

# 9 Footswitches, Knee Lever and Expression Pedals

These leg- and foot-operated controls allow you to turn on and execute various performance functions without taking your hands from the keyboards. Controllable functions include Registration Shift, Glide, Tremolo, Sustain, Melody On Chord, Lead Slide, and Pitch Bend (EL-90 only), as well as rhythm operations such as tempo change, stop, ending and Fill In.

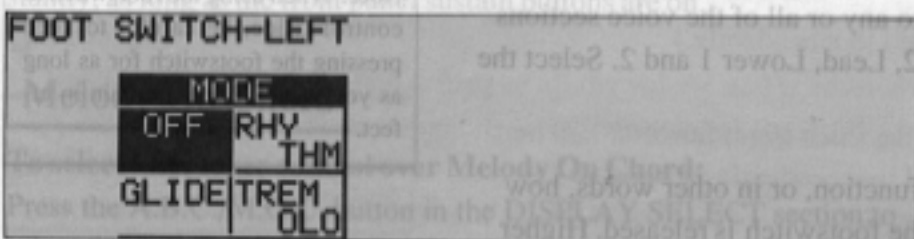
**Note:** The second expression pedal is available on the EL-90 only.

## Footswitch Control

The Electone has two footswitches on the main expression pedal that can be used to control various functions. The right footswitch is used for the Registration Shift functions (see p. 52). The left footswitch can be set to control one of the following functions: Glide, Tremolo, rhythm stop, rhythm ending, and rhythm Fill In. Assignments of the functions are made in the Foot Switch pages.

### To select the Foot Switch pages:

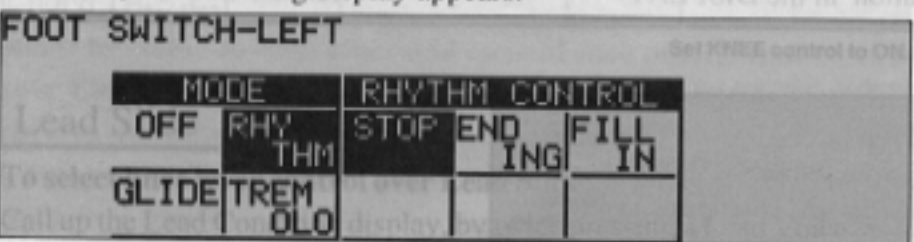
Press the FOOT SW. button in the DISPLAY SELECT section.



**Off**  
Cancels left footswitch control.

### Rhythm

Selection of left footswitch control over rhythm functions. When this is chosen, the following display appears:



One of the three Rhythm Control functions can be selected. Pressing the footswitch executes the corresponding function:

- 1 **Stop**  
Functions as an off/on switch for the rhythm pattern.
- 2 **Ending**  
Switches the rhythm to the Ending pattern, after which the rhythm is stopped.
- 3 **Fill In**  
Switches the rhythm to the Fill In pattern.



## Glide

Selection of footswitch control over Glide. Pressing the footswitch immediately lowers the pitch of the selected voice or voices by a half-step. When the Glide setting is chosen, the following display appears:

(EL-90)

FOOT SWITCH-LEFT					
MODE		GLIDE CONTROL			
OFF	RHY THM	UPPER 1	UPPER 2	LEAD	TIME
GLIDE	TREM OLO	LOWER 1	LOWER 2		

**Note:** When the Glide function is applied, the Vibrato is not effective.

(EL-70)

FOOT SWITCH-LEFT					
MODE		GLIDE CONTROL			
OFF	RHY THM	UPPER 1	UPPER 2	LEAD	TIME
GLIDE	TREM OLO	LOWER 1	LOWER 2		

## 1 Voice Sections

The Glide function can be applied to any or all of the voice sections shown in the display: Upper 1 and 2, Lead, Lower 1 and 2. Select the desired voice section(s).

## 2 Time

Determines the speed of the Glide function, or in other words, how gradually the pitch changes when the footswitch is released. Higher settings produce slower pitch changes.

**Note:** When using the footswitch to control Glide, be careful to keep pressing the footswitch for as long as you want Glide to remain in effect.

## Tremolo

Selection of footswitch control over Tremolo. Pressing the footswitch turns the Tremolo effect on and off (Chorus), performing the same function as the TREMOLO (FAST) button in the DISPLAY SELECT section.

FOOT SWITCH-LEFT					
MODE		GLIDE CONTROL			
OFF	RHY THM	UPPER 1	UPPER 2	LEAD	TIME
GLIDE	TREM OLO	LOWER 1	LOWER 2		

## Knee Lever

The knee lever, located on the underside of the keyboard panel, can be used to turn on and off the Melody On Chord function, Lead Slide and the Sustain effect.

### Sustain

**To select knee lever control over Sustain:**

Make sure that the Upper and/or Lower Sustain effect panel controls have been turned on; otherwise the knee lever will have no effect.

**To use the knee lever:**

Fold the knee lever down and press it to the right with your knee when you want to have sustain.

**When the knee lever is vertical:** The sustain effect is cancelled.

**When the knee lever is continuously pressed to the right:**

The sustain effect is on.

**When the knee lever is folded up:** The sustain effect is applied constantly, as long as the front panel sustain buttons are on.

### Melody On Chord

**To select knee lever control over Melody On Chord:**

Press the A.B.C./M.O.C. button in the DISPLAY SELECT section to select the A.B.C./M.O.C. page. Then set the KNEE control to ON, and select one of the modes.

AUTO BASS CHORD			MELODY ON CHORD		
MODE		MEM.	MODE		KNEE
OFF	Single Finger	LOWER	OFF	1	ON
Finger Chord	Custom A.B.C.	PEDAL	2	3	OFF

Set KNEE control to ON.

### Lead Slide

**To select knee lever control over Lead Slide:**

Call up the Lead Condition display, by twice pressing a Lead Voice button (or the Data Control button corresponding to a Lead Voice Menu voice). Then select KNEE in the SLIDE controls.

(EL-90)

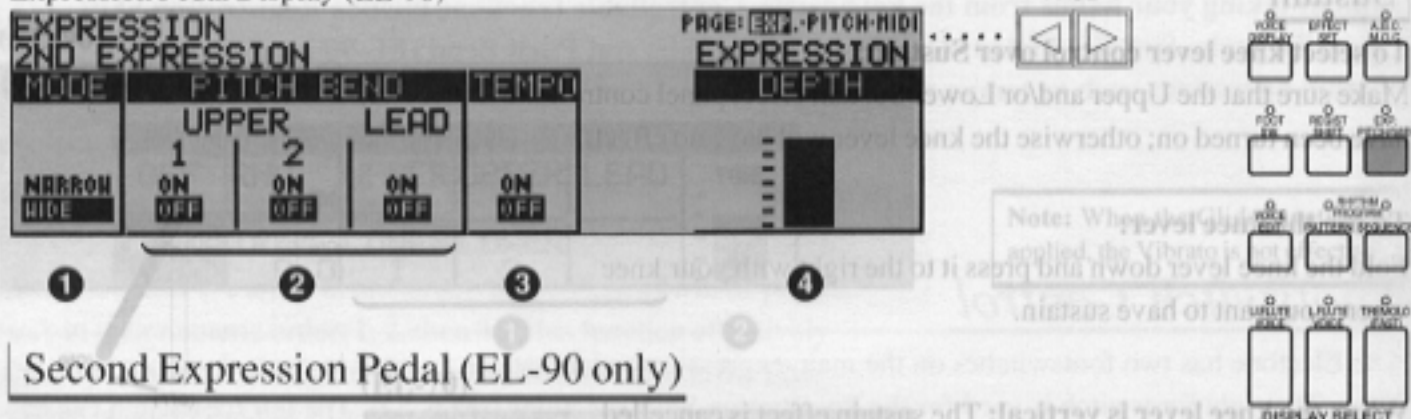
LEAD Violin 1			PRG: 1 2			
VIBRATO			TOUCH VIB.	SLIDE		TUNE
PRESET USER	DELAY	DEPTH	SPEED	ON OFF	TIRE	
				ON KNEE OFF		

Set the SLIDE control to KNEE.

# Expression Pedals

To select the Expression Pedal display, press the EXP. PITCH/MIDI button in the DISPLAY SELECT section.

## Expression Pedal Display (EL-90)



## Second Expression Pedal (EL-90 only)

## Pitch Bend Controls

### 1 Mode

Determines the range of the Pitch Bend control. The NARROW setting results in a small amount of pitch variation; Wide results in a large amount of pitch variation. (This control is the same as for Tempo below; the two cannot be used independently.)

### 2 Pitch Bend

Selects the voice sections to which the Pitch Bend function will be applied. Pitch Bend can be selected independently or together for Lead Voices and Upper Voices 1 and 2.

**Note:** The Pitch Bend function cannot be used when the Lead Slide function is applied.

## Tempo

### 1 Mode

Determines the range of the Tempo control. The NARROW setting results in a small amount of tempo variation; Wide results in a large amount of tempo variation. (This control is the same as for Pitch Bend above; the two cannot be used independently.)

### 3 Tempo

On/off switch for control over the rhythm pattern tempo. When on, pressing the pedal with your toe speeds up the tempo; pressing it with your heel slows it down. Releasing the pedal from either position causes it to return to center, restoring the original tempo.

## Expression Pedal

### 4 Expression Depth

This display shows how far the expression pedal is pressed.

## Expression Pedal Display (EL-70)

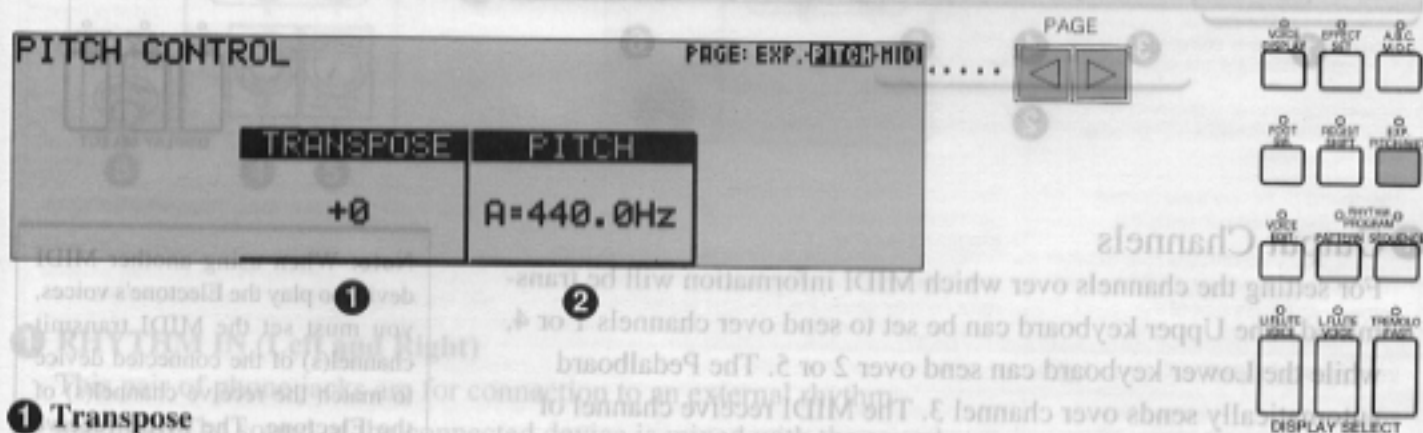


# 10 Pitch Controls

There are two pitch-related controls on the Electone: Transpose and Pitch. Transpose allows you to change the key of the instrument and Pitch lets you finely adjust the tuning. These features make it easy to change the key of a song to accommodate a vocalist's range or to precisely match the tuning of another instrument. The Pitch controls are located on the Pitch page.

To select the Pitch page:

Press the EXP. PITCH/MIDI button in the DISPLAY SELECT section, and select the Pitch page with the Page Select buttons.



## 1 Transpose

Determines the coarse pitch setting of all the voices, and is adjustable in half-steps (semitones). Range: -6 — +6 (one octave)

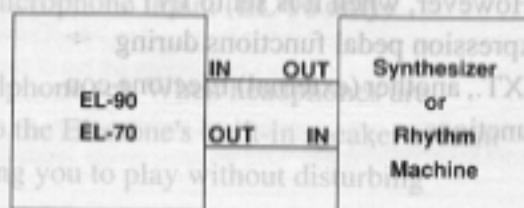
## 2 Pitch

Determines the fine pitch setting of all the voices. Range: 438.8 — 444.5Hz

**Note:** Simultaneously press the Data Control buttons below the appropriate settings to restore each to the original (default) values.

# 11 MIDI Controls

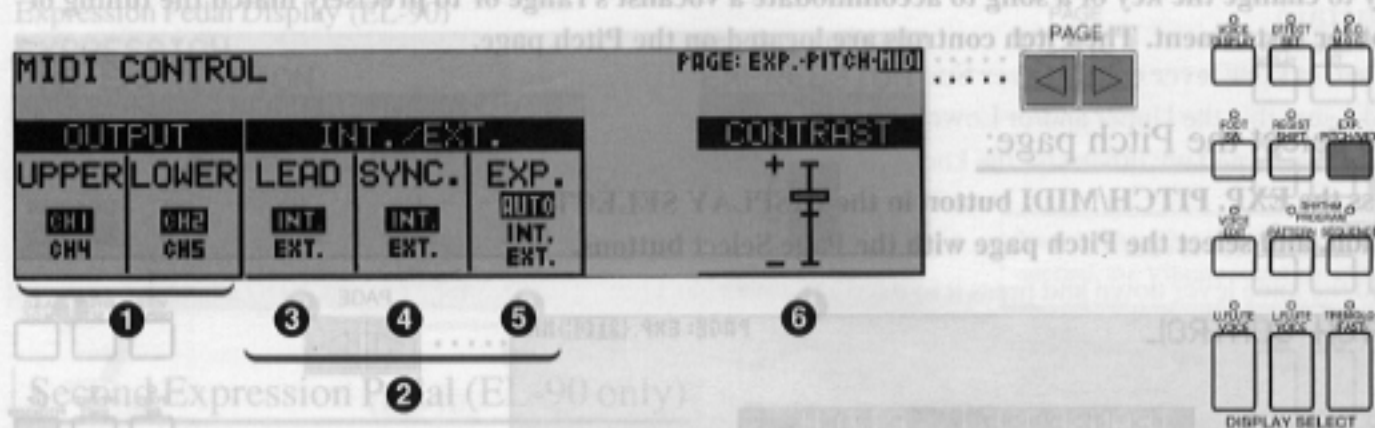
MIDI (Musical Instrument Digital Interface) is a kind of communication system for electronic musical instruments. It is built into most every modern digital musical instrument and allows different instruments to "talk" to each other and control each other's functions. For example, the Upper keyboard of your Electone could be used to play sounds on a connected synthesizer. In another application, a rhythm machine can be programmed to play its rhythm patterns in perfect synchronization with the tempo set on the Electone. To use the MIDI functions you must, of course, have a second MIDI device (such as a synthesizer or rhythm machine), and a set of MIDI cables. Connect the MIDI cables as shown in the illustration below:



All MIDI functions are controlled from the MIDI page. Though not directly related to the MIDI controls, an LCD contrast control is also included on the MIDI page.

To select the MIDI page:

Press the EXP. PITCH/MIDI button in the DISPLAY SELECT section, and select the MIDI page with the Page Select buttons.



## 1 Output Channels

For setting the channels over which MIDI information will be transmitted. The Upper keyboard can be set to send over channels 1 or 4, while the Lower keyboard can send over 2 or 5. The Pedalboard automatically sends over channel 3. The MIDI receive channel of each connected MIDI device should match the numbers set here.

## 2 Internal/External Control

### 3 Lead

Determines Internal or External control of the Lead Voices. When set to Internal, Lead Voices are played from the Electone and the sounds from a connected MIDI instrument can be played via MIDI channel 1 (or channel 2, when the To Lower function is on). When set to External, the Lead Voices can only be played from the connected instrument via MIDI channel 4.

### 4 Sync

Determines the source of the timing control, for rhythm synchronization purposes. Setting this to Internal gives the Electone timing control over the connected rhythm machine. This also allows you to start and stop the rhythm patterns of the connected rhythm machine from the Electone's panel controls. Setting this to External gives timing control to the connected rhythm machine.

### 5 Expression

Determines the control of the expression pedal functions. Ordinarily, this control is set to Auto. However, when it is set to INT., you can manually control the expression pedal functions during M.D.R. playback. When set to EXT., another (external) Electone controls over the expression pedal functions.

### 6 Contrast

For adjusting the relative sharpness of the characters displayed in the LCD.

**Note:** When using another MIDI device to play the Electone's voices, you must set the MIDI transmit channel(s) of the connected device to match the receive channel(s) of the Electone. The MIDI receive channels of the Electone are automatically set to the following values:

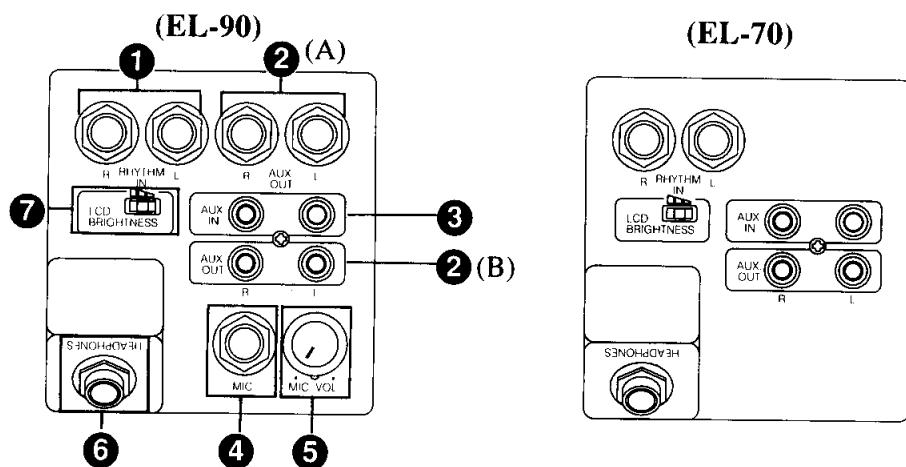
Upper - 1  
Lower - 2  
Pedal - 3

**Note:** Accompaniment pattern sounds cannot be controlled via MIDI.

**Note:** The Electone also features a panel LCD brightness control, located underneath the keyboard.

# 12 Accessory Jacks and Controls

On the left underside of the Electone keyboard is a separate panel equipped with various input/output terminals and miscellaneous controls, the functions of which are described below.



## 1 RHYTHM IN (Left and Right)

This pair of phone jacks are for connection to an external rhythm machine. The sound of the connected device is mixed with the sound of the Electone and played through the speaker system. The volume of the rhythm machine can be controlled by the Expression pedal of the Electone

## 2 AUX. OUT (Left and Right)

These two separate sets of stereo outputs (one set of RCA pin jacks on the EL-70) are for connection to external amplification/speaker systems. The phone jacks (A) are for connection to keyboard amplifiers and mixers; the RCA pin jacks (B) are for direct connection to a home audio system or cassette deck.

## 3 AUX. IN (Left and Right)

This pair of RCA pin jacks are for connection to an external stereo sound source, such as a cassette deck or home audio system. The sound of the connected device is mixed with the sound of the Electone and played through the speaker system. Adjust the level by using the control(s) on the connected device.

## 4 MIC.

For connection of a microphone. (EL-90 only)

## 5 MIC. VOL.

For adjusting the level of the microphone input. (EL-90 only)

## 6 HEADPHONES

For connection of a stereo headphone set. When headphones are connected to this jack, sound to the Electone's built-in speaker system is automatically cut off, allowing you to play without disturbing others.

## 7 LCD BRIGHTNESS

For adjusting the brightness of the LCD display. Use this control with the Contrast control in the MIDI page (See page 109.).

# Troubleshooting

Please note that the appearance of any of following phenomena does not indicate a mechanical failure of the Electone.

Problem	Possible Cause and Solution
<b>GENERAL OPERATION</b>	
Some of the LEDs in the DISPLAY SELECT section do not light.	The LEDs of on/off buttons [UPPER/LOWER FLUTE VOICES, VOICE EDIT, RHYTHM PROGRAM, and TREMOLO (FAST)] are lit when those functions are turned on. The LEDs of other function's buttons momentarily flash when the functions are selected. (See page 14.)
No sound is produced from the Electone's speakers. (Assembly models)	The plug of the cable from the speaker unit is disconnected. Refer to the separate "Assembly Instructions," and reconnect the plug securely.
A crackling noise is sometimes heard.	Noise may be produced when either an electrical appliance is turned on or off, or an electric power tool (such as a drill) is used in the proximity of the Electone. If this occurs, plug the Electone into an electrical outlet located as far as possible from the device that seems to be the source of the problem.
Interference from radio, TV, or other sources occurs.	This is caused by the proximity of a high-power broadcasting station or amateur ham radio setup.
The sound of the Electone causes surrounding objects to resonate.	Because the Electone is capable of producing powerful bass sounds, resonance may be caused in surrounding objects, such as cabinets or glass windows. To avoid this, relocate the objects or lower the Electone's volume.
The Electone panel does not function normally or the content of the memorized data has changed.	This happens very rarely. Occasionally, power surges and spikes due to electrical storms or other reasons may cause the Electone to malfunction and/or alter the contents of memorized data. If this happens, perform the Power On Reset operation to reset the Electone. (See page 55.)
<b>VOICES/RHYTHMS</b>	
When selecting a dotted button voice or rhythm, the voice or rhythm title at the top of the LCD does not match the voices or rhythms	The currently assigned voice or rhythm is displayed at the top of the LCD, and remains until another voice or rhythm has been selected. (See page 18.)
When too many keys are pressed, not all of the notes sound.	Total polyphonic capacity (notes sounding for both Upper and Lower keyboards) is 14 notes on the EL-90 and 11 on the EL-70. Polyphonic capacity is 12 for both the Upper and Lower Flute Voices, and 6 each for the Upper and Lower Attack sound (EL-90 and EL-70).
When playing a Pedal voice from the Lower keyboard (using the To Lower function), pressing the Lower keyboard's Sustain button does not turn on Sustain.	Even though the Pedal voice is being played from the Lower keyboard, it is still a Pedal voice; turn the Sustain on with the Pedal Sustain button. (See page 31.)
The sound is too soft, despite the volume being set to the maximum.	Check all of the volume controls, making sure that they are set to suitable levels: the panel Volume controls for each voice section, the Master Volume dial, and the Expression Pedal. (See page 6.) Also check the Upper/Lower Balance control on the Voice Display. (See page 17.)
Switching voices causes the volume to change, despite their having identical volume settings.	The volume of certain voices may seem lower than that of others. Adjust the balance of the sound with the Volume control within the appropriate Voice Condition display.
When keys on the Lower keyboard or Pedalboard are pressed, the sounds of percussion instruments are also heard.	The Keyboard Percussion function has been turned on. When not using the function, be sure to turn it off. (See page 47.)
Only one sound is heard when two notes of the Lead or Pedal voices are simultaneously played.	For practical performance reasons, the Electone has been designed so that one note of the Lead or Pedal voices can be played at a time. If several keys are pressed at once, only the highest note will be sounded (high-note priority).
The Pedal voices do not sound, even though the volume is properly set.	The Single Finger or Fingering Chord mode of Auto Bass Chord is on. Turn off the mode in the display. (See page 44.)
The Touch Tone function does not operate.	Adjust the Touch Tone settings in the Voice Condition display.
While an Intro./Ending pattern is automatically playing, the Lower keyboard does not produce any sound, even when the keys are played.	Since the Accompaniment chords play automatically one after another, the Lower keyboard is designed not to produce any sound during the play of an Intro./Ending pattern.
Even though a Dotted button's rhythm pattern has been selected and started, the pattern does not sound.	Since the Dotted buttons contain User rhythm patterns, no rhythm will sound if a pattern has not been saved to the selected Dotted button.
During use of the Rhythm Pattern Programmer, no sound is produced even when you play a certain percussion sound.	If percussion sounds have been recorded to all 16 rhythm tracks, no subsequently selected instruments can be heard or recorded. If necessary, erase one of the tracks and play the sound.



Problem	Possible Cause and Solution
<b>EFFECTS</b>	
The Symphonic, Flanger, and Delay effects cannot be heard, even when they are set in Effect Set.	Effects must be selected first in the Voice Condition display. (See page 26.)
The Tremolo effect cannot be heard, even when the TREMOLO (FAST) button in the DISPLAY SELECT section is on.	Tremolo must be selected first in the Voice Condition display (for panel voices), or in the Flute Voices' Volume page (for Flute Voices). (See page 33.)
The Pan function does not operate.	The Pan function can only be used if all other effects in the Voice Condition page are set to off. (See page 26.)
The Reverb effect does not operate, even when Reverb parameters are increased.	Increase the Reverb on the panel Reverb controls, or increase the Reverb Depth in Reverb Page 1. (See page 29.)
<b>ACCOMPANIMENT AND OTHER FUNCTIONS</b>	
Despite its volume being set to a suitable level, the Accompaniment cannot be heard.	The rhythm has not been started. Be sure to use Accompaniment together with the rhythm.
The pitch in the Single Finger mode does not change, even when pressing different keys of the keyboard.	Single Finger mode will only produce notes when played within a fixed octave interval on the Lower keyboard. If notes with the same letter name are pressed outside of that range, the chords that are sounded will share the same pitch.
The harmony notes of the Melody On Chord function cannot be heard.	The Upper keyboard has been set to sound only Lead voices. Increase the volume of the Upper voices.
<b>REGISTRATION MEMORY</b>	
Certain functions have not been memorized to Registration Memory.	Transposition and Pitch control data, among others, cannot be memorized (except as song data). (See page 50.)
<b>VOICE EDITING</b>	
During voice editing, the specified voice isn't heard, even when the keyboard is played.	The current settings keep the voice from sounding. Make sure that the volume of the voice is set to a suitable level, and adjust the various parameters in the Voice Edit display until the voice can be heard.
<b>MUSIC DISK RECORDER</b>	
Recording or playback cannot be performed.	1) Problems in recording or playback may be caused by improper operation of the M.D.R. Refer to the LED Display Messages chart on page 71.) 2) The PLAY or RECORD section buttons for selecting parts may be turned off. Turn on the appropriate PLAY or RECORD buttons.
A total of 40 songs cannot be recorded.	If some song numbers contain a large amount of recorded data, the disk may not have enough available memory left to record the normal maximum of 40 songs.
Recording is stopped before the performance is finished, or the Song Copy function cannot be executed.	The amount of recorded data on the disk is close to the maximum limit. Either use another disk or delete the data of any unnecessary song number. (See page 70.)
In addition to a recorded performance on the Upper and/or Lower keyboards, a performance using a Lead voice cannot be recorded or played back.	1) When recording, you forgot the following operation: press the RECORD button, then hold down the SHIFT button while you press the UPPER button (selecting Lead). 2) During playback, you forgot to set the UPPER PLAY button to on.
The Keyboard Percussion part has not been recorded, or plays back a different rhythm from the one recorded.	When recording, you forgot the following operation: press the RECORD button, then hold down the SHIFT button while you press the PEDAL button (selecting Keyboard Percussion). Other causes may be involved, so refer to the procedure for recording parts separately.
The rhythm does not start at the beginning of a recording, or stops in the middle of the performance.	The M.D.R. is designed so that the rhythm cannot be started at the very beginning of a recording. If you wish to use the rhythm, start it after the available memory display appears on the M.D.R. display.
The notes of the recording are "stuck" and sound continuously.	During playback, you removed the disk by pressing the EJECT button. Whenever you wish to stop playback, always press the STOP button.

# SPECIAL MESSAGE SECTION

**ELECTROMAGNETIC INTERFERENCE (RFI):** Your Yamaha Electronic Product has been type tested and found to comply with all applicable regulations. However, if it is installed in the immediate proximity of other electronic devices, some form of interference may occur.

**IMPORTANT NOTICE:** This product has been tested and approved by independent safety testing laboratories in order that you may be sure that, when it is properly installed and used in its normal and customary manner, all foreseeable risks have been eliminated. DO NOT modify this unit or commission others to do so unless specifically authorized by Yamaha.

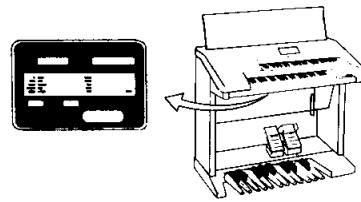
Product performance and/or safety standards may be diminished. Claims filed under the expressed warranty may be denied if the unit is / has been modified. Implied warranties may also be affected.

**SPECIFICATIONS SUBJECT TO CHANGE:** The information contained in this manual is believed to be correct at the time of printing. Yamaha reserves the right to change or modify specifications at any time without notice or obligation to update existing units.

**NOTICE:** Service charges incurred due to a lack of knowledge relating to how a function or effect works (when the unit is operating as designed), are not covered by the manufacture's warranty. Please study this manual carefully before requesting service.

**NAME PLATE LOCATION:** The graphic indicates the location of the Name Plate on your Yamaha Electronic Products. The Model, Serial Number, Power requirements, etc., are indicated on this plate.

You should note the model serial number and the date of purchase in the spaces provided below and retain this manual as a permanent record of your purchase.



**Model** \_\_\_\_\_  
**Serial No.** \_\_\_\_\_  
**Purchase Date** \_\_\_\_\_

**STATIC ELECTRICITY CAUTION:** Some Yamaha Electronic Products have modules that plug into the unit to perform various functions. The contents of a plug-in module can be altered/damaged by static electricity discharges. Static electricity build-ups are more likely to occur during cold winter months (or in areas with very dry climates) when the natural humidity is low. To avoid possible damage to the plug-in module, touch any metal object (a metal desk lamp, a door knob, etc.) before handling the module, if static electricity is a problem in your area, you may want to have your carpet treated with a substance that reduces static electricity buildup. See your local carpet retailer for professional advice that relates to your specific situation.

## Music Disk Recorder — Disk Compatibility and Precautions

### Disk Compatibility

- Either double-sided double-density (2DD) or double-sided high-density (2HD) 3.5-inch microfloppy disks can be used with the M.D.R.

### Precautions on Microfloppy Disk Use

- Never open the disk's shutter. Dirt or dust on the internal magnetic surface will cause data errors.
- Never leave disks near a speaker, TV or other device that emits a strong magnetic field.
- Do not store disks in places exposed to direct sunlight or sources of high temperature.
- Do not place heavy objects, such as books or notebooks, on top of the disks.
- Avoid getting the disks wet.
- Make sure to store the disks in environmental conditions as specified below:
  - ▶ Storage temperature: 4° to 53°C (39° to 127°F)
  - ▶ Storage humidity: 8 to 90% relative humidity
  - ▶ Location where disks are unlikely to be exposed to dust, sand, smoke, etc.
- Be sure to apply the label at the proper position. When changing the label, never cover the old label with a new label; always remove the old label first.

## IMPORTANT

THE WIRES IN MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE:

**Blue: NEUTRAL**  
**Brown: LIVE**

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows: The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK. The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

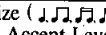
Making sure that neither core is connected to the earth terminal of the three pin plug



# Specifications

		<b>EL-90</b>
<b>KEYBOARD</b>	<b>Keyboards</b> <b>Touch Tone</b>	Upper: 49 keys (C <sub>2</sub> ~C <sub>6</sub> ), Lower: 49 keys (C <sub>1</sub> ~C <sub>5</sub> ), Pedal: 20 keys (C <sub>0</sub> ~G <sub>1</sub> ) Initial, After (Upper, Lead, Lower, Pedal)
<b>VOICE</b>	<b>Tone Generation</b>	New AWM & FM
	<b>Upper/Lower Keyboard</b> (Upper Keyboard Voice 1, 2) (Lower Keyboard Voice 1, 2)	Strings 1, 2, 3, 4, 5, Pizz. Strings, Tremolo Strings, Synth. Strings 1, 2; Organ 1, 2, 3, 4, Jazz Organ 1, 2, 3, Pop Organ 1, 2, Theatre Organ 1, 2, Accordion, Bandoneon; Brass 1, 2, 3, 4, Synth. Brass 1, 2; Piano 1, 2, Honky Tonk, Elec. Piano 1, 2, Harpsichord, Clavi.; Clarinet 1, 2, Synth. Clarinet; Guitar 1, 2, 3, Banjo, Mandolin, Elec. Guitar 1, 2, Muted Guitar, Distortion Guitar, Harp, Koto, Taisho Koto; Saxophone 1, 2, Soprano Sax., Sax. Ensemble; Vibraphone, Glockenspiel, Celesta, Marimba, Xylophone, Chime, Synth. Chime, Steel Drum; Chorus 1, 2, 3, Vocal; Cosmic 1, 2, 3, 4, 5, 6, 7, 8, 9; Tutti 1, 2, 3, 4, 5, 6; [Upper] Harmonica 1, 2; [Lower] Horn 1, 2, 3, Muted Horn; User 1-16; (56 Buttons/87 Voices) Volume Fine; Brilliance
	<b>Lead (Upper)</b> (Lead Voice)	Violin 1, 2, 3, 4, Pizz. Violin, Cello; Oboe 1, 2, English Horn, Bassoon 1, 2; Flute 1, 2, Piccolo, Recorder, Pan Flute, Whistle; Trumpet 1, 2, 3, 4, 5, Muted Trumpet, Trombone 1, 2, Muted Trombone, Flugel Horn; User 1-16; To Lower; (6 Buttons/27 Voices) Volume Fine; Brilliance
	<b>Pedalboard</b> (Pedalboard Voice 1, 2)	ContraBass 1, 2, Pizz. Bass, Upright Bass; Organ Bass 1, 2, 3, 4; Elec. Bass 1, 2, 3, Synth. Bass 1, 2, 3; Tuba, Timpani, Timpani Roll; User 1-16; To Lower; (12 Buttons/17 Voices) Volume Fine; Brilliance
	<b>Voice Display</b>	Upper, Lower, Lead, Pedal; Manual Balance
<b>Upper Flute Voice</b> <b>Lower Flute Voice</b>	Flute Voices (16', 8', 5 1/3', 4', 2 2/3', 2', 1 3/8', 1'); Attack (4', 2 2/3', 2'); Length; Mode: Each, First); Click; Response; Tremolo On/Off; Volume; 8 Presets; 8 User Voices; On/Off Control : Upper, Lower	
<b>VOICE EDIT</b>	On/Off; Operator 1, 2, 3, 4; (Output Level, Attack Rate, Decay 1 Rate, Decay 1 Level, Decay 2 Rate, Release Rate); AWM: (Output Level, Cutoff, Resonance); Operator Selectors; Operator On/Off Buttons; Save: User: 1~16; (From) Voice Disk	
<b>MELODY ON CHORD</b>	Mode: Off, 1, 2, 3; Knee: On/Off	
<b>EFFECT/ CONDITION</b>	<b>Digital Reverb</b>	3Types: Room, Hall, Church; Length; Depth; Volume: Upper/Lower 1, 2, Flute Voice, Lead, Pedal 1, 2, Accompaniment, Percussion, Tremolo, Symphonic, Delay/Flanger (Upper, Lower, Pedal)
	<b>Sustain</b>	Upper (Knee), Lower (Knee), Pedal: Length
	<b>Brilliance</b>	Upper, Lead, Lower, Pedal: Control (Brilliant ↔ Mellow)
	<b>Tremolo/Chorus</b>	Upper, Lead, Lower, Pedal, Flute Voice; Tremolo (Fast): Speed; Chorus: Slow, Stop
	<b>Symphonic/Celeste</b>	Upper, Lead, Lower, Pedal; Mode: Symphonic/Celeste
	<b>Vibrato</b>	Upper, Lower, Lead: Preset/User (Delay, Depth, Speed); Touch Vibrato
	<b>Delay/Flanger</b>	Upper, Lead, Lower, Pedal; Delay: Speed, Feedback, Balance; Flanger: Speed, Feedback, Depth
	<b>Pitch Bend</b>	On/Off: Upper 1, 2, Lead; Mode: Narrow/Wide
	<b>Lead Slide</b>	On/Knee/Off; Time
	<b>Panning</b>	Upper, Lead, Lower, Pedal (7 positions)
	<b>Dynamic Range Enhancer</b>	Off, 1, 2, 3
	<b>Feet</b>	Upper, Lead, Lower, Pedal: Preset/4'/8'/16'
	<b>Lead Tune</b>	Tune Control
<b>Glide</b>	Upper 1, 2, Lower 1, 2, Lead: Time	
<b>RHYTHM</b>	<b>Rhythms</b>	March 1, 2, 3, Polka 1, 2, Country 1, 2, Broadway, Baroque; Waltz 1, 2, 3, 4, 5, Jazz Waltz 1, 2, 3, Bolero; Swing 1, 2, 3, 4, 5, 6, Jazz Ballad, Dixieland 1, 2; Bounce 1, 2, 3, Reggae 1, 2; Slow Rock 1, 2, 3; 8 Beat 1, 2, 3, 4, 5, Dance Pop 1, 2, 3, 4; Tango 1, 2, 3; Mambo, Salsa, Chacha, Rhumba, Beguine; Samba 1, 2, 3, Bossanova 1, 2, 3; 16 Beat 1, 2, 3, 4, 5, Funk 1, 2, 3; User 1-8 (A-D); (12 Buttons: 66 Rhythms); Volume Fine
	<b>Variations</b>	Fill-In; Intro. Ending; Lead In; Auto Variation: On/Off
	<b>Others</b>	Start; Synchro Start; Tempo; Bar/Beat LED; Volume; Balance
<b>RHYTHM PROGRAM</b>	<b>Pattern Program</b>	On/Off; Step Write/Real Time Write; Beat (1/4, 3/4, 2/4); Quantize (On/Off); Metronome (On/Off); Edit: Instruments 1-16 (Change, Clear; Cursor); Accent Level 0-8; 75 Percussion Sounds; Accompaniment Select; Save: User 1-8 (A-D, Fill-In); Remaining Memory Display
	<b>Rhythm Sequence</b>	On/Off; Sequence 1-4; 120 Positions (Bar); Cursor Controls; Data: Preset/User (Set, Insert, Delete, Clear)
<b>KEYBOARD PERCUSSION</b>	On/Off: Lower, Pedal; 43 Sounds	
<b>ACCOMPANIMENT</b>	<b>Auto Bass Chord</b>	Mode: Off; Single Finger; Fingered Chord; Custom ABC; Memory: Lower/Pedal
	<b>Accompaniments</b>	Type 1, 2, 3, 4, All Off
<b>REGISTRATION MEMORY</b>	M/To Disk, 1~16; Disable Button; Mode: Off; Shift; Jump; User (80 Positions); Cursor Controls; Data: Set, Insert, Delete, Clear	
<b>BASIC REGISTRATION</b>	1~5	
<b>REGISTRATION MENU</b>	80 (Provided in the Included Disk)	
<b>MUSIC DISK RECORDER</b>	Play/Record: Upper, Lower, Pedal, Lead, Keyboard Percussion, Control; Pause; Stop; Song Select; Song Repeat; Song Delete; Song Copy: From/To; Tempo; Shift; Format; Custom Play; Remaining Memory; LED Display; Eject	
<b>FOOT SWITCH</b>	[Left] Mode: Off; Rhythm (Stop, Ending, Fill-In); Glide (Upper/Lower 1, 2, Lead; Time); Tremolo (On/Off); [Right] Regist.Shift Mode: Off, Shift, Jump, User	
<b>KNEE LEVER</b>	On/Off: Sustain (Upper, Lower); MOC; Lead Slide	
<b>2ND EXP. PEDAL</b>	Pitch Bend (On/Off: Upper 1, 2, Lead; Mode: Narrow, Wide); Tempo (Mode: Narrow, Wide)	
<b>LCD DISPLAY</b>	256×64 (Large) Full Dot	
<b>OTHER CONTROLS</b>	Power On/Off; Exp. Pedal (Depth); Pitch Control; Transpose; Master Volume; Display Select; Data Controls; Page; Coarse; Hold; LCD Contrast; LCD Brightness; MIDI (Output: Upper/Lower; Int./Ext.: Lead, Sync., Exp.)	
<b>OTHER FITTINGS</b>	Registration Menu Disk; 3.5" Floppy Disk; Matching Bench; Keyboard Cover/Music Stand; MIDI In/Out; Headphone Jack; Rhythm In (Phone; R/L); Aux Out (Phone; R/L); Aux In/Out (RCA; R/L); Mic; Mic. Volume	
<b>OPTIONAL ACCESSORIES</b>	Voice Disks; Registration Menu Disk; YHE-5 Headphones; 3.5" Floppy Disks	
<b>SOUND SYSTEM</b>	<b>Power Amplifiers</b>	210W (35W×6)
	<b>Speakers</b>	20cm(7 7/8")×2; 18cm(7 1/8")×2; 5cm(2")×2; Monitor×2
<b>DIMENSIONS</b>	<b>Width×Depth×Height</b>	114.9cm×55.6cm×98.0cm* (45"×21 7/8"×38 3/5") *With Keyboard Cover Closed
<b>WEIGHT</b>	96.5kg (212 3/4 lbs.)	
<b>FINISH</b>	Simulated Mahogany Grain	

## EL-70

		<b>EL-70</b>
<b>KEYBOARD</b>	<b>Keyboards Touch Tone</b>	Upper: 49 keys (C <sub>2</sub> ~ C <sub>6</sub> ), Lower: 49 keys (C <sub>1</sub> ~ C <sub>5</sub> ), Pedal: 20 keys (C <sub>0</sub> ~ G <sub>1</sub> ) Touch Tone (Initial/After; Upper, Lead, Lower)
<b>VOICE</b>	<b>Tone Generation</b>	New AWM & FM
	<b>Upper/Lower Keyboard (Upper Keyboard Voice 1, 2 Lower Keyboard Voice 1, 2)</b>	Strings 1, 2, 3, Pizz. Strings, Tremolo Strings, Synth. Strings; Organ, Jazz Organ 1, 2, Pop Organ, Theatre Organ, Accordion, Bandoneon; Brass 1, 2, 3, Synth. Brass; Piano, Elec. Piano 1, 2, Harpsichord; Clarinet; Guitar 1, 2, 3, Banjo, Mandolin, Elec. Guitar, Harp; Saxophone, Soprano Sax.; Vibraphone, Glockenspiel, Marimba, Xylophone, Chime, Synth. Chime, Chorus 1, 2; Cosmic 1, 2, 3, 4, 5, 6; Tutti 1, 2, 3, 4; [Upper] Harmonica; [Lower] Horn 1, 2; User 1-16; (56 Buttons/52 Voices) Volume Fine; Brilliance
	<b>Lead (Upper) (Lead Voice)</b>	Violin 1, 2, Cello; Oboe, English Horn, Bassoon; Flute, Piccolo, Recorder, Whistle; Trumpet 1, 2, Muted Trumpet, Trombone, Flugel Horn; User 1-16; To Lower; (6 Buttons/15 Voices) Volume Fine; Brilliance
	<b>Pedalboard (Pedalboard Voice)</b>	Contra Bass, Pizz. Bass, Upright Bass; Organ Bass 1, 2, 3; Elec. Bass 1, 2, Synth. Bass 1, 2; Tuba, Timpani; User 1-16; To Lower; (6 Buttons/12 Voices) Volume Fine; Brilliance
	<b>Voice Display</b>	Upper, Lower, Lead, Pedal; Manual Balance
	<b>Upper Flute Voice Lower Flute Voice</b>	Flute Voices (16', 8', 5 1/3', 4', 2 2/3', 2', 1 3/5', 1'); Attack (4', 2 2/3', 2'); Length; Mode Each, First); Click; Response; Tremolo On/Off; Volume; 8 Presets; 8 User Voices; On/Off Controls : Upper, Lower
<b>VOICE EDIT</b>		On/Off; Operator 1, 2, 3, 4: (Output Level, Attack Rate, Decay 1 Rate, Decay 1 Level, Decay 2 Rate, Release Rate); AWM: (Output Level, Cutoff, Resonance); Operator Selectors; Operator On/Off Buttons; Save: User: 1-16; (From) Voice Disk
<b>MELODY ON CHORD</b>		Mode: Off, 1, 2, 3; Knee: On/Off
<b>EFFECT/ CONDITION</b>	<b>Digital Reverb</b>	3 Types: Room, Hall, Church; Length; Depth; On/Off; Upper/Lower 1, 2, Flute Voice, Lead, Pedal, Accompaniment, Percussion, Tremolo, Symphonic, Delay, Flanger
	<b>Sustain</b>	Upper (Knee), Lower (Knee), Pedal: Length
	<b>Brilliance</b>	Upper, Lead, Lower, Pedal: Control (Brilliant ↔ Mellow)
	<b>Tremolo/Chorus</b>	Upper, Lead, Lower, Pedal, Flute Voice; Tremolo (Fast): Speed; Chorus: Slow, Stop
	<b>Symphonic/Celeste</b>	Upper, Lead, Lower, Pedal; Mode: Symphonic/Celeste
	<b>Vibrato</b>	Upper, Lower, Lead: Preset/User (Delay, Depth, Speed); Touch Vibrato
	<b>Delay/Flanger</b>	Lead, Upper/Lower Voice 1; Delay: Speed, Feedback, Balance; Flanger: Speed, Feedback, Depth
	<b>Pitch Bend</b>	—
	<b>Lead Slide</b>	On/Knee/Off
	<b>Panning</b>	Upper, Lead, Lower, Pedal (7 positions)
	<b>Dynamic Range Enhancer</b>	—
	<b>Feet</b>	Upper, Lead, Lower, Pedal: Preset/4'8"/16'
	<b>Lead Tune</b>	—
<b>Glide</b>	Upper 1, 2, Lower 1, 2, Lead	
<b>RHYTHM</b>	<b>Rhythms</b>	March 1, 2, 3, Polka 1, 2, Country 1, 2, Broadway, Baroque; Waltz 1, 2, 3, 4, 5, Jazz Waltz 1, 2, 3, Bolero; Swing 1, 2, 3, 4, 5, 6, Jazz Ballad, Dixieland 1, 2; Bounce 1, 2, 3, Reggae 1, 2; Slow Rock 1, 2, 3; 8 Beat 1, 2, 3, 4, 5, Dance Pop 1, 2, 3, 4; Tango 1, 2, 3; Mambo, Salsa, Chacha, Rhumba, Beguine; Samba 1, 2, 3, Bossanova 1, 2, 3; 16 Beat 1, 2, 3, 4, 5, Funk 1, 2, 3; User 1-8 (A-D); (12 Buttons; 66 Rhythms); Volume Fine
	<b>Variations</b>	Fill-In; Intro. Ending; Lead In; Auto Variation: On/Off
	<b>Others</b>	Start; Synchro Start; Tempo; Bar/Beat LED; Volume; Balance
<b>RHYTHM PROGRAM</b>	<b>Pattern Program</b>	On/Off; Step Write/Real Time Write; Beat (1/4, 3/4, 2/4); Quantize (  off); Metronome (On/Off); Edit: Instruments 1-16 (Change, Clear; Cursor); Accent Level 0-8; 75 Percussion Sounds; Accompaniment Select; Save: User 1-8 (A-D, Fill-In); Remaining Memory Display
	<b>Rhythm Sequence</b>	On/Off; Sequence 1-4; 120 Positions (Bar); Cursor Controls; Data: Preset/User (Set, Insert, Delete, Clear)
<b>KEYBOARD PERCUSSION</b>		On/Off: Lower, Pedal; 43 Sounds
<b>ACCOMPANIMENT</b>	<b>Auto Bass Chord</b>	Mode: Off; Single Finger; Fingered Chord; Custom ABC; Memory: Lower/Pedal
	<b>Accompaniments</b>	Type 1, 2, 3, 4, All Off
<b>REGISTRATION MEMORY</b>		M/To Disk, 1 ~ 8; Disable Button; Mode: Off; Shift; Jump; User (80 Positions; Cursor Controls; Data: Set, Insert, Delete, Clear)
<b>BASIC REGISTRATION</b>		1 ~ 5
<b>REGISTRATION MENU</b>		80 (Provided in the Included Disk)
<b>MUSIC DISK RECORDER</b>		Play/Record: Upper, Lower, Pedal, Lead, Keyboard Percussion, Control; Pause; Stop; Song Select; Song Repeat; Song Delete; Song Copy: From/To; Tempo; Shift; Format; Custom Play; Remaining Memory; LED Display; Eject
<b>FOOT SWITCH</b>		[Left] Mode: Off; Rhythm (Stop, Ending, Fill-In); Glide (Upper/Lower 1, 2; Lead); Tremolo (On/Off); [Right] Regist. Shift Mode: Off, Shift, Jump, User
<b>KNEE LEVER</b>		On/Off: Sustain (Upper, Lower); MOC; Lead Slide
<b>2ND EXP. PEDAL</b>		—
<b>LCD DISPLAY</b>		256 × 64 Full Dot
<b>OTHER CONTROLS</b>		Power On/Off; Exp. Pedal (Depth); Pitch Control; Transpose; Master Volume; Display Select; Data Controls; Page; Coarse; Hold; LCD Contrast; LCD Brightness; MIDI (Output: Upper, Lower; Int./Ext.: Lead, Sync., Exp.)
<b>OTHER FITTINGS</b>		Registration Menu Disk; 3.5" Floppy Disk; Matching Bench; Keyboard Cover/Music Stand; MIDI In/Out; Headphone Jack; Rhythm In (Phone; R/L); Aux In/Out (RCA; R/L)
<b>OPTIONAL ACCESSORIES</b>		Voice Disks; Registration Menu Disk; YHE-5 Headphones; 3.5" Floppy Disks
<b>SOUND SYSTEM</b>	<b>Power Amplifiers</b>	200W (50W × 4)
	<b>Speakers</b>	20cm (7 7/8") × 2; 5cm (2") × 2; Monitor × 2
<b>DIMENSIONS</b>		114.9cm × 55.6cm × 98.0cm* (45" × 21 7/8" × 38 3/8") *With Keyboard Cover Closed
<b>WEIGHT</b>		89.0kg (196 1/2 lbs.)
<b>FINISH</b>		Simulated Mahogany Grain

Specifications and descriptions in this User's Guide are for information purposes only. Yamaha Corp. reserves the right to change or modify products or specifications at any time without prior notice. As specifications, equipment or options may not be the same in every locale, please check with Yamaha dealer.

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# MIDI Implementation Chart

Date Jan 22, '91  
Version: 1.1

Function		Transmitted	Recognized	Remarks
Basic Channel	Default	1 2 3	1 2 3 15 16	UK LK PK Keyboard Percussion CONTROL
	Changes	16 4 5	4	UK LK LEAD
Mode	Default Messages Altered	Mode 3 × *****	Mode 3 × ×	
Note Number	True Voice	48-96 36-84 36-55 × × *****	36-96 36-96 36-96 36-96 36-127 36-96	UK LK PK LEAD Keyboard Percussion UK, LK, PK
Velocity	Note ON Note OFF	○ 9nH, v = 1-127 ○ 9nH, v = 0	○ 9nH, v = 1-127 ○ 9nH, v = 0, 8nH	
After Touch	Key's Ch's	× ○	× ○	
Pitch Bender		×	×	
Control Change		1 × 4 ○ 11 ○ 64 ×	× ○ ○*** ×	Modulation wheel 2nd Expression pedal Expression pedal Sustain
Program Change	Range	0-15 (0-7) * 112-116 *****	0-15 (0-7) * 112-116 0-15 (0-7) *	
System Exclusive		○ **	○ **	
System Common	Song Pos Song Sel Tune	× × ×	× × ×	
System Real Time	Clock Commands	○ ○	○ *** ○	(FAH, FCH)
Aux Messages	Local ON/OFF All Notes OFF Active Sense Reset	× × ○ ×	× × ○ ×	
Notes		* 0-15 = EL-90, 0-7 = EL-70 ** Refer to MIDI Specifications *** Recognize only when External mode		

Mode 1: OMNI ON, POLY    Mode 2: OMNI ON, MONO  
Mode 3: OMNI OFF, POLY    Mode 4: OMNI OFF, MONO

○: YES  
×: NO

# MIDI SPECIFICATIONS

## ■ CHANNEL MESSAGES

Date Jan 22, '91  
Version: 1.1

Code	Function	Transmitted	Recognized	Remarks
8nH, nnH (Note No.), 00H-7FH	Note OFF	× × × × ×	CH 1 CH 2 CH 3 (CH 4)* CH 15	UK LK PK LEAD Keyboard Percussion
9nH, nnH (Note No.), 01H-7FH (ON) 00H (OFF)	Note On/OFF	CH 1 CH 2 CH 3 (CH 4)* (CH 5)* ×	CH 1 CH 2 CH 3 (CH 4)* × CH 15	UK LK PK LEAD Keyboard Percussion
BnH, 04H, 00H-7FH	2nd Expression Pedal	(CH 4)* CH 16	(CH 4)* CH 16	LEAD CONTROL
BFH, 0BH, 00H-7FH	Expression Pedal	CH 16	CH 16	CONTROL
BnH, 40H, 7FH (ON) 00H (OFF)	Sustain ON/OFF	× × ×	× × ×	UK LK PK
BnH, 7BH, 00H	All Note OFF	× × × × ×	× × × × ×	UK LK PK LEAD CONTROL
CnH, nnH (Regist. No.)	Program Change (Registration Memory)	× × × CH 16	CH 1 CH 2 CH 3 CH 16	UK LK PK CONTROL
DnH, 00H-7FH	After Touch	CH 1 CH 2 CH 3 (CH 4)*	CH 1 CH 2 CH 3 (CH 4)*	UK LK PK LEAD

\* Can be replaced by MIDI CONTROL function.

## ■ SYSTEM REALTIME MESSAGES

Code	Function	Transmitted	Recognized	Remarks
F8H	Clock	○	○*	* Recognize = Ext. mode
FAH	Start	○	○	
FCH	Stop	○	○	
FEH	Active Sensing	○	○	
FFH	Reset	×	×	



# 1. Electone common messages

## ■ BULK DUMP Related Messages

Code	Messages	Transmitted	Recognized
F0H, 43H, 70H, 70H, 00H, ..... (data) ....., F7H	Bulk Dump data	×	○
01H	Request-to-Send Voice Parameter data	×	○
02H	Request-to-Receive Voice Parameter data	×	○
F0H, 43H, 70H, 70H, 10H, F7H	Request-to-Send all RAM data	×	○
11H	Request-to-Send Registration data	×	○
12H	Request-to-Send R.S.P. data	×	○
14H	Request-to-Send User pattern data	×	○
15H	Request-to-Send User pattern data	×	○
16H	Request-to-Send USER Voice data	×	○
F0H, 43H, 70H, 70H, 20H, F7H	Request-to-Receive all RAM data	×	○
21H	Request-to-Receive Registration data	×	○
22H	Request-to-Receive R.S.P. data	×	○
24H	Request-to-Receive User Pattern data	×	○
25H	Request-to-Receive User Pattern data	×	○
26H	Request-to-Receiver USER Voice data	×	○
F0H, 43H, 70H, 70H, 30H, F7H	Request-to-Send Model ID data	×	○
F0H, 43H, 70H, 70H, 38H, 7FH, F7H 00H	Bulk Dump Acknowledge Unacknowledge	○ ○	× ×

## ■ CONTROL CHANGE

Code	Messages	Transmitted	Recognized
F0H, 43H, 70H, 70H, 40H, 45H, 7FH, F7H 00H	FOOT SWITCH LEFT ON OFF	○ ○	○ ○
40H, 47H, 7FH, F7H 00H	KNEE LEVER ON OFF	○ ○	○ ○
40H, 48H, 7FH, F7H 00H	FILL IN ON OFF	○ ○	○ ○
40H, 48H, 7FH, F7H 00H	INTRO./ENDING ON OFF	○ ○	○ ○
40H, 50H, TLH, THH, F7H	TEMPO	○	○

## ■ MDR STATUS

Code	Messages	Transmitted	Recognized
F0H, 43H, 70H, 70H, 70H, 01H, 7FH 02H	PLAY Start Stop	×	○ ○
03H 04H	RECORD Start Stop	×	○ ○
05H 06H	FF ►► Start Stop	×	○ ○
	Rhythm Pointer Reset	×	○

## ■ OTHERS

Code	Messages	Transmitted	Recognized
F0H, 43H, 70H, 78H, SCH, NCH, F7H	Bar signal	○	○

## 2. EL-90/70 common message

Code	Messages	Transmitted	Recognized
F0H, 43H, 70H, 78H, 00H, ..... (data) ....., F7H	Bulk Dump data	○	○
01H	Request-to-Send Voice Parameter data	×	○
02H	Request-to-Receive Voice Parameter data	×	○
F0H, 43H, 70H, 78H, 10H, F7H	Request-to-Send all RAM data	×	○
11H	Request-to-Send Registration data	×	○
12H	Request-to-Send R.S.P. data	×	○
14H	Request-to-Send User pattern data	×	○
15H	Request-to-Send User pattern data	×	○
16H	Request-to-Send USER Voice data	×	○
F0H, 43H, 70H, 78H, 20H, F7H	Request-to-Receive all RAM data	×	○
21H	Request-to-Receive Registration data	×	○
22H	Request-to-Receive R.S.P. data	×	○
24H	Request-to-Receive User Pattern data	×	○
25H	Request-to-Receive User Pattern data	×	○
26H	Request-to-Receive USER Voice data	×	○
F0H, 43H, 70H, 78H, 41H, ..... (data) ....., F7H	Panel Switch Event data * 1	○	○
F0H, 43H, 70H, 78H, 42H, ..... (data) ....., F7H	Current Registration data	○	○

\* 1 Refer to the "Table of Switch-Related MIDI Codes."

● Table of SW MIDI codes [FOH, 43H, 70H, 78H, 41H, CODE, DATA, F7H]

Switch Code

Functions/Switches		Code	Data	Remarks
Selector	UK Voice 1	02H	00H-0DH	SW no.
	LK Voice 1	03H	00H-0DH	SW no.
	UK Voice 2	04H	00H-0DH	SW no.
	LK Voice 2	05H	00H-0DH	SW no.
	Lead	06H	00H-04H	SW no.
	PK Bass 1	07H	00H-04H	SW no.
	PK Bass 2	08H	00H-04H	SW no.
	Rhythm	0BH	00H-0BH	SW no.
Volume	UK Voice 1	12H	00H-7FH	Volume data
	LK Voice 1	13H	00H-7FH	Volume data
	UK Voice 2	14H	00H-7FH	Volume data
	LK Voice 2	15H	00H-7FH	Volume data
	Lead	16H	00H-7FH	Volume data
	PK Bass 1	17H	00H-7FH	Volume data
	PK Bass 2	18H	00H-7FH	Volume data
	Rhythm	1AH	00H-7FH	Volume data
	Reverb	1BH	00H-7FH	Volume data
Flute Voice	Upper	30H	00H-01H	00H = Off 01H = On
	Lower	31H	00H-01H	00H = Off 01H = On
To Lower	Lead	36H	00H-01H	00H = Off 01H = On
	PK Bass 1	37H	00H-01H	00H = Off 01H = On
	PK Bass 2	38H	00H-01H	00H = Off 01H = On
Brilliance	UK Voice 1	42H	00H-06H	00H = Brilliant 06H = Mellow
	LK Voice 1	43H	00H-06H	00H = Brilliant 06H = Mellow
	UK Voice 2	44H	00H-06H	00H = Brilliant 06H = Mellow
	LK Voice 2	45H	00H-06H	00H = Brilliant 06H = Mellow
	Lead	46H	00H-06H	00H = Brilliant 06H = Mellow
	PK Bass 1	47H	00H-06H	00H = Brilliant 06H = Mellow
	PK Bass 2	48H	00H-06H	00H = Brilliant 06H = Mellow
Sustain	UK Sustain	50H	00H-01H	00H = Off 01H = On
	LK Sustain	51H	00H-01H	00H = Off 01H = On
	PK Sustain	52H	00H-01H	00H = Off 01H = On
Keyboard Percussion	LK	5BH	00H-01H	00H = Off 01H = On
	PK	5CH	00H-01H	00H = Off 01H = On
Disable	Disable	5FH	00H-01H	00H = Off 01H = On
Tremolo	Tremolo	60H	00H-01H	00H = Chorus 01H = Tremolo
R.S.P.	1	61H	00H-01H	00H = Off 01H = On
	2	62H	00H-01H	00H = Off 01H = On
	3	63H	00H-01H	00H = Off 01H = On
	4	64H	00H-01H	00H = Off 01H = On

### 3. Model-Specific messages

Code	Messages	Transmitted	Recognized
F0H, 43H, 70H, nnH, 00H, ..... (data) ....., F7H nnH, 00H nnH, 01H, nnH, 02H	Bulk Dump data	×	○
	Model ID data	○	×
	Request-to-Send Voice Parameter data	×	○
	Request-to-Receive Voice Parameter data	×	○
F0H, 43H, 70H, nnH, 10H, F7H 11H 12H 14H 15H 16H	Request-to-Send all RAM data	×	○
	Request-to-Send Registration data	×	○
	Request-to-Send R.S.P. data	×	○
	Request-to-Send USER Pattern data	×	○
	Request-to-Send USER Pattern data	×	○
	Request-to-Send USER Voice data	×	○
F0H, 43H, 70H, nnH, 20H, F7H 21H 22H 24H 25H 26H	Request-to-Receive all RAM data	×	○
	Request-to-Receive Registration data	×	○
	Request-to-Receive R.S.P. data	×	○
	Request-to-Receive USER Pattern data	×	○
	Request-to-Receive USER Pattern data	×	○
	Request-to-Receive USER Voice data	×	○

"nnH" can be sent/received by \$35 (E-70) or \$36 (EL-90).

### 4. Electone/Single Keyboard common messages

Code	Messages	Transmitted	Recognized
F0H, 43H, 73H, 01H, 02H, F7H 03H	Request for Internal Synchronous mode	×	○
	Request for External Synchronous mode	×	○

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