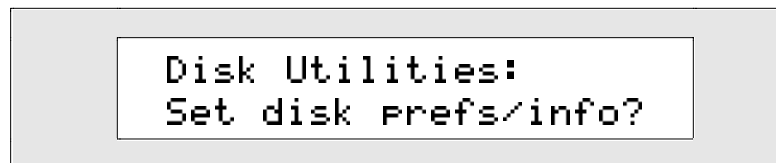
To Learn How Much Free Space is on a Floppy Disk

- Insert the relevant floppy into the ZR's floppy drive, with the label-side facing up, and the metal shutter facing away from you.
- Press the Utilities button.



The red/green No and Yes LEDs begin to flash.

- Turn the Parameter knob until the display shows:



- Press Yes if you'd like to continue the procedure, or No if you'd like to cancel.

If you press Yes, turn the Parameter knob until the ZR shows the number of free bytes on the floppy:



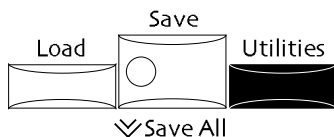
The number of free bytes on the floppy

Viewing Disk Files Alphabetically

The ZR-76 provides a handy utility that alphabetically sorts the files within the directories on a floppy disk, making disk files easier to find and load.

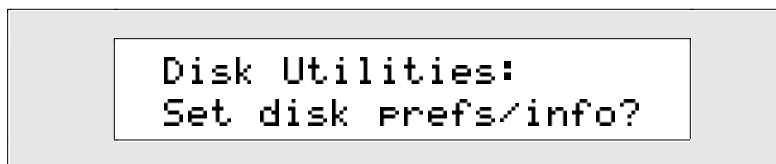
To Alphabetize the Viewing of Files on a Floppy Disk

1. Insert the relevant floppy into the ZR's floppy drive, with the label-side facing up, and the metal shutter facing away from you.
2. Press the Utilities button.



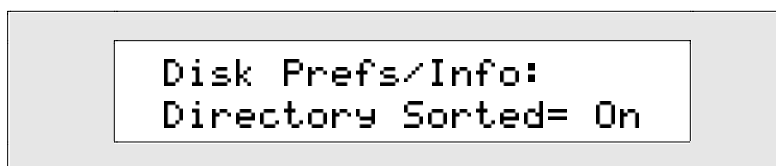
The red/green No and Yes LEDs begin to flash.

3. Turn the Parameter knob until the display shows:



4. Press Yes if you'd like to continue the procedure, or No if you'd like to cancel.

If you press Yes, turn the Parameter knob until the display shows:



What you see here may be different

When Directory Sorted=On, disk files will be viewed alphabetically within their selected file type
When Directory Sorted=Off, disk files will be in the order in which they were saved within their selected file type

5. Turn the Value knob to the desired setting.

Chapter 10

Expanding the ZR-76

This chapter discusses the two methods for expanding the capabilities of your ZR-76:

- the installation of ENSONIQ EXP Series Wave Expansion and MR-FLASH Boards
- the upgrading of your ZR-76 operating system software

Using EXP and MR-FLASH Expansion Boards

EXP Series Wave Expansion Boards

The ZR-76 is shipped from ENSONIQ's factory with a powerful 14 megabytes of 16-bit wave data, at a CD-quality sample playback rate of 44.1kHz. By installing wave expansion boards—such as ENSONIQ's EXP Series Wave Expansion Boards—you can bring your ZR's wave data memory up to a gigantic 86 megabytes. Your ZR-76 already contains one such board installed at the factory: EXP-4, The Perfect Piano™ by William Coakley. The ZR-76 can accommodate an additional pair of wave expansion boards which can supply new sounds and demos, as well as up to 24 megabytes of new wave data. You can easily install these boards yourself—this chapter describes how.

MR-FLASH Boards

With the installation of an MR-FLASH board, your ZR-76 can load .WAV and AIF-format sample files from floppy disk. Once loaded into the ZR—and stored on the MR-FLASH board—these samples can be played in the same way as any other ZR sound (see *Chapter 9* to learn more).

Note: The ZR-76 will recognize a single MR-FLASH board at a time.

An Important Note About Electro Static Discharge

Many of the internal components in the ZR-76 and areas of their expansion boards are susceptible to Electro Static Discharge (ESD), commonly known as “static.” Electro static discharge can damage or destroy electronic devices. Here are some procedures you can follow when handling electronic devices in order to minimize the possibility of causing ESD damage:

- Before opening your ZR-76, or handling an expansion board, you should be grounded. Use a ground strap to discharge any static electric charge built up on your body. The ground strap attaches to your wrist and any unpainted metal surface within the ZR-76.
- Avoid any unnecessary movement, such as scuffing your feet when handling electronic devices, since most movement can generate additional charges of static electricity.
- Minimize the handling of expansion boards. Keep them in their static-free packages until needed. Transport or store the expansion boards only in their protective packages.
- When handling the expansion boards, avoid touching the connector pins. Try to handle the expansion boards by the edges only.

If you have any questions concerning the use of the expansion boards, or for additional technical support, please contact your authorized ENSONIQ dealer or ENSONIQ Customer Service at (610) 647-3930 Monday through Friday 9:30 a.m. to 12:15 p.m. and 1:15 p.m. to 6:30 p.m. Eastern Time.

Installing And Removing Expansion Boards In The ZR-76

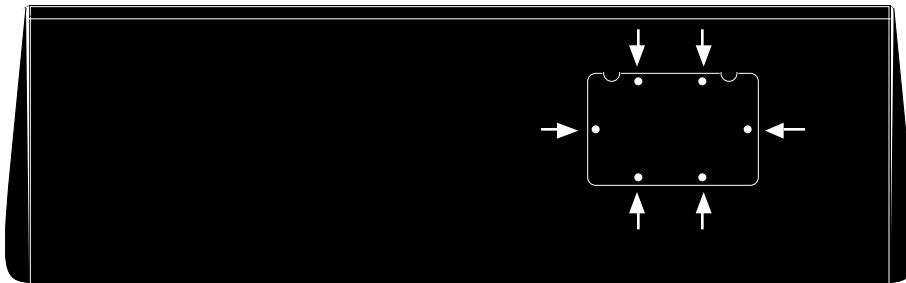
The ZR-76 can use up to two additional ENSONIQ EXP Series Wave Expansion Boards expansion boards at any one time, or one MR-FLASH board and one EXP board. These boards are easily installed.

Warning: Make sure to read “An Important Note About Electro Static Discharge” earlier in this chapter before installing a wave expansion board.

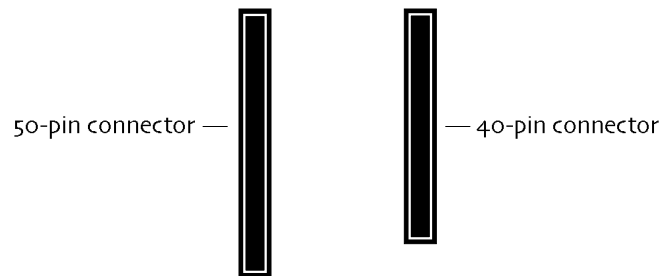
To prevent any damage to yourself or your ZR-76, we highly recommend that you perform this operation on a wide, solid surface, such as a table. Do not attempt to open your unit if your ZR-76 keyboard is only supported by a keyboard stand.

To Install An Expansion Board In The ZR-76

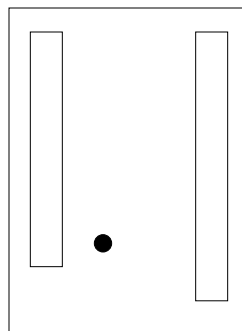
1. Turn the ZR-76 off, and unplug it from its AC outlet.
2. Turn the ZR-76 upside down, and place it on a soft surface with the keys facing away from you.
3. Remove the six Phillips-head screws from the trap door on the bottom of the ZR-76.



4. Examine the inside of the ZR-76, and locate the two empty expansion board bays. Notice that each bay has a pair of connectors: a 50-pin connector (toward the left of the unit) and a 40-pin connector (toward the right).



5. Examine your expansion board. Notice that it too has a 50-pin and a 40-pin connector.



When you turn your expansion board connector-side-down, its connectors will line up with the ones in the ZR-76.

- Position your expansion board above the lowest-numbered empty bay and align the connectors. The number of each bay is printed on the ZR's circuit board: "EXP CARD 1," "EXP CARD 2" or "EXP CARD 3." (The Perfect Piano™ board will already be installed in one of the bays.)

Important: Expansion boards must be installed in the lowest-numbered available locations, or the ZR-76 may not recognize them.

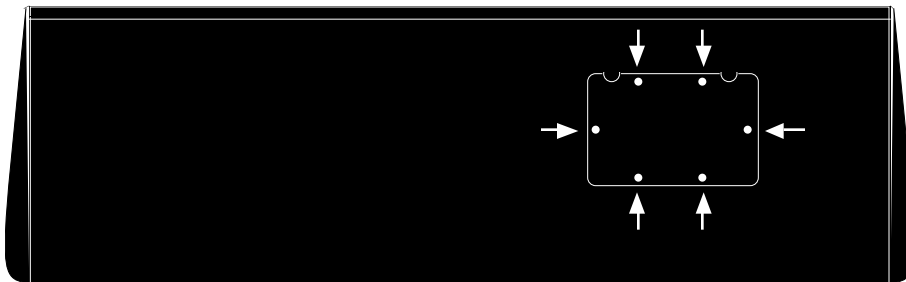
- Press the expansion board down firmly into its location so that it makes a physical (and electrical) connection with your ZR-76. The expansion board's connectors *must* be inserted into *both* of the chassis' connectors in order to work properly.
- Reinstall the trap door with the six Phillips-head screws.
- Turn the ZR-76 right-side up, plug it into an outlet, turn it on, and follow the instructions in "To Identify an Installed Expansion Board," below to verify that the ZR-76 is properly recognizing the expansion board.

Warning: Make sure to read "An Important Note About Electro Static Discharge" earlier in this chapter before installing a wave expansion board.

To prevent any damage to yourself or your ZR-76, we highly recommend that you perform this operation on a wide, solid surface, such as a table. Do not attempt to open your unit if your ZR-76 keyboard is only supported by a keyboard stand.

To Remove An Expansion Board From The ZR-76

- Turn the ZR-76 off, and unplug it from its AC outlet.
- Turn the ZR-76 upside down, and place it on a soft surface with the keys facing away from you.
- Remove the six Phillips-head screws from the trap door on the bottom of the ZR-76.



- Remove the trap door.
- Examine the inside of the ZR-76, and locate the expansion board you'd like to remove.
- Grab the expansion board you want to remove by its edges and gently lift it straight upwards out of its sockets to remove it.

Important: Expansion boards must be installed in the lowest numbered available location—they're numbered from left to right, with the first bay to the left. If you've removed the number 1 or 2 expansion board, re-install the remaining boards in the lowest available expansion bays.

- Reinstall the trap door with the six Phillips-head screws.
- Turn the ZR-76 right-side up, plug it into an outlet, turn it on, and follow the instructions in "To Identify an Installed Expansion Board" below to verify that the ZR-76 is properly recognizing any remaining expansion boards.

Note: Sequences and drum kits that used sounds from the expansion board you've just removed will display ****EMPTY**** in place of any no-longer available expansion-board sounds.

To Identify An Installed Expansion Board

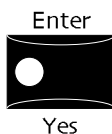
1. Press the Librarian button.



2. Turn the Parameter knob until the display shows:



3. Press the Yes button.



The display shows:



This will show the name of the first installed expansion board

When an expansion board is installed, this read-only display will show the name of the expansion board located in the first slot.

4. Turning the Parameter knob two more times will show the names of the expansion boards in Wave EXP slots 2 and 3 (if they're installed).

If there are no expansion boards installed, the display will show "Exp Name: **EMPTY**."

Note: If you've installed new expansion boards and the ZR-76 appears not to be recognizing them, carefully repeat the instructions in "How To Install an Expansion Board." If the ZR-76 still doesn't recognize the expansion board, call your authorized ENSONIQ dealer or ENSONIQ Customer Service at (610) 647-3930.

Updating the ZR-76 Operating System

With mO.S.t electronic devices, operating system (O.S.) upgrades have become common. For ENSONIQ products, an operating system upgrade provides system enhancements, and at times offers additional features. The ZR-76 O.S. is contained entirely on a pair of chips—a ROM chip and an EPROM chip—installed in sockets on your ZR's mainboard. Any O.S. changes require changing the O.S. EPROM chip.

You can find out what the current operating system is by calling ENSONIQ Customer Service at (610) 647-3930, or by visiting ENSONIQ's World Wide Web site at <http://www.ensoniq.com>. (You'll find the O.S. list at <http://www.ensoniq.com/html/0010.htm>). An up-to-date O.S. list for all ENSONIQ products can also be found in the TransonIQ Hacker, a third-party monthly publication—for more information about the Hacker, call (503) 227-6848.

Learning The Version Number Of Your Operating System

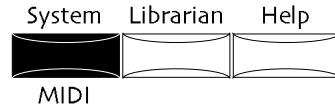
You can easily find out what operating system your ZR-76 is currently using.

To Find The Installed Operating System's Version Number

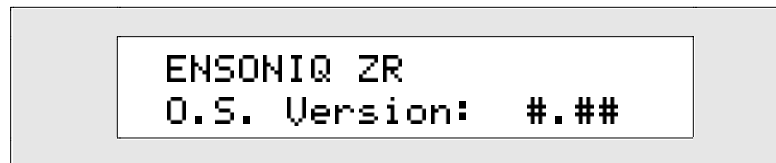
1. Press the SoundFinder Save button and hold it down.



2. While still holding the Save button, press the System button.



The display briefly shows you the version number of the operating system installed in your ZR-76:



If you'd like to upgrade your ZR-76, contact your authorized ENSONIQ dealer or ENSONIQ's Customer Service at (610) 647-3930 to obtain the ZR-76 EPROM upgrade kit. If your operating system version is numbered 1.20 or less, call ENSONIQ Customer Service at (610) 647-3930 for special upgrade information.

Updating Your ZR-76 Operating System Using the EPROM Kit

Extremely Important:

READ THROUGH ALL OF THESE INSTRUCTIONS BEFORE ATTEMPTING TO INSTALL THIS SOFTWARE UPDATE. IF YOU HAVE ANY UNCERTAINTY ABOUT INSTALLING AN EPROM CHIP, TAKE YOUR ZR-76 TO AN AUTHORIZED ENSONIQ SERVICE CENTER AND LET A TECHNICIAN INSTALL IT FOR YOU. TO FIND THE AUTHORIZED ENSONIQ SERVICE CENTER NEAR YOU, CALL (800) 553-5151.

If you install this software update and your ZR-76 does not work afterwards, call ENSONIQ's Customer Service at (610) 647-3930.

Items Included in the EPROM Replacement Kit

- One software update EPROM chip
- A self-addressed stamped envelope
- An anti-static wrist strap

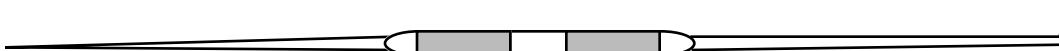
Do not remove the EPROM chip from the protective black foam until you are ready to install it. Be sure to use a grounding strap when handling the chip to avoid damage from static discharge.

A disposable grounding strap is included in this kit. You need not use the wrist strap until you have the cover off of your ZR-76. A grounding wrist strap will discharge to ground any static built up on your body, and prevent you from damaging your software chip or your ZR-76.

Warning: Make sure the power switch is off any time the case of the ZR-76 is opened and *always* use a wrist grounding strap.

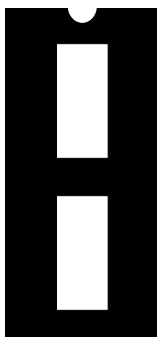
The Tools You'll Need

- #2 Phillips screwdriver
- A thin bladed, flathead screwdriver or a scribe as shown here:



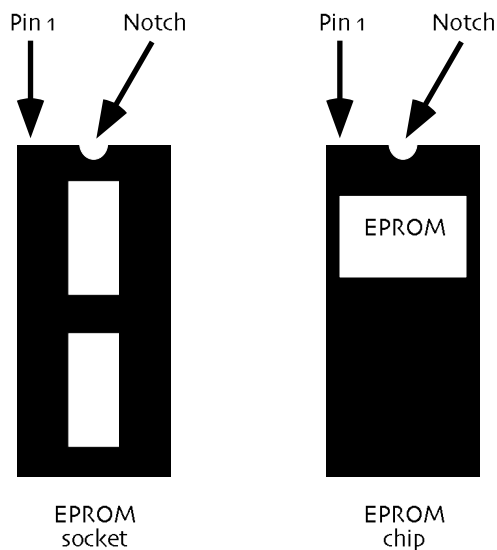
A Visual Examination of EPROMs and Sockets

The EPROM goes in a socket that look like this:



Aligning the Chip to the Socket

The EPROM chip and its socket have a notch on one end. Looking down on the EPROM or socket, with the notch facing away from you, pin 1 will always be to the left. Pin 1 of the EPROM will always go into pin 1 of the socket.



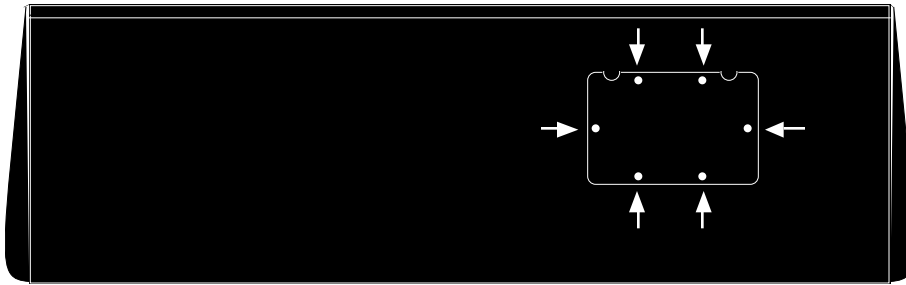
The ZR O.S. EPROM chip must always be justified to pin 1 on the chip and the socket. Look at your chip through its pink plastic bag and make sure you can locate pin 1.

Warnings: Make sure you've read "An Important Note About Electro Static Discharge" earlier in this chapter before installing the EPROM chip.

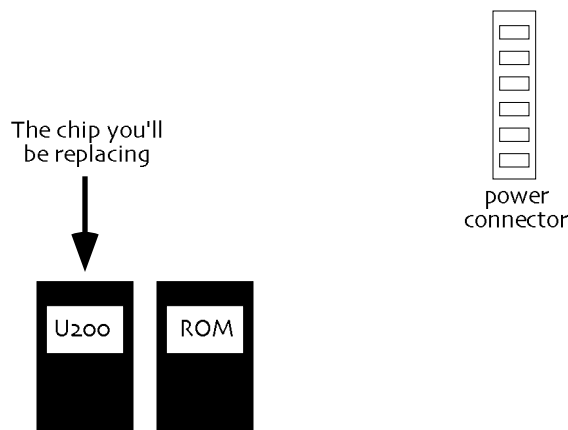
To Replace Your Operating System EPROM

1. Save all of your work to disk—see *Chapter 9* for instructions.
2. Disconnect all other cables from the ZR-76.
Make sure to disconnect the power cable from your ZR-76 before proceeding!

3. You will need to remove the access cover from the bottom of the unit. Remove the screws and remove the access cover from the bottom of the unit.



4. Make sure the power switch is off on your ZR, and then disconnect the power supply cable to the ZR-76 and the wall outlet.
5. Open the envelope with the disposable wrist strap. Unwrap the first two folds of the band and wrap the exposed adhesive side firmly around your wrist. Unroll the rest of the band and peel the liner from the copper foil at the opposite end. Attach the sticky side of the copper foil to the inside of the ZR's bottom panel.
6. Locate the U200 O.S. EPROM chip on the ZR-76 main board.



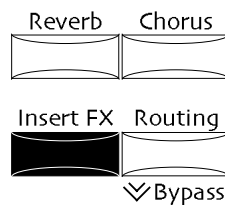
7. Remove the U200 O.S. EPROM from the ZR-76 main board. ENSONIQ recommends using the angled end of a scribe, or a thin-bladed, flathead screwdriver to slowly lift each end of the EPROM until it is free from the socket. Gently wedge the scribe or screwdriver between the black socket and the chip (not the green board and the socket). When the scribe or screwdriver is in place, work it slowly up and down between the chip and the socket, raising the chip a little at one end and then the other, until the chip is free.
8. Lift the chip out of the ZR-76 and set it aside for now.
9. Replace the U200 EPROM chip with the new one supplied. Remember to line up the notch in the socket with the notch in the chip (review “Aligning the Chip to the Socket” earlier in this chapter if you need to). The pins of the chip should be inserted into the holes in the socket. In a new EPROM, it's not uncommon for the left and right sets of pins on a chip to be spread a bit wider than the socket. You can *very carefully* bend the pins inward slightly by resting the long edge of the chip on a flat non-metal surface and tipping the chip while applying pressure gently.
10. Install the access cover, replacing all of the screws.
11. Load in any work you saved in step 1.
12. Load the FLASH sounds and rhythms from the disk that was supplied with your ZR-76.
13. Place the old chip in the black foam and pink bag. Put the pink bag in the supplied envelope, and mail the envelope to ENSONIQ.
14. Congratulations, you've updated your ZR's software!

Chapter 11

Insert Effect Parameters

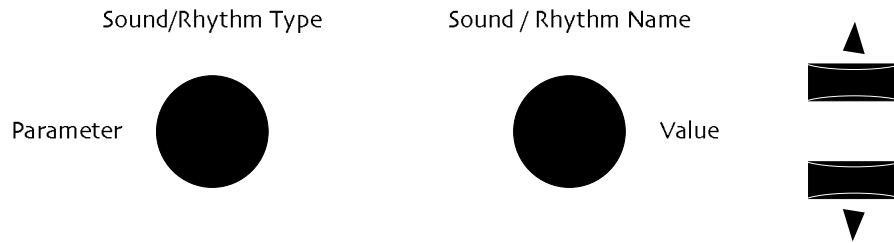
This chapter offers detailed descriptions of the insert effects and their related parameters. For a basic overview of how the effects work in the ZR-76, see *Chapter 8*.

To access the functions you'll find in this chapter, press the Insert FX button:



The ZR-76 provides many options for routing, assigning, and editing effects. Each of these options is called a *parameter*. When you change the setting of a parameter, you are editing the parameter's *value*.

To select insert effect parameters, turn the *Parameter knob*. To edit an insert effect parameter's value, turn the *Value knob* or use the up and down arrow buttons.



List of ZR-76 Insert Effects

The following is a list of the insert effects in the order that they appear in the ZR-76:

01 Parametric EQ	15 Chorus→Rev	29 ResVCF→DDL
02 Hall Reverb	16 Flanger→Rev	30 Dist→VCF→DDL
03 Large Room	17 Phaser→Rev	31 Pitch Detuner
04 Small Room	18 EQ→Reverb	32 Chatter Box
05 Large Plate	19 Spinner→Rev	33 Formant Morph
06 Small Plate	20 DDL→Chorus	34 RotarySpeaker
07 NonLinReverb1	21 DDL→Flanger	35 Tunable Spkr
08 NonLinReverb2	22 DDL→Phaser	36 Guitar Amp
09 Gated Reverb	23 DDL→EQ	37 Dist→DDL→Trem
10 Stereo Chorus	24 Multi-Tap DDL	38 Comp→Dist→DDL
11 8-VoiceChorus	25 Dist→Chorus	39 EQ→Comp→Gate
12 Rev→Chorus	26 Dist→Flanger	40 EQ→Chorus→DDL
13 Rev→Flanger	27 Dist→Phaser	
14 Rev→Phaser	28 Dist→AutoWah	

List of Insert Effect Modulators

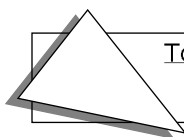
Here is a list of the effect modulators available within the ZR-76:

Off	Pressure	Sostenuto
FullModAmt	PitchWheel	SysCTRL1
Velocity	ModWheel	SysCTRL2
Vel+Pressure	Wheel+Press	SysCTRL3
+PosMIDIkey#	FootPedal	SysCTRL4
-NegMIDIkey#	Sustain	

For full descriptions of each of these effect modulators, see “Choosing a Real-Time Insert Effect Modulator” in *Chapter 8*.

A Note about Signed Parameters

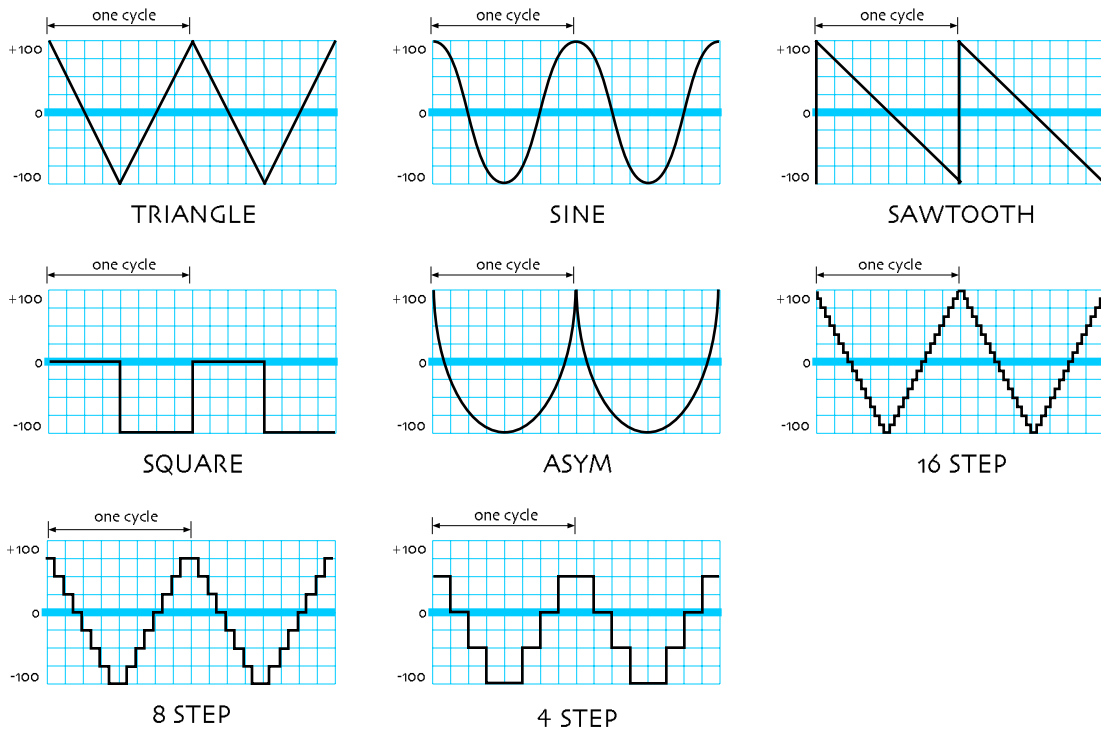
Many insert effect parameters have a range that includes both negative and positive signed values (e.g., -99 to +99). The sign denotes the phase of the parameter. An inverted phase setting helps to add some of the natural phase irregularities found in acoustic spaces.



To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

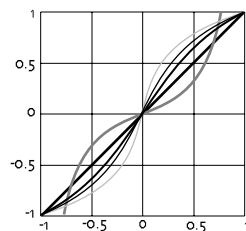
LFO Wave Shapes

Many insert effects have an LFO Shape parameter that determines how the LFO signal will rise or fall. There are eight possible values:



Distortion Curves

Many distortion-based insert effects have a “Dist Curve” parameter that determines the type of clipping produced by the distortion. There are five possible distortion curves:



Distortion Curves

TABLE:

Soft= _____
 Medium 1= _____
 Medium 2= _____
 Hard= _____
 Buzz= _____

To access the Parameters described on this page (unless otherwise noted):
 Press the Insert FX button. Turn the Parameter knob to select the parameter,
 and use the Value knob to change the parameter's setting

Insert Effect Parameters

The following is a description of the insert effects and their related parameters. Parameters that are common to all insert effects, and the modulation parameters are defined in *Chapter 8*.

Common Insert Effect Parameters

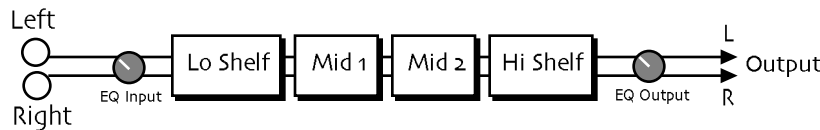
Preset	GlobalReverb Amt
Input Mix	Insert FX to Global Chorus Mix

Common Modulation Parameters

Mod Src	Mod Src Max	Dest Min
Mod Src Min	Dest	Dest Max

Insert Effect Descriptions

01 Parametric EQ



This insert effect offers a minimum phase, four-band parametric EQ.

Parameter	Range	Description
EQ Input	Off, -49.5dB to +24dB	Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals.
LoShelf Fc	10Hz to 20.0kHz	Sets the center of the low frequency EQ.
LoShelf Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this low frequency shelf.
Mid 1 Fc	10Hz to 20.0kHz	Sets the center of the mid frequency parametric.
Mid 1 Q	1.0 to 40.0	Bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth.
Mid 1 Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this mid frequency parametric.
Mid 2 Fc	10Hz to 20.0kHz	Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range.
Mid 2 Q	1.0 to 40.0	Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range.
Mid 2 Gain	Off, -49.5dB to +24dB	Identical to the Mid 1 Gain parameter, used to control different bandwidths within the mid range.
HiShelf Fc	10Hz to 20.0kHz	Sets the center frequency of the high frequency shelf.
HiShelf Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this high frequency shelf.
EQ Output	Off, -49.5dB to +24dB	Controls the gain coming out of the parametric EQ.

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

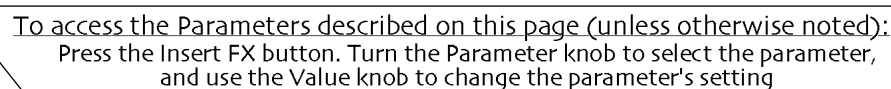
02 Hall Reverb

03 Large Room

04 Small Room

Hall Reverb is a large acoustic space, and provides a high density reverb. Large Room reverb provides ambience, and Small Room reverb simulates the ambience and shorter decay times of a small space.

Parameter	Range	Description
Decay	0sec to 10.0sec (Hall setting) 0sec to 10.0sec (Room settings)	Controls the amount of time it takes for the reverberation to decay to a very low level after the input signal stops. Higher values are recommended for the hall reverb.
LF Decay	-99% to +99%	Functions as a tone control and boosts (when set to a positive value) or cuts (when set to a negative value) the rate at which low frequencies will decay.
HF Damping	100Hz to 21.2kHz	Controls the rate of attenuation of high frequencies in the decay of the reverberation. As natural reverb decays, some high frequencies tend to get absorbed by the environment. Increasing the value of this parameter will gradually filter out (dampen) more and more high frequency energy.
HF Bandwidth	100Hz to 21.2kHz	The high frequency bandwidth acts as a low pass filter on the signal going into the reverb, controlling the amount of high frequencies that will pass into the effect. The higher the setting, the more high frequencies are allowed to pass.
Primary Send	-99% to +99%	Controls the level of the diffused input signal into the reverb definition.
Diffusion 1	0 to 100	Smears the input signal transients, to diffuse and smooth the sound. Lower values will cause impulse sounds to appear as a series of discrete echoes, while higher values tend to increase the smear (smoother sounding with fewer discrete echoes). We recommend settings of 50 for starters.
Diffusion 2	0 to 100	This parameter, similar to and in series with Diffusion 1, performs the same way but controls lower frequency ranges. Experiment with different levels between the diffusion parameters to find the settings that are right for your source.
Definition	0 to 100	Controls the rate at which echo density is increased with time. Setting this parameter too high can cause the echo density to build at a rate which exceeds the decay rate.
Detune Rate	0.00Hz to 1.54Hz	Controls the LFO rate of detuning introduced into the reverberation decay. Detuning creates a slight oscillating pitch shift into the decay, giving it a more natural sound by breaking up resonant nodes.
Detune Depth	0% to 100%	Controls the depth of the detuning, that is, how much the pitch will change. Low values yield a metallic sound. Some sounds may require very low values, while others sound more natural with higher values.
PreDelay	0 to 36ms	Controls the amount of time it takes for the original signal to be presented to the reverb. Higher values denote a longer delay.
ER 1 Time	0 to 112ms	Controls the delay time for the first pre-echo. Pre-echoes are the first sounds reflected back from the walls or reflective "live" surfaces. Higher values delay the diffused signal more.
ER 1 Send	-99% to +99%	Controls the level of the first pre-echo, with the echo routed directly to the output. The sign denotes the phase of the echo.
ER 1 Level	-99% to +99%	Controls the level of the first pre-echo. This pre-level controls the echo send to the Definition.
ER 2 Time	0 to 112ms	Controls the delay time for the second pre-echo.



To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

ER 2 Send	-99% to +99%	Controls the level of the second pre-echo, with the echo routed directly to the output.
ER 2 Level	-99% to +99%	Controls the level of the second pre-echo. As a signal continues to bounce off the different reflective surfaces (walls), it decreases in volume. Set this parameter to a lower value than Ref 1 Level, in order to create a natural sounding echo.
Position 1	-99% to +99%	These parameters simulate the depth of the hall. Think of them as three different microphones placing at various distances within the hall (Position 1 is closest to the front, and Position 3 is farthest from the front). When the range (volume) is higher for Position 1, the sound appears closer to the front, whereas a higher setting for Position 3 appears farther from the front, suggesting a deeper (wetter) hall. The sign denotes the phase of the echo.
Position 2	-99% to +99%	
Position 3	-99% to +99%	
Output Bal	Full <L to Full >R	Controls the left/right stereo balance of the reverb signal.

05 Large Plate

06 Small Plate

A plate reverb takes the vibrations from a metal plate and uses them to create a metallic sounding reverb. Large plate reverbs are often used to enhance a vocalist's performance, and small plate reverbs are often used in the studio for drums and percussion.

Parameter	Range	Description
Decay	0sec to 10.0sec	Controls the amount of time it takes for the reverberation to decay away to a very low level after the input signal stops. High values of decay sound good on plate reverbs.
HF Damping	100Hz to 21.2kHz	Increasing the value of this parameter will gradually filter out increasing amounts of high frequency energy. Higher values yield an abrupt decay. This parameter controls the cut off of a low pass filter in series with the decay within the definition.
HF Bandwidth	100Hz to 21.2kHz	This parameter acts as a low pass filter on the output of the plate reverbs, controlling the amount of high frequencies present. The higher the setting, the more high frequencies are allowed to pass through, offering a brighter ringing sound. Some interesting effects can be created by using a mod controller over a large range.
Diffusion 1	0 to 100	Smears the input signal to create a smoother sound. Lower values will cause impulse sounds to appear as a series of discrete echoes, while higher values tend to increase the smear, making the echoes less apparent.
Diffusion 2	0 to 100	This diffuser, similar to and in series with the previous one, offers control over lower frequency ranges. Plate reverbs tend to sound metallic, and the diffusers help to smear the signal, eliminating the metallic sound.
Definition	0 to 100	Controls the rate at which echo density increases with time. Higher values can cause the echo density to build at a rate that exceeds the decay rate. For the best results, try to select the highest value that works with your sound source.
PreDelay	0 to 36ms	Controls the amount of time it takes for the input signal to be presented to the plate reverb. A value of 0 would offer no delay.
ER 1 Level	-99% to +99%	Control four early reflection levels. Setting these levels to lower values will produce a wetter sound. These four reflection levels are close to the input of the Definition.
ER 2 Level	-99% to +99%	
ER 3 Level	-99% to +99%	
ER 4 Level	-99% to +99%	
Output Bal	Full <L to Full >R	Controls the left/right stereo balance of the plate reverb signal.

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

07 NonLinReverb1

08 NonLinReverb2

Non linear reverbs can be used to obtain blooming reverb, gated reverb, reverse reverb and early reflections. In general, they do not produce an exponentially decaying reverb. Unlike the hall, room and plate reverbs, NonLinReverb1 and 2 pass the input signal through the reverb diffusers only once. For this reason the reverb diffusers are called *density*, to distinguish them from the other reverb diffusers (called definition). Density controls the *amount* of echo density, as opposed to the rate of increase of echo density. The NonLin Reverbs purposely impose a coloration on the resulting sound.

Parameter	Range	Description
Env 1 Level	-99% to +99%	These parameters control the output tap levels sequenced in time across the density from input to output. Envelope Level 1 is tapped right after the diffusers and before the echoes. If this is undesirable, set Envelope Level 1 to 0%. Envelope Levels 8 and 9 are positioned at the very end of the Density setting these too high can cause excessive ringing. Envelope Levels 8 and 9 are also very dry. Set all nine tap levels to find the envelope for your application. We recommend the average Envelope Level not to exceed a value of $\pm 45\%$ to prevent overdriving these reverbs.
Env 2 Level	-99% to +99%	
Env 3 Level	-99% to +99%	
Env 4 Level	-99% to +99%	
Env 5 Level	-99% to +99%	
Env 6 Level	-99% to +99%	
Env 7 Level	-99% to +99%	
Env 8 Level	-99% to +99%	
Env 9 Level	-99% to +99%	
HF Damping	100Hz to 21.2kHz	The HF Damping is located within the density. This parameter selects the amount of high frequency energy to be filtered out.
HF Bandwidth	100Hz to 21.2kHz	The high frequency bandwidth parameter acts as a low pass filter on the output signal, controlling the amount of high frequencies that will be heard. The higher the setting, the more high frequencies are heard.
Primary Send	-99% to +99%	Controls the level of the diffused input signal which is nearly instantaneous with respect to the input. This signal is injected directly into the Density at the specified level.
Diffusion 1	0 to 100	This parameter smears the input signal transients of higher frequency ranges. Higher values are recommended for smoother decay. Very low values will give a highly repetitive echo-like sound. Diffusion 1 and 2 exist within each diffuser block.
Diffusion 2	0 to 100	Diffusion 2 is similar to Diffusion 1, but offers control of lower frequencies. In general a setting of 50 can be considered an equal mix of dry/diffused sound. This setting is a good starting point.
Density 1	0 to 100	Density 1 controls the number of echoes.
Density 2	0 to 100	Density 2 controls the number of echoes in a lower frequency range. In general, to get the smoothest sound, Density 2 is usually less than the value of Density 1.
ER 1 Time	0 to 112ms	Controls the amount of time it takes for the first pre-echo to be injected into the density. Pre-echoes are the sounds which have been reflected back from the walls or other reflective surfaces.
ER 1 Send	-99% to +99%	This parameter controls the level of the first pre-echo.
ER 2 Time	0 to 112ms	This controls the amount of time it takes for the second pre-echo to be injected into the density.
ER 2 Send	-99% to +99%	This parameter controls the level of the second pre-echo. Experiment with both positive and negative on all echoes to change the tonal character of the results.
Output Bal	Full <L to Full >R	Controls the left/right stereo balance of the reverb signal.

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

09 Gated Reverb

When the output of a reverb is muted partway through its decay, it creates a gated sound. To achieve this gated effect, the gated reverb must gate a number of internal parameters, not just the output amplitude envelope. It is, however, the output amplitude over which you have control. The ZR-76 offers a highly controllable gated reverb, optimized for percussive instruments, but useful for any sound. The gated reverb triggers whenever the input signal exceeds a (user programmable) threshold. This trigger threshold should be set as low as possible, so that none of the input signal is missed. The gate will stay open as long as the input signal remains above the threshold, and all the input signals will be accumulated under this gate until the total input signal level falls below the hysteresis level. When this happens, the hold time will begin. The reason for hysteresis is to eliminate false retriggering and to ensure precise hold time durations. If you desire a separate gate on each and every note, use the Non Lin reverbs.

Parameter	Range	Description
Gate Thresh	-96.0dB to 0.0dB	Sets the signal level that triggers the gated reverb. When the incoming signal reaches this value, it triggers (starts) the gated reverb. Higher values would require a stronger incoming signal. Set this parameter as low as possible to work with your particular source, but not so low as to cause false triggering.
Gate Hysteresis	0dB to 48dB	Sets the lower threshold level relative to Gate Thresh below which the Gate Hold Time begins. If the difference between Gate Thresh and Gate Hysteresis is lower than the level of the incoming signal, the gated reverb will continue to retrigger. With a high decay rate, this adds a cavernous quality to percussion instruments.
Gate Attack	50us to 10.0s	Sets the attack time of the gated reverb once the incoming signal has reached the trigger level. Generally the attack should be short and not set longer than the Gate Hold time.
Gate Release	50us to 10.0s	Sets the amount of time after the Gate Hold time has elapsed for the gated reverb to shut down. Generally these times are very short.
Gate Hold	50us to 10.0s	Sets the amount of time that the reverb will hold after the retrigger and before the release. The Gate Hold time will begin again if retriggered.
Decay	0sec to 10.0sec	Sets the decay rate. In general, the decay rate is set very high.
HF Damping	100Hz to 21.2kHz	Controls the rate of attenuation of high frequencies in the decay of the reverb. Increasing the value of this parameter will gradually filter out increasing amounts of high frequency energy.
Diffusion 1	0 to 100	Smears the transients, so as to diffuse and smooth the sound. Lower values will cause impulsive sounds to appear as a series of discrete echoes, while higher values tend to increase the smear (smoother sounding). Recommended setting is approximately 50.
Diffusion 2	0 to 100	This parameter, similar to and in series with Diffusion 1, performs the same way but controls lower frequency ranges. Recommended setting is approximately 50.
Definition	0 to 100	Controls the rate of echo density build up in the reverb decay. If set too high, the echo density will build at a rate that exceeds the decay rate. A general rule of thumb: Definition should not exceed the Decay Rate. We recommend settings between 25 and 50.
Slap Time	0ms to 108ms	Controls the delay time of an internal dry stereo signal to create a slapback. In general, the slapback is greater or equal to the Gate Hold time to achieve a reverse effect.
Slap Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the slapback (internal dry) signal.
ER 1 Level	-99% to +99%	These parameters control four early reflection levels. Setting these levels to lower values will produce a wetter sound. A setting of 0% turns the early reflections off.
ER 2 Level	-99% to +99%	
ER 3 Level	-99% to +99%	
ER 4 Level	-99% to +99%	
Output Bal	Full <L to Full >R	Controls the left/right stereo balance of the gated reverb signal.

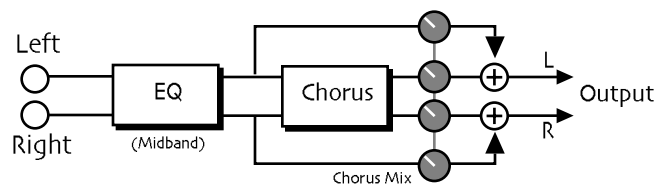
To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

10 Stereo Chorus

This stereo chorus uses delays to produce pitch and amplitude modulation.

Parameter	Range	Description
LFO Rate	0.0Hz to 20.0Hz	Controls the rate of pitch modulation applied to the delays.
Chorus Depth	0.0ms to 25.0ms	Controls the excursion of modulation. As this parameter increases, the amount of detuning also increases.
ChorusCenter	0.0ms to 50.0ms	Controls the nominal delay time of the chorus about which the delay modulation occurs. Adjusting this parameter will change the tonal character of the chorus.
Spread	(wide stereo to mono, to reversed image)	Offers control of the synthesized stereo field. The farthest counterclockwise setting of the Value knob offers true stereo, the middle setting forces the left & right into the center (mono), and turning the Value knob fully clockwise inverts the left & right signal.
Chorus Phase	0deg or -180deg	Controls the relative phase between left and right LFOs.

11 8-VoiceChorus

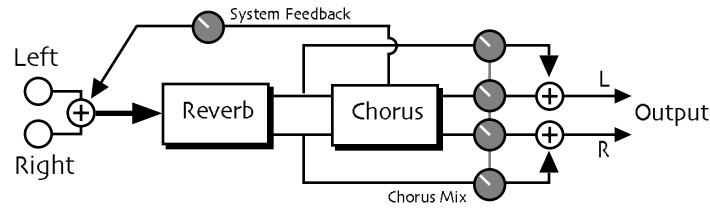


8-Voice Chorus offers a symphonic chorused sound having eight different voices and using eight separately randomized LFOs. This effect is good for creating an ensemble of instruments from single sources (there is no internal filtering applied to any of the chorused voices).

Parameter	Range	Description
EQ Input	Off, -49.5dB to +24dB	Adjusts the input volume of the EQs to eliminate the possibility of clipping boosted signals.
Mid 1 Fc	10Hz to 20.0kHz	Sets the center of the mid frequency band.
Mid 1 Q	1.0 to 40.0	Bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. Raising the value will produce a narrower bandwidth.
Mid 1 Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this mid frequency band.
EQ Output	Off, -49.5dB to +24dB	Controls the gain coming out of the parametric EQ.
Dry Blend	Full Dry to Full Wet	Controls the dry to wet mix of the chorus .
HPF Cutoff	10Hz to 10.9kHz	Controls the cutoff frequency of the high pass filter frequency applied to the input signal.
LFO Rate	0.0Hz to 7.0Hz	Controls the rate of pitch modulation applied to the delays.
Chorus Depth	0.0ms to 300ms	Controls the excursion of modulation.
ChorusCenter	0.0ms to 300.0ms	Controls the nominal delay time of the chorus about which the delay modulation occurs. Adjusting this parameter will change the tonal character of the chorus.
Center Offset	0% to 100%	Controls the relative spacing in nominal delay time among the eight voices. 100% is the maximum setting.
Chorus Phase	-180deg to +180deg	Controls the relative phase between left and right LFOs.
Chorus Feedback	-99% to +99%	Controls the amount of feedback applied to the chorus. Positive settings are in-phase, negative values are out-of-phase, and impart a different tonality to the chorus.

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12 Rev→Chorus

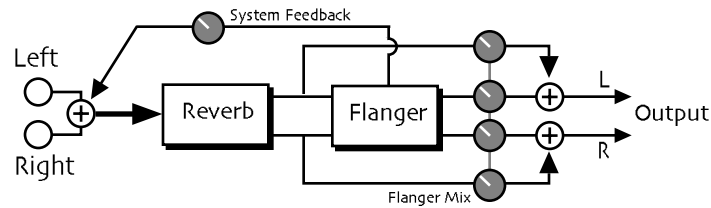


Combines a plate reverb with a stereo chorus.

Parameter	Range	Description
Decay	0.0sec to 10.0sec	Controls the amount of time it takes for the reverberation to decay after the input signal stops.
HF Damping	100Hz to 21.2kHz	Controls the rate of attenuation of high frequencies in the decay of the reverberation. Increasing the value of this parameter will gradually filter out (dampen) more and more high frequency energy.
HF Bandwidth	100Hz to 21.2kHz	The high frequency bandwidth acts as a low pass filter on the signal going into the reverb, controlling the amount of high frequencies that will pass into the effect. The higher the setting, the more high frequencies are allowed to pass.
Diffusion 1	0 to 100	Smears the input signal transients, to diffuse and smooth the sound. Lower values will cause impulse sounds to appear as a series of discrete echoes, while higher values tend to increase the smear (smoother sounding with fewer discrete echoes). We recommend settings of 50 for starters.
Diffusion 2	0 to 100	This parameter, similar to and in series with Diffusion 1, performs the same way but controls lower frequency ranges. Experiment with different levels between the diffusion parameters to find the settings that are right for your source.
Definition	0 to 100	Controls the rate at which echo density is increased with time. Setting this parameter too high can cause the echo density to build at a rate which exceeds the decay rate.
Chorus Mix	Full Dry to Full Wet	Controls the dry/wet mix of the chorus.
LFO Rate	1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz	Controls the rate of pitch modulation to the chorus.
LFO Shape	Triangle, Sine, Sawtooth, Square, Asym, 16-Step, 8-Step, 4-Step	Determines the shape that the LFO will use for pitch modulation.
LFO Phase	-180deg to +180deg	Controls the relative phase between left & right LFOs.
Chorus Depth	0.0ms to 25.0ms	Controls the amount of modulation.
Chorus Center	0.0ms to 50.0ms	Controls the delay times within the chorus. Adjusting this parameter will change the tonal character of the chorus.
System Feedback	-99% to +99%	Controls the amount of feedback applied from the output of the chorus to the input of the reverb.

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

13 Rev→Flanger

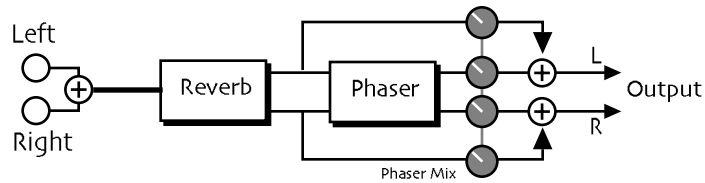


This insert effect features a plate reverb with a flanger effect.

Parameter	Range	Description
Decay	0.0sec to 10.0sec	Controls the amount of time it takes for the reverb to decay after the input signal stops.
HF Damping	100Hz to 21.2kHz	Controls the rate of attenuation of high frequencies in the decay of the reverberation. Increasing the value of this parameter will gradually filter out (dampen) more and more high frequency energy.
HF Bandwidth	100Hz to 21.2kHz	The high frequency bandwidth acts as a low pass filter on the signal going into the reverb, controlling the amount of high frequencies that will pass into the effect. The higher the setting, the more high frequencies are allowed to pass.
Diffusion 1	0 to 100	Smears the input signal transients, to diffuse and smooth the sound. Lower values will cause impulse sounds to appear as a series of discrete echoes, while higher values tend to increase the smear (smoother sounding with fewer discrete echoes). We recommend settings of 50 for starters.
Diffusion 2	0 to 100	This parameter, similar to and in series with Diffusion 1, performs the same way but controls lower frequency ranges. Experiment with different levels between the diffusion parameters to find the settings that are right for your source.
Definition	0 to 100	Controls the rate at which echo density is increased with time. Setting this parameter too high can cause the echo density to build at a rate which exceeds the decay rate.
FlangerMix	Full Dry to Full Wet	Controls the dry/wet mix of the flanger.
LFO Rate	1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz	Controls the rate of modulation applied to the flanger.
LFO Shape	Triangle, Sine, Sawtooth, Square, Asym, 16-Step, 8-Step, 4-Step	Determines the shape that the LFO will use for pitch modulation.
LFO Phase	-180deg to +180deg	Controls the relative phase between left and right LFOs.
Flanger Depth	0.0ms to 25.0ms	Controls the range of the high-to-low frequency sweep in the flanger effect.
FlangerCenter	0.0ms to 50.0ms	Sets the sweep mid-point of the flanger effect.
Notch Depth	0% to 100%	Controls the depth of the peaks and notches produced by the flanger.
Feedback	-99% to +99%	Controls the amount of feedback applied to the flanger. Positive or negative values will impart a different tonality to the flange effect, either accenting the peaks or the notches.
System Feedback	-99% to +99%	Controls the amount of feedback applied from the output of the flanger to the input of the reverb.

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

14 Rev→Phaser

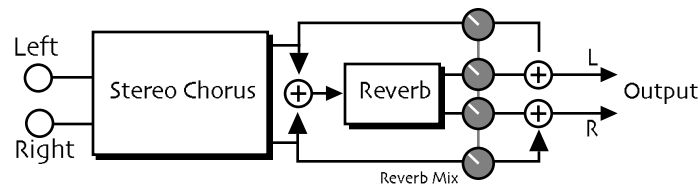


Combines a plate reverb with a 12-pole phase shifter.

Parameter	Range	Description
Decay	0.0sec to 10.0sec	Controls the amount of time it takes for the reverberation to decay away to a very low level after the input signal stops.
HF Damping	100Hz to 21.2kHz	Controls the rate of attenuation of high frequencies in the decay of the reverberation. As natural reverb decays, some high frequencies tend to get absorbed by the environment. Increasing the value of this parameter will gradually filter out (dampen) more and more high frequency energy.
HF Bandwidth	100Hz to 21.2kHz	The high frequency bandwidth acts as a low pass filter on the signal going into the reverb, controlling the amount of high frequencies that will pass into the effect. The higher the setting, the more high frequencies are allowed to pass. This functions like a tone control on a guitar.
Diffusion 1	0 to 100	Smears the input signal transients, to diffuse and smooth the sound. Lower values will cause impulse sounds to appear as a series of discrete echoes, while higher values tend to increase the smear (smoother sounding with fewer discrete echoes). We recommend settings of 50 for starters.
Diffusion 2	0 to 100	This parameter, similar to and in series with Diffusion 1, performs the same way but controls lower frequency ranges. Experiment with different levels between the diffusion parameters to find the settings that are right for your source.
Definition	0 to 100	Controls the rate at which echo density is increased with time. Setting this parameter too high can cause the echo density to build at a rate which exceeds the decay rate.
Phaser Mix	Full Dry to Full Wet	Controls the dry/wet mix of the phaser.
LFO Rate	1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz	Controls the rate of the modulation applied to the phaser.
LFO Shape	Triangle, Sine, Sawtooth, Square, Asym, 16-Step, 8-Step, 4-Step	Determines the shape that the LFO will use for pitch modulation.
Phaser Depth	0 to 100	Controls the amount of modulation applied to the phaser.
Phaser Center	0 to 100	This parameter controls the mid-point of the phaser.
Notch Depth	0% to 100%	Controls the depth of the peaks and notches produced by the phaser. This parameter should normally be set to 100%.
Feedback	-99% to +99%	Controls the amount of feedback applied to the phaser. Positive or negative values will impart a different tonality to the phaser effect, either accenting the peaks or the notches.

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

15 Chorus→Rev

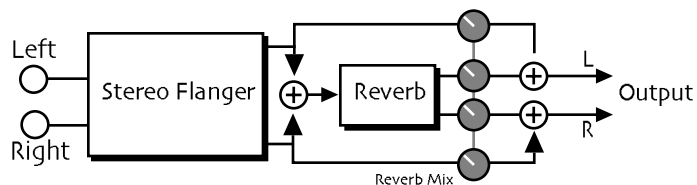


Chorus→Rev combines a rich sounding chorus with the standard reverb.

Parameter	Range	Description
LFO Rate	1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz	Controls the rate of the modulation applied to the delay time of the chorus.
LFO Shape	Triangle, Sine, Sawtooth, Square, Asym, 16-Step, 8-Step, 4-Step	Determines the shape that the LFO will use for pitch modulation.
LFO Phase	-180deg to +180deg	Controls the relative phase between left and right LFOs.
Chorus Depth	0.0ms to 25.0ms	Controls the amount of modulation.
Chorus Center	0.0ms to 50.0ms	Controls the four delay times within the chorus. Adjusting this parameter will change the tonal character of the chorus.
Rev Mix	Full Dry to Full Wet	Controls the dry/wet mix of the reverb.
Decay	0.0sec to 10.0sec	Controls the amount of time it takes for the reverberation to decay away to a very low level after the input signal stops.
HF Damping	100Hz to 21.2kHz	Controls the rate of attenuation of high frequencies in the decay of the reverberation. As natural reverb decays, some high frequencies tend to get absorbed by the environment. Increasing the value of this parameter will gradually filter out (dampen) more and more high frequency energy.
HF Bandwidth	100Hz to 21.2kHz	The high frequency bandwidth acts as a low pass filter on the signal going into the reverb, controlling the amount of high frequencies that will pass into the effect. The higher the setting, the more high frequencies are allowed to pass.
Diffusion 1	0 to 100	Smears the input signal transients, to diffuse and smooth the sound. Lower values will cause impulse sounds to appear as a series of discrete echoes, while higher values tend to increase the smear (smoother sounding with fewer discrete echoes). We recommend settings of 50 for starters.
Diffusion 2	0 to 100	This parameter, similar to and in series with Diffusion 1, performs the same way but controls lower frequency ranges. Experiment with different levels between the diffusion parameters to find the settings that are right for your source.
Definition	0 to 100	Controls the rate at which echo density is increased with time. Setting this parameter too high can cause the echo density to build at a rate which exceeds the decay rate.

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

16 Flanger→Rev

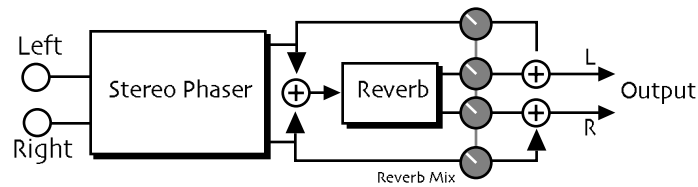


This insert effect features a flanger combined with a plate reverb.

Parameter	Range	Description
LFO Rate	1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz	Controls the rate of the modulation applied to the flange effect.
LFO Shape	Triangle, Sine, Sawtooth, Square, Asym, 16-Step, 8-Step, 4-Step	Determines the shape that the LFO will use for pitch modulation.
LFO Phase	-180deg to +180deg	Controls the relative phase between left and right LFOs.
Flanger Depth	0.0ms to 25.0ms	Controls the range of the high-to-low frequency sweep in the flanger effect.
FlangerCenter	0.0ms to 50.0ms	Sets the sweep mid-point of the flanger effect.
Notch Depth	0% to 100%	Controls the depth of the peaks and notches produced by the flanger. This parameter should be set to 100% for maximum effect.
Feedback	-99% to +99%	Controls the amount of feedback applied to the flanger. Positive or negative values will impart a different tonality to the flange effect, either accenting the peaks or the notches.
Rev Mix	Full Dry to Full Wet	Controls the dry/wet mix of the reverb.
Decay	0.0sec to 10.0sec	Controls the amount of time it takes for the reverberation to decay to a very low level after the input signal stops.
HF Damping	100Hz to 21.2kHz	Controls the rate of attenuation of high frequencies in the decay of the reverberation. As natural reverb decays, some high frequencies tend to get absorbed by the environment. Increasing the value of this parameter will gradually filter out (dampen) more and more high frequency energy.
HF Bandwidth	100Hz to 21.2kHz	The high frequency bandwidth acts as a low pass filter on the signal going into the reverb, controlling the amount of high frequencies that will pass into the effect. The higher the setting, the more high frequencies are allowed to pass.
Diffusion 1	0 to 100	Smears the input signal transients, to diffuse and smooth the sound. Lower values will cause impulse sounds to appear as a series of discrete echoes, while higher values tend to increase the smear (smoother sounding with fewer discrete echoes). We recommend settings of 50 for starters.
Diffusion 2	0 to 100	This parameter, similar to and in series with Diffusion 1, performs the same way but controls lower frequency ranges. Experiment with different levels between the diffusion parameters to find the settings that are right for your source.
Definition	0 to 100	Controls the rate at which echo density is increased with time. Setting this parameter too high can cause the echo density to build at a rate which exceeds the decay rate.

To access the Parameters described on this page (unless otherwise noted):
 Press the Insert FX button. Turn the Parameter knob to select the parameter,
 and use the Value knob to change the parameter's setting

17 Phaser→Rev

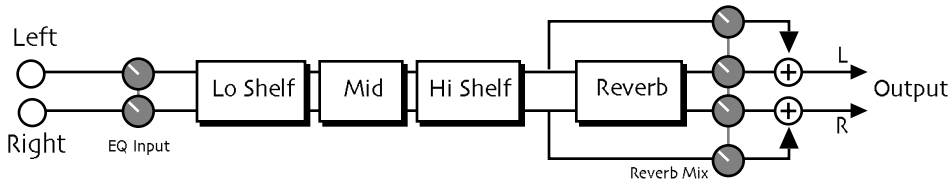


A 12-pole phase shifter with reverb.

Parameter	Range	Description
LFO Rate	1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz	Controls the rate of the modulation applied to the phaser.
LFO Shape	Triangle, Sine, Sawtooth, Square, Asym, 16-Step, 8-Step, 4-Step	Determines the shape that the LFO will use for pitch modulation.
Phaser Depth	0 to 100	Controls the amount of modulation applied to the phaser.
Phaser Center	0 to 100	This parameter controls the mid-point of the phaser.
Notch Depth	0% to 100%	Controls the depth of the peaks and notches produced by the phaser. This parameter should normally be set to 100%.
Feedback	-99% to +99%	Controls the amount of feedback applied to the phaser. Positive or negative values will impart a different tonality to the phaser effect, either accenting the peaks or the notches.
Rev Mix	Full Dry to Full Wet	Controls the dry/wet mix of the reverb.
Decay	0.0sec to 10.0sec	Controls the amount of time it takes for the reverberation to decay to a very low level after the input signal stops.
HF Damping	100Hz to 21.2kHz	Controls the rate of attenuation of high frequencies in the decay of the reverberation. As natural reverb decays, some high frequencies tend to get absorbed by the environment. Increasing the value of this parameter will gradually filter out (dampen) more and more high frequency energy.
HF Bandwidth	100Hz to 21.2kHz	The high frequency bandwidth acts as a low pass filter on the signal going into the reverb, controlling the amount of high frequencies that will pass into the effect. The higher the setting, the more high frequencies are allowed to pass. This functions like a tone control on a guitar.
Diffusion 1	0 to 100	Smears the input signal transients, to diffuse and smooth the sound. Lower values will cause impulse sounds to appear as a series of discrete echoes, while higher values tend to increase the smear (smoother sounding with fewer discrete echoes). We recommend settings of 50 for starters.
Diffusion 2	0 to 100	This parameter, similar to and in series with Diffusion 1, performs the same way but controls lower frequency ranges. Experiment with different levels between the diffusion parameters to find the settings that are right for your source.
Definition	0 to 100	Controls the rate at which echo density is increased with time. Setting this parameter too high can cause the echo density to build at a rate which exceeds the decay rate.

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

18 EQ→Reverb

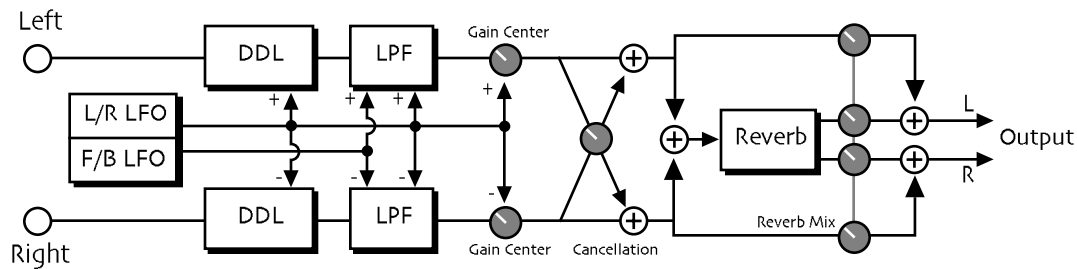


A parametric EQ with reverb.

Parameter	Range	Description
EQ Input	Off, -49.5dB to +24dB	Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals.
LoShelf Fc	10Hz to 20.0kHz	Sets the center of the low frequency EQ.
LoShelf Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this low frequency shelf.
Mid 1 Fc	10Hz to 20.0kHz	Sets the center of the mid frequency parametric.
Mid 1 Q	1.0 to 40.0	This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth.
Mid 1 Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this high frequency shelf.
HiShelf Fc	10Hz to 20.0kHz	Sets the center frequency of the high frequency shelf.
HiShelf Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this shelf.
EQ Output	Off, -49.5dB to +24dB	Controls the gain coming out of the parametric EQ.
Rev Mix	Full Dry to Full Wet	Controls the reverb mix.
Decay	0.0sec to 10.0sec	Controls the amount of time it takes for the reverb to decay after the input signal stops.
HF Damping	100Hz to 21.2kHz	Controls the rate of attenuation of high frequencies in the decay of the reverb. Increasing the value of this parameter will gradually filter out (dampen) more and more high frequency energy.
HF Bandwidth	100Hz to 21.2kHz	Acts as a low pass filter on the signal going into the reverb, controlling the amount of high frequencies that will pass. The higher the setting, the more high frequencies are allowed to pass.
Diffusion 1	0 to 100	Smears the input signal transients, to diffuse and smooth the sound. Lower values will cause impulse sounds to appear as a series of discrete echoes, while higher values tend to increase the smear (smoother sounding with fewer discrete echoes). We recommend settings of 50 for starters.
Diffusion 2	0 to 100	This parameter, similar to and in series with Diffusion 1, controls lower frequency ranges.
Definition	0 to 100	Controls the rate at which echo density is increased with time. Setting this too high can cause the echo density to build at a rate which exceeds the decay rate.

To access the Parameters described on this page (unless otherwise noted):
 Press the Insert FX button. Turn the Parameter knob to select the parameter,
 and use the Value knob to change the parameter's setting

19 Spinner→Rev

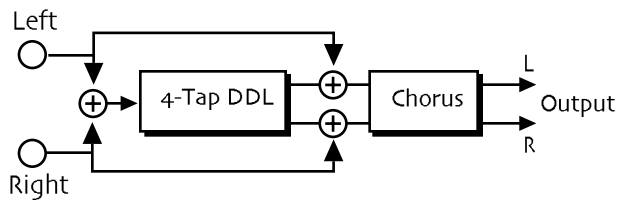


Combines a pseudo-three dimensional panner with the standard reverb.

Parameter	Range	Description
LFO Rate	1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz	Controls the rate of modulation applied to the spinner.
LFO Shape	Triangle, Sine, Sawtooth, Square, Asym, 16-Step, 8-Step, 4-Step	Determines the shape that the LFO will use for modulation.
LFO Phase	-180deg to +180deg	Controls the relative phase between the left and right and front and back LFOs. Set this to ± 90 deg for circular motion.
DDL Mod Depth	0.0ms to 10.0ms	Controls the left to right mod depth of delay time. Try setting this to 0.3 ms for average head size.
DDL ModCenter	0.0ms to 50.0ms	Fixed delay time.
Level Mod	0% to 100%	Left to right LFO mod depth to level.
L-to-R Mod	0% to 100%	Left to right LFO mod depth to filter.
F-to-B Mod	0% to 100%	Front to back LFO mod depth to filter. If the sum of the L-to-R Mod and F-to-B Mod is greater than 100%, the filter can “thump” as it closes down.
Cancellation	-99% to +99%	Sets the depth and phase of the opposite speaker cancellation signal.
Rev Mix	Full Dry to Full Wet	Controls the dry/wet mix of the reverb.
Decay	0.0sec to 10.0sec	Controls the amount of time it takes for the reverb to decay after the input signal stops.
HF Damping	100Hz to 21.2kHz	Controls the rate of attenuation of high frequencies in the decay of the reverberation. Increasing the value of this parameter will gradually filter out (dampen) more and more high frequency energy.
HF Bandwidth	100Hz to 21.2kHz	Acts as a low pass filter on the signal going into the reverb, controlling the amount of high frequencies that will pass. The higher the setting, the more high frequencies are allowed to pass.
Diffusion 1	0 to 100	Smears the input signal transients, to diffuse and smooth the sound. Lower values will cause impulse sounds to appear as a series of discrete echoes, while higher values tend to increase the smear (smoother sounding with fewer discrete echoes). We recommend settings of 50 for starters.
Diffusion 2	0 to 100	This parameter, similar to and in series with Diffusion 1, controls lower frequency ranges.
Definition	0 to 100	Controls the rate at which echo density is increased with time. Setting this too high can cause the echo density to build at a rate which exceeds the decay rate.

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

20 DDL→Chorus



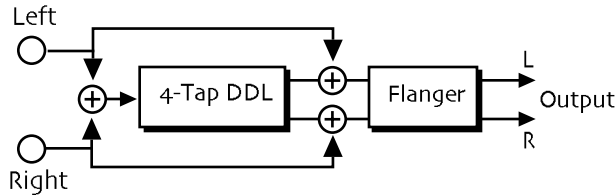
DDL→Chorus combines four independent, controllable digital delays with a chorus.

Parameter	Range	Description
Dly1 Time	1/1 Sys to 1/32 Sys, oms to 63oms	Sets the delay time for the first independent delay.
Dly1 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly1 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly1 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.
Dly1 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
Dly2 Time	1/1 Sys to 1/32 Sys, oms to 63oms	Sets the delay time for the second independent delay.
Dly2 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly2 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly2 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.
Dly2 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
Dly3 Time	1/1 Sys to 1/32 Sys, oms to 63oms	Sets the delay time for the third independent delay.
Dly3 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly3 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
Dly4 Time	1/1 Sys to 1/32 Sys, oms to 63oms	Sets the delay time for the fourth independent delay.
Dly4 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly4 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
LFO Rate	1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz	Controls the four rates of the modulation applied to the delay time of the chorus.
LFO Shape	Triangle, Sine, Sawtooth, Square, Asym, 16-Step, 8-Step, 4-Step	Determines the shape that the LFO will use for pitch modulation.
LFO Phase	-180deg to +180deg	Controls the relative phase between left and right LFOs.
Chorus Depth	0.oms to 25.oms	Controls the amount of modulation.
ChorusCenter	0.oms to 50.oms	Controls the delay time within the chorus, and changes the tonal character.

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

Spread	(wide stereo to mono)	This parameter offers control of the synthesized stereo field. The farthest counterclockwise setting of the Value knob offers true stereo, the middle setting forces the left and the right into the center (mono), and turning the Value knob fully clockwise inverts the left and right signal.
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21 DDL→Flanger



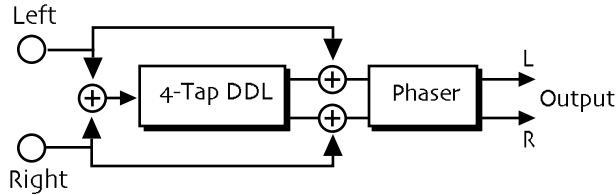
Combines four independent controllable digital delays with a flanger.

Parameter	Range	Description
Dly1 Time	1/1 Sys to 1/32 Sys, oms to 63oms	Sets the delay time for the first independent delay.
Dly1 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly1 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly1 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.
Dly1 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
Dly2 Time	1/1 Sys to 1/32 Sys, oms to 63oms	Sets the delay time for the second independent delay.
Dly2 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly2 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly2 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.
Dly2 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
Dly3 Time	1/1 Sys to 1/32 Sys, oms to 63oms	Sets the delay time for the third independent delay.
Dly3 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly3 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
Dly4 Time	1/1 Sys to 1/32 Sys, oms to 63oms	Sets the delay time for the fourth independent delay.
Dly4 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly4 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
LFO Rate	1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz	Controls the rate of the modulation applied to the flange effect.
LFO Shape	Triangle, Sine, Sawtooth, Square, Asym, 16-Step, 8-Step, 4-Step	Determines the shape that the LFO will use for pitch modulation.
LFO Phase	-180deg to +180deg	Controls the relative phase between left and right LFOs.

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

Flanger Depth	0.0ms to 25.0ms	Controls the range of the high-to-low frequency sweep in the flanger effect.
FlangerCenter	0.0ms to 50.0ms	Sets the sweep mid-point of the flanger effect.
Notch Depth	0% to 100%	Controls the depth of the peaks and notches produced by the flanger. This parameter should be set to 100% for maximum effect.
Feedback	-99% to +99%	Controls the amount of feedback applied to the flanger. Positive or negative values will impart a different tonality to the flange effect, either accenting the peaks or the notches.

22 DDL→Phaser



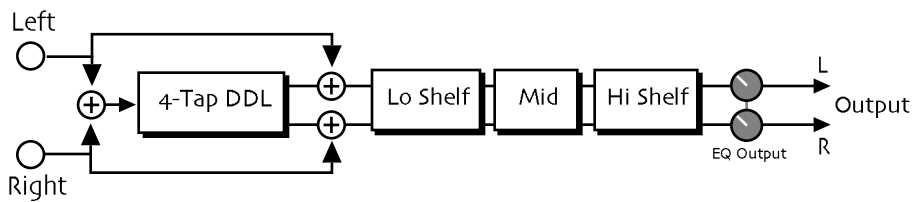
Combines a digital delay with a phase shifter.

Parameter	Range	Description
Dly1 Time	1/1 Sys to 1/32 Sys, 0ms to 630ms	Sets the delay time for the first independent delay.
Dly1 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly1 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly1 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.
Dly1 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
Dly2 Time	1/1 Sys to 1/32 Sys, 0ms to 630ms	Sets the delay time for the second independent delay.
Dly2 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly2 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly2 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.
Dly2 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
Dly3 Time	1/1 Sys to 1/32 Sys, 0ms to 630ms	Sets the delay time for the third independent delay.
Dly3 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly3 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
Dly4 Time	1/1 Sys to 1/32 Sys, 0ms to 630ms	Sets the delay time for the fourth independent delay.
Dly4 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly4 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
LFO Rate	1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz	Controls the rate of the modulation applied to the phaser.

To access the Parameters described on this page (unless otherwise noted):
 Press the Insert FX button. Turn the Parameter knob to select the parameter,
 and use the Value knob to change the parameter's setting

LFO Shape	Triangle, Sine, Sawtooth, Square, Asym, 16-Step, 8-Step, 4-Step	Determines the shape that the LFO will use for pitch modulation.
Phaser Depth	0 to 100	Controls the amount of modulation applied to the phaser.
Phaser Center	0 to 100	This parameter controls the mid-point of the phaser.
Notch Depth	0% to 100%	Controls the depth of the peaks and notches produced by the phaser. This parameter should normally be set to 100%.
Feedback	-99% to +99%	Controls the amount of feedback applied to the phaser. Positive or negative values will impart a different tonality to the phaser effect, either accenting the peaks or the notches.

23 DDL→EQ

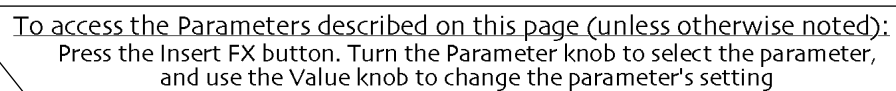


Combines a digital delay with a parametric EQ.

Parameter	Range	Description
Dly1 Time	1/1 Sys to 1/32 Sys, oms to 630ms	Sets the delay time for the first independent delay.
Dly1 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly1 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly1 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.
Dly1 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
Dly2 Time	1/1 Sys to 1/32 Sys, oms to 630ms	Sets the delay time for the second independent delay.
Dly2 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly2 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly2 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.
Dly2 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
Dly3 Time	1/1 Sys to 1/32 Sys, oms to 630ms	Sets the delay time for the third independent delay.
Dly3 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly3 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
Dly4 Time	1/1 Sys to 1/32 Sys, oms to 630ms	Sets the delay time for the fourth independent delay.
Dly4 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly4 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.

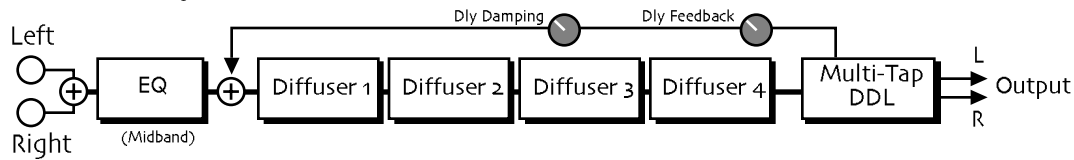
To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

EQ Input	Off, -49.5dB to +24dB	Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals.
LoShelf Fc	10Hz to 20.0kHz	Sets the center of the low frequency EQ.
LoShelf Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this low frequency shelf.
Mid 1 Fc	10Hz to 20.0kHz	Sets the center of the mid frequency parametric.
Mid 1 Q	1.0 to 40.0	This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth.
Mid 1 Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this mid frequency band.
HiShelf Fc	10Hz to 20.0kHz	Sets the center frequency of the high frequency shelf.
HiShelf Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this high frequency shelf.
EQ Output	Off, -49.5dB to +24dB	Controls the gain coming out of the parametric EQ.



To access the Parameters described on this page (unless otherwise noted):
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24 Multi-Tap DDL

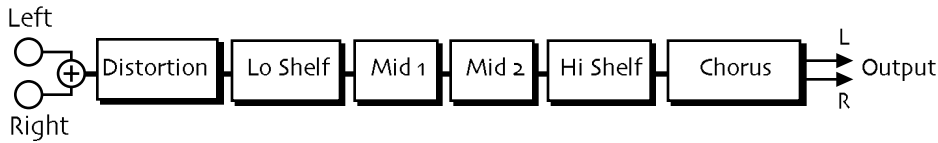


Multi-Tap DDL offers four diffusers in series feeding a nine-tap digital delay.

Parameter	Range	Description
EQ Input	Off, -49.5dB to +24dB	Adjusts the input level trim to the EQ to eliminate the possibility of clipping boosted signals.
EQ Output	Off, -49.5dB to +24dB	Controls the gain coming out of the parametric EQ.
Mid 1 Fc	10Hz to 20.0kHz	Sets the center of the mid frequency parametric.
Mid 1 Q	1.0 to 40.0	This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth.
Mid 1 Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this mid frequency band.
Diffusion 1	-99% to +99%	Sets the amount and phase of the first diffuser.
Diffus Time 1	0ms to 62ms	Sets the delay time of the first diffuser.
Diffusion 2	-99% to +99%	Sets the amount and phase of the second diffuser.
Diffus Time 2	0ms to 62ms	Sets the delay time of the second diffuser.
Diffusion 3	-99% to +99%	Sets the amount and phase of the third diffuser.
Diffus Time 3	0ms to 62ms	Sets the delay time of the third diffuser.
Diffusion 4	-99% to +99%	Sets the amount and phase of the fourth diffuser.
Diffus Time 4	0ms to 62ms	Sets the delay time of the fourth diffuser.
Dly Interval	Uniform, Linear+, Linear-, Expon.+, Expon.-, Random	Controls the spacing of the taps within the DDL.
MaxDlyTime	1/1 Sys to 1/32 Sys, 0ms to 500ms	Controls the maximum delay time.
Dly Smoothing	0ms to 500ms	Controls the amount of time it takes to change from one Dly Max Time setting to another. Low values result in more clicking but less detuning. High values result in less clicking but more detuning.
Feedback Tap	1 to 9	Selects one of the nine taps to be fed back into the input of the effect.
Dly Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly Damping	10Hz to 20.0kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.
Dly Levels	Uniform, Linear+, Linear-, Expon.+, Expon.-, Random	Controls the relative levels of the taps.
Dly Max Level	0 to 100	Controls the maximum level that any one tap can attain.
Dly Pan	Centered, Alternating, L->R, R->L, Center->Out, Out->Center, Random	Controls the panning of the taps in the stereo field.
Dly Spread	0 to 100	Controls the width of the stereo field. A setting of 0 is the narrowest (mono)—a setting of 100 is the widest (full stereo).

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

25 Dist→Chorus



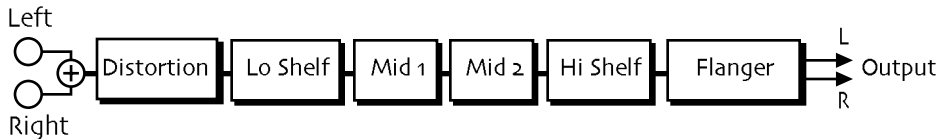
Dist→Chorus combines a distortion with a chorus.

Parameter	Range	Description
Dist LPF Fc	10Hz to 20.0kHz	Filters out high frequencies prior to the distortion.
Dist Offset	-99% to +99%	Adjusts the balance of even-to-odd-generated harmonics.
Dist Gain	Off, -49.5dB to +48dB	Controls the gain going into the distortion effect. This will boost the signal level up to 48 dB. For more distortion, use a high input level gain and turn Dist Volume down to keep the volume under control. For less distortion, use a low gain input level and a higher output volume.
Dist Curve	Soft, Medium 1, Medium 2, Hard, Buzz	Selects the type of clipping produced by the distortion. The curves range from tube-like distortion (Soft) to nasty distortion (Buzz).
Dist Volume	Off, -99dB to 0.0dB	Controls the volume of the distortion effect. Generally, if Distortion Gain is set high, set this parameter lower.
Post VCF Fc	10Hz to 7.10kHz	Determines the distortion filter cutoff frequency. Higher values have a brighter sound. This parameter can be modulated, using a CV Pedal or any controller for a wah-wah pedal effect.
Post VCF Q	1.0 to 40.0	Determines the level and width of the resonant peak at the filter cutoff point. While the Fc (filter cutoff) parameter determines where (at what frequency) this peak will occur, the Q setting controls the <i>sharpness</i> of the peak.
Dist Dry Lev	Off, -49.5dB to 0.0dB	Controls the amount of dry signal to be mixed with the distorted signal.
EQ Input	Off, -49.5dB to +24dB	Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals.
LoShelf Fc	10Hz to 20.0kHz	Sets the center of the low frequency EQ.
LoShelf Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this low frequency band.
Mid 1 Fc	10Hz to 20.0kHz	Sets the center of the mid frequency parametric.
Mid 1 Q	1.0 to 40.0	This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth.
Mid 1 Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this mid frequency band.
Mid 2 Fc	10Hz to 20.0kHz	Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range.
Mid 2 Q	1.0 to 40.0	Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range.
Mid 2 Gain	Off, -49.5dB to +24dB	Identical to the Mid 1 Gain parameter, and is used to control different bandwidths within the mid range.
HiShelf Fc	10Hz to 20.0kHz	Sets the center frequency of the high frequency shelf.
HiShelf Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this high frequency shelf.
EQ Output	Off, -49.5dB to +24dB	Controls the gain coming out of the parametric EQ.
LFO Rate	1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz	Controls the four rates of the modulation applied to the delay time of the chorus.
LFO Shape	Triangle, Sine, Sawtooth, Square, Asym, 16-Step, 8-Step, 4-Step	Determines the shape that the LFO will use for pitch modulation.

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
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LFO Phase	-180deg to +180deg	Controls the relative phase between left and right LFOs.
Chorus Depth	0.0ms to 25.0ms	Controls the amount of modulation.
ChorusCenter	0.0ms to 50.0ms	Controls the delay times within the chorus. Adjusting this parameter will change the tonal character of the chorus.
Spread	(wide stereo to mono)	This parameter offers control of the synthesized stereo field. The farthest counterclockwise setting of the Value knob offers true stereo, the middle setting forces the left and the right into the center (mono), and turning the Value knob fully clockwise inverts the left and right signal.

26 Dist→Flanger



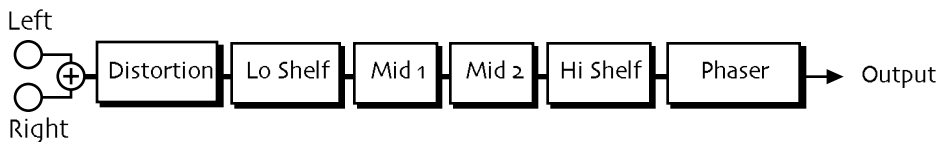
Dist→Flanger combines a distortion with a flanger.

Parameter	Range	Description
Dist LPF Fc	10Hz to 20.0kHz	Filters out high frequencies prior to the distortion.
Dist Offset	-99% to +99%	Adjusts the balance of even-to-odd-generated harmonics.
Dist Gain	Off, -49.5dB to +48dB	Controls the gain going into the distortion effect. This will boost the signal level up to 48 dB. For more distortion, use a high input level gain and turn the distortion volume down to keep the volume under control. For less distortion, use a low gain input level and a higher output volume.
Dist Curve	Soft, Medium 1, Medium 2, Hard, Buzz	Selects the type of clipping produced by the distortion. The curves range from tube-like distortion (Soft) to nasty distortion (Buzz).
Dist Volume	Off, -99dB to 0.0dB	Controls the volume of the distortion effect. Generally, if the distortion gain is set high, set this parameter lower.
Post VCF Fc	10Hz to 7.10kHz	Determines the distortion filter cut off frequency. Higher values have a brighter sound. This parameter can be modulated, using a CV Pedal or any controller for a wah-wah pedal effect.
Post VCF Q	1.0 to 40.0	Determines the level and width of the resonant peak at the filter cutoff point. While the Fc (filter cutoff) parameter determines where (at what frequency) this peak will occur, the Q setting controls the <i>sharpness</i> of the peak.
Dist Dry Lev	Off, -49.5dB to 0.0dB	Controls the amount of dry signal to be mixed with the distorted signal.
EQ Input	Off, -49.5dB to +24dB	Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals.
LoShelf Fc	10Hz to 20.0kHz	Sets the center of the low frequency EQ.
LoShelf Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this low frequency shelf.
Mid 1 Fc	10Hz to 20.0kHz	Sets the center of the mid frequency parametric.
Mid 1 Q	1.0 to 40.0	This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth.
Mid 1 Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this mid frequency band.
Mid 2 Fc	10Hz to 20.0kHz	Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range.
Mid 2 Q	1.0 to 40.0	Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range.

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

Mid 2 Gain	Off, -49.5dB to +24dB	Identical to the Mid 1 Gain parameter, and is used to control different bandwidths within the mid range.
HiShelf Fc	10Hz to 20.0kHz	Sets the center frequency of the high frequency shelf.
HiShelf Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this high frequency shelf.
EQ Output	Off, -49.5dB to +24dB	Controls the gain coming out of the parametric EQ.
LFO Rate	1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz	Controls the rate of the modulation applied to the flange effect.
LFO Shape	Triangle, Sine, Sawtooth, Square, Asym, 16-Step, 8-Step, 4-Step	Determines the shape that the LFO will use for pitch modulation.
LFO Phase	-180deg to +180deg	Controls the relative phase between left and right LFOs.
Flanger Depth	0.0ms to 25.0ms	Controls the range of the high-to-low frequency sweep in the flanger effect.
FlangerCenter	0.0ms to 50.0ms	Sets the sweep mid-point of the flanger effect.
Notch Depth	0% to 100%	Controls the depth of the peaks and notches produced by the flanger. This parameter should be set to 100% for maximum effect.
Feedback	-99% to +99%	Controls the amount of feedback applied to the flanger. Positive or negative values will impart a different tonality to the flange effect, either accenting the peaks or the notches.

27 Dist→Phaser

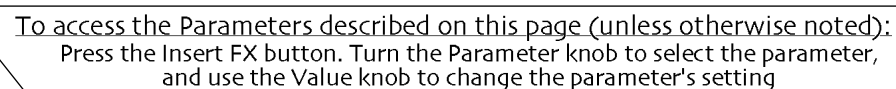


This insert effect combines a raspy distortion with a phase shifter.

Parameter	Range	Description
Dist LPF Fc	10Hz to 20.0kHz	Filters out high frequencies prior to the distortion.
Dist Offset	-99% to +99%	Adjusts the balance of even-to-odd-generated harmonics.
Dist Gain	Off, -49.5dB to +48dB	Controls the gain going into the distortion effect. This will boost the signal level up to 48 dB. For more distortion, use a high input level gain and turn the distortion volume down to keep the volume under control. For less distortion, use a low gain input level and a higher output volume.
Dist Curve	Soft, Medium 1, Medium 2, Hard, Buzz	Selects the type of clipping produced by the distortion. The curves range from tube-like distortion (Soft) to nasty distortion (Buzz).
Dist Volume	Off, -99dB to 0.0dB	Controls the volume of the distortion effect. Generally, if the distortion gain is set high, set this parameter lower.
Post VCF Fc	10Hz to 7.10kHz	Determines the distortion filter cut off frequency. Higher values have a brighter sound. This parameter can be modulated, using a CV Pedal or any controller for a wah-wah pedal effect.
Post VCF Q	1.0 to 40.0	Determines the level and width of the resonant peak at the filter cutoff point. While the Fc (filter cutoff) parameter determines where (at what frequency) this peak will occur, the Q setting controls the sharpness of the peak.
Dist Dry Lev	Off, -49.5dB to 0.0dB	Controls the amount of dry signal to be mixed with the distorted signal.
EQ Input	Off, -49.5dB to +24dB	Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals.
LoShelf Fc	10Hz to 20.0kHz	Sets the center of the low frequency EQ.

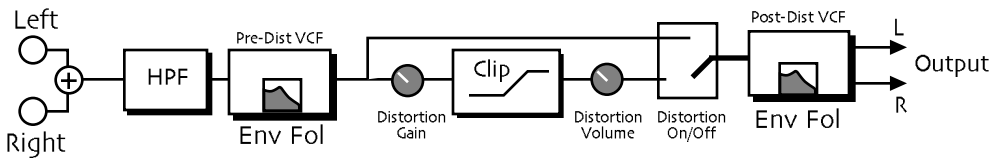
To access the Parameters described on this page (unless otherwise noted):
 Press the Insert FX button. Turn the Parameter knob to select the parameter,
 and use the Value knob to change the parameter's setting

LoShelf Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this low frequency shelf.
Mid 1 Fc	10Hz to 20.0kHz	Sets the center of the mid frequency parametric.
Mid 1 Q	1.0 to 40.0	This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth.
Mid 1 Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this mid frequency band.
Mid 2 Fc	10Hz to 20.0kHz	Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range.
Mid 2 Q	1.0 to 40.0	Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range.
Mid 2 Gain	Off, -49.5dB to +24dB	Identical to the Mid 1 Gain parameter, and is used to control different bandwidths within the mid range.
HiShelf Fc	10Hz to 20.0kHz	Sets the center frequency of the high frequency shelf.
HiShelf Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this high frequency shelf.
EQ Output	Off, -49.5dB to +24dB	Controls the gain coming out of the parametric EQ.
LFO Rate	1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz	Controls the rate of the modulation applied to the phaser.
LFO Shape	Triangle, Sine, Sawtooth, Square, Asym, 16-Step, 8-Step, 4-Step	Determines the shape that the LFO will use for pitch modulation.
Phaser Depth	0 to 100	Controls the amount of modulation applied to the phaser.
Phaser Center	0 to 100	This parameter controls the mid-point of the phaser.
Notch Depth	0% to 100%	Controls the depth of the peaks and notches produced by the phaser. This parameter should normally be set to 100%.
Feedback	-99% to +99%	Controls the amount of feedback applied to the phaser. Positive or negative values will impart a different tonality to the phaser effect, either accenting the peaks or the notches.



To access the Parameters described on this page (unless otherwise noted):
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and use the Value knob to change the parameter's setting

28 Dist→AutoWah



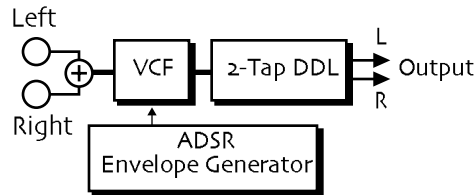
Dist→AutoWah combines a voltage control filter and a raspy distortion, and a second voltage controlled filter. Three effects can be obtained: Distortion, Wah-wah, and Auto-wah. The last two functions use the same VCF. These filters can be disabled or used as EQ if desired. There is a second VCF that exists after the distortion that can be set to act like a simple speaker simulator, or it can be modulated in parallel with the pre-distortion VCF.

Parameter	Range	Description
Pre HPF Fc	10Hz to 1.50kHz	Filters out the low frequencies before the EQ. The higher the value, the less low frequencies will pass through.
Pre VCF Fc	10Hz to 7.10kHz	Determines the distortion filter cutoff frequency. Higher values have a brighter sound. This parameter can be modulated, using a CV Pedal or any controller for a wah-wah pedal effect.
Pre VCF Q	1.0 to 40.0	Determines the level and width of the resonant peak at the filter cutoff point. While the Fc (filter cutoff) parameter determines where (at what frequency) this peak will occur, the Q setting controls the <i>sharpness</i> of the peak.
PreVCF EnvAmt	-99% to +99%	Determines how much the amplitude of the incoming signal will modify the distortion filter cutoff frequency. When set to 0, no modification will occur. When set to mid positive values, the Pre-VCF Fc will go high, but then come down to its nominal setting. When set to negative mid values, the Pre-VCF Fc will go low, and then go back up to its nominal setting. How quickly it does so is determined by the Attack and Release parameters. This sound is the auto-wah. Positive values will boost the high frequencies, offering an "oww-oww" sound, and negative values will cut the high frequencies, producing a "dweep-dweep" sound.
Dist Gain	Off, -49.5dB to +48dB	Controls the gain going into the distortion effect. This will boost the signal level up to 48 dB. For more distortion, use a high input level gain and turn the distortion volume down to keep the volume under control. For less distortion, use a low gain input level and a higher output volume.
Dist Volume	Off, -99dB to 0.0dB	Controls the volume of the distortion effect. Generally, if the distortion gain is set high, set this parameter lower.
Distortion	Off, On	Chooses between distorted and clean signals.
Post VCF Fc	10Hz to 7.10kHz	Determines the second distortion filter cutoff frequency. Higher values have a brighter sound. This parameter can be modulated, using a CV Pedal or any controller for a wah-wah pedal effect.
Post VCF Q	1.0 to 40.0	Determines the level and width of the resonant peak at the filter cutoff point. While the Fc (filter cutoff) parameter determines where (at what frequency) this peak will occur, this parameter controls the <i>sharpness</i> of the peak.
PostVCF EnvAmt	-99% to +99%	Determines how much the amplitude of the incoming signal will modify the distortion filter cutoff frequency. When set to 0, no modification will occur. When set to mid positive values, the Pre-VCF Fc will go high, but then come down to its nominal setting. When set to negative mid values, the Pre-VCF Fc will go low, and then go back up to its nominal setting. How quickly it does so is determined by the Attack and Release parameters.
VCF Attack	50us to 10.0s	Sets the attack of the envelope follower (i.e., determines how closely the attack is followed) once the incoming signal has been detected. Generally the attack should be short.

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
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VCF Release	50us to 10.0s	Sets the amount of time after the incoming signal has ceased for the envelope follower to shut down. Generally these times are longer than the attack times.
Post HPF Fc	10Hz to 1.50kHz	Filters out the low frequencies after the distortion.

29 ResVCF→DDL

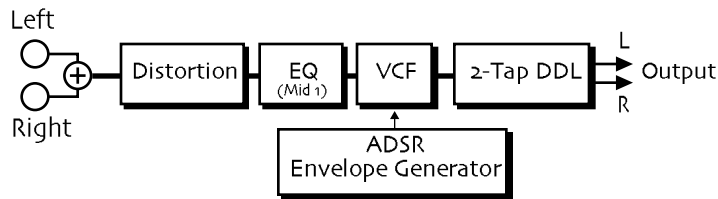


ResVCF→DDL combines a voltage control filter and a digital delay.

Parameter	Range	Description
VCF Input	Off, -49.5dB to 0.0dB	Acts as a trim control at the input of the VCF.
VCF Fc	10Hz to 7.10kHz	Determines the VCF cut off frequency. Higher values have a brighter sound. This parameter can be modulated, using a CV Pedal for a wah wah pedal effect.
VCF Q	1.0 to 40.0	Determines the level and width of the resonant peak at the filter cutoff point. While the Fc (filter cutoff) parameter determines where (at what frequency) this peak will occur, the Q setting controls the <i>sharpness</i> of the peak.
ADSR Attack	50us to 10.0s	Sets the attack time for the ADSR envelope shape.
ADSR Decay	50us to 10.0s	Sets the decay time for the ADSR envelope shape.
ADSR Sustain	Off, -49.5dB to 0.0dB	Sets the sustain level for the ADSR envelope shape.
ADSR Release	50us to 10.0s	Sets the release time for the ADSR envelope shape.
ADSR Env Amt	-99% to +99%	Determines the degree to which the envelope modifies the cutoff frequency of the VCF.
ADSR TrigMode	Single or Multi	Determines whether the envelope which controls the VCF will retrigger with each key-event (Multi) or not (Single).
Dly1 Time	1/1 Sys to 1/32 Sys, 0ms to 630ms	Sets the amount of delay time for the first independent delay.
Dly1 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly1 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly1 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.
Dly1 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
Dly2 Time	1/1 Sys to 1/32 Sys, 0ms to 630ms	Sets the amount of delay time for the second independent delay.
Dly2 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly2 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly2 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.
Dly2 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

30 Dist→VCF→DDL

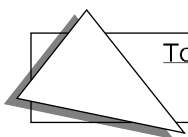


Dist→VCF→DDL combines a distortion, a voltage control filter and a digital delay.

Parameter	Range	Description
Dist LPF Fc	10Hz to 20.0kHz	Filters out high frequencies prior to the distortion.
Dist Offset	-99% to +99%	Adjusts the balance of even-to-odd-generated harmonics.
Dist Gain	Off, -49.5dB to +48dB	Controls the gain going into the distortion effect. This will boost the signal level up to 48 dB. For more distortion, use a high input level gain and turn the distortion volume down to keep the volume under control. For less distortion, use a low gain input level and a higher output volume.
Dist Curve	Soft, Medium 1, Medium 2, Hard, Buzz	Selects the type of clipping produced by the distortion. The curves range from tube-like distortion (Soft) to nasty distortion (Buzz).
Dist Volume	Off, -99dB to 0.0dB	Controls the volume of the distortion effect. Generally, if the distortion gain is set high, set this parameter lower.
Post VCF Fc	10Hz to 7.10kHz	Determines the distortion filter cut off frequency. Higher values have a brighter sound. This parameter can be modulated, using a CV Pedal or any controller for a wah-wah pedal effect.
Post VCF Q	1.0 to 40.0	Determines the level and width of the resonant peak at the filter cutoff point. While the Fc (filter cutoff) parameter determines where (at what frequency) this peak will occur, the Q setting controls the <i>sharpness</i> of the peak.
Dist Dry Lev	Off, -49.5dB to 0.0dB	Controls the amount of dry signal to be mixed with the distorted signal.
EQ Input	Off, -49.5dB to +24dB	Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals.
Mid 1 Fc	10Hz to 20.0kHz	Sets the center of the mid frequency parametric.
Mid 1 Q	1.0 to 40.0	This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth.
Mid 1 Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this mid frequency band.
VCF Input	Off, -49.5dB to 0.0dB	Acts as a trim control at the input of the VCF.
VCF Fc	10Hz to 7.10kHz	Determines the VCF cut off frequency. Higher values have a brighter sound. This parameter can be modulated, using a CV Pedal or any controller for a wah-wah pedal effect.
VCF Q	1.0 to 40.0	Determines the level and width of the resonant peak at the filter cutoff point. While the Fc (filter cutoff) parameter determines where (at what frequency) this peak will occur, the Q setting controls the <i>sharpness</i> of the peak.
ADSR Attack	50us to 10.0s	Sets the attack time for the ADSR envelope shape.
ADSR Decay	50us to 10.0s	Sets the decay time for the ADSR envelope shape.
ADSR Sustain	Off, -49.5dB to 0.0dB	Sets the sustain level for the ADSR envelope shape.
ADSR Release	50us to 10.0s	Sets the release time for the ADSR envelope shape.
ADSR Env Amt	-99% to +99%	Determines the degree to which the envelope modifies the cutoff frequency of the VCF.

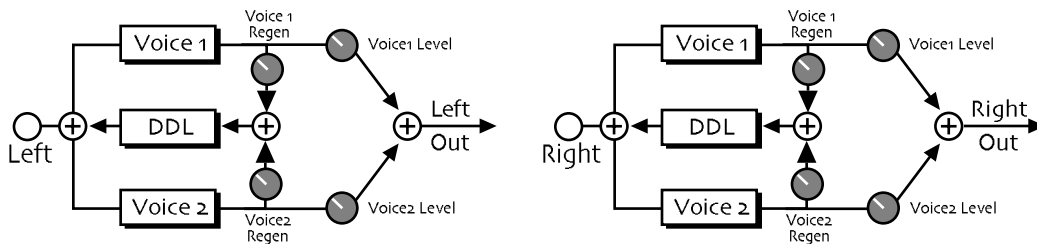
To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

ADSR TrigMode	Single or Multi	Determines whether the envelope which controls the VCF will retrigger with each key-event (Multi) or not (Single).
Dly1 Time	1/1 Sys to 1/32 Sys, oms to 630ms	Sets the amount of delay time for the first independent delay.
Dly1 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly1 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly1 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.
Dly1 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
Dly2 Time	1/1 Sys to 1/32 Sys, oms to 630ms	Sets the amount of delay time for the second independent delay.
Dly2 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly2 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly2 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.
Dly2 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.



To access the Parameters described on this page (unless otherwise noted):
 Press the Insert FX button. Turn the Parameter knob to select the parameter,
 and use the Value knob to change the parameter's setting

31 Pitch Detuner

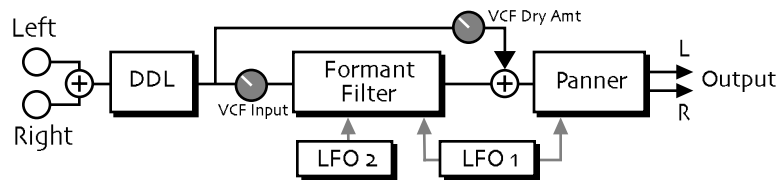


Pitch Detuner allows you to change the pitch of a sound to any pitch within a range of two octaves in either direction. We recommend using this insert effect as an LFO-controlled detuner.

Parameter	Range	Description
Voice1 Semi	-24 semi to +24 semi	Allows you to adjust the pitch of voice 1 up to two octaves above or below the original pitch in semi-tones (half steps).
Voice1 Fine	-100cent to +100cent	This parameter allows you to fine tune the pitch of voice 1.
Voice1 Level	Off, -49.5dB to 0.0dB	Adjusts the volume of voice 1.
Voice1 Regen	-99% to +99%	Controls the amount of feedback from the output of the pitch detuner back into the input. This allows you to create special effects with ascending/descending delays.
Voice1 Width	1ms to 185ms	Controls the splice width of voice 1. Select the width that sounds best to you. Shorter values result in a grainier sound, while longer values sound smoother.
Voice1 Mod	0% to 100%	Controls the amount of modulation applied to voice 1.
Voice2 Semi	-24 semi to +24 semi	Allows you to adjust the pitch of voice 2 up to two octaves above or below the original pitch in semi-tones (half steps).
Voice2 Fine	-100cent to +100cent	This parameter allows you to fine tune the pitch of voice 2.
Voice2 Level	Off, -49.5dB to 0.0dB	Adjusts the volume of voice 2.
Voice2 Regen	-99% to +99%	Controls the amount of feedback from the output of the pitch detuner back into the input. This allows you to create special effects with ascending/descending delays.
Voice2 Width	1ms to 185ms	Controls the splice width of voice 2. Select the width that sounds best to you. Shorter values result in a grainier sound, while longer values sound smoother.
Voice2 Mod	0% to 100%	Controls the amount of modulation applied to voice 2.
LFO Rate	1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz	This parameter controls the rate of pitch modulation which creates a chorusing effect. To achieve chorusing, this rate must be very low.
LFO Shape	Triangle, Sine, Sawtooth, Square, Asym, 16-Step, 8-Step, 4-Step	Determines the shape that the LFO will use for pitch modulation.
LFO Phase	-180deg to +180deg	Controls the relative phase between left and right LFOs.
Regen Time	1/1 Sys to 1/32 Sys, 0ms to 185ms	Controls the amount of delay in the feedback path.

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

32 Chatter Box



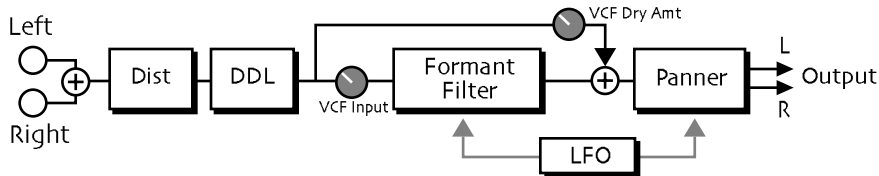
This insert effect uses a formant filter with a time-varying spectrum to impart a dynamic vocal-like quality to almost any sound. Two LFOs are combined such that the filter morphs between four vowel shapes that you select. The first LFO is also tied to an auto-panner, which can bounce the vocalized signal through stereo space. Finally, a digital delay can be used to create highly unusual talking echo effects.

Parameter	Range	Description
VCF Input	Off, -49.5dB to 0.0dB	Trims the input to the formant filter so that clipping does not occur.
VCF Dry Amt	Off, -49.5dB to 0.0dB	Controls the level of the DDL signal to be mixed with the output of the formant filter.
Shape 1	A, E, I, O, U, AA, AE, AH, AO, EH, ER, IH, IY, UH, UW, B, D, F, G, J, K, L, M, N, P, R, S, T, V, Z	Select the shape of the first formant filter.
Shape 2	A, E, I, O, U, AA, AE, AH, AO, EH, ER, IH, IY, UH, UW, B, D, F, G, J, K, L, M, N, P, R, S, T, V, Z	Select the shape of the second formant filter.
Shape 3	A, E, I, O, U, AA, AE, AH, AO, EH, ER, IH, IY, UH, UW, B, D, F, G, J, K, L, M, N, P, R, S, T, V, Z	Select the shape of the third formant filter.
Shape 4	A, E, I, O, U, AA, AE, AH, AO, EH, ER, IH, IY, UH, UW, B, D, F, G, J, K, L, M, N, P, R, S, T, V, Z	Select the shape of the fourth formant filter.
FormantWarp	-12 to +12 semi	Shifts all formant frequencies up or down, warping the “size” of the formant filter.
AutoPan Depth	0% to 100%	Controls the depth of the auto-panning function after the formant filter.
LFO Rate	1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz	This parameter controls the rate of pitch modulation which creates a chorusing effect. To achieve chorusing, this rate must be very low.
LFO Shape	Triangle, Sine, Sawtooth, Square, Asym, 16-Step, 8-Step, 4-Step	Determines the shape that the LFO will use for pitch modulation.
LFO 2 Rate	1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz	This parameter controls the rate of the second LFO.
LFO 2 Shape	Triangle, Sine, Sawtooth, Square, Asym, 16-Step, 8-Step, 4-Step	Determines the shape that the second LFO will use for pitch modulation.
Dly1 Time	1/1 Sys to 1/32 Sys, 0ms to 630ms	Sets the amount of delay time for the first independent delay.
Dly1 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly1 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly1 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

Dly2 Time	1/1 Sys to 1/32 Sys, oms to 630ms	Sets the amount of delay time for the second independent delay.
Dly2 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly2 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly2 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.

33 Formant Morph



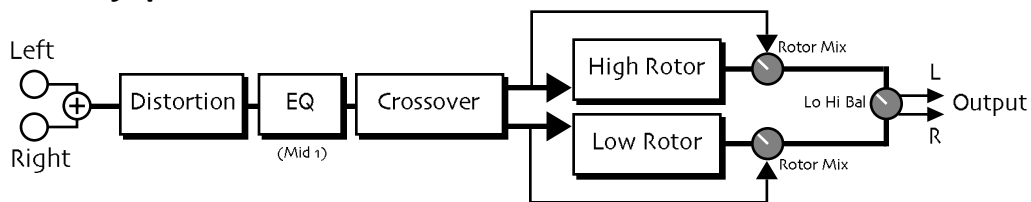
This effect is similar to the Chatter Box, except that it has a distorter for increased harmonic content, and it uses a single LFO to morph between two vowel shapes that you select.

Parameter	Range	Description
Dist Gain	Off, -49.5dB to +48dB	Controls the gain going into the distortion effect. This will boost the signal level up to 48 dB. For more distortion, use a high input level gain and turn the distortion volume down to keep the volume under control. For less distortion, use a low gain input level and a higher output volume.
Dist Volume	Off, -99dB to 0.0dB	Controls the volume of the distortion effect. Generally, if the distortion gain is set high, set this parameter lower.
Dist LPF Fc	10Hz to 20.0kHz	Filters out high frequencies prior to the distortion.
Post VCF Fc	10Hz to 7.10kHz	Determines the distortion filter cut off frequency. Higher values have a brighter sound. This parameter can be modulated, using a CV Pedal or any controller for a wah-wah pedal effect.
Post VCF Q	1.0 to 40.0	Determines the level and width of the resonant peak at the filter cutoff point. While the Fc (filter cutoff) parameter determines where (at what frequency) this peak will occur, the Q setting controls the <i>sharpness</i> of the peak.
Dist Offset	-99% to +99%	Adjusts the balance of even-to-odd-generated harmonics.
Dist Curve	Soft, Medium 1, Medium 2, Hard, Buzz	Selects the type of clipping produced by the distortion. The curves range from tube-like distortion (Soft) to nasty distortion (Buzz).
Dist Dry Lev	Off, -49.5dB to 0.0dB	Controls the amount of dry signal to be mixed with the distorted signal.
VCF Input	Off, -49.5dB to 0.0dB	Trims the input to the formant filter so that clipping does not occur.
VCF Dry Amt	Off, -49.5dB to +24dB	Controls the level of the distortion/DDL signal to be mixed with the output of the formant filter.
Shape 1	A, E, I, O, U, AA, AE, AH, AO, EH, ER, IH, IY, UH, UW, B, D, F, G, J, K, L, M, N, P, R, S, T, V, Z	Selects the shape of the first formant filter.
Shape 2	A, E, I, O, U, AA, AE, AH, AO, EH, ER, IH, IY, UH, UW, B, D, F, G, J, K, L, M, N, P, R, S, T, V, Z	Selects the shape of the second formant filter.
FormantWarp	-12 to +12 semi	Shifts all formant frequencies up or down, warping the "size" of the formant filter.

To access the Parameters described on this page (unless otherwise noted):
 Press the Insert FX button. Turn the Parameter knob to select the parameter,
 and use the Value knob to change the parameter's setting

AutoPan Depth	0% to 100%	Controls the depth of the auto-panning function after the formant filter.
LFO Rate	1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz	This parameter controls the rate of pitch modulation which creates a chorusing effect. To achieve chorusing, this rate must be very low.
LFO Shape	Triangle, Sine, Sawtooth, Square, Asym, 16-Step, 8-Step, 4-Step	Determines the shape that the LFO will use for pitch modulation.
LFO Phase	-180deg to +180deg	Controls the relative phase between left and right LFOs.
Dly1 Time	1/1 Sys to 1/32 Sys, 0ms to 630ms	Sets the amount of delay time for the first independent delay.
Dly1 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly1 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly1 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.
Dly2 Time	1/1 Sys to 1/32 Sys, 0ms to 630ms	Sets the amount of delay time for the second independent delay.
Dly2 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly2 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly2 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.

34 RotarySpeaker

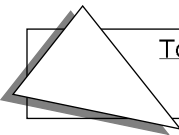


This insert effect adds the famous, classic rotating speaker effect to any sound. A tunable distortion is added to the input signal and is also passed through the rotors.

Parameter	Range	Description
Dist LPF Fc	10Hz to 20.0kHz	Filters out high frequencies prior to the distortion.
Dist Offset	-99% to +99%	Adjusts the balance of even-to-odd-generated harmonics.
Dist Gain	Off, -49.5dB to +48dB	Controls the gain going into the distortion effect. This will boost the signal level up to 48 dB. For more distortion, use a high input level gain and turn the distortion volume down to keep the volume under control. For less distortion, use a low gain input level and a higher output volume.
Dist Curve	Soft, Medium 1, Medium 2, Hard, Buzz	Selects the type of clipping produced by the distortion. The curves range from tube-like distortion (Soft) to nasty distortion (Buzz).
Dist Volume	Off, -99dB to 0.0dB	Controls the volume of the distortion effect. Generally, if the distortion gain is set high, set this parameter lower.
Post VCF Fc	10Hz to 7.10kHz	Determines the distortion filter cut off frequency. Higher values have a brighter sound. This parameter can be modulated, using a CV Pedal or any controller for a wah-wah pedal effect.

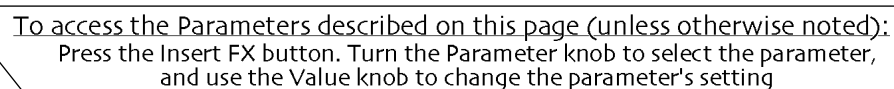
To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

Post VCF Q	1.0 to 40.0	Determines the level and width of the resonant peak at the filter cutoff point. While the Fc (filter cutoff) parameter determines where (at what frequency) this peak will occur, the Q setting controls the <i>sharpness</i> of the peak.
Dist Dry Lev	Off, -49.5dB to 0.0dB	Controls the amount of dry signal to be mixed with the distorted signal.
EQ Input	Off, -49.5dB to +24dB	Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals.
Mid 1 Fc	10Hz to 20.0kHz	Sets the center of the mid frequency parametric.
Mid 1 Q	1.0 to 40.0	This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth.
Mid 1 Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this mid frequency parametric.
Speed	Slow or Fast	Selects one of the two available rotor speeds, whose rates are determined by the Hi Slow, Hi Fast, Lo Slow, and Lo Fast parameters. The behavior of this switch accurately reflects an actual rotary speaker, taking time to speed up or slow down, based on the values of the inertia parameters. By assigning a modulation controller to this parameter, you can change between the slow and fast speeds in real time.
Spread	Stereo or Mono	Selects either a stereo or mono rotary speaker effect.
Crossover Fc	10Hz to 20.0kHz	Sets the crossover frequency between the low and high rotors.
Lo Hi Bal	Full <Lo to Full >Hi	Controls the volume balance between the low and the high rotor.
Rotor Mix	Full Dry to Full Wet	Controls the balance between the leakage (dry) signal and the rotor (wet) signal. We recommend settings near 70.0% wet.
Hi Inertia	100ms to 10.0s	Determines how long it will take for the rotor effect to speed up to the high setting after switching from slow or vice versa. Adjust this parameter to simulate the effect of the rotary speaker gradually picking up speed.
Hi Slow	0.0Hz to 10.0Hz	Sets the speed of the horn rotor simulator when Speed=Slow (modulated or set by hand). Remember, a real Leslie has two sets of speakers (horns & woofer). The ZR has separate controls for both. This parameter is used to set the horn's rate.
Hi Fast	0.0Hz to 10.0Hz	Sets the speed of the horn rotor simulator when Speed=Fast (modulated or set by hand). Remember, a real Leslie has two sets of speakers (horns & woofer). The ZR has separate controls for both. This parameter is used to set the horn's rate.
Hi FM Min	0 to 100	Sets the minimum amount of detuning as the speaker rotates when the Speed parameter is set to "Slow."
Hi FM Max	0 to 100	Sets the maximum amount of detuning as the speaker rotates when the Speed parameter is set to "Fast." These two parameters create what is also known as the "Doppler" effect.
Hi AM Min	0 to 100	Sets the minimum amount that the volume will change as the speaker rotates when the Speed parameter is set to "Slow."
Hi AM Max	0 to 100	Sets the maximum amount that the volume will change as the speaker rotates when the Speed parameter is set to "Fast." Broader ranges between these two parameters will create a deeper rotating speaker effect.
Lo Inertia	100ms to 10.0s	Determines how long it will take for the rotor Speed effect to slow down to the low setting after switching from Fast or vice versa. Adjust this parameter to simulate the effect of the rotary speaker gradually slowing down.



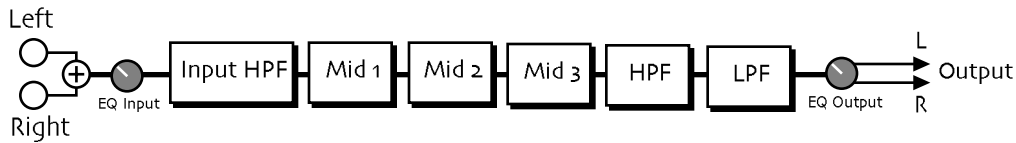
To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

Lo Slow	0.0Hz to 10.0Hz	<p>Sets the speed of the bass woofer's rotor simulator when Speed=Slow (modulated or set by hand).</p> <p>A real Leslie has two sets of speakers (horns & woofer). The ZR has separate controls for both. This parameter is used to set the woofer's rate.</p>
Lo Fast	0.0Hz to 10.0Hz	<p>Sets the speed of the bass woofer's rotor simulator when Speed=Fast (modulated or set by hand).</p> <p>A real Leslie has two sets of speakers (horns & woofer). The ZR has separate controls for both. This parameter is used to set the woofer's rate.</p>
Lo FM Min	0 to 100	Sets the minimum amount of detuning as the speaker rotates when the Speed parameter is set to "Slow."
Lo FM Max	0 to 100	Sets the maximum amount of detuning as the speaker rotates when the Speed parameter is set to "Fast." These two parameters create what is also known as the "Doppler" effect.
Lo AM Min	0 to 100	Sets the minimum amount that the volume will change as the speaker rotates when the Speed parameter is set to "Slow."
Lo AM Max	0 to 100	Sets the maximum amount that the volume will change as the speaker rotates when the Speed parameter is set to "Fast." Broader ranges between these two parameters will create a deeper rotating speaker effect.
Speed Control	Normal or Toggle	<p>Allows you to select a modulator and define what <i>type</i> of modulation you want to use to affect the rotor speed. The two modulation modes are:</p> <ul style="list-style-type: none"> • Normal — The modulation source continuously switches between the Speed slow and fast setting, based on the mod source position and/or movement. Try this setting with a Mod Wheel — you'll hear the rotary speaker change speed based on the position of the wheel (and the speed settings). • Toggle — The modulation source toggles the rotor speed between the Speed parameter's slow and fast setting. Every time the modulation source moves from zero in a positive direction, the rotating speaker effect changes speeds from slow to fast or vice versa. Try this setting with a Sustain pedal. <p>With both types of modulation, the rotary speaker <i>always</i> takes the inertia time to get to the rotor speed slow and fast settings.</p>



To access the Parameters described on this page (unless otherwise noted):
 Press the Insert FX button. Turn the Parameter knob to select the parameter,
 and use the Value knob to change the parameter's setting

35 Tunable Spkr

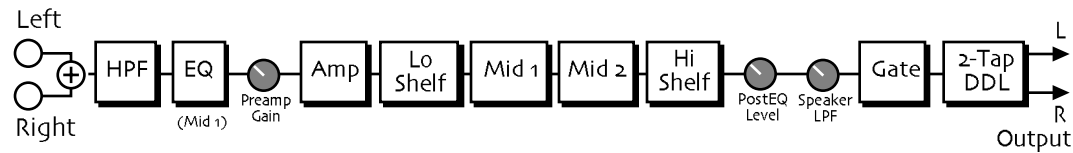


This insert effect offers an EQ controllable speaker sound. By tuning three parametric filters, you can simulate many different speaker cabinet sounds that are used in all styles of music.

Parameter	Range	Description
Pre HP Fc	10Hz to 1.50kHz	Controls the boost or cut of the high pass filter frequency applied to the input signal.
EQ Input	Off, -49.5dB to +24dB	This parameter allows you to adjust the input level before the EQs to eliminate the possibility of clipping boosted signals.
Mid 1 Fc	10Hz to 20.0kHz	Sets the center of the mid-frequency parametric.
Mid 1 Q	1.0 to 40.0	This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth.
Mid 1 Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this mid frequency band.
Mid 2 Fc	10Hz to 20.0kHz	Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range.
Mid 2 Q	1.0 to 40.0	Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range.
Mid 2 Gain	Off, -49.5dB to +24dB	Identical to the Mid 1 Gain parameter, and is used to control different bandwidths within the mid range.
Mid 3 Fc	10Hz to 20.0kHz	Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range.
Mid 3 Q	1.0 to 40.0	Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range.
Mid 3 Gain	Off, -49.5dB to +24dB	Identical to the Mid 1 Gain parameter, and is used to control different bandwidths within the mid range.
EQ Output	Off, -49.5dB to +24dB	Since speaker cabinets are "lossy," output gain is required to compensate losses in perceived volume. Setting this gain too high will cause clipping of the output signal.
HPF Cutoff	10Hz to 20.0kHz	Filters out the low frequencies. The higher the value, the less low frequencies pass through. This parameter is used to increase brightness.
LPF Cutoff	10Hz to 20.0kHz	Controls the boost or cut of the low pass filter frequency applied to the input signal.

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

36 Guitar Amp

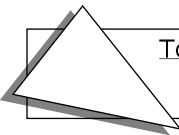


This insert effect recreates the warm sound of a tube guitar amplifier. It does this by emulating tube distortion characteristics. This effect is good for all stringed instruments.

Parameter	Range	Description
Pre HP Fc	10Hz to 1.50kHz	Filters out the low frequencies before the preamp. The higher the value, the less low frequencies pass through.
Pre EQ Trim	Off, -49.5dB to +24dB	Controls the input level to the pre-amp EQ to eliminate the possibility of clipping boosted signals.
Pre EQ Fc	10Hz to 20.0kHz	Determines the center frequency of the parametric filter before the preamp. Higher values have a brighter sound.
Pre EQ Q	1.0 to 40.0	Determines the width of the resonant peak at the parametric filter center frequency. While the filter center parameter determines where (at what frequency) this peak will occur, the Q setting controls the <i>sharpness</i> of the peak.
Pre EQ Gain	Off, -49.5dB to +24dB	Adjusts the amount of boost or cut applied to the parametric filter in front of the preamp.
Preamp Gain	Off, -49.5dB to +24dB	Adjusts the amount of boost or cut applied to the incoming signal. This parameter can be thought of as the primary distortion stage (clipping). We recommend a setting of 0 dB, since these emulations were optimized for distortion there. Lower preamp gains will result in less distortion, while higher preamp gains will yield clipping distortion. For low preamp gain, it may be desirable to use low tube bias values.
Master Level	Off, -99dB to 0.0dB	This parameter controls the output level of the main amp.
Tube Bias	0 to 100	For preamp gains approximately 0 dB, this parameter controls the emphasis of even to odd harmonics which determines the tone of the amp. Mid values emphasize even harmonics and offer a warmer “glowing tube” sound, while the highest values may sound like tubes going bad. Tube bias and preamp gain are independent parameters. For low preamp gain, it may be desirable to use low tube bias values, because this more closely imitates the operation of a real amplifier.
Bias Attack	50us to 10.0s	Controls the time it takes for the incoming signal to get to the tube bias. Generally the attack should be short.
Bias Release	50us to 10.0s	Sets the amount of time after the incoming signal has ceased for the amp level to shut down. Generally these times are longer than the attack times.
Post HP Fc	10Hz to 1.50kHz	This parameter filters out the low frequencies of the main amp prior to the speaker. The higher the value, the less low frequencies pass through.
Amp BassGain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to the low shelving filter.
Amp Mid1 Fc	10Hz to 20.0kHz	Sets the center of the mid frequency parametric.
Amp Mid1 Q	1.0 to 40.0	This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth.
Amp Mid1Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this mid frequency parametric.
Amp Mid2 Fc	10Hz to 20.0kHz	Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range.

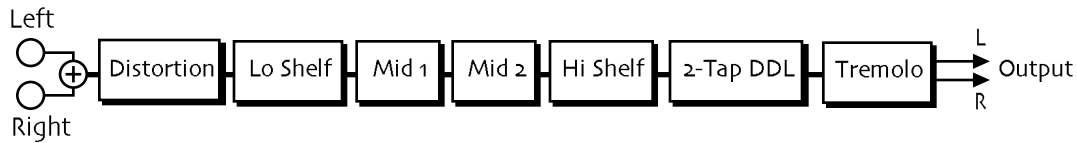
To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

Amp Mid2 Q	1.0 to 40.0	Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range.
Amp Mid2Gain	Off, -49.5dB to +24dB	Identical to the Mid 1 Gain parameter, and is used to control different bandwidths within the mid range.
Amp TrebGain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to the high shelving filter.
PostEQ Level	Off, -49.5dB to +24dB	This parameter controls the output level of the main amp before the output EQ.
Speaker LPF	10Hz to 20.0kHz	Attenuates the high frequency content of the signal driving the distortion at a rate of 6dB per octave starting at the corner frequency set by this parameter. The high-frequency bandwidth acts as a low pass filter on the signal going into the distortion, controlling the amount of high frequencies that will pass into the effect. The higher the setting, the more high frequencies are allowed to pass. This functions like a tone control on a guitar.
Gate Thresh	-96.0dB to 0.0dB	Sets the upper threshold level at which the noise gate passes the audio.
Gate Hysteresis	0dB to 48dB	Sets the lower threshold level relative to Gate Thresh, below which the noise gate shuts off the audio.
Dly1 Time	1/1 Sys to 1/32 Sys, oms to 63oms	Sets the amount of delay time for the first independent delay.
Dly1 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly1 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly1 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.
Dly1 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
Dly2 Time	1/1 Sys to 1/32 Sys, oms to 63oms	Sets the amount of delay time for the second independent delay.
Dly2 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly2 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.



To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

37 Dist→DDL→Trem

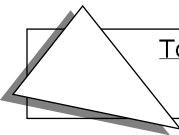


A guitar-effect chain that includes voltage-controlled distortion, parametric EQ, digital delay, and LFO modulation.

Parameter	Range	Description
Dist LPF Fc	10Hz to 20.0kHz	Filters out high frequencies prior to the distortion.
Dist Offset	-99% to +99%	Adjusts the balance of even-to-odd-generated harmonics.
Dist Gain	Off, -49.5dB to +48dB	Controls the gain going into the distortion effect. This will boost the signal level up to 48 dB. For more distortion, use a high input level gain and turn the distortion volume down to keep the volume under control. For less distortion, use a low gain input level and a higher output volume.
Dist Curve	Soft, Medium 1, Medium 2, Hard, Buzz	Selects the type of clipping produced by the distortion. The curves range from tube-like distortion (Soft) to nasty distortion (Buzz).
Dist Volume	Off, -99dB to 0.0dB	Controls the volume of the distortion effect. Generally, if the distortion gain is set high, set this parameter lower.
Post VCF Fc	10Hz to 7.10kHz	Determines the filter cut off-frequency after the distortion. Higher values have a brighter sound. This parameter can be used to emulate a speaker cabinet.
Post VCF Q	1.0 to 40.0	Determines the level and width of the resonant peak at the filter cutoff point. While the Post VCF Fc parameter determines where (at what-frequency) this peak will occur, this parameter controls the <i>sharpness</i> of the peak.
Dist Dry Lev	Off, -49.5dB to 0.0dB	Controls the amount of dry signal to be mixed with the distorted signal.
LoShelf Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to the low frequency shelf.
HiShelf Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to the high frequency shelf.
Mid 1 Fc	10Hz to 20.0kHz	Sets the center of the mid frequency parametric.
Mid 1 Q	1.0 to 40.0	This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth.
Mid 1 Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this mid frequency shelf.
Mid 2 Fc	10Hz to 20.0kHz	Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range.
Mid 2 Q	1.0 to 40.0	Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range.
Mid 2 Gain	Off, -49.5dB to +24dB	Identical to the Mid 1 Gain parameter, and is used to control different bandwidths within the mid range.
EQ Output	Off, -49.5dB to +24dB	Controls the gain coming out of the parametric EQ.
Dly1 Time	1/1 Sys to 1/32 Sys, oms to 630ms	Sets the amount of delay time for the first independent delay.
Dly1 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly1 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.

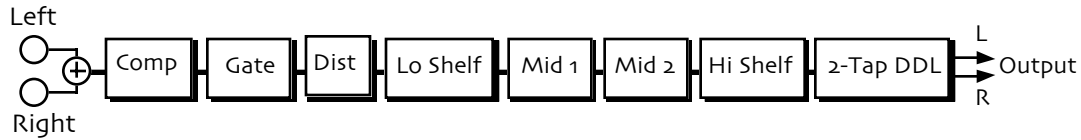
To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

Dly1 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.
Dly1 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
Dly2 Time	1/1 Sys to 1/32 Sys, oms to 63oms	Sets the amount of delay time for the second independent delay.
Dly2 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly2 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly2 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.
Dly2 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
LFO Rate	1/1 Sys to 1/32 Sys, 0.0Hz to 20.0Hz	Controls the rate of the modulation applied to the tremolo.
LFO Shape	Triangle, Sine, Sawtooth, Square, Asym, 16-Step, 8-Step, 4-Step	Determines the shape that the LFO will use for amplitude modulation.
LFO Phase	-180deg to +180deg	Controls the relative phase between left and right LFOs.
LFO Depth	Full Dry to Full Wet	Controls the amount of tremolo.



To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

38 Comp→Dist→DDL



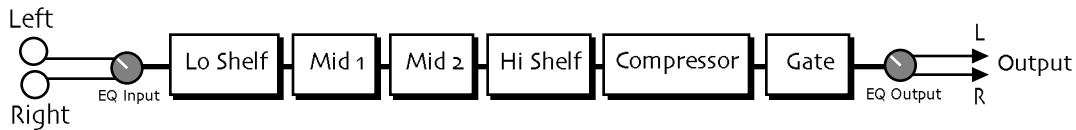
A bright guitar-effects chain that features compression, gate voltage-controlled distortion, parametric EQ, and a digital delay.

Parameter	Range	Description
Comp Ratio	1.0:1 to INF:1	Sets the amount of compression. The range is based on decibels (dB) above the threshold. If set to 4:1 for example, it will allow 1 dB increase in output level for every 4 dB increase in input level. When set to infinity, it acts as a limiter.
Comp Attack	50µs to 10.0s	Determines the time after the initial signal has been detected and before the compression takes affect.
Comp Release	50µs to 10.0s	Determines how long it takes for the compression to be fully deactivated after the input signal drops below the threshold level. This is generally set longer than the attack time.
Comp Thresh	-96.0dB to 0.0dB	Sets the threshold level. Signals that exceed this level will be compressed, while signals that are below will be unaffected. To turn off the compressor, set the level to +∞ dB.
Comp Output	Off, -49.5dB to +48dB	This parameter boosts or cuts the compressed signal level.
Gate Thresh	-96.0dB to 0.0dB	Sets the upper threshold level at which the noise gate passes the audio.
Gate Hysteresis	0dB to 48dB	Sets the lower threshold level relative to Gate Thresh, below which the noise gate shuts off the audio.
Dist LPF Fc	10Hz to 20.0kHz	Filters out high frequencies prior to the distortion.
Dist Offset	-99% to +99%	Adjusts the balance of even-to-odd-generated harmonics.
Dist Gain	Off, -49.5dB to +48dB	Controls the gain going into the distortion effect. This will boost the signal level up to 48 dB. For more distortion, use a high input level gain and turn the distortion volume down to keep the volume under control. For less distortion, use a low gain input level and a higher output volume.
Dist Curve	Soft, Medium 1, Medium 2, Hard, Buzz	Selects the type of clipping produced by the distortion. The curves range from tube-like distortion (Soft) to nasty distortion (Buzz).
Dist Volume	Off, -99dB to 0.0dB	Controls the volume of the distortion effect. Generally, if the distortion gain is set high, set this parameter lower.
Post VCF Fc	10Hz to 7.10kHz	Determines the filter cut off-frequency after the distortion. Higher values have a brighter sound. This parameter can be used to emulate a speaker cabinet.
Post VCF Q	1.0 to 40.0	Determines the level and width of the resonant peak at the filter cutoff point. While the Post VCF Fc parameter determines where (at what-frequency) this peak will occur, this parameter controls the <i>sharpness</i> of the peak.
Dist Dry Lev	Off, -49.5dB to 0.0dB	Controls the amount of dry signal to be mixed with the distorted signal.
LoShelf Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to the low frequency shelf.
Mid 1 Fc	10Hz to 20.0kHz	Sets the center of the mid frequency parametric.
Mid 1 Q	1.0 to 40.0	This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth.
Mid 1 Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this mid frequency band.

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

Mid 2 Fc	10Hz to 20.0kHz	Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range.
Mid 2 Q	1.0 to 40.0	Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range.
Mid 2 Gain	Off, -49.5dB to +24dB	Identical to the Mid 1 Gain parameter, and is used to control different bandwidths within the mid range.
HiShelf Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to the high frequency shelf.
EQ Output	Off, -49.5dB to +24dB	Controls the gain coming out of the parametric EQ.
Dly1 Time	1/1 Sys to 1/32 Sys, oms to 630ms	Sets the amount of delay time for the first independent delay.
Dly1 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly1 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly1 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.
Dly1 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
Dly2 Time	1/1 Sys to 1/32 Sys, oms to 630ms	Sets the amount of delay time for the second independent delay.
Dly2 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly2 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.

39 EQ→Comp→Gate



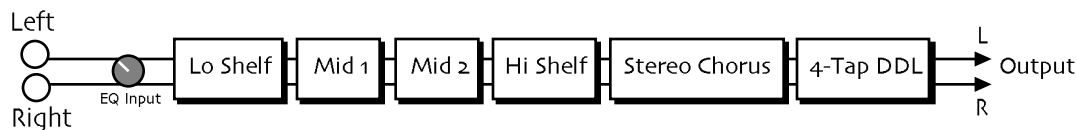
EQ→Comp→Gate combines an EQ with a full feature stereo compressor. When using high compressor ratios, this insert effect functions as a limiter. This effect operates by compressing (attenuating) signals above the threshold and passing the signals below the threshold. With higher ratios and lower thresholds, this effect can be used to create sustain.

Parameter	Range	Description
EQ Input	Off, -49.5dB to +24dB	Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals.
Lo Shelf Fc	10Hz to 20.0kHz	Sets the center of the low frequency EQ.
LoShelf Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this low frequency shelf.
Mid 1 Fc	10Hz to 20.0kHz	Sets the center of the mid frequency parametric.
Mid 1 Q	1.0 to 40.0	This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth.
Mid 1 Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this mid frequency band.
Mid 2 Fc	10Hz to 20.0kHz	Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range.
Mid 2 Q	1.0 to 40.0	Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range.
Mid 2 Gain	Off, -49.5dB to +24dB	Identical to the Mid 1 Gain parameter, and is used to control different bandwidths within the mid range.

To access the Parameters described on this page (unless otherwise noted):
 Press the Insert FX button. Turn the Parameter knob to select the parameter,
 and use the Value knob to change the parameter's setting

HiShelf Fc	10Hz to 20.0kHz	Sets the center frequency of the high frequency shelf.
HiShelf Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this high frequency shelf.
EQ Output	Off, -49.5dB to +24dB	Controls the gain coming out of the parametric EQ.
Comp PreDelay	0ms to 100ms	Determines how long it takes before the compressor is activated.
Comp Ratio	1.0:1 to INF:1	Sets the amount of compression. The range is based on decibels (dB) above the threshold. If set to 4:1 for example, it will allow 1 dB increase in output level for every 4 dB increase in input level. When set to infinity, it acts as a limiter.
Comp Attack	50ms to 10.0s	Determines the time after the initial signal has been detected and before the compression takes affect.
Comp Release	50ms to 10.0s	Determines how long it takes for the compression to be fully deactivated after the input signal drops below the threshold level. This is generally set longer than the attack time.
Comp Thresh	-96.0dB to 0.0dB	Sets the threshold level. Signals that exceed this level will be compressed, while signals that are below will be unaffected. To turn off the compressor, set the level to +∞ dB.
Comp Output	Off, -49.5dB to +48dB	This parameter boosts or cuts the compressed signal level.
Gate Thresh	-96.0dB to 0.0dB	Sets the upper threshold level at which the noise gate passes the audio.
Gate Hysteresis	0dB to 48dB	Sets the lower threshold level relative to Gate Thresh, below which the noise gate shuts off the audio.
Gate Attack	50ms to 10.0s	Determines the time after the initial signal has been detected for the gate to occur.
Gate Release	50ms to 10.0s	This parameter sets the amount of time after the signal has elapsed for the noise gate to shut down. For a longer sustain, set this parameter higher.
Gate Hold	50ms to 10.0s	This is the detection sustain time in the ADSR—it determines how long the gate will last.

40 EQ→Chorus→DDL

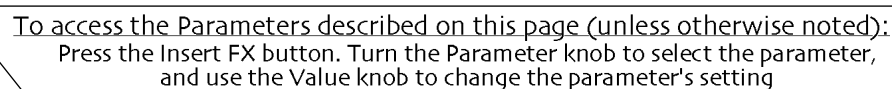


An effect chain that features a four-band parametric EQ, chorus, and four discrete delays.

Parameter	Range	Description
EQ Input	Off, -49.5dB to +24dB	Adjusts the input level trim to the EQs to eliminate the possibility of clipping boosted signals.
LoShelf Fc	10Hz to 20.0kHz	Sets the center of the low frequency EQ.
LoShelf Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this low frequency shelf.
Mid 1 Fc	10Hz to 20.0kHz	Sets the center of the mid frequency parametric.
Mid 1 Q	1.0 to 40.0	This parameter is a bandwidth control that determines the width of the resonant peak at the center frequency band. This parameter is equal to the cutoff frequency divided by the bandwidth. By raising the value, you can produce a narrower bandwidth.
Mid 1 Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this mid frequency band.
Mid 2 Fc	10Hz to 20.0kHz	Identical to the Mid 1 Fc parameter, and is used to control different bandwidths within the mid range.

To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

Mid 2 Q	1.0 to 40.0	Identical to the Mid 1 Q parameter, and is used to control different bandwidths within the mid range.
Mid 2 Gain	Off, -49.5dB to +24dB	Identical to the Mid 1 Gain parameter, and is used to control different bandwidths within the mid range.
HiShelf Fc	10Hz to 20.0kHz	Sets the center frequency of the high frequency shelf.
HiShelf Gain	Off, -49.5dB to +24dB	Sets the amount of boost or cut applied to this high frequency shelf.
EQ Output	Off, -49.5dB to +24dB	Controls the gain coming out of the parametric EQ.
Dry Blend	Full Dry to Full Wet	Controls the amount of the dry signal.
LFO Rate	0.0Hz to 20.0Hz	Controls the four rates of the modulation applied to the delay time of the chorus.
Chorus Depth	0.0ms to 25.0ms	Controls the amount of modulation.
Chorus Center	0.0ms to 50.0ms	Controls the four delay times within the chorus. Adjusting this parameter will change the tonal character of the chorus.
Dly1 Time	1/1 Sys to 1/32 Sys, 0ms to 630ms	Sets the amount of delay time for the first independent delay.
Dly1 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly1 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly1 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.
Dly1 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
Dly2 Time	1/1 Sys to 1/32 Sys, 0ms to 630ms	Sets the amount of delay time for the second independent delay.
Dly2 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly2 Feedback	-99% to +99%	Determines the amount of signal that will be fed from the output back into the input, increasing the number of repeats in the delay.
Dly2 Damping	100Hz to 21.2kHz	Controls the cutoff of a low pass filter on the feedback signal, which adjusts the amount of damping to the feedback signals. The lower the number, the more the signals are damped.
Dly2 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
Dly3 Time	1/1 Sys to 1/32 Sys, 0ms to 630ms	Sets the amount of delay time for the third independent delay.
Dly3 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly3 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.
Dly4 Time	1/1 Sys to 1/32 Sys, 0ms to 630ms	Sets the amount of delay time for the fourth independent delay.
Dly4 Level	Off, -49.5dB to +12.0dB	Adjusts the volume of the delayed signal against the original dry signal.
Dly4 Pan	Full <L to Full >R	Determines the location of the delay in the stereo spectrum.



To access the Parameters described on this page (unless otherwise noted):
Press the Insert FX button. Turn the Parameter knob to select the parameter,
and use the Value knob to change the parameter's setting

Chapter 12

Using the Unisyn Editing Software

The Unisyn ZR-76 software provides a way to create and edit ZR-76 sounds with your computer. Before you begin, you must first connect your ZR-76 to a Macintosh or PC-compatible computer. For more information about setting up the ZR with a computer, see Chapter 2, as well as Unisyn's own documentation. Consult your Unisyn documentation to familiarize yourself with the way that Unisyn operates. If you have any problems configuring your Unisyn software, call Mark of the Unicorn customer service.

The following sections provide information specific to the ZR parameters you can edit using the Unisyn editing software.

Tip: You can use the Unisyn editing software to edit sounds in the ZR's FLASH or RAM sound banks. Due to the faster nature of RAM memory, however, it is strongly recommended that you use RAM sound bank locations as targets for your edits when programming ZR-76 sounds. To learn how to create a RAM sound bank, see Chapter 9. Make sure to save the RAM sounds you edit to floppy, copy them into FLASH memory, or save them as Unisyn disk files on your computer before powering down your ZR-76.

Sound Editor Parameters

Sound Modulators

Various aspects of the layers in a ZR sound may be modulated in real time by the following modulators:

- Off—no modulation
- FullAmt—the maximum amount of modulation is applied to the modulation destination
- LFO—the selected layer's LFO
- Stepped—a significant amount of random noise modulation at a rate determined by the Noise Rate parameter (see below)
- Smooth—a subtle amount of random noise modulation at a rate determined by the Noise Rate parameter (see below)
- Env1—the selected layer's Envelope 1
- Env2—the selected layer's Envelope 2
- Env3—the selected layer's Envelope 3
- Velocity—MIDI velocity: higher values cause greater modulation; lower values cause less modulation
- Vel+Pres—a combination modulator, with MIDI velocity and pressure messages together achieving maximum modulation amounts
- MIDIKey—MIDI note numbers set the modulation destination parameter to absolute corresponding values
- Keyboard—MIDI note numbers above C4 raise the modulation destination's value from its setting; lower note numbers reduce it
- Pressure—MIDI channel or polyphonic (ENSONIQ PolyKey™) pressure; higher values cause greater modulation, lower values cause less modulation
- PitchWhl—MIDI pitch bend raises or lowers modulation destination value; a pitch bend wheel at rest transmits a central modulation value of 64
- ModWhl—MIDI modulation wheel (controller #1); maximum values are attained when the mod wheel is pushed all the way forward
- Whl+Pres—a combination modulator, with MIDI mod wheel and pressure messages together achieving maximum modulation amounts
- FtPedal—MIDI foot pedal (controller #4); maximum values are attained when the foot pedal is pushed all the way forward

- Sustain—MIDI sustain pedal (controller #64) operating as a modulation switch: down produces maximum modulation; up produces no modulation
- Sostenuto—MIDI sostenuto pedal (controller #66) operating as a modulation switch: down produces maximum modulation; up produces no modulation
- SysCTRL1—the first of the ZR-76’s assignable MIDI controllers (see “Setting Up New Real-Time Controllers” in *Chapter 3*)
- SysCTRL2—the second of the ZR-76’s assignable MIDI controllers (see “Setting Up New Real-Time Controllers” in *Chapter 3*)
- SysCTRL3—the third of the ZR-76’s assignable MIDI controllers (see “Setting Up New Real-Time Controllers” in *Chapter 3*)
- SysCTRL4—the fourth of the ZR-76’s assignable MIDI controllers (see “Setting Up New Real-Time Controllers” in *Chapter 3*)

Sound Settings

While most of the Sound Editor parameters refer to a single layers within a sound, the following suite of parameters apply to the whole sound.

Layers in Sound

Determines the number of layers to be used in the sound being edited or created. Each sound can have up to 16 layers, depending on available memory in the ZR-76.

Range: 1 to 16

Bend Down

Determines the maximum number of semitone steps by which the pitch-bend enabled layers in the sound will be lowered or raised when the ZR-76 receives pitch bend messages from a MIDI pitch bend wheel pulled all the way down (back).

Range: 12 down to 12 up, Off

Bend Up

Determines the maximum number of steps by which the pitch-bend enabled layers in the sound will be raised or lowered when the ZR-76 receives pitch bend messages from a MIDI pitch bend wheel pushed all the way up (forward).

Range: 12 down to 12 up, Off

Restrike Limit

Determines the number of consecutive keystrokes of the same key in the same layer before voice-stealing occurs. Velocity-switched sounds may result in keystrokes sounding from different layers, therefore allowing more keystrokes before note-stealing is activated. In a standard sound, the default value is equivalent to 2 voices/layers. If the sound is used by a drum or percussion kit, the default value changes to 6 voices/layers.

Range: 1 voice/layer to 16 voices/layer, Default

GM Alias

reserved for future use

Pitch Table

Selects a pitch table which may be accessed by layers in the sound (see “List of ROM System Pitch Tables” elsewhere in this chapter for a list of pitch tables). The ZR-76 supports the MIDI Tuning Change Standard—pitch tables may be transmitted via MIDI SysEx to the ZR’s RAM pitch table (see “ZR-76 MIDI Implementation” in *Chapter 13* for more details).

Range: various, RAM

Held PBend

Determines whether or not the sound’s pitch-bend enabled layers will operate normally or in held mode. Normally, when MIDI pitch bend messages are received, all notes sounding are affected by the pitch bend messages. In held mode, only notes physically being held down—notes which have not

yet received a key-up message—are affected when pitch bend messages are received. The held option is useful for a number of musical situations, including the simulation of pedal steel guitars or solo string lines played against a chordal background.

Range: Off, On

Sound Category

Determines the sound's SoundFinder sound type instrument category.

Range: various

Demo Sound?

Enables/disables inclusion of the sound in the DEMO-SND SoundFinder sound type category.

Range: Off, On

User Sound?

Enables/disables inclusion of the sound in the USER-SND SoundFinder sound type category. The USER-SND category provides easy access to sounds you've created yourself. (This category is only visible in the ZR-76 when it contains sounds.)

Range: Off, On

Use Handshake?

Enables/disables the ability of an editor and the ZR-76 to confirm edits behind the scenes. When set to Off, the editor sends edits, but receives no confirmation back from the ZR; when set to On, The ZR invisibly confirms receipt of edit data.

Range: No (off-line), Yes (Live)

Select Parameters

Volume (dB)

Determines the volume of the current layer.

Range: -72 to 14

Pan

Positions the current layer within the stereo field. A value of -64 pans the layer hard left, +00 pans the layer center, +63 pans the layer hard right.

Range: -64 to 63

Semi Tune

Lowers or raises the pitch of the current layer by semitones.

Range: -64 to 63

Fine Tune

Fine tunes the pitch of the current layer by steps of one cent (1/100 of a semitone).

Range: -128 to 127

Trigger On

Determines whether the selected layer will sound notes upon the receipt of note-ons or note-offs. When Trigger On=Key Down, the layer will sound on note-on. When Trigger On=Key Up, layer will

trigger on note-off, and release velocity amounts will be used for all velocity-dependent envelope parameters.

Range: KeyUp, KeyDown

Low Key

Determines the lowest MIDI note to which the current layer will respond.

Range: A0 to C8

High Key

Determines the highest MIDI note to which the current layer will respond.

Range: A0 to C8

Vel lo

Determines the lowest velocity amount the current layer will respond to when Trigger On=KeyDown, or the lowest release velocity the layer will respond to if Trigger On=KeyUp.

Range: 0 to 127

Vel hi

Determines the highest velocity amount the current layer will respond to when Trigger On=KeyDown, or the highest release velocity the layer will respond to if Trigger On=KeyUp.

Range: 0 to 127

Trigger Ctrl

This parameter designates a MIDI Controller as a filter for the current layer. When the layer has received a value for the controller that falls within the range determined by the (Trigger) Ctrl Low and Ctrl High parameters (see below), the layer will respond to MIDI note-ons and note-offs. If no such controller values have been received, the layer will not sound.

Range: Off (unused), all MIDI Controllers, SysCTRLs 1-4

Ctrl Low

Determines the lowest recognized value for the MIDI controller specified with the Trigger Ctrl parameter (see above). Values for the selected Trigger Ctrl lower than this setting will cause the selected layer to ignore MIDI note-ons and note-offs.

Range: 0 to 127

Ctrl High

Determines the highest recognized value for the MIDI controller specified with the Trigger Ctrl parameter (see above). Values for the selected Trigger Ctrl higher than this setting will cause the selected layer to ignore MIDI note-ons and -offs.

Range: 0 to 127

Glide

Enables/disables glide (portamento) in the current layer. The exact nature of the layer's glide is determined by the Voice parameter (see below).

Range: Off, On

Glide Time

Determines the amount of time it takes for the pitch to glide from one note to another when glide is enabled in the current layer: 0 represents the shortest glide time, 127 the longest. When Voice=Mono (see below), glide in the ZR is constant-time portamento: the time it takes to glide from note to note is the same regardless of how far away from each other the notes are.

Range: 0 to 127

Voice

Determines whether the current layer will be polyphonic or monophonic. When Voice=Poly, notes glide from a random selection of pitches.

Range: Poly, Mono

PBend

Enables/disables the current layer's response to MIDI pitch bend messages.

Range: Off, On

Sustain

Enables/disables the current layer's response to MIDI sustain messages.

Range: Off, On

KeyGrp

Allows assignment of current layer to one of 16 monophonic key groups. Key groups are used when you'd like two or more waves to cut each other off, particularly helpful when emulating real-world situations where two waves would be mutually exclusive. For example, when designing hi-hat drum sounds, you can assign the layers in your open hi-hat sound and those in your closed hi-hat sound to the same key group. When these two sounds are accessed by a drum or percussion kit sound, the last one played will silence the other, as it would in a real hi-hat.

Range: Off, 1 to 16

Layer Delay

Determines amount of time the current layer will wait to sound a note after receiving a note-on or trigger. A delay of up to 9999 milliseconds is possible. If envelope 3's Env Mode parameter (see below) is set to Finish, notes will sound even if their keys have been released before the layer delay time has passed.

Range: 0 to 9999

Pitch Parameters

KeyTrack

Determines the pitch response of the current layer to MIDI note numbers. The default setting is Western equal temperament; other options include ratio relationships to received note numbers, inverted equal temperament or assignment to the sound's pitch table, determined by the pitch table parameter (see above).

Range: various

Pitch Mod

Selects a pitch modulator for the current layer. See "Sound Editor Overview" above for a list of the available pitch modulators.

Range: various

Mod Amt

Determines the amount and polarity of pitch modulation caused by the Pitch Mod within the overall limit designated by the Mod Range parameter (see below).

Range: -127 to 127

Mod Range

Determines the maximum amount of pitch shifting the Pitch Mod may cause, in keyboard steps. The amount of pitch change invoked by each step is dependent on the layer's pitch table.

Range: 0 to 64

Env1 Amt

Env 1 Amt is a special routing that endows envelope 1 with unique capabilities in the modulation of the current layer's pitch. When applied to the current layer's pitch via the Env 1 Amt parameter, Envelope 1 automatically sustains at the pre-enveloping pitch, regardless of its Level 4 setting. Instead, its Level 4 setting serves to determine which Envelope 1 level values will cause the pitch to rise above the un-enveloped pitch and which level values will drive it below. Envelope 1 level values equal to the Level 4 value will cause the current layer to sound at the un-enveloped pitch. Higher level values will shift the pitch upward, and lower values will shift the pitch downward. This feature allows for the creation of bi-directional pitch envelope shapes, while conveniently ensuring that the current layer will always sustain at the un-enveloped pitch.

Range: -127 to 127

LFO Amt

Determines the degree to which the LFO will affect the pitch of the current layer.

Range: 0 to 127

Wave Parameters

Wave Class

Determines the wave class from which the current layer's wave will be selected. See "List of Wave Names and Classes" in *Chapter 13* for a complete list of the wave classes resident in an unexpanded ZR.

Range: various

Wave Name

Determines the wave used by the current layer. Each wave may contain a single sound sample or a set of matched multisamples. See "List of Wave Names and Classes" in *Chapter 13* for a complete list of the waves resident in an unexpanded ZR.

Range: various

Direction

Determines the direction that the current layer's wave will play. When Direction=backward, looped waves will play from the end of the sample to the start point, and will not loop.

Range: Forward, Backward

Start Index

Determines a location relative to the beginning of the selected wave. The wave will play from this location at note-on. A setting of 0 will cause the wave to play from its beginning; higher values move the playback start point further into the wave.

Range: 0 to 127

Wave Mod

Selects a start index modulation source. See "Sound Editor Overview" above for a list of the available start index modulators.

Range: various

Wave Mod Amt

Determines the degree to which the selected Wave Mod will move the start index, and in which direction it will move it. Negative modulation amounts will push the start index forward towards the beginning of the layer's wave; higher values will push it back toward its end. If the Direction parameter (see above) is set to Backward, the opposite is true.

Range: -127 to 127

Shift Mode

Enables/disables the resetting of the key ranges for multisamples in the selected layer. If the layer's wave consists of a single sample, this parameter will have no effect.

Range:

- Off—uses standard sample mapping.
- Shift All—moves the key ranges of all samples in the wave by the number of semitones designated by the Shift Amount parameter (see below).
- Stretch—stretches the sample designated by the Shift Amount parameter down to the bottom of the keyboard but preserves the original key ranges of all other samples above that key.
- Pick One—stretches the sample designated by the Shift Amount parameter over the entire pitch range.
- Shift Vel—selects the sample designated by the Shift Amount parameter as the sample heard at the lowest-velocity keystrikes. Greater velocities play samples mapped higher on the keyboard than the selected sample.

Shift Amount

This parameter is used in conjunction with the Shift Mode parameter (see above), and operates according to the selected Shift Mode value:

- When Shift Mode=Off, this parameter has no effect.
- When Shift Mode=Shift All, this parameter selects the number of keyboard steps by which all of the layers' wavesample key ranges will be shifted.
- When Shift Mode=Stretch, Pick One or Shift Vel, this parameter selects a location, in keyboard steps, above or below C4 (Middle C).

Range: -64 to 63

Envelope 1 Parameters

The following parameters pertain to the first of the selected layer's three envelopes. Envelope 1 is typically applied to pitch, though it may be used as a modulator for any modulatable parameter. When envelope 1 is applied to a layer's pitch through the Env1 Amt pitch parameter (see "Pitch Parameters," above), it's endowed with some special attributes, also described above.

Time 1

Determines the time it takes for the envelope's level to travel from zero (when a note-on is received) to Level 1, also referred to as the "attack time." The higher the value, the longer the time.

Range: 0 to 99

Time 2

Determines the time it takes the envelope to go from Level 1 to Level 2.

Range: 0 to 99

Time 3

Determines the time it takes the envelope to go from Level 2 to Level 3.

Range: 0 to 99

Time 4

Determines the time it takes the envelope to go from Level 3 to the Level 4 stage. At the end of Time 4, the envelope will remain at Level 4 until the key is released.

Range: 0 to 99

Time 5

Determines the time it takes the envelope to return to zero after the key has been released, also referred to as the “release time.”

Range: 0 to 99

Level 1

Determines the level the envelope will reach at the end of the time defined by Time 1.

Range: 0 to 127

Level 2

Determines the level the envelope will reach at the end of Time 2.

Range: 0 to 127

Level 3

Determines the level the envelope will reach at the end of Time 3.

Range: 0 to 127

Level 4

Determines the level the envelope will reach at the end of Time 4 and that it will retain until a note-off or sustain-off message is received. When Envelope 1 is used to modulate the current layer’s pitch through the Env 1 Amt parameter, this parameter functions differently—see “Env 1 Amt” above.

Range: 0 to 127

Level Vel

Determines to what degree velocity will affect envelope levels. Level Vel values above 0 increase the amount of velocity required to reach the Envelope 1 values determined by the Level 1 through Level 4 settings. Vel Curv gives you further control over the velocity response of the envelope.

Range: 0 to 99

Attack Vel

Determines the degree to which higher velocities will shorten envelope 1’s Time 1. This parameter will have no effect if Time 1=0.

Range: 0 to 99

Key Scale

Makes the envelope times longer or shorter, depending on the key played. The scaling effect of this parameter is based on a center break point of F4+. Higher values will make all envelope 1 times (except Time 5) shorter for keys above F4+, and longer for keys below F4+. Envelope times for F4+ itself are not affected by this parameter.

Range: 0 to 99

Release Mod Amt

Determines the degree to which higher release velocities will make the envelope 1’s Time 5 shorter or longer. When the value is positive, a higher release velocity value will result in a shorter Time 5. When the value is negative, a higher release velocity value will result in a longer Time 5. This parameter will have no effect if the Time 5=0. Note that release velocity values must fall within the range set with the Vel lo and hi parameters, in order to be recognized.

Range: -127 to 127

Env Mode

Envelope 1 may function in one of three ways:

- Normal—Envelope 1 plays through normally. When the key is released, the envelope takes the Time 5 to go from the current level down to zero.

- **Finish**—Envelope 1 finishes playing through all its stages, ignoring the key-up event. The envelope spends no time at the Level 4 stage. When the Time 4 interval is finished, instead of stopping at the Level 4 stage, the envelope immediately goes into the Time 5 stage. This is good for percussive-type sounds where you want the envelope to be the same for every note, no matter how long the key is held down.
- **Repeat**—At the end of the Time 3 stage, instead of sustaining, envelope 1 goes immediately back to the beginning and repeats, starting with the Time 1 stage. When the key is released, the envelope stops repeating and moves into the release stage, taking the Time 5 interval to go from the current level down to zero. This type of envelope can be used to create complex LFO-type effects.
Range: Normal, Finish, Repeat

Vel Curve

Selects which of the velocity response curves the envelope will use if the velocity level control (Level Vel) is set to some value other than zero.

Range: Quikrise, Convex1, Convex2, Convex3, Linear, Concave1, Concave2, Concave3, Concave4, LateRise

Filter Parameters

Each layer in a ZR sound has a pair of independently configurable multi-mode dynamic digital filters. The following parameters determine the behavior of the selected layer's filters.

Mode

Determines the filter configuration for the current layer: LP=low-pass filter, which allows frequencies lower than the filter cutoff frequency (Fc) to be heard; HP=high-pass filter, which allows frequencies above the Fc to be heard. Each layer has two filters: the first is always LP, while the second may be LP or HP. The steepness of each filter is determined by its *pole* setting; the higher the pole value, the more extreme the filter's slope becomes. A 1-pole filter rolls off frequencies at a slope of 6 dB per octave, a 2-pole filter at 12 dB per octave, and a 3-pole at 18 dB per octave.

Range: 2LP/2HP, 3LP/1HP, 2LP/2LP, 3LP/1LP

Flt 1+2 Link

When set to On, Filter 2 uses Filter 1's settings; when Off, Filter 2 uses its own settings.

Range: Off, On

Filter 1 Parameters

FC1 Mod

Selects a modulator for Filter 1's cutoff frequency. See "Sound Editor Overview" above for a list of the available FC1 modulators.

Range: various

FC1 Mod Amt

Determines the amount by which the modulation source will lower or raise Filter 1's cutoff frequency.

Range: -127 to 127

KeyTrack

Determines how Filter 1's cutoff frequency will change as various MIDI note numbers are received, expressed in ratios. Positive values raise the cutoff as higher note numbers are received.

Range: Off, various

KeyT Breakpoint

Determines which MIDI note number will be treated as the nominal center of the key track range, and produce neither negative or positive cutoff modulation.

Range: C-1 to A9

FC1

Determines filter 1's cutoff frequency. Filter 1 is always a low-pass filter: frequencies within the selected wave that are lower than the FC1 setting will pass, or be heard. Frequencies above it will be filtered out. Lowering the FC1 value is similar to turning down the treble on a home stereo.

Range: 0 to 127

Env2 Amt

Determines the degree to which envelope 2 will affect Filter 1's cutoff frequency.

Range: 0 to 127

Filter 2 Parameters

FC2 Mod

Selects a modulator for Filter 2's cutoff frequency. See "Sound Editor Overview" above for a list of the available FC2 modulators.

Range: various

FC2 Mod Amt

Determines the amount by which the modulation source will lower or raise Filter 2's cutoff frequency.

Range: -127 to 127

KeyTrack

Determines how Filter 2's cutoff frequency will change as various MIDI note numbers are received, expressed in ratios. Positive values raise the cutoff as higher note numbers are received.

Range: Off, various

KeyT Breakpoint

Determines which MIDI note number will be treated as the nominal center of the key track range, and will produce neither negative or positive cutoff modulation.

Range: C-1 to A9

FC2

Determines filter 2's cutoff frequency. Filter 2 can be either a low-pass or high-pass. When filter 2 is a low-pass (LP) filter, frequencies within the selected wave that are lower than the FC1 setting will pass, or be heard. Frequencies above it will be filtered out. When filter 2 is a high-pass (HP) filter, frequencies above FC2 will be heard, while those below it will be filtered out.

Range: 0 to 127

Env2 Amt

Determines the degree to which envelope 2 will affect filter 2's cutoff frequency.

Range: 0 to 127

Envelope 2 Parameters

The following parameters pertain to the second of the selected layer's three envelopes. Envelope 2 is typically applied to filters 1 and 2—there are built-in parameters specifically for this purpose—it may also be used as a modulator for any modulatable parameter. Envelope 2's diagram reflects its current time and level settings. You can alter these settings by entering values in their parameter boxes, or by dragging the blue dots in the diagram.

Time 1

Determines the time it takes for the envelope's level to travel from zero (when a note-on is received)

to Level 1, also referred to as the “attack time.” The higher the value, the longer the time.

Range: 0 to 99

Time 2

Determines the time it takes the envelope to go from Level 1 to Level 2.

Range: 0 to 99

Time 3

Determines the time it takes the envelope to go from Level 2 to Level 3.

Range: 0 to 99

Time 4

Determines the time it takes the envelope to go from Level 3 to the Level 4 stage. At the end of Time 4, the envelope will remain at Level 4 until the key is released.

Range: 0 to 99

Time 5

Determines the time it takes the envelope to return to zero after the key has been released, also referred to as the “release time.”

Range: 0 to 99

Level 1

Determines the level the envelope will reach at the end of the time defined by Time 1.

Range: 0 to 127

Level 2

Determines the level the envelope will reach at the end of Time 2.

Range: 0 to 127

Level 3

Determines the level the envelope will reach at the end of Time 3.

Range: 0 to 127

Level 4

Determines the level the envelope will reach at the end of Time 4 and that it will retain until a note-off or sustain-off message is received.

Range: 0 to 127

Level Vel

Determines to what degree velocity will affect envelope levels. Level Vel values greater than 0 increase the amount of velocity required to reach the envelope 2 values determined by the Level 1, Level 2, Level 3, and Level 4 settings. Vel Curv gives you further control over the velocity response of the envelope.

Range: 0 to 99

Attack Vel

Determines the degree to which higher velocities will shorten envelope 2’s Time 1. This parameter will have no effect if Time 1=0.

Range: 0 to 99

Key Scale

Makes the envelope times longer or shorter, depending on the key played. The scaling effect of this parameter is based on a center break point of F4+. Higher values will make all envelope 2 times (except Time 5) shorter for keys above F4+, and longer for keys below F4+. Envelope times for F4+

itself are not affected by this parameter.

Range: 0 to 99

Release Mod Amt

Determines the degree to which higher release velocities will make the envelope 2's Time 5 shorter or longer. When the value is positive, a higher release velocity value will result in a shorter Time 5. When the value is negative, a higher release velocity value will result in a longer Time 5. This parameter will have no effect if the Time 5=0, and also that release velocity values must fall within the range set with the Vel lo and hi parameters, in order to be recognized.

Range: -127 to 127

Env Mode

Envelope 2 may function in one of three ways:

- Normal—Envelope 2 plays through normally. When the key is released, the envelope takes the Time 5 to go from the current level down to zero.
- Finish—Envelope 2 finishes playing through all its stages, ignoring the key-up event. The envelope spends no time at the Level 4 stage. When the Time 4 interval is finished, instead of stopping at the Level 4 stage, the envelope immediately goes into the Time 5 stage. This is good for percussive-type sounds where you want the envelope to be the same for every note, no matter how long the key is held down.
- Repeat—At the end of the Time 3 stage, instead of sustaining, Envelope 2 goes immediately back to the beginning and repeats, starting with the Time 1 stage. When the key is released, the envelope stops repeating and moves into the release stage, taking the Time 5 interval to go from the current level down to zero. This type of envelope can be used to create complex LFO-type effects.

Range: Normal, Finish, Repeat

Vel Curve

Selects which of the velocity response curves the envelope will use if the velocity level control (Level Vel) is set to some value other than zero.

Range: Quikrise, Convex1, Convex2, Convex3, Linear, Concave1, Concave2, Concave3, Concave4, LateRise

Amp Parameters

The following parameters affect the selected layer's amplitude, or volume, characteristics.

Amp Mod

Selects a modulator for the current layer's volume. See "Sound Editor Overview" above for a list of the available Amp Mod modulators you may use in addition to envelope 3, which always affects layer volume.

Range: various

Amp Mod Amt

Determines the degree to which the Amp Mod or will lower or raise the volume of the layer.

Range: -127 to 127

Pan Mod

Selects a modulation source for the current layer's position in the stereo field. See "Sound Editor Overview" above for a list of the available Pan Mod modulators.

Range: various

Pan Mod Amt

Determines the degree to which the modulator will move the current layer's stereo position to the left (negative values) or right (positive values).

Range: -127 to 127

Rolloff Mode

Enables/disables a progressive volume reduction for the current layer, either above or below the rolloff Key (see Key below).

Range: Off, Below, Above

Slope (dB/oct)

Determines the extremity of the rolloff when Rolloff Mode is engaged.

Range: 0 to 127

Key

Determines the MIDI note number above or below which the rolloff occurs when Rolloff Mode is engaged.

Range: C-1 to A9

Noise Rate

Determines the speed of the stepped and smooth modulators (see “Sound Editor Overview” above).

Tip: When this parameter is set to 0, the noise modulators will choose new random values only upon new note-ons, and will not further modulate already-sounding notes.

Range: 0 to 127

Noise Sync

Enables/disables synchronization of the current layer’s stepped and smooth noise modulators to the ZR’s system tempo by providing rhythmic divisions of its pulse. The system tempo may be synchronized to the ZR’s internal clock or to received MIDI clocks.

Range: Normal, various rhythmic divisions of System Tempo

Envelope 3 Parameters

The following parameters pertain to the third of the selected layer’s three envelopes. Envelope 3 always controls its layer’s volume, though it may be used as a modulator for any modulatable parameter. Envelope 3’s diagram reflects its current time and level settings. You can alter these settings by entering values in their parameter boxes, or by dragging the blue dots in the diagram.

Time 1

Determines the time it takes for the envelope’s level to travel from zero (when a note-on is received) to Level 1, also referred to as the “attack time.” The higher the value, the longer the time.

Range: 0 to 99

Time 2

Determines the time it takes the envelope to go from Level 1 to Level 2.

Range: 0 to 99

Time 3

Determines the time it takes the envelope to go from Level 2 to Level 3.

Range: 0 to 99

Time 4

Determines the time it takes the envelope to go from Level 3 to the Level 4 stage. At the end of Time 4, the envelope will remain at Level 4 until the key is released.

Range: 0 to 99

Time 5

Determines the time it takes the envelope to return to zero after the key has been released, also referred to as the “release time.”

Range: 0 to 99

Level 1

Determines the level the envelope will reach at the end of the time defined by Time 1.

Range: 0 to 127

Level 2

Determines the level the envelope will reach at the end of Time 2.

Range: 0 to 127

Level 3

Determines the level the envelope will reach at the end of Time 3.

Range: 0 to 127

Level 4

Determines the level the envelope will reach at the end of Time 4 and that it will retain until a note-off or sustain-off message is received.

Range: 0 to 127

Level Vel

Determines to what degree velocity will affect envelope levels. Level Vel values greater than 0 increase the amount of velocity required to reach the Envelope 3 values determined by the Level 1, Level 2, Level 3, and Level 4 settings. Vel Curv gives you further control over the velocity response of the envelope.

Range: 0 to 99

Attack Vel

Determines the degree to which higher velocities will shorten Envelope 3’s Time 1. If Envelope 3’s Time 1=0, Time 2 will be shortened.

Range: 0 to 99

Key Scale

Makes the envelope times longer or shorter, depending on the key played. The scaling effect of this parameter is based on a center break point of F4+. Higher values will make all envelope 3 times (except Time 5) shorter for keys above F4+, and longer for keys below F4+. Envelope times for F4+ itself are not affected by this parameter.

Range: 0 to 99

Release Mod Amt

Determines the degree to which higher release velocities will make the Envelope 3’s Time 5 shorter or longer. When the value is positive, a higher release velocity value will result in a shorter Time 5. When the value is negative, a higher release velocity value will result in a longer Time 5. This parameter will have no effect if the Time 5=0, and also that release velocity values must fall within the range set with the Vel lo and hi parameters, in order to be recognized.

Range: -127 to 127

Env Mode

Envelope 3 may function in one of three ways:

- Normal—Envelope 3 plays through normally. When the key is released, the envelope takes the Time 5 to go from the current level down to zero.

- **Finish**—Envelope 3 finishes playing through all its stages, ignoring the key-up event. The envelope spends no time at the Level 4 stage. When the Time 4 interval is finished, instead of stopping at the Level 4 stage, the envelope immediately goes into the Time 5 stage. This is good for percussive-type sounds where you want the envelope to be the same for every note, no matter how long the key is held down.
- **Repeat**—At the end of the Time 3 stage, instead of sustaining, envelope 3 goes immediately back to the beginning and repeats, starting with the Time 1 stage. When envelope 3 recycles from the beginning, it uses the same wave start index setting (see above) it used on the original key-down. When the key is released, the envelope stops repeating and moves into the release stage, taking the Time 5 interval to go from the current level down to zero. This type of envelope can be used to create complex LFO-type effects.
Range: Normal, Finish, Repeat

Vel Curve

Selects which of the velocity response curves the envelope will use if the velocity level control (Level Vel) is set to some value other than zero.

Range: Quikrise, Convex1, Convex2, Convex3, Linear, Concave1, Concave2, Concave3, Concave4, LateRise

LFO Parameters

Each layer in a ZR sound has its own LFO (low frequency oscillator). The following parameters determine the behavior of the selected layer's LFO.

LFO Shape

Determines the wave shape of the selected layer's LFO:

Range:

Triangle—commonly used to modulate pitch to produce vibrato

Sine+Tri—mixture of a sine and triangle wave, a somewhat pointy sine wave

Sine—pure fundamental frequency, more rounded in its peaks and valleys than the triangle wave

Pos-Tri—a positive-only triangle wave useful for simulating vibrato on instruments like the guitar where a player can only bend notes up

Pos-Sine—positive-only sine wave useful for simulating vibrato on instruments like the guitar where a player can only bend notes up

Saw—sawtooth wave commonly used for special effects

Square—positive-only square wave useful for producing in-tune trill effects

Retrigger

Determines whether the LFO will restart with each note-on. When set to “off,” the LFO will cycle continuously without resetting, whether a note is being played or not. When set to “ON,” the LFO waveform will always commence at its starting phase, as determined by the phase parameter, when a note-on is received.

Range: Off, On

Timebase

Enables/disables synchronization of the current layer's LFO to the ZR's system tempo, by providing rhythmic divisions of its pulse. The system tempo may be synchronized to the ZR's internal clock or to received MIDI clocks.

Range: Normal, various rhythmic divisions of System Tempo

Rate

Determines the speed of the LFO.

Tip: When this parameter is set to 0, the LFO will produce modulation only upon new note-ons, and will not further modulate already-sounding notes.

Range: 0 to 99

Depth

Determines the amplitude of the LFO.

Range: 0 to 127

Delay

Determines the time it takes for the LFO to go from zero to the amount determined by the Depth parameter. Values above 0 will cause the LFO to take longer to achieve its full depth.

Range: 0 to 99

Phase

Determines the starting phase of the LFO, when Retrigger=On. With a setting of 0, the LFO will always restart at the beginning of its cycle.

Tip: When Phase=0, this parameter determines what part of the LFO wave will be applied as a fixed modulator upon key-down.

Range: 0 to 127

Depth Mod

Selects a modulator for the LFO depth. See “Sound Editor Overview” above for a list of the available LFO Depth Mod modulators.

Range: various

Depth Mod Amt

Determines the degree to which the modulator will decrease or increase the LFO depth.

Range: -127 to 127

Rate Mod

Selects a modulator for the LFO rate. See “Sound Editor Overview” above for a list of the available LFO Rate Mod modulators.

Range: various

Rate Mod Amt

Determines the degree to which the modulator will slow down or speed up the LFO Rate.

Range: -127 to 127

Effect Parameters

Alt FX Bus

Determines the FX bus routing the sound will use if it's routed to an effect bus other than the Insert or Dry bus.

Range: Default (MediumVerb), Chorus, LiteVerb, MediumVerb, WetVerb, Dry

Send Insert FX?

Enables/disables sending of sound's insert effect to the ZR, if there's one present.

Range: Off, On

Note: Insert effects can be assigned to a sound only in the ZR itself, when the sound is routed to the Insert FX Bus (a sound editor has no way of accomplishing this). Once the sound has been assigned an insert effect, and the patch has been retrieved into a sound editor, its name will be displayed in the read-only Insert FX Name field.

Input Mix

If the sound has an insert effect, this parameter determines the relative balance between the sound as it is before going through the insert effect (dry), and as it is after the going through the insert effect (wet). A value of 0 is all dry, a value of 127 is all wet.

Range: 0 to 127

Insert Cho Mix

If the sound has an insert effect, this parameter determines the relative balance between the sound as it is after going through the insert effect, and as it is after it's gone through the global chorus. A value of 0 is all insert effect, a value of 127 is all chorus.

Range: 0 to 127

Insert Rvb Amount

Determines the amount of the global reverb added to the insert effect by adjusting the amount of the insert effect being sent into the global reverb.

Range: 0 to 127

Insert FX Name

A read-only display listing any insert effect retrieved with the current sound after it has been retrieved into a sound editor.

Range: read-only

Perform Editor Parameters

The Perform module allows you to use Unisyn to edit 16 Track Recorder SoundFinder track parameters when the System module's Edit Buffer parameter is set to "Use Performance." These parameters are described in Chapter 4.

Drumkit Editor Parameters

Drum Key Parameters

The following parameters affect individual drum keys.

Edit DrumKey

Selects a drum key for editing.

Range: B1 to D7

DrumKey Bank

Determines the ZR bank in which the sound assigned to the selected drum key resides.

Range: 0 to 127

DrumKey Program

Determines the sound that the selected drum key will use.

Range: 0 to 127

FX Bus

Determines the FX bus routing of the selected drum key.

Range: Insert, LiteVerb, MediumVerb, WetVerb, Dry

Volume

Offsets the programmed volume of the sound assigned to the selected drum key. Values are listed in dB

Range: -50 to 14

Pan

Offsets the programmed stereo panning of the sound assigned to the selected drum key. A 0 value uses the sound's programmed panning; negative values shift the sound leftward; positive values shift it to the right.

Range: -64 to 63

Tuning Shift

Retunes the sound assigned to the selected drum key by keyboard steps. Amount of pitch change depends on the key track value programmed into the sound.

Range: -64 to 63

Drum Kit Parameters

The following parameters determine the characteristics of the entire drum or percussion kit sound.

Kit Category

Determines the drum or percussion kit's SoundFinder sound type instrument category.

Range: SoundFinder categories

Demo Kit?

Enables/disables inclusion of the drum or percussion kit in the DEMO-SND SoundFinder sound type category.

Range: Off, On

User Kit?

Enables/disables inclusion of the drum or percussion kit in the USER-SND SoundFinder sound type category. The USER-SND category provides easy access to sounds you've created yourself.

Range: Off, On

Use Handshake?

Enables/disables the ability of Unisyn and the ZR to confirm edits behind the scenes. When set to Off, Unisyn sends edits, but receives no confirmation back from the ZR; when set to On, the ZR invisibly confirms receipt of edit data.

Range: No (off-line), Yes (Live)

Send Insert FX?

Enables/disables sending of drum or percussion kit sound's insert effect to the ZR, if there's one present.

Range: Off, On

Note: Insert effects can be assigned to a drum or percussion kit sound only in the ZR itself, when the sound is assigned to the insert FX bus (Unisyn has no way of accomplishing this). Once the drum or percussion kit sound has been assigned an insert effect, performing a Get Patch command in Unisyn will retrieve the drum or percussion kit sound with its insert effect, which will be displayed in the read-only Insert FX Name field in the Unisyn Drumkit editor.

Input Mix

If the drum or percussion kit sound has an insert effect, this parameter determines the relative balance between the drum or percussion kit as it is before going through the insert effect (dry), and as it is after the going through the insert effect (wet). A value of 0 is all dry, a value of 127 is all wet.

Range: 0 to 127

Insert Cho Mix

If the drum or percussion kit sound has an insert effect, this parameter determines the relative balance between the drum or percussion kit as it is after going through the insert effect, and as it is after it's gone through the global chorus. A value of 0 is all insert effect, a value of 127 is all chorus.

Range: 0 to 127

InsertRvb Amt

Determines the amount of the global reverb added to the insert effect by adjusting the amount of the insert effect being sent into the global reverb.

Range: 0 to 127

Insert FX Name

A read-only display listing the insert effect retrieved with the current drum or percussion kit after a Unisyn Get Patch command is performed.

Range: read-only

InsertFX Parameters

The parameters available for each insert effect are described in detail in Chapter 11.

System Editor Parameters

Profile Params

Edit Buffer

Sets the area of the ZR's memory to be used for the receipt and storage of Unisyn edits. When set to "Use Performance," edits are sent to the 16 Track Recorder track numerically corresponding to the active MIDI channel. When set to "Select Below," the Ed Buffer Bank # and Ed Buffer Prog # settings are used.

Range: Use Performance; Select Below

Ed Buffer Bank

When the Edit Buffer parameter is set to "Select Below," sets the ZR bank from which patches will be drawn when Unisyn's Get Patch command is run. Also sets the ZR bank to which patches will be sent when Unisyn's Send Patch command is run.

Range: RAM1-3

Ed Buffer Prog

When the Edit Buffer parameter is set to "Select Below," sets the ZR patch location within the Ed Buffer Bank from which a patch will be drawn when Unisyn's Get Patch command is run. Also sets the location to which patches will be sent within the Ed Buffer Bank when Unisyn's Send Patch command is run.

Range: 0-127

Get Bank Gets

Determines ZR bank that will be transferred into Unisyn when the Get Bank command is activated.

Range: any ZR bank

Send Bank Gets

Determines ZR bank to which data will be transferred when Unisyn's Send Bank command is run.

Range: RAM1-3

Use Handshake?

Enables/disables the ability of Unisyn and the ZR to confirm edits behind the scenes. When set to Off, Unisyn sends edits, but receives no confirmation back from the ZR; when set to On, the ZR invisibly confirms receipt of edit data.

Range: No (off-line), Yes (Live)

All Other Parameters

The remaining parameters are described in Chapter 3, with the exception of the read-only "What Am I?" parameter, which identifies the device being edited by the Unisyn editor.

Chapter 13

Supplemental Information

Demo Types

When stored in the ZR's memory, or on an EXP expansion board, demos will appear in alphabetical order within these categories:

AMBIENT	JAZZ
BIG-BAND	LATIN
BLUES	NEW-AGE
CLASSICAL	POP
COUNTRY-	RAP
DANCE	ROCK
FOLK	SOUL-R&B
FUNK	SOUNDTRACK
FUSION	TECHNO
HIPHOP	WORLD
HOLIDAY	WORSHIP
INDUSTRY	*UTILITY
ISLAND	*OTHER

RhythmFinder Types

Rhythms will appear in alphabetical order within each of these categories:

DEMORTHM	Demo-designated rhythms in alphabetical order.
EXP-RTHM	Rhythms found on an expansion board (in numerical order).
ROM-RTHM	Rhythms stored in ROM memory (in numerical order).
INT-RTHM	Rhythms stored in both FLASH and DRAM memory (in numerical order).
ALL-RTHM	All rhythms, in alphabetical order.
AMBIENT	Ambient rhythms.
BALLAD	Rhythms for a variety of ballad styles.
BLUES	Rhythms for whatever blues you've got.
COUNTRY	Assorted country & western rhythm styles.
DANCE	Move the floor with these dance rhythms.
FUNK	Complex, syncopated rhythms designed for funk.
HIPHOP	Hip hop rhythm styles.
ISLAND	Caribbean-style rhythms.
JAZZ	Variety of jazz-based rhythms.
LATIN	Energetic latin rhythm grooves.
ODDMETER	Uncommon meter rhythms.
POP	Top-forty based drum rhythms.
RAP	Take it to the top with these rap rhythms.
ROCK	The ZR offers a variety of driving rock rhythms.
SOUL-R&B	Rhythms optimized for soul and rhythm and blues.
WORLD	Assorted rhythms from around the world.
*UTILITY	Utility rhythms (e.g., default rhythms used for programming and other special purposes).
*OTHER	Rhythms that fall into no appropriate category.
*CUSTOM	Use this type to define your own special purpose rhythms ENSONIQ rhythms will never be released with a type of CUSTOM.

SoundFinder™ Types

Here is a list of the available SoundFinder categories. If there are no sounds of a particular type, the type will not appear in the list of types:

USER-SND	Sound type for sounds that you want quick access to. These sounds also appear in their appropriate SoundFinder musical instrument type list.
DEMO-SND	Demo sounds are designed to demonstrate the scope of sounds in the ZR-76. Whenever this is selected, the first sound in the type will be selected; the ZR will not reselect the last sound selected in the DEMO-SND type. Demo sounds also appear in their appropriate Sound Type list.
EXP-SND	Expansion board sounds.
DRAM-SND	ROM drum key sounds.
GM-SND	Includes both ROM General MIDI sounds, and GM/GS drum kit sounds
ROM-SND	All sounds in ROM.
INT-SND	All FLASH and DRAM sounds.
ALL-SND	All sounds. The SongEditKit appears in ALL-SND.
BASS	Acoustic and electric basses.
BASS-SYN	Synth basses, and processed electric basses with a "synthy" quality.
BELL	Acoustic and synth bell sounds, both pitched (e.g., glockenspiel, celesta), and non-pitched (e.g., church bells).
BRASSECT	Trumpet, trombone, tuba, French horn, saxophone, and mixed brass sections (including sampled sections) and small ensembles (with more than one distinct pitch/"player" on a single key).
BRASSOLO	Solo brass (e.g., trumpet, trombone, tuba, French horns).
DRUM-KIT	Drum kits that use the ENSONIQ drum map.
DRMKITGM	Drum kits that use the General MIDI drum map.
GUITAR-A	Steel, nylon, and gut-stringed acoustic guitars.
GUITAR-E	Clean electric guitars and distortion guitars.
HITS	Orchestra hits.
KEYS	Other stringed keyboard sounds (e.g., harpsichord and clavinet).
LAYERS	Unnatural layered combinations of acoustic elements (e.g., a bass harmonic layered with a string section), excluding pianos/electric-pianos/organs layered with other sounds in which the piano/electric-piano/organ element is dominant. Also excludes multi-instrumental orchestral layers.
LOOPGRUV	Looped, repeating musical passages and drum rhythm loops (sampled or wave-sequenced) that play on one key.
MALLET	Tuned mallet-struck percussion instruments (e.g., marimba, xylophone, timpani, steel drum, log drum).
ORCHSTRA	Multi-instrumental orchestral Sounds (e.g., mixed strings/brass/woodwinds/reeds/orchestral percussion) layered with one another.
ORGAN-A	Acoustic pipe and pump organs.
ORGAN-E	Electric and electronic organs.
ORGANLYR	Any organs layered with other sounds in which the organ element is dominant.
PERC-KIT	Percussion kits that use either the ENSONIQ or General MIDI percussion maps.
PERCSOLO	Solo untuned percussion (e.g., taiko, synth-tom) includes most drum key sounds.
PIANO-A	Acoustic pianos, honky-tonk, toy pianos, and piano forte.
PNOLYR-A	Acoustic pianos layered with other sounds in which the acoustic piano element is dominant.
PIANO-E	Electric and electronic piano sounds, and electric pianos layered with acoustic pianos.
PNOLYR-E	Electric pianos layered with other sounds in which the electric piano element is dominant.
PLUCKED	Plucked strings (e.g., harps, banjo, dulcimer, sitar), pizzicato strings, and other plucked instruments (e.g., kalimba).
SAX-SOLO	Solo saxophones.
SOUND-FX	Realistic sound effects (e.g., broken glass, animal sounds, record scratches) and entirely non-pitched fantasy and chaos sound effects (e.g., spacecraft, environments).
SPLITS	Combination keyboard splits of two or more different types of sounds. Also includes splits of similar sounds that have discontinuous key ranges (e.g., a bassoon/oboe split that covers the natural ranges of both instruments).
STRGSECT	Bowed string sections (including sampled sections) and small string ensembles (with more than one distinct pitch/"player" on a single key).
STRGSOLO	Bowed solo strings (e.g., violin, viola, cello).
SYN-COMP	Non-vintage, sustaining and non-sustaining, polyphonic synth sounds with a pitched or non-pitched, highly obtrusive attack component that lend themselves toward comping (i.e., you can always play successive 1/8 note chords with these funky sounds).
SYN-LEAD	Monophonic lead synth sounds (excluding monophonic synth basses).
SYN-PAD	Non-vintage, sustaining, polyphonic synth sounds with a pitched, less obtrusive attack component, and an appropriate release, that lend themselves toward pad playing.
SYN-VINT	Polyphonic, signature vintage "analog" synth sounds (excluding monophonic vintage synth leads and synth basses). Normally these are named after the synth that they evoke.
SYNOTHER	Other types of pitched, polyphonic, hybrid synth sounds with sustaining, disparate components (e.g., sample & hold sync sounds).
VOCALS	Vocal sounds (e.g., choirs, synth-vox).
WINDREED	Solo woodwinds/reeds (e.g., flute, oboe, bassoon, clarinet, recorder, English horn, ocarina, bandoneon, shakuhachi, bagpipes, harmonica, accordion, melodica, didjeridoo).
*UTILITY	Utility resources (e.g., default template sounds used for programming and other special non-musical purposes).
*CUSTOM	Use this type to define your own special purpose sounds when created with the Unisyn sound editing software. The SongEditKit will always be assigned to CUSTOM. ENSONIQ sounds will never be released with a type of CUSTOM.
MIDI-OUT	Use this type for controlling other external MIDI devices. Each note you play, every controller you use, can be transmitted via MIDI. In any situation where you would otherwise select a local ZR-76 sound, you can transmit MIDI instead, by selecting one of the special MIDI-OUT sounds. For more information, see "Sending and Receiving MIDI" in <i>Chapter 4</i> .

List of Wave Names and Classes

Here is a list of the waves built in to the ZR-76:

<p>KEYBOARD GRAND PIANO GRAND MED HI GRAND MED LO GRAND SOFT PIANO THUD PNO HAMMER UP PNO HARP NOIS TINE EPNO A TINE EPNO B TINE EPNO C TINE EPNO D TINE EPNO E TINE EPNO F DIGI PIANO DIGI PNO SOFT FM EPNO A FM EPNO B FM EPNO C FM EPNO D WURLIE HIVEL WURLIE LOVEL HARPSICHORD CLAVINET FM CLAV CELESTE ORG-775305004 ORG-845351402 ORG-875434578 ORG-875645332 ORG-888000000 ORG-888808008 ORG-888856444 ORG-888880880 ORGAN WAVE 1 ORGAN WAVE 2 PERC ORGAN 1 PERC ORGAN 2 ROTARY ORGAN SYNKEY WAVE CHURCH ORGAN PIPE ORGAN REED ORGAN CLINK ORG KEYCLICK MOOG LEAD PAD SYNTH</p>	<p>BRASS+HORNS TRUMPET MUTE TRUMPET FLUGELHORN SOLO FR HORN TROMBONE POP BRASS SEC FR HORN SECT SYNTH BRASS</p> <p>WIND+REEDS TENOR SAX ALTO SAX SOPRANO SAX SAX AIR CHIFF CHIFFLUTE FLUTE OCARINA PAN FLUTE OBOE ENGLISH HORN BASSOON CLARINET ACCORDION 1 ACCORDION 2 HARMONICA CONCH SHELL RECORDER</p>	<p>DRUM-SOUND ACOUSTC KICK BIG KICK BOOM KICK BRIGHT KICK DANCE KICK ELEC KICK FAT KICK GATED KICK JAZZ KICK LOOP KICK MUFF KICK PROCESSD KICK PUNCHY KICK RAP KICK REAL KICK RESO KICK SYNTH KICK 1 SYNTH KICK 2 TIGHT KICK COM/GATE SNR CONCERT SNARE CRACK SNARE DANCE SNARE ELEC SNARE GATED POP SNR GM SNARE 1 HIPHOP SNARE POP SNARE RAP SNARE REAL SNARE RIMSHOT ROCK SNARE SYNTH SNARE SNARE ROLL SIDESTICK 1 SIDESTICK 2 STICK CLICK BRUSH HIT BRUSH SLAP BRUSH SWISH BRUSH TAP BRUSH TOM DRY TOM ROOM TOM SYNTH DRUM SYNTH RIM DEEP KICK A DEEP KICK B DEEP KICK C ROCK KICK A ROCK KICK B ROOM KICK 2A ROOM KICK 2B ROOM KICK 2C BIG SNARE A BIG SNARE B BIG SNARE C DARK SNR 1 A DARK SNR 1 B DARK SNR 2 A DARK SNR 2 B DRY SNR 1 A DRY SNR 1 B DRY SNR 1 C DRY SNR 2 A DRY SNR 2 B DRY SNR 2 C DYN SNR 1 A DYN SNR 1 B DYN SNR 2 A DYN SNR 2 B DYN SNR 3 A DYN SNR 3 B FAT SNARE A FAT SNARE B LIVE SNR 1 A LIVE SNR 1 B LIVE SNR 2 A LIVE SNR 2 B LIVE SNR 3 A LIVE SNR 3 B RING SNARE A</p>	<p>DRUM-SOUND cont'd. RING SNARE B RING SNARE C RING SNARE D TECHNO SNARE SIDESTICK 3A SIDESTICK 3B BRUSH SWISH2 BRUSH SWISH3 BRUSH SWISH4 DRY TOM HI LIVE TOM 2 A LIVE TOM 2 B LIVE TOM 2 C PURE TOM A PURE TOM B BIG TOM 1 A PURE TOM C BIG TOM 1 B BIG TOM 1 C BIG TOM 1 D BIG TOM 2 A BIG TOM 2 B BIG TOM 2 C BIG TOM 2 D BIG TOM 3 A BIG TOM 3 B BIG TOM 3 C BIG TOM 3 D LIVE TOM 1 A LIVE TOM 1 B LIVE TOM 1 C ROCK TOM 1 A ROCK TOM 1 B ROCK TOM 1 C ROCK TOM 2 A ROCK TOM 2 B ROCK TOM 2 C</p>	<p>PERCUSSION AGOGO BONGO CABASA CASTANETS CLAVE CLICK CONGA HIGH CONGA LOW CONGA MUTE COWBELL COWBELL STICK CUICA FINGER SNAPS GUIRO HANDCLAPS JAWHARP MARACAS SHAKER SLEIGHBELL SPOONS TAIKO TAMBOURINE TIMBALI TRIANGLE VIBRASLAP WHISTLE WOODBLOCK SYN CLAPS SYN COWBELL SYN MARACAS SYNTH CLAVE SYNTH KISS WIND CHIME CACTUS LOOP NUT RATTLE LP RAINSTICK EQ CABASA 1 EQ CABASA 2 CONGA HEEL THIN MARACA SHEKERE DN SHEKERE UP TAMBO DOWN TAMBO UP TIMBALI RIM</p>	<p>WAVEFORM SAWTOOTH SINE WAVE SQUARE WAVE TRIANGLE WAVE ANALOG WV 1 ANALOG WV 2 ANALOG WV 3 ANALOG WV 4 ANALOG WV 5 ANALOG WV 6 ANALOG WV 7 ANALOG WV 8 DIGITAL WV 1 DIGITAL WV 2 BELL WAVE 1 BELL WAVE 2 BELL WAVE 3 BELL WAVE 4 BELL WAVE 5 BELL WAVE 6 BELL WAVE 7 BIG BELL WF SYNTH BELL DIGITAL WF 1 VOCAL WF 2 VOCAL WF 3 VOCAL WF 4 VOCAL WF 5 VOCAL WF 6 DOUBLE REED REED WF SINGLE REED PIANO BS WF PIANO WF E-BASS WF 1 E-BASS WF 2</p>
<p>STRING-SOUND NYLON GUITAR NYLON GTR SOFT STEEL GUITAR STEEL GTR SOFT FRET NOISE EL GUITAR 1 EL GTR 1 SOFT EL GUITAR 2 DIST GUITAR DIST GTR LOOP FEEDBACK HARM GTR HARMONIC JAZZ GUITAR MUTE GUITAR MUTE GTR SOFT CELLO VIOLIN STRING SECTION STRING SECT B STRING SECT C PIZZ STRINGS BANJO HARP GOTO SHAMISEN SITAR</p>	<p>VOCAL-SOUND VOCAL AAHS VOCAL OOHs BREATHY OOH SYNTH VOX AAH VOCAL AIR DOO ATTACK ONE TWO THREE FOUR</p> <p>BASS-SOUND STANDUP BASS STANDUP BS 2 STANDUP BS 3 FRETLESS BASS FINGER BASS 1 FINGER BASS 2 FINGER BASS 3 PICK BASS 1 PICK BASS 2 MUTED BASS SLAP BASS 1 SLAP BASS 2 BASS POP NOIS BS HARMONICS EL BASS TAP ANALOG BS 1 ANALOG BS 2 ANALOG BS 3 FM BASS 1 FM BASS 2 GUITARRON TUBE BASS</p>	<p>CYMBALS CLOSED HAT 1 CLOSED HAT 2 CLOSED HAT 3 SYN CLOSEHAT RAP HAT 1 RAP HAT 2 OPEN HAT SYN OPEN HAT PEDAL HAT CRASH CYMBAL RIDE CYMBAL RIDE BELL CHINA CRASH 15"HAT TIGHT SYN CL HAT 2 TECHNO HAT 1 TECHNO HAT 2 TECHNO HAT 4 TECHNO HAT 3 15"HAT OPEN 15"HAT LOOSE SYN OP HAT 2 15"HAT FOOT CYM LOOP ROOM KICK 1A THIN RIDE A ROOM KICK 1B ROOM KICK 1C THIN RIDE B SYNTH CYMBAL</p>	<p>TUNED-PERC VIBRAPHONE MARIMBA XYLOPHONE LOG DRUM KALIMBA STEEL DRUM DOORBELL GAMELAN BELL GLOCKENSPIEL HANDBELLS SM TUNED GONG TUBULAR TYMPANI DANCE HIT ORCH HIT</p>	<p>INHARMONIC NOISE SPECTRUM AIR LOOP BIG BELL CRYSTAL TEXTURE</p>	<p>TRANSWAVE AAH OOH XW ANA BS XWAVE ANA VOX-X ANALOG PAD X BELL XWAVE 1 BELL XWAVE 2 BELL XWAVE 3 BELL XWAVE 4 DRAWBAR XW MELLOW SWEEP MULTI BELL ORGAN XWAVE OSC SYNC XW 1 OSC SYNC XW 2 PHASE SYNC PULSE X RAP BS XWAVE RESONANCE REZ BS XWAVE REZ SWEEP REZO-X 4 REZO-X 3 REZO-X 2 REZO-X 1 SCRATCH WAVE SOFT ANALOG TECHNO BASS TINE XWAVE TRANSWAVE AA TRANSWAVE AH TRANSWAVE EE TRANSWAVE OO TRANSWAVE Z TRI SWEEP WAKKA WAKKA</p>

List of ZR-76 Sounds

The following is a list of the factory ZR-76 sounds. Sounds will appear in alphabetical order within each SoundFinder type. The list also includes the sound's residency and effect status.

BASS					
Ac.Bass-GM	GM 008:032	MediumReverb	Jazz Kit-GM	GM 009:032	Various (per key)
FingBass-GM	GM 008:033	MediumReverb	Orch Kit-GM	GM 009:048	Various (per key)
Finger Bass	ROM 004:105	18 EQ->Reverb	Pwr. Kit-GM	GM 009:016	Various (per key)
Fretless	ROM 004:113	Chorus	Room Kit-GM	GM 009:008	Various (per key)
FrtlsBas-GM	GM 008:035	MediumReverb	Std. Kit-GM	GM 009:000	Various (per key)
Guitarron	ROM 004:115	18 EQ->Reverb	SynthKit-GM	GM 009:025	Various (per key)
P-Bass	ROM 004:106	Dry	TeknoKit-GM	GM 009:065	Various (per key)
P-Bass Slap	ROM 004:107	Dry			
PickBass-GM	GM 008:034	MediumReverb	GUITAR-A		
PickdFretls	ROM 004:109	Chorus	12-String	ROM 005:003	18 EQ->Reverb
Picked Bass	ROM 004:108	Dry	Dbl 6-Strng	ROM 005:004	18 EQ->Reverb
SlapBs1-GM	GM 008:036	MediumReverb	FretNois-GM	GM 008:120	MediumReverb
SlapBs2-GM	GM 008:037	MediumReverb	NylonGtr-GM	GM 008:024	MediumReverb
Switch Bass	ROM 004:110	Dry	NylonGuitar	ROM 005:000	12 Rev->Chorus
Switch Pop1	ROM 004:111	Dry	Spruce Top	ROM 005:001	18 EQ->Reverb
Switch Pop2	ROM 004:112	Dry	SteelGtr-GM	GM 008:025	MediumReverb
Uprite Bass	ROM 004:114	LightReverb	SteelString	ROM 005:002	WetReverb
BASS-SYN			GUITAR-E		
303 Bass	ROM 004:124	29 ResVCF->DDL	Capt.Crunch	ROM 005:008	37 Dist->DDL->Trem
Analog Bass	ROM 004:119	08 NonLinReverb2	Charang-GM	GM 008:084	MediumReverb
Big Bottom	ROM 004:126	39 EQ->Comp->Gate	Chicken Gtr	ROM 005:012	18 EQ->Reverb
Dance Bass	ROM 004:127	LightReverb	CleanGtr-GM	GM 008:027	MediumReverb
GreasySynBs	ROM 004:116	Dry	Dist.Gtr-GM	GM 008:030	MediumReverb
Grumbler	ROM 004:123	22 DDL->Phaser	Electric 12	ROM 005:014	WetReverb
HouseBass1	ROM 004:121	39 EQ->Comp->Gate	FM Jazz Gtr	ROM 005:015	20 DDL->Chorus
HouseBass2	ROM 004:122	LightReverb	Gtr.Harm-GM	GM 008:031	MediumReverb
Rap Bass	ROM 004:120	39 EQ->Comp->Gate	Jazz Gtr-GM	GM 008:026	MediumReverb
Rogue Bass	ROM 004:118	39 EQ->Comp->Gate	Mean Mutes	ROM 005:009	MediumReverb
Room Bass	ROM 004:125	09 Gated Reverb	MetalGuitar	ROM 005:013	38 Comp->Dist->DDL
Smack Bass	ROM 004:117	Dry	Mute Gtr-GM	GM 008:028	MediumReverb
Synbass1-GM	GM 008:038	MediumReverb	OvDrvGtr-GM	GM 008:029	MediumReverb
Synbass2-GM	GM 008:039	MediumReverb	Overdrive	ROM 005:011	38 Comp->Dist->DDL
			Pearl Strum	ROM 005:007	27 Dist->Phaser
			Pedal Steel	ROM 005:019	23 DDL->EQ
			SpagettiGtr	ROM 005:010	MediumReverb
			Tweed&Roto	ROM 005:016	34 RotarySpeaker
			Wak It	ROM 005:020	MediumReverb
BELL					
Agogo-GM	GM 008:113	MediumReverb	HITS		
Bellmen	ROM 005:102	40 EQ->Chorus->DDL	Dance Hit 1	INT 001:046	Chorus
Big Bell	ROM 005:097	32 Chatter Box	Dance Hit 2	INT 001:047	Chorus
Celesta-GM	GM 008:008	MediumReverb	Dance Hit 3	INT 001:048	Chorus
ChurchBells	ROM 005:096	WetReverb	Dance Hit 4	INT 001:049	Chorus
Crystal-GM	GM 008:098	MediumReverb	Dance Hit 5	INT 001:050	Chorus
FM Bells	ROM 005:098	19 Spinner->Rev	House Vox	INT 001:051	MediumReverb
Gamelan+Arp	ROM 005:105	MediumReverb	Orch Hit	DRM 018:106	MediumReverb
Glockens-GM	GM 008:009	MediumReverb	Orch.Hit-GM	GM 008:055	MediumReverb
Glockenspiel	ROM 005:104	02 Hall Reverb	Rave m7maj7	INT 001:045	Chorus
Handbell	ROM 005:101	WetReverb	Rave Vox	ROM 005:031	Chorus
Little Bell	ROM 005:100	WetReverb	Slam Orch	DRM 018:107	LightReverb
Musicbox-GM	GM 008:010	MediumReverb			
Octave Bell	ROM 005:103	MediumReverb	KEYS		
Pixie Bell	ROM 005:095	MediumReverb	AutoWahClav	ROM 004:059	28 Dist->AutoWah
TinklBel-GM	GM 008:112	MediumReverb	ChatterClav	ROM 004:062	32 Chatter Box
Trans Bell	ROM 005:099	MediumReverb	Clavicle	INT 001:041	22 DDL->Phaser
Tubular-GM	GM 008:014	MediumReverb	Clavinet	ROM 004:061	15 Chorus->Rev
			Clavinet-GM	GM 008:007	MediumReverb
BRASSECT			Funky Clav	ROM 004:063	27 Dist->Phaser
Brass 1-GM	GM 008:061	MediumReverb	Harpsi.-GM	GM 008:006	MediumReverb
Fr.Horn-GM	GM 008:060	MediumReverb	Harpichord	ROM 005:094	MediumReverb
Fr.HornSect	ROM 005:057	WetReverb			
GreaseBrass	ROM 005:056	05 Large Plate	LAYERS		
Mute Swells	ROM 005:058	15 Chorus->Rev	ChoirStrngs	ROM 005:043	WetReverb
Pop Brass	ROM 005:055	MediumReverb	Lush GtrPad	ROM 005:006	MediumReverb
StereoBrass	ROM 005:054	MediumReverb	Mute+Flute	ROM 005:067	06 Small Plate
SynBrs.1-GM	GM 008:062	MediumReverb	Nylon Pad	ROM 005:005	15 Chorus->Rev
SynBrs.2-GM	GM 008:063	MediumReverb	Sitar Layer	ROM 005:018	17 Phaser->Rev
			Steel Pad	INT 001:000	15 Chorus->Rev
BRASSOLO			LOOPGRUV		
Cornet	ROM 005:060	MediumReverb	Multi Perk	ROM 005:114	07 NonLinReverb1
Flugelhorn	ROM 005:062	MediumReverb	TakeMyWife	INT 001:064	MediumReverb
French Horn	ROM 005:063	WetReverb			
MuteTrpt-GM	GM 008:059	MediumReverb	MALLET		
MuteTrumpet	ROM 005:064	02 Hall Reverb	Balafon	ROM 005:093	MediumReverb
Trombone	ROM 005:059	MediumReverb	CaribeTrans	ROM 005:111	15 Chorus->Rev
Trombone-GM	GM 008:057	MediumReverb	EthnoMallet	ROM 005:106	MediumReverb
Trumpet	ROM 005:061	MediumReverb	Log Drum-PT	ROM 005:112	MediumReverb
Trumpet-GM	GM 008:056	MediumReverb	Marimba	ROM 005:107	MediumReverb
Tuba-GM	GM 008:058	MediumReverb	Marimba-GM	GM 008:012	MediumReverb
			SmTunedGong	ROM 005:113	MediumReverb
DRUM-KIT			Steel Drum	ROM 005:108	MediumReverb
Dance Kit	ROM 005:122	Various (per key)	SteelDrum-GM	GM 008:114	MediumReverb
Jazz Kit	ROM 005:126	Various (per key)	Tymp Roll	DRM 015:084	MediumReverb
Live Kit	ROM 005:127	Various (per key)	Tympani	DRM 015:076	MediumReverb
Multikit #1	ROM 005:123	Various (per key)	Tympani mf	DRM 015:077	MediumReverb
Multikit #2	ROM 005:124	Various (per key)	Tympani pp	DRM 015:078	MediumReverb
Multikit #3	ROM 005:125	Various (per key)	Tympani-GM	GM 008:047	MediumReverb
Street Kit	ROM 005:121	Various (per key)	Vibes-GM	GM 008:011	MediumReverb
			Vibraphone	ROM 005:109	06 Small Plate
DRMKITGM			WhisperWood	INT 001:010	MediumReverb
Brsh Kit-GM	GM 009:040	Various (per key)	Xylophon-GM	GM 008:013	MediumReverb
DanceKit-GM	GM 009:064	Various (per key)	Xylophone	ROM 005:110	02 Hall Reverb
Elec Kit-GM	GM 009:024	Various (per key)			
FormtKit-GM	GM 009:066	Various (per key)			

ORCHSTRA

Orch/Wheel INT 001:011 02 Hall Reverb
 String+Wind ROM 005:052 18 EQ->Reverb
 Wind Str-Wl ROM 005:068 15 Chorus->Rev
 Woodwinds INT 001:012 05 Large Plate

ORGAN-A

Bell Organ ROM 004:058 12 Rev->Chorus
 Cathedral ROM 004:051 02 Hall Reverb
 Ch.Organ-GM GM 008:019 MediumReverb
 ChurchOrgan ROM 004:052 12 Rev->Chorus
 Flute Stops ROM 004:055 MediumReverb
 Hall Organ ROM 004:054 12 Rev->Chorus
 MellowPipes ROM 004:040 MediumReverb
 Org+Pedals ROM 004:049 MediumReverb
 PhantomPipe ROM 004:056 MediumReverb
 Pipe Organ ROM 004:050 WetReverb
 ReedOrgn-GM GM 008:020 MediumReverb
 Regal Organ ROM 004:057 MediumReverb
 WheelPipes ROM 004:053 12 Rev->Chorus

ORGAN-E

3Drawbrs-PR ROM 004:037 34 RotarySpeaker
 4Drawbrs-PR ROM 004:035 34 RotarySpeaker
 AllStops-PR ROM 004:038 34 RotarySpeaker
 Big Organ ROM 004:031 10 Stereo Chorus
 Chiff Organ ROM 004:047 MediumReverb
 Donor Organ ROM 004:036 34 RotarySpeaker
 Farcheeza ROM 004:043 MediumReverb
 Full B3-PR ROM 004:042 34 RotarySpeaker
 Jazz Organ ROM 004:041 34 RotarySpeaker
 Organ 1-GM GM 008:016 MediumReverb
 Organ 2-GM GM 008:017 MediumReverb
 Organ 3-GM GM 008:018 MediumReverb
 Ped/Perc B3 ROM 004:034 34 RotarySpeaker
 Perc B3-PR ROM 004:032 34 RotarySpeaker
 Perc+Chorus ROM 004:039 MediumReverb
 Rock B3-PR ROM 004:033 34 RotarySpeaker
 Synth Organ ROM 004:048 MediumReverb
 Wheel Org 1 ROM 004:044 34 RotarySpeaker
 Wheel Org 2 ROM 004:046 34 RotarySpeaker
 Whl Dbl Org ROM 004:045 34 RotarySpeaker

PERC-KIT

Conga Map ROM 005:117 Various (per key)
 Insta-Rap INT 001:052 Various (per key)
 Latin Percs ROM 005:116 Various (per key)
 Perc Kit 1 ROM 005:120 Various (per key)
 SynPerc Kit ROM 005:119 Various (per key)
 World Kit ROM 005:118 Various (per key)

PERCSOLO

4x Hat1 B DRM 014:001 MediumReverb
 4x Hat2 B DRM 014:004 MediumReverb
 4x Hat3 B DRM 014:008 MediumReverb
 4xCl Hat1 DRM 014:000 MediumReverb
 4xCl Hat2 DRM 014:003 MediumReverb
 4xCl Hat3 DRM 014:007 MediumReverb
 4xVel Hats DRM 014:010 MediumReverb
 8o8 Cymbal DRM 014:075 MediumReverb
 Acoust Kik2 DRM 011:005 MediumReverb
 AcoustcKick DRM 011:004 MediumReverb
 Agogo DRM 016:013 MediumReverb
 Agogo Stik DRM 016:014 MediumReverb
 AltRevCrash DRM 014:071 MediumReverb
 Big Kick1 DRM 011:015 MediumReverb
 Big Kick2 DRM 011:016 MediumReverb
 Bongo DRM 015:031 MediumReverb
 Bongo 2 DRM 015:034 MediumReverb
 Bongo HP DRM 015:033 MediumReverb
 Bongo Roll DRM 015:035 MediumReverb
 BongoShort DRM 015:032 MediumReverb
 Boom Kik A DRM 011:051 MediumReverb
 Boom Kik B DRM 011:052 MediumReverb
 Boom Kik C DRM 011:053 MediumReverb
 BrassChimes DRM 016:049 MediumReverb
 Bright Kick DRM 011:000 MediumReverb
 Bright Kik2 DRM 011:001 MediumReverb
 Bright Udu DRM 015:090 MediumReverb
 Brush Hit DRM 012:076 MediumReverb
 Brush Hitz2v DRM 012:077 MediumReverb
 Brush Slap DRM 012:079 MediumReverb
 Brush Swish DRM 012:082 MediumReverb
 Brush Tap DRM 012:091 MediumReverb
 Brush Tap2 DRM 012:092 MediumReverb
 Brush Tom1 DRM 013:064 MediumReverb
 Brush Tom2 DRM 013:065 MediumReverb
 Brush Tom3 DRM 013:066 MediumReverb
 Brush Tom4 DRM 013:067 MediumReverb
 BrushSwish2 DRM 012:083 MediumReverb
 BrushSwish3 DRM 012:084 MediumReverb
 BrushSwish4 DRM 012:085 MediumReverb
 BrushSwish5 DRM 012:086 MediumReverb
 BrushSwish6 DRM 012:087 MediumReverb
 Cabasa DRM 017:028 MediumReverb
 Cabasa HP DRM 017:030 MediumReverb
 Cabasa Up DRM 017:029 MediumReverb
 Cactus Hit1 DRM 017:064 MediumReverb
 Cactus Hit2 DRM 017:065 MediumReverb

CactusLoop1 DRM 017:058 MediumReverb
 CactusLoop2 DRM 017:059 MediumReverb
 Castanets 1 DRM 017:039 MediumReverb
 Castanets 2 DRM 017:040 MediumReverb
 China 1-GM DRM 014:063 MediumReverb
 China Crash DRM 014:062 MediumReverb
 ChokeCrash DRM 014:059 MediumReverb
 ChokeSplash DRM 014:060 MediumReverb
 Clave DRM 017:012 MediumReverb
 Clave HP DRM 017:013 MediumReverb
 ClHat 1-NKG DRM 014:002 MediumReverb
 ClHat 2-NKG DRM 014:005 MediumReverb
 ClHat 3-NKG DRM 014:006 MediumReverb
 ClHat 4-NKG DRM 014:009 MediumReverb
 Click DRM 017:016 MediumReverb
 Com/GateSnr DRM 012:013 MediumReverb
 ConcrtdBD-GM DRM 011:039 MediumReverb
 ConcrtnSnare DRM 012:007 MediumReverb
 Conga Flam1 DRM 015:025 MediumReverb
 Conga Hi 2 DRM 015:004 MediumReverb
 Conga Hi 3 DRM 015:005 MediumReverb
 Conga High DRM 015:000 MediumReverb
 Conga Lo 2 DRM 015:010 MediumReverb
 Conga Low DRM 015:009 MediumReverb
 Conga Mute DRM 015:026 MediumReverb
 Conga Shrt2 DRM 015:028 MediumReverb
 CongaFingHi DRM 015:003 MediumReverb
 CongaFingLo DRM 015:014 MediumReverb
 CongaHi/whl DRM 015:001 MediumReverb
 CongaLO/whl DRM 015:011 MediumReverb
 CongaLoShrt DRM 015:027 MediumReverb
 CongaMoose1 DRM 015:015 MediumReverb
 CongaMoose2 DRM 015:016 MediumReverb
 CongaMoose3 DRM 015:017 MediumReverb
 CongaMoose4 DRM 015:018 MediumReverb
 CongaMoose5 DRM 015:019 MediumReverb
 CongaMoose6 DRM 015:020 MediumReverb
 CongaPatHi DRM 015:002 MediumReverb
 CongaPatLo DRM 015:013 MediumReverb
 CongLoTite DRM 015:012 MediumReverb
 Cool Ride 1 DRM 014:039 MediumReverb
 Cowbel Stik DRM 016:022 MediumReverb
 Cowbell DRM 016:016 MediumReverb
 Cowbell Mtd DRM 016:017 MediumReverb
 CrackSnare1 DRM 012:016 MediumReverb
 CrackSnare2 DRM 012:017 MediumReverb
 Crash 1-GM DRM 014:054 MediumReverb
 Crash Cym 1 DRM 014:052 MediumReverb
 Crash Cym 2 DRM 014:053 MediumReverb
 CrshCymRoll DRM 014:073 MediumReverb
 CTRL1 OpHat DRM 014:032 MediumReverb
 Cuica 1 DRM 015:050 MediumReverb
 Cuica 2 DRM 015:051 MediumReverb
 Cuica 3 DRM 015:052 MediumReverb
 Cuica 4 DRM 015:053 MediumReverb
 Cuica 5 DRM 015:054 MediumReverb
 Cym Swell DRM 014:066 MediumReverb
 Cym Swell2 DRM 014:067 MediumReverb
 Dance Kick DRM 011:094 MediumReverb
 Dark Udu DRM 015:091 MediumReverb
 Dbl Moose 1 DRM 015:021 MediumReverb
 Dbl Moose 2 DRM 015:022 MediumReverb
 DblFlamTom DRM 013:016 MediumReverb
 Dry Tom 1 DRM 013:000 MediumReverb
 Dry Tom 2 DRM 013:004 MediumReverb
 Dull SynKik DRM 011:056 MediumReverb
 Dyn.Tambo DRM 016:028 MediumReverb
 Dynamic Tom DRM 013:018 MediumReverb
 DynamicKick DRM 011:013 MediumReverb
 DynamicSnar DRM 012:001 MediumReverb
 DynTimb HP DRM 015:040 MediumReverb
 DynTibaldi DRM 015:041 MediumReverb
 Egg Shaker DRM 017:032 MediumReverb
 Elec Kick1 DRM 011:059 MediumReverb
 Elec Kick2 DRM 011:060 MediumReverb
 Elec Sn-GM DRM 012:042 MediumReverb
 Elec Snare1 DRM 012:040 MediumReverb
 Elec Snare2 DRM 012:041 MediumReverb
 Elec Tom-GM DRM 013:030 MediumReverb
 Fast Taiko DRM 015:070 MediumReverb
 Fat Claps DRM 017:021 MediumReverb
 Fat Kick1 DRM 011:009 MediumReverb
 Fat Kick2 DRM 011:010 MediumReverb
 Fat Kick3 DRM 011:011 MediumReverb
 Fat Kick4 DRM 011:012 MediumReverb
 FINTe Drum DRM 015:089 MediumReverb
 Gate/PopSnr DRM 012:022 MediumReverb
 Gated Kick1 DRM 011:042 MediumReverb
 Gated Kick2 DRM 011:043 MediumReverb
 Gated Sn-GM DRM 012:021 MediumReverb
 Gong ff DRM 014:085 MediumReverb
 Gong mf DRM 014:084 MediumReverb
 Gong p DRM 014:083 MediumReverb
 Guiro Long DRM 017:000 MediumReverb
 Guiro Long2 DRM 017:001 MediumReverb

Guiro Short	DRM 017:002	MediumReverb	Rev CmpGtSn	DRM 012:102	MediumReverb
Hand Claps	DRM 017:020	MediumReverb	Rev CrackSn	DRM 012:103	MediumReverb
HiCngMoose1	DRM 015:006	MediumReverb	Rev Crash 1	DRM 014:070	MediumReverb
HiCngMoose2	DRM 015:007	MediumReverb	Rev DanceSn	DRM 012:104	MediumReverb
HiPass Kik1	DRM 011:072	MediumReverb	Rev ElKick	DRM 011:110	MediumReverb
HiPass Kik2	DRM 011:073	MediumReverb	Rev FatKick	DRM 011:105	MediumReverb
HiPass Snr1	DRM 012:051	MediumReverb	Rev GateKik	DRM 011:106	MediumReverb
HiPass Snr2	DRM 012:052	MediumReverb	Rev Gm Sn	DRM 012:106	MediumReverb
HiPass Snr3	DRM 012:053	MediumReverb	Rev Guiro	DRM 017:005	MediumReverb
HipHopSnare	DRM 012:031	MediumReverb	Rev LoopKik	DRM 011:107	MediumReverb
House Rim	DRM 018:003	MediumReverb	Rev OpHat 1	DRM 014:101	MediumReverb
HouseClap1	DRM 018:005	MediumReverb	Rev OpHat 2	DRM 014:102	MediumReverb
HouseClap2	DRM 018:006	MediumReverb	Rev PedlHat	DRM 014:100	MediumReverb
HouseClHat1	DRM 014:011	MediumReverb	Rev Pop Sn	DRM 012:105	MediumReverb
HouseClHat2	DRM 014:012	MediumReverb	Rev Rap Sn	DRM 012:108	MediumReverb
HouseClHat3	DRM 014:013	MediumReverb	Rev RapHat1	DRM 014:111	MediumReverb
HouseCrash1	DRM 014:057	MediumReverb	Rev RapHat2	DRM 014:112	MediumReverb
HouseCrash2	DRM 014:058	MediumReverb	Rev RapKick	DRM 011:108	MediumReverb
HouseKick1	DRM 011:068	MediumReverb	Rev Real Sn	DRM 012:101	MediumReverb
HouseKick2	DRM 011:069	MediumReverb	Rev SynHat1	DRM 014:108	MediumReverb
HouseKick3	DRM 011:070	MediumReverb	Rev SynHat2	DRM 014:109	MediumReverb
HouseKick4	DRM 011:071	MediumReverb	Rev SynHat3	DRM 014:110	MediumReverb
HouseOpHat1	DRM 014:019	MediumReverb	Rev Timbali	DRM 015:044	MediumReverb
HouseOpHat2	DRM 014:020	MediumReverb	Rev.Cym.-GM	GM 008:119	MediumReverb
HouseOpHat3	DRM 014:021	MediumReverb	RevChinaCym	DRM 014:064	MediumReverb
HouseRide1	DRM 014:040	MediumReverb	RevHiphopSn	DRM 012:107	MediumReverb
HouseRide2	DRM 014:041	MediumReverb	RevRideBell	DRM 014:048	MediumReverb
HouseSnare1	DRM 012:036	MediumReverb	Ride 1-GM	DRM 014:036	MediumReverb
HouseSnare2	DRM 012:037	MediumReverb	Ride Bell	DRM 014:046	MediumReverb
HouseSnare3	DRM 012:038	MediumReverb	Ride Cym 1	DRM 014:033	MediumReverb
HouseSnare4	DRM 012:039	MediumReverb	Ride Cym 2	DRM 014:034	MediumReverb
HouseTom1	DRM 013:036	MediumReverb	Ride Cym 3	DRM 014:035	MediumReverb
HouseTom2	DRM 013:037	MediumReverb	Ride Short	DRM 014:037	MediumReverb
Jaw Harp	DRM 016:035	MediumReverb	Ride+ Bell	DRM 014:047	MediumReverb
JawHarp+HP	DRM 016:038	MediumReverb	RideBell-GM	DRM 014:049	MediumReverb
Jawharp/whl	DRM 016:036	MediumReverb	RideCymRoll	DRM 014:042	MediumReverb
Jazz Kick1	DRM 011:034	MediumReverb	RimshotSnr	DRM 012:025	MediumReverb
Jazz Kick2	DRM 011:035	MediumReverb	Ring Tom 1	DRM 013:006	MediumReverb
Jazz Kick3	DRM 011:036	MediumReverb	Ring Tom 2	DRM 013:007	MediumReverb
Jazz Kick4	DRM 011:037	MediumReverb	Ring Tom 3	DRM 013:008	MediumReverb
LoEthnicDr	DRM 015:088	MediumReverb	Ring Tom 4	DRM 013:009	MediumReverb
LongHat-NKG	DRM 014:015	MediumReverb	Rock Snare	DRM 012:010	MediumReverb
LongOpHat 1	DRM 014:014	MediumReverb	Roll+Sn Hit	DRM 012:057	MediumReverb
Loop Kick1	DRM 011:074	MediumReverb	Room Tom 1	DRM 013:010	MediumReverb
Loop Kick2	DRM 011:075	MediumReverb	Room Tom 2	DRM 013:013	MediumReverb
Maracas	DRM 017:024	MediumReverb	Scratch 01	DRM 018:032	MediumReverb
Maracas HP	DRM 017:025	MediumReverb	Scratch 02	DRM 018:033	MediumReverb
Maracas Up	DRM 017:026	MediumReverb	Scratch 03	DRM 018:034	MediumReverb
Marktree	DRM 016:048	MediumReverb	Scratch 04	DRM 018:035	MediumReverb
Med Hat-NKG	DRM 014:017	MediumReverb	Scratch 05	DRM 018:036	MediumReverb
MeloTom1-GM	GM 008:117	MediumReverb	Scratch 06	DRM 018:037	MediumReverb
Military Sn	DRM 012:006	MediumReverb	Scratch 07	DRM 018:038	MediumReverb
Mt Surdo-GM	DRM 015:073	MediumReverb	Scratch 08	DRM 018:039	MediumReverb
Muff Kick 1	DRM 011:048	MediumReverb	Scratch 09	DRM 018:040	MediumReverb
Muff Kick 2	DRM 011:049	MediumReverb	Scratch 10	DRM 018:041	MediumReverb
Muffled Sn	DRM 012:008	MediumReverb	Scratch 11	DRM 018:042	MediumReverb
Native Drum	DRM 015:092	MediumReverb	Scratch 12	DRM 018:043	MediumReverb
NutRatlHit	DRM 017:073	MediumReverb	Scratch 13	DRM 018:044	MediumReverb
NutRatlLp1	DRM 017:069	MediumReverb	Scratch 14	DRM 018:045	MediumReverb
Op Surdo-GM	DRM 015:072	MediumReverb	Shaker	DRM 017:035	MediumReverb
OpenHat-GM	DRM 014:027	MediumReverb	ShrtOpHat 1	DRM 014:016	MediumReverb
Pedal Hat	DRM 014:018	MediumReverb	SideStick 1	DRM 012:066	MediumReverb
Piatti	DRM 014:079	MediumReverb	SideStick 2	DRM 012:069	MediumReverb
Piatti 2	DRM 014:080	MediumReverb	SizlRide 2	DRM 014:089	MediumReverb
Piatti-GM	DRM 014:081	MediumReverb	SizlRide 3	DRM 014:090	MediumReverb
Pillow Kik	DRM 011:067	MediumReverb	SizlRideCym	DRM 014:088	MediumReverb
Pole	DRM 016:045	MediumReverb	Sleighbell	DRM 016:055	MediumReverb
Pop Snare	DRM 012:019	MediumReverb	Slow Cactus	DRM 017:060	MediumReverb
Press Roll	DRM 012:056	MediumReverb	Slow Nuts	DRM 017:070	MediumReverb
ProcessKick	DRM 011:045	MediumReverb	Slow Ratl 2	DRM 017:076	MediumReverb
PtchDwnKik1	DRM 011:099	MediumReverb	Slow Rattle	DRM 017:075	MediumReverb
PtchDwnKik2	DRM 011:100	MediumReverb	Snare Roll	DRM 012:055	MediumReverb
PtchDwnKik3	DRM 011:101	MediumReverb	Snare-GM	DRM 012:003	MediumReverb
Punchy Kick	DRM 011:022	MediumReverb	Soft Noise	DRM 017:045	MediumReverb
R.Crash-GM	DRM 014:072	MediumReverb	Splash1-GM	DRM 014:061	MediumReverb
Rainstick	DRM 017:047	MediumReverb	SplashCym 1	DRM 014:056	MediumReverb
Rainstick 2	DRM 017:048	MediumReverb	Spoons	DRM 016:041	MediumReverb
Rainstick 3	DRM 017:049	MediumReverb	Spoons 2	DRM 016:042	MediumReverb
Rap Hat 1	DRM 014:028	MediumReverb	Stereo Clap	DRM 018:008	MediumReverb
Rap Hat 2	DRM 014:030	MediumReverb	Stick Click	DRM 012:072	MediumReverb
Rap Kick 1	DRM 011:064	MediumReverb	SwitchTom 1	DRM 013:020	MediumReverb
Rap Kick 2	DRM 011:065	MediumReverb	Syn Cowbell	DRM 018:000	MediumReverb
Rap Kick 3	DRM 011:066	MediumReverb	Syn Kick-GM	DRM 011:084	MediumReverb
Rap Snare	DRM 012:028	MediumReverb	Syn Kick1A	DRM 011:079	MediumReverb
Rap Tambo	DRM 016:032	MediumReverb	Syn Kick1B	DRM 011:080	MediumReverb
Real Kick	DRM 011:019	MediumReverb	Syn Kick1C	DRM 011:081	MediumReverb
Real Snare	DRM 012:000	MediumReverb	Syn Kick1D	DRM 011:082	MediumReverb
Reso Kick1	DRM 011:029	MediumReverb	Syn Maracas	DRM 018:015	MediumReverb
Reso Kick2	DRM 011:030	MediumReverb	Syn OpenHat	DRM 014:025	MediumReverb
Rev BoomKik	DRM 011:109	MediumReverb	Syn Snr-GM	DRM 012:049	MediumReverb
Rev ClHat 1	DRM 014:103	MediumReverb	Syn Tom-GM	DRM 013:033	MediumReverb
Rev ClHat 2	DRM 014:104	MediumReverb	Syn.Drum-GM	GM 008:118	MediumReverb
Rev ClHat 3	DRM 014:105	MediumReverb	SynClHat-GM	DRM 014:023	MediumReverb
Rev ClHat 4	DRM 014:106	MediumReverb	SynCloseHat	DRM 014:022	MediumReverb
Rev ClHat 5	DRM 014:107	MediumReverb	SynHiCongGM	DRM 018:029	MediumReverb

SynLoCongGM	DRM 018:028	MediumReverb	Pop Piano	ROM 004:007	12 Rev->Chorus
SynOpHat-GM	DRM 014:026	MediumReverb	Room Piano	ROM 004:003	18 EQ->Reverb
SynRideCym1	DRM 014:076	MediumReverb	StereoGrand	ROM 004:000	01 PaINTetric EQ
SynRideCym2	DRM 014:077	MediumReverb	Tack Piano	ROM 004:008	MediumReverb
SynRimshot	DRM 018:002	MediumReverb	Warm Piano	ROM 004:001	MediumReverb
Synth Clave	DRM 018:010	MediumReverb	PNOLYR-A		
Synth Drip	DRM 018:019	MediumReverb	LA Layer	ROM 004:009	Chorus
Synth Drip2	DRM 018:020	MediumReverb	Pno+Strings	ROM 004:010	MediumReverb
Synth Drip3	DRM 018:021	MediumReverb	Pno+Voices	ROM 004:012	MediumReverb
Synth Hit 1	DRM 018:085	MediumReverb	PnoStrBells	ROM 004:011	WetReverb
Synth Hit 2	DRM 018:086	MediumReverb	PIANO-E		
Synth Hit 3	DRM 018:087	MediumReverb	DynFM E.Pno	ROM 004:021	Chorus
Synth Hit 4	DRM 018:088	MediumReverb	DynoE.Pno1	ROM 004:022	Chorus
Synth Hit 5	DRM 018:089	MediumReverb	E.Piano1-GM	GM 008:004	MediumReverb
Synth Hit 6	DRM 018:090	MediumReverb	E.Piano2-GM	GM 008:005	MediumReverb
Synth Hit 7	DRM 018:091	MediumReverb	Hammer Tine	ROM 004:020	Chorus
Synth Hit 8	DRM 018:092	MediumReverb	HybridKeys	ROM 004:016	MediumReverb
Synth Hit 9	DRM 018:093	MediumReverb	HybridE.Pno	ROM 004:023	Chorus
Synth Hit10	DRM 018:094	MediumReverb	Mod Wurlie	ROM 004:026	MediumReverb
Synth Hit11	DRM 018:095	MediumReverb	Pure El.Pno	ROM 004:015	11 8-Voice Chorus
Synth Hit12	DRM 018:096	MediumReverb	Real El.Pno	ROM 004:013	Chorus
Synth Hit13	DRM 018:097	MediumReverb	Suitcase EP	ROM 004:024	17 Phaser->Rev
Synth Hit14	DRM 018:098	MediumReverb	Tine Flies	ROM 004:025	Chorus
Synth Kick2	DRM 011:086	MediumReverb	Tine Sine	ROM 004:017	Chorus
Synth Kick3	DRM 011:088	MediumReverb	Tine-2-Love	ROM 004:018	Chorus
Synth Kick4	DRM 011:091	MediumReverb	VintgeE.Pno	ROM 004:014	10 Stereo Chorus
Synth Kiss	DRM 018:023	MediumReverb	VintgWurlie	ROM 004:027	17 Phaser->Rev
Synth Kiss2	DRM 018:024	MediumReverb	Warm FM Pno	ROM 004:019	MediumReverb
Synth Kiss3	DRM 018:025	MediumReverb	PNOLYR-E		
Synth Snare	DRM 012:047	MediumReverb	ElPiano+Pad	ROM 004:029	17 Phaser->Rev
Synth Tom 1	DRM 013:024	MediumReverb	FM Pno+Strg	ROM 004:028	Chorus
Synth Tom 2	DRM 013:025	MediumReverb	PLUCKED		
Synth Tom 3	DRM 013:026	MediumReverb	Banjo	ROM 005:089	18 EQ->Reverb
Synth Tom 4	DRM 013:027	MediumReverb	Banjo-GM	GM 008:105	MediumReverb
Synth Tom 5	DRM 013:028	MediumReverb	Coral Sitar	ROM 005:017	MediumReverb
Taiko	DRM 015:069	MediumReverb	Ethnotan	ROM 005:088	20 DDL->Chorus
Taiko-GM	GM 008:116	MediumReverb	Hammered	ROM 005:086	WetReverb
Tambo Shake	DRM 016:026	MediumReverb	Harp-GM	GM 008:046	MediumReverb
Tambo Short	DRM 016:030	MediumReverb	Harp-Stereo	ROM 005:090	MediumReverb
TamboUpShak	DRM 016:029	MediumReverb	Kalimba	ROM 005:084	MediumReverb
Tambourine	DRM 016:027	MediumReverb	Kalimba-GM	GM 008:108	MediumReverb
Tambourine2	DRM 016:031	MediumReverb	Koto-GM	GM 008:107	MediumReverb
Tight Kick1	DRM 011:025	MediumReverb	Lucy	INT 001:038	11 8-Voice Chorus
Tight Kick2	DRM 011:026	MediumReverb	Mbira	ROM 005:085	18 EQ->Reverb
Timbali	DRM 015:042	MediumReverb	PizzStrg-GM	GM 008:045	MediumReverb
Timbali 2	DRM 015:045	MediumReverb	Santur-GM	GM 008:015	MediumReverb
Timbali HP	DRM 015:043	MediumReverb	Shamisen	ROM 005:091	WetReverb
TimbaliFlam	DRM 015:046	MediumReverb	Shamisen-GM	GM 008:106	MediumReverb
TimbaliFlm2	DRM 015:047	MediumReverb	Sitar	ROM 005:087	WetReverb
Trashy Snr	DRM 012:034	MediumReverb	Sitar-GM	GM 008:104	MediumReverb
Tri Mute-GM	DRM 016:007	MediumReverb	Solo Pizz	ROM 005:045	WetReverb
Tri Open-GM	DRM 016:008	MediumReverb	Synthtar	INT 001:022	MediumReverb
Tri Roll	DRM 016:006	MediumReverb	Whl/OctPizz	ROM 005:044	WetReverb
Triangl/whl	DRM 016:000	MediumReverb	SAX-SOLO		
Triangle Mt	DRM 016:002	MediumReverb	Alto Sax-GM	GM 008:065	MediumReverb
Triangle Op	DRM 016:005	MediumReverb	Bari.Sax-GM	GM 008:067	MediumReverb
TriangleMt2	DRM 016:003	MediumReverb	BreathyAlto	ROM 005:080	WetReverb
TrianglTick	DRM 016:004	MediumReverb	BreathySopr	ROM 005:077	WetReverb
VelociDrums	INT 001:065	MediumReverb	BreathyTenr	ROM 005:078	WetReverb
VelociPercs	INT 001:063	MediumReverb	Sop.Sax-GM	GM 008:064	MediumReverb
Vibraslap	DRM 017:043	MediumReverb	Soprano Sax	ROM 005:081	WetReverb
Vibraslap 2	DRM 017:044	MediumReverb	Tenor Lead	ROM 005:079	WetReverb
Wakka 01	DRM 018:054	MediumReverb	TenorSax-GM	GM 008:066	MediumReverb
Wakka 02	DRM 018:055	MediumReverb	SOUND-FX		
Wakka 03	DRM 018:056	MediumReverb	Applause	DRM 018:080	MediumReverb
Wakka 04	DRM 018:057	MediumReverb	Applause-GM	GM 008:126	MediumReverb
Wakka 05	DRM 018:058	MediumReverb	Astro Car	INT 001:060	MediumReverb
Wakka 06	DRM 018:059	MediumReverb	Birds-GM	GM 008:123	MediumReverb
Wakka 07	DRM 018:060	MediumReverb	BUGZ!!!	DRM 018:105	WetReverb
Wakka 08	DRM 018:061	MediumReverb	Gunshot-GM	GM 008:127	MediumReverb
Wakka 09	DRM 018:062	MediumReverb	Hlicoptr-GM	GM 008:125	MediumReverb
Wakka 10	DRM 018:063	MediumReverb	ZR.RoboVox	INT 001:059	MediumReverb
Wakka 11	DRM 018:064	MediumReverb	Scratch It	DRM 018:072	MediumReverb
Wakka 12	DRM 018:065	MediumReverb	Seashore-GM	GM 008:122	MediumReverb
Wakka 13	DRM 018:066	MediumReverb	SurfaceNoiz	DRM 018:070	MediumReverb
Wakka 14	DRM 018:067	MediumReverb	Telephon-GM	GM 008:124	MediumReverb
Whistle A	DRM 017:051	MediumReverb	Warp Nine	INT 001:058	MediumReverb
Whistle B	DRM 017:054	MediumReverb	SPLITS		
WHLJaw Harp	DRM 016:037	MediumReverb	Jazz Trio	INT 001:061	MediumReverb
Wind Chime	DRM 016:051	MediumReverb	Modern Jazz	INT 001:062	MediumReverb
Windchime2	DRM 016:052	MediumReverb	STRGSECT		
WindchimeGM	DRM 016:053	MediumReverb	Chamber Str	ROM 005:037	MediumReverb
Woodblock 1	DRM 017:008	MediumReverb	DarkStrings	ROM 005:034	MediumReverb
Woodblock 2	DRM 017:010	MediumReverb	Dyn Marcato	ROM 005:040	WetReverb
WoodblockHP	DRM 017:009	MediumReverb	Holiday Str	ROM 005:039	WetReverb
Woodblok-GM	GM 008:115	MediumReverb	Hot Bath	ROM 005:033	MediumReverb
PIANO-A			Legato Str	ROM 005:036	WetReverb
BrightPiano	ROM 004:005	01 PaINTetric EQ	MovieStrngs	ROM 005:038	WetReverb
ConcertGrnd	ROM 004:004	18 EQ->Reverb	SlowStrg-GM	GM 008:049	MediumReverb
Dance Piano	ROM 004:006	12 Rev->Chorus	String Mass	ROM 005:035	Chorus
HonkyTnk-GM	GM 008:003	MediumReverb	Strings-GM	GM 008:048	MediumReverb
Jazz Piano	ROM 004:002	MediumReverb	Syn Strings	ROM 005:042	MediumReverb
Piano 1-GM	GM 008:000	MediumReverb	SynStrg1-GM	GM 008:050	MediumReverb
Piano 2-GM	GM 008:001	MediumReverb	TremStrg-GM	GM 008:044	MediumReverb
Piano 3-GM	GM 008:002	MediumReverb	Warm Bath	ROM 005:032	MediumReverb

STRGSOLO

Cello	ROM 005:049	WetReverb
Cello+Vln	ROM 005:048	WetReverb
Cello-GM	GM 008:042	MediumReverb
CntrBass-GM	GM 008:043	MediumReverb
Contrabass	ROM 005:050	WetReverb
Elec Fiddle	ROM 005:051	MediumReverb
Fiddle-GM	GM 008:110	MediumReverb
SoloMarcato	ROM 005:041	WetReverb
Viola	ROM 005:047	WetReverb
Viola-GM	GM 008:041	MediumReverb
Violin	ROM 005:046	WetReverb
Violin-GM	GM 008:040	MediumReverb

SYN-COMP

Ana-Comp	ROM 004:102	22 DDL->Phaser
Analog Clav	INT 001:040	20 DDL->Chorus
Big AnaLead	ROM 004:099	20 DDL->Chorus
Brassy Stab	INT 001:033	MediumReverb
Brite Comp	ROM 004:104	21 DDL->Flanger
Bs.&Lead-GM	GM 008:087	MediumReverb
Chiff.Ld-GM	GM 008:083	MediumReverb
Churbles	ROM 004:073	33 Formant Morph
Digi-Comp	ROM 004:101	22 DDL->Phaser
Echoes	INT 001:039	20 DDL->Chorus
House Layer	ROM 005:115	MediumReverb
MassiveLead	INT 001:029	MediumReverb
Meta-Clav	INT 001:042	16 Flanger->Rev
Mood Unit	INT 001:004	16 Flanger->Rev
Neboir	INT 001:056	21 DDL->Flanger
PolySyn.-GM	GM 008:090	MediumReverb
Real Rezz	INT 001:019	30 Dist->VCF->DDL
Rezz Comp	INT 001:043	16 Flanger->Rev
Rezz Stab	INT 001:032	MediumReverb
Rezy Brass	ROM 004:086	MediumReverb
Rubber Rez	ROM 004:083	Chorus
ScratchPtch	INT 001:127	01 PalNTetric EQ
Strat Pad	INT 001:001	40 EQ->Chorus->DDL
SynC Lead	ROM 004:095	22 DDL->Phaser
SynFunkClav	ROM 004:060	19 Spinner->Rev
TakeThesth	INT 001:028	MediumReverb
Trans Comp	INT 001:027	14 Rev->Phaser
Trans Rezz	INT 001:020	MediumReverb
Vel Trans	ROM 004:103	MediumReverb
Watery Pad	INT 001:008	13 Rev->Flanger

SYN-LEAD

Acid Wheel	ROM 004:100	MediumReverb
Acid Wheel2	INT 001:044	22 DDL->Phaser
FormantLead	ROM 004:096	33 Formant Morph
Lucky'sLead	INT 001:026	MediumReverb
Maxi Mini	ROM 004:098	31 Pitch Detuner
Mini-Lead	INT 001:024	40 EQ->Chorus->DDL
MonoBrassLd	ROM 004:087	MediumReverb
OdysseyLead	INT 001:035	MediumReverb
Rap Glider	ROM 004:097	MediumReverb
Rezolution	INT 001:021	MediumReverb
Smooth Lead	INT 001:025	13 Rev->Flanger
TransFusion	INT 001:023	21 DDL->Flanger

SYN-PAD

4-D Pad	ROM 004:068	MediumReverb
Abaco	ROM 004:075	20 DDL->Chorus
Atmspher-GM	GM 008:099	MediumReverb
Bell Pad	ROM 004:084	17 Phaser->Rev
Bellsalar	ROM 004:067	14 Rev->Phaser
BowedGls-GM	GM 008:092	MediumReverb
Brittness-GM	GM 008:100	MediumReverb
ComfortZone	ROM 004:077	18 EQ->Reverb
Delay Sweep	INT 001:054	32 Chatter Box
Dreamwave	ROM 004:072	20 DDL->Chorus
EchoDrop-GM	GM 008:102	MediumReverb
Evolution	ROM 004:080	19 Spinner->Rev
Fantasia-GM	GM 008:088	MediumReverb
Fat Pad	ROM 004:081	Chorus
Goblin-GM	GM 008:101	MediumReverb
Halo Pad-GM	GM 008:094	MediumReverb
Hi-Tech Bed	ROM 004:078	22 DDL->Phaser
Horizons	ROM 004:090	11 8-Voice Chorus
Icicles	ROM 004:076	22 DDL->Phaser
Icy Voices	ROM 004:070	15 Chorus->Rev
Late Breeze	ROM 004:085	MediumReverb
Lovely	INT 001:003	10 Stereo Chorus
MetalPad-GM	GM 008:093	MediumReverb
Phase Sweep	ROM 004:079	40 EQ->Chorus->DDL
Positrons	INT 001:002	11 8-Voice Chorus
Sage Orbit	ROM 004:074	23 DDL->EQ
Slow Wash	INT 001:016	18 EQ->Reverb
SoundTrk-GM	GM 008:097	MediumReverb
SpinCrystal	INT 001:006	20 DDL->Chorus
StarThm.-GM	GM 008:103	MediumReverb
SweepPad-GM	GM 008:095	MediumReverb
Syn Orch	ROM 005:053	20 DDL->Chorus
SynCalio-GM	GM 008:082	MediumReverb

SyncroTrans	INT 001:053	20 DDL->Chorus
SynStrg2-GM	GM 008:051	MediumReverb
Textures	INT 001:007	14 Rev->Phaser
Trans Vox	ROM 005:024	22 DDL->Phaser
Transilient	INT 001:055	15 Chorus->Rev
Translucent	INT 001:005	20 DDL->Chorus
Transphere	INT 001:017	21 DDL->Flanger
Tryptichon	ROM 004:069	15 Chorus->Rev
Warm Pad-GM	GM 008:089	MediumReverb

SYN-VINT

5ths Wv-GM	GM 008:086	MediumReverb
AnalogBrass	INT 001:031	LightReverb
Elka Strngs	ROM 004:089	02 Hall Reverb
FairliteStr	ROM 004:094	MediumReverb
MicroTrans	INT 001:009	11 8-Voice Chorus
OB-8 Strngs	ROM 004:092	11 8-Voice Chorus
Poly Stab	INT 001:034	MediumReverb
Prophet Str	INT 001:030	MediumReverb
Pulse Synth	INT 001:036	13 Rev->Flanger
Retro Lead	ROM 004:091	29 ResVCF->DDL
Saw Wv-GM	GM 008:081	MediumReverb
SawTeeth	ROM 004:093	40 EQ->Chorus->DDL
SquareWv-GM	GM 008:080	MediumReverb
Vox Humana	ROM 004:088	22 DDL->Phaser

SYNOTHER

FormantSync	INT 001:057	33 Formant Morph
Glyder	INT 001:037	20 DDL->Chorus
Ice Rain-GM	GM 008:096	MediumReverb
RainMan	ROM 004:071	20 DDL->Chorus
Sample&Hold	INT 001:018	MediumReverb
Transzex	ROM 004:066	21 DDL->Flanger

VOCALS

A Ha Ha Ha	INT 001:014	19 Spinner->Rev
Aaaahhhs	ROM 005:021	13 Rev->Flanger
Ahhzy	ROM 005:030	MediumReverb
Airy Voices	INT 001:015	05 Large Plate
Bell-Air	ROM 005:028	MediumReverb
ChoirAah-GM	GM 008:052	05 Large Plate
Nutmeg	ROM 005:029	MediumReverb
Oh Yeah Pad	ROM 005:025	MediumReverb
Oooohhhs	ROM 005:022	13 Rev->Flanger
Slow Morph	ROM 005:026	12 Rev->Chorus
Solo Vox-GM	GM 008:085	MediumReverb
SpaceVox-GM	GM 008:091	MediumReverb
Syn.Vox-GM	GM 008:054	MediumReverb
Transcend	ROM 004:082	MediumReverb
Tundra Vox	ROM 005:023	MediumReverb
Vox Oohs-GM	GM 008:053	MediumReverb
Wheel Morph	ROM 005:027	Chorus

WINDREED

Accord.-GM	GM 008:021	MediumReverb
Accordion	ROM 004:064	MediumReverb
Airy Flute	ROM 005:073	WetReverb
Andes Flute	ROM 005:074	02 Hall Reverb
Bagpipe-GM	GM 008:109	MediumReverb
Bagpipes-PT	ROM 005:083	18 EQ->Reverb
Bandneon-GM	GM 008:023	MediumReverb
Bassoon	ROM 005:069	WetReverb
Bassoon-GM	GM 008:070	MediumReverb
BotlBlow-GM	GM 008:076	MediumReverb
BrthNois-GM	GM 008:121	MediumReverb
Chiff Flute	ROM 005:075	WetReverb
Clarinet	ROM 005:072	02 Hall Reverb
Clarinet-GM	GM 008:071	MediumReverb
Eng.Horn-GM	GM 008:069	MediumReverb
EnglishHorn	ROM 005:071	WetReverb
Flute Pad	INT 001:013	02 Hall Reverb
Flute-GM	GM 008:073	MediumReverb
Folk Accord	ROM 004:065	MediumReverb
FormantHarp	ROM 005:082	32 Chatter Box
Harmnica-GM	GM 008:022	MediumReverb
Harmonica	ROM 005:076	WetReverb
Oboe	ROM 005:070	WetReverb
Oboe-GM	GM 008:068	MediumReverb
Ocarina-GM	GM 008:079	MediumReverb
Pan Flutes	ROM 005:065	15 Chorus->Rev
PanFlute-GM	GM 008:075	MediumReverb
Piccolo-GM	GM 008:072	MediumReverb
Recorder	ROM 005:066	WetReverb
Recorder-GM	GM 008:074	MediumReverb
Shaku.-GM	GM 008:077	MediumReverb
Shannai-GM	GM 008:111	MediumReverb
TinWhistles	ROM 005:092	MediumReverb
Whistle-GM	GM 008:078	MediumReverb

***UTILITY**

Silence	DRM 018:127	MediumReverb
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***CUSTOM**

RthmEditKit	kito10:001	Various (per key)
SongEditKit	kito10:000	Various (per key)

MIDI-OUT

Xmit bnk:prg		
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List of Rhythm Pattern Files

The following is a list of all the rhythm pattern files currently available for the ZR-76 Drum Machine. All INT-RTHM rhythm patterns are backed-up to the ZRD-100 floppy disk in the “!FLSRTHM” rhythm bank. Any rhythms that are listed as ZRD-100 are additional rhythms available exclusively on the ZRD-100 disk:

Category	Name	Residency			
AMBIENT	Sci-Fi 1	INT-RTHM	POP	Old Hits 1	ROM-RTHM
BALLAD	Philly	ROM-RTHM	POP	6/8 pop	INT-RTHM
BALLAD	RockBallad1	ROM-RTHM	POP	Dance Pop 4	INT-RTHM
BALLAD	R&BBallad 2	ROM-RTHM	RAP	InsertLoop1	ROM-RTHM & DEMORTHM
BALLAD	RockBallad 1	ROM-RTHM	RAP	JazzyLoop 1	ROM-RTHM
BALLAD	Straight 8	INT-RTHM	RAP	Loops 1	ROM-RTHM
BALLAD	R&BBallad 3	ZRD-100	RAP	Loops 2	ROM-RTHM
BALLAD	Rim 16&Perc	ZRD-100	RAP	Loops 3	ROM-RTHM
BALLAD	Rim 16ths	ZRD-100	RAP	Loops 4	ROM-RTHM
BALLAD	Shuffle 8	ZRD-100	RAP	Loops 5	ROM-RTHM
BALLAD	Straight 16	ZRD-100	RAP	Loops 6	ROM-RTHM
BLUES	Shuffle 1	ROM-RTHM	RAP	Loops 7	ROM-RTHM
BLUES	SlowBlues 1	ROM-RTHM	RAP	Loops 8	ROM-RTHM
BLUES	Shuffle 2	ZRD-100	RAP	Slow Jam 1	ROM-RTHM
COUNTRY	16th Brush 1	ROM-RTHM	RAP	Slow Loops1	ROM-RTHM
COUNTRY	Brush Shuffl	ROM-RTHM	RAP	WakkaLoop 1	ROM-RTHM & DEMORTHM
COUNTRY	Cntry Rock1	ROM-RTHM	ROCK	16th Snr 1	ROM-RTHM
COUNTRY	Cntry Rock2	ROM-RTHM	ROCK	Basics 1	ROM-RTHM
COUNTRY	Cntry Waltz	ROM-RTHM	ROCK	Basics 2	ROM-RTHM
COUNTRY	Pop Cntry 1	ROM-RTHM	ROCK	Big Rock 1	ROM-RTHM
COUNTRY	Shuffle 12/8	ROM-RTHM	ROCK	Big Rock 2	ROM-RTHM
COUNTRY	Slow Shuff1	ROM-RTHM	ROCK	Classic 1	ROM-RTHM
COUNTRY	Straight 1	ROM-RTHM	ROCK	Cookin'	ROM-RTHM & DEMORTHM
COUNTRY	6/8 Country	INT-RTHM	ROCK	Cops	ROM-RTHM
COUNTRY	Fast Pop 1	ZRD-100	ROCK	Dance Pop 2	ROM-RTHM
COUNTRY	Fast Waltz	ZRD-100	ROCK	Fast Rock 1	ROM-RTHM
DANCE	Euro Dancet	ROM-RTHM	ROCK	Funky Stick	ROM-RTHM
DANCE	Euro Tech 1	ROM-RTHM & DEMORTHM	ROCK	Med Rock 1	ROM-RTHM
DANCE	Euro Tech 2	ROM-RTHM	ROCK	Med. Pop 1	ROM-RTHM
DANCE	Hip Hop 1	ROM-RTHM	ROCK	Med. Pop 2	ROM-RTHM
DANCE	House 2	ROM-RTHM	ROCK	Pop Ballad	ROM-RTHM
DANCE	House 3	ROM-RTHM	ROCK	Pop Shuff1	ROM-RTHM
DANCE	House 4	ROM-RTHM	ROCK	Ride/Rim 1	ROM-RTHM
DANCE	Jungle 1	ROM-RTHM & DEMORTHM	ROCK	RockAnthem1	ROM-RTHM
DANCE	Jungle 2	ROM-RTHM	ROCK	Shuffle 3	ROM-RTHM
DANCE	Jungle 3	ROM-RTHM	ROCK	Shuffle Pop	ROM-RTHM
DANCE	Jungle 4	ROM-RTHM	ROCK	Slow Rock 1	ROM-RTHM
DANCE	JungleRave1	ROM-RTHM	ROCK	Swing 16th1	ROM-RTHM
DANCE	Robo Techno	ROM-RTHM	ROCK	TripShuffle	ROM-RTHM
DANCE	Slow Euro 1	ROM-RTHM	ROCK	All 4 Stick	INT-RTHM
DANCE	Techno 1	ROM-RTHM	ROCK	Drum Solo	INT-RTHM & DEMORTHM
DANCE	Techno Toys	ROM-RTHM	ROCK	Sthrn Rock	INT-RTHM & DEMORTHM
DANCE	House 1	INT-RTHM	ROCK	Pop Rd/Snr1	ZRD-100
DANCE	Rave 1	INT-RTHM	ROCK	Stones	ZRD-100
DANCE	Insert Fun 2	ZRD-100	SOUL-R&B	16th Tambo 1	ROM-RTHM
FUNK	Funk Fun 1	ROM-RTHM	SOUL-R&B	Easy R&B	ROM-RTHM
FUNK	Kickin'	ROM-RTHM	SOUL-R&B	LoveBallad1	ROM-RTHM
FUNK	New Jam	ROM-RTHM	SOUL-R&B	LoveBallad2	ROM-RTHM
FUNK	Old School1	ROM-RTHM	SOUL-R&B	Pop Soul 1	ROM-RTHM & DEMORTHM
FUNK	Old School2	ROM-RTHM	SOUL-R&B	Dance Hit 1	INT-RTHM & DEMORTHM
FUNK	Tiny Drums1	ROM-RTHM	SOUL-R&B	Dance Hit 2	INT-RTHM & DEMORTHM
FUNK	Funky Thang	INT-RTHM	SOUL-R&B	Gospel 1	INT-RTHM
HIPHOP	Dance Pop 3	ROM-RTHM	SOUL-R&B	Gospel 2	ZRD-100
HIPHOP	DanceBeats1	ROM-RTHM	SOUL-R&B	Gospel 3	ZRD-100
HIPHOP	DanceBeats2	ROM-RTHM	WORLD	World Pop 1	ROM-RTHM & DEMORTHM
HIPHOP	Hop Loop 1	ROM-RTHM	WORLD	World Pop 3	ROM-RTHM
HIPHOP	HopBallad 2	ROM-RTHM	WORLD	PercGroove1	ZRD-100
HIPHOP	Insert Fun 1	ROM-RTHM	WORLD	World Pop 2	ZRD-100
HIPHOP	Soul Jam 1	ROM-RTHM	WORLD	World Pop 4	ZRD-100
ISLAND	Pop Reggae1	ROM-RTHM	*UTILITY	ClickTracks	ROM-RTHM
ISLAND	Reggae 1	ROM-RTHM			
ISLAND	Reggae 2	ROM-RTHM			
ISLAND	Rubba Dub	ROM-RTHM			
ISLAND	Kingston	INT-RTHM			
JAZZ	6/8 latin jz	ROM-RTHM			
JAZZ	Swing #1	ROM-RTHM			
JAZZ	Brush Ballad	INT-RTHM			
JAZZ	Up Bop	INT-RTHM & DEMORTHM			
LATIN	Brush Samba	ROM-RTHM			
LATIN	Samba 1	ZRD-100			
LATIN	Samba 3	ZRD-100			
LATIN	Samba 2	ZRD-100			
LATIN	Clave Funk	INT-RTHM			
LATIN	Songo	INT-RTHM			
LATIN	Marinera	ZRD-100			
LATIN	Vals	ZRD-100			
ODDMETER	5/4 Groove	INT-RTHM & DEMORTHM			
POP	12/8 ballad	ROM-RTHM			
POP	16th Perc 1	ROM-RTHM			
POP	Dance Pop 1	ROM-RTHM			

EXP-4: The Perfect Piano™ by William Coakley

Your ZR-76 contains ENSONIQ's EXP-4 Wave Expansion board, featuring The Perfect Piano™ by William Coakley. This board adds additional waves and sounds to those built in to the ZR, or provided on the floppy that came with it. The Perfect Piano™ waves are based on a Steinway D grand piano and two electric pianos. These waves can be accessed by the Unisyn editing software and incorporated into your own new sounds.

The Perfect Piano™ Waves

HARP NOISE L	TINE NOISE 2	EPNO HI	WURLIE LOW	WURLIE MED	HAMMER THUMP
HARP NOISE R	WURLIE KEYUP	EPNO MID	EPNO LOW	TINE CLANK	WURLIE HI
TINE NOISE 1	STNWX SOFT-L	STNWX SOFT-R	STNWX HARD-L	EPNO KEY UP	STNWX HARD-R

The Perfect Piano™ Sounds

PIANO-A

Perfect Pno	036:000	MediumReverb
StPno EQwhl	036:001	LightReverb
Mello-Piano	036:002	LightReverb
Warm Pno/EQ	036:003	LightReverb
TrackingPno	036:004	LightReverb
Stately Pno	036:005	LightReverb
Brite Piano	036:006	LightReverb
LatinoPiano	036:007	LightReverb
Honky-Tonky	036:008	15 Chorus->Rev
Warm-ThkSus	036:009	LightReverb
2Lyr-Bright	036:010	01 Parametric EQ
2Lyr-Stereo	036:011	01 Parametric EQ
4Lyr w/Thud	036:012	01 Parametric EQ
Pno/HrpNoiz	036:013	LightReverb
Cheap Seats	036:014	23 DDL->EQ
Lt Chor Pno	036:015	15 Chorus->Rev
EQ Piano	036:016	01 Parametric EQ
HrdLyrs/Thd	036:017	01 Parametric EQ
Reflex Pno	036:018	24 Multi-Tap DDL
DarkSt Pno*	037:001	MediumReverb
Seq. Piano	037:063	01 Parametric EQ

PIANO-E

Real Thing	036:033	LightReverb
Chorus EPno	036:034	Chorus
3Lyr ElPno	036:035	17 Phaser->Rev
Cuttin'Tine	036:036	18 EQ->Reverb
4X Med EPno	036:037	Chorus
Subtle EPno	036:038	Chorus
Tine-In	036:039	17 Phaser->Rev
Busted Tine	036:040	17 Phaser->Rev
PhasedWurli	036:042	17 Phaser->Rev
WurliFat	036:043	12 Rev->Chorus
WurliGtrAmp	036:044	36 Guitar Amp
Talkin'Wurli	036:046	32 Chatter Box
TrashdWurli	036:047	27 Dist->Phaser
Rock Wurlie	036:048	25 Dist->Chorus
Pianet	036:050	01 Parametric EQ
Hybrid EP*	037:004	10 Stereo Chorus
Tine-Wurli	037:006	19 Spinner->Rev
TexturedEP*	037:012	15 Chorus->Rev

DigiPianet*	037:013	17 Phaser->Rev
AttackEPno*	037:014	17 Phaser->Rev
Sweet EPno*	037:015	Chorus
WrlIHybrid*	037:016	15 Chorus->Rev
FM Hybrid*	037:017	Chorus
PercWurlie*	037:020	MediumReverb
Tite Wurlie	037:023	MediumReverb
Amped ElPno	037:024	27 Dist->Phaser
ClaviWurlie	037:027	LightReverb
BritePhase	037:028	17 Phaser->Rev
Dark Wurlie	037:029	LightReverb
Jazzy Phase	037:030	17 Phaser->Rev
Wurli-Organ	037:031	34 RotarySpeaker

PNOLYR-A

Piano-Bell	036:019	12 Rev->Chorus
ElPno Attack	036:020	01 Parametric EQ
Piano/ElPno	036:021	01 Parametric EQ
Toy-Piano	036:022	10 Stereo Chorus
Acoustatine	036:023	12 Rev->Chorus
New Age Piano	036:024	40 EQ->Chorus->DDL
TineNoisePd	036:025	15 Chorus->Rev
HarpNoisePd	036:026	15 Chorus->Rev
Padulatiary	036:027	12 Rev->Chorus
Feisty Pad	036:029	40 EQ->Chorus->DDL
Quack Comp	036:030	15 Chorus->Rev
Pno/Orgn-Wh	036:031	34 RotarySpeaker
PercOrg Pno	036:032	10 Stereo Chorus
Piano/Wurly	036:049	01 Parametric EQ
Piano/Strg*	037:000	01 Parametric EQ
Pno/VibStr*	037:002	40 EQ->Chorus->DDL
Piano/Aahs*	037:003	01 Parametric EQ
NylonPiano*	037:007	12 Rev->Chorus
DeepPnoPad*	037:008	14 Rev->Phaser
KeithJ Pno*	037:009	06 Small Plate
Air Piano*	037:021	19 Spinner->Rev
StPno+EPno*	037:025	05 Large Plate
StPno+Strg*	037:026	05 Large Plate
PnoPdDetun*	037:033	31 Pitch Detuner
Harp-Piano*	037:034	12 Rev->Chorus
Deep Piano*	037:035	14 Rev->Phaser
SqrWavPiano	037:037	02 Hall Reverb

Pno Squared	037:039	12 Rev->Chorus
Piano-Tri	037:040	12 Rev->Chorus
4L Pno-Synt	037:044	12 Rev->Chorus
4L Pno-Harm	037:045	12 Rev->Chorus
Quack Atak*	037:046	15 Chorus->Rev
Piano-GamIn	037:047	12 Rev->Chorus
Pno/MrmbaPd	037:048	15 Chorus->Rev
PianoVoiln*	037:049	12 Rev->Chorus
Pno/Org-Wh*	037:050	34 RotarySpeaker
SlapAttack*	037:056	16 Flanger->Rev
PnoHrpStrg*	037:057	01 Parametric EQ
PnoSynLead*	037:058	40 EQ->Chorus->DDL
Pno-Kalmba*	037:062	01 Parametric EQ

PNOLYR-E

RhythmicPad	036:028	40 EQ->Chorus->DDL
HarpTinePad	036:041	15 Chorus->Rev
Wurli-Rotor	036:045	34 RotarySpeaker
ElPnoGamPad	037:005	15 Chorus->Rev
Orgn Hybrid*	037:018	10 Stereo Chorus
Org-EP Mix*	037:019	10 Stereo Chorus
Weird EPLYr	037:022	40 EQ->Chorus->DDL
Wurli-Rez*	037:032	20 DDL->Chorus
EPno-Strgs*	037:036	12 Rev->Chorus
Wurli Synth	037:038	12 Rev->Chorus
EP-Mute Gtr	037:041	11 8-Voice Chorus
East Piano*	037:042	11 8-Voice Chorus
ElPno-Squr*	037:043	12 Rev->Chorus
EPnoDigVoi*	037:01	11 8-Voice Chorus

SPLITS

AcBs/Piano*	037:010	04 Small Room
Pno/TenrSx*	037:011	04 Small Room
AcBs/ElPno*	037:052	17 Phaser->Rev
FrtIs/EPno*	037:053	17 Phaser->Rev
BsGtr/EPno*	037:054	17 Phaser->Rev
SynBs/EPno*	037:055	17 Phaser->Rev
Piano/Alto*	037:059	04 Small Room
Piano/Sopr*	037:060	04 Small Room
Pno/Clarnt*	037:061	04 Small Room

ENSONIQ Drum Map

ZR-76 drum kits that are mapped to the ENSONIQ drum map have eight predefined zones. These predefined zones allow you to swap between the different drum kits that use this map in any of your sequences or songs and have expected results. Within some of the zones there are single keys and/or groups of keys designed to be in finish mode as far as their envelopes are concerned.

ZONE	KEY RANGE	NAME	NOTES
1	B1 to E2 (6 keys)	KICK	The key C#2 allows for non-finish envelope sounds.
2	F2 to D3 (10 keys)	SNARE	Includes sidestick—the keys from A2-C3 allow for non-finish envelope sounds (Snare rolls, brush swirls, etc.)
3	D#3 to C4 (10 keys)	HATS	The keys G#3 and B3 allow for non-finish envelope sounds (closed hats first, opens on A#3 and B3; foot closed on C4).
4	C#4 to A4 (9 keys)	CYMBL	The key A4 allows for non-finish envelope sounds (rides C#4 to E4; followed by crashes).
5	A#4 to F#5 (9 keys)	TOMS	All keys in finish envelope mode.
6	G5 to C#6 (7 keys)	PERC1	Shaken or small hits—tambourine (G5 to A5); shaker, cabasa, or maracas (A#5 to C6); claps (C#6); snap; woodblock
7	D6 to G6 (6 keys)	PERC2	Latin non-pitched Percussion—bongo; conga slap; low conga; high conga; timbale
8	G#6 to D7 (7 keys)	PERC3	Pitched and Bell-like Percussion—Triangle (A6 closed, A#6 long); cowbell (G#6); high agogo; low agogo; claves (B6, or at D#6 if there are no congas); vinyl surface noise (C7). The keys from B6-D7 allow for non-finish envelope sounds.

ENSONIQ Percussion Map

Percussion kits are subject to the same zone rules as drum kits. Within some of the zones there are single keys and/or groups of keys designed to be in finish mode as far as their envelopes are concerned.

The ZR-76 percussion map consists of eight zones:

ZONE	KEY RANGE	NAME	NOTES
1	B1 to E2 (6 keys)	KICK	Low Drums—the key C#2 allows for non-finish envelope sounds.
2	F2 to D3 (10 keys)	SNARE	Medium drums such as Conga, Tabla, Udu—the keys from A2-C3 allow for non-finish envelope sounds.
3	D#3 to C4 (10 keys)	HATS	Small things that keep time (shakers, small drums, etc) Clave (G#3); sleighbells, castanets (C4). The keys G#3 and B3 allow for non-finish envelope sounds.
4	C#4 to A4 (9 keys)	CYMBL	Small time-keeping instruments including ride cymbals and instruments like Guiro (C#4 to E4); crash cymbals, or other accent instruments like windchime, vibraslap, gong (F4 to A4). The key A4 allows for non-finish envelope sounds.
5	A#4 to F#5 (9 keys)	TOMS	Things struck that play fills—like timbali, woodblocks, log drums, small pitched drums.
6	G5 to C#6 (7 keys)	PERC1	Tambourines or similar shaken instruments (G5-A5); small high-pitched shakers like maraccas, egg shakes (A#5 - C6); claps, clave (C#6)
7	D6 to G6 (6 keys)	PERC2	Multi hits of bongos, high drums, cuica, guiro (D6-E6); multi hits of agogo, or other metallic inst. (F6-G6)
8	G#6 to D7 (7 keys)	PERC3	Cowbell (G#6); Triangle (A6 closed, A#6 long); Long sounds like rainsticks (B6-D7) The keys from B6-D7 allow for non-finish envelope sounds.

Note: Percussion map zones use the drum map zone names when viewed in the Drum Machine Edit pages.

Built-In ROM Presets

Location	Preset	Location	Preset	Location	Preset	Location	Preset
ROM004:000	DefaultPset	ROM004:008	SynBs/RzClv	ROM004:016	ElPno/Vibes	ROM004:024	BsnOboe-Ped
ROM004:001	Piano+Strgs	ROM004:009	BigFatSynth	ROM004:017	ElPno/JzGtr	ROM004:025	PizArco-Ped
ROM004:002	ElPnoStrLyr	ROM004:010	Org/SqueaLd	ROM004:018	BoneSaxTrpt	ROM004:026	StrngSwpPad
ROM004:003	Piano Blend	ROM004:011	UprBs/Piano	ROM004:019	NyGtr/SopSx	ROM004:027	Harp Pad
ROM004:004	Lwr/UprMnul	ROM004:012	Bs/ElPnoPed	ROM004:020	MariachiBnd	ROM004:028	WetBelChoir
ROM004:005	OrgClavLyr	ROM004:013	Piano/Sax	ROM004:021	AcGtr/PnFlt	ROM004:029	IceMakerPad
ROM004:006	RubberWurly	ROM004:014	Pno/Mut-Flt	ROM004:022	ChicknPickn	ROM004:030	PercRainPad
ROM004:007	PipeLyr-Ped	ROM004:015	PnoStr/AcGtr	ROM004:023	Clo/Vln-Ped	ROM004:031	IslandStack
						ROM005:000	FarEastPhaz

Velocity Response Curves in the ZR-76

The Touch Curve parameter allows you to adjust the velocity response of the ZR-76 keyboard to match your playing style and technique. There are six velocity curve (touch) settings:

- Table-1 — This is for someone with a light touch. On this setting, it is easier to reach the maximum level of any velocity controlled parameter.
- Table-2 — This setting represents average velocity sensitivity. This setting should be right for most players.
- Table-3 — This velocity best represents the “classically-trained” player with strong fingers, and offers a wide dynamic range for skilled pianists.
- Table-4 — This velocity setting is for skilled players who desire more volume for softer playing. It still requires strong playing to reach the top velocity levels.
- Fixed 64 — With this setting the velocity curve always generates a fixed value, set at the halfway point. This may be useful in simulating vintage synth sounds that originally had no velocity control.
- Fixed127 — This setting is also a fixed velocity curve, with full volume. This is good for playing drum/percussion parts when you want a part without dynamic changes.

List of Quantize Templates

The following is a list of all the quantize parameters and their settings for the available quantize templates (there is no data recorded for High Key and Low Key):

Name	Q. to:	Strength	Swing	Random	Shift	Win. Min	Win. Max.	Q Offs?	Move Offs?	Deltas
Strict 1/4	1/4	100	50	0	0	0	50	off	on	off
Strict 1/8	1/8	100	50	0	0	0	50	off	on	off
Strict 1/16	1/16	100	50	0	0	0	50	off	on	off
Strict 1/8T	1/8T	100	50	0	0	0	50	off	on	off
Tighten 1	1/8	5	50	0	0	0	50	off	on	off
Tighten 2	1/8	20	50	0	0	0	50	off	on	off
Tighten 3	1/8	50	50	0	0	0	50	off	on	off
Tighten 4	1/8	70	50	0	0	0	50	off	on	off
Tighten 5	1/16	5	50	0	0	0	50	off	on	off
Tighten 6	1/16	20	50	0	0	0	50	off	on	off
Tighten 7	1/16	50	50	0	0	0	50	off	on	off
Tighten 8	1/16	70	50	0	0	0	50	off	on	off
Randomize 1	1/8	50	50	3	0	0	50	off	on	off
Randomize 2	1/8	60	50	15	0	0	50	off	on	off
Randomize 3	1/16	50	50	3	0	0	50	off	on	off
Randomize 4	1/16	60	50	15	0	0	50	off	on	off
Note Offs 1	1/8	100	50	0	0	0	50	on	on	off
Note Offs 2	1/16	100	50	0	0	0	50	on	on	off
Swing 1	1/16	90	55	0	0	0	50	off	on	off
Swing 2	1/16	92	57	1	0	0	50	off	on	off
Swing 2	1/16	100	63	0	0	0	50	off	on	off
Humanize 1	1/16	75	51	2	0	0	50	off	on	off
Delta 1/8	1/8	100	50	0	0	0	50	off	on	on

What Is MIDI?

Musical instrument and computer manufacturers have agreed upon a set of standards that allows their products to communicate with each other. It's called "MIDI," an acronym for "Musical Instrument Digital Interface." There are two basic aspects to the MIDI standards: the kind of wiring to be used for connecting MIDI devices, and the nature of messages will be sent through those wires.

Life In The MIDI World

MIDI has opened up incredible possibilities for musicians and music lovers alike. Here are some of the things MIDI has made possible:

- Musicians can record their performances into MIDI recorders—called *sequencers*—which are found in keyboard workstations, such as the ZR-76, in stand-alone boxes, and in computers. Once recorded, MIDI-recorded performances can be tweaked and nudged to perfection. Musical arrangements can be re-orchestrated after they've been recorded. Full-blown multi-instrument recordings can be easily created.
- Keyboardists can connect their instruments to a myriad of sound-producing MIDI boxes. MIDI allows a conventional-looking keyboard, such as the ZR-76, to control a number of such devices at the same time, providing for the creation of new, complex timbres. Keyboardists can also set up specific areas on their keyboards to control specific external MIDI devices. These same capabilities are available to computer users. Actually, most musical instruments can be outfitted to control MIDI devices.
- Musicians can benefit from the communication possible between MIDI instruments and computers to program sounds for their instruments on their computers, taking advantage of the computers' large graphic displays, familiar keyboards and comfortable mice.
- Home enthusiasts can enjoy pre-recorded MIDI music by taking advantage of General MIDI, a separate-but-related standard described later in this section. General MIDI (GM) sequences can be performed by any GM-compliant MIDI sequencer, such as the ZR-76, or personal computer.
- Internal data from one MIDI device can be transmitted to another for storage.
- Recording engineers can control mixing consoles and effects devices with MIDI.
- Stage lights in concert halls can be automated to respond to musical cues using MIDI.

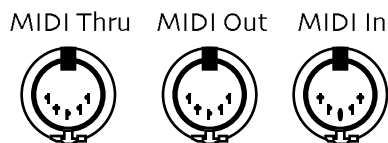
Understanding MIDI

MIDI Hardware

The architects of MIDI had to settle, first of all, on the MIDI hardware: the wires. All MIDI cables have the same kind of plug on either end:



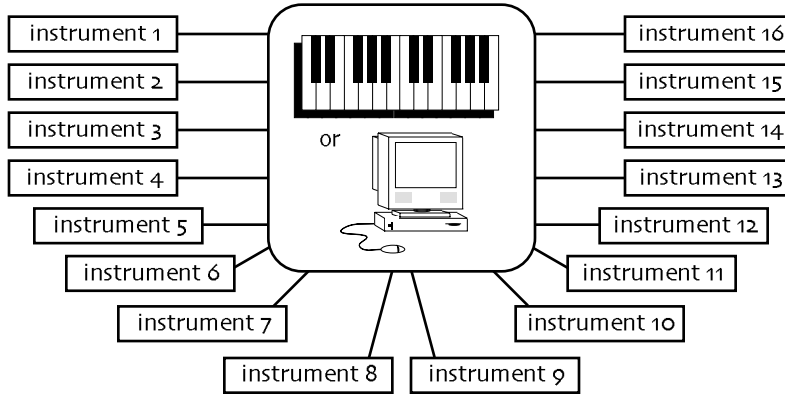
There are three MIDI sockets, or *jacks*, on the back of most MIDI instruments. The *MIDI In* jack is for MIDI information coming into the instrument. The instrument sends out its own MIDI information through the *MIDI Out* jack. The *MIDI Thru* jack is for MIDI data that passes through the instrument unchanged, on its way to some other MIDI device.



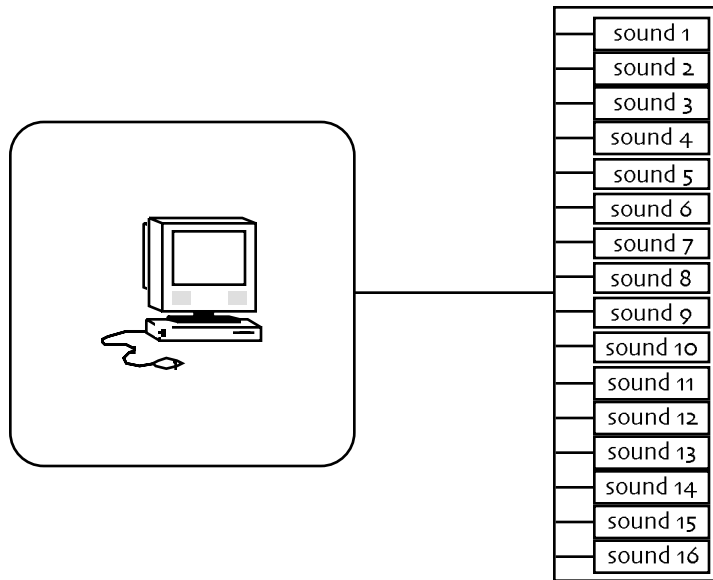
The MIDI cable itself can carry 16 independent channels of MIDI information that travel together through the wire. This means that you can have 16 separate MIDI conversations going on at once among instruments and/or computers connected together with MIDI cables.

How MIDI Channels Work

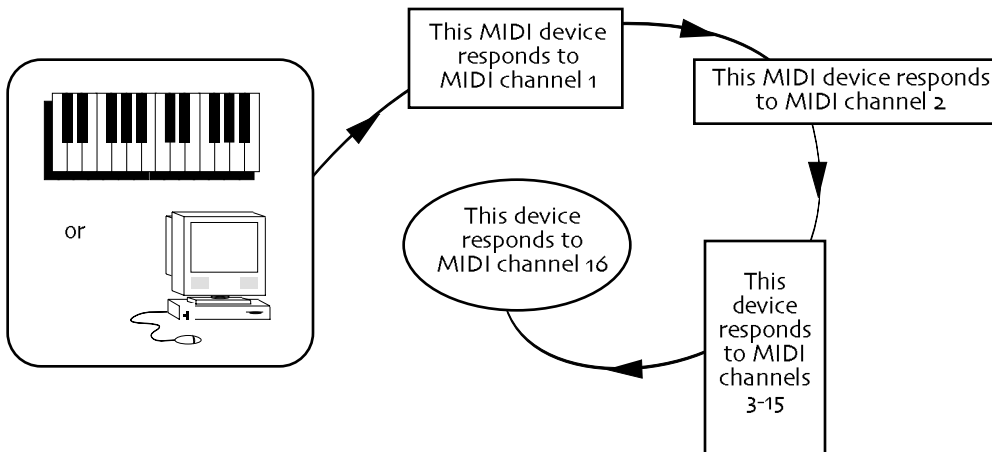
MIDI instruments can be set up to listen to specific channels and ignore everything else that's going on. This allows a central device such as the ZR-76 or your personal computer to control each instrument individually.



Some devices—such as the ZR-76—are capable of responding to as many as 16 channels at once. Such instruments are referred to as being *multi-timbral*—it’s as if there are up to 16 musical instruments in one box, and MIDI allows you to control each sound separately.



MIDI rigs can also combine both possibilities, with some instruments programmed to respond to one MIDI channel or another, and multi-timbral devices set up to receive up to 16 channels at once.



MIDI messages travel up and down all these channels, and these constitute the second major component of the MIDI Spec.

How MIDI Messages Work

MIDI works in a manner reminiscent of the old player pianos, whose sheets of hole-punched paper told the keyboard mechanism which keys to press down and when. It's not sound that's sent through MIDI cables; it's instructions from one MIDI device—called the “controller”—to another. Of course, MIDI generally doesn't cause any keys to physically move.

Suppose a keyboardist presses a note on a keyboard which is controlling some sound-producing MIDI box. The controller would send out a *Key Down* message for that note. The MIDI box receiving such a message would play the note. When the keyboardist lets go, the controller would send out a *Key Up* message, and the receiving device would stop sounding the note. At heart, it's as simple as that.

MIDI captures the expressive nuances in a performance by sending out other kinds of messages. Controllers can sense how hard a musician plays—referred to in the MIDI world as *velocity*—and can instruct other devices to respond accordingly. Sustain and sostenuto foot pedals also send out MIDI messages. There are many tools for expression that can be transmitted and responded to via MIDI.

To tell a MIDI instrument which sound or effect program you want to hear, you would send a MIDI *Program Change*.

MIDI can also send messages that have the same effect as pushing buttons and twirling knobs on a receiving device. To make sure that only the intended instrument listens to such instructions, MIDI sends it a special greeting in a language only it can understand. Every MIDI device has such a language, and these “hey there” messages are referred to as “System Exclusive headers.” System Exclusive data is often referred to as *SysEx* data. SysEx is also used for the “dumping” of a MIDI instrument's memory to an external storage device, such as a hard disk or floppy drive; it helps the data find its way back home when it's time to load it back into the instrument.

In MIDI recording, all of the messages that a controller produces are sent to a sequencer. Most sequencers have Record, Stop and Play buttons, since they're usually designed to resemble tape recorders. When the Record button is pressed, the sequencer captures incoming MIDI information. Pressing Stop tells the sequencer to store that information in its memory. When Play is pressed, it sends it back out.

The Art of MIDI

The fact that MIDI is so simple to use is a testament to the cleverness of its designers. Its true magic, however, lies in MIDI's power as a tool in the creative process, and in the imaginations of those artists who wield it.

What Is General MIDI?

General MIDI is an agreed-upon set of sounds and protocols which aims to ensure that, no matter what brand or model General MIDI-compatible instrument you use when playing a General MIDI recording, the music will sound essentially the same. General MIDI provides a tremendous convenience for listeners and multimedia fans who want to enjoy MIDI-based music without having to delve too deeply into its mechanics. All General MIDI-supporting products sport the General MIDI logo:



The ZR-76 is fully General MIDI-compliant instruments. General MIDI accomplishes its predictability by employing a very specific set of agreements on a number of MIDI issues.

General MIDI Sounds

In the larger MIDI universe, any sound may reside anywhere in an instrument's memory. In the General MIDI world, the same sounds always reside in the same-numbered memory locations. This guarantees that if a programmer calls up a particular sound when he or she programs some General MIDI music, any time anyone anywhere plays that music back on a General MIDI instrument, that same sound will be invoked. See “List of General MIDI Sounds” in this chapter for a full list of the General MIDI sounds.

General MIDI Drum Kits

Another important convention employed by General MIDI instruments are the General MIDI drum maps. The GM drum maps are available in several different styles, with a different drum or percussion sound on every key on the keyboard, running from the B two octaves below Middle C to the D# or E two octaves above. Some sounds in the GM drum maps are consistent from style to style—the low key on a 61-note keyboard will always be a bass drum of some kind and the note two semitones above it will always be a snare drum, for instance. Drum maps in General MIDI are always addressed via MIDI channel number 10. See “General MIDI Drum Maps” in this chapter for details of the various General MIDI drum map layouts.

Earning the General MIDI Logo

There are a number of other standards with which an instrument must comply in order to deserve its General MIDI logo. You can be sure that, if the MIDI music you purchase displays the General MIDI logo, it will work perfectly with your ZR-76.

General MIDI Sound Map

The following map shows the General MIDI sound name and program change number of each sound as they appear in the ZR-76. This map also shows how General MIDI divides the instruments into 16 categories of similar sounds:

PROG #	INSTRUMENT	PROG #	INSTRUMENT	PROG #	INSTRUMENT	PROG #	INSTRUMENT
0-7	PIANO	32-	BASS	64-	REED	96-	SYNTH
0	Piano 1	39	Ac.Bass	71	Sop.Sax	103	EFFECTS
1	Piano 2	32	FingBass	64	Alto Sax	96	Ice Rain
2	Piano 3	33	PickBass	65	TenorSax	97	Soundtrk
3	HonkyTnk	34	FrtlsBas	66	Bari.Sax	98	Crystal
4	E.Piano1	35	SlapBs1	67	Oboe	99	Atmspher
5	E.Piano2	36	SlapBs2	68	Eng.Horn	100	Britness
6	Harpsi.	37	SynBass1	69	Bassoon	101	Goblin
7	Clavinet	38	SynBass2	70	Clarinet	102	EchoDrop
		39		71		103	StarThm.
8-15	CHROM	40-	STRINGS	72-	PIPE	104-	ETHNIC
8	PERCUSSION	47	Violin	79	Piccolo	111	Sitar
9	Celesta	40	Viola	72	Flute	104	Banjo
10	Glockens	41	Cello	73	Recorder	105	Shamisen
11	Musicbox	42	CntrBass	74	PanFlute	106	Koto
12	Vibes	43	TremStrg	75	BotlBlow	107	Kalimba
13	Marimba	44	PizzStrg	76	Shaku.	108	Bagpipe
14	Xylophon	45	Harp	77	Whistle	109	Fiddle
15	Tubular Santur	46	Timpani	78	Ocarina	110	Shannai
		47		79		111	
16-	ORGAN	48-	ENSEMBLE	80-	SYNTH LEAD	112-	PERCUSSIVE
23	Organ 1	55	Strings	87	SquareWv	119	TinklBell
16	Organ 2	48	SlowStrg	80	Saw Wv	112	Agogo
17	Organ 3	49	SynStrg1	81	SynCalio	113	SteelDrm
18	Ch.Organ	50	SynStrg2	82	Chiff.Ld	114	Woodblok
19	ReedOrgn	51	ChoirAah	83	Charang	115	Taiko
20	Accord.	52	Vox Oohs	84	Solo Vox	116	MeloTom1
21	Harmnica	53	Syn.Vox	85	5ths Wv	117	Syn.Drum
22	Bandneon	54	Orch.Hit	86	Bs.&Lead	118	Rev.Cym.
23		55		87		119	
24-	GUITAR	56-	BRASS	88-	SYNTH PAD	120-	SOUND
31	NylonGtr	63	Trumpet	95	Fantasia	127	EFFECTS
24	SteelGtr	56	Trombone	88	Warm Pad	120	FretNois
25	Jazz Gtr	57	Tuba	89	PolySyn.	121	BrthNois
26	CleanGtr	58	MuteTrpt	90	SpaceVox	122	Seashore
27	Mute Gtr	59	Fr.Horn	91	BowedGls	123	Birds
28	OvDrvGtr	60	Brass 1	92	MetalPad	124	Telephon
29	Dist.Gtr	61	SynBrs.1	93	Halo Pad	125	Hlicoptr
30	Gtr.Harm	62	SynBrs.2	94	SweepPad	126	Applause
31		63		95		127	Gunshot

The names listed above are as they appear in the ZR-76, and not as they appear in the General MIDI Spec. The only differences are in spelling.

GM and GS Percussion Key Maps (Channel 10)

MIDI Note #		0 - Std.Kit-GM 32 - Jazz Kit-GM	8 - RoomKit-GM	16 - Pwr. Kit-GM	24 - Elec Kit-GM	25 - SynthKit-GM
35	B1	AcoustcKick	AcoustcKick	AcoustcKick	AcoustcKick	AcoustcKick
36	C2	Bright Kick	Bright Kick	Fat Kick1	Elec Kick1	Syn Kick-GM
37	C#2	SideStick 1	SideStick 1	SideStick 1	SideStick 1	SynRimshot
38	D2	Snare-GM	Snare-GM	Snare-GM	Elec Sn-GM	Syn Snr-GM
39	D#2	HouseClap1	HouseClap1	HouseClap1	HouseClap1	HouseClap1
40	E2	Rock Snare	Rock Snare	Gated Sn-GM	Gated Sn-GM	Rock Snare
41	F2	Dry Tom 1	Room Tom 1	Room Tom 1	Elec Tom-GM	Syn Tom-GM
42	F#2	4xCl Hat3	4xCl Hat3	4xCl Hat3	4xCl Hat3	SynClHat-GM
43	G2	Dry Tom 1	Room Tom 1	Room Tom 1	Elec Tom-GM	Syn Tom-GM
44	G#2	Pedal Hat	Pedal Hat	Pedal Hat	Pedal Hat	SynClHat-GM
45	A2	Dry Tom 1	Room Tom 1	Room Tom 1	Elec Tom-GM	Syn Tom-GM
46	A#2	OpenHat-GM	OpenHat-GM	OpenHat-GM	OpenHat-GM	SynOpHat-GM
47	B2	Dry Tom 1	Room Tom 1	Room Tom 1	Elec Tom-GM	Syn Tom-GM
48	C3	Dry Tom 1	Room Tom 1	Room Tom 1	Elec Tom-GM	Syn Tom-GM
49	C#3	Crash 1-GM	Crash 1-GM	Crash 1-GM	Crash 1-GM	8o8 Cymbal
50	D3	Dry Tom 1	Room Tom 1	Room Tom 1	Elec Tom-GM	Syn Tom-GM
51	D#3	Ride 1-GM	Ride 1-GM	Ride 1-GM	Ride 1-GM	Ride 1-GM
52	E3	China 1-GM	China 1-GM	China 1-GM	R.Crash-GM	China 1-GM
53	F3	RideBell-GM	RideBell-GM	RideBell-GM	RideBell-GM	RideBell-GM
54	F#3	Tambourine	Tambourine	Tambourine	Tambourine	Tambourine
55	G3	Splash1-GM	Splash1-GM	Splash1-GM	Splash1-GM	Splash1-GM
56	G#3	Cowbell	Cowbell	Cowbell	Cowbell	Syn Cowbell
57	A3	Crash 1-GM	Crash 1-GM	Crash 1-GM	Crash 1-GM	Crash 1-GM
58	A#3	Vibraslap	Vibraslap	Vibraslap	Vibraslap	Vibraslap
59	B3	Ride 1-GM	Ride 1-GM	Ride 1-GM	Ride 1-GM	Ride 1-GM
60	C4	Bongo	Bongo	Bongo	Bongo	Bongo
61	C#4	Bongo	Bongo	Bongo	Bongo	Bongo
62	D4	Conga Mute	Conga Mute	Conga Mute	Conga Mute	SynHiCongGM
63	D#4	Conga High	Conga High	Conga High	Conga High	SynHiCongGM
64	E4	Conga Low	Conga Low	Conga Low	Conga Low	SynLoCongGM
65	F4	Timbali	Timbali	Timbali	Timbali	Timbali
66	F#4	Timbali	Timbali	Timbali	Timbali	Timbali
67	G4	Agogo	Agogo	Agogo	Agogo	Agogo
68	G#4	Agogo	Agogo	Agogo	Agogo	Agogo
69	A4	Cabasa	Cabasa	Cabasa	Cabasa	Cabasa
70	A#4	Maracas	Maracas	Maracas	Maracas	Syn Maracas
71	B4	Whistle B	Whistle B	Whistle B	Whistle B	Whistle B
72	C5	Whistle A	Whistle A	Whistle A	Whistle A	Whistle A
73	C#5	Guiro Short	Guiro Short	Guiro Short	Guiro Short	Guiro Short
74	D5	Guiro Long	Guiro Long	Guiro Long	Guiro Long	Guiro Long
75	D#5	Clave	Clave	Clave	Clave	Synth Clave
76	E5	Woodblock 1	Woodblock 1	Woodblock 1	Woodblock 1	Woodblock 1
77	F5	Woodblock 1	Woodblock 1	Woodblock 1	Woodblock 1	Woodblock 1
78	F#5	Cuica 1	Cuica 1	Cuica 1	Cuica 1	Cuica 1
79	G5	Cuica 5	Cuica 5	Cuica 5	Cuica 5	Cuica 5
80	G#5	Tri Mute-GM	Tri Mute-GM	Tri Mute-GM	Tri Mute-GM	Tri Mute-GM
81	A5	Tri Open-GM	Tri Open-GM	Tri Open-GM	Tri Open-GM	Tri Open-GM
82	A#5	Shaker	Shaker	Shaker	Shaker	Shaker
83	B5	Sleighbell	Sleighbell	Sleighbell	Sleighbell	Sleighbell
84	C6	WindchimeGM	WindchimeGM	WindchimeGM	WindchimeGM	WindchimeGM
85	C#6	Castanets 1	Castanets 1	Castanets 1	Castanets 1	Castanets 1
86	D6	Mt Surdo-GM	Mt Surdo-GM	Mt Surdo-GM	Mt Surdo-GM	Mt Surdo-GM
87	D#6	Op Surdo-GM	Op Surdo-GM	Op Surdo-GM	Op Surdo-GM	Op Surdo-GM
88	E6	Silence	Silence	Silence	Silence	Silence

GM and GS Percussion Key Maps (Channel 10)

MIDI Note #		40 - Brsh Kit-GM	48 - Orch Kit-GM	64 - DanceKit-GM	65 - TeknoKit-GM	66 - FormtKit-GM
35	B1	AcousticKick	Big Kick1	Boom Kik C	PtchDwnKik3	HouseKick2
36	C2	Bright Kick	ConcrtBD-GM	PtchDwnKik3	PtchDwnKik1	HouseKick1
37	C#2	SideStick 1	SideStick 1	SideStick 1	House Rim	House Rim
38	D2	Brush Tap	ConcrtSnare	CrackSnare1	House Snare1	House Snare1
39	D#2	Brush Slap	Castanets 1	HouseClap1	Stereo Clap	HouseClap1
40	E2	Brush Swish	ConcrtSnare	HiPass Snr2	HiPass Snr3	HouseSnare4
41	F2	Dry Tom 1	Tympani	HouseTom1	HouseTom1	HouseTom1
42	F#2	4xCl Hat3	Tympani	4xCl Hat3	HouseClHat2	HouseClHat1
43	G2	Dry Tom 1	Tympani	HouseTom1	HouseTom1	HouseTom2
44	G#2	Pedal Hat	Tympani	Pedal Hat	HouseClHat2	Pedal Hat
45	A2	Dry Tom 1	Tympani	HouseTom1	HouseTom1	HouseTom1
46	A#2	OpenHat-GM	Tympani	ShrtOpHat 1	HouseOpHat2	HouseOpHat1
47	B2	Dry Tom 1	Tympani	HouseTom1	HouseTom1	HouseTom2
48	C3	Dry Tom 1	Tympani	HouseTom1	HouseTom1	HouseTom1
49	C#3	Crash 1-GM	Tympani	HouseCrash2	HouseCrash2	HouseCrash1
50	D3	Dry Tom 1	Tympani	HouseTom1	HouseTom1	HouseTom2
51	D#3	Ride 1-GM	Tympani	Cool Ride 1	Cool Ride 1	HouseRide1
52	E3	China 1-GM	Tympani	Gong mf	Gong mf	China Crash
53	F3	RideBell-GM	Tympani	HouseRide2	HouseRide1	Ride Bell
54	F#3	Tambourine	Tambourine	Dyn.Tambo	Dyn.Tambo	Tambourine
55	G3	Splash1-GM	Splash1-GM	ChokeSplash	ChokeSplash	SplashCym 1
56	G#3	Cowbell	Cowbell	Cowbell	Cowbell	Cowbell
57	A3	Crash 1-GM	Crash 1-GM	808 Cymbal	808 Cymbal	Crash Cym 1
58	A#3	Vibraslap	Vibraslap	Vibraslap	Pole	Vibraslap
59	B3	Ride 1-GM	Piatti-GM	SizlRideCym	SizlRideCym	Ride Cym 1
60	C4	Bongo	Bongo	Bongo	Synth Drip	Bongo
61	C#4	Bongo	Bongo	Bongo	Synth Kiss	Bongo
62	D4	Conga Mute	Conga Mute	CongaLO/whl	SynLoCongGM	Conga Mute
63	D#4	Conga High	Conga High	CongaHi/whl	SynHiCongGM	Conga High
64	E4	Conga Low	Conga Low	CongaMoose1	SynLoCongGM	Conga Low
65	F4	Timbali	Timbali	Timbali	Timbali	Tambourine
66	F#4	Timbali	Timbali	Timbali	Timbali	Timbali
67	G4	Agogo	Agogo	Agogo	Agogo	Agogo
68	G#4	Agogo	Agogo	Agogo	Agogo	Agogo
69	A4	Cabasa	Cabasa	Cactus Hit1	Cactus Hit1	Cabasa
70	A#4	Maracas	Maracas	Egg Shaker	Egg Shaker	Maracas
71	B4	Whistle B	Whistle B	Synth Hit 1	Synth Hit 1	Whistle A
72	C5	Whistle A	Whistle A	Synth Hit 4	Synth Hit 2	Whistle A
73	C#5	Guiro Short	Guiro Short	Synth Hit 6	Synth Hit 3	HouseRide1
74	D5	Guiro Long	Guiro Long	Synth Hit 7	Synth Hit 4	Guiro Long
75	D#5	Clave	Clave	Synth Hit12	Synth Hit 5	Clave
76	E5	Woodblock 1	Woodblock 1	Synth Hit11	Synth Hit 6	Woodblock 1
77	F5	Woodblock 1	Woodblock 1	Wakka 1	Synth Hit 7	Woodblock 1
78	F#5	Cuica 1	Cuica 1	Wakka 3	Synth Hit 8	Cuica 1
79	G5	Cuica 5	Cuica 5	Wakka 5	Synth Hit 9	Cuica 1
80	G#5	Tri Mute-GM	Tri Mute-GM	Wakka 7	Synth Hit 10	Triangle Mt
81	A5	Tri Open-GM	Tri Open-GM	Scratch 1	Synth Hit 11	Triangle Op
82	A#5	Shaker	Shaker	Scratch 2	Synth Hit 12	Cym Swell2
83	B5	Sleighbell	Sleighbell	Scratch 3	Synth Hit 10	AltRevCrash
84	C6	WindchimeGM	WindchimeGM	Scratch 4	Synth Hit 10	HiPass Kik1
85	C#6	Castanets 1	Castanets 1	Scratch 6	Synth Hit 8	Synth Hit 4
86	D6	Mt Surdo-GM	Mt Surdo-GM	Scratch 10	Synth Hit 7	HiPass Snr1
87	D#6	Op Surdo-GM	Op Surdo-GM	Scratch 11	Synth Hit 5	HouseClap2
88	E6	Silence	Applause-GM	Silence	Silence	HiPass Snr2

ZR-76 MIDI Implementation

The ZR-76 features an extensive MIDI (Musical Instrument Digital Interface) implementation. For normal applications, you will find all the information you need regarding the ZR-76's MIDI functions in this manual. You can also refer to the following MIDI Implementation Chart for a summary of the ZR-76 MIDI implementation.

If you are writing a computer program to communicate with the ZR-76 via MIDI, or otherwise require a copy of the full MR-76 System Exclusive Specification, it is available free of charge by writing to:

ENSONIQ Corp.
MIDI Specification Desk
155 Great Valley Parkway
P.O. Box 3035
Malvern PA 19355-0735
USA

Include in your written request your name and address, and indicate that you would like a copy of the "MR-76 System Exclusive Specification." Please allow 2 to 3 weeks for delivery.

ZR-76 **MIDI Implementation Chart** **Version: 1.45**

Function...		Transmitted	Recognized	Remarks
Basic Channel	Default Changed	1 1-16	1-16 1-16	Each of ZR-76's 16 tracks may be set to any MIDI channel
Mode	Default Messages Altered	POLY X X	MULTI X X	
Note Number	True voice	21-108	21-108	Note reception is filtered by Key Lo and Key High track parameters
Velocity	Note On	O	O	Note On velocity reception is filtered by VelocityRange Lo and VelocityRange Hi track parameters
	Note Off	O	O	Note Off velocity is filtered by VelocityRange Lo and VelocityRange Hi track parameters when modulating keyup layers
After Touch	Key Channel	O O	O O	ZR keyboard produces channel pressure only
Pitch Bend		O	O	supports held mode
Control Change		0-119	0-119	see "MIDI Controllers Behavior" below
Program Change	True#	0-119 0-119	0-119 0-119	select sounds from the currently selected bank invalid program changes select silent sound
System Exclusive		O	O	see MR-76 SysEx Specification recognizes Universal Non-Real Time SysEx General MIDI On/Off messages recognizes MIDI Tuning Dump Standard and Single-Note Tuning Change messages
System Common	Song Position Song Select Tune Request	O X X	O X X	
System Real Time	Clock Commands	O X	O X	
Aux Messages	Local On/Off All Notes Off Active Sensing System Reset	X O X X	X O X X	
Notes	Response to received Controllers varies depending on the nature of the ZR-76 parameter affected—see parameter descriptions for details When the ZR-76 is configured for General MIDI, Bank Select reception is disabled, and new sequences cannot be selected by program changes—see "Using the ZR-76 with General MIDI Standard MIDI Files", in <i>Chapter 3</i>			

Mode 1: Omni On, Poly
Mode 3: Omni Off, Poly

Mode 2: Omni On, Mono
Mode 4: Omni Off, Mono

O : Yes
X: No

MIDI Controllers Reception Behavior

Control Change	Description	Remark
0-119	SysCTRL 1-4	assignable controllers
0	Bank Select MSB	always 0
1	Mod Wheel	
4	Foot (Pedal)	
5	Portamento Time	
6	Data Entry MSB	for editing of registered and non-registered parameters only, after registered or non-registered parameter MSB and LSB are received
7	Volume	
10	Pan	
11	Expression Controller	
32	Bank Select LSB	
64	Sustain	
65	Portamento On/Off	
66	Sustenuto	
72	Release Time	Amp Env Release
73	Attack Time	Amp Env Attack
74	Brightness	Filter Cutoff
75	Sound Controller 6	Normal LFO Rate
76	Sound Controller 7	Amp Env Decay
91	Effects 1 Depth	GM reverb depth, described in "Adding Effects to Tracks," <i>Chapter 8</i>
93	Effect 2 Depth	GM chorus depth, described in "Adding Effects to Tracks," <i>Chapter 8</i>
98	Non-Reg. Param. Select LSB	Track parameter descriptions in <i>Chapter 4</i> list track parameters' Non-Registered parameter LSB values
99	Non-Reg. Param. Select MSB	always 0
100	Reg. Param. Select LSB	always 0, 1 or 2 only
101	Reg. Param. Select MSB	always 0

List of MIDI Controller Names

This list of MIDI Controller names (as found in the ZR-76) represents the current state-of-the-art MIDI controller assignments as defined in the MIDI Detailed Specification, version 95.1:

Bank Select #000 - Bank Select	Expression#043 - Expression LSB	MIDIContrl#086 - UNDEFINED
Mod Wheel #001 - Mod Wheel or Lever	FXControl1#044 - Effect Control 1 LSB	MIDIContrl#087 - UNDEFINED
Breath #002 - Breath Controller	FXControl2#045 - Effect Control 2 LSB	MIDIContrl#088 - UNDEFINED
MIDIContrl#003 - UNDEFINED	MIDIContrl#046 - UNDEFINED	MIDIContrl#089 - UNDEFINED
FootContrl#004 - Foot Controller	MIDIContrl#047 - UNDEFINED	MIDIContrl#090 - UNDEFINED
Glide Time#005 - Portamento Time	GenPurpse1#048 - UNDEFINED	FX Depth 1#091 - Effects Depth 1
Data Entry#006 - Data Entry MSB	GenPurpse2#049 - General Purpose 1 LSB	FX Depth 2#092 - Effects Depth 2
Volume #007 - Volume	GenPurpse3#050 - General Purpose 2 LSB	FX Depth 3#093 - Effects Depth 3
Balance #008 - Balance	GenPurpse4#051 - General Purpose 3 LSB	FX Depth 4#094 - Effects Depth 4
MIDIContrl#009 - UNDEFINED	MIDIContrl#052 - General Purpose 4 LSB	FX Depth 5#095 - Effects Depth 5
Pan #010 - Pan	MIDIContrl#053 - UNDEFINED	Data Inc #096 - Data Inc
Expression#011 - Expression	MIDIContrl#054 - UNDEFINED	Data Dec #097 - Data Dec
FX Control1#012 - Effect Control 1	MIDIContrl#055 - UNDEFINED	NonRgPmLSB#098 - Non-Reg param Num LSB
FX Control2#013 - Effect Control 2	MIDIContrl#056 - UNDEFINED	NonRgPmMSB#099 - Non-Reg param Num MSB
MIDIContrl#014 - UNDEFINED	MIDIContrl#057 - UNDEFINED	RgParamLSB#100 - Reg param Num LSB
MIDIContrl#015 - UNDEFINED	MIDIContrl#058 - UNDEFINED	RgParamMSB#101 - Reg param Num MSB
GenPurpse1#016 - General Purpose 1	MIDIContrl#059 - UNDEFINED	MIDIContrl#102 - UNDEFINED
GenPurpse2#017 - General Purpose 2	MIDIContrl#060 - UNDEFINED	MIDIContrl#103 - UNDEFINED
GenPurpse3#018 - General Purpose 3	MIDIContrl#061 - UNDEFINED	MIDIContrl#104 - UNDEFINED
GenPurpse4#019 - General Purpose 4	MIDIContrl#062 - UNDEFINED	MIDIContrl#105 - UNDEFINED
MIDIContrl#020 - UNDEFINED	MIDIContrl#063 - UNDEFINED	MIDIContrl#106 - UNDEFINED
MIDIContrl#021 - UNDEFINED	Sustain #064 - Sustain	MIDIContrl#107 - UNDEFINED
MIDIContrl#022 - UNDEFINED	PortOn/Off#065 - Portamento On/Off	MIDIContrl#108 - UNDEFINED
MIDIContrl#023 - UNDEFINED	Sostenuto #066 - Sostenuto	MIDIContrl#109 - UNDEFINED
MIDIContrl#024 - UNDEFINED	Soft Pedal#067 - Soft Pedal	MIDIContrl#110 - UNDEFINED
MIDIContrl#025 - UNDEFINED	LegatoFtsw#068 - Legato Ftsw	MIDIContrl#111 - UNDEFINED
MIDIContrl#026 - UNDEFINED	Hold 2 #069 - Hold 2	MIDIContrl#112 - UNDEFINED
MIDIContrl#027 - UNDEFINED	PatchSelct#070 - Snd Variation (Patch Select)	MIDIContrl#113 - UNDEFINED
MIDIContrl#028 - UNDEFINED	Timbre #071 - Harmonic Content (Timbre)	MIDIContrl#114 - UNDEFINED
MIDIContrl#029 - UNDEFINED	Release #072 - Release	MIDIContrl#115 - UNDEFINED
MIDIContrl#030 - UNDEFINED	Attack #073 - Attack	MIDIContrl#116 - UNDEFINED
MIDIContrl#031 - UNDEFINED	Brightness#074 - Brightness	MIDIContrl#117 - UNDEFINED
BankSelect#032 - Bank Select LSB	SoundCntl6#075 - Sound Controller 6	MIDIContrl#118 - UNDEFINED
Mod Wheel #033 - Mod Wheel LSB	SoundCntl7#076 - Sound Controller 7	MIDIContrl#119 - UNDEFINED
Breath #034 - Breath Controller LSB	SoundCntl8#077 - Sound Controller 8	
MIDIContrl#035 - UNDEFINED	SoundCntl9#078 - Sound Controller 9	
FootContrl#036 - Foot Controller LSB	SoundCntl10#079 - Sound Controller 10	
Glide Time#037 - Portamento Time LSB	GenPurpse5#080 - General Purpose 5	
Data Entry#038 - Data Entry LSB	GenPurpse6#081 - General Purpose 6	
Volume #039 - Volume LSB	GenPurpse7#082 - General Purpose 7	
Balance #040 - Balance LSB	GenPurpse8#083 - General Purpose 8	
MIDIContrl#041 - UNDEFINED	Portamento#084 - Portamento Control	
Pan #042 - Pan LSB	MIDIContrl#085 - UNDEFINED	

Note: Controllers #000-031 are the MSBs and #032-063 are the LSBs for controllers with 14 bit resolution, and their names are displayed identically in the list of values.

Reset All Controllers (MIDI controller 121) Reception Behavior

When the system `ResetControlRecv=Off`, the reset all controllers message will be ignored.

When system `ResetControlRecv=On`, the following MIDI messages and parameters on all tracks assigned to the MIDI channel on which the message was received will be reset to the following values:

Assignable SysCtrl1-4=000	Controller 008=064	Controller 070 to 071=000
Pitch Bend=center	Controller 009=000	Controller 072 to 079=064
Channel Pressure=000	Controller 010=064	Controllers 080 to 097=000
Polyphonic Pressure=000 for all 88 keys	Controller 011=127	Controller 098 to 101=cleared
Controllers 001 to 004=000	Controllers 012 to 031=000	Controllers 102 to 119=000
Controller 005=064	Controllers 033 to 064=000	Controllers 120 to 127=left unchanged
Controller 006=000	Controller 065=000	
Controller 007=100	Controllers 066 to 069=000	

When system `Track ParamReset=Off`:

Controllers 005, and 070 to 079 will be left unchanged.

When system `Track ParamReset=On`:

Controllers 005, and 070 to 079 will be reset to the values listed above.

Track MIDI reception filters do not affect reception of the Reset All Controllers message.

Registered Parameters

Registered parameters 0, 1 and 2 are received multi-timbrally by the ZR-76. When received on a track's MIDI channel, RPN 0 affects the track's pitch bend up and down simultaneously: Pitch bend up is raised and pitch bend down is lowered by the same RPN value. RPNs 1 and 2 edit Semitone Shift and Fine Tuning parameters, respectively, when received on the track's MIDI channel.

Registered parameters must be transmitted to the ZR-76 as a Continuous Controller status byte followed by three consecutive Continuous Controller messages: The registered parameter MSB and LSB values select the track parameter that will be edited, and a Data Entry value invokes the track parameter's desired setting.

Controllers Number	Name	Value
101	Registered Parameter Select MSB (Most Significant Byte)	always 0
100	Registered Parameter Select LSB (Least Significant Byte)	00, 01 or 02 (see below)
6	Data Entry MSB	0-127, desired track parameter setting

Registered Parameters Number	Name	ZR Parameter Range
00	Pitch Bend Range	0-12 (displayed as Pitch Bend Up =0-12 up; raises pitch; Pitch Bend Down=0-12 down)
01	Fine Tuning	0-127 (displayed as -50 cents to +49 cents)
02	Coarse Tuning	0-127 (displayed as -64st to +63st)

Non-Registered Parameters

Non-registered parameters are received multi-timbrally by the ZR-76, affecting track parameters when received on the track's MIDI channel.

Non-registered parameters must be transmitted to the ZR-76 as a continuous controller status byte followed by three consecutive continuous controller messages. The non-registered parameter MSB and LSB select the track parameter, and a data entry value invokes the track parameter's desired setting.

Controllers Number	Name	Value
99	Non-Registered Parameter Select MSB (Most Significant Byte)	always 0
98	Non-Registered Parameter Select LSB (Least Significant Byte)	see track parameter descriptions in <i>Chapter 4</i> for each parameter's Non-Registered parameter LSB value
6	Data Entry MSB	0-127, desired track parameter setting

Registered and Non-Registered Parameters (RPN/NRPN)

Expression	Responds to MIDI controller 011 and NRPN LSB 034.
FX Bus assignment (Insert, Chorus, LightReverb, MediumReverb, WetReverb, Dry)	Responds to MIDI NRPN LSB 033.
Pitch Bend Up	Responds to MIDI RPN LSB 000 and NRPN LSB 022.
Pitch Bend Down	Responds to MIDI RPN LSB 000 and NRPN LSB 023.
Octave Shift (-4oct to +4oct)	Responds to MIDI NRPN LSB 011.
Semitone Shift	Responds to MIDI RPN LSB 002.
Fine Tuning	Responds to MIDI RPN LSB 001.
Pitch Table	Responds to MIDI NRPN LSB 021.
Glide Mode	Responds to MIDI controller 065 (see below) and NRPN LSB 031. When a value of 64 or greater for MIDI controller 065 is received, glide is enabled for the part; values below 64 do not disable glide.
Glide Time	Responds to MIDI controller 005 and NRPN LSB 032.
Delay Offset (positive-only)	Responds to MIDI NRPN LSB 024.
Sync LFO&Noise (system tempo time division)	Responds to MIDI NRPN LSB 025.
Normal LFO Rates	Responds to MIDI controller 075 and NRPN LSB 008.
LFO Depth	Responds to MIDI NRPN LSB 009.
LFO Delay Time	Responds to MIDI NRPN LSB 010.
Amplitude Envelope Attack time	Responds to MIDI controller 073 and NRPN LSB 014.
Amplitude Envelope Decay time	Responds to MIDI controller 076 and NRPN LSB 015.
Amplitude Envelope Release time	Responds to MIDI controller 072 and NRPN LSB 016.
Filter Cutoff (lo-pass & hi-pass)	Responds to MIDI controller 074 and NRPN LSB 012.
Filter Envelope Attack time	Responds to MIDI NRPN LSB 017.
Filter Envelope Decay time	Responds to MIDI NRPN LSB 018.
Filter Envelope Release time	Responds to MIDI NRPN LSB 019.
Amp & Filter Envelope Velocity sensitivity	Responds to MIDI NRPN LSB 020.
Key Range Low limit	Responds to MIDI NRPN LSB 026.
Key Range High limit	Responds to MIDI NRPN LSB 027.
Velocity Range Low limit	Responds to MIDI NRPN LSB 028.
Velocity Range High limit	Responds to MIDI NRPN LSB 029.
Pressure Mode	Responds to MIDI NRPN LSB 030.
Velocity MIDI reception converter	Responds to MIDI NRPN LSB 035.
Mute button	Responds to MIDI NRPN LSB 036 (0=normal muted, 1=unmuted, 2=solo muted, 3=solo, 4-127=solo).

For an explanation of how to use RPNs and NRPNs with the ZR-76, see “Using RPNs and NRPNs to Edit Parameters” at the end of *Chapter 4*.

Universal Non-Real-Time SysEx General MIDI On/Off

The ZR-76 recognizes the Universal Non-Real-Time SysEx General MIDI On/Off messages.

When the ZR-76 receives a SysEx General MIDI On message, it responds as if the ZR's own "ENTER GM mode?" command has been run: the General MIDI set-up is selected, and certain System parameters are reset (see "Using the ZR-76 with General MIDI Standard MIDI Files" in *Chapter 3* for details).

The Universal Non-Real-Time SysEx General MIDI On message is comprised of the Universal Non-Real-Time header, the current SysEx Device ID number of the ZR-76, sub-ID #1 and sub-ID #2 messages, and an End of SysEx message.

Turning General MIDI On Via SysEx

Transmit	Description	Notes
F0, 7E	Universal Non-Real-Time SysEx header	
<Device ID>	SysEx Device ID	0-127, determined by the setting of the SysEx Device ID System parameter (see <i>Chapter 3</i>)
09	sub-ID #1=General MIDI message	
01	sub-ID #2=General MIDI On	
F7	End of SysEx	

When the ZR-76 receives a Universal Non-Real-Time SysEx General MIDI Off message, it concludes General MIDI operation by selecting the default sequence and track 1. System parameters altered at the start of General MIDI operation are not reset (for a list of these parameters, see "Using General MIDI," *Chapter 3*).

The Universal Non-Real-Time SysEx General MIDI Off message is comprised of the Universal Non-Real-Time header, the SysEx Device ID number of the ZR-76, sub-ID #1 and sub-ID #2 messages, and an End of SysEx message.

Turning General MIDI Off Via SysEx

Transmit	Description	Notes
F0, 7E	Universal Non-Real-Time SysEx header	
<Device ID>	SysEx Device ID	0-127, determined by the setting of the SysEx Device ID System parameter (see <i>Chapter 3</i>)
09	sub-ID #1=General MIDI message	
02	sub-ID #2=General MIDI Off	
F7	End of SysEx	

Pitch Tables and the MIDI Tuning Standard Format

Pitch tables created using an external computer can be downloaded into the ZR-76's RAM pitch table using the MIDI Tuning Standard format. The ZR-76 can accommodate one user-defined RAM pitch table in addition to the many alternate pitch tables stored in ROM. The ZR-76's pitch tables can be accessed by any of its 16 tracks through the setting of the track's PitchTbl parameter, or via NRPN LSB 021 values sent on the track's MIDI channel. You can also select a system-wide special pitch table by selecting the desired table with the PitchTbl System parameter.

The MIDI Tuning Standard is comprised of two kinds of messages: the MIDI Tuning Dump, a SysEx bulk dump which transmits tunings for all keys, and a Single-Note Tuning Change, which alters the tuning of a specific note. The SysEx bulk dump format is supported by several tuning editors for the Apple Macintosh and Microsoft Windows 95. It is anticipated that the Single-Note Tuning Change message will be employed by third-party tuning controllers to achieve Middle-Eastern music scales.

The ZR-76's response to the Single-Note Tuning Change message has been extended to allow users to apply a single tuning change to the ZR's entire pitch range. If a Single-Note Tuning Change message is sent to user-tuning number 7F (127), and if the note is between Middle C and an octave above (note numbers 60 to 71 inclusive), the tuning change will be applied to all notes in the current RAM pitch table. In all other cases, the note-change message only changes the tuning for the note specified. If a Single-Note Tuning Change message is received during playback of a note (between the key-down and key-up messages), the tuning change takes effect on the next note.

It is suggested that third-party tuning controllers should send a zero-pitch-detune message for each of the twelve notes supported by the Single-Note Tuning Change message and also select the RAM tuning for the receiving channel. The zero-pitch messages need only be sent once before sending their note-change messages.

For more information on the MIDI Tuning Standard, contact:

MIDI Manufacturer's Association
c/o Tom White, President
P.O. Box 3173
La Habra, CA 90632-3173
Phone/FAX: (310) 947-4569
email: mma@earthlink.net

Just Intonation Network
535 Stevenson Street
San Francisco, CA 94103
Phone: (415) 824-5325
FAX: (415) 864-8726
WWW: <http://www.dnai.com/~jinetwk>

List of ROM System Pitch Tables

The intervals (or relationships) between each note in a scale is called a pitch table. The default pitch table is the western 12-tone equal-tempered pitch table. The ZR-76 offers a large assortment of traditional, modern, ethnic, and exotic pitch tables for use as the System pitch table. These pitch tables are:

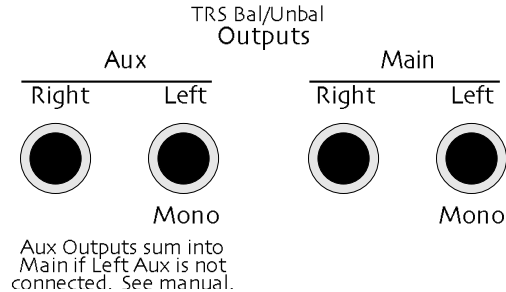
Pitch Table	Description
EqualTemper	The Western 12-tone equal-temperament tuning is used for the default pitch table.
Pythagrn-C	Early tuning derived by calculating 12 perfect fifths and adjusting the octaves downward as necessary. Leaves all fifths except the one between G# and D# very pure. The entire mathematical anomaly encountered by tuning up 12 perfect fifths (called the Pythagorean comma) is accounted for in the interval between G# and D#.
Just Int-C	Designed so that the major intervals in any scale are very pure, especially the third and fifth.
Meantone-C	One of the earliest attempts to derive a tuning which would accommodate music played in a variety of keys. The major third interval is very pure.
Wrkmeistr-C	Derived by Andreas Werkmeister, a contemporary of Bach, this is a further attempt to create a temperament which would accommodate music played in any key.
Vallotti-C	A variation of Pythagorean tuning in which the first 6 fifths in the circle of fifths are flat by 1/6 of the Pythagorean Comma. This is probably close to the tuning used by Bach for his Well-Tempered Clavier.
Grk-Diatonic	The basic building block of ancient Greek music (in which most modern Western music has its roots) was the tetra chord - four notes and three intervals spanning a perfect fourth. The placement of the two inner notes of the tetra chord determined its genus - diatonic, chromatic or enharmonic. This pitch table is derived from two diatonic tetra chords, combined to form a seven-note scale similar to the modern diatonic scale. It is to be played only on the white keys. Tone center is E.
Grk-Chromat	This pitch table is derived from two chromatic tetra chords (the intervals are, roughly, quarter-tone, half-step, major third), combined to form a seven-note scale. It is meant to be played on the white keys. Tone center is E.
Grk-Enharm	This pitch table is derived from two enharmonic tetra chords (the intervals are, more or less, two quarter-tones followed by a major third), combined to form a seven-note scale. It is meant to be played on the white keys. Tone center is E.
Turkish-A	This is a typical Turkish octave-based scale using only one quarter tone. The second note in the scale is tuned 40 cents flat from the equal-tempered equivalent. In this tuning B is 40 cents flatter from B natural. The scale rises from A.
Arabic-1	The intervals in this table form the basis for much Middle Eastern music. Here the octave is divided into 17 intervals, corresponding to the fret intervals of some stringed instruments used in this area. The scale rises from the base pitch of C4 in a series of three repeating intervals (in cents) of 90, 90, 24 and so on. From C4 to F5 represents an octave.

Arabic-2	Similar to Arabic 1, except that here the octave is divided into 24 intervals. This makes one pitch octave cover two keyboard octaves, meaning that the fingering will be the same in any octave. This scale rises from the base pitch of C ₄ in a series of four repeating intervals (in cents) of 24, 66, 24, 90 and so on.
Arabic-3	This is a 12-tone scale using quarter tones (notes tuned sharp or flat by 50 cents from their equal-tempered equivalents) on the C#, E, G# and B keys.
Arabic-4	Another octave-based scale with an Arabic flavor. In this case the "quarter tones" are not perfectly equal, imparting a distinctive character to the notes.
Java-Pelog1	One of the two main scales of the gamelan orchestras of Java and Bali is the seven-tone scale called Pelog. The notes C, D, F, G, and A (which are reproduced on the black keys) are considered primary, with E and B used for grace notes. The octaves are stretched (tuned a little sharp) due to the harmonic content of the instruments in the gamelan. (There are many variations of these tunings, almost as many as there are gamelan ensembles. These tunings are to be considered typical, not definitive.)
Java-Pelog2	Another version of the seven-tone Pelog scale used in gamelan music. The notes C, D, F, G, and A (which are reproduced on the black keys) are considered primary, with E and B used for grace notes. The octaves are stretched (tuned a little sharp) due to the harmonic content of the instruments in the gamelan.
Java-Pelog3	A third version of the seven-tone Pelog scale used in gamelan music. The notes C, D, F, G, and A (which are reproduced on the black keys) are considered primary, with E and B used for grace notes.
Java-Slndro	A 15-tone equal tempered tuning from Java. Playing every third note (as in a diminished chord) yields a typical 5-tone scale of the gamelan. Other notes can be used as passing tones.
Java-Combi	This is actually two pitch tables in one. The white keys play the seven-tone Pelog scale, same as the table JAVA-PELOG1. The black keys play a five-tone scale called Slendro, which is close to a five-tone equi-tempered scale. Both tunings have their octaves stretched (tuned a little sharp) due to the harmonic content of the instruments in the gamelan.
Indian-Raga	Indian scale used to play ragas, based on 22 pure intervals called Srutis. This pitch table uses two keyboard octaves to play one octave in pitch. The 22 Srutis are mapped to keys in this two-octave range omitting the A#s, which play the same pitch as the adjacent A.
Tibetan	This tuning is based on a pentatonic scale from Tibet. Notice that playing the black keys yield a scale similar to the 5-tone Slendro tuning from Indonesia.
Chinese-1	This is a seven-tone scale used widely in China. It is meant to be played on the white keys.
Chinese-2	A seven-tone scale based on an ancient Chinese lute tuning. It is meant to be played on the white keys.
Thailand	This is a seven-tone equi-tempered scale from Thailand. It is meant to be played on the white keys.
24-Tone-Equ	Centered on C ₄ , this scale has an even quarter tone (50 cents) between each keyboard note, and each pitch octave covers 2 keyboard octaves. This tuning has been used by many contemporary composers and can be used in some Middle Eastern music.
19-Tone-Equ	Centered on C ₄ , this scale divides the octave into 19 equal steps. From C ₄ to G ₅ forms an octave. This scale yields very pure thirds and sixths, but not fifths. Like the 24-tone scale, this has been used by some modern composers.
31-Tone-Equ	Centered on C ₄ , this scale divides the octave into 31 equal steps. From C ₄ to G ₆ forms an octave. Similar to 19-tone in the purity of its intervals.
53-Tone-Equ	This scale divides the octave into 53 equal steps. From C ₂ to F ₆ forms an octave. It yields very pure thirds, fourths and fifths.
Harmonic	This is a mathematically generated scale based on the relationships of the partials in the harmonics of the fifth octave of the linear harmonic spectrum. It is interesting mostly from a theoretical standpoint.
CarlosAlpha	Derived mathematically by Wendy Carlos in the search for scales with the maximum purity of primary intervals, This is based on the division of the octave into 15.385 equal steps (78 cents per key). One pitch "octave" covers 16 keys, though because the Carlos scales are asymmetric (not based on whole number divisions of the octave) they do not yield pure octaves.
Carlos-Beta	Wendy Carlos' Beta scale is based on the division of the octave into 18.809 equal steps 63.8 cents per key. One pitch "octave" covers 19 keys; though, being asymmetric, it yields no pure octaves.
CarlosGamma	Wendy Carlos' Gamma scale is based on the division of the octave into 34.188 equal steps (35.1 cents per key). This scale has essentially perfect major thirds, fourths and fifths. One pitch "octave" covers 35 keys, though, again, being asymmetric it yields no pure octaves.
Partch-43	Harry Partch was a pioneer of micro-tonality in the early 20th century. He developed this 43-tone-per-octave scale of pure intervals, and even designed an entire orchestra of instruments using this scale. The tonal center is found on key D ₂ (the low D on the 76-note keyboard). This pitch table has been transposed up an octave to bring the notes into a more usable range.
Reverse	This pitch table simply reverses the pitch-tracking of the keyboard, putting the highest notes at the bottom of the keyboard and the highest notes at the top. Hours of fun.
Bagpipe	This is the tuning of a traditional Scottish bagpipe.
ShonaMbira1	One tuning of the African Mbira, similar to the Kalimba or thumb-piano. Each Mbira player uses his own "tuning" which is his signature.
ShonaMbira2	Another Mbira tuning.
SuperJust	This is a Just Intonation scale created by Wendy Carlos.
88CET	88CET is a scale with a constant interval of 88 cents. It features three different thirds and close approximations to many just intervals. This keyboard mapping omits the G#/Ab key from the system.
Pierce-Bohl	An octave-repeating stretched scale invented by John Pierce which is derived from a pure twelfth divided into thirteen steps.
WS1	The WS scales are for single samples which span the entire keyboard. WS1 maintains 12 tones per octave for two octaves centered on middle C, then continues to high and low ends of the keyboard with 1/4 of a semitone or 48 tones per octave.
WS2	WS2 maintains 12 tones per octave for three octaves centered on middle C from G to G.
WS3	WS2 maintains 12 tones per octave for four octaves centered on middle C.
Stretch	A stretch tuning, in which the middle C is at unity, C ₁ is detuned flat 40 cents and C ₈ is detuned sharp 40 cents. The stretch is a linear ramp between these two offsets.
RandomDetun	Each note has been "tweaked" by + or - up to 10 cents, giving chords a chorused effect which is different for each note.
RAM	Selects pitch tables that can be downloaded via MIDI. See earlier for more information about RAM pitch tables.

Using the ZR-76 Outputs

A Note About the Main and Aux Output Jacks

Use standard balanced (TRS) stereo cables or unbalanced (TS) mono cables for these connections.



As the labels on the Aux Out jacks and Main Out jacks indicate, the ZR employs automatic switching on each stereo pair of outputs. That is:

- Main Outputs Right and Left are normally stereo outputs. However, if nothing is plugged into the Right Output, the stereo signal will be summed to mono and sent to the Left Output.
- Similarly, the Aux Outputs Right and Left are normally stereo outputs. However, if nothing is plugged into the Right Aux Output, the stereo signal will be summed to mono and sent to the Left Aux Output.

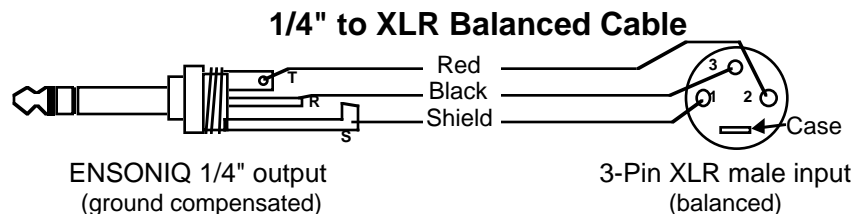
Note: If there is nothing connected to the Left Aux Out jack, any signal sent to the Aux Outputs will be summed into the Main Outputs.

Ground Compensated Outputs

The ZR-76 has “ground compensated” outputs, which offer the advantages of balanced outputs (minimized hum and interference), plus the advantage of a transformer isolated output (eliminates ground loop problems). The output connector “grounds” are not hooked directly to the ZR-76 ground, thus eliminating the possibility of a ground loop. This ground compensating scheme works on both balanced and unbalanced equipment with standard cables.

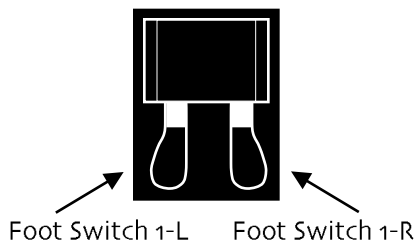
Using XLR Outs with the ZR-76

The ZR-76 ground compensating outputs make things very easy. Use of a standard 1/4” to XLR cable will work fine with no ground loops.



A Note about Stereo Foot Switches

The recommended stereo foot switch for use with the ZR-76 is the ENSONIQ SW-10 Dual Foot Switch. The SW-10 is a dual (piano-type) foot switch with two separate pedals.



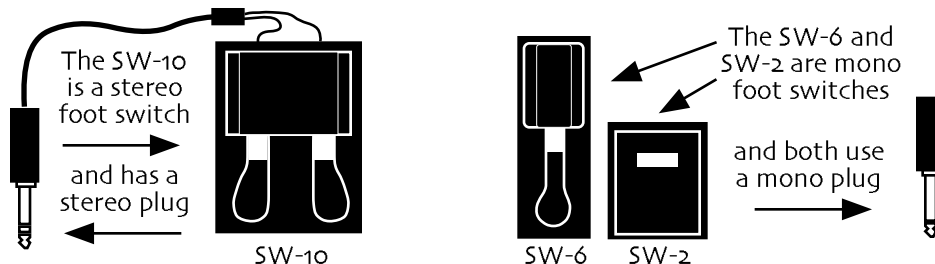
When the SW-10 is connected, the pedals can be assigned to a number of different functions, allowing a total of four independent foot switch controllers (when two optional SW-10 Dual Foot Switches are connected). If you are considering using a foot switch, we highly recommend the ENSONIQ SW-10 Dual Foot Switch. Why not get two?

Note: If you are using a foot switch manufactured by another company, there is a possibility that the wires inside the foot switch may be reversed. This could make the ZR recognize Foot Switch 1-R as left, and Foot Switch 1-L as right.

A Note about Mono Foot Switches

The ZR-76 has two stereo foot switch jacks. When any mono foot switch is plugged in, it functions like the right side of a stereo foot switch, and acts as a permanent shut-off switch for the (non-existent) left side of the foot switch.

If you are using a single foot switch (SW-2 or SW-6) in either of the Foot Switch jacks, the FtSw 1-L and/or FtSw 2-L values on the System page should *always* be set to “Unused”. This will prevent note drones. Remember that the foot switch jacks are optimized for use with a stereo foot switch (SW-10), and when a single foot switch is connected, it behaves like the right foot switch.



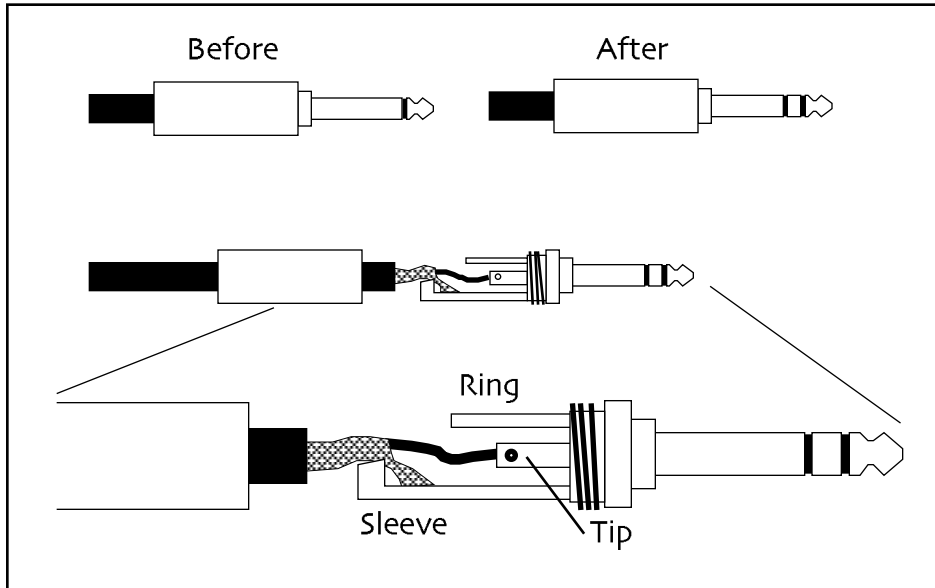
To optimize the usage of mono foot switches, please consider performing one of the two modifications explained in “HOT MODS” on the following pages.

HOT MODS!

Although mono foot switches can be used as is, their usage can be optimized if you are willing to make either of the following modifications. If you are not comfortable performing the following modifications, we recommend asking a qualified technician for assistance:

Replace the Mono Foot Switch Plug with a Stereo Plug

The advantage of this modification is that you will eliminate the “shorted” left foot switch signal (see “About Mono Foot Switches” earlier).



Tools/supplies required:

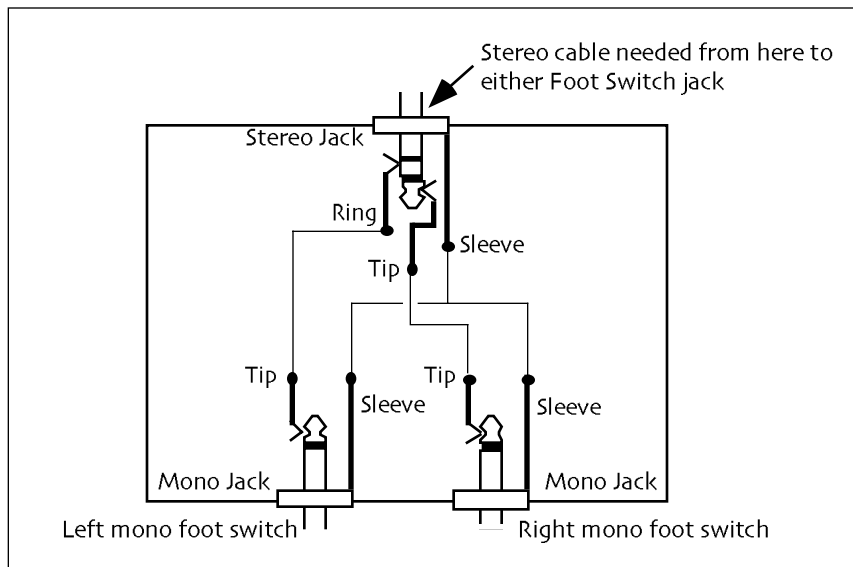
- soldering iron
- solder
- wire cutters
- 1/4" stereo plug

1. Unscrew the mono plug cover, and slide it out of the way (down the cable).
2. Either with wire cutters or a soldering iron, remove the wires from the mono plug.
3. Replace the mono plug cover with the stereo plug cover on the mono foot switch cable.
4. Solder the “hot” wire (the insulated wire in the center of the cable) to the tip connector, and the ground (shield) wire to the sleeve on the stereo plug as shown in the diagram.
5. Screw the stereo plug cover onto the stereo plug to complete the modification.

HOT MODS!

Build a Splitter Box to Merge Two Mono Foot Switches into One Stereo Jack

The advantage of this modification is that it will allow you to make two mono foot switches function as one stereo foot switch.



Tools/supplies required:

- soldering iron
- solder
- wire cutters
- drill and drill bits
- one plastic housing assembly (must be large enough to mount three jacks)
- one stereo jack
- two mono jacks
- shielded wire
- 1/4" stereo-to-stereo cable

1. Drill three holes in the housing assembly and mount the stereo and mono jacks.
2. Solder a wire from the tip of the left mono jack to the ring of the stereo jack.
3. Solder a wire from the tip of the right mono jack to the tip of the stereo jack.
4. Solder a wire(s) connecting the sleeves of all three jacks.
5. Connect the mono foot switch(es) to the mono jacks.
6. Connect the stereo-to-stereo cable between the stereo jack and either Foot Switch jack.
7. You might want to mark the housing assembly to easily identify the jacks.

Tip: By doubling the above instructions, you could build a splitter box to merge four mono foot switches into two stereo jacks, for maximum ZR-76 control!

Using Headphones with the ZR-76

Headphones can be used with the ZR-76 when connected to the rear panel 1/4" stereo Phones jack to listen to the keyboard in stereo. The signals going to this jack are the same signals that appear at the main output jacks, even if they are not connected. The main outputs are mapped to the stereo headphone as follows: Main Out Left is mostly to the left; Main Out Right is mostly to the right. The outputs are not routed hard left and right to the headphone jack, to provide a “mixed stereo” signal:

Headphones



Headphone volume is controlled by the Master Volume slider. Plugging headphones into the Phones jack does not turn off the audio in the outputs.

Warning: The headphone output circuit is designed to minimize the volume differences between low and high impedance headphones. Because some headphones are more efficient than others, make sure you set the Master Volume slider accordingly—high output volume levels could damage your hearing.

Sending the Aux Signals to the Headphones

Since the headphone jack always mirrors the Main Output jacks, the easiest way to send the Aux signals to the headphones is to route the Aux signals to the Main Outputs. Here’s how:

To Route the Aux Signals to the Main Outputs:

1. Press the System button.
2. Using the Parameter knob, locate the “AuxToMainOuts” parameter.
3. Turn the Value knob, or press the up and down arrow buttons to select “AuxToMainOuts=Always.”

Now whatever was routed to the Aux jacks is now being sent to the Main Outputs, and therefore, can be heard in the headphones.

Note: Remember to reset the System “AuxToMainOuts” parameter if you do not want to send the aux signals to the main outputs.

Error/Informational Messages

The following error/informational messages are organized alphabetically.

16 Track Recorder Messages

Add track parameters to track #?	<p>This appears when the selected sequence has had its track #'s and MIDI channel #'s aligned (i.e., "Align MIDI channels to track numbers" has been performed, and the track contains a GM sound), but the selected track does not yet contain track parameters. This prompt appears when you:</p> <ul style="list-style-type: none"> - Turn the left knob on the Track select page. - Turn the Mix knob - Turn the Pan knob - Press the Mixdown/FX Routing button <p>Answering No or Yes will re-display the track select page.</p>
Align MIDI channels to track numbers?	<p>This appears when the selected sequence has not had its tracks/channels aligned. This prompt appears when you:</p> <ul style="list-style-type: none"> - Press a track button - Press Enter from the SoundFinder Send To page (which always sends to the current song) - Press Enter from the Idea Pad Send To page when Send To=Current Song <p>Pressing Yes will move all the data around to make track numbers and channel numbers the same, add track parameters to the selected track, and add the sequence name, the sequence insert effect, and the ability to store the Region settings to the sequence as a SysEx. The next available empty track will become the selected track; if there is no available empty track, pressing Enter will do nothing.</p>
Can't append to an empty track!	<p>This appears when you try to append a track to another track on which nothing has been recorded.</p>
Can't change FX when playlist is active!	<p>This appears when you try to change the Insert Effect or track routing with an active playlist.</p>
Can't copy a rhythm track to itself!	<p>When performing the Track Copy command on a rhythm track, if you try to select the Dest Part to be the same as the current and press Enter on that page, this message will appear.</p>
Can't copy playlist! Select a seq first!	<p>This appears when you press the the Song Editor copy button with an active playlist.</p>
Can't copy when playlist is active!	<p>This appears when you press the 16 Track Recorder Copy button with an active playlist.</p>
Can't edit drum kit on rhythm track!	<p>This appears when you try to edit a drum key on the rhythm drum kit on track 10.</p>
Can't edit multiple time signatures!	<p>If a sequence has more than one time signature, attempting to edit the time signature value on the sequence select page will show this message. The displayed time signature value is read only.</p>
Can't erase when playlist is active!	<p>This appears when you press the 16 Track Recorder Erase button with an active playlist.</p>
Can't locate when playlist is active!	<p>This appears when the sequencer is not playing, and you press the 16 Track Recorder Stop button with an active playlist.</p>
Can't loop when playlist is active!	<p>This appears when you press the Loop button with an active playlist.</p>
Can't mix when playlist is active!	<p>This appears when you move the Mix knob with an active playlist.</p>
Can't mute when playlist is active!	<p>This appears when you press the Mute button with an active playlist.</p>
Can't Pan when playlist is active!	<p>This appears when you move the Pan knob with an active playlist.</p>

Can't quantize track rhythm playback!	When a Rhythm is on track 10, the 16 Track Recorder Quantize function will only quantize any note data that exists on the track; it will not quantize the rhythm playback, and will not quantize events that control rhythm playback (start/stop/fill/var). If there is a rhythm on track 10, but there are no note events on track 10, pressing the 16 Track Recorder Quantize button will display this momentary error message.
Can't quantize when playlist is active!	This appears when you press the 16 Track Recorder Quantize button with an active playlist.
Can't record when playlist is active!	This appears when you press the 16 Track Recorder Record button with an active playlist.
Can't rename an empty sequence!	When you try to rename a nameless, empty sequence that has no sounds assigned to any tracks, this error message is displayed.
Can't smooth step! Step #4 = Bank1: D	If there is insufficient RAM to play all playlist steps seamlessly, and you still go ahead and build the playlist even though it cannot be smoothed, the ZR will tell you which steps cannot be smoothed by timed messages similar to this (step numbers and bank locations will vary).
Can't solo when playlist is active!	This appears when you press the Solo button with an active playlist.
No playlist defined! Hold to define one.	This message is displayed when the Playlist button is pressed and released and no Playlist has been defined.
No seqs to select!	This appears when there are no sequences in the currently selected song, and you press the Playlist button.
Not enough memory to finish alignment!	This error message is displayed if the aligning of tracks has begun, but there's insufficient memory to complete the process. Tip: We recommend that when an SMF that contains either 1) multiple MIDI channels per track, 2) multiple tracks with the same MIDI channel, or 3) more than 16 tracks is loaded, sequencer memory should be empty to give the aligning process the highest odds for success.
Press STOP first!	This appears in several situations: <ul style="list-style-type: none"> • when you press the Bank button and the playlist is selected, and playing. • when you attempt to change the time signature of a sequence while it's playing • while the sequencer is running, if you press: <ul style="list-style-type: none"> 16 Track Recorder Edit 16 Track Recorder Copy 16 Track Recorder Erase 16 Track Recorder Quantize Song Editor Copy Song Editor Erase Song Editor Misc. Song Editor Select Song Song Editor New Song Song Editor Song Playlist • Any sequence button except for the selected one
RAM low! Playlist not smooth. Proceed?	This prompt is displayed when there is insufficient RAM to play all playlist steps seamlessly.
Recording stopped! Out of song memory.	This appears when you run out of sequencer memory while recording.
Replace contents of rhythm & target trk?	After aligning tracks on a sequence as the result of doing a Send to Track from SoundFinder (or the Idea Pad), if there is something recorded on both the target track, and track 10 (a rhythm, or a normal track), this is displayed.
Replace contents of rhythm track?	After aligning tracks on a sequence as the result of doing a Send to Track from the Drum Machine, if track 10 contains data, this is displayed.
Replace rhythm from Drum Machine only!	This message is displayed when you attempt to change the rhythm on the rhythm track by turning the Value knob.
Replace sound on target track?	After aligning tracks on a sequence as the result of doing a Send to Track from SoundFinder (or the Idea Pad), if the target track contains data, this is displayed.
Rhythm data is not available!	When the Drum Machine cannot find the rhythm that should be in the selected rhythm location, this message will be displayed.

Select new rhythm & send to track!	Rhythms cannot be selected on track 10. This display informs you that you have to use the Drum Machine Send To function to change the rhythm on track 10.
Seq tempo/meter will be used! Proceed?	Pressing Send To Track in the Idea Pad will display this prompt after pressing a track button or after pressing Yes, if the idea was recorded with a rhythm, and the target sequence contains data on at least one track (i.e., has a tempo & time signature already), but both the target track and track 10 are empty.
Set Method to Normal for quantize params!	When the 16 Track Recorder Quantize command has Method=Deltas, and all of the subsequent parameters are no longer displayed, turning the left knob clockwise will display this message as an informational tip.
Song playlist does not have a region!	This appears when you press the Region From or To with an active playlist.
Sound not available!	When a sequence or drum pattern contains a RAM or FLASH resident sound on a track, and you erase all RAM or FLASH sounds in the librarian, pressing the track button will display this message.
Tempo read-only when playlist is active!	When the Song Playlist is selected, and the Song Editor Tempo page is displayed, the Current Tempo parameter is read-only—attempting to edit the value will display this momentary error message.
Update track params with MIDI values?	When any MIDI input has been received by the ZR-76 in sequencer mode (multi mode), on any track (the track could be defined with track params, defined without track params, or *UNDEFINED) in a sequence that has had its tracks/channels aligned, pressing any of the following controls will display this prompt: - pressing a track button - pressing the FX/Mixdown Routing button - turning the Mix knob - turning the Pan knob - pressing the Mute button - pressing the Solo button Pressing Yes will copy the last received values for all track parameters into the SysEx's that contain the track parameters in the current sequence; any tracks that were either defined without track params, or *UNDEFINED, will become defined with track parameters. Pressing No will leave the track unchanged, and will redisplay the sequence select page.

Disk/Global/Storage Messages

Bad location	This is displayed when trying to send a sound into a ROM location.
Bad MIDI file data! File can't be loaded	This appears when a corrupted .MID, .SMF, .MFF file is loaded. The ZR-76 will abort the load and show this error message.
Can only load first 100 files from disk!	The ZR floppy disk system has a file limit of 100 files. This means that you can only view the first 100 files on a disk. This momentary warning message is displayed if the disk you've inserted contains more than 100 files.
Can't close file!	This appears if a specific file on the floppy disk is corrupted and can't be closed.
Can't erase file!	This appears if try to erase a file that exists in ROM memory.
Can't format floppy!	This appears when the floppy disk is corrupted and cannot be formatted.
Can't open disk!	Interrupted disk writes (by ejecting the disk during the write cycle) shows this message.
Can't open <filename>	This appears if a specific file on the floppy disk is corrupted and can't be opened.
Can't rename file!	This appears if try to rename a file that exists in ROM memory.
Can't save more than 100 files to disk!	The ZR floppy disk system has a file limit of 100 files. This means that you can only save 100 files to disk. This error message is displayed if you try to save more than 100 files to a disk.
Couldn't find pattern to save!	This appears if you try to save a pattern that doesn't exist or that's been erased from memory.
Couldn't find preset to save!	This appears if you try to save a preset that doesn't exist or that's been erased from memory.

Couldn't find rhythm to save!	This appears if you try to save a rhythm that doesn't exist or that's been erased from memory.
Couldn't find sound to save!	This appears if you try to save a sound that doesn't exist or that's been erased from memory.
Couldn't find target preset!	This appears if you try to load a preset into a location that doesn't exist, or that's corrupted.
Couldn't find target rhythm!	This appears if you try to load a rhythm from floppy into a location that doesn't exist, or that's corrupted.
Couldn't find target sound!	This appears if you try to load a sound into a location that doesn't exist, or that's corrupted.
Disk not readable!	Ejecting the disk while loading directories displays this message.
Disk Utilities: No disk in drive!	This appears when you press the Disk Utility button when there is no disk in the drive.
Disk write-protected	If you try to process any disk command and the disk's write-protect window is open, this will be displayed.
Disk is full!	This appears when there is no more room to store information on the floppy disk.
Disk read failed!	This appears if there is corrupted data on the floppy disk during a disk load command.
Disk write failed!	If either the floppy disk or the file is corrupted, this will be displayed when trying to save the data to a floppy disk.
Disk's been changed!	This appears whenever you try to load data from a disk, and there's a different floppy disk in the drive.
Dump: <dump type> Sending...	Message to inform that the ZR-76 is transmitting MIDI SysEx.
Failed! May be hosed	Message to inform you that the disk file may be corrupted.
Fatal memory error!	This appears when the ZR's memory bank becomes corrupted. Restarting the ZR should remedy the problem.
File is bigger than free memory!	This appears when there is not enough allocated memory in the ZR to load a file from the floppy disk.
File is too big	This appears when you've exceeded the available memory for your file.
File with same name exists! Overwrite?	This appears when a file of the same name exists on a disk and a disk save is invoked.
Insufficient memory!	When there is not enough memory to complete an operation, this is displayed.
Load from disk? No disk in drive!	This appears when you press the Disk Load button when there is no disk in the drive.
Load from disk? No readable files!	After pressing Disk Load, if no legal files are found on a disk, this error message will be displayed on the bottom line of the Load page.
Not a valid preset file!	This appears when you try to load in preset data that is corrupted, or data that was saved improperly.
Not a valid program file!	This appears when you try to load in sound data that is corrupted, or data that was saved improperly.
Not a valid rhythm file!	This appears when you try to load in rhythm data that is corrupted, or data that was saved improperly.

Not enough FLASH memory!	This appears when the information you are trying to save exceeds the available allocated memory.
Not enough FLASH rhythm memory!	This appears when the information you are trying to save exceeds the available allocated memory.
Not enough memory for this RAM setup!	This appears when the information you are trying to save exceeds the available allocated memory.
Pattern is too big	This appears when you've exceeded the available memory for your pattern.
RCU: <message type> Receiving <msg type>	Message to inform that the ZR-76 is receiving MIDI SysEx.
RCU: <message type> Successful!	Message to inform that MIDI SysEx reception is complete.
Save to disk? No disk in drive!	This appears when you press the Disk Save button when there is no disk in the drive.
Sorry! No memory for sound sent from MIDI	Message to inform that the ZR-76 does not have sufficient memory to store the single sound SysEx message that was sent to it.
Turn Layer off to save to disk!	This appears if you try to save the current sound to disk and layer is on. Saving a single sound to disk will only save the primary sound in SoundFinder mode.
Turn Split&Layer off to save to disk!	This appears if you try to save the current sound to disk and split and layer are on. Saving a single sound to disk will only save the primary sound in SoundFinder mode.
Turn Split off to save to disk!	This appears if you try to save the current sound to disk and split is on. Saving a single sound to disk will only save the primary sound in SoundFinder mode.

SoundFinder Message

Too few free layers to save as a sound!

This is displayed when trying to save a split or layered sound to the internal FLASH RAM when there is not enough memory available. To remedy the problem, press the Librarian button until the display shows "Erase memory item?" Press the Yes button. The ZR will then display "Sound : XXX". Use the up/down arrows or the Value knob to select which FLASH sounds you want to erase from memory, thereby freeing memory for your sound. Press the Yes button to begin the process of creating more space for your custom, split or layered sounds.

Global Error Message

Sorry! An Unexpected Event xxx occurred.

Message to indicate that the ZR-76 has experienced a fatal error. This will cause the ZR-76 to soft restart after displaying the message for about three seconds. The bottom line shows the event code number (000 to 256).

**Unknown error
Error code = xxx**

This also indicates that the ZR-76 has experienced a fatal error. This will cause the ZR-76 to soft restart after displaying the message for about three seconds. The bottom line shows the error code number (000 to 256).

Glossary

Active	The state of a drum kit zone when it's audible. Also the audible state of the phrase a zone plays in a variation or fill. The opposite of "Muted."
Add Mode	A mode of recording in the 16 Track Recorder where recording new material on a previously recorded track superimposes the new music on top of the old without erasing it. See "Recording Modes."
Alt. FX Bus	The "second-choice" effect bus routing for sounds routed to the insert effect bus. Also an alternate term for the effect bus routing parameter of any sound not routed to the insert bus. In the ZR Unisyn editor, the Alt. FX Bus is the means by which a sound's effect routing is programmed when it's not being routed to the insert or dry effect busses.
Ambience	The sound of the physical space—real or simulated—in which a sound occurs.
Amplify	To increase the level, or loudness, of a signal.
Amplitude	The level, or loudness, of a signal.
AO-C8	The MIDI pitch range of an 88-note keyboard. The lowest note is an A, designated as "Ao," and the highest note, a C, is referred to as "C8." The numbers increment at each C—Ao is followed by A#o, Bo and C1, for example. Middle C is "C4." Most MIDI manufacturers use this scheme; however, a few manufacturers refer to Middle C as "C3."
Append	To attach one track to the end of another. One of the 16 Track Recorder Copy functions.
Attenuate	To decrease the level, or loudness, of a signal.
Balanced-Line Input	Three-conductor balanced lines are used to interconnect various pieces of equipment, and are often used in professional studios. These balanced-line inputs tend to reject hum and/or radio frequency interference. The ZR-76 has balanced-line outputs, for connecting with professional balanced-line input studio equipment.
Bandwidth	The overall frequency spectrum of a sound or effect, measured in Hertz (Hz) and kiloHertz (kHz).
Bank	A collection of sounds, presets or rhythms. The ZR-76 contains ROM sound banks and rhythm banks, FLASH sound, preset and rhythm banks, and can contain RAM sound and rhythm banks. Each sound bank in the ZR-76 can hold up to 361 sound layers; each rhythm bank is 80,000 bytes in size; the FLASH preset bank can hold 32 presets. Sound banks may be selected via MIDI through the use of MIDI Bank Select messages.
Bank Select	A type of MIDI message that can select sound banks in MIDI devices that store sounds in bank groupings and support Bank Select messages. The ZR-76 responds to Bank Select messages, and transmit them when a MIDI-OUT sound is selected.
Base MIDI Channel	The MIDI channel on which SoundFinder receives MIDI data. Also the channel upon which SoundFinder transmits MIDI when a non-MIDI-OUT sound is selected.
C4	The MIDI designation for Middle C on a MIDI keyboard or controller. Note: some MIDI manufacturers refer to Middle C as "C3."
Chorusing	An audio effect that results from the mixing together of a source signal with slightly delayed copies of itself where the delay time of the copies is fluctuating in a regular, rhythmic fashion. The timing variations create phasing anomalies that cause the source signal to swirl, and sound wider and/or bigger.
Click	A term for the metronome in the ZR's 16 Track Recorder; not necessarily a description of the sound the metronome uses.
Clock	1/384th of a quarter note in the ZR-76; the ZR's finest metric value. Locations within sequences are measured in bars, beats and clocks.
Clock Source	A built-in reference pulse generated by the ZR-76 for the synchronizing of LFOs, delays and noise modulators used in sounds and effects. The rate of the pulse is derived from the 16 Track Recorder's tempo, or the Drum Machine's tempo when in SoundFinder. The clock source can also be synchronized to received MIDI clocks.
Compression	A sound conditioning process that reduces a source signal's dynamic range. Loud signals get softer and softer signals get louder.
Compression Ratio	The amount by which a signal is compressed, expressed as a ratio. For example, a 4 to 1 compression ratio will result in an increase of 1dB in output level for every 4dB increase in input level. At high ratios (such as 20:1 and above), the compressor acts as a limiter.
Computer	A personal computer typically using either the Mac OS or an IBM-compatible operating system (such as Windows 3.1 or Windows 95). To be used in conjunction with a ZR-76, a personal computer must be able to mount DOS-formatted 3.5" floppy disks.

Countoff	Beats heard before recording begins that allow a musician to become accustomed with the tempo of the music about to be recorded.
CTRL	Synonym for “system controller.”
Cutoff Frequency	The filter setting that determines which frequencies a filter will leave un-attenuated. In a low-pass filter, the cutoff frequency setting determines the highest frequency that will be allowed to pass through the filter. In a high-pass filter, it determines the lowest frequency.
Cycle	A sound wave’s single journey from exerting a greater amount of air pressure to a lesser one and back to its starting point. The number of cycles per second determines the pitch—or frequency—of the sound wave. The number of cycles per second is expressed in Hertz (Hz) and kiloHertz (kHz).
Damping	A reverb parameter that determines how quickly the high-frequency content of a reverb will be reduced as it decays to silence.
DDL	Abbreviation for “digital delay line,” an effect that creates a digital copy, or copies, of a source signal and plays it (or them) back later than the original signal. These delays can be used to create a myriad of audio effects.
Delta Quantize	A new ENSONIQ form of rhythm auto-correction, delta quantizing analyzes the spaces, or deltas, between recorded notes to ascertain the musician’s intent and corrects timing mistakes without the artifacts often introduced when using standard quantization methods. Allows the rhythmic auto-correction of tracks recorded without a metronome reference.
Diffusion	A reverb parameter used to smear a reverb’s transients in order to smooth the reverb’s sound. Low diffusion values will cause transients to appear as a series of discrete echoes, while higher values tend to increase the blurring effect for a smoother sound.
Drum Key	Any of the keys on the keyboard when a ZR-76 drum or percussion kit sound is selected. Each key in a ZR drum or percussion kit sound plays a standard ZR sound and has its own set of parameters.
Drum Kit Sound	A special type of sound program that assigns a standard sound to each key on the keyboard. Drum (and percussion) kit sounds can access up to 64 standard sounds at once.
Drum Map	A standardized selection of sounds for the drum keys in a drum or percussion kit sound.
Dry	The effect description for a sound not routed to any of the ZR’s effects.
Early Reflections (ER)	Early reflections are delayed signals that aurally suggest the size of ambient spaces. In the real world, sound bounces off surfaces it encounters—walls, ceiling and floor. Quick early reflections suggest small spaces, with these surfaces close by. Longer early reflections imply to the ear that the surfaces are farther away, and that the ambient space is therefore larger.
Edit Buffer	An area of the ZR’s memory that temporarily stores changes to a sound, preset, rhythm or track. When editing sounds, presets and rhythms, the edit buffer hold changes you’ve made until a new sound, preset or rhythm is selected, or until you save your work. After each new recording and track command in the 16 Track Recorder, the edit buffer temporarily retains the track’s previous state, allowing you to undo your most recent track procedure.
Effect	Signal processing typically applied to sounds as a final touch. Many effects simulate ambiances of a realistic or fantastic nature. Effects include reverbs, delays, choruses, flangers, phasers, distortion and so on. Every ZR-76 song offers a global chorus and a global reverb setup. Each sequence offers an insert effect. Many of the ZR-76 sounds also contain insert effects. Any sound in SoundFinder or on a track in the 16 Track Recorder can be routed to any of the ZR effects.
Effect Bus	A pathway leading to each of the effect possibilities: insert, global chorus, global reverb or dry. A sound assigned to an effect bus is processed by the effect for which the pathway is named. Synonym for “FX Bus.”
Envelopes	Devices that allow the shaping of sounds and effects.
EPROM	A memory chip found inside the ZR-76 containing the computer programming code for the ZR’s operating system. The ZR operating system requires a pair of EPROMS.
Equalization (EQ)	The process of altering the frequency content of a sound. Everything we hear is comprised of a number of sound waves occurring at the same time, at different pitches, or “frequencies.” Equalization allows you to change the volume balance of the frequencies within a sound.
Feedback	A signal routing in which the output of an effect is mixed back into the input. Feedback of a delay line is also called regeneration.
Fill	A non-repeating drum or percussion phrase typically used to set up transitions in a musical arrangement.

Filter	A device that attenuates selected frequencies within a sound or effect. For example, a high-pass filter passes all signals higher than a selected frequency, attenuating all those frequencies below it. A low-pass filter passes all signals below a selected frequency, attenuating all those frequencies above it.
Flanger	A processor that simulates the effect of two synchronized tape machines playing back the same signal, with the speed of one machine being slowed slightly by the gentle pressing on the outer shell—or flange—of one of its tape reels. This small amount of delay causes a phasing cancellation that momentarily filters out elements of the sound being processed. Changing the delay time causes the “flange” effect. In the ZR-76, flanging is achieved using interpolated digital delay lines.
FLASH	A long-lasting form of computer memory utilized in the ZR-76.
Frequency	The number of times per second that a sound wave repeats its excursion from maximum compression of air pressure to minimum compression and back to its starting point—each excursion is called a cycle. The number of cycles per second is expressed in Hertz (Hz) and kiloHertz (kHz). Lower frequencies produce lower pitches and higher frequencies produce higher pitches. Sounds are comprised of a number of sound waves of varying frequencies occurring at roughly the same time. “Frequency” may be used a shorthand for one of those sound waves, or “frequencies” for a group of them.
FX	Abbreviation for “effect.” See “Effect.”
FX Bus	Synonym for “Effect Bus.”
Gate (Noise Gate)	A device that attenuates a source signal falling below a pre-determined volume threshold. A useful tool in eliminating noise and controlling signals that use an effect. Ambiences such as reverb may be gated to produce an extreme and artificial-sounding decay.
General MIDI	A set of standards providing a uniform palette of sounds, drum kits and effects to be used in the creation of MIDI recordings.
Global	“Global” has two meanings in the ZR-76: 1. parameters that affect the operations on the entire ZR-76; these are accessed by pressing the System button in the Disk/Global section of the ZR’s front panel. 2. a description of the chorus and reverb effects universally available in every ZR song.
Hysteresis	The property of a system whose behavior is determined by the level, direction and history of a controlling signal. Used in the ZR-76 to provide greater control over gating, triggering and compression.
Idea	A piece of music played on the ZR’s keyboard, and/or produced by the ZR’s Drum Machine, that’s been captured by the Idea Pad.
Layer	“Layer” has two usages in the ZR-76: 1. a set of digital sound recordings—or samples—that span the entire MIDI pitch range, and their associated parameters. Up to 16 of these can be combined to create a standard ZR-76 sound (split and/or layer single sounds can have more than 16). 2. a function available in SoundFinder that allows you to stack two sounds on top of each other so that when a key is pressed, both sounds are heard.
LED	LEDs (Light Emitting Diodes) are small solid-state lamps found embedded in a number of the ZR’s buttons. Under normal conditions, they have a virtually unlimited lifetime.
LFO	An oscillator that generates sound waves at a frequency below the audio spectrum. These low-frequency waves can modulate audible sound waves to produce vibrato, tremolo, and other effects. They can also be employed to produce rhythmic changes in various effects.
LFO Depth	The amount of LFO modulation.
LFO Rate	The speed at which an LFO wave completes a single cycle.
Limiter	A device that will prevent a source signal from exceeding a pre-set amplitude threshold. A limiter can be thought of as a compressor with an infinite compression ratio.
Loop Length	The length, in bars, of a Drum Machine variation; when the variation plays to its end, it starts playing again from its beginning without stopping.
LSB	Many MIDI controllers use a pair of MIDI messages. The first—the MSB—for “Most Significant Byte”—chooses among 128 sets of MIDI values, each of which contains 128 values of its own. The LSB—for “Least Significant Byte”—selects one of the 128 values contained in each MSB set. The ZR-76 MIDI Implementation Chart in this chapter provides information on the proper use of MSB/LSB values with various MIDI controllers and the ZR-76.
Merge	To combine the data on one track in the 16 Track Recorder with the data of another. One of the 16 Track Recorder Copy functions.
MIDI	Musical Instrument Digital Interface. A communication protocol for musical instruments. MIDI has expanded the ability of the electronic musician to interconnect products from different manufacturers through the use of this single communication protocol. See “What Is MIDI?” elsewhere in this chapter for more information.

MIDI Controller	“MIDI controller” has two different usages in the ZR-76: 1. a physical device that produces MIDI messages, including the ZR’s keyboard, pitch bend wheel, mod wheel and foot controls, as well as external devices that can be used to access the ZR’s sounds. 2. the types of messages produced by devices such as those described in the first meaning, including Pitch Bend messages, Volume messages and many others. MIDI controllers are referred to by name and/or number. The ZR-76 responds to all MIDI controller messages.
MIDI In	Theon the ZR’s rear panel that receives MIDI data transmitted to the ZR from an external MIDI device.
MIDI Merger	A device that allows a MIDI instrument to receive MIDI data from multiple transmitting instruments through a single MIDI In jack by combining all of the instruments’ data into a single MIDI data stream. MIDI Mergers are available as self-contained devices; many MIDI patchbays also offer built-in MIDI merging. See “MIDI Patchbay.”
MIDI Out	The jack on the ZR’s rear panel that transmits MIDI data from the ZR to an external MIDI device.
MIDI Thru	The jack on the ZR’s rear panel that passes along MIDI data received by the ZR’s MIDI In jack.
Modulation	Any change made to a sound, sound wave or effect, either through pre-programmed automatic devices or real-time manual manipulation.
Modulator	Any device, real or software-based, that can be used to change a sound, sound wave or effect.
MSB	Many MIDI controllers use a pair of MIDI messages. The first—the MSB—for “Most Significant Byte”—chooses among 128 sets of MIDI values, each of which contains 128 values of its own. The LSB—for “Least Significant Byte”—selects one of the 128 values contained in each MSB set. The ZR-76 MIDI Implementation Chart in this chapter provides information on the proper use of MSB/LSB values with various MIDI controllers and the ZR-76.
Muted	The state of a drum kit zone when it’s silenced, and the inaudible state of a phrase played by a zone in a variation or fill. The opposite of “active.” Also the state of a track in the 16 Track Recorder when the FX/Mixdown Mute button has been pressed in order to silence it.
Noise	A software mechanism that produces a randomly fluctuating level, used to create random modulation in a sound or effect.
Normal LFO	A ZR-76 LFO whose rate is set to a fixed time value.
Overdubbing	Adding a new recording to material previously recorded on the track. In the ZR-76, this is accomplished through the use of the Add recording mode. Historically, this was achieved by making a copy of tape recording as new recording occurred, and combining both elements into a new recording.
Pan	The apparent location of a sound relative to the left and right speakers used in a stereophonic sound system.
Parameter	Any setting of the ZR-76 that can be changed or modified.
Parametric EQ	An equalizer for targeting specific frequency regions in a sound with pinpoint accuracy.
Paste	To copy data from one track to another, replacing any data already on the track. One of the 16 Track Recorder Copy functions.
Patchbay	A central junction box for audio or MIDI cables. A patchbay allows the interconnection of instruments, consoles, recorders and effect devices—and the changing of those connections—through electronic switching, eliminating the need for physically unplugging and re-plugging cables.
Phaser	Originally conceived as an approximation to the flange effect. All-pass filters are used in place of the delay lines. All-pass filters introduce delay by modifying signal phase, hence the name.
Pick-up	A few lead-in notes that occur prior to the beginning of a composition, or prior to a section of a composition.
Pitch Table	A set of tuning instructions that tell the ZR-76 what pitch to sound in response to the receipt of MIDI note-ons.
Portamento	The gliding in pitch of one note to another.
Pre-roll	To listen to music from a point prior to the location at which recording will begin, in order to allow a musician to become accustomed to the music before recording commences. Similar in use to a countoff.
Program Change	A MIDI message that instructs the ZR-76 to select the sound whose Program Change number corresponds to the Program Change’s numerical value.

Punching	To re-record a portion of a track. To “punch in” is to start recording somewhere in the middle of a track; to “punch out” is to stop recording somewhere in the middle of a track.
Q	A bandwidth control that determines the width of the resonant peak at the center of the frequency band. This is equal to the cutoff frequency divided by the bandwidth. By raising the Q value, a narrower bandwidth is selected.
Quantize	To align the notes in a track to multiples of a selected metric value. For example, to quantize a track to quarter notes is to move each note in a track to its nearest quarter note.
Quantize To	The metric value to which notes on a track in the ZR-76 will be aligned when quantized.
RAM	For “Random Access Memory.” A very fast type of temporary computer memory used in the ZR-76.
Recording Modes	The various ways that recording can occur in the 16 Track Recorder. In Replace mode, newly recorded music replaces music already on the selected track; in Add mode, new music is combined with music already on the track; Track Mix mode allows the recording of Mix and Pan knob movements onto the selected track.
Regeneration	A signal routing in which some of the output is mixed back into the input. The feedback of a delay line is also called regeneration.
Region	A section of a sequence determined by the settings of the Region From and Region To parameters. A sequence’s region is the portion of the sequence that will be heard when the sequence is played back, and can determine an area of the sequence to be processed by the 16 Track Recorder Copy, Erase and Quantize functions.
Region From	The start point of a region, as in, “the region goes from here to here.”
Region To	The end point of a region, as in, “the region goes from here to here.”
Release Velocity	The speed at which you let go of keys on a keyboard. Release velocity sensitivity can be used as a modulator of ZR-76 sounds.
Replace Mode	A mode of recording in the 16 Track Recorder where new material recorded on a track replaces music previously recorded on the track. See “Recording Modes.”
Resonant Peak	The frequency selected in an equalizer (EQ) or filter. Q may be as narrow as a single frequency or broadened, using a Q control, to include adjacent frequencies.
Reverb	Multiple echoes and reflections that combine to create an ambient effect that fades to silence in imitation of the manner in which sound naturally decays. Different devices have been used to simulate these ambiances: springs, plates, tubes and chambers. The ZR-76 uses digital processing to create new environments and simulate these classic ambiances.
Rhythm	A collection of complementary Drum Machine variations and fills. Each rhythm uses a stylistically appropriate drum kit sound.
Rhythm Name	The name of an individual Drum Machine rhythm.
Rhythm Track	A special track in the 16 Track Recorder that can play a rhythm from the Drum Machine, and can record drum or percussion notes played on the selected rhythm’s drum kit.
Rhythm Type	One of the categories into which Drum Machine rhythms are sorted.
RhythmFinder	The method for selecting Drum Machine rhythms. Rhythms can be selected using the Rhythm Type and Rhythm Name knobs, or by holding down the Select Rhythm button and spelling the name of the desired rhythm on the ZR’s keyboard.
ROM	For “Read-Only Memory.” A type of permanent computer memory used in the ZR-76. ROM memory contains sounds and rhythms programmed by ENSONIQ.
RPN	For “Registered Parameter,” a set of MIDI Controller values used for the adjustment of various pitch bend and tuning parameters.
Sample	A digital recording used as the basic building block of ZR-76 sounds.
Scoop	To selectively erase notes out of a track. Notes can be scooped out one-by-one, or all of a specified note’s occurrences in a track can be scooped out at once.
Sequence	A piece of music recorded as MIDI data.
Sequencer	A device that records and plays back MIDI data.
Signal	A general term for sound.
Silence	
SMF	The abbreviation for “Standard MIDI File.” See “Standard MIDI File.”
Song	In the ZR-76, a song is a collection of up to 24 sequences, a song playlist if one has been created, and a set of global chorus and global reverb settings.

Song Memory	The area of RAM memory in which the ZR-76 holds song data. The ZR-76 song memory can hold as many songs as available memory allows. There is always a song active and available in the ZR's Song Editor.
Song Playlist	A list of sequences arranged into a song structure. In the ZR-76, to hear a completed song, you play its song playlist.
Sound	A sound in the ZR-76 is a collection of one or more layers of samples. Most standard ZR-76 sounds have a maximum of 16 layers, though split and/or layer single sounds may have more. Drum and percussion kit sounds are a special type of sound in that they contain no layers of their own—each key uses a separate sound.
Sound Name	The name of an individual ZR-76 sound.
Sound Type	One of the categories into which sounds are sorted.
Sound Wave	A periodic disturbance in air pressure that causes the eardrum to vibrate in response.
SoundFinder	SoundFinder has two meanings in the ZR-76: 1. The method by which sounds (and presets) are selected in the ZR-76. You can select sounds using the Sound Type and Sound Name knobs, or by holding down the Select Sound button and spelling the desired sound's name on the ZR's keyboard. 2. The area in the ZR-76 where sounds, splits, layers and presets are created, edited and used; also, in a sense, the arena in which the Idea Pad and Drum Machine operate.
Split	A combination of two sounds, each played from its own area of the ZR's keyboard. Splits are created by pressing the Split button in SoundFinder.
Split Key	The key on the ZR's keyboard below which the split sound is heard in SoundFinder.
Standard MIDI File	A disk file containing a sequence recorded using the Standard MIDI File format. Standard MIDI File sequences can be played by any sequencer of any brand or type that supports the Standard MIDI File format.
Standard Sound	A ZR-76 sound program that is heard over the entire keyboard range. Standard sounds typically have up to 16 sound layers, though split and/or layer single sounds may have more.
Sync LFO	A ZR-76 LFO whose rate is synchronized to the ZR's clock source.
SysCTRL	Synonym for "system controller."
System Controller	Any of four assignable MIDI controllers available in the ZR-76, useful for enabling system-wide ZR response to non-standard MIDI controllers. Each system controller may be set to any MIDI controller number (000-127), and may be used in the modulation of sounds and effects. Each system controller may also be referred to as "SysCTRL" or "CTRL."
Template	A collection, stored in the ZR's FLASH memory, of 16 Track Recorder quantization settings.
Track	A receptacle for recorded MIDI data. Each musical performance recorded in the ZR-76 is recorded on a track. Each sequence in the 16 Track Recorder contains 16 tracks.
Track Mix Mode	A method of recording in the 16 Track Recorder that allows you to record Mix and Pan knob movements for a track onto the track. See "Recording Modes."
Transient	A quick, momentary burst of high-amplitude sound.
Value	A ZR-76 parameter setting.
Variation	A repeating drum or percussion phrase used in the Drum Machine.
Velocity	The force—interpreted in MIDI terms as speed—with which you strike keys on a keyboard. Velocity sensitivity can be used as a modulator of ZR-76 sounds and effects.
Voltage-Controlled Filter	A filter whose cutoff frequency is modulated by input voltage. Useful for creating distortion, wah wah, and envelope (auto) wah effects.
XLR Connector	A type of professional audio connector, with three pins: pin 1 is the ground reference, pin 2 carries the "hot" signal, and pin 3 carries the anti-phase "cold" signal. Designed for use with balanced inputs and outputs.
Zone	A range of keys on the keyboard within a drum kit sound that's allocated for the reproduction of an instrument (or type of instrument) in a real drum kit.

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