

# REFERENCE

## EDIT OPERATION SUMMARY

The instructions below are a brief summary of the editing operations of the P-500. Unless indicated otherwise (in their respective parameter pages), all parameters follow the editing conventions shown below.

### Entering an Edit Mode

#### Voice Edit Mode

Select a preset Voice (in the Voice Play mode) and press **EDIT**.

#### Performance Edit Mode

Select a Performance (in the Performance Play mode) and press **EDIT**.

#### Chain Edit Mode

Select a Chain (in the Chain Play mode) and press **EDIT**. (Or, press **CHAIN** while in the Voice/Performance Edit mode.)

### Selecting Edit Pages

While the **EDIT** button lamp is lit or flashing in the selected Voice or Performance Edit mode:

Press the Voice/Performance Select button corresponding to the group of pages you wish to edit. For example, to call up the **Reverb** pages, press the button labeled **REVERB** in green.

### Selecting Other Pages in the Group

- Simultaneously hold down the same Voice/Performance Select button (for example, **REVERB**) and press the Function button corresponding to the desired Edit page in the LCD display.

or:

- Use the **PAGE**  $\leftarrow/\rightarrow$  buttons. These can also be used to select any of the other Edit pages.

### Selecting and Editing Parameters

- 1 Select a parameter by pressing the appropriate Function button (for example, **[F3]**).
- 2 Edit the parameter value by using the **-1/+1** buttons or the **DATA ENTRY** slider.

Some parameters must be turned on before editing. Examples of the two basic types are shown here:

#### Pages with a Sw (Switch) parameter:

(**REVERB** — **[F1]: Reverb - Page 1**)



Press **[F3]** to select **Sw**, then use the **-1/+1** buttons or the **DATA ENTRY** slider to set it to **on**.

#### Pages with separate off/on parameters:

(**VOLUME** — **[F1]: Volume**)



Select the parameter you wish to edit (in this example, with **[F3]**, **[F5]**, **[F6]**, or **[F8]**), then turn the selected parameter on by pressing **[F2]**. (Use **[F1]** to turn it off.)

#### NOTE

Setting a parameter to **off** does not cancel the last setting made. That setting is still remembered by the P-500 and can be called up simply by setting the parameter to **on** again.

#### NOTE

Keep in mind that "B"-type parameters will be in effect only when the Dual or Split modes are selected. When in the Single mode, a dashed line (---) appears in the "B" portion of the display, indicating that the "B" parameter is inactive.

### Reset

Parameter values can be reset to their original default conditions by simultaneously pressing both **-1/+1** buttons. (See page 35 for more information.)

### Parameter Grouping

Different parameters of the same page can be grouped for simultaneous editing by simultaneously pressing the corresponding Function buttons. (See page 36 for more information.) Parameters that can be used with this function are indicated in the respective sections.

### Compare

Pressing the **EDIT** button during editing lets you compare the changes you've made with the settings of the original Voice or Performance. (See page 37 for more information.)

### Storing

Remember that all edits you make in the Voice Edit or Performance Edit modes are temporary. To save your edits to memory, use the Store operation. (To call up the Store operation, press the **STORE** button; see pages 38, 41 for more information.)

### Initialize

You can replace the settings you've created with the original factory settings by using the **INIT** (Initialize) function in the Utility mode. (See page 89 for more information.)

# EDIT PARAMETERS

## EDIT PARAMETERS

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\* Only those parameters marked with an asterisk (\*) can be stored to a Voice (the "PresetVoices" destination) in the Voice Edit mode. Those marked with a double asterisk (\*\*) indicate that only the MIDI A Path parameters in the page can be stored to a Voice. Editing of any of the other parameters will result in all edits automatically being stored as Performance data, when the Store operation is executed.

### NOTE

When you hold down one of the Edit page buttons, an asterisk also appears in the LCD display next to the Voice-storable parameters. For example, when you hold down VOLUME, an asterisk appears next to "F1:VOLUME" in the LCD display.

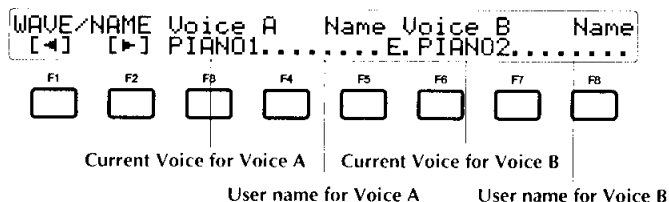
# TG (TONE GENERATOR)

The TG parameters let you determine the Voices to be used and change the basic sound elements of the Voices, such as the sound envelope, vibrato settings, panning position, and equalization.

## [F1]: Wave/Name

With these parameters, you can assign the Voices to be used for Voice A and Voice B, and give names to them.

### Display



**Parameter Grouping:** [F3] and [F6], or [F4]/[F5] and [F7]/[F8] can be grouped for simultaneous editing.

**[F1]:** Moves cursor one space left (for selecting a character in **Name** parameter).

**[F2]:** Moves cursor one space right (for selecting a character in **Name** parameter).

### NOTE

When [F4]/[F5] and [F7]/[F8] are grouped, these move the cursor on both Voice A and Voice B Name parameters.

### [F3] Voice A:

For assigning an internal Voice to Voice A.

### Settings:

PIANO1 - PIANO4, E.PIANO 1 - E.PIANO 5, CLAVI, CLTONE (CLAVINOVA TONE)

### [F4] Name:

For giving a name (up to eight characters) to Voice A. Use [F1], [F2] to move cursor, then **DATA ENTRY** slider or -1/+1 buttons to change character at cursor.

### Available Characters:

<b>Numbers:</b>	<b>Letters:</b>
0-9	A-Z a-z
<b>Miscellaneous:</b>	
! " # \$ % & ' ( ) * + , - . /	
: ; < = > ? @	
[ \ ] ^ _ ` {   } ~	

### [F6] Voice B:

For assigning an internal Voice to Voice B.

### Settings:

(Same as in [F3] Voice A.)

### [F7] Name:

For giving a name to Voice B. Use [F1], [F2] to move cursor, then **DATA ENTRY** slider or -1/+1 buttons to change character at cursor.

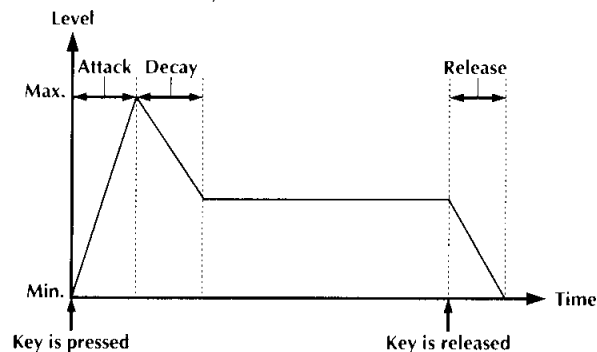
### Available Characters:

(Same as in [F4] Name.)

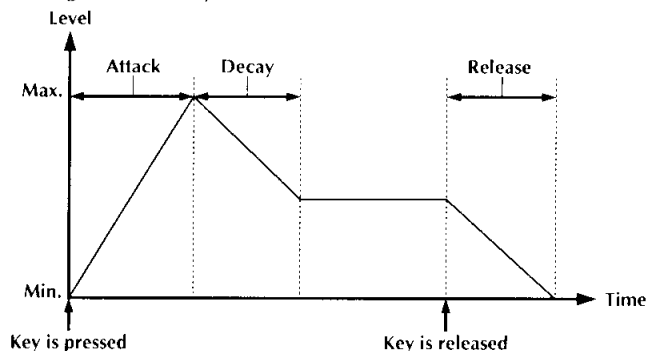
## [F2]: EG (Envelope Generator)

The EG parameters allow you to shape the sound of each Voice, or, in other words, set how the level of the sound changes over time. The relationship of the three parameters — Attack, Decay, and Release — are shown in the illustration below:

### 1) Short Attack, Decay, Release times:



### 2) Long Attack, Decay, Release times:



Even though the key is held for the same length of time in both examples, the sound of the second example slowly reaches full volume and decays over a longer time. It also sustains longer after the key is released.

REFERENCE

## NOTE

Depending on the Voice that is selected, the EG settings here may have little audible effect. This may be especially true when trying to extend the Decay and Release parameters on a Voice that inherently has short decay and release times.

Also, remember that the EG parameters affect each other — and are affected by how long a key on the keyboard is held. For example, if Decay is set to a low value and the key is held for a long time, you may not be able to hear changes that you make to the Release parameter.

## Display



Indicates currently selected parameter. Envelope curve is shown in graphic next to value.

**Parameter Grouping:** [F3] and [F6], or [F4] and [F7], or [F5] and [F8] can be grouped for simultaneous editing.

### [F3] A (Voice A Attack):

For setting the Attack of Voice A, or how long it takes for the sound of the Voice to reach full volume when a key is pressed.

**Range:** 1 (slow attack) - 8 (instantaneous attack)

### [F4] D (Voice A Decay):

For setting the Decay of Voice A, or how rapidly the sound of the Voice dies out as a key is held.

**Range:** 1 (sound is held until key release) - 8 (sound decays quickly as note is held)

### [F5] R (Voice A Release):

For setting the Release of Voice A, or how long the sound of the Voice sustains after a key is released.

**Range:** 1 (slow release) - 8 (instantaneous release)

### [F6] A (Voice B Attack):

(Same as for Voice A.)

### [F7] D (Voice B Decay):

(Same as for Voice A.)

### [F8] R (Voice B Release):

(Same as for Voice A.)

## HINT

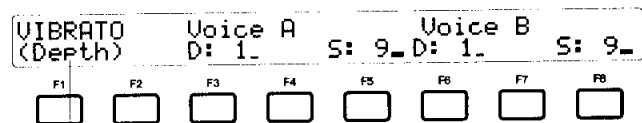
The EG parameters give you powerful tools for completely changing the character of the Voices. Even familiar Voices like the acoustic piano sounds can take on a whole new life with different EG settings. Start exploring by trying some of the following setting suggestions on the PIANO 1 Voice:

- **To mimic the slow attack sound of an organ or a strings section:**  
Set the Attack to 2 or 3, Decay to 4, and Release to 5.
- **To get a muted string attack, like that of a banjo or a violin being played pizzicato:**  
Set the Attack and Decay to 8, and Release to 6. (Also, try longer Release settings, such as 2 or 1, for a slight sustain.)
- **For a longer sustain, without having to use the damper pedal:**  
Set the Attack to 8, and Decay and Release to 1. (This setting is good for lyrical, New Age-type piano; play around with the Attack setting as well for different effects.)
- **For an organ or Clavi-type sound, where the sound cuts off abruptly when the key is released:**  
Set the Attack to 8, Decay to 1, and Release to 8.

## [F3]: Vibrato

Vibrato produces a quavering, vibrating sound in the Voice, by regularly modulating the pitch. You can then control the amount of Vibrato applied to the Voices in realtime by using **WHEEL 2**. (Other controllers can be set to control Vibrato instead of **WHEEL 2**; see **FC** or **WHEEL CS PS AT**, pages 72, 77.)

## Display



Indicates currently selected parameter.

**Parameter Grouping:** [F3] and [F6], or [F5] and [F8] can be grouped for simultaneous editing.

### [F3] D (Voice A Depth):

For setting the depth of the Vibrato on Voice A, or the pitch range over which the sound is modulated. Higher settings result in a more pronounced Vibrato.

**Range:** 0 - 15

### [F5] S (Voice A Speed):

For setting the speed of the Vibrato on Voice A. Higher settings result in a faster Vibrato sound.

**Range:** 1 - 32

### [F6] D (Voice B Depth):

(Same as for Voice A.)

### [F8] S (Voice B Speed):

(Same as for Voice A.)

## [F4]: Pan

The Pan parameters allow you to set the stereo position of the Voice, or where the Voice “appears” in the stereo image. Setting one Voice to the left side of the stereo image and the other to the right creates a rich, spacious sound.

### Display



Indicates currently selected parameter.

**Parameter Grouping:** [F3] and [F6], or [F5] and [F8] can be grouped for simultaneous editing.

### [F3] P (Voice A Position):

For setting the position of the sound of Voice A in the stereo image, from left to right. A value of 0 corresponds to the sound being placed in the center. (See illustration below.)

**Range:** L 7 (full left) - 0 (center) - R 7 (full right)

### [F5] R (Voice A Range):

For setting the “spread” of the sound of Voice A in the stereo position. Lower settings result in a tighter, more defined stereo position, while higher settings spread the sound out further across the stereo image. (See illustration below.)

**Range:** 1 - 8

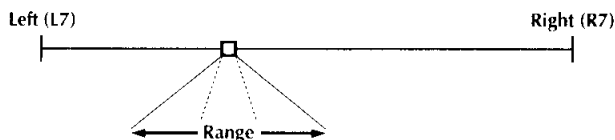
### [F6] P (Voice B Position):

(Same as for Voice A.)

### [F8] R (Voice B Range):

(Same as for Voice A.)

### Pan Position and Range



#### HINT — Using Pan With Two Voices

When using two Voices together in the Dual mode, the Pan effect can be made even richer and spacier by setting each Voice to opposite Pan Positions and slightly detuning each Voice (with the Voice Tune parameters, page 65).

## [F5], [F6]: Graphic Equalizer

The Graphic Equalizer parameters for Voices A and B give you the same tone control found on the panel equalizer, with the advantage that these are completely independent from the panel (and from each other). Also, since these settings are stored as part of the Performance data, they are called up automatically any time the Performances are selected.

## [F5]: Graphic Equalizer Voice A (GEQ-A)

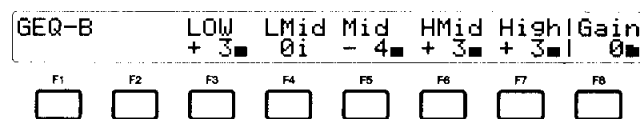
### Display



**Parameter Grouping:** [F3], [F4], [F5], [F6] and [F7] can be grouped for simultaneous editing.

## [F6]: Graphic Equalizer Voice B (GEQ-B)

### Display



**Parameter Grouping:** [F3], [F4], [F5], [F6] and [F7] can be grouped for simultaneous editing.

Since the parameters and ranges are the same for both GEQ-A and GEQ-B, the descriptions and explanations are combined here and apply to both.

### [F3] Low:

For adjusting the level of the low frequencies. A setting of 0 is “flat,” or no change in equalization.

**Range:** -24 - +24

### [F4] LMid (Low-mid):

For adjusting the level of the low-midrange frequencies.

**Range:** -24 - +24

### [F5] Mid:

For adjusting the level of the midrange frequencies.

**Range:** -24 - +24

### [F6] HMid (High-mid):

For adjusting the level of the high-midrange frequencies.

**Range:** -24 - +24

### [F7] High:

For adjusting the level of the high frequencies.

**Range:** -24 - +24

### [F8] Gain:

For adjusting the overall level of the equalized signal. A setting of 0 corresponds to no change in level.

**Range:** -32 - +16

## ■ EFFECT

The Effect pages provide twelve different types of signal processing for enhancing the sound of the internal Voices. The Effect types include various enhancer-, EQ-, pitch- and modulation-related effects, all of which respond to level and the strength with which you play. Each Effect type has three parameters, and different Effect types can be programmed for Voice A and Voice B. Effect is also completely independent of Reverb and Modulation, allowing all three to be used simultaneously.

### [F1]: Effect Voice A

Display

EFFECT	Sw	Type	Sns	Bri	Frq		
Voice A	off	ENH>POWER	16	16	16		
F1	F2	F3	F4	F5	F6	F7	F8
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### [F2]: Effect Voice B

Display

EFFECT	Sw	Type	Sns	Bri	Frq		
Voice A	off	ENH>POWER	16	16	16		
F1	F2	F3	F4	F5	F6	F7	F8
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Since the parameters and ranges are the same for both EFFECT A and EFFECT B, the descriptions and explanations are combined here and apply to both.

#### [F3] Sw (Switch):

For enabling/disabling Effect for the Voice.

#### [F4]/[F5] Type:

For selecting the type of Effect for the Voice. (Either [F4] or [F5] can be used to select this parameter.) Refer to **Effect Types and Parameters** below for specific effect types and descriptions.

#### [F6] (Parameter 1):

#### [F7] (Parameter 2):

#### [F8] (Parameter 3):

For adjusting the first, second and third parameters of the selected Effect type. (The actual parameter differs depending on the type selected; refer to **Effect Types and Parameters** below.)

**Range:** 0 - 32 (for all parameters)

## Effect Types and Parameters

### ENHANCER GROUP

The Enhancer types generally increase the clarity of the sound, and give it greater definition and presence, helping the sound cut through when playing with other instruments. The three Enhancer types — **Power**, **Sharp** and **Tight** — all respond to the velocity with which you play.

#### ENH>POWER

This is a general-purpose, full-range enhancer, and is ideal for brightening and adding definition to the acoustic piano Voices.

#### Parameters:

##### Sns (Sensitivity)

Determines to what degree key velocity affects the Enhancer sound. Higher settings let you bring in more of the Enhancer sound by playing more strongly on the keyboard.

##### Bri (Brilliance)

Determines the level of high frequencies or the overall brightness of the sound.

##### Frq (Frequency)

Determines the emphasized frequency range of the Enhancer effect. Lower values result in a brighter sound across the full range of the keyboard, while higher values result in a "rounder," more mellow tone.

#### ENH>SHARP

Compared to Power Enhancer above, Sharp preserves more of the high to midrange frequencies in the sound, providing a brighter, metallic tone.

##### Sns (Sensitivity)

##### Bri (Brilliance)

##### Frq (Frequency)

(All parameters are the same as in ENH>POWER above.)

### ENH>TIGHT

As the name implies, Tight is capable of creating a harder and tighter sound, compared to the other two Enhancer types.

#### Hi (High Sensitivity)

Determines the amount of Enhancer effect applied to the high frequencies. Higher values result in a brighter, more brittle tone.

#### Lo (Low Sensitivity)

Determines the amount of Enhancer effect applied to the low frequencies. Higher values result in a warmer tone.

#### Bri (Brilliance)

Determines the brightness of the sound. Higher values result in a brighter, more brittle tone.

## COMPRESSOR

The Compressor type effect basically “squashes” the dynamic range of the signal, smoothing out the “peaks” and “valleys” in the level of the sound. Essentially, Compressor makes all loud sounds softer and soft sounds louder.

### CMP>COMP

#### Rto (Ratio)

Determines how much compression is applied to the sound. Higher values result in a smaller dynamic range, generally making the level of the sound more uniform. Values close to the maximum may even create a slight swell in the level as the sound decays.

#### Atk (Attack)

Determines the time it takes for compression to be applied. Higher values result in a slower Attack, letting more of the original signal through without being processed.

#### Rel (Release)

Determines the time it takes for compression to be released, after the signal drops below a certain level. Higher values result in a slower Release time.

## DETUNE

The Detune type effect separates the original sound into two signals and changes the pitch of each, making one lower and the other higher. This detuning of the sounds results in a rich chorusing effect. Since Detune is a stereo effect, it is also dependent on the Pan settings in the TG pages (page 55). Both pitches can best be heard together when the Pan Position parameter is set to 0.

### DET>DETUNE

#### Dpt (Depth)

Determines the amount of the Detune effect, or how much pitch difference there is between the two separate signals.

## Mix

Determines the balance of the mix of the Detune sound and original sound. A value of 0 results in a dry mix (no Detune sound).

#### Sns (Sensitivity)

Determines to what degree the Detune effect responds to key velocity. For higher values, the stronger you play the keyboard, the more the sound is initially detuned. (The pitch gradually returns closer to normal as the level decays.)

## CHORUS

The Chorus type effect uses pitch modulation to create a rich and spacious chorus sound. It is also touch-sensitive, letting you control the degree and intensity of the Chorus effect by how strongly you play the keyboard. Since Chorus is a stereo effect, it is most effective when the Pan Position parameter in the TG pages (see page 55) is set to 0.

### HINT

For a particularly luxurious Chorus sound (when using two Voices in the Dual mode), try assigning **CHO>TOUCH** to both Voices but set their parameters to different values (especially the Depth and Speed parameters).

### CHO>TOUCH

#### Dpt (Depth)

Determines the intensity of the Chorus effect.

#### Spd (Speed)

Determines the speed of the Chorus modulation.

#### Sns (Sensitivity)

Determines to what degree the Chorus effect responds to key velocity. For higher values, the stronger you play the keyboard, the more the sound is initially chorused.

## PHASER

The Phaser type uses pitch shifting and modulation to create an animated, metallic-sounding, swirling motion effect.

### PHS>PHASER

#### Dpt (Depth)

Determines the intensity of the Phaser effect. A value of 0 results in no Phaser effect.

#### Spd (Speed)

Determines the modulation speed of the Phaser effect.

#### Sns (Sensitivity)

Determines to what degree the Speed of the Phaser effect responds to key velocity and level. For higher values, the stronger you play the keyboard, the faster the Speed becomes. (The Phaser Speed gradually slows down as the level decays.)

## PAN

The Pan type effect uses a free-running LFO (low frequency oscillator) to create an auto pan effect. This repeatedly moves the sound in the stereo image, from left to right and right to left. The effect is also touch-sensitive; playing the keyboard more strongly results in a faster, more pronounced auto pan effect, especially on the initial part of the sound.

### NOTE

Since Pan is a stereo effect, the Pan Position parameter in the TG pages (see page 55) should be set to 0.

### HINT

The Pan type can be used to create a wide variety of rich and interesting-sounding effects, when used with two Voices in the Dual mode. Try assigning Pan to both Voices, and change some of the settings in the TG pages so that the Voices are different from each other in some way. For example, try giving the Voices different EG, Vibrato and/or GEQ settings, and notice the luxurious shift in textures as the Voices weave in and out of each other across the stereo image. In fact, make things even more interesting by setting different Pan parameter values for each Voice.

### PAN>ΠJ

#### Dpt (Depth)

Determines the intensity of the auto pan effect. A value of 0 results in no panning of the sound.

#### Spd (Speed)

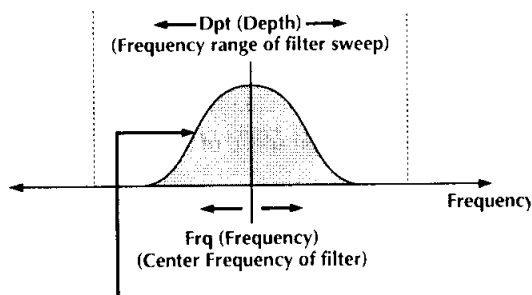
Determines the speed of the auto pan effect.

#### Sns (Sensitivity)

Determines to what degree the Speed of the Pan effect responds to key velocity and level. For higher values, the stronger you play the keyboard, the faster the Speed becomes. (The Pan Speed gradually slows down as the level decays.)

## WAH GROUP

The Wah type effects, as the name implies, produces a "wah" type sound. They employ a band-pass filter (as shown below), and "sweeps" it back and forth across a set frequency range in the sound.



Band pass filter; this lets through only a certain set of frequencies. The filter is moved constantly across the frequency range, creating the "wah" effect.

### WAH>LFO

The LFO type uses a free-running LFO (low frequency oscillator) to sweep the filter. This creates a steady, repeating "wah-wah" sound.

#### Dpt (Depth)

Determines the frequency range across which the filter is swept. Lower values result in a narrow filter sweep range and create a more subtle Wah effect, while higher values create a more pronounced Wah effect.

#### Spd (Speed)

Determines the speed of the filter sweep cycle. The higher the value, the faster the cycle.

#### Frq (Frequency)

Determines the central frequency of the band pass filter. The higher the value, the higher the frequency.

### WAH>TOUCH

This Wah effect responds to key velocity and the level of the sound. Touch Wah can be a very expressive effect, responding dynamically to your playing technique. The stronger you play the keyboard, the greater the range of the filter sweep.

#### Frq (Frequency)

Determines the central frequency of the band pass filter.

#### Sns (Sensitivity)

Determines to what degree the Wah effect responds to key velocity.

#### Rel (Release)

Determines the time it takes for the Wah effect to be released, after the signal drops below a certain level. Higher values result in a slower release time.

### WAH>DELAY

This is virtually the same as WAH>LFO, except that this features a Delay parameter, which allows you to delay the onset of the Wah effect.

#### Dpt (Depth)

(Same as WAH>LFO above.)

#### Spd (Speed)

(Same as WAH>LFO above.)

#### Del (Delay)

Determines the amount of time before the Wah effect begins. The higher the value, the longer the delay. A setting of 0 results in no delay, or instant application of the Wah effect.



## SOUNDBOARD

### **SOUNDBRD**

The Soundboard type effect is best used with the acoustic piano Voices (PIANO 1 - PIANO 4). It effectively recreates the rich resonance of an actual acoustic piano's soundboard.

#### **Dpt (Depth)**

Determines the depth of the Soundboard effect.

#### **Siz (Size)**

Determines the size of the apparent soundboard. Higher values reproduce the characteristics of a concert grand piano.

#### **Pdl (Damper Pedal)**

Determines the amount of sustain or reverberation in the Soundboard effect. Higher values result in greater sustain and reverberation, when used with the Damper pedal.

## MODULATION

The Modulation page provides ten different pitch modulation effects — including Chorus, Phaser, and Flanger — for enhancing the sound of the internal Voices. Two Auto Pan effects are also available for creating continuous motion in the stereo image. Each Modulation type has Depth and Speed parameters (except for Detune, which has Depth and Mix). The selected Modulation type is applied equally to both Voice A and Voice B, though it can be turned on and off independently for each Voice. Modulation is also completely independent of Reverb and Effect, allowing all three to be used simultaneously (except when Special Reverb is selected; see Note below).

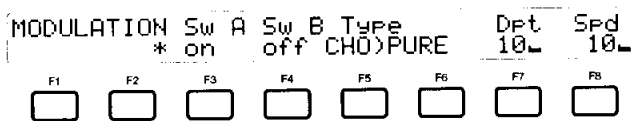
Modulation has only one page, which is automatically selected when pressing the **MODULATION** button.

### NOTE

When a Special Reverb effect type is selected for Reverb (see page 63), Modulation is automatically disabled. Dashes appear in all the parameter indications and none of the parameters can be edited.

## MODULATION

### Display



**Parameter Grouping:** [F3] and [F4] can be grouped for simultaneous editing.

#### [F3] Sw A (Switch Voice A):

For enabling/disabling Modulation for Voice A.

#### [F4] Sw B (Switch Voice B):

For enabling/disabling Modulation for Voice B.

#### [F5]/[F6] Type:

For selecting the Modulation type for Voices A and B. (Either [F5] or [F6] can be used to select this parameter.) Refer to the **Modulation Types and Parameters** below for specific Modulation types and descriptions.

#### [F7] Dpt (Depth):

For adjusting the depth or intensity of the Modulation. The higher the value, the greater the Depth. In Chorus, Phaser and Flanger types, this determines the amount of pitch modulation. In the Pan type, this determines the intensity of the panning effect.

**Range:** 0 - 32

#### [F8] Spd (Speed):

For adjusting the speed of the Modulation. The higher the value, the greater the Speed. (This parameter becomes Mix for the **CHO)DETUNE** type.)

**Range:** 0 - 32

## Modulation Types and Parameters

### CHORUS GROUP

As with the Chorus group in the Effect pages, Chorus here uses pitch modulation to enhance the sound by making it more rich and spacious. There are five different types of Chorus effects in this group: **Pure**, **Detune**, **Bright**, **Wide** and **Pan**. The Depth parameter controls the amount of pitch modulation, or how widely the pitch is varied, while Speed controls the speed of the pitch modulation.

#### CHO)PURE

This is a basic, all-purpose Chorus effect, providing a subtle yet rich chorusing.

#### CHO)DETUNE

Unlike the other Chorus types in this group, Detune does not use modulation of the signal but creates rich stereo chorusing by varying the pitch. The Depth parameter controls the amount of pitch variation, while Mix controls the relative level of the detuned sound in the wet/dry mix.

#### CHO)BRIGHT

This is similar to **CHO)PURE** above, but provides a brighter overall sound.

#### CHO)WIDE

This Chorus type provides a wider range of pitch variation (in the Depth parameter) than the other types.

#### CHO)PAN

Pan combines chorusing with an auto pan effect, repeatedly moving the chorused sound back and forth across the stereo image. The Depth parameter determines both the depth of pitch modulation and the width of the pan position spread; higher values create a more pronounced chorusing sound and a wider spread in the pan position variation.

### NOTE

Since Pan is a stereo effect, the Pan Position parameter in the TCG pages (see page 55) should be set to 0.

## PHASER GROUP

As with Phaser in the Effect pages, these two Phaser types — **Light** and **Deep** — create an animated, swirling motion effect. The **Depth** parameter controls the amount of pitch modulation, while **Speed** controls the speed.

### PHS)LIGHT

As the name implies, this is a light and subtle Phaser effect.

### PHS)DEEP

This type has a more pronounced Phaser effect and provides a wider range of pitch variation (in the **Depth** parameter) than PHS)LIGHT.

## PAN GROUP

As with Pan in the Effect pages, these two Pan types use LFOs to create an auto pan effect, repeatedly moving the sound back and forth in the stereo image. The **Depth** parameter controls the intensity of the panning effect, while **Speed** controls the speed of the panning movement.

### NOTE

Since Pan is a stereo effect, the **Pan Position** parameter in the TG pages (see page 55) should be set to 0.

### PAN)△

This Pan type uses a triangle wave to create the panning motion.

### PAN)Π

This Pan type uses a square wave to create abrupt panning shifts between the left and right channels.

## FLANGER

### FLG)FLNGER

Flanger creates a rich, swirling sound that is stronger and more pronounced than Chorus, yet more subtle than Phaser. The **Depth** parameter controls the amount of pitch modulation, while **Speed** controls the speed.

# REVERB

The Reverb pages provide sixteen different high-quality Reverb and Delay (Echo) effects. Though Reverb is applied to both Voice A and Voice B, the Depth parameter can be set independently for each Voice. The second Reverb page contains additional Reverb and Delay parameters for the effect. Reverb is also completely independent of Effect and Modulation, allowing all three to be used simultaneously.

Reverb includes six different Special Reverb effects. These take full advantage of the P-500's advanced signal processing circuitry to create a richer, more luxurious-sounding reverberation. (Special Reverb cannot be used with Modulation; see Note below.)

## NOTE

When a Special Reverb type is selected, the Modulation effect, if active, is automatically cancelled. Likewise, Special Reverb can only be selected if Modulation has been turned off for the relevant Voices.

## [F1]: Reverb - Page 1

### Display

REVERB	Sw	Type	DptA	DptB	Time		
Page1	on	ECHO	16	16	1.90s		
F1	F2	F3	F4	F5	F6	F7	F8
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Parameter Grouping:** [F6] and [F7] can be grouped for simultaneous editing.

### [F3] Sw (Switch):

For enabling/disabling Reverb for the Voice.

### [F4]/[F5] Type:

For selecting the Reverb type for Voices A and B. (Either [F4] or [F5] can be used to select this parameter.) Refer to the **Reverb Types and Parameters** list below for specific Reverb types and descriptions.

### [F6] DptA (Depth Voice A):

For adjusting the depth or intensity of the Reverb for Voice A. In Delay types, this controls the amount of reverb applied to the Delay signal.

**Range:** 0 - 32

### [F7] DptB (Depth Voice B):

(Same as for Voice A.)

### [F8] Time:

For setting the time of the Reverb.

**Range:** 0.30 - 9.90 seconds

## NOTE

This only affects the time of the Reverb. The Delay time in Delay types is determined by the Tempo parameter in Reverb - Page 2 below.

## [F2]: Reverb - Page 2

### Display

REVERB	High	ModIn	Tempo	Decay			
Page2	16	50%	150(400.0ms)	16			
F1	F2	F3	F4	F5	F6	F7	F8
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### [F3] High (High Damp):

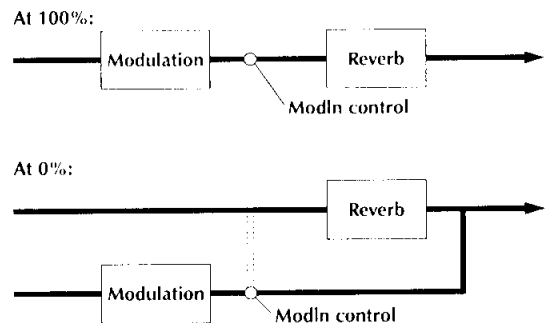
For controlling the amount of high frequency content in the Reverb sound. Higher values result in a "damping" or filtering out of the high frequencies. This recreates the natural reverberation characteristics of actual environments, allowing you to deaden or enliven the sound of the apparent environment.

**Range:** 0 - 32

### [F4] ModIn (Modulation Input Level):

For controlling the amount of the Modulation sound that is routed through the Reverb. A value of 0% completely separates the Modulation and Reverb sounds (no Reverb is applied to Modulation). A value of 100% routes all of the Modulation sound through the Reverb so that Reverb is applied to the Modulation.

**Settings:** 0%, 25%, 50%, 75%, 100%



## NOTE

The ModIn parameter is not available when a Special Reverb type is selected. ModIn is active only when Modulation is turned on.

**[F5]/[F6]/[F7] Tempo:**

For determining the delay time for the Delay types. This sets the delayed repeats to a specific tempo value, allowing you to match the delayed repeats to the rhythm of a sequencer-recorded song.

**Range:** ♩ (quarter note) = 81 - 140 bpm (beats per minute), 140 - 220 (every other unit), 220 - 300 (every four units), 325, 350, 375, 400, 425, 450, 500, 600

**[F8] Decay:**

For controlling the feedback of the delay, or the length of time it takes the Delay sound to decay to silence. Higher values result in a longer decay time.

**Range:** 0 - 32

**NOTE**

The Tempo and Decay parameters are only available for the Delay types.

**Reverb Types and Parameters**

TYPE	Page1			Page2			
	Name	Parameter 1	Parameter 2	Parameter 3	Parameter 4	Parameter 5	Parameter 6
Reverb	LARGE-HALL	Depth	Time	HiDamp	ModIn*		
	PLATE	Depth	Time	HiDamp	ModIn*		
	CHURCH	Depth	Time	HiDamp	ModIn*		
	SMALL-HALL	Depth	Time	HiDamp	ModIn*		
	LARGE-ROOM	Depth	Time	HiDamp	ModIn*		
	SMALL-ROOM	Depth	Time	HiDamp	ModIn*		
	EARLY-REF	Depth	Time	HiDamp	ModIn*		
Delay (Echo)	ECHO ♩	Depth	Time	HiDamp	ModIn*	Tempo	Decay
	ECHO 1/8	Depth	Time	HiDamp	ModIn*	Tempo	Decay
	ECHO 1/16	Depth	Time	HiDamp	ModIn*	Tempo	Decay
Special Reverb	CONCERT	Depth	Time	HiDamp			
	CLEAN	Depth	Time	HiDamp			
	DX-PLATE	Depth	Time	HiDamp			
	ER+HALL	Depth	Time	HiDamp			
	SALON	Depth	Time	HiDamp			
	MID-ROOM	Depth	Time	HiDamp			

\*ModIn is active only when Modulation is turned on.

**NOTE**

Special Reverb can only be selected when Modulation SW A and SW B are off. Similarly, all Modulation parameters are disabled when Special Reverb is active.

**REVERB GROUP**

Reverb recreates the sounds of various types of performance environments by adding an ambient wash of delays. The Depth parameter controls the amount of Reverb applied to each Voice, while Time controls the overall duration of the Reverb sound. (SMALL-ROOM and EARLY-REF substitute the Size parameter for Time.)

- LARGE-HALL
- PLATE
- CHURCH
- SMALL-HALL
- LARGE-ROOM
- SMALL-ROOM
- EARLY-REF (Early Reflections)

**DELAY (ECHO) GROUP**

The Delay types add distinct echoed repeats to the sound. The Depth parameter controls the level and amount of Delay applied to each Voice. The Time parameter controls the duration of the Reverb sound that is applied to the Delay. In Reverb Page 2, the High parameter controls the amount of high frequency content in the Reverb applied to the Delay. (Descriptions of the Tempo and Decay parameters are given above.)

**ECHO ♩ (Quarter notes, 4/4 time)**

This type creates quarter-note delayed repeats, for use in a time signature of 4/4.

**ECHO 1/8 (Eighth notes, 3/4 time)**

This type creates quarter-note delayed repeats for use in a time signature of 3/4, or eighth-note triplets.

**ECHO 1/16 (Sixteenth notes)**

This type creates sixteenth-note delayed repeats.

**SPECIAL REVERB GROUP**

The Special Reverb types feature six different performance environments. Special Reverb utilizes all of the P-500's Reverb and Modulation circuitry to achieve an exceptionally smooth and rich Reverb effect. (Because of this, Modulation and Special Reverb cannot be used together; one or the other must be turned off.)

- CONCERT
- CLEAN
- DX-PLATE
- ER+HALL
- SALON
- MID-ROOM

**NOTE**

When you select a Special Reverb type the message "Cannot Use ModIn With Special Reverb" appears briefly in the LCD display, before the Special Reverb parameters are displayed.

# ■ VOLUME

The Volume parameters let you control the Volume settings for the internal Voices and the connected MIDI devices and the Expression settings of Voices A and B.

## [F1]: Volume

The Volume parameters determine the MIDI volume setting that is transmitted for Voices A and B and for MIDI A and B.

### Display

VOLUME	Voice A	MIDI A	Voice B	MIDI B			
[off][on]	127■	127■	off	off			
F1	F2	F3	F4	F5	F6	F7	F8
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Parameter Grouping:** [F3], [F5], [F6], and [F8] can be grouped for simultaneous editing.

### [F1]/[F2] Off/On:

These determine whether the other parameter values set in this page are effective or not. When set to **off**, MIDI volume data is not transmitted over the selected Path and the sound of the internal Voices cannot be heard.

### [F3] Voice A:

For changing the transmitted MIDI volume setting for the Voice A Path.

**Range:** off, 0 - 127

### [F5] Voice B:

(Same as for Voice A.)

### [F6] MIDI A:

For changing the transmitted MIDI volume setting for the MIDI A Path.

**Range:** off, 0 - 127

### [F8] MIDI B:

(Same as for MIDI A.)

## [F2]: Expression

Expression, like Volume, is a means for controlling the level of the Voices. The way the two are used, however, differs. For example, Volume is used to set the relative levels of each of the sounds, while Expression is used to altogether control the entire set of sounds on the Path. This way, Expression can be used to adjust the overall volume while maintaining the relative level balance among individual sounds.

### Display

EXPRES-	Voice A	Voice B					
SION	127■	127■					
F1	F2	F3	F4	F5	F6	F7	F8
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Parameter Grouping:** [F3] and [F6] can be grouped for simultaneous editing.

### [F3] Voice A:

For determining the Expression level applied to Voice A.

**Range:** 0 - 127

### [F6] Voice B:

(Same as for Voice A.)

# VOICE TUNE

The Voice Tune parameters provide fine control over the pitch of the internal Voices. Voice Tune sets the basic pitch, while Piano Tune and Microtune give you two different tools for changing how the pitch of the Voices responds across the keyboard range.

Coarse pitch controls are found in the Transpose page (see page 67). The main pitch controls for the P-500 as a whole are found in the Master Tune page (see page 84).

## NOTE

Remember that the final output pitch of the Voices and each of their notes depends on **all** of the P-500's pitch controls — those in this page, and others in the Transpose and Master Tune pages. If the pitch isn't as you expect, be sure to check that all pitch settings are appropriate.

## [F1]: Voice Tune

Voice Tune allows you to set the basic pitch of each of the internal Voices. Keep in mind that this is a fine pitch adjustment; coarse pitch controls (for changing the pitch in semitone steps) are found in the Transpose page (see page 67). In Dual mode, this could be used to slightly detune each Voice in opposite directions, creating a naturally thick chorusing effect.

## NOTE

Unlike the Transpose parameter, this only affects the internal Voices and is not transmitted to MIDI devices on the Voice A or Voice B Paths.

## Display



Shows the current Master Tune setting for the internal Voices; set in the Master Tune page (see page ??).

**Parameter Grouping:** [F4] and [F7] can be grouped for simultaneous editing.

### [F4] Voice A:

For adjusting the fine pitch setting of Voice A.

**Range:** -63 - +63

(approx. +/- 50 cents; 100 cents = 1 semitone)

### [F7] Voice B:

(Same as for Voice A.)

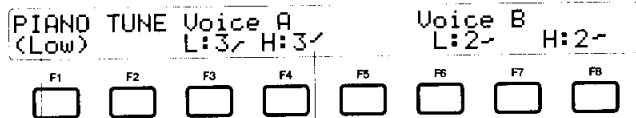
## [F2]: Piano Tune

The Piano Tune controls allow you to create a more authentic acoustic piano sound by simulating stretch tuning. Stretch tuning is a technique applied to acoustic pianos in which the higher and lower notes of the piano are slightly "stretched" out of tune, making them actually sound more in tune to the human ear. Stretch tuning starts around the middle of the keyboard, and the difference in pitch gradually increases as you play notes further up or down on the keyboard.

## NOTE

This parameter only affects the internal Voices and is not transmitted to MIDI devices on the Voice A or Voice B Paths.

## Display



Indicates currently selected parameter.

Graphically shows curve that corresponds to the set value.

**Parameter Grouping:** [F3] and [F6], or [F4] and [F7] can be grouped for simultaneous editing.

### [F3] L (Voice A Low):

For setting the degree of stretch tuning for the lower keyboard range of Voice A, or starting with notes below A3 (the A above middle C).

**Range:** 1 - 3

### [F4] H (Voice A High):

For setting the degree of stretch tuning for the upper keyboard range of Voice A, or starting with notes above A3 (the A above middle C).

**Range:** 1 - 3

### [F6] L (Voice B Low):

(Same as for Voice A.)

### [F7] H (Voice B High):

(Same as for Voice A.)

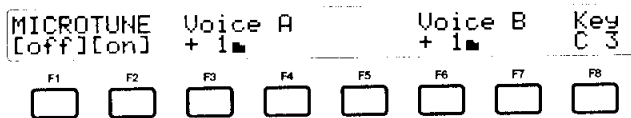
## [F3]: Microtune

The Microtune parameters allow you to set a separate pitch for each individual key of the keyboard, independently for Voice A and Voice B.

### NOTE

This parameter only affects the internal Voices and is not transmitted to MIDI devices on the Voice A or Voice B Paths.

### Display



**Parameter Grouping:** [F3] and [F6] can be grouped for simultaneous editing.

### [F1]/[F2] Off/On:

These determine whether the Microtune function is active for both Voices or not. Though independent Microtune settings can be made for Voice A and Voice B, the Microtune Off/On control here applies to both Voices.

### [F3] Voice A Tuning:

For adjusting the pitch of the selected key for Voice A.

**Range: -63 - +63**

(approx. +/- 50 cents; 100 cents = 1 semitone)

### [F6] Voice B Tuning:

(Same as for Voice A.)

### [F8] Key:

For selecting the key on the keyboard whose pitch is to be changed. You can set the value by pressing the appropriate key on the keyboard, or by using the -1/+1 buttons or **DATA ENTRY** slider. No sound is output from the P-500 when Key is selected.



# ■ TRANSPOSE / PB (PITCH BEND) RANGE

This page provides other pitch-related parameters, such as making transpose settings for the internal Voices and connected MIDI instruments, as well as the range over which the pitch can be “bent” by using WHEEL 1 or After Touch on the keyboard (or a properly assigned Foot Controller).

## [F1]: Transpose

Transpose allows you to determine the coarse pitch setting, both for the internal Voices and the MIDI instruments on the Voice A/B and MIDI A/B Paths. The settings for all four Paths are independent. Transpose is particularly useful in the Dual and Split modes. In the Dual mode, for example, you can play two different Voices together, each having a different pitch.

### HINT — KEEPING TRACK OF PITCH SETTINGS

Remember that Transpose is just one of the many pitch-related parameters, and that the actual pitch you hear may depend on those other parameters as well. Be sure to take into consideration the Master Tune and Master Transpose parameters (page 84) in the System Setup’s Master Tune page, as well as settings made in the Voice Tune page (page 65), Piano Tune page (page 65), and Microtune page (page 66).

### Display

TRANSPOSE		Voice A	MIDI A	Voice B	MIDI B		
[off] [on]		-12	+7	off	off		
F1	F2	F3	F4	F5	F6	F7	F8
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Parameter Grouping:** [F3], [F5], [F6] and [F8] can be grouped for simultaneous editing.

### [F1]/[F2] Off/On:

These determine whether the Transpose function is active for the selected Path or not. Setting a Path to **off** is the same as making a Transpose setting of **0** for the Voice or MIDI instrument.

### [F3] Voice A:

For setting the coarse pitch of Voice A. This also determines the coarse pitch of the MIDI instrument on the Voice A Path.  
**Range: -24 - +24 semitones** (12 semitones = 1 octave)

### [F5] MIDI A:

For setting the coarse pitch of MIDI A.  
**Range: -24 - +24 semitones** (12 semitones = 1 octave)

### [F6] Voice B:

(Same as for Voice A.)

### [F8] MIDI B:

(Same as for MIDI A.)

## [F2]: Pitch Bend Range

The Pitch Bend function lets you continuously change the pitch of the internal Voices by using WHEEL 1, After Touch on the keyboard, or one of the Foot Controllers (see pages 72, 77). This parameter page determines the maximum range over which the pitch of the Voices can be changed. (This also affects the pitch response of the internal Voices when being controlled by an external MIDI keyboard or sequencer.) Independent ranges can be set for each Voice and for each control method (WHEEL 1 and After Touch).

### NOTE

Though WHEEL 1 is normally set to control Pitch Bend, you will probably need to properly assign Pitch Bend to After Touch (or the Foot Controller you wish to use) in the WHEEL CS PS AT and FC pages (see pages 72, 77). Otherwise, After Touch (or the Foot Controller) will have no effect on Pitch Bend.

### NOTE

The Pitch Bend Range only controls how the internal Voices respond to pitch bend control, and has no effect on the range of connected MIDI instruments. The pitch bend range for the MIDI instruments must be set on the instruments themselves; refer to the appropriate owner’s manuals for details.

### Display

PB RANGE		Voice A	Voice B				
(Wheel1)		W:3	A:-2 W:1 A:+2				
F1	F2	F3	F4	F5	F6	F7	F8
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Indicates currently selected parameter.

**Parameter Grouping:** [F3] and [F6], or [F5] and [F8] can be grouped for simultaneous editing.

### [F3] W (Voice A WHEEL 1):

For setting the range over which WHEEL 1 affects the pitch of Voice A.

**Range: 0 - 3 semitones**

### [F5] A (Voice A After Touch, Foot Controller):

For setting the range over which After Touch affects the pitch of Voice A. Negative values bend the pitch downward when pressing down hard on the keys, while positive values bend the pitch upward.

**Range: -3 - +3 semitones**

### [F6] W (Voice B WHEEL 1):

(Same as for Voice A.)

### [F8] A (Voice B After Touch, Foot Controller):

(Same as for Voice A.)

# KEYBOARD SENS. (SENSITIVITY)

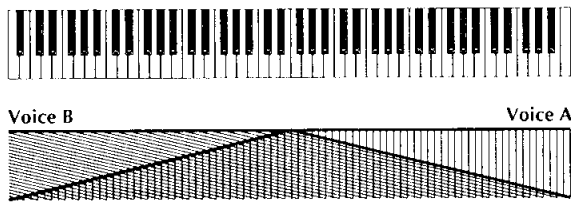
The Keyboard Sensitivity pages allow you to control how the volume of the internal Voices and connected MIDI instruments responds to your keyboard playing.

## [F1]: Voice Key Scale

Voice Key Scale and MIDI Key Scale determine the amount the volume of the Voices (or MIDI instrument sound programs) change according to the section of the keyboard played. (This parameter is sometimes referred to as "keyboard tracking.") For example, you could program this parameter to have notes played at the upper end of the keyboard sound softer than notes played at the lower end. Different Key Scale curves are available for tailoring the response for specific applications.

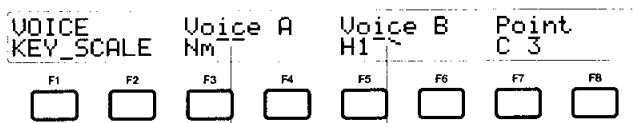
### HINT

One of the main uses for the Key Scale parameter is in creating "soft splits" or positional crossfades. In this way, one Voice (or MIDI instrument sound program) can sound from the lower end of the keyboard and a different Voice can sound from the upper, with a gradual crossfade between the two through the middle of the keyboard, like this:



Using the Voice and MIDI Key Scale functions together, you can program even more sophisticated positional crossfades, using both the internal Voices and the connected MIDI instruments.

### Display



Graphically shows curve that corresponds to the setting.

## [F2]: MIDI Key Scale

### Display



**Parameter Grouping:** [F3] and [F5] can be grouped for simultaneous editing.

### [F3] Voice A / MIDI A Key Scaling:

For setting the Key Scale curve for Voice A (or MIDI A).

### Settings:

#### L3, L2, L1

The L (Low) curves cause the volume of the sound to become softer, the lower the notes that are played (below the Point setting). L3 is the steepest curve and results in the greatest decrease in volume.

#### Nm

The Nm (Normal) curve is the conventional playing condition and causes no change in volume throughout the entire keyboard range.

#### H1, H2, H3

The H (High) curves cause the volume of the sound to become softer, the higher the notes that are played (above the Point setting). H3 is the steepest curve and results in the greatest decrease in volume.

### [F5] Voice B / MIDI B Key Scaling:

(Same as for Voice A / MIDI A.)

### [F7] Point:

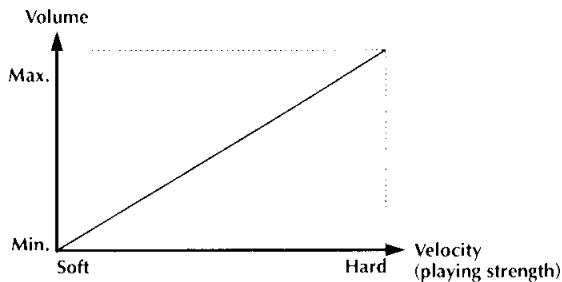
For setting the center key around which the Key Scale curve takes effect. The note set here is used as the center point for the curves set from [F3] and [F5] above. You can set the value by pressing the appropriate key on the keyboard, or by using the -1/+1 buttons or DATA ENTRY slider. No sound is output from the P-500 when Point is selected.

Range: A -1 - C 7

## [F3]: Velocity Curve

The Velocity Curve parameter gives you wide and flexible control over how the strength of your playing affects the volume of the Voices and the MIDI instruments over each of the four Paths.

On a conventional acoustic instrument such as an acoustic piano, the harder you play it, the louder the resulting sound. Generally, this velocity-to-volume relationship is linear; in other words, the sound becomes louder in direct proportion to the strength with which you play, like this:



The P-500, however, provides a total of twenty different Velocity Curves. This allows you to tailor the keyboard response to fit the way you play, as well as set up separate curves for the various Paths in order to selectively and gradually bring in different sounds depending on how softly or strongly you play.

### Display



Graphically shows curve that corresponds to the setting.

**Parameter Grouping:** [F3], [F5], [F6], and [F8] can be grouped for simultaneous editing.

### [F3] Voice A Velocity Curve:

For setting the type of Velocity Curve for Voice A. (Actual curves and their descriptions are given in the Velocity Curves chart below.)

**Settings:** A1 - A4, B1 - B4, C1 - C5, D1 - D2, E1 - E2, F1 - F3

### [F5] MIDI A Velocity Curve:

For setting the type of Velocity Curve for MIDI A. (Actual curves and their descriptions are given in the Velocity Curves chart below.)

**Settings:** A1 - A4, B1 - B4, C1 - C5, D1 - D2, E1 - E2, F1 - F3

### [F6] Voice B Velocity Curve:

(Same as for Voice A.)

### [F8] MIDI B Velocity Curve:

(Same as for MIDI A.)

## Velocity Curves

In general, the larger the number of the Velocity Curve, the louder the Voice (or MIDI sound program) becomes for even low key velocities. In other words, if you want the sound to be relatively loud even when you play the keyboard relatively softly, you should choose a higher number Curve (for example, using C5 of the C Curves).

### A1, A2, A3, A4

The A Curves are best suited for use with the internal Voices (Voice A and Voice B).

### B1, B2, B3, B4

The B Curves are all-purpose velocity curves, suitable for both the internal Voices and connected MIDI instruments.

### C1, C2, C3, C4, C5

The C Curves are best suited for use with connected MIDI instruments (MIDI A and MIDI B).

### D1, D2

The D Curves are designed to bring up the level of the desired sound when playing softly. Use this in tandem with an E Curve (below) on a different sound to create a velocity crossfade between sounds.

### E1, E2

The E Curves are designed to bring up the level of the desired sound when playing strongly. Use this in tandem with a D Curve (above) on a different sound to create a velocity crossfade between sounds.

### F1, F2, F3

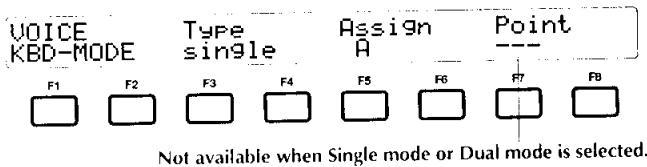
The F Curves create flat velocity response. The volume of the sound remains the same, no matter how softly or strongly the keys are played.

# KEYBOARD MODE

In the Keyboard Mode pages, the configuration or mode of the keyboard — Single, Dual, or Split — can be set for the internal Voices and the four MIDI Paths. The name of the Performance can also be set here.

## [F1]: Voice Keyboard Mode

### Display



## [F2]: MIDI Keyboard Mode

### Display



These pages let you determine the Keyboard Mode — Single, Dual, or Split — for the internal Voices, and the Voice A/B and MIDI A/B Paths. In Single mode, one Voice (or sound program on a MIDI instrument) is played across the keyboard. Dual mode allows two Voices to be played in a layer across the keyboard, while Split allows two Voices to be played from opposite sections of the keyboard (separated by a user-definable Split Point).

### [F3] Type:

For setting the Keyboard Mode.

**Settings: Single, Dual, Split**

### [F5] Assign:

For determining the type of Voice/MIDI assignment used in the selected mode. Each mode has its own settings, as described below.

### Settings:

#### (In Single mode:)

##### off

Disables playing of internal Voices and sound programs on the Voice A/B Paths (or MIDI A/B Paths).

##### A

Enables Voice A (or MIDI A).

#### (In Dual mode:)

##### off

Disables playing of internal Voices and sound programs on the Voice A/B Paths (or MIDI A/B Paths).

##### A&B

Enables Voices A and B (or MIDI A and B) to be played together in a layer.

#### (In Split mode:)

##### off

Disables playing of internal Voices and sound programs on the Voice A/B Paths (or MIDI A/B Paths).

##### IA

Sets the lower section of the keyboard to off (no Voice sound or MIDI data is output from here), and assigns Voice A (or MIDI A) to the upper section of the keyboard.

##### IB

Sets the lower section of the keyboard to off (no Voice sound or MIDI data is output from here), and assigns Voice B (or MIDI B) to the upper section of the keyboard.

##### AI

Assigns Voice A (or MIDI A) to the lower section of the keyboard, and sets the upper section of the keyboard to off (no Voice sound or MIDI data is output from here).

##### BI

Assigns Voice B (or MIDI B) to the lower section of the keyboard, and sets the upper section of the keyboard to off (no Voice sound or MIDI data is output from here).

##### BIA

Assigns Voice B (or MIDI B) to the lower section of the keyboard, and Voice A (or MIDI A) to the upper section.

##### AIB

Assigns Voice A (or MIDI A) to the lower section of the keyboard, and Voice B (or MIDI B) to the upper section.

### [F7] Point (Split mode only):

For setting the Split Point, or the key on the keyboard at which the two Split sections are separated. You can set the value by pressing the appropriate key on the keyboard, or by using the -1/+1 buttons or DATA ENTRY slider. No sound is output from the P-500 when Point is selected.

**Range: A -1 - C 7**

## [F3]: Performance Name

In the Performance Name page, you can give an eight-character name to the Performance you've created.

### Display

PERF	NAME	PERFORMANCE					
[←]	[→]	PRSETUCE					
F1	F2	F3	F4	F5	F6	F7	F8
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

#### [F1]:

Moves cursor one space left.

#### [F2]:

Moves cursor one space right.

### Operation —

- 1 Use [F1] and [F2] to move cursor to desired position in the name.
- 2 Use the **DATA ENTRY** slider or -1/+1 buttons to change character at cursor. (For a list of the available characters, see page 53.)

# ■ FC (FOOT CONTROLLERS)

The P-500 features four FOOT CONTROLLER input jacks on the side panel for connecting the Pedal Unit and/or optional pedal controllers (such as the Yamaha FC7) or Foot Switches (such as the Yamaha FC4 or FC5). These can then be used to control various functions, both on the P-500 itself and the connected MIDI devices.

Since the operations, parameters, settings and ranges are the same for all FC parameter pages, the descriptions and explanations are combined here and apply to all pages.

## [F1]: FC1 (Foot Controller 1)

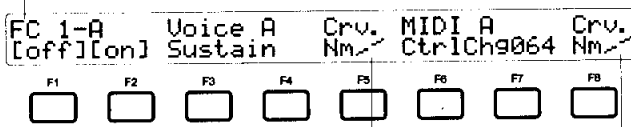
## [F2]: FC2 (Foot Controller 2)

## [F3]: FC3 (Foot Controller 3)

## [F4]: FC4 (Foot Controller 4)

### Display

Indicates selected Foot Controller number and Voice/MIDI A or B Path.  
(Use the PAGE ◀/▶ buttons to change the Path between A and B.)



Graphically shows curve that corresponds to the setting.

**Parameter Grouping:** [F5] and [F8] can be grouped for simultaneous editing.

### Operation —

- 1 After calling up the desired parameter page (FC1, FC2, FC3, FC4), use the PAGE ◀/▶ buttons to select the desired Path (Voice/MIDI A or Voice/MIDI B).
- 2 Select the desired control destination parameter(s) (with [F3], [F6]), then turn the selected parameter off or on by pressing [F1] or [F2], respectively.
- 3 With the parameter turned on in the step above, use the DATA ENTRY slider or -1/+1 buttons to change the setting.

### [F1]/[F2] Off/On:

These determine whether the destination parameter values set in this page (with [F3] or [F6]) are effective or not. When set to **off**, the Foot Switch or Foot Controller has no effect over the selected Path.

### [F3] Voice A / B Destination:

For setting the control destination for the selected Foot Controller number over the Voice A (or B) Path.

For example, when Volume is selected as the Voice A destination in the **FC 1-A** page, a Foot Controller connected to the FOOT CONTROLLER 1 jack can be used to control the volume of Voice A (both that of the internal Voice and the MIDI instrument on the Path).

**Settings:** Mod.Wheel, Volume, Panpot, Express, Sustain, Sostenuto, Soft, PitchCtrl, PerfChg, ChainChg, Attack, Decay, Release, Vib Speed, Pan Range, Eff Depth, Rev Depth, Mod Depth, Mod Speed, = VoiceA (for Voice B only)  
(See the list below for detailed descriptions.)

### NOTE

For best results and ease of operation, use an on/off Foot Switch with the settings labeled "Discrete" or "Continuous/Discrete" below. Use a continuous Foot Controller with "Continuous" settings.

When using a continuous Foot Controller with a Continuous/Discrete destination, the pedal minimum position corresponds to off and pedal maximum corresponds to on.

**Mod.Wheel (Modulation Wheel)** (Continuous) — For adding Vibrato to the Voice. (This modulation is unrelated to the Modulation effect, page 60.) For the MIDI Path, this corresponds to controller number 1 (Modulation).

**Volume** (Continuous) — For controlling the volume of the Voice. For the MIDI Path, this corresponds to controller number 7 (Volume).

**Panpot** (Continuous) — For controlling the pan position of the Voice. For the MIDI Path, this corresponds to controller number 10 (Pan).

**Express (Expression)** (Continuous) — For controlling the Expression, or the overall volume of the Voice. For the MIDI Path, this corresponds to controller number 11 (Expression).

**Sustain** (Continuous/Discrete) — For controlling the sustain of the Voice (as with the damper pedal on a piano). For the MIDI Path, this corresponds to controller number 64 (Damper Pedal or Sustain).

**Sostenuto** (Continuous/Discrete) — For sustaining only those notes of a Voice that are played and held when the pedal controlling Sostenuto is pressed. All subsequent notes played while the pedal is held down are not sustained. In other words, if you play a chord, press the Sostenuto pedal, then release the chord, the notes of the chord will sustain, while further notes that you play will have no sustain. This allows you, for example, to hold a chord and play staccato notes over it. For the MIDI Path, this corresponds to controller number 66 (Sostenuto).

**Soft** (Continuous/Discrete) — Like the soft pedal on an acoustic piano, this lowers the volume of the Voice by a set amount while the pedal is held down. For the MIDI Path, this corresponds to controller number 67 (Soft).

**PitchCtrl** (Continuous) — For controlling the amount of pitch bend applied to the Voice and the MIDI Path.

**PerfChg (Performance Change)** (Discrete) — For selecting Performances in order, one by one. An inverse curve in the Curve parameter would allow stepping in reverse through the Performances, while a normal curve would allow stepping forward. (Only affects the P-500.)

**ChainChg (Chain Change)** (Discrete) — For selecting Chains in order, one by one. An inverse curve in the Curve parameter would allow stepping in reverse through the Chains, while a normal curve would allow stepping forward. (Only affects the P-500.)

**Attack** (Continuous) — For controlling the Attack rate of the EG (see page 54). (Only affects the P-500.)

**Decay** (Continuous) — For controlling the Decay rate of the EG (see page 54). (Only affects the P-500.)

**Release** (Continuous) — For controlling the Release rate of the EG (see page 54). (Only affects the P-500.)

**Vib Speed (Vibrato Speed)** (Continuous) — For controlling the Speed parameter of the Vibrato (see page 54). (Only affects the P-500.)

**Pan Range** (Continuous) — For controlling the degree to which keyboard position affects Pan position (see page 55). (Only affects the P-500.)

**Eff Depth (Effect Depth)** (Continuous) — For controlling the Depth parameter of Effect (see page 56). (Only affects the P-500.)

**Rev Depth (Reverb Depth)** (Continuous) — For control-

ling the Depth parameter of Reverb (see page 62). (Only affects the P-500.)

**Mod Depth** (Continuous) — For controlling the Depth parameter of Modulation (see page 60). (Only affects the P-500.)

**Mod Speed** (Continuous) — For controlling the Speed parameter of Modulation (see page 60). (Only affects the P-500.)

= **VoiceA** — (Only available in Voice B parameters.) When this is selected, Voice B is assigned to the same control as Voice A.

#### [F5] Crv. (Voice A / B Curve):

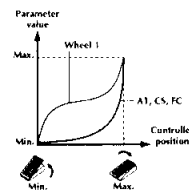
For setting the type of curve for the selected controller, or how the destination parameter responds to the press of the Foot Switch or movement of the Foot Controller.

**Settings:** H3, H2, H1, Nm, S1, S2, S3, In, Sw  
(See descriptions/illustrations below.)

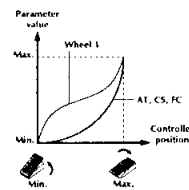
#### NOTE

WHEEL 1 affects the MIDI data differently than the other controllers. The dotted-line curves in the illustrations below correspond to WHEEL 1 operation; the solid-line curves apply to the other continuous controllers (Foot Controllers, After Touch, CS Sliders, WHEEL 2).

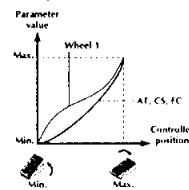
**H3** — An exponential-type curve in which the controller changes the parameter values only around the maximum positions. (or the UP/DOWN positions, for WHEEL 1).



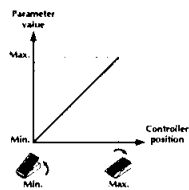
**H2** — An exponential-type curve in which the controller changes the parameter values only slightly at the minimum-to-median positions. (or around the center position, for WHEEL 1).



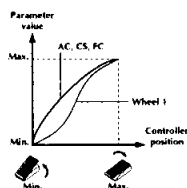
**H1** — A nearly linear curve in which the minimum controller positions have slightly less effect (in changing the parameter values) than the maximum positions. (For WHEEL 1, the value change is slightly greater around the UP/DOWN positions.)



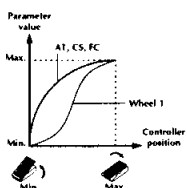
**Nm** — Normal linear response; the further the controller is moved toward the maximum position, the higher the parameter value becomes. For Foot Switches, the raised position corresponds to off or minimum; pressed down corresponds to on or maximum.



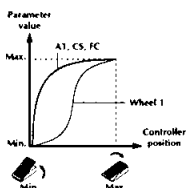
**S1** — A nearly linear curve in which the maximum controller positions have slightly less effect (in changing the parameter values) than the minimum positions. (For WHEEL 1, the value change is slightly less around the UP/DOWN positions.)



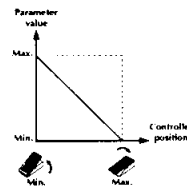
**S2** — An exponential-type curve in which the controller changes the parameter values only slightly at the median-to-maximum positions. (For WHEEL 1, the value change is greatest around the center position.)



**S3** — An exponential-type curve in which the controller changes the parameter values only around the minimum positions. (or around the center position, for WHEEL 1.)



**In** — Inverted linear response (opposite of Nm); the further the controller is moved toward the maximum position, the lower the parameter value becomes. For Foot Switches, the raised position corresponds to on or maximum; pressed down corresponds to off or minimum.



**Sw** — Simple minimum/maximum or on/off Curve. With this Curve, both continuous controller types (Foot Controllers, Wheels) and switch types (Foot Switches) have the same effect on the Destination parameter.

**NOTE**

Since discrete, switch-type destinations (such as Sustain or Effect Sw) respond only to simple on/off control, setting the Curve for one of these destinations to S1, S2 or S3 has the same effect as the **Nm** (Normal) Curve, while H1, H2 or H3 has the same effect as the **In** (Inverted) Curve.

**HINT**

If you are using a pedal switch from a different manufacturer, and the Sustain (or any other) function doesn't work properly, the polarity of the switch may be reversed. To use the pedal switch with the P-500, set the Curve parameter to **In**.

**[F6] MIDI A / B Destination:**

For setting the control destination for the selected Foot Controller number over the MIDI A (or B) Path.

For example, when Control Change 007 is selected as the MIDI A destination in the **FC 1-A** page, a Foot Controller connected to the FOOT CONTROLLER 1 jack can be used to control the volume of the MIDI instrument(s) on the MIDI A Path.

**Settings: Control Change Number 0 - Control Change Number 120, Pitch Bend, Start (FA\*), Continue (FB\*), Stop (FC\*), After Touch, = MIDI A (for MIDI B only)** (See the chart below for detailed descriptions.)

\* The corresponding MIDI data byte, expressed as a hexadecimal number.



**NOTE**

For best results and ease of operation, use an on/off Foot Switch with the settings labeled "Discrete" or "Continuous/Discrete" below. Use a continuous Foot Controller with "Continuous" settings.

The Continuous/Discrete description applies to certain MIDI controller numbers (such as Sustain, #64) which were once discrete switches and have now been redefined in the MIDI specification as continuous. The redefinition does not affect their operation, though; they still work best with an on/off Foot Switch.

When using a continuous Foot Controller with a Continuous/Discrete destination, the pedal minimum position corresponds to off and pedal maximum corresponds to on.

**NOTE**

Control change numbers not listed here are either undefined according to the MIDI specification or are not commonly used. Those interested should refer to the MIDI Detailed Specification, published by the MIDI Manufacturers Association, as well as any of the multitude of other books on MIDI.

This chart lists the most commonly used MIDI controllers and their corresponding numbers. All of these are included in the MIDI A / B Destination parameters.

Parameter (as shown in LCD display); Controller Type	Control Change Number	Control Function	Description
CntrChg001 (Continuous)	1	Modulation wheel or lever	For adding modulation to the sound. The modulation can control pitch, volume, brightness or some other aspect of the sound, depending on the functions of the MIDI instrument.
CntrChg002 (Continuous)	2	Breath controller	For adding modulation to the sound, as with controller number 1 above.
CntrChg004 (Continuous)	4	Foot controller	For adding modulation to the sound, as with controller number 1 above.
CntrChg005 (Continuous)	5	Portamento time	For controlling the time of the portamento (pitch slide) effect on a synthesizer.
CntrChg006 (Continuous)	6	Data entry	For changing a specified parameter on the MIDI device. (The parameter to be controlled is set on the device itself.)
CntrChg007 (Continuous)	7	Volume	For controlling the volume of the sound.
CntrChg010 (Continuous)	10	Pan	For controlling the pan position of the sound in the stereo image.
CntrChg011 (Continuous)	11	Expression	For controlling the Expression level (overall volume) of the sound.
CntrChg064 (Continuous/Discrete)	64	Damper pedal (Sustain)	For controlling the sustain of the sound (as with the damper pedal on a piano).
CntrChg065 (Continuous/Discrete)	65	Portamento	For turning the portamento (pitch slide) function of a synthesizer on and off.
CntrChg066 (Continuous/Discrete)	66	Sostenuto	For sustaining only those notes of a Voice that are played and held when the pedal controlling Sostenuto is pressed. All subsequent notes played while the pedal is held down are not sustained. (See Sostenuto in Voice A/B Destination parameter above for more information.)

Parameter (as shown in LCD display) ; Controller Type	Control Change Number	Control Function	Description
CntrChg067 (Continuous/Discrete)	67	Soft pedal	For lowering the volume of the Voice by a set amount while the pedal is on.
CntrChg069 (Continuous/Discrete)	69	Hold 2	Unlike numbers 64 and 66 above, this is controlling other types of "hold" functions (such as "freezing" the operation of a synthesizer's envelope until pedal is released).
CntrChg091 (Continuous/Discrete)	91	External effects depth	For controlling the effect depth on a MIDI effect device.
CntrChg092 (Continuous/Discrete)	92	Tremolo depth	For controlling the tremolo depth on a MIDI effect device.
CntrChg093 (Continuous/Discrete)	93	Chorus depth	For controlling the chorus depth on a MIDI effect device.
CntrChg094 (Continuous/Discrete)	94	Celeste (Detune) depth	For controlling the celeste depth (amount of detuning) on a MIDI effect device.
CntrChg095 (Continuous/Discrete)	95	Phaser depth	For controlling the phaser depth on a MIDI effect device.
CntrChg096 (Discrete)	96	Data increment	For increasing the value of a specified parameter on the MIDI instrument (in single unit steps).
CntrChg097 (Discrete)	97	Data decrement	For decreasing the value of a specified parameter on the MIDI instrument (in single unit steps).
PitchBend (Continuous)	—	Pitch bend	For controlling the pitch bend function on a MIDI instrument.
FA:Start (Discrete)	—	Start	For starting playback of a MIDI sequencer or rhythm machine.
FB:Cont (Discrete)	—	Continue	For continuing playback of a MIDI sequencer or rhythm machine (when playback has been stopped in the middle of a sequence).
FC:Stop (Discrete)	—	Stop	For stopping playback of a MIDI sequencer or rhythm machine.
AfterTouch (Continuous)	—	After touch	For adding modulation to the sound, as with controller number 1 above.
= MIDI A (for MIDI B only)	—	—	This sets the control destination for the MIDI B Path to the same destination as that of the MIDI A Path in the same page.

**[F8] Crv. (MIDI A / B Curve):**

For setting the type of curve for the selected controller, or how the destination parameter responds to movement of the Foot Switch or Foot Controller. (The settings are the same as for Voice A/B; refer to [F5] Crv. above for detailed descriptions.)

# WHEEL / CS PS AT (WHEELS, CS SLIDERS, PS SWITCHES, AFTER TOUCH)

## [F1]: AT A (After Touch Voice/MIDI A)

## [F2]: AT B (After Touch Voice/MIDI B)

After Touch is a pressure sensing function built into the keyboard, letting you control various functions by how hard you press down on the keys while playing them. After Touch can be used to control aspects of the sound both on the P-500 itself and the connected MIDI devices.

The operations of the After Touch pages are the same as those for the Foot Controller pages, but some parameter settings and values may be different. Refer to the brief parameter descriptions given below. For more detailed descriptions and explanations of the relevant functions, see **FC (FOOT CONTROLLERS)**, page 72.

### Display

AFT. TOUCH	Voice A	Crv.	MIDI A	Crv.
[off]	[on]	Rev Depth	Nm	CtrlChg003
F1	F2	F3	F4	F5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Parameter Grouping:** For this and all of the WHEEL CS PS AT parameter pages below, [F3] and [F6], or [F5] and [F8] can be grouped for simultaneous editing.

### [F1]/[F2] Off/On:

### [F3] Voice A / B Destination:

**Settings:** Mod.Wheel, Volume, Panpot, Express, Sustain, Sostenuto, Soft, PitchCtrl, Attack, Decay, Release, Vib Speed, Pan Range, Eff Depth, Rev Depth, Mod Depth, Mod Speed, = Voice A (for Voice B only)

(See page 72 for detailed descriptions.)

### IMPORTANT

PerfChg and ChainChg are not available as After Touch Destinations.

### [F5] Crv. (Voice A / B Curve):

**Settings:** H3, H2, H1, Nm, S1, S2, S3 In, Sw (See page 73 for detailed descriptions.)

### [F6] MIDI A / B Destination:

**Settings:** Control Change Number 0 - Control Change Number 120, Pitch Bend, Start (FA\*), Continue (FB\*), Stop (FC\*), After Touch, = MIDI A (for MIDI B only)

(See page 75 for detailed descriptions.)

\* The corresponding MIDI data byte, expressed as a hexadecimal number.

### [F8] Crv. (MIDI A / B Curve):

(Same as for Voice A/B.)

## [F3]: WHEEL 1 A/B

## [F4]: WHEEL 2 A/B

The WHEEL 1 and WHEEL 2 controllers on the left side of the keyboard allow you to control various functions in realtime as you play. They can be used to control aspects of the sound both on the P-500 itself and the connected MIDI devices.

The operations of the WHEEL pages are the same as those for the Foot Controller pages, but some parameter settings and values may be different. Refer to the brief parameter descriptions given below. For more detailed descriptions and explanations of the relevant functions, see **FC (FOOT CONTROLLERS)**, page 72.

### Display

Indicates selected controller and Voice/MIDI A or B Path.  
(Use the PAGE ◀▶ buttons to change the Path between A and B.)

WHEEL 1-A	Voice A	Crv.	MIDI A	Crv.
[off]	[on]	PitchBend	Nm	PitchBend
F1	F2	F3	F4	F5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### [F1]/[F2] Off/On:

### [F3] Voice A / B Destination:

**Settings:** Mod.Wheel, Volume, Panpot, Express, Sustain, Sostenuto, Soft, Pitch Bend (WHEEL 1 only), Attack, Decay, Release, Vib Speed, Pan Range, Eff Depth, Rev Depth, Mod Depth, Mod Speed, = Voice A (for Voice B only)

(See page 72 for detailed descriptions.)

### IMPORTANT

PerfChg and ChainChg are not available as WHEEL Destinations. Also, PitchCtrl is not available as a Destination for WHEEL 2.

### [F5] Crv. (Voice A / B Curve):

**Settings:** H3, H2, H1, Nm, S1, S2, S3, In, Sw

(See page 73 for detailed descriptions.)

### [F6] MIDI A / B Destination:

**Settings:** Control Change Number 0 - Control Change Number 120, Pitch Bend, Start (FA\*), Continue (FB\*), Stop (FC\*), After Touch, = MIDI A (for MIDI B only)

(See page 75 for detailed descriptions.)

\* The corresponding MIDI data byte, expressed as a hexadecimal number.

### [F8] Crv. (MIDI A / B Curve):

(Same as for Voice A/B.)

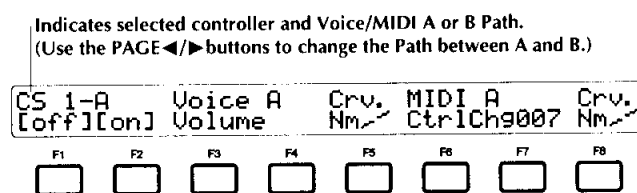
## [F5]: CS 1 Slider A/B

## [F6]: CS 2 Slider A/B

The CS 1 and CS 2 sliders, like WHEEL 1 and WHEEL 2, are continuous controllers that allow you to control various functions in realtime as you play. They can be used to control aspects of the sound both on the P-500 itself and the connected MIDI devices.

The operations of the CS pages are the same as those for the Foot Controller pages, but some parameter settings and values may be different. Refer to the brief parameter descriptions given below. For more detailed descriptions and explanations of the relevant functions, see **FC (FOOT CONTROLLERS)**, page 72.

### Display



[F1]/[F2] Off/On:

[F3] Voice A / B Destination:

Settings: Mod.Wheel, Volume, Panpot, Express, Sustain, Sostenuto, Soft, Attack, Decay, Release, Vib Speed, Pan Range, = Voice A (for Voice B only)

(See page 72 for detailed descriptions.)

[F5] Crv. (Voice A / B Curve):

Settings: H3, H2, H1, Nm, S1, S2, S3, In, Sw

(See page 73 for detailed descriptions.)

[F6] MIDI A / B Destination:

Settings: Control Change Number 0 - Control Change Number 120, Pitch Bend, Start (FA\*), Continue (FB\*), Stop (FC\*), After Touch, = MIDI A (for MIDI B only)

(See page 75 for detailed descriptions.)

\* The corresponding MIDI data byte, expressed as a hexadecimal number.

[F8] Crv. (MIDI A / B Curve):

(Same as for Voice A/B.)

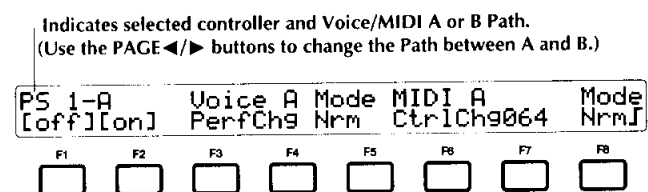
## [F7]: PS 1 Switch A/B

## [F8]: PS 2 Switch A/B

The PS 1 and PS 2 Switches provide on/off control over various functions, both on the P-500 itself and the connected MIDI devices. They can also be used as maximum/minimum value switches for continuous controller destinations not normally used with switches.

The operations of the PS pages are the same as those for the Foot Controller pages, but some parameters and their settings/values may be different. Refer to the brief parameter descriptions given below. For more detailed descriptions and explanations of the relevant functions, see **FC (FOOT CONTROLLERS)**, page 72.

### Display



[F1]/[F2] Off/On:

[F3] Voice A / B Destination:

Settings: PerfChg, ChainChg

(See page 73 for detailed descriptions.)

[F5] Voice A / B Mode:

Similar to the Curve parameter in the other controllers, this determines how the destination parameter of the Voice and Voice Path responds to pressing of the Foot Switch.

Settings: Nrm (Normal), Inv (Inverted)

[F6] MIDI A / B Destination:

Settings: Control Change Number 0 - Control Change Number 120, Pitch Bend, Start (FA\*), Continue (FB\*), Stop (FC\*), After Touch, = MIDI A (for MIDI B only)

(See page 75 for detailed descriptions.)

\* The corresponding MIDI data byte, expressed as a hexadecimal number.

[F8] MIDI A / B Mode:

Similar to the Curve parameter in the other controllers, this determines how the destination parameter of the MIDI Path responds to pressing of the Foot Switch.

Settings: Nrm (Normal), Inv (Inverted)

# PROGRAM CHANGE

The Program Change pages let you enable or disable program change transmission and reception for the Performance, and set the bank number(s) and program change number(s) that are transmitted when the Performance is selected.

## [F1]: PROGRAM CHANGE TX (Program Change Transmit Number/Switch)

In this page, program change can be enabled or disabled independently for each of the four MIDI Paths. When enabled, you can set the program change number that is transmitted over the Path when the Performance is selected.

### Display

PC TX NO. [off][on]	Voice A MIDI A 1	Voice B MIDI B 32	Voice A MIDI A 5	Voice B MIDI B off			
F1	F2	F3	F4	F5	F6	F7	F8

**Parameter Grouping:** [F3], [F5], [F6] and [F8] can be grouped for simultaneous editing.

### [F1]/[F2] Off/On:

These determine whether the other parameter values set in this page are effective or not. When set to **off**, MIDI program changes are not transmitted over the selected Path.

### [F3] Voice A:

For setting program change transmission and program change number for the Voice A Path.

**Range:** off, 1 - 128

### [F5] MIDI A:

For setting program change transmission and program change number for the MIDI A Path.

**Range:** off, 1 - 128

### [F6] Voice B:

(Same as for Voice A.)

### [F8] MIDI B:

(Same as for MIDI A.)

## [F2]: PROGRAM CHANGE RX (Program Change Receive Switch)

This page lets you enable or disable program change reception for the internal Voices.

### Display

PC RX SW	Voice A on	Voice B on					
F1	F2	F3	F4	F5	F6	F7	F8

**Parameter Grouping:** [F3] and [F6] can be grouped for simultaneous editing.

### [F3] Voice A Program Change Receive:

For enabling or disabling the reception of program change messages for internal Voice A. When this is set to **off**, the internal Voices will not change in response to incoming program change numbers. (They may, however, still respond to other MIDI data, if set appropriately; see **Receive Channel** on page 81.)

### [F6] Voice B Program Change Receive:

(Same as for Voice A.)

## [F3]: VOICE BANK TX (Voice Bank Transmit Number/Switch)

This page allows you to specify the bank numbers that are transmitted (along with the program change number) on the Voice A and Voice B Paths. This makes it possible to select any program on a MIDI instrument that has more than 128 programs.

Generally, the MSB (Most Significant Byte) parameter should be set to 1, and LSB (Least Significant Byte) to the corresponding bank number on the MIDI instrument.

For example, if you want to select bank 3 on your MIDI instrument, set LSB to 3. This would be true for bank numbers up to 128. To select bank numbers beyond 128, set the MSB number to 2 or higher. The chart below should help in selecting the desired bank number:

Program Numbers	Bank (on MIDI instrument)	MSB	LSB
1 - 128	Bank 1	1	1
129 - 256	Bank 2	1	2
257 - 384	Bank 3	1	3
385 - 512	Bank 4	1	4



REFERENCE

## Display

VOICE BANK TX	A:MSB	LSB	B:MSB	LSB			
[off][on]	1	1	off	off			
F1	F2	F3	F4	F5	F6	F7	F8
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Parameter Grouping:** [F4], [F5], [F7], and [F8] can be grouped for simultaneous editing.

### [F1]/[F2] Off/On:

These determine whether the other parameter values set in this page are effective or not. When set to **off**, bank number changes are not transmitted over the selected Path.

#### NOTE

Since MSB and LSB work in conjunction with one another, they cannot be independently switched on and off. Turning one of them on or off automatically does the same for the other.

### [F4] MSB (Voice A MSB Number):

For setting the MSB number to be transmitted over the Voice A Path.

**Range:** off, 1 - 128

### [F5] LSB (Voice A LSB Number):

For setting the LSB number to be transmitted over the Voice A Path.

**Range:** off, 1 - 128

### [F7] MSB (Voice B MSB Number):

(Same as for Voice A.)

### [F8] LSB (Voice B LSB Number):

(Same as for Voice A.)

#### NOTE

If the MIDI instrument you are using does not have multiple banks, it will not respond to these settings. If the instrument **does** have multiple banks, refer to the owner's manual of that instrument to check the specific bank/bank number correspondence.

## [F4]: MIDI BANK TX

### (MIDI Bank Transmit Number/Switch)

This page allows you to specify the bank numbers that are transmitted (along with the program change number) on the MIDI A and MIDI B Paths.

The operations and parameters of this page are the same as for [F3] Voice Bank Transmit Number/Switch. Refer to that section for details.

## Display

MIDI BANK TX	A:MSB	LSB	B:MSB	LSB			
[off][on]	1	1	off	off			
F1	F2	F3	F4	F5	F6	F7	F8
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# MIDI

The MIDI pages contain parameters related to general MIDI functions, such as selecting the transmit and receive channels for each Path, enabling/disabling keyboard control over the internal Voices, and merging incoming MIDI data with that generated by the P-500.

## [F1]: TX CH (Transmit Channel)

This page allows you to enable or disable transmission of MIDI data over each Path, and determine the MIDI channel for the Path.

### NOTE

The settings made here are the most important in determining whether the connected MIDI instruments respond to the P-500 or not. Make sure that for each Path, the Transmit Switch is set to on and that the Transmit Channel in this page matches the receive channel of the connected instrument.

### Display

TX CH	Voice A	MIDI A	Voice B	MIDI B			
[off][on]	1	3	2	4			
F1	F2	F3	F4	F5	F6	F7	F8
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Parameter Grouping:** [F3] and [F5], or [F6] and [F8] can be grouped for simultaneous editing.

### [F1]/[F2] Off/On:

These determine whether the other parameter values set in this page are effective or not. When set to **off**, MIDI data is not transmitted over the selected Path.

### [F3] Voice A:

For enabling/disabling MIDI data transmission and setting the MIDI transmit channel for the Voice A Path.

**Range:** off, 1 - 16

### [F5] MIDI A:

For enabling/disabling MIDI data transmission and setting the MIDI transmit channel for the MIDI A Path.

**Range:** off, 1 - 16

### [F6] Voice B:

For enabling/disabling MIDI data transmission and setting the MIDI transmit channel for the Voice B Path. The setting **VceA+1** makes the Voice B Transmit Channel one greater than that of Voice A. For example, if Voice A is 5, then Voice B would be 6. The setting also "wraps around": if Voice A is 16, Voice B becomes 1.

**Range:** off, 1 - 16, VceA (same as Voice A Transmit Ch.), VceA+1 (Voice A Transmit Ch. + 1)

### [F8] MIDI B:

For enabling/disabling MIDI data transmission and setting the MIDI transmit channel for the MIDI B Path.

**Range:** off, 1 - 16, MIDI A (same as MIDI A transmit Ch.), MIDI A+1 (MIDI A transmit Ch. + 1)

## [F2]: RX CH (Receive Channel)

This page allows you to enable or disable reception of MIDI data for the internal Voices, and determine the MIDI receive channel (when MIDI data reception is enabled for the Path).

### Display

RX CH	Voice A	Voice B					
[off][on]	1	2					
F1	F2	F3	F4	F5	F6	F7	F8
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### [F1]/[F2] Off/On:

These determine whether the other parameter values set in this page are effective or not. When set to **off**, MIDI data is not received over the selected Path.

### [F3] Voice A Receive Channel/Switch:

For enabling/disabling MIDI data reception and setting the MIDI receive channel for internal Voice A. A setting of **all** allows internal Voice A to respond to MIDI data coming over any of the 16 channels.

**Range:** off, 1 - 16, all, VceATx (same as Voice A Transmit Ch.)

### [F6] Voice B Receive Channel/Switch:

For enabling/disabling MIDI data reception and setting the MIDI receive channel for internal Voice B.

**Range:** off, 1 - 16, all, VceBTx (same as Voice B Transmit Ch.), VceARx (same as Voice A Receive Ch.), VceARx+1 (same as Voice A Receive Ch. + 1)

## [F3]: LOCAL (Local Switch)

The Local Switch page lets you “disconnect” the keyboard of the P-500 from its internal Voices. When Local is set to off, the affected internal Voice does not respond to notes played from the P-500’s keyboard. (However, the Voice may respond to incoming MIDI data if other settings are appropriate; see Receive Channel, page 81.)

### HINT

Though the Local Switch function may not seem very useful at first glance, there are several applications in which the function comes in very handy.

One of these would be when you want to play **only** the connected MIDI instruments, and leave the internal Voices silent.

Another more common application is when using the P-500 as a master controller for an extended MIDI/sequencer system, and its internal Voices (via the MIDI IN terminals) as one of the sound sources in that system. Here, the P-500 keyboard is used to input performance data to the sequencer, and is routed (by means of the sequencer and a MIDI patch bay) to the various MIDI instruments, including the internal Voices. If Local is set to on, the P-500 will be playing its Voices twice — once from the keyboard, and after a very brief delay, again from the incoming MIDI data. Since this not only cuts down on the available polyphony, but also creates an undesirable flanging sound, Local should be turned off in this case.

### Display

LOCAL	Voice A on	Voice B on					
F1	F2	F3	F4	F5	F6	F7	F8

**Parameter Grouping:** [F3] and [F6] can be grouped for simultaneous editing.

### [F3] Voice A Local Switch:

For enabling or disabling keyboard control over internal Voice A. Select **on** to enable keyboard control (with the **DATA ENTRY** slider or **-1/+1** buttons), and **off** to disable.

**Settings:** on, off

### [F6] Voice B Local Switch:

(Same as for Voice A.)

## [F4]: MIDI Merge

The MIDI Merge function allows you to combine the data received at the MIDI IN terminal with the MIDI data of the P-500, and transmit both together via the MIDI OUT terminal.

Normally, MIDI Merge should be set to **off**. Applications in which it should be set to **on** include:

- **Playing or recording with another MIDI musician.**

The other player’s MIDI controller should be connected to the MIDI IN terminal of the P-500, and MIDI Merge should be on. In this way, both players can play MIDI instruments connected to the P-500, or simultaneously record to a connected sequencer.

- **Avoiding repeated connecting and disconnecting of a second MIDI controller.**

In a variation of the above example, you may have a second MIDI controller that you often use yourself — for example, a drum pad controller, wind controller or guitar controller. By keeping this connected to the MIDI IN terminal and leaving MIDI Merge on, you can simply play either controller as you wish, without having to re-patch the connections.

### Display

MIDI MERGE	MIDI IN -> MIDI Out						
	off						
F1	F2	F3	F4	F5	F6	F7	F8

Since this page contains only one parameter which is automatically selected when the page is called up, none of the Function buttons are active here.

Set the MIDI Merge function to **on** or **off** by using the **DATA ENTRY** slider or **-1/+1** buttons.



# EXTRA MIDI SETUP

Extra MIDI provides an additional two MIDI Paths for connection to MIDI effect units, signal processors and mixers. This allows you to automatically have those devices change programs when you select a Performance on the P-500.

The only types of data transmitted over Extra MIDI are bank change, program change, and initial volume messages. No keyboard performance data or controller messages are transmitted.

## [F1]: Extra MIDI Setup A

## [F2]: Extra MIDI Setup B

Since the parameters and ranges are the same for both Extra MIDI Setup A and Extra MIDI Setup B, the descriptions and explanations are combined here and apply to both.

### Display

EXTRA A	TxCh	Bank (MSB	LSB)	PC	Vol
[off][on]	1	1	2	16	127
F1	F2	F3	F4	F5	F6
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Parameter Grouping:** [F5] and [F6] can be grouped for simultaneous editing.

### [F1]/[F2] Off/On:

These determine whether the other parameter values set in this page are effective or not. When set to **off**, the relevant MIDI data is not transmitted over the selected Extra MIDI Path.

### NOTE

Since MSB and LSB ([F5] and [F6]) work in conjunction with one another, they cannot be independently switched on and off. Turning one of them on or off automatically does the same for the other.

### [F3] TxCh (Extra MIDI A/B Transmit Channel):

For enabling/disabling MIDI data transmission and setting the MIDI transmit channel for the Extra MIDI A/B Path.

**Range (for Extra MIDI A) :** off, 1 - 16

**Range (for Extra MIDI B) :** off, 1 - 16, Ex. A (same as Extra MIDI A Transmit Ch.), Ex. A+1 (same as Extra MIDI A Transmit Ch. + 1)

### [F5] Bank (MSB) (Extra MIDI A/B MSB Number):

For setting the MSB number to be transmitted over the Extra MIDI A/B Paths.

**Range:** off, 1 - 128

### [F6] Bank (LSB) (Extra MIDI A/B LSB Number):

For setting the LSB number to be transmitted over the Extra MIDI A/B Paths.

**Range:** off, 1 - 128

### NOTE

For details on Bank Number selection, refer to the Voice Bank Transmit Number/Switch page, on page 79.

### [F7] PC (Extra MIDI A/B Program Change):

For setting program change transmission and program change number for the Extra MIDI A/B Paths.

**Range:** off, 1 - 128

### [F8] Vol (Extra MIDI A/B Volume):

For determining the initial volume setting transmitted to instruments on the Extra MIDI A/B Paths.

**Range:** 0-127

## SYSTEM SETUP

The System Setup pages contain miscellaneous global parameters — parameters that are related to the P-500 as a whole. These include:

- Master Tune and Master Transpose settings.
- Bulk Receive function.
- Performance Change transmit and receive settings.
- The Device Number for the P-500, which is important when receiving bulk data from another MIDI device.
- Effect Bypass.

Keep in mind that these parameters apply to all preset Voices and Performances, and cannot be saved as part of a Voice or Performance. All changes you make to the System Setup settings are retained even after exiting from the Edit mode.

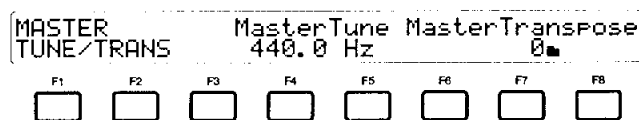
### [F1]: Master Tune/Transpose

Master Tune contains the global tuning controls (Master Tune and Master Transpose) for the internal Voices of the P-500. These controls affect all Voices and Performances.

#### NOTE

Keep in mind that the actual pitch of the Voices also depends on settings made in the Voice Tune pages (see page 65) and the Transpose parameter (see page 67). Any Voice Tune settings are offset from the basic pitch values set here.

#### Display



#### [F4] Master Tune:

For fine setting of the overall pitch of the internal Voices. The value in the display corresponds to the pitch of key A3 (A above middle C).

**Range: 427.7 Hz - 452.7 Hz**

(approx. +/-50 cents; 100 cents = 1 semitone)

**Reset Value: 440.0 Hz**

#### [F7] Master Transpose:

For coarse setting (in semitone intervals) of the overall pitch of the internal Voices.

**Range: -24 - +24 (+/-2 octaves)**

**Reset Value: 0**

#### NOTE

Some Master Transpose settings may result in duplication of octaves at the upper or lower ends of the keyboard. This happens because the Transpose setting has shifted to an "impossible" pitch, out of the normal piano range. Since no further notes are available, the P-500 duplicates the highest (or lowest) octave to fill the remaining keys.

### [F2]: BULK RECEIVE (Bulk Data Receive)

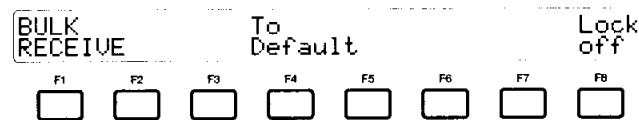
The Bulk Data Receive parameter allows you to enable or disable reception of bulk data, and specify the destination for that data (e.g., Voice number, Performance number, all Performances, etc.).

This is the companion function to Send Bulk Data (see page 88). Together, they give you the tools to back up the original data you create on the P-500 to a separate MIDI device (such as the Yamaha MDF2 MIDI Data Filer, or a computer or sequencer), and then restore that data to the P-500 when needed.

#### NOTE

Bulk Data operations cannot be executed when the MIDI Merge function (page 82) is on.

#### Display



#### [F4]/[F5] To (Destination):

For selecting the memory location to which the data is to be received. (Either [F4] or [F5] can be used to select this parameter.)

#### Settings:

**Default** — For restoring all received data.

#### Individual Voices:

**PIANO 1 - PIANO 4, E. PIANO 1 - E. PIANO 5, CLAVI, CL TONE**

#### Individual Performances:

**Perf01\_A, Perf01\_B - Perf32\_A, Perf32\_B** — For restoring the data from only one Path (Voice/MIDI A or B) of a single Performance.

**PresetVoices** — For restoring the data of all preset Voices.

**Perf01 - Perf32** — For restoring the data of a single Performance.

#### NOTE

During sending and receiving of data, certain error messages may appear in the LCD display, indicating a problem of some sort. Try remedying the problem, referring as needed to the list of error messages on page 96, then attempt the operation again.

**[F8] Lock:** For enabling or disabling the Bulk Data Receive function. When this is set to **off**, bulk data can be received.

**CAUTION**

Generally, you should keep the Lock parameter set to on, unless you wish to restore data to the P-500. Keep in mind that restoring data automatically and irretrievably erases whatever data was in the selected destination. To avoid losing important data, periodically save all your necessary settings to another device by using the Send Bulk Data function (page 88).

**[F3]: PERF. CHANGE**  
(Performance Change Transmit/Receive)

This parameter allows you to enable or disable Performance change transmission and reception, and set the MIDI channel for each. Performance numbers 1 - 32 are selected when receiving program change numbers 64 - 95, respectively. (For example, program change number 64 selects Performance 1, number 65 selects Performance 2, and so on.)

**HINT**

This function is useful in sequencer applications, especially when using a sequencer in live performance. By enabling Performance change transmission and reception, you can record Performance changes to the sequencer, and have the Performances change automatically when the sequencer plays back.

**Display**

PERF. CHANGE		TxCh		RxCh			
[off][on]		11		11			
F1	F2	F3	F4	F5	F6	F7	F8
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**[F1]/[F2] Off/On:**

These determine whether the other parameter values set in this page are effective or not.

**[F4] TxCh (Performance Change Transmit Switch/Channel):**

For enabling/disabling transmission of Performance change messages and setting the MIDI transmit channel for Performance change.

**Range:** off, 1 - 16, VceATx (same as Voice A Transmit Ch.)  
**Reset Value:** 1

**[F7] RxCh (Performance Change Receive Switch/Channel):**

For enabling/disabling reception of Performance change messages and setting the MIDI receive channel for Performance change.

**Range:** off, 1 - 16, all, VceARx (same as Voice A Receive channel)  
**Reset Value:** 1

**[F4]: DEVICE NO. (Device Number)**

Device Number is a means for "identifying" the P-500, for bulk data transfer purposes. Device Numbers must match on both the sending and receiving devices.

**Display**

DEVICE NO.		Device Number					
[off][on]		1					
F1	F2	F3	F4	F5	F6	F7	F8
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

This page contains only one parameter which is automatically selected when the page is called up.

**[F1]/[F2] Off/On:**

These determine whether the Device Number parameter is enabled or not. When set to **off**, the P-500 does not respond to any incoming MIDI Device Number message.

**Device Number:**

For enabling/disabling Device Number reception and setting the specific Device Number for the P-500.

**Range:** off, 1 - 16, all

**[F5]: Effect Bypass**

Effect bypass is a global switch for independently turning Effect, Modulation or Reverb on and off. The settings made here override the individual switch settings in a Voice or Performance.

**Display**

EFFECT BYPASS		Effect active		Mod. active		Reverb active	
F1	F2	F3	F4	F5	F6	F7	F8
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Parameter Grouping:** [F3], [F5], and [F7] can be grouped for simultaneous editing.

**[F3] Effect Bypass:**

For bypassing both Effect A and Effect B (see page 56). When this is set to **bypass**, Effect is not applied to the internal Voices.  
**Settings:** bypass, active

**[F5] Mod. (Modulation Bypass):**

For bypassing the Modulation effect (see page 60). When this is set to **bypass**, Modulation is not applied to the internal Voices.  
**Settings:** bypass, active

**[F7] Reverb Bypass:**

For bypassing the Reverb effect (see page 62). When this is set to **bypass**, Reverb is not applied to the internal Voices.  
**Settings:** bypass, active

# UTILITY MODE

The Utility mode contains operations related to the overall system of the P-500, such as:

- Copying data.
- Swapping data.
- Restoring lost edited data (Recall/Revert).
- Sending bulk data to another instrument.
- Checking the MIDI data stream (MIDI Monitor).
- Checking the P-500 system when problems occur (Troubleshoot).
- Initializing the data of a Voice, Performance or the entire system of the P-500 to its original factory settings.

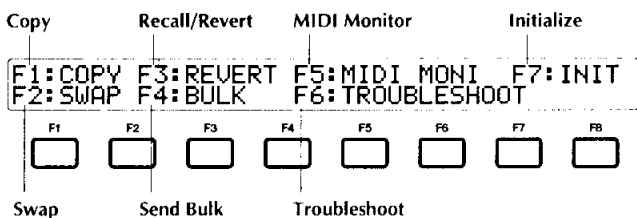
## Operation —

The Utility operations can be called up from any other operation or mode. While holding down the **UTILITY** button, simultaneously press the appropriate Function key, or use the **PAGE**  $\leftarrow/\rightarrow$  buttons to select the desired Utility operation, then release the button(s).

While holding this down...



...press one of the Function buttons ([F1] - [F7]).



Or, hold down **UTILITY** and use the **PAGE**  $\leftarrow/\rightarrow$  buttons to select the desired operation.



When you release the buttons, the selected Utility page is called up.

To exit from the mode, press the **[F1]** button, corresponding to **[quit]** in the LCD display. (None of the other panel buttons, including **EDIT**, **PRESET VOICE**, and **1-16/17-32**, can be used to exit from the Utility mode.)

## [F1]: Copy

The Copy utility allows you to copy the data of a single Voice, Performance Path, or Performance to a different Performance Path's or Performance's memory location. (One Voice cannot be copied to another Voice, since the basic sound data for each Voice is permanently set.)

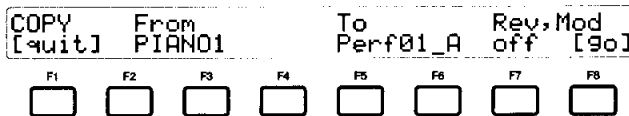
### HINT

Use the Copy utility to save time in editing. Rather than programming a Performance from scratch, first find an existing Performance that already has many of the settings that you want, and copy that Performance to a different Performance number. Then, edit the copied Performance as desired. For example, you may want to program a set of Performances (say, for use onstage) that have the same basic MIDI channel and controller settings, but have different Voices and Program Change settings. In such situations, Copy can save a lot of time and editing effort.

### CAUTION

Keep in mind that copying data to another location automatically and irretrievably erases whatever data was there previously. To avoid losing important data, periodically save all your necessary settings to another device by using the Send Bulk Data function (page 88).

## Display



### [F1] Quit:

For exiting from the Copy page and returning to the previous (non-Utility) display condition, without executing the Copy operation.

### [F3]/[F4] From (Copy Source):

For selecting the specific Voice or Performance data which is to be copied. (Either **[F3]** or **[F4]** can be used to select this parameter.)

## Settings:

### Voices:

**PIANO 1 - PIANO 4, E. PIANO 1 - E. PIANO 5, CLAVI, CL TONE**

### Performances:

**Perf01\_A, Perf01\_B - Perf32\_A, Perf32\_B** — For copying the data from a single Path (Voice/MIDI A or B) of a Performance.

**PresetVoices** — For copying the data of all preset Voices.

**Perf01 - Perf32** — For copying the entire data of a Performance.

### [F5]/[F6] To (Copy Destination):

For selecting the specific Performance location to which the data is to be copied. (Either [F5] or [F6] can be used to select this parameter.)

**Settings (in the Play mode): Perf01\_A, Perf01\_B - Perf32\_A, Perf32\_B, Perf01 - Perf32**

**Settings (in the Edit mode): Voice A, Voice B, All**

### [F7] Rev,Mod (Reverb/Modulation Switch):

Determines whether the Reverb and Modulation settings will also be copied. (Neither will be copied when set to **off**.)

**Settings: off, on**

### [F8] Go:

For executing the Copy operation. When this is selected, a "Copy Completed" message briefly appears in the LCD display while the data is being copied. After the Copy operation is finished, the display returns to the previous condition.

## NOTE

When the types of data for the Copy source and the Copy destination are different (incompatible), an "Object Type Mismatch" message appears in the LCD display. When the source and destination numbers are the same (for example, when trying to copy Performance 01 to itself), a "Cannot Copy to the Same Voice/Perf" message appears in the LCD display. In either case, press [F1] [quit] to exit, or press [F8] [retry] to return to the Copy operation, and change the settings and try again.

## [F2]: Swap

The Swap utility allows you to exchange data between two Performance Paths or two Performances.

## HINT

Swap is useful in organizing your Performance data, since it allows you to put Performances in any desired order. Since Performance Paths can also be swapped, you can move individual A and B Paths to different Performance numbers.

## NOTE

The Swap operation cannot be executed while editing in the Edit mode. If you attempt the operation, the following error message appears:

```
***** You Can't Swap in Edit Mode *****  
[quit]
```

Press [F1] to exit.

## Display

```
SWAP      Object1 <--> Object2  
[quit]    Perf03      Perf10 [go]  
  
F1      F2      F3      F4      F5      F6      F7      F8  
□       □       □       □       □       □       □       □
```

### [F1] Quit:

For exiting from the Swap page and returning to the previous (non-Utility) display condition, without executing the Swap operation.

### [F3]/[F4] Object 1:

For selecting one of the Performance/Performance Path locations for which data is to be swapped (the other location is selected with Object 2). (Either [F3] or [F4] can be used to select this parameter.)

**Settings: Perf01\_A, Perf01\_B - Perf32\_A, Perf32\_B, Perf01 - Perf32**

### [F6]/[F7] Object 2:

For selecting one of the Performance/Performance Path locations for which data is to be swapped (the other location is selected with Object 1). (Either [F6] or [F7] can be used to select this parameter.)

**Settings: Perf01\_A, Perf01\_B - Perf32\_A, Perf32\_B, Perf01 - Perf32**

### [F8] Go:

For executing the Swap operation. When this is selected, a "Swap Completed" message briefly appears in the LCD display while the two data groups are being exchanged. After the Swap operation is finished, the display returns to the previous condition.

## NOTE

The two types of data be compatible for the Swap function to work. If you press [F8] [go] when the data types do not match — for example, when trying to swap **Perf01** with **Perf12 A** — an "Object Type Mismatch" message appears in the LCD display. When the source and destination numbers are the same (for example, when trying to swap Performance 01 with itself), a "Cannot Swap with the Same Voice/Perf" message appears in the LCD display. In either case, press [F1] [quit] to exit, or press [F8] [retry] to return to the Swap operation, and change the settings and try again.

## [F3]: Recall/Revert

The Recall/Revert utility allows you to restore lost data. The utility works (and is named) in two different ways, depending on the mode from which it is called up:

### Recall (within Voice Play, Performance Play modes):

If you have edited a preset Voice or Performance and then quit and exited the Edit mode without storing, the utility "recalls" the edited settings that were made before exiting the Edit mode.

### Revert (within Voice Edit, Performance Edit modes):

If you are making edits in the Voice Edit or Performance Edit mode, the utility "reverts" to the previous settings (those that existed before you began editing). This holds true for as long as you edit without storing.

Recall/Revert has no effect in the Chain Play or Chain Edit modes.

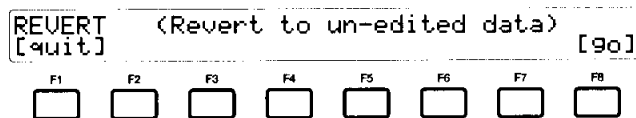
#### NOTE

Keep in mind that Recall/Revert only works as long as the power to the P-500 remains on. The original data is stored temporarily in a special edit buffer, and the contents of the buffer are lost when the power is turned off.

**Display** (from Voice Play and Performance Play modes):



**Display** (from Voice Edit and Performance Edit modes):



### [F1] Quit:

For exiting from the Recall/Revert page and returning to the previous (non-Utility) display condition, without executing the Recall/Revert operation.

### [F8] Go:

For executing the Recall/Revert operation. When this is selected, a "Recalled Data"\* or "Revert Completed" message briefly appears in the LCD display while the original data is being restored. After the Recall/Revert operation is finished, the display returns to the previous condition.

\* The "Recalled Data" message remains in the LCD display until you press STORE and use the Store operation to save the recalled data to a Voice/Performance, or press any other panel button to exit from the display.

## [F4]: SEND BULK (Send Bulk Data)

The Send Bulk Data utility allows you to save important Voice, Performance and System data to a MIDI sequencer or a dedicated MIDI storage device (such as the Yamaha MDF2 MIDI Data Filer). Saving your data to another device frees up memory space in the P-500 for programming or loading of other data. (To load data to the P-500, use the Bulk Data Receive function; see page 88.)

#### NOTE

Bulk Data operations cannot be executed when the MIDI Merge function (page 82) is on.

**Display**

Shows currently selected Device Number (see page 85).



Since this page contains only one parameter which is automatically selected when the page is called up, Function buttons [F2] to [F7] are not active.

### [F1] Quit:

For exiting from the Send Bulk Data page and returning to the previous (non-Utility) display condition, without executing the Send Bulk Data operation.

### Settings:

#### Individual Voices:

PIANO 1 - PIANO 4, E. PIANO 1 - E. PIANO 5, CLAVI, CL TONE

#### Individual Performances:

Perf01\_A, Perf01\_B - Perf32\_A, Perf32\_B — For transmitting the data from only one Path (Voice/MIDI A or B) of a single Performance.

PresetVoices — For transmitting the data of all preset Voices.

Perf01 - Perf32 — For transmitting the data of a single Performance.

#### Global:

All — For transmitting all data of the P-500.

### [F8] Go:

For executing the Send Bulk Data operation. After the Send Bulk Data operation is finished, the display returns to the previous (non-Utility) display condition.

## [F5]: MIDI MONI (MIDI Monitor)

The MIDI Monitor utility allows you to view outgoing and incoming MIDI data in realtime. The function is useful in troubleshooting some MIDI problems, especially in checking whether data is properly being transmitted or received by the P-500.

## Display

Shows data being transmitted.

Data scrolls across the display from left to right.  
(Most recent data is at the far left.)

```
MIDI Out 31 90 3E 00 90 3C 3A 90 3C 4+
[quit] In 5F 90 5E 33 90 5E 00 90 5F 4-
```

F1 F2 F3 F4 F5 F6 F7 F8

Shows data being received.

### [F1] Quit:

For exiting from the MIDI Monitor page and returning to the previous (non-Utility) display condition.

## [F6]: Troubleshoot

The Troubleshoot utility is a sophisticated function that scans the system and current operations of the P-500 and reports the first problem encountered. Whenever you have some trouble in using the P-500, this is a convenient and easy way to find out what may be causing the problem.

## Display

Indicates the buttons for calling up the relevant parameter — in this case, Voice/Performance Select button 16 (SYSTEM SETUP) and [F2] (BULK RX).

```
TROUBLE Type : Bulk RX off? 16-F2
[quit] all [go]
```

F1 F2 F3 F4 F5 F6 F7 F8

Since this page contains only one parameter which is automatically selected when the page is called up, Function buttons [F2] to [F7] are not active.

## Operation —

- 1 Use the **DATA ENTRY** slider or -1/+1 buttons to select the type of operation you wish to troubleshoot:  
**all** — All operations below  
**sound** — Operations related to sound output  
**MIDI receive** — Operations related to receiving MIDI data  
**MIDI transmit** — Operations related to transmitting MIDI data
- 2 Press [F8] ([go]) to start the Troubleshooting scan. Once a problem has been found, the scan stops and displays a message indicating the problem.
- 3 Continue pressing [F8] as often as is necessary to complete the Troubleshoot operation. When no further problems are encountered, a "No more problems found" message is displayed.

### [F1] Quit:

For exiting from the Troubleshoot page and returning to the previous (non-Utility) display condition.

### [F8] Go:

For starting/resuming the Troubleshoot scanning operation.

## [F7]: INIT (Initialize)

The Initialize utility allows you to restore the factory-programmed settings of the P-500. You can initialize data groups as small as a single Voice, or as large as the entire System of the P-500.

## Display

```
INITIALIZE Object Lock
[quit] AllPerf off [go]
```

F1 F2 F3 F4 F5 F6 F7 F8

### [F1] Quit:

For exiting from the Initialize page and returning to the previous (non-Utility) display condition.

### [F3]/[F4] Object:

For selecting the data type/location that is to be initialized. (Either [F3] or [F4] can be used to select this parameter.)

### Settings:

#### Individual Voices:

**PIANO 1 - PIANO 4, E. PIANO 1 - E. PIANO 5, CLAVI, CL TONE**

#### Individual Performances:

**Perf01\_A, Perf01\_B - Perf32\_A, Perf32\_B** — For restoring the factory data of only one Path (Voice/MIDI A or B) of a single Performance.

**PresetVoices** — For restoring the data of all preset Voices.

**Perf01 - Perf32** — For restoring the factory data of a single Performance.

#### Global:

**All Perf** — For restoring the factory data of all Performances

**All** — For restoring all factory data.

**[F6] Lock:** For enabling or disabling the Initialize function.

When this is set to **off**, the selected data type/location can be initialized.

### CAUTION

Generally, you should keep the Lock parameter set to **on**, unless you wish to restore data to the P-500. Keep in mind that initializing a data type or location automatically and irretrievably erases whatever data was there previously. To avoid losing important data, periodically save all your necessary settings to another device (such as the Yamaha MDF2 MIDI Data Filer, or a computer or sequencer) by using the Send Bulk Data function (page 88).

### [F8] Go:

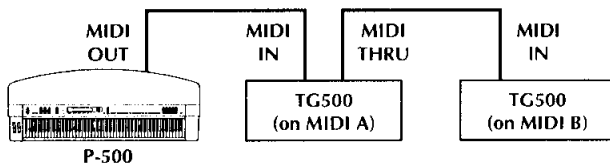
For executing the Initialize operation. When this is selected, an "Initialize Completed" message briefly appears in the LCD display. After the operation is finished, the display returns to the previous condition.

# MIDI BASICS AND APPLICATIONS

This section is a continuation of the short introduction to MIDI in the **GUIDED TOUR** section (page 14). Here, we'll delve a little bit deeper into the subject of MIDI, by showing you how to integrate your P-500 into a variety of MIDI systems. Most importantly, you'll also get some practical, hands-on experience in exploring some MIDI applications.

## MIDI Channels and Messages

As you saw on page 15, MIDI instruments communicate by sending MIDI messages or data. Since the messages all travel together in one direction on the same MIDI cable, they are generally assigned to separate channels, to allow selective control over different instruments.



The two tone generators above are connected in "daisy chain" fashion. Messages received at the MIDI IN of the first tone generator are relayed unchanged (via MIDI THRU) to the second.

## Transmit Channels

In the example connection above, the P-500 is used to play the sounds of two different tone generators. If you simply want to play all the instruments in a layer and have them all respond to the controllers in exactly the same way, then there is no need to keep the messages separate.

However, if you want to do fancier things — such as have one instrument's sound transposed up an octave, or have another sound come up in volume when you press down hard on the keyboard — the appropriate messages have to be sent to each instrument on a different channel.

The four main Paths of the P-500 — Voice A, Voice B, MIDI A and MIDI B — are used for this purpose. Transmit channels and the various types of MIDI controls are independent for each Path, letting you control four different instruments in completely different ways.

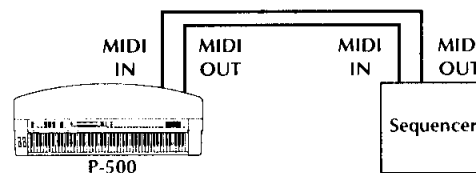
## The P-500's MIDI Controllers and Messages

Besides the notes of the keyboard, the P-500's MIDI controllers include the PS 1/2 Switches, CS 1/2 Sliders, WHEEL 1/2, Foot Controllers and After Touch. When set to on in their respective pages, these can send out MIDI messages over all enabled Paths. All controllers can be used simultaneously (provided you have enough hands or feet to do that!), and each can control different parameters for each of the Paths.

## More MIDI Connection Examples

To better illustrate how the P-500 can be used with various MIDI devices, a few further connection examples are given below. Use these as a guide in setting up your own MIDI system.

### P-500 and MIDI Sequencer

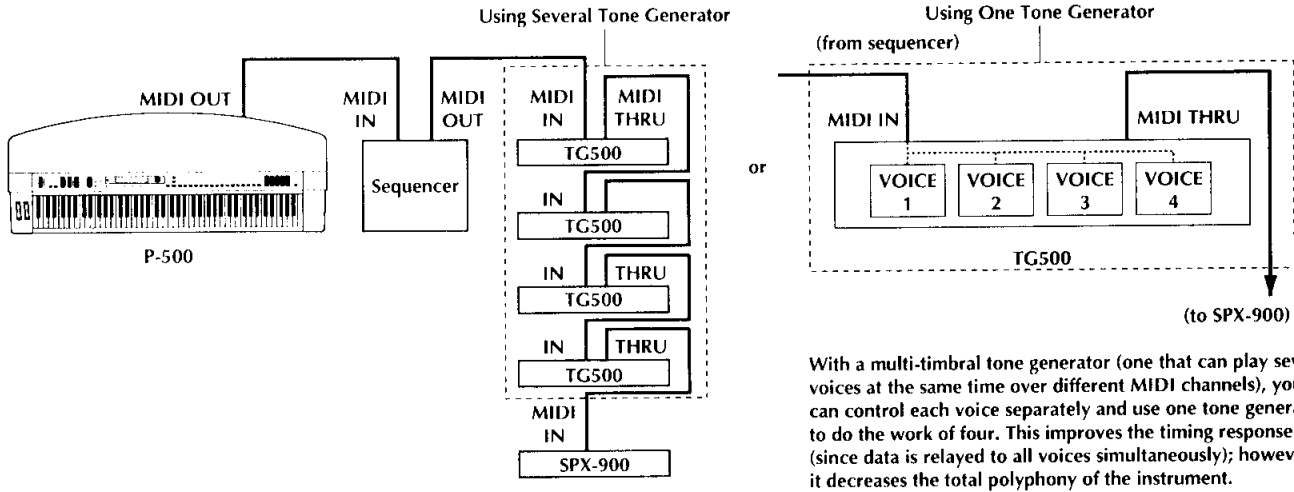


In this basic setup, the sequencer is used to record your play data from the P-500, and then play it back using the internal Voices.

The same setup will work for bulk data storage operations, as well. (See page 88.) Use a sequencer or a special MIDI data storage device (such as the Yamaha MDF2 MIDI Data Filer) to save data from and restore data to the P-500.



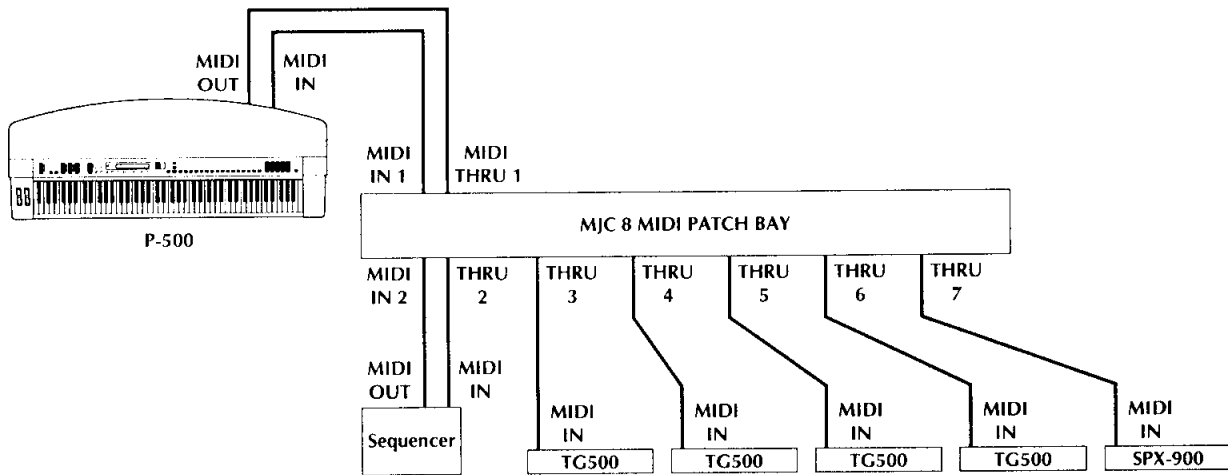
## Extended MIDI System



With a multi-timbral tone generator (one that can play several voices at the same time over different MIDI channels), you can control each voice separately and use one tone generator to do the work of four. This improves the timing response (since data is relayed to all voices simultaneously); however, it decreases the total polyphony of the instrument.

In this connection example, the sequencer is used for recording and playback, while four different MIDI instruments are connected in "daisy chain" fashion. The effect unit tagged onto the end of the chain is controlled over the Extra MIDI A Path.

## MIDI Patch Bay



In a variation of the extended MIDI system above, a MIDI patch bay (such as the Yamaha MJC8) is used to "direct traffic" for the complex MIDI signal routings.

MIDI patch bays are an absolute necessity if you use a sequencer and several MIDI devices. You may often have to change the routings of the MIDI data, especially if you use your sequencer for storing bulk data of your P-500, various tone generators, and so on. Doing this manually by unplugging and plugging all the MIDI cables is far too time consuming. The patch bay solves this problem by letting you instantly reconfigure the way all MIDI cables are connected for a given application.

## MIDI Applications

The following section of example applications is in no way exhaustive. The possibilities of MIDI are enormously vast, with new uses and applications being dreamed up every day. Each example used here can serve as a springboard to many other uses, sending you out on any one of hundreds of different tangents. Try out the applications that interest you, and happy exploring!

### Setting Up

Before trying out these applications, make sure your system is set up correctly:

- Connect all MIDI instruments properly. (Use the connection examples above as a reference.)
- Use the P-500 in the Performance Edit mode. (See page 40.)
- Set both **VOICE KEYBOARD MODE** and **MIDI KEYBOARD MODE** (page 70) to **dual** (so that all main Paths are active).
- Set the internal Voices that you want to use in the Dual mode in **WAVE/NAME** (page 53).
- Make sure that **TRANSMIT CHANNEL** (page 81) is on for all four paths, and that each is set to a different channel.
- If you have four different tone generators, set each to a different receive channel. If you have a multi-timbral tone generator, set each voice to a different receive channel. In each case, make sure the channels match the corresponding Transmit Channel settings on the P-500.

If you've set up everything correctly — including your audio connections — you should be able to hear the four MIDI instruments and the internal Voices of the P-500 sound together in a massive six-voice layer when you play the keyboard.

#### HINT

If you're using all four Paths as you work through these applications, you may often want to turn off one or more of the Paths to better hear the effect of your editing. For example, if you're working primarily with Voice A and MIDI A, try this:

- ↻ In **MIDI** — **[F1] TRANSMIT CHANNEL** (page 81), select both **Voice B** and **MIDI B** so that both parameters are highlighted.
- ↻ Use **[F1]** or **[F2]** to turn them off or on, as needed.

Now, go to other pages and continue editing. When you need to turn Voice B and MIDI B off or on, simply press **MIDI** then **[F1]** or **[F2]** (the parameters are automatically selected).

Remember also that you can compare the effects of your edits with the previous condition with the Compare function. (See page 37.)

### 1 Independent Program Change Numbers

With your new layer of voices, you'll want to be able to choose the individual voices from the P-500. By assigning different program change numbers to each Path, you can automatically call up the desired voices when you select the created Performance.

#### Settings:

- ↻ **PROGRAM CHANGE** — **[F1] PROGRAM CHANGE TX** (page 79)  
Set desired program number for each Path.

### 2 Independent Pitch and Transpose Settings

Changing the individual pitch and transpose settings of the voices in the layer can make the entire sound even bigger and richer.

#### Settings:

- ↻ **TRANPOSE** — **[F1] TRANPOSE** (page 67)  
Try various settings — harmonies of perfect fourths or fifths (+5, -5; +7, -7), and/or octaves (-24, -12, +12, +24).
- ↻ **VOICE TUNE** — **[F1] VOICE TUNE** (page 65)  
You can fill out the sound even more by detuning the internal Voices relative to each other (and to the voices of the MIDI instruments).

#### Variation

Try setting different levels for the various voices to achieve the best balance. You may want to set the harmonies or higher octaves slightly back in the mix for a more subtle effect.

#### Settings:

- ↻ **VOLUME** — **[F1] VOLUME** (page 64)

### 3 Dual and Split Combination

Let's take our six voices and arrange them in a Dual/Split combination — so that each side of the keyboard has a different three-instrument layer.

#### Settings:

- ↻ **KEYBOARD MODE** — **[F1] VOICE KEYBOARD MODE**, **[F2] MIDI KEYBOARD MODE** (page 70)  
Set the Type parameter for both of these to **split**, and make the desired Assign and Split Point settings. Consider carefully which voices you want on the lower half of the keyboard and which you want on the right. Or don't consider carefully; just experiment and try whatever sounds good.

### Variation

If you are using the Pedal Unit, try assigning the damper pedal to affect only one section of the keyboard (or even just one of the voices). For example, you could set it up so that pressing the pedal sustains notes only on the lower part of the keyboard, letting you play staccato on the upper part.

### Settings:

- ⇨ **FC** — [F1] **FC 1** (page 72)

Set the controller for the appropriate Path or Paths to **off**.

## 4 “Soft” Split

Instead of having two sets of voices change abruptly at a set Split Point, you may find it more musically useful for them to gradually blend into each other toward the middle of the keyboard. This is often called a “soft” split, since the voices crossfade with each other in respect to keyboard position, but, no definite split can be heard.

### IMPORTANT

Making a “soft” split does **not** use the Split mode. Use the Dual mode and make the following settings such that the Voice and MIDI Paths are on opposite sides of the keyboard. (In other words, Voice A **cannot** be on the other side of a split with Voice B.) In the settings below, Voice A is split with MIDI A, and Voice B with MIDI B.

### Settings:

- ⇨ **KEYBOARD MODE** — [F1] **VOICE KEYBOARD MODE**, [F2] **MIDI KEYBOARD MODE** (page 70)

Set the Type parameter for both of these to **dual**.

- ⇨ **KEYBOARD SENS.** — [F1] **VOICE KEY SCALE** (page 68)

Set the **Key Scale Curves** for both Voice A and Voice B to **H3**. Set **Point** to **A-1**.

- ⇨ **KEYBOARD SENS.** — [F2] **MIDI KEY SCALE** (page 68)

Set the **Key Scale Curves** for both MIDI A and MIDI B to **L3**. Set **Point** to **C7**.

## 5 Velocity Crossfade

Another way to “split” voices is by velocity. In this application, you can have one voice sound when you play the keyboard strongly and a different one sound when you play softly. Since this is a crossfade, the voices gradually blend into one another in the middle velocity range.

### IMPORTANT

Any of the Paths’ voices can be combined in a velocity crossfade. However, they must be in a layer together, and not on opposite sides of the keyboard in a split.

### Settings:

- ⇨ **KEYBOARD SENS.** — [F3] **VELOCITY CURVE** (page 69)

Try setting **Voice A** to **A5**, and **MIDI A** to **E2**. This lets you play only Voice A with a soft touch, and bring in the MIDI A voice when you play hard. Try also setting **Voice B** to **D2**; this mixes in Voice B with the other two only when you play at medium strength.

## 6 Multi-function Controllers

You can use a single controller of the P-500 to affect each of the Paths in completely different ways. In the example below, we’ll use After Touch to control four different functions simultaneously, so that when you press down hard on the keyboard:

- Vibrato is applied to Voice A.
- The volume of the MIDI A voice increases.
- Pitch Bend is applied to Voice B.
- The MIDI B voice is sustained.

### Settings:

- ⇨ **WHEEL CS PS AT** — [F1] **AFTER TOUCH A** (page 77)  
Set **Voice A** to **Mod.Wheel**, and **MIDI A** to **CtrlChg007**. (Keep the **Crv.** settings at **Nm.**)

- ⇨ **WHEEL CS PS AT** — [F2] **AFTER TOUCH B** (page 77)  
Set **Voice B** to **PitchCtrl**, and **MIDI B** to **CtrlChg064**. (Keep the **Crv.** settings at **Nm.**)

## 7 Same Function, Opposite Effect

By careful use of the Curves in each controller, you can have a single controller affect the **same** function in **different** ways. In the example below, we’ll use WHEEL 1 to bend the pitch of two voices in opposite directions.

### Settings:

- ⇨ **WHEEL CS PS AT** — [F3] **WHEEL 1 A** (page 77)  
Set **Voice A** to **PitchCtrl** and the Voice A **Crv.** to **Nm.** Set **MIDI A** to **CtrlChg009** and the MIDI A **Crv.** to **In**.

### Variation

In a similar application, you could use WHEEL 2 to control the panning of two different voices. Moving WHEEL 2 to the maximum position pans one voice to the left and the other to the right. As you move WHEEL 2 down toward the minimum, the voices gradually “cross” each other, the first voice going to the right and the other to the left.

### Settings:

- ⇨ **WHEEL CS PS AT** — [F4] **WHEEL 2 A** (page 77)  
Set **Voice A** to **Panpot** and the Voice A **Crv.** to **Nm.** Set **MIDI A** to **CtrlChg010** and the MIDI A **Crv.** to **In**.

## 8 Controlling a Rhythm Machine or Sequencer

When you're using a rhythm machine or sequencer to automatically play backing parts for a live performance, the P-500 conveniently lets you execute Start, Stop and Continue commands with the PS switches or connected Foot Switches.

Here, we'll use the PS 1 switch to start the rhythm machine or sequencer over the MIDI A Path, and a Foot Switch (connected to FOOT CONTROLLER jack 4) to stop it.

### Settings:

⇨ **WHEEL CS PS AT** — [F7] **PS 1 A** (page 78)

Set **MIDI A** to **FA:Start**

⇨ **FC** — [F4] **FC 4 A** (page 72)

Set **MIDI A** to **FA:Stop**

# APPENDIX

## ■ TROUBLESHOOTING

Since the P-500 is an exceptionally sophisticated instrument with many controls and functions, it may occasionally not function as you expect. If this happens, use the list below as a guide for spotting and solving the particular problem you're experiencing. Remember that you can also use the TROUBLESHOOT function in the Utility mode to spot certain problems.

When you come across some problem in the sound, first check whether the problem is in the P-500 itself, or in one of the connected devices, or in any of the connecting audio or MIDI cables:

- Connect a set of headphones to the P-500 and check that the sound is properly output. If the sound in the headphones is fine, the problem is in the connecting cables or the connected equipment.
- Also try changing Voices or Performances on the P-500 and check if the problem persists. If the problem occurs with only one specific Voice or Performance, that Voice or Performance is at fault. If the problem occurs irrespective of the Voice or Performance selected, check some of the global settings of the P-500 (such as those of System Setup or the panel EQUALIZER).

Problem	Possible Cause and Solution
<b>No sound is output from the P-500.</b>	Check that: <ul style="list-style-type: none"> <li>• The power of the amplifier/mixer is turned on.</li> <li>• The volume of the amplifier/mixer is turned up.</li> <li>• The output jacks of the P-500 are correctly connected to the input jacks of the amplifier/mixer. ( → page 5)</li> <li>• The audio cable is not damaged or shorted out.</li> <li>• The volume is turned up. Make sure that the MASTER VOLUME slider is at or near maximum. ( → page 6)</li> <li>• The Switch and Voice level settings in the Quick Edit's Volume page (or the Volume parameters, in the Edit mode) are set appropriately. ( → pages 29, 64)</li> <li>• The Expression level is turned up. ( → page 64)</li> <li>• The Foot Controller which is assigned to Volume or Expression is pressed down. ( → page 72)</li> <li>• The Local Switch parameter is set to on. (When this is off, the keyboard cannot play the internal Voices of the P-500.) ( → page 82)</li> <li>• The Transmit Channel is set to the same value as the Voice Receive Channel (if the Local Switch is off and you are playing the P-500 Voices via a sequencer, or some other MIDI routing scheme). ( → page 81)</li> </ul>
<b>Little or no sound is output.</b>	Check that: <ul style="list-style-type: none"> <li>• The Velocity Curve settings are appropriate. ( → page 69)</li> <li>• The Frequency and Sensitivity parameters of the WAH&gt;TOUCH Effect are not set too low. (If these are both set to 0, no sound will be output for the Voice.) ( → page 58)</li> </ul>
<b>Depending on what keys of the keyboard are played, no sound (or a very soft sound) is output.</b>	Check that: <ul style="list-style-type: none"> <li>• The Key Scale parameters are set to Nm (Normal). ( → page 68)</li> <li>• (When in Split mode) the Volume parameters of both Voice A and B are set appropriately. ( → page 64)</li> </ul>
<b>Distorted sound.</b>	Check that: <ul style="list-style-type: none"> <li>• The output of the P-500 is not connected to a microphone input jack of amplifier/mixer. Also, check the gain control on the amplifier/mixer, if applicable.</li> <li>• The Equalizer settings are appropriate. If Gain in the GEQ pages is set too high, distortion may result. Also, check the panel EQUALIZER settings. ( → pages 55,45)</li> </ul>
<b>The pitch of the P-500 is off or out of tune (compared to standard pitch or other instruments).</b>	Check that: <ul style="list-style-type: none"> <li>• The Master Tune parameter is set correctly. ( → page 84)</li> <li>• The Voice Tune parameter is set to 0. ( → page 65)</li> <li>• The Master Transpose parameter is set correctly. ( → page 84)</li> <li>• The Voice Transpose parameter is set correctly. ( → page 67)</li> <li>• The Piano Tune and Microtune parameters are properly set. (In particular, the individual keys in Microtune should not have special tune settings.) ( → pages 65, 66)</li> <li>• DETUNE in the Effect section is not applied. ( → page 57)</li> <li>• The After Touch setting is appropriate. If After Touch is used to control pitch bend, the pitch may vary as you press down hard on the keyboard. ( → page 77)</li> </ul>
<b>The pitch of the P-500 is not pure.</b>	Check that pitch modulation effects such as DETUNE and PHASER in the Effect section and the various Modulation section effects are off. ( → pages 57, 60)

Problem	Possible Cause and Solution
The sound is too "tinny," too "boomy," or radically different in timbre than expected.	Check the Equalizer settings. If both the (TG) GEQ parameters and the panel EQUALIZER sliders have been set to settings other than "flat," they may be doubling each other or working against each other. Adjust one or the other to flat settings. ( → pages 55, 45)  Also, check the Effect, Modulation and Reverb sections. Use of these effects can drastically change the sound. ( → pages 56, 60, 62)
The stereo position of the sound seems to be wrong, or other than what was intended.	Even when the TG Pan Position parameter is set so that a Voice is output from only one side, using a stereo effect in the Effect section will result in the sound being output from both sides in stereo. ( → pages 55, 56)
Some notes of a played chord or sustained passage (held with the damper pedal) cannot be heard.	You may have played more notes than the maximum polyphony of the P-500. Remember that using the Dual or Split modes cut down on available polyphony. This situation may also occur when playing the keyboard of P-500 at the same time a sequencer is being used to play the internal Voices. ( → page 24)
The Effect, Modulation or Reverb sound cannot be heard.	Check that: • The Effect Bypass is set to active, not bypass. ( → page 85) • The particular effect has appropriate settings; make sure especially that the Switch parameter is on. ( → pages 56, 60, 62)
The Modulation (or Special Reverb) effect cannot be used.	Modulation and Special Reverb cannot be used at the same time. If a Special Reverb type is selected (even if the Switch parameter is off), all Modulation parameters are disabled. If Modulation is on, none of the Special Reverb types can be selected. ( → pages 60, 63)
No sound is output from the connected MIDI instruments.	Check that: • All MIDI connections have been properly made. ( → pages 5, 90) • The receive channel of the connected device matches that of the Transmit Channel for the selected Path on the P-500. ( → page 81) • The Volume settings for all Paths are appropriate. ( → page 64) • The Voice and MIDI Keyboard Mode settings are appropriate. If the Assign parameter is off (or only one voice Path is assigned), no sound (or an unexpected sound) may result. ( → page 70)
The sound of the connected MIDI instruments is too soft (or too loud).	Check that the Velocity Curve settings are appropriate. ( → page 69)
Connected MIDI instruments sound, but do not change programs when changing Performances on the P-500.	Check that program change receive (or the equivalent parameter) on the receiving MIDI instrument has not been turned off.
Sustain (damper pedal operation) doesn't work properly.	Check that the pedal is properly connected to FOOT CONTROLLER jack and that proper settings have been made in the FC pages ( → page 72)  Also, if you are using a pedal switch with opposite polarity, set the appropriate Curve parameter to In. ( → page 74)

## ■ ERROR MESSAGES

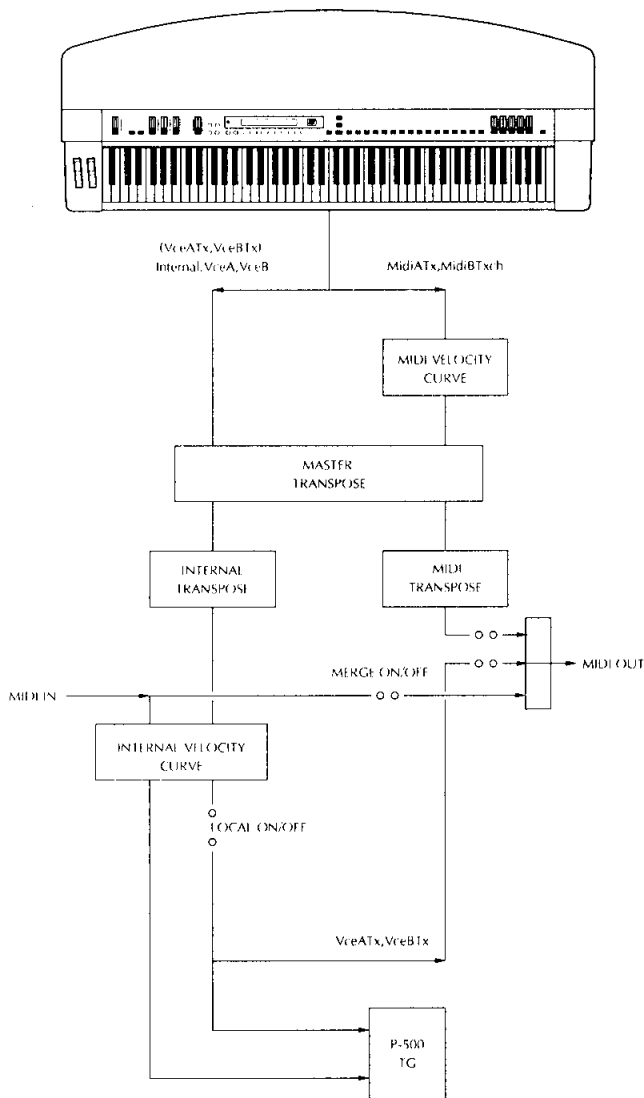
LCD Display	Explanation
Initialize Locked	Since the Initialize Lock parameter is on, the Initialize operation cannot be executed. ( → page 89)
Cannot Swap in Edit Mode	The Swap operation cannot be executed during editing in any of the Edit modes.
MIDI Buffer Overflow	This appears when too much MIDI data is transmitted or received at once. Transmission or reception of data is interrupted and cannot be continued. Reduce the amount of data and attempt the operation again.
MIDI Data Error	An error occurred during reception of MIDI data. Check all MIDI connections, settings, etc., and attempt the operation again.
MIDI Bulk Check Sum Error	An error occurred during reception of bulk data. Check all MIDI connections, settings, etc., and attempt the operation again.
MIDI Bulk Locked	Bulk data cannot be received, since the Bulk Receive Lock is currently on. ( → page 85)
Device Number Error	Bulk data cannot be transmitted or received since the Device Number parameter is either turned off or does not match that of the connected device.
Merge Sw On, Cannot Send Bulk	The Send Bulk Data operation cannot be executed when MIDI Merge is on.
REPLACE BATTERY	The internal backup battery charge is low and the battery should be replaced.
Object Type Mismatch	Copy or Swap operations cannot be executed when the types do not match. ( → pages 86, 87)
Cannot Copy to the Same Voice/Perf.	The Copy operation cannot be executed if the source and destination for copying is the same.
Cannot Swap With the Same Voice/Perf.	The Swap operation cannot be executed if the source and destination for swapping is the same.

# SPECIFICATIONS

<b>Keyboard</b>	88-key (A-1 to C7), velocity sensitive, with assignable After Touch	
<b>Tone Generator</b>	AWM; 32-note maximum polyphony	
<b>Voices</b>	(Voice A/B): PIANO 1 - 4, E.PIANO (ELECTRIC PIANO) 1 - 5, CLAVI, CLTONE (CLAVINOVA TONE)	
<b>Play Modes:</b>	Single, Dual, Split	
<b>Performances:</b>	1 - 32	
<b>Chains:</b>	1 - 16	
<b>Panel Equalizer</b>	LOW, LO-MID, MID, HI-MID, HIGH	
<b>Edit</b>	Edit Functions: Quick Edit: Edit Parameters:	Edit, Store OFF, EFFECT, MODULATION, REVERB, VOLUME TG: Wave/Name; EG (Envelope Generator; Attack, Decay, Release); Vibrato (Depth, Speed); Pan (Position, Range); Graphic Equalizer (Low, Low-mid, Mid, High-mid, High, Gain) Effect: Enhancer (Power, Sharp, Tight); Compressor; Detune; Touch Chorus; Phaser; Pan; Wah (LFO, Touch, Delay); Soundboard Modulation: Chorus (Pure, Detune, Bright, Wide, Pan); Phaser (Light, Deep); Pan (A, PJ); Flanger Reverb: Reverb (Large Hall, Plate, Church, Small Hall, Large Room, Small Room, Early Reflection); Echo (J, J3, J4); Special Reverb (Concert, Clean, DX-Plate, ER + Hall, Salon, Mid-Room) Volume: Volume (On/Off, 0 - 127); Expression (0 - 127) Voice Tune: Voice Tune (-63 - +63); Piano Tune (Low: 1 - 3; High: 1 - 3); Microtune (On/Off, -63 - +63) Transpose: Transpose (On/Off, -24 - +24) Pitch Bend Range: Wheel (0 - 3); After Touch (-3 - +3) Keyboard Sensitivity: Voice/MIDI Key Scale (L3 - H3, Point); Velocity Curve (A1 - F3) Keyboard Mode: Voice/MIDI Keyboard Mode (Single/Dual/Split, Assign, Point); Performance Name (cursor movement: ◀, ▶; characters) Foot Controller: FC 1 - 4 (On/Off, Voice/MIDI controls, Curve) Wheel, CS, PS, AT: After Touch; Wheel; Continuous Slider; Panel Switch (On/Off, Voice/MIDI controls, Curve/Mode) Program Change: Program Change Transmit (On/Off, Voice, MIDI); Program Change Receive (On/Off); Voice/MIDI Bank Transmit (On/Off, MSB/LSB) MIDI: Transmit Channel (On/Off, Voice/MIDI); Receive Channel (On/Off, Voice); Local (On/Off); MIDI Merge (On/Off) Extra MIDI Setup: Extra MIDI Setup (On/Off, Transmit Channel, Bank MSB/LSB, Program Change, Volume) Chain: Chain (Menu 1 - 16; cursor movement: ◀, ▶, ▲, ▼; Insert, Delete) System Setup: Master Tune/Transpose (Tune: 427.7 Hz - 452.7 Hz; Transpose: - 24 - +24); Bulk Receive (To, Lock On/Off); Performance Change (On/Off, Transmit/Receive Channel); Device Number (On/Off, Number); Effect Bypass (Effect/Modulation/Reverb: Bypass/Active)
<b>Utility</b>	Copy (From, To, Reverb/Modulation On/Off); Swap (Object 1/2); Recall/Revert; Send Bulk; MIDI Monitor (Out/In); Troubleshoot (Type); Initialize (Object, Lock On/Off)	
<b>View</b>	[F1]: Transmit Channel; [F2]: Receive Channel; [F3]: Volume; [F4]: Bank/Program Change A (Voice/MIDI/Extra MIDI A); [F5]: Bank/Program Change B (Voice/MIDI/Extra MIDI B); [F6]: Signal Path; [F7]: Keyboard Mode; [F8]: PC (Program Change) Sender	
<b>Help</b>	Context-sensitive Help messages	
<b>Controls</b>	POWER; MASTER VOLUME; WHEEL 1, 2; PS 1, 2; CS 1, 2; Function buttons [F1] - [F8]; DATA ENTRY; +/- buttons; PAGE ◀, ▶; LCD CONTRAST; Soft/Sostenuto/Damper (Sustain) Pedals, MIDI PANIC	
<b>Indicators</b>	LCD display: 40-character x 2-row, backlit LED display: red two-digit numeric	
<b>Button lamps:</b>	EDIT button (green); 1-16, 17-32 buttons (red); PRESET VOICE button (red); Voice/Performance Select buttons (red/green)	
<b>Input Jacks</b>	FOOT CONTROLLER jacks (1/SUSTAIN, 2, 3, 4)	
<b>Output Jacks</b>	LINE OUT jacks (L/MONO, R; unbalanced, 1/4" phone); LINE OUT jacks (L, R; balanced, XLR); PHONES jack	
<b>MIDI Terminals</b>	MIDI IN, MIDI OUT, MIDI THRU	
<b>Electrical Characteristics</b>	Power Consumption:	25 W
	Output Impedance:	Phone (600Ω), XLR (150Ω)
<b>Dimensions</b>	1447(W) x 548(D) x 773(H) mm (57" x 21-5/8" x 30-1/2")	
<b>Weight</b>	55 kg (121 lbs.)	
<b>Included Accessories</b>	Keyboard Stand, Pedal Unit, Attachment for Extra Keyboard	
<b>Optional Accessories</b>	Yamaha FC4, FC5 Foot Switches; Yamaha FC7 Foot Controller	

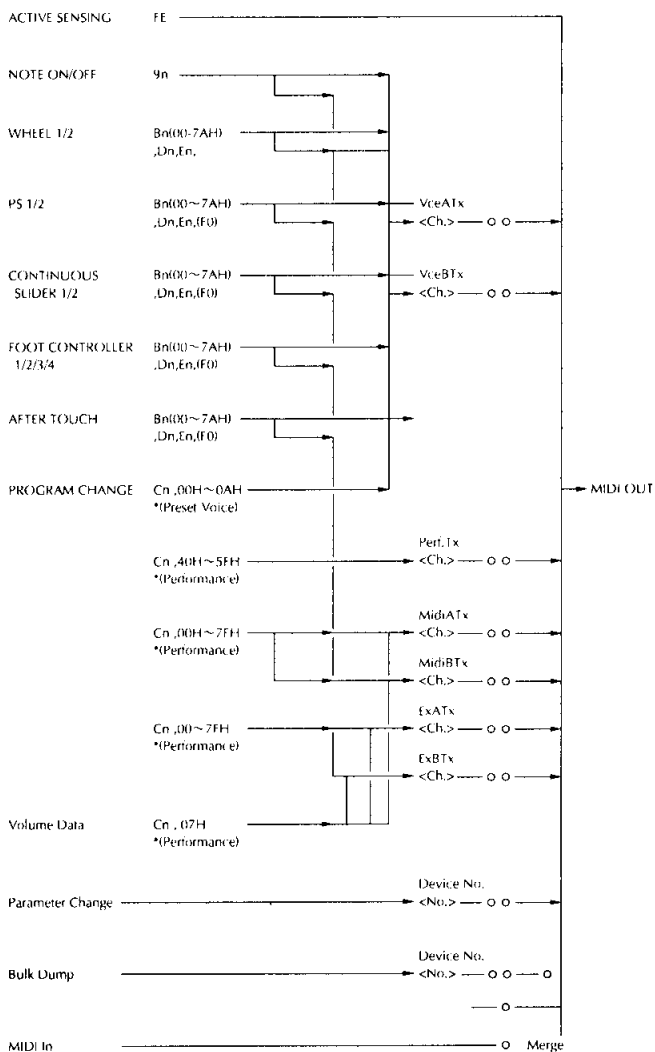
# MIDI DATA FORMAT

## 1. MIDI DATA FLOW



## 2. MIDI TRANSMISSION/RECEPTION

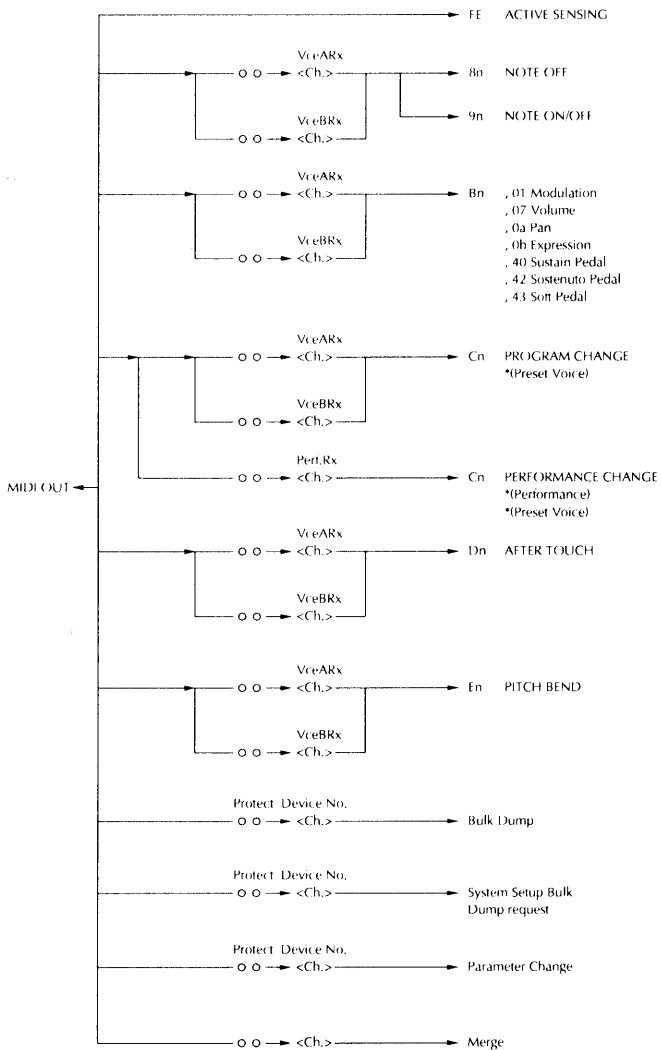
### 2.1 MIDI Transmission Conditions



\*(Preset Voice) : Preset Voice Mode only  
\*(Performance) : Performance Mode only



## 2.2 MIDI Reception Conditions



\*[Preset Voice] : Preset Voice Mode only  
 \*(Performance) : Performance Mode only

## 3. CHANNEL MESSAGES

### 3.1 Transmission

#### 3.1.1. Note On/Off

[9nH] → [kk] → [vv]

9nH : Note on/off Status  
 n : Channel No.  
 kk : Key no.  
 Transpose : 21(A-1)-108(C7)  
 vv : Velocity  
 Key on : 1-127  
 Key off : 0

\*Note range can be extended to 1-127  
 with MIDI A/B Transpose.

### 3.1.2. Control Change

Control Number

cc	PARAMETER	Value.
0 -- 120	WHEEL 1	0 -- 127
0 -- 120	WHEEL 2	0 -- 127
0 -- 120	FC 1	0 -- 127
0 -- 120	FC 2	0 -- 127
0 -- 120	FC 3	0 -- 127
0 -- 120	FC 4	0 -- 127
0 -- 120	CS 1	0 -- 127
0 -- 120	CS 2	0 -- 127
0 -- 120	PS 1	0, 127
0 -- 120	PS 2	0, 127

#### 3.1.3. Program Change

Program Change messages are transmitted on the Transmit Channel when a Voice is selected.

#### 3.1.4. After Touch

When After Touch is assigned to an assignable controller, After Touch data is transmitted.

#### 3.1.5. Pitch Bend

Pitch Bend is transmitted with 7-bit resolution.

## 3.2 Reception

### 3.2.1. Note On/Off

1) [9nH] → [kk] → [vv] n : Channel No.

9nH : Note on/off Status  
 kk : Key note  
 Reception : 0-127  
 vv : Velocity  
 Key on : 1-127  
 Key off : 0

2) [8nH] → [kk] → [vv] n : Channel No.

8nH : Note off Status  
 kk : Key no.  
 Reception : 21-108  
 vv : Velocity  
 Key off : 0-127

\*Note range can be extended to 0-127  
 with MIDI A/B Transpose.

### 3.2.2. Control Change

[BnH] → [cc] → [vv]

BnH : Control Change Status  
 n : Channel No.  
 cc : Control No.  
 vv : Value

cc	Description	vv
1	Modulation Depth	0 -- 127
7	Volume	0 -- 127
10	Pan	0 -- 127
11	Expression	0 -- 127
64	Sustain Pedal	0 -- 127
66	Sostenuto Pedal	0 -- 127
67	Soft Pedal	0 -- 127

### 3.2.3. Program Change

Program Change messages received on the Program Change Receive Channel select a Voice on the P-500.

### 3.2.4. Pitch Bend

Only the MSB of the Pitch Bend is received.

## 4. SYSTEM REAL TIME MESSAGES

When Start, Continuous or Stop is assigned to assignable controller, System Realtime messages are transmitted.

## 5. System Exclusive Messages

### 5.1 Parameter Change

#### 5.1.1. System Setup

```

11110000 F0
01000011 43
0001nnnn nnnn=Device Number
00101010 2A
00010000 10
00000000 00
00000000 00
0ppppppp ppppppp=N2
00000000 00
0vvvvvvv vvvvvv=Data Value
11110111 F7
    
```

#### 5.1.2. Chain Table

```

11110000 F0
01000011 43
0001nnnn nnnn=Device Number
00101010 2A
00010001 11
00000000 00
0iiiiiii iiiiii=N1
0ppppppp ppppppp=N2
00000000 00
0vvvvvvv vvvvvv=Data Value
11110111 F7
    
```

#### 5.1.3. Voice

```

11110000 F0
01000011 43
0001nnnn nnnn=Device Number
00101010 2A
00010010 12
00000000 00
0iiiiiii iiiiii=N1
0ppppppp ppppppp=N2
00000000 00
0vvvvvvv vvvvvv=Data Value
11110111 F7
    
```

#### 5.1.4. Microtuning

```

11110000 F0
01000011 43
0001nnnn nnnn=Device Number
00101010 2A
00010011 13
00000000 00
0iiiiiii iiiiii=N1
0ppppppp ppppppp=N2
00000000 00
0vvvvvvv vvvvvv=Data Value
11110111 F7
    
```

### 5.1.5. Modulation/Reverb

```

11110000 F0
01000011 43
0001nnnn nnnn=Device Number
00101010 2A
00010100 14
00000000 00
00000000 00
0ppppppp ppppppp=N2
00000000 00
0vvvvvvv vvvvvv=Data Value
11110111 F7
    
```

### 5.1.6. MIDI & Extra MIDI

```

11110000 F0
01000011 43
0001nnnn nnnn=Device Number
00101010 2A
00010101 15
00000000 00
0iiiiiii iiiiii=N1
0ppppppp ppppppp=N2
00000000 00
0vvvvvvv vvvvvv=Data Value
11110111 F7
    
```

### 5.1.7. Others

```

11110000 F0
01000011 43
0001nnnn nnnn=Device Number
00101010 2A
00010110 16
00000000 00
00000000 00
0ppppppp ppppppp=N2
00000000 00
0vvvvvvv vvvvvv=Data Value
11110111 F7
    
```

### 5.1.8. Controller

```

11110000 F0
01000011 43
0001nnnn nnnn=Device Number
00101010 2A
00010111 17
00000000 00
00000000 00
0ppppppp ppppppp=N2
00000000 00
0vvvvvvv vvvvvv=Data Value
11110111 F7
    
```

## 5.2 Bulk Dump

The P-500 is capable of transmitting and receiving the following types of bulk dumps:

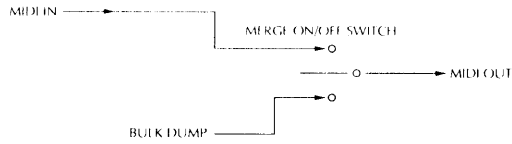
1. System Setup bulk dumps:
  - 1-1. System Setup
  - 1-2. Chain table
2. Voice bulk dumps:
  - 2-1. Voice
  - 2-2. Microtuning
  - 2-3. Modulation/Reverb
3. Performance bulk dumps:
  - 3-1. Voice
  - 3-2. Microtuning
  - 3-3. Modulation/Reverb
  - 3-4. MIDI and Extra MIDI
  - 3-5. Other bulk dumps

Note: Bulk dump cannot be executed when the Device Number is off and/or the MIDI Merge function is on.

The above ten types can transmitted/received independently.

### 5.3 MIDI Merge

The P-500 has a MIDI Merge function which allows it to merge the MIDI data it generates with data received at the MIDI IN terminal, then transmit the combined data from the MIDI OUT terminal.



MIDI messages received on the same channel as the P-500's MIDI transmit channel are transmitted without alteration. As a result, the controllers of the P-500 may not function as expected when MIDI Merge is used, since both the P-500's internal Voices and any devices receiving the merged data can be controlled by the controllers of either the P-500 or the device connected to MIDI IN. For the same type of controller, the last-generated control messages will always take priority. Also, notes being sounded by the P-500 may be turned off by received All Notes Off messages.

Active Sensing messages received at MIDI IN are not included in the merged data. However, if the P-500 detects an interruption in Active Sensing message reception, it will stop transmitting its own Active Sensing messages from MIDI OUT for an interval of 500 msec. This may cause devices receiving the merged data to interrupt their processing of note messages transmitted by the P-500.

When System Exclusive messages 32 bytes or longer are received, the relaying of these messages may be cut off by the P-500's own MIDI messages. The P-500 puts a temporary hold on the transmission of MIDI messages when it receives a System Exclusive message. However, as soon as the length of the received System Exclusive message exceeds 31 bytes, the hold is cleared. The P-500 then transmits an EOF (End of Exclusive) message before transmitting its own data. When this happens, the P-500 will not pass on any received data until it receives data with a status byte other than that of System Realtime messages.

The P-500's Bulk Dump function cannot be used when MIDI Merge is on.

When the P-500 receives a Channel message (such as Control Change or Program Change) while receiving System Exclusive messages, the P-500 will transmit an EOF message and stop receiving the System Exclusive messages, then will resume transmitting the new Channel messages as they are received.

If the P-500 receives an F6H or System Realtime message while receiving a System Exclusive message, it will ignore the F6H or System Realtime message.

### 5.4 Panic

Key Off	→	90 00 00 .. 9F 7F 00
All Note Off	→	B0 7B 00 .. BF 7B 00
Sustain Off (00H)	→	B0 40 00 .. BF 40 00
Modulation Depth Off (00H)	→	B0 01 00 .. BF 01 00
Channel Pressure Off	→	D0 00 .. DF 00
Pitch Bend Depth Center (40H)	→	E0 00 40 .. FF 00 40
Reset All Controllers	→	B0 79 00 .. BF 79 00

## 6. PARAMETER CHANGE TABLE

### 6.1 System Setup

F0H,43H,1nH,2AH,10H,00H,00H,N2H,00H,V2H,F7H  
 n : Device No.  
 N2H : Parameter No.  
 V2H : Parameter Value 2

	N2	Data Name	V2(Data Range)	Notes
0	00	MTUNE	0~64~127	Master Tuning
1	01	MNSEF	0~24~48	Master Transpose
2	02	BLKXSW	0,127	Bulk Rx Lock SW
3	03	BLKXDLST	0~108	Bulk Rx Dest.
4	04	DEVNUMSW	0,127	Device No. SW
5	05	DEVNUM	0~16	Device No.
6	06	PERFXSW	0,127	Perf.TxCh SW
7	07	PERFXNUM	0~17	Perf.TxCh No.
8	08	PERFRXSW	0,127	Perf.RxCh SW
9	09	PERFRXNUM	0~17	Perf.RxCh No.
10	0A	MEFFSW	0,127	Effect Bypass SW
11	0B	MMODSW	0,127	Modulation Bypass SW
12	0C	MREVSW	0,127	Reverb Bypass SW

### 6.2 Chain Table

F0H,43H,1nH,2AH,11H,00H,N1H,N2H,00H,V2H,F7H  
 n : Device No.  
 N1H : Parameter No.  
 N2H : Parameter No.  
 V2H : Parameter Value 2

	N2	Data Name	V2(Data Range)	Notes
0	00	Chain	-01	1 item in Chain (1,...,32)
1	01		-02	2 items in Chain (1,...,32)
2	02		-03	3 items in Chain (1,...,32)
3	03		-04	4 items in Chain (1,...,32)
4	04		-05	5 items in Chain (1,...,32)
5	05		-06	6 items in Chain (1,...,32)
6	06		-07	7 items in Chain (1,...,32)
7	07		-08	8 items in Chain (1,...,32)
8	08		-09	9 items in Chain (1,...,32)
9	09		-10	10 items in Chain (1,...,32)
10	0A		-11	11 items in Chain (1,...,32)
11	0B		-12	12 items in Chain (1,...,32)
12	0C		-13	13 items in Chain (1,...,32)
13	0D		-14	14 items in Chain (1,...,32)
14	0E		-15	15 items in Chain (1,...,32)
15	0F		-16	16 items in Chain (1,...,32)
16	10		-17	17 items in Chain (1,...,32)
17	11		-18	18 items in Chain (1,...,32)
18	12		-19	19 items in Chain (1,...,32)
19	13		-20	20 items in Chain (1,...,32)
20	14		-21	21 items in Chain (1,...,32)
21	15		-22	22 items in Chain (1,...,32)
22	16		-23	23 items in Chain (1,...,32)
23	17		-24	24 items in Chain (1,...,32)
24	18		-25	25 items in Chain (1,...,32)
25	19		-26	26 items in Chain (1,...,32)
26	1A		-27	27 items in Chain (1,...,32)
27	1B		-28	28 items in Chain (1,...,32)
28	1C		-29	29 items in Chain (1,...,32)
29	1D		-30	30 items in Chain (1,...,32)
30	1E		-31	31 items in Chain (1,...,32)
31	1F		-32	32 items in Chain (1,...,32)

N1	Chain Number
00H	1
:	:
0FH	16

### 6.3 Voice

F0H,43H,1nH,2AH,12H,00H,N1H,N2H,00H,V2H,F7H  
 n : Device No.  
 N1H : Parameter No.  
 N2H : Parameter No.  
 V2H : Parameter Value 2

	N2	Data Name	V2(Data Range)	Notes
0	00	WNUM	0~10	Wave No.
1	01	VCENAME1	0~95	Voice Name Character 1
2	02	VCENAME2	0~95	Voice Name Character 2
3	03	VCENAME3	0~95	Voice Name Character 3
4	04	VCENAME4	0~95	Voice Name Character 4
5	05	VCENAME5	0~95	Voice Name Character 5
6	06	VCENAME6	0~95	Voice Name Character 6
7	07	VCENAME7	0~95	Voice Name Character 7
8	08	VCENAME8	0~95	Voice Name Character 8
9	09	ATR	0~7	Attack Rate
10	0A	DR	0~7	Decay Rate
11	0B	RR	0~7	Release Rate
12	0C	VIBD	0~15	Vibrato Depth
13	0D	VIBS	0~31	Vibrato Speed
14	0E	PANP	0~14	Pan Point
15	0F	PANS	0~3	Pan Key Scale
16	10	GEQLO	0~24~48	GEQ Low 0
17	11	GEQLM	0~24~48	GEQ Low Mid
18	12	GEQM	0~24~48	GEQ Mid
19	13	GEQHIM	0~24~48	GEQ High Mid
20	14	GEQHI	0~24~48	GEQ High
21	15	GEQG	0~32~48	GEQ Gain
22	16	VCETUNE	0~126	Voice Tuning
23	17	PTUNEL0	0~2	Piano Tuning Low
24	18	PTUNEHI	0~2	Piano Tuning High
25	19	MTUNE	0,127	Micro Tune SW

N2	Data Name	V2(Data Range)	Notes
26	1A reserved		
27	1B VCEVOLSW	0,127	Voice Volume SW
28	1C VCEVOL	0~127	Voice Volume
29	1D VCEEXP SW	0,127	Voice Exp. SW
30	1E VCEEXP	0~127	Voice Exp.
31	1F reserved		
32	20 VCESFTSW	0,127	Transpose SW
33	21 VCISFT	0~48	Transpose
34	22 PBRW	0~3	PB Range Wheel
35	23 PBR0	0~6	PB Range Other
36	24 VELCRV	0~19	Velocity Curve Type
37	25 reserved		
38	26 reserved		
39	27 reserved		
40	28 EFFSW	0,127	Effect SW
41	29 EFFTY	0~11	Effect Type
42	2A EFFD1	0~32	Effect Depth 1
43	2B EFFD2	0~32	Effect Depth 2
44	2C EFFD3	0~32	Effect Depth 3
45	2D reserved		
46	2E reserved		
47	2F reserved		
48	30 VCEPCTXSW	0,127	P.C. Number Send SW
49	31 VCEPCTXNUM	0~127	P.C. Number
50	32 reserved		
51	33 VCEPCBSW	0,127	P.C. Bank Send SW
52	34 VCEPCBLO	0~127	P.C. Bank LSB Number
53	35 VCEPCBHI	0~127	P.C. Bank MSB Number
54	36 reserved		
55	37 reserved		
56	38 WHL1VSW	0,127	Wheel 1 Voice SW
57	39 WHL1VASS	0~18	Wheel 1 Voice Assign
58	3A WHL1VCRV	0~8	Wheel 1 Voice Curve Type
59	3B WHL2VSW	0,127	Wheel 2 Voice SW
60	3C WHL2VASS	0~18	Wheel 2 Voice Assign
61	3D WHL2VCRV	0~8	Wheel 2 Voice Curve Type
62	3E CS1VSW	0,127	CS 1 Voice SW
63	3F CS1VASS	0~14	CS 1 Voice Assign
64	40 CS1VCRV	0~8	CS 1 Voice Curve Type
65	41 CS2VSW	0,127	CS 2 Voice SW
66	42 CS2VASS	0~14	CS 2 Voice Assign
67	43 CS2VCRV	0~8	CS 2 Voice Curve Type
68	44 PS1VSW	0,127	PS 1 Voice SW
69	45 PS1VASS	Perf/Chain	PS 1 Voice Assign
70	46 PS1VCRV	Nrm/Inv	PS 1 Voice Curve Type
71	47 PS2VSW	0,127	PS 2 Voice SW
72	48 PS2VASS	Perf/Chain	PS 2 Voice Assign
73	49 PS2VCRV	Nrm/Inv	PS 2 Voice Curve Type
74	4A ATVSW	0,127	A.T. Voice On/Off SW
75	4B ATVASS	0~18	A.T. Voice Assign
76	4C ATVCRV	0~8	A.T. Voice Curve Type
77	4D FC1VSW	0,127	FC 1 Voice SW
78	4E FC1VASS	0~18	FC 1 Voice Assign
79	4F FC1VCRV	0~8	FC 1 Voice Curve Type
80	50 FC2VSW	0,127	FC 2 Voice SW
81	51 FC2VASS	0~18	FC 2 Voice Assign
82	52 FC2VCRV	0~8	FC 2 Voice Curve Type
83	53 FC3VSW	0,127	FC 3 Voice SW
84	54 FC3VASS	0~18	FC 3 Voice Assign
85	55 FC3VCRV	0~8	FC 3 Voice Curve Type
86	56 FC4VSW	0,127	FC 4 Voice SW
87	57 FC4VASS	0~18	FC 4 Voice Assign
88	58 FC4VCRV	0~8	FC 4 Voice Curve Type

N1	Voice Number
00H	Voice A
01H	Voice B

#### 6.4 Microtuning

F0H,43H,1nH,2AH,13H,00H,N1H,N2H,00H,V2H,F7H  
n : Device No.  
N1H : Parameter No.  
N2H : Parameter No.  
V2H : Parameter Value 2

N2	Data Name	V2(Data Range)	Notes
0	00 MTUNE01	-64~63	Micro Tune A-1 key
1	01 MTUNE02	-64~63	Micro Tune A#-1 key
2	02 MTUNE03	-64~63	Micro Tune B-1 key
3	03 MTUNE04	-64~63	Micro Tune C0 key
4	04 MTUNE05	-64~63	Micro Tune C#0 key
5	05 MTUNE06	-64~63	Micro Tune D0 key
6	06 MTUNE07	-64~63	Micro Tune D#0 key
7	07 MTUNE08	-64~63	Micro Tune E0 key
8	08 MTUNE09	-64~63	Micro Tune F0 key
9	09 MTUNE10	-64~63	Micro Tune F#0 key
10	0A MTUNE11	-64~63	Micro Tune G0 key
11	0B MTUNE12	-64~63	Micro Tune G#0 key
12	0C MTUNE13	-64~63	Micro Tune A0 key
13	0D MTUNE14	-64~63	Micro Tune A#0 key
14	0E MTUNE15	-64~63	Micro Tune B0 key
15	0F MTUNE16	-64~63	Micro Tune C1 key
16	10 MTUNE17	-64~63	Micro Tune C#1 key
17	11 MTUNE18	-64~63	Micro Tune D1 key
18	12 MTUNE19	-64~63	Micro Tune D#1 key
19	13 MTUNE20	-64~63	Micro Tune E1 key
20	14 MTUNE21	-64~63	Micro Tune F1 key
21	15 MTUNE22	-64~63	Micro Tune F#1 key
22	16 MTUNE23	-64~63	Micro Tune G1 key
23	17 MTUNE24	-64~63	Micro Tune G#1 key
24	18 MTUNE25	-64~63	Micro Tune A1 key
25	19 MTUNE26	-64~63	Micro Tune A#1 key
26	1A MTUNE27	-64~63	Micro Tune B1 key
27	1B MTUNE28	-64~63	Micro Tune C2 key
28	1C MTUNE29	-64~63	Micro Tune C#2 key
29	1D MTUNE30	-64~63	Micro Tune D2 key
30	1E MTUNE31	-64~63	Micro Tune D#2 key
31	1F MTUNE32	-64~63	Micro Tune E2 key
32	20 MTUNE33	-64~63	Micro Tune F2 key
33	21 MTUNE34	-64~63	Micro Tune F#2 key
34	22 MTUNE35	-64~63	Micro Tune G2 key
35	23 MTUNE36	-64~63	Micro Tune G#2 key
36	24 MTUNE37	-64~63	Micro Tune A2 key
37	25 MTUNE38	-64~63	Micro Tune A#2 key
38	26 MTUNE39	-64~63	Micro Tune B2 key
39	27 MTUNE40	-64~63	Micro Tune C3 key
40	28 MTUNE41	-64~63	Micro Tune C#3 key
41	29 MTUNE42	-64~63	Micro Tune D3 key
42	2A MTUNE43	-64~63	Micro Tune D#3 key
43	2B MTUNE44	-64~63	Micro Tune E3 key
44	2C MTUNE45	-64~63	Micro Tune F3 key
45	2D MTUNE46	-64~63	Micro Tune F#3 key
46	2E MTUNE47	-64~63	Micro Tune G3 key
47	2F MTUNE48	-64~63	Micro Tune G#3 key
48	30 MTUNE49	-64~63	Micro Tune A3 key
49	31 MTUNE50	-64~63	Micro Tune A#3 key
50	32 MTUNE51	-64~63	Micro Tune B3 key
51	33 MTUNE52	-64~63	Micro Tune C4 key
52	34 MTUNE53	-64~63	Micro Tune C#4 key
53	35 MTUNE54	-64~63	Micro Tune D4 key
54	36 MTUNE55	-64~63	Micro Tune D#4 key
55	37 MTUNE56	-64~63	Micro Tune E4 key
56	38 MTUNE57	-64~63	Micro Tune F4 key
57	39 MTUNE58	-64~63	Micro Tune F#4 key
58	3A MTUNE59	-64~63	Micro Tune G4 key
59	3B MTUNE60	-64~63	Micro Tune G#4 key
60	3C MTUNE61	-64~63	Micro Tune A4 key
61	3D MTUNE62	-64~63	Micro Tune A#4 key
62	3E MTUNE63	-64~63	Micro Tune B4 key
63	3F MTUNE64	-64~63	Micro Tune C5 key
64	40 MTUNE65	-64~63	Micro Tune C#5 key
65	41 MTUNE66	-64~63	Micro Tune D5 key
66	42 MTUNE67	-64~63	Micro Tune D#5 key
67	43 MTUNE68	-64~63	Micro Tune E5 key
68	44 MTUNE69	-64~63	Micro Tune F5 key
69	45 MTUNE70	-64~63	Micro Tune F#5 key
70	46 MTUNE71	-64~63	Micro Tune G5 key
71	47 MTUNE72	-64~63	Micro Tune G#5 key
72	48 MTUNE73	-64~63	Micro Tune A5 key
73	49 MTUNE74	-64~63	Micro Tune A#5 key
74	4A MTUNE75	-64~63	Micro Tune B5 key
75	4B MTUNE76	-64~63	Micro Tune C6 key
76	4C MTUNE77	-64~63	Micro Tune C#6 key
77	4D MTUNE78	-64~63	Micro Tune D6 key
78	4E MTUNE79	-64~63	Micro Tune D#6 key
79	4F MTUNE80	-64~63	Micro Tune E6 key
80	50 MTUNE81	-64~63	Micro Tune F6 key
81	51 MTUNE82	-64~63	Micro Tune F#6 key
82	52 MTUNE83	-64~63	Micro Tune G6 key
83	53 MTUNE84	-64~63	Micro Tune G#6 key
84	54 MTUNE85	-64~63	Micro Tune A6 key
85	55 MTUNE86	-64~63	Micro Tune A#6 key
86	56 MTUNE87	-64~63	Micro Tune B6 key
87	57 MTUNE88	-64~63	Micro Tune C7 key

N1	Voice Number
00H	Voice A
01H	Voice B

## 6.5 Modulation/Reverb

F0H,43H,1nH,2AH,14H,00H,00H,N2H,00H,V2H,F7H  
n : Device No.  
N2H : Parameter No.  
V2H : Parameter Value 2

	N2	Data Name	V2(Data Range)	Notes
0	00	MODASW	0,127	Mod Voice A SW
0	00	MODBSW	0,127	Mod Voice B SW
2	02	MODTY	0~9	Mod Type
3	03	MODD	0~32	Mod Depth
4	04	MODS	0~32	Mod Speed
5	05	REVS	0,127	Reverb SW
6	06	REVTY	0~15	Reverb Type
7	07	REVVAD	0~32	VoiceA Reverb Depth
8	08	REVVBD	0~32	VoiceB Reverb Depth
9	09	REVTIM	0~32	Reverb Time
10	0A	REVMODMP	0~32	Rev High Damp
11	0B	REVMODIN	0~4	Reverb Mod In
12	0C	ECHTMP	0~127	Echo Tempo
13	0D	ECHDC	0~32	Echo Decay

## 6.6 MIDI & Extra MIDI

F0H,43H,1nH,2AH,15H,00H,N1H,N2H,00H,V2H,F7H  
n : Device No.  
N1H : Parameter No.  
N2H : Parameter No.  
V2H : Parameter Value 2

N1: 0, 1

	N2	Data Name	V2(Data Range)	Notes
0	00	reserved		
1	01	reserved		
2	02	reserved		
3	03	reserved		
4	04	reserved		
5	05	reserved		
6	06	reserved		
7	07	reserved		
8	08	reserved		
9	09	reserved		
10	0A	reserved		
11	0B	reserved		
12	0C	reserved		
13	0D	reserved		
14	0E	reserved		
15	0F	reserved		
16	10	reserved		
17	11	reserved		
18	12	reserved		
19	13	reserved		
20	14	reserved		
21	15	reserved		
22	16	reserved		
23	17	reserved		
24	18	reserved		
25	19	reserved		
26	1A	reserved		
27	1B	MIVOLS	0,127	MIDI Volume SW
28	1C	MIVOL	0~127	MIDI Volume
29	1D	reserved		
30	1E	reserved		
31	1F	reserved		
32	20	MISFTS	0,127	MIDI Transpose SW
33	21	MISFT	0~48	MIDI Transpose
34	22	reserved		
35	23	reserved		
36	24	MIVELC	0~19	MIDI OUT Velocity Curve Type
37	25	reserved		
38	26	reserved		
39	27	reserved		
40	28	reserved		
41	29	reserved		
42	2A	reserved		
43	2B	reserved		
44	2C	reserved		
45	2D	reserved		
46	2E	reserved		
47	2F	reserved		

	N2	Data Name	V2(Data Range)	Notes
48	30	MIPCTXSW	0,127	MIDI P.C. Number Send SW
49	31	MIPCTXNUM	0~127	MIDI P.C. Number
50	32	reserved		
51	33	MIPCBSW	0,127	MIDI P.C. Bank Send SW
52	34	MIPCBL0	0~127	MIDI P.C. Bank LSB Number
53	35	MIPCBI	0~127	MIDI P.C. Bank MSB Number
54	36	reserved		
55	37	reserved		
56	38	WHL1MISW	0,127	Wheel 1 MIDI OUT SW
57	39	WHL1MIASS	0~125	Wheel 1 MIDI OUT Assign
58	3A	WHL1MICRV	0~8	Wheel 1 MIDI OUT Curve Type
59	3B	WHL2MISW	0,127	Wheel 2 MIDI OUT SW
60	3C	WHL2MIASS	0~125	Wheel 2 MIDI OUT Assign
61	3D	WHL2MICRV	0~8	Wheel 2 MIDI OUT Curve Type
62	3E	CS1MISW	0,127	CS 1 MIDI OUT Switch
63	3F	CS1MIASS	0~125	CS 1 MIDI OUT Assign
64	40	CS1MICRV	0~8	CS 1 MIDI OUT Curve Type
65	41	CS2MISW	0,127	CS 2 MIDI OUT Switch
66	42	CS2MIASS	0~125	CS 2 MIDI OUT Assign
67	43	CS2MICRV	0~8	CS 2 MIDI OUT Curve Type
68	44	PS1MISW	0,127	PS 1 MIDI OUT Switch
69	45	PS1MIASS	0~125	PS 1 MIDI OUT Assign
70	46	PS1MICRV	0~8	PS 1 MIDI OUT Curve Type
71	47	PS2MISW	0,127	PS 2 MIDI OUT Switch
72	48	PS2MIASS	0~125	PS 2 MIDI OUT Assign
73	49	PS2MICRV	0~8	PS 2 MIDI OUT Curve Type
74	4A	ATMISW	0,127	A.T. MIDI OUT On/Off SW
75	4B	ATMIASS	0~125	A.T. MIDI OUT Assign
76	4C	ATMICRV	0~8	A.T. MIDI OUT Curve Type
77	4D	FC1MISW	0,127	Foot 1 MIDI OUT SW
78	4E	FC1MIASS	0~125	Foot 1 MIDI OUT Assign
79	4F	FC1MICRV	0~8	Foot 1 MIDI OUT Curve Type
80	50	FC2MISW	0,127	Foot 2 MIDI OUT SW
81	51	FC2MIASS	0~125	Foot 2 MIDI OUT Assign
82	52	FC2MICRV	0~8	Foot 2 MIDI OUT Curve Type
83	53	FC3MISW	0,127	Foot 3 MIDI OUT SW
84	54	FC3MIASS	0~125	Foot 3 MIDI OUT Assign
85	55	FC3MICRV	0~8	Foot 3 MIDI OUT Curve Type
86	56	FC4MISW	0,127	Foot 4 MIDI OUT SW
87	57	FC4MIASS	0~125	Foot 4 MIDI OUT Assign
88	58	FC4MICRV	0~8	Foot 4 MIDI OUT Curve Type

N1: 2, 3

185	00	EXVOLSW	0~127	Ex.MIDI Volume SW
186	01	EXVOL	0~127	Ex.MIDI Volume OUT
187	02	EXPCIXSW	0,127	Ex.MIDI P.C. Number Send SW
188	03	EXPCIXNUM	0~127	Ex.MIDI P.C. Number
189	04	EXBSW	0,127	Ex.MIDI P.C. Bank Send SW
190	05	EXBLO	0~127	Ex.MIDI P.C. Bank LSB Number
191	06	EXBI	0~127	Ex.MIDI P.C. Bank MSB Number

N1	MIDI Number
00H	MIDI A
01H	MIDI B
02H	EXTRA MIDI SETUP A
03H	EXTRA MIDI SETUP B

## 6.7 Others

F0H,4BH,10H,2AH,16H,00H,00H,N2H,00H,V2H,F7H  
 n: Device No.  
 N2H: Parameter No.  
 V2H: Parameter Value 2

	N2	Data Name	V2(Data Range)	Notes
0	00	PERNAME1	0~95	Perf.Name Character 1
1	01	PERNAME2	0~95	Perf.Name Character 2
2	02	PERNAME3	0~95	Perf.Name Character 3
3	03	PERNAME4	0~95	Perf.Name Character 4
4	04	PERNAME5	0~95	Perf.Name Character 5
5	05	PERNAME6	0~95	Perf.Name Character 6
6	06	PERNAME7	0~95	Perf.Name Character 7
7	07	PERNAME8	0~95	Perf.Name Character 8
8	08	MERGSW	0,1,27	Merge SW
9	09	reserved		
10	0A	VCTKEYMD	0,1,2	Voice Keyboard Mode
11	0B	VCTSPLP	0~87	Voice Split Point
12	0C	VCKEYASS	0~15	Voice KB Upper/Lower Assign
13	0D	MTUNEK	0~87	Micro Tune Key Point
14	0E	VCTSCP	0~87	Voice Scale Point
15	0F	MISCP	0~87	MIDI Scale Point
16	10	VCFATXSW	0,1,27	Voice A Tx Channel SW
17	11	VCFATXCH	0~15	Voice A Tx Channel Number
18	12	VCFARXSW	0,1,27	Voice A Rx Channel SW
19	13	VCFARXCH	0~17	Voice A Rx Channel Number
20	14	LOCALA	0,1,27	Voice A Local ON/OFF
21	15	VCFBTXSW	0,1,27	Voice B Tx Channel SW
22	16	VCFBTXCH	0~15	Voice B Tx Channel Number
23	17	VCFBRXSW	0,1,27	Voice B Rx Channel SW
24	18	VCFBRXCH	0~19	Voice B Rx Channel Number
25	19	LOCALB	0,1,27	Voice B Local ON/OFF
26	1A	VAPCRXSW	0,1,27	Voice A P.C.Number Receive SW
27	1B	VBPCRXSW	0,1,27	Voice B P.C.Number Receive SW
28	1C	MIRLYMD	0,1,2	MIDI keyboard Mode
29	1D	MISPLP	0~87	MIDI Keyboard Split Point
30	1E	MIRKEYASS	0~15	MIDI KB Upper/Lower Assign
31	1F	reserved		
32	20	MIAIXSW	0,1,27	MIDI A Tx Channel Sw
33	21	MIAIXCH	0~15	MIDI A Tx Channel Number
34	22	MIBIXSW	0,1,27	MIDI B Tx Channel Sw
35	23	MIBIXCH	0~17	MIDI B Tx Channel Number
36	24	EXAIXSW	0,1,27	Ex.MIDI A Tx Channel SW
37	25	EXAIXCH	0~15	Ex.MIDI A Tx Channel Number
38	26	EXBIXSW	0,1,27	Ex.MIDI B Tx Channel SW
39	27	EXBIXCH	0~17	Ex.MIDI B Tx Channel Number
40	28	VASCLCRV	0~6	VceA Velocity Scale Curve Type
41	29	VBSCLCRV	0~6	VceB Velocity Scale Curve Type
42	2A	MIASCLCRV	0~6	MIDI A OUT Scale Curve Type
43	2B	MIBSCLCRV	0~6	MIDI B OUT Scale Curve Type

## 6.8 Controller

F0H,4BH,10H,2AH,17H,00H,N1H,N2H,00H,V2H,F7H  
 n: Device No.  
 N2H: Parameter No.  
 V2H: Parameter Value 2

	N2	Data Name	V2(Data Range)	Notes
0	00	PERFCHG	0,1,27	Performance Change UP/DOWN
1	00	CHAINCHG	0,1,27	Chain Change UP/DOWN
2	00	LGATR	0~7	Attack Control
3	00	LGDR	0~7	Decay Control
4	00	LGRR	0~7	Release Control
5	00	VIBSPD	0~31	Vibrato Depth Control
6	00	PANRANGE	0~3	Pan Range Control
7	00	EFFECTP	0~32	Effect Parameter Control
8	00	REVDEP	0~32	Reverb Depth Control
9	00	MODDEP	0~32	Modulation Depth Control
A	00	MODSPD	0~32	Modulation Speed Control
B	00	OBIBDD	0~1,27	Other Bend Depth Control

N1	Voice Number
00H	Voice A
01H	Voice B

## 7. BULK DUMP TABLE

### 7.1 System Setup & Dump Request

SYSTEM SETUP	
	Data
0	F0H
1	4BH
2	0NH
3	7AH
4	7 bytes
5	3
6	S
7	K
8	-
9	-
10	2
11	3
12	5
13	6
14	S
15	Y
16	↓
17	↓
18	↓
19	↓
20	↓
21	↓
22	↓
23	↓
24	↓
25	↓
26	↓
27	↓
28	↓
29	↓
30	↓
31	↓
32	MTUNE
33	↓
34	↓
35	↓
36	↓
37	↓
38	↓
39	↓
40	↓
41	↓
42	↓
43	↓
44	MREXSW
45	check sum
46	F7H

DUMP REQUEST	
	Data
0	F0H
1	4BH
2	2NH
3	7AH
4	S
5	K
6	-
7	-
8	2
9	3
10	5
11	6
12	S
13	Y
14	↓
15	↓
16	↓
17	↓
18	↓
19	↓
20	↓
21	↓
22	↓
23	↓
24	↓
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369	↓
370	↓
371	↓
372	↓
373	↓
374	↓
375	↓
376	↓
377	↓
378	↓
379	↓
380	↓
381	↓
382	↓
383	↓
384	↓
385	↓
386	↓
387	↓
388	↓
389	↓
390	↓
391	↓
392	↓
393	↓
394	↓
395	↓
396	↓
397	↓
398	↓
399	↓
400	↓
401	↓
402	↓
403	↓
404	↓
405	↓
406	↓
407	↓
408	↓
409	↓
410	↓
411	↓
412	↓
413	↓
414	↓
415	↓
416	↓
417	↓
418	↓
419	↓
420	↓
421	↓
422	↓
423	↓
424	↓
425	↓
426	↓
427	↓
428	↓
429	↓
430	↓
431	↓
43	

CHAIN TABLE		
	Data	
0	F0H	
1	43H	
2	0NH	
3	7AH	
4	] bytes	
5		S
6	S	
7	K	
8	-	
9	-	
10	2	
11	3	
12	5	
13	6	
14	C	
15	H	
16	] 00H	
17		↓
18		↓
19	↓	
20	type 1	
21	type 2	
6. PARAMETER CHANGE TABLE		
6.2. Chain Table 00H~11H		
32	Chain01	
↓		
63	Chain12	
64 check sum		
65	F7H	

DUMP REQUEST	
	Data
0	F0H
1	43H
2	2NH
3	7AH
4	S
5	K
6	-
7	-
8	2
9	3
10	5
11	6
12	C
13	H
14	] 00H
15	
16	↓
17	↓
18	type 1
19	type 2
20	F7H

Type 2	VOICE NUMBER
30H	Perf.17 Voice A
31H	Perf.17 Voice B
32H	Perf.18 Voice A
33H	Perf.18 Voice B
34H	Perf.19 Voice A
35H	Perf.19 Voice B
36H	Perf.20 Voice A
37H	Perf.20 Voice B
38H	Perf.21 Voice A
39H	Perf.21 Voice B
3AH	Perf.22 Voice A
3BH	Perf.22 Voice B
3CH	Perf.23 Voice A
3DH	Perf.23 Voice B
3EH	Perf.24 Voice A
3FH	Perf.24 Voice B
40H	Perf.25 Voice A
41H	Perf.25 Voice B
42H	Perf.26 Voice A
43H	Perf.26 Voice B
44H	Perf.27 Voice A
45H	Perf.27 Voice B
46H	Perf.28 Voice A
47H	Perf.28 Voice B
48H	Perf.29 Voice A
49H	Perf.29 Voice B
4AH	Perf.30 Voice A
4BH	Perf.30 Voice B
4CH	Perf.31 Voice A
4DH	Perf.31 Voice B
4EH	Perf.32 Voice A
4FH	Perf.32 Voice B

### 7.3 Voices

Type 1: 00H

Type 2: Voice No.

Type 2	VOICE NUMBER
00H	Piano1
01H	Piano2
02H	Piano3
03H	Piano4
04H	E.Piano1
05H	E.Piano2
06H	E.Piano3
07H	E.Piano4
08H	E.Piano5
09H	Clavi
0AH	Cl. tone
10H	Perf.01 Voice A
11H	Perf.01 Voice B
12H	Perf.02 Voice A
13H	Perf.02 Voice B
14H	Perf.03 Voice A
15H	Perf.03 Voice B
16H	Perf.04 Voice A
17H	Perf.04 Voice B
18H	Perf.05 Voice A
19H	Perf.05 Voice B
1AH	Perf.06 Voice A
1BH	Perf.06 Voice B
1CH	Perf.07 Voice A
1DH	Perf.07 Voice B
1EH	Perf.08 Voice A
1FH	Perf.08 Voice B
20H	Perf.09 Voice A
21H	Perf.09 Voice B
22H	Perf.10 Voice A
23H	Perf.10 Voice B
24H	Perf.11 Voice A
25H	Perf.11 Voice B
26H	Perf.12 Voice A
27H	Perf.12 Voice B
28H	Perf.13 Voice A
29H	Perf.13 Voice B
2AH	Perf.14 Voice A
2BH	Perf.14 Voice B
2CH	Perf.15 Voice A
2DH	Perf.15 Voice B
2EH	Perf.16 Voice A
2FH	Perf.16 Voice B

PRESET VOICE		
	Data	
0	F0H	
1	43H	
2	0NH	
3	7AH	
4	] bytes	
5		S
6	S	
7	K	
8	-	
9	-	
10	2	
11	3	
12	5	
13	6	
14	V	
15	O	
16	] 00H	
17		↓
18		↓
19	↓	
20	type 1	
21	type 2	
6. PARAMETER CHANGE TABLE		
6.3 Voice Table 00H~5BH		
32	WNUM	
↓		
120	FC4VCRV	
121 check sum		
122	F7H	

DUMP REQUEST	
	Data
0	F0H
1	43H
2	2NH
3	7AH
4	S
5	K
6	-
7	-
8	2
9	3
10	5
11	6
12	V
13	O
14	] 00H
15	
16	↓
17	↓
18	type 1
19	type 2
20	F7H

## 7.4 Microtuning

Type 1: 00H

Type 2: Voice No.

Type 2	VOICE NUMBER
00H	Piano1
01H	Piano2
02H	Piano3
03H	Piano4
04H	E.Piano1
05H	E.Piano2
06H	E.Piano3
07H	E.Piano4
08H	E.Piano5
09H	Clavi
0AH	CL Tone
10H	Perf.01 Voice A
11H	Perf.01 Voice B
12H	Perf.02 Voice A
13H	Perf.02 Voice B
14H	Perf.03 Voice A
15H	Perf.03 Voice B
16H	Perf.04 Voice A
17H	Perf.04 Voice B
18H	Perf.05 Voice A
19H	Perf.05 Voice B
1AH	Perf.06 Voice A
1BH	Perf.06 Voice B
1CH	Perf.07 Voice A
1DH	Perf.07 Voice B
1EH	Perf.08 Voice A
1FH	Perf.08 Voice B
20H	Perf.09 Voice A
21H	Perf.09 Voice B
22H	Perf.10 Voice A
23H	Perf.10 Voice B
24H	Perf.11 Voice A
25H	Perf.11 Voice B
26H	Perf.12 Voice A
27H	Perf.12 Voice B
28H	Perf.13 Voice A
29H	Perf.13 Voice B
2AH	Perf.14 Voice A
2BH	Perf.14 Voice B
2CH	Perf.15 Voice A
2DH	Perf.15 Voice B
2EH	Perf.16 Voice A
2FH	Perf.16 Voice B
30H	Perf.17 Voice A
31H	Perf.17 Voice B
32H	Perf.18 Voice A
33H	Perf.18 Voice B
34H	Perf.19 Voice A
35H	Perf.19 Voice B
36H	Perf.20 Voice A
37H	Perf.20 Voice B
38H	Perf.21 Voice A
39H	Perf.21 Voice B
3AH	Perf.22 Voice A
3BH	Perf.22 Voice B
3CH	Perf.23 Voice A
3DH	Perf.23 Voice B
3EH	Perf.24 Voice A
3FH	Perf.24 Voice B
40H	Perf.25 Voice A
41H	Perf.25 Voice B
42H	Perf.26 Voice A
43H	Perf.26 Voice B
44H	Perf.27 Voice A
45H	Perf.27 Voice B
46H	Perf.28 Voice A
47H	Perf.28 Voice B
48H	Perf.29 Voice A
49H	Perf.29 Voice B
4AH	Perf.30 Voice A
4BH	Perf.30 Voice B
4CH	Perf.31 Voice A
4DH	Perf.31 Voice B
4EH	Perf.32 Voice A
4FH	Perf.32 Voice B

VOICE MICROTUNE	
Data	
0	FOH
1	43H
2	0NH
3	7AH
4	] bytes
5	
6	S
7	K
8	-
9	-
10	2
11	3
12	5
13	6
14	V
15	T
16	] 00H
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	type 1
29	type 2
30	type 1
31	type 2
6. PARAMETER CHANGE TABLE	
6.4 Microtune 00H~57H	
32	MTUNE01
↓	
119	MTUNE88
120 check_sum	
121	F7H

DUMP REQUEST	
Data	
0	FOH
1	43H
2	2NH
3	7AH
	S
5	K
6	-
7	-
8	2
9	3
10	5
11	6
12	V
13	T
14	] 00H
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	type 1
29	type 2
30	F7H

## 7.5 Modulation/Reverb

Type 1: 00H

Type 2: MOD/REV No.

Type 2	PERFORMANCE NUMBER
00H	Performance 1
:	:
1FH	Performance 32
20H	Piano1
21H	Piano2
22H	Piano3
23H	Piano4
24H	E.Piano1
25H	E.Piano2
26H	E.Piano3
27H	E.Piano4
28H	E.Piano5
29H	Clavi
2AH	CL Tone

PRESET VOICE BALANCE	
Data	
0	FOH
1	43H
2	0NH
3	7AH
4	] bytes
5	
6	S
7	K
8	-
9	-
10	2
11	3
12	5
13	6
14	D
15	S
16	] 00H
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	type 1
29	type 2
30	type 1
31	type 2
6. PARAMETER CHANGE TABLE	
6.5 Mod./Rev./Balance 00~0D	
32	MODASV
↓	
45	ECHDC
46 check_sum	
47	F7H

DUMP REQUEST	
Data	
0	FOH
1	43H
2	2NH
3	7AH
	S
5	K
6	-
7	-
8	2
9	3
10	5
11	6
12	D
13	S
14	] 00H
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	type 1
29	type 2
30	F7H



## 7.6 MIDI & Extra MIDI

Type 1: MIDI & Extra MIDI No.

Type 1	MIDI NUMBER
00H	MIDI A
01H	MIDI B
02H	EXTRA MIDI SETUP A
03H	EXTRA MIDI SETUP A

Type 2: Performance No.

Type 2	PERFORMANCE NUMBER
00H	Performance 1
:	:
1FH	Performance 32
20H	Preset Voice

PRESET VOICE MIDI	
	Data
0	FOH
1	43H
2	0NH
3	7AH
4	] bytes
5	] bytes
6	S
7	K
8	-
9	-
10	2
11	3
12	5
13	6
14	M
15	M
16	] 00H
17	] 00H
29	] type 1
30	] type 2
31	] type 2
6. PARAMETER CHANGE TABLE	
6.6 MIDI & Extra MIDI 00H~5BH or 00H~06H	
32	reserved
↓	
120	FC4MICRV
121 check sum	
122	F7H

DUMP REQUEST	
	Data
0	FOH
1	43H
2	2NH
3	7AH
4	S
5	K
6	-
7	-
8	2
9	3
10	5
11	6
12	M
13	M
14	↓
15	] 00H
27	] 00H
28	type 1
29	type 2
30	5F7

PRESET VOICE MIDI	
	Data
32	EXVOLS
↓	
38	EXBHI
39 check sum	
40	F7H

or

## 7.7 Others

Type 1: 00H

Type 2: Performance No.

Type 2	PERFORMANCE NUMBER
00H	Performance 1
:	:
1FH	Performance 32
20H	Preset Voice

PRESET VOICE SETUP	
	Data
0	FOH
1	43H
2	0NH
3	7AH
4	] bytes
5	] bytes
6	S
7	K
8	-
9	-
10	2
11	3
12	5
13	6
14	O
15	T
16	] 00H
17	] 00H
29	] type 1
30	] type 1
31	] type 2
6. PARAMETER CHANGE TABLE	
6.7 Others 00H~2BH	
32	PERFNAME1
↓	
75	MIBSCLCRV
76 check sum	
77	F7H

DUMP REQUEST	
	Data
0	FOH
1	43H
2	2NH
3	7AH
4	S
5	K
6	-
7	-
8	2
9	3
10	5
11	6
12	O
13	T
14	↓
15	] 00H
27	] 00H
28	type 1
29	type 2
30	F7H

# MIDI IMPLEMENTATION CHART

Data:1-NOV-1993

YAMAHA [ Electronic Piano P-500 ] Model P-500 MIDI Implementation Chart Version : 1.0

Function ...	Transmitted	Recognized	Remarks
Basic Default	: 1 - 16	: 1 - 16	: memorized
Channel Changed	: 1 - 16	: 1 - 16	:
Mode Default	: Mode 3	: Mode 1 , 3	: memorized
Mode Messages	: x	: x	:
Mode Altered	: *****	: x	:
Note Number : True voice	: 1 - 127 : *****	: 1 - 127 : 21 - 108	:
Velocity Note ON	: o 9nH, v=1-127	: o v=1-127	:
Velocity Note OFF	: x 9nH, v=0	: x	:
After Key's	: x	: x	:
Touch Ch's	: o	: x	:
Pitch Bender	: o	: o 0 - 12 semi	: 7 bit resolution
Control Change	1 : o M.Wheel 7 : o Foot Volume 10 : o Pan 11 : o Expression 64 : o Sustain 66 : o Sostenuto 67 : o Soft 0 - 120 : o Assignable 120 : x All Sound Off	: o : o : o : o : o : o : o : x : o	:
	121 : o	*1: o	: Reset All Contls
Program Change : True #	: o 0 - 127 : *****	: o 0 - 127 : o 0 - 10	: assignable
System Exclusive	: o	: o	: voice etc.
System : Song Pos	: x	: x	:
System : Song Sel	: x	: x	:
Common : Tune	: x	: x	:
System : Clock	: x	: x	:
Real Time : Commands	: x	: x	:
Aux : Local ON/OFF	: x	: x	:
Aux : All Notes OFF	: o	*1: o	:
Mes- : Active Sense	: o	: o	:
sages:Reset	: x	: x	:
Notes:	Received messages are merged to MIDI OUT when MIDI merge Switch is on.		
	*1 = Transmit if PANIC Switch is ON.		

Mode 1 : OMNI ON, POLY    Mode 2 : OMNI ON, MONO    o : Yes  
 Mode 3 : OMNI OFF, POLY    Mode 4 : OMNI OFF, MONO    x : No

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# IMPORTANT SAFETY INSTRUCTIONS

INFORMATION RELATING TO PERSONAL INJURY, ELECTRICAL SHOCK, AND FIRE HAZARD POSSIBILITIES HAS BEEN INCLUDED IN THIS LIST.

**WARNING-** When using any electrical or electronic product, basic precautions should always be followed. These precautions include, but are not limited to, the following:

**1.** Read all Safety Instructions, Installation Instructions, Special Message Section items, and any Assembly Instructions found in this manual BEFORE making any connections, including connection to the main supply.

**2.** Do not attempt to service this product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified service personnel.

**3.** Main Power Supply Verification: Yamaha products are manufactured specifically for the supply voltage in the area where they are to be sold. If you should move, or if any doubt exists about the supply voltage in your area, please contact your dealer for supply voltage verification and (if applicable) instructions. The required supply voltage is printed on the name plate. For name plate location, please refer to the graphic found in the Special Message Section of this manual.

**4.** **DANGER-**Grounding Instructions: This product must be grounded and therefore has been equipped with a three pin attachment plug. If this product should malfunction, the ground pin provides a path of low resistance for electrical current, reducing the risk of electrical shock. If your wall socket will not accommodate this type plug, contact an electrician to have the outlet replaced in accordance with local electrical codes. Do NOT modify the plug or change the plug to a different type!

**5.** **WARNING:** Do not place this product or any other objects on the power cord or place it in a position where anyone could walk on, trip over, or roll anything over power or connecting cords of any kind. The use of an extension cord is not recommended! If you must use an extension cord, the minimum wire size for a 25' cord (or less ) is 18 AWG. NOTE: The smaller the AWG number, the larger the current handling capacity. For longer extension cords, consult a local electrician.

**6.** Ventilation: Electronic products, unless specifically designed for enclosed installations, should be placed in locations that do not interfere with proper ventilation. If instructions for enclosed installation are not provided, it must be assumed that unobstructed ventilation is required.

**7.** Temperature considerations: Electronic products should be installed in locations that do not seriously contribute to their operating temperature. Placement of this product close to heat sources such as; radiators, heat registers etc., should be avoided.

**8.** This product was NOT designed for use in wet/damp locations and should not be used near water or exposed to rain. Examples of wet/damp locations are; near a swimming pool, spa, tub, sink, or wet basement.

**9.** This product should be used only with the components supplied or; a cart, rack, or stand that is recommended by the manufacturer. If a cart, rack, or stand is used, please observe all safety markings and instructions that accompany the accessory product.

**10.** The power supply cord (plug) should be disconnected from the outlet when electronic products are to be left unused for extended periods of time. Cords should also be disconnected when there is a high probability of lightning and/or electrical storm activity.

**11.** Care should be taken that objects do not fall and liquids are not spilled into the enclosure through any openings that may exist.

**12.** Electrical / electronic products should be serviced by a qualified service person when:

- a. The power supply cord has been damaged; or
- b. Objects have fallen, been inserted, or liquids have been spilled into the enclosure through openings; or
- c. The product has been exposed to rain; or
- d. The product does not operate, exhibits a marked change in performance; or
- e. The product has been dropped, or the enclosure of the product has been damaged.

**13.** This product, either alone or in combination with an amplifier and headphones or speaker / s, 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. **IMPORTANT:** The louder the sound, the shorter the time period before damage occurs.

**14.** Some Yamaha products may have benches and / or accessory mounting fixtures that are either supplied as a part of the product or as optional accessories. Some of these items are designed to be dealer assembled or installed. Please make sure that benches are stable and any optional fixtures (where applicable) are well secured BEFORE using. Benches supplied by Yamaha are designed for seating only. No other uses are recommended.

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Pour plus de détails sur les produits, veuillez-vous adresser à Yamaha ou au distributeur le plus proche de vous figurant dans la liste suivante.

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6600 Orangethorpe Ave., Buena Park, Calif. 90620,  
U.S.A.  
Tel: 714-522-9011

## MIDDLE & SOUTH AMERICA

### MEXICO

**Yamaha De Mexico S.A. De C.V.,  
Departamento de ventas**  
Javier Rojo Gomez No.1149, Col. Gpe Del  
Moral, Deleg. Iztapalapa, 09300 Mexico, D.F.  
Tel: 686-00-33

### BRASIL

**Yamaha Musical Do Brasil LTDA.**  
Ave. Reboucas 2636, São Paulo, Brasil  
Tel: 55-11 853-1377

### PANAMA

**Yamaha De Panama S.A.**  
Edificio Interseco, Calle Elvira Mendez no.10,  
Piso 3, Oficina #105, Ciudad de Panama, Panama  
Tel: 507-69-5311

### OTHER LATIN AMERICAN COUNTRIES AND CARIBBEAN COUNTRIES

**Yamaha Music Latin America Corp.**  
6101 Blue Lagoon Drive, Miami, Florida 33126,  
U.S.A.  
Tel: 305-261-4111

## EUROPE

### THE UNITED KINGDOM

**Yamaha-Kemble Music (U.K.) Ltd.**  
Sherbourne Drive, Tilbrook, Milton Keynes,  
MK7 8BL, England  
Tel: 0908-366700

### IRELAND

**Danfay Limited**  
61D, Sallynoggin Road, Dun Laoghaire, Co. Dublin  
Tel: 01-2859177

### GERMANY/SWITZERLAND

**Yamaha Europa GmbH.**  
Siemensstraße 22-34, D-2084 Rellingen, F.R. of  
Germany  
Tel: 04101-3030

### AUSTRIA/HUNGARY/SLOVENIA/ ROMANIA/BULGARIA

**Yamaha Music Austria GesmbH.**  
Schleiergasse 20, A-1100 Wien Austria  
Tel: 0222-60203900

### THE NETHERLANDS

**Yamaha Music Benelux B.V.,  
Verkoop Administratie**  
Kanaalweg 18G, 3526KL, Utrecht, The Netherlands  
Tel: 030-828411

### BELGIUM/LUXEMBOURG

**Yamaha Music Benelux B.V.,  
Brussels-office**  
Keiberg Imperiastraat 8, 1930 Zaventem, Belgium  
Tel: 02-7258220

### FRANCE

**Yamaha Musique France,  
Division Instruments Electroniques et de Scène**  
BP 70-77312 Marne-la-Vallée Cedex 2, France  
Tel: 01-64-61-4000

### ITALY

**Yamaha Musica Italia S.P.A.,  
Combo Division**  
Viale Italia 88, 20020 Lainate (Milano), Italy  
Tel: 02-935-771

### SPAIN

**Yamaha-Hazen Electronica Musical, S.A.**  
Jorge Juan 30, 28001, Madrid, Spain  
Tel: 91-577-7270

### PORTUGAL

**Valentim de Carvalho CI SA**  
Estrada de Porto Salvo, Paço de Arcos 2780 Oeiras,  
Portugal  
Tel: 01-443-3398/4030/1823

### GREECE

**Philippe Nakas S.A.**  
Navarinou Street 13, P.Code 10680, Athens, Greece  
Tel: 01-364-7111

### SWEDEN

**Yamaha Scandinavia AB**  
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Göteborg, Sweden  
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### DENMARK

**YS Copenhagen Liaison Office**  
Finsensvej 86, DK-2000 Frederiksberg, Denmark  
Tel: 31-87 30 88

### FINLAND

**Fazer Music Inc.**  
Aleksanterinkatu 11, SF 00100 Helsinki, Finland  
Tel: 0435 011

### NORWAY

**Narud Yamaha AS**  
Østerdalen 29, 1345 Østerås  
Tel: 02-24 47 90

### ICELAND

**Páll H. Pálsson**  
P.O. Box 85, 121 Reykjavik, Iceland  
Tel: 01-19440

### EAST EUROPEAN COUNTRIES (Except HUNGARY)

**Yamaha Europa GmbH.**  
Siemensstraße 22-34, D-2084 Rellingen, F.R. of  
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Tel: 04101-3030

## AFRICA

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International Marketing Division**  
Nakazawa-cho 10-1, Hamamatsu, Japan 430  
Tel: 053-460-2311

## MIDDLE EAST

### TURKEY/CYPRUS

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### OTHER COUNTRIES

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## ASIA

### HONG KONG

**Tom Lee Music Co., Ltd.**  
11/F., Silvercord Tower 1, 30 Canton Road,  
Tsimshatsui, Kowloon, Hong Kong  
Tel: 730-1098

### INDONESIA

**PT. Yamaha Music Indonesia(Distributor)  
PT. Nusantik**  
Gedung Yamaha Music Center, Jalan Jend. Gatot  
Subroto Kav. 4, Jakarta 12930, Indonesia  
Tel: 21-520-2577

### KOREA

**Cosmos Corporation**  
#131-31, Neung-Dong, Sungdong-Ku, Seoul  
Korea  
Tel: 02-466-0021~5

### MALAYSIA

**Yamaha Music Malaysia, Sdn., Bhd.**  
16-28, Jalan SS 2/72, Petaling Jaya, Selangor,  
Malaysia  
Tel: 3-717-8977

### PHILIPPINES

**Yupango Music Corporation**  
339 Gil J. Puyat Avenue, P.O. BOX 885 MCPO,  
Makati, Metro Manila, Philippines  
Tel: 819-7551

### SINGAPORE

**Yamaha Music Asia Pte., Ltd.**  
Blk 17A Toa Payoh #01-190 Lorong 7  
Singapore 1231  
Tel: 354-0133

### TAIWAN

**Kung Hsue She Trading Co., Ltd.**  
No. 322, Section 1, FuHsing S. Road,  
Taipei 106, Taiwan. R.O.C.  
Tel: 02-709-1266

### THAILAND

**Siam Music Yamaha Co., Ltd.**  
865 Phornprapha Building, Rama 1 Road,  
Patumwan, Bangkok 10330, Thailand  
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### THE PEOPLE'S REPUBLIC OF CHINA AND OTHER ASIAN COUNTRIES

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Tel: 053-460-2311

## OCEANIA

### AUSTRALIA

**Yamaha Music Australia Pty. Ltd.**  
17-33 Market Street, South Melbourne, Vic. 3205,  
Australia  
Tel: 3-699-2388

### NEW ZEALAND

**Music Houses of N.Z. Ltd.**  
146/148 Captain Springs Road, Te Papapa, Auckland,  
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### COUNTRIES AND TRUST TERRITORIES IN PACIFIC OCEAN

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