Owner's Manual

RolandPiano
3500s/4000s/5000s

FEATURES

The Roland Piano utilizes SA/S technology to reproduce the timbres, dynamics, and characteristics of many of the world's most famous acoustic and electric keyboard instruments. These instrument voices include two acoustic grand pianos, electric grand piano, harpsichord, clavi, vibraphone and two electric pianos.

The Roland Piano includes built-in Chorus, Tremolo and Reverb effects.

Each of the keyboard timbres of the Roland Piano can be controlled via the keyboard of its own or through MIDI with full control over velocity (dynamics).

CONTENTS

■HOW TO ASSEMBLE THE KS-4000 (Optional)

1 Attach side panels B to both ends of pedal unit A, with the holders on B facing inside, then tighten the screws (Fig.1). Be careful not to pinch or cut the connection cord.

2 Connect the connection cord as shown in Fig.2. Put C between the B panels and fix it with the screws.

3 Again being careful not to pinch or cut the connection cord, set the keyboard on the stand, sliding it toward you, and secure it with the supplied connecting pins, (Fig.1). (To tighten the connecting pins, use a large size screwdriver or a coin.)

4 Connect the stand's connector to the connector on the bottom of the keyboard, with both connectors facing to the same direction as shown in Fig.4.

5 Loosen the screw on cord clamp with the supplied screwdriver, pass the power cord through cord clamp, and retighten the screw (Fig.3).

6 After installation and assembly are finished, turn the adjusting bolt to adjust the height of the pedal from the floor. (Fig.5).

> **CAUTION:**
> Whenever it is necessary to move the Piano, make sure to remove the body from the stand by reversing the assembly procedure and move them separately.

Fig.1

HP-3500s/4000sʟ

screw

B

C

B

Fig.2   bolt

Fig.3

Fig.4

Power cord

Cord clamp

Fig.5

Adjusting bolt

4
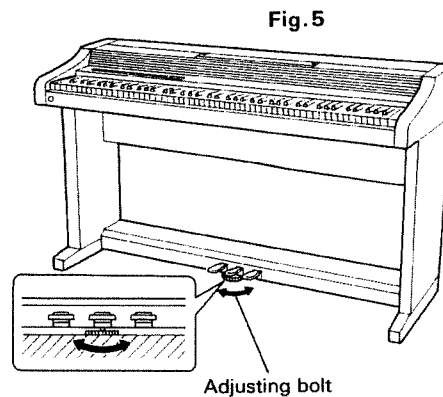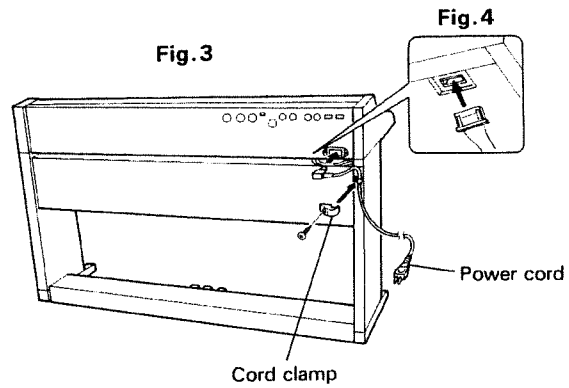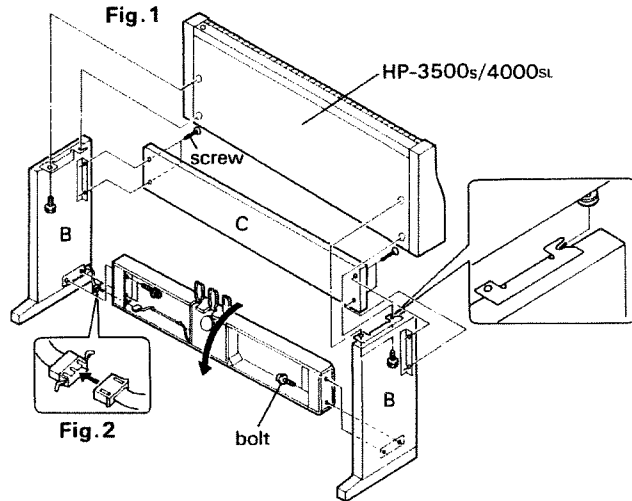
■HOW TO ASSEMBLE THE KS-5000

1

● Fit the rocking arm **A** on each end of the woofer box into the groove of the rocking holder **B** on each side panel.
● Fix the side panels with 4 mounting screws.

Accessories:
Mounting screws ·······································8
Connecting pins ·······································2
Allen wrench ···1
Screwdriver ··1

Fig.1

Side panel
Woofer box
Mounting screws
Allen wrench
Rocking holder **B**
Rocking aram **A**
Side panel
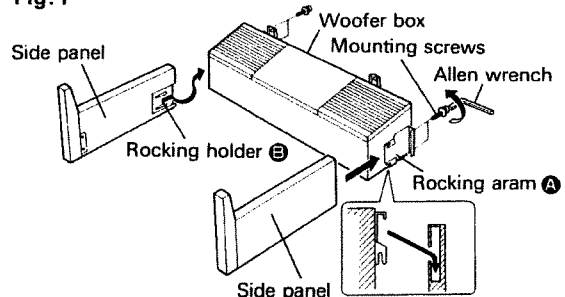
2

● As shown in Fig.2, attach Pedal unit **C** to the side panel with care not to pinch the connection cord.
● Connect the connection cord as shown in Fig.3.

Fig.2

Side panel
Pedal unit **C**
Mounting screw
Side panel

Fig.3   Allen wrench

3

● Being careful not to pinch or cut the connecting cord, set the piano on the stand and secure it with the connecting pins. (Fig.4). (Use a large screwdriver or a coin tighten the connecting pins.)

Fig.4

Body

Connecting pins

4

● Using the accessory screwdriver, loosen the screw of cord clamp, and, after dis connecting the power cord, retighten the screw. (Fig.5)
● Connect the connector of the stand to that on the underside of the piano.
Line up the connectors as shown in the illustration and insert them. (Fig.6)

Fig.5

Fig.6

Cord clamp
Power cord
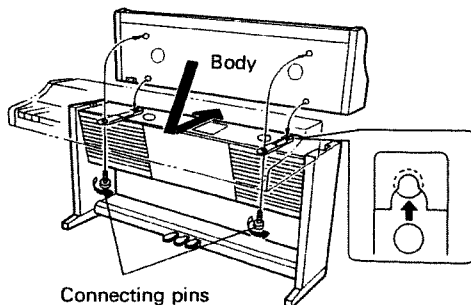
5

● After installation and assembly are finished, turn the adjusting bolt to adjust the height of the pedal from the floor. (Fig.7)

CAUTION:
Whenever it is necessary to move the Piano, make sure to remove the body from the stand by reversing the assembly procedure and move them separetely.

Fig.7

adjusting bolt

5

HOW TO ATTACH THE KEYBOARD COVER KL-5000

① Insert A into the hole on the side panel of the keyboard.

② Place B at the hole on the side panel of the keyboard, slide
the lever, and insert the head of the lever into the hole as
shown in the picture.

B

A

Lever

6

■ PANEL DESCRIPTION

Chorus Button

Volume Control Knob

Tremolo Button

Brilliance Control Knob

Tremolo Rate Knob

Power Switch

Tone Selectors

Reverb Control Knob

Reverb Buttons

Key Transpose/MIDI Button

Tuning Knob

Local ON/OFF Switch
(Usually, set this to "ON" position.)

Input Sockets

Output Sockets

| PR-100 | MT-32 |

MIDI Sockets

DC Outlet
9V 1.8A

DC-DC plug
PCS-25
(Optional)

Receptacle
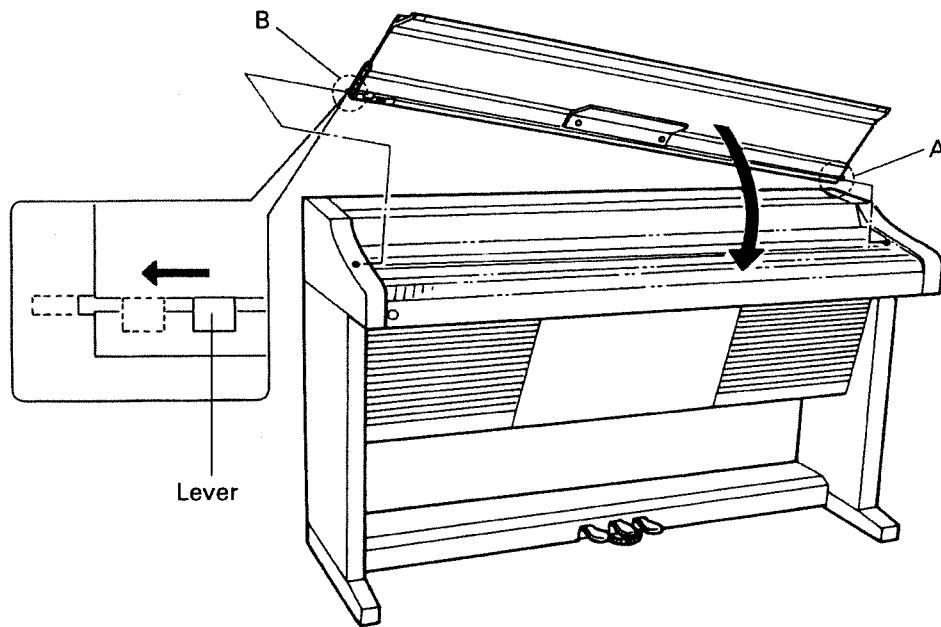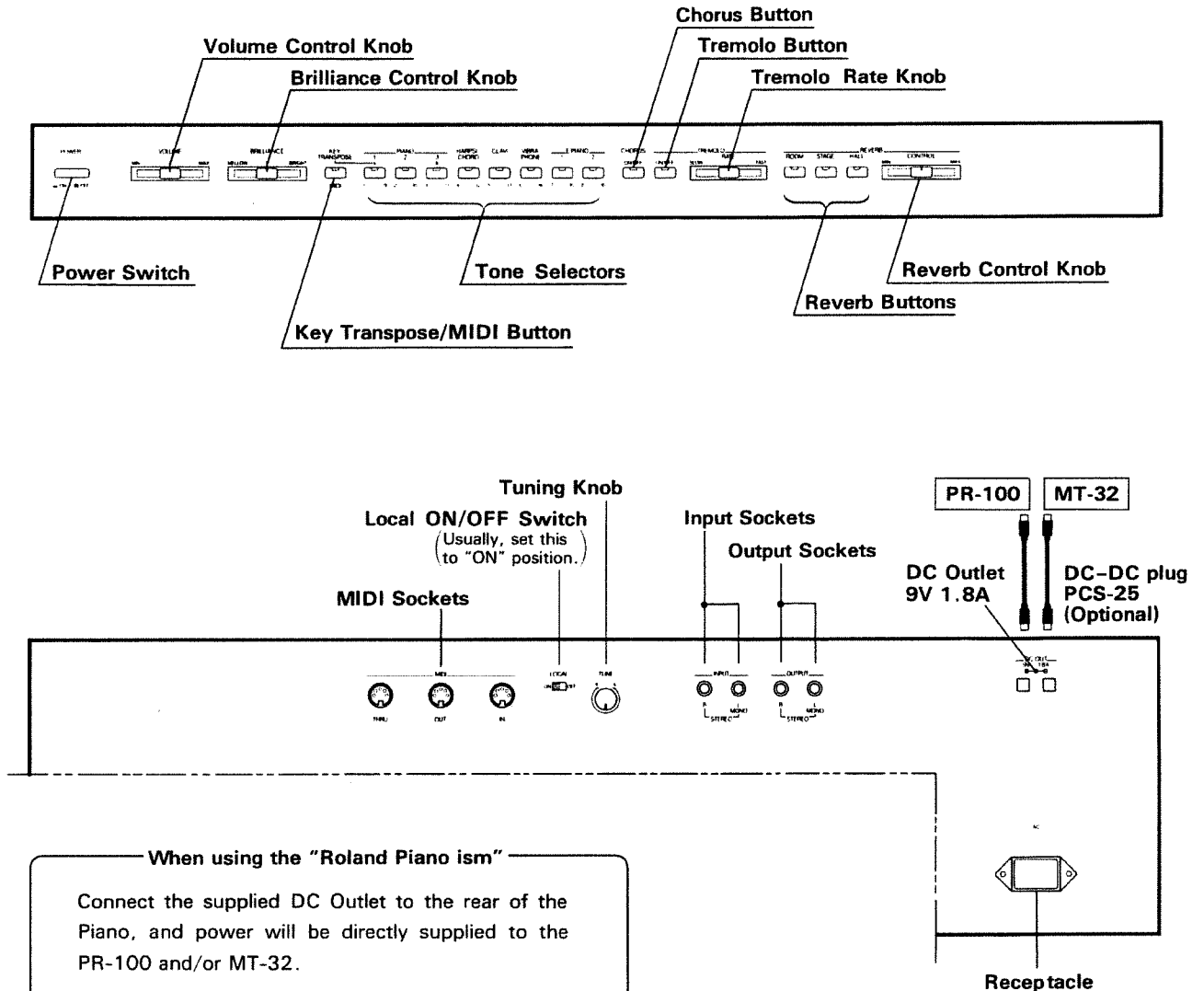
┌─────────── When using the "Roland Piano ism" ───────────┐

Connect the supplied DC Outlet to the rear of the
Piano, and power will be directly supplied to the
PR-100 and/or MT-32.

*For connecting the DC Outlet, use the optional
DC—DC plug PCS-25.

└───┘

┌─────────────── Notes on the DC Outlet ───────────────┐

● Be sure that the polarity (+/−) of the DC Outlet
is correct.

● Do not connect the DC Outlet to any device except
9V voltage.

● When using two DC Outlets, make sure that the
total power consumption does not exceed 1.8A.

└──┘

■ IMPORTANT NOTES

Power Supply

- Do not use the same socket that is used for any noise generating device, such as a motor or variable lighting system.

- This unit might not work properly if the power cable is plugged in with the unit turned on. If this happens, simply turn the unit off, and turn it on again in a few seconds.

- The appropriate voltage to be used is shown on the name plate on the rear of the unit. Be sure that the voltage system in your country meets the requirement.

Power Cord

- When disconnecting the power cord from the socket, do not hold the cord but the plug. When the unit is not to be used for a long period, disconnect the power cord.

Location

- Operating this unit near a neon or fluorescent lamp may cause noise interference. If so, change the angle or position of the unit.

- Avoid using this unit in extreme heat or humidity or where it may be affected by dust or vibration.

Cleaning

- Use a soft cloth and clean only with a mild detergent.

- Do not use solvents such as paint thinner.

1 OPERATION

1. Basic Operation

① **Connect the plug of the power cable to the wall socket.**

② **Turn the piano on.**

* For about 2 seconds after turned on, the piano cannot be played because of the muting circuit.

③ **Adjust the volume with the Volume Control knob.**

VOLUME

MIN ———————— MAX
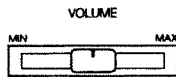
2. Tone Selection

The Roland Piano features 8 keyboard sounds; two acoustic grand pianos, electric grand piano, harpsichord, clavi, vibraphone and two electric pianos.

▶ **To select a voice, press one of the Tone Selector buttons numbered 1 through 8. One keyboard sound can be selected at a time.**

PIANO HARPSI- CLAVI VIBRA- E PIANO
1 2 3 CHORD PHONE 1 2
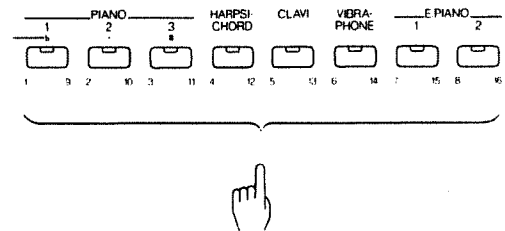
VOICE PRESERVE FUNCTION

The Roland Piano features the Voice Preserve Function, that is, while you are playing the keyboard using a certain voice, you can request the next voice to be used, without the voice actually changing until you release all the keys.

When the piano is being played with the Note or Damper/Sostenuto ON (See next page), the voice does not change (the indicator of the corresponding sound flashes.) To change the voices, lift all Notes and the Damper/Sostenuto OFF. (Now, the indicator of the new voice is constantly lighted.)

3. Tuning

The Tune Knob is provided for controlling the overall tuning center of the Roland Piano. This is especially useful for tuning to other acoustic instruments, synthesizers, and synthesizer sound modules. Since the Roland Piano incorporate S/A Synthesis, the tuning of indiviudal notes will never be necessary. At its center position, Middle A = 442Hz.

TUNE

4. Damper/Soft/Sostenuto Pedal

The supplied stand (optional for the HP-3500s/4000sL) features three pedals:

Soft Pedal ——————————————— Damper Pedal
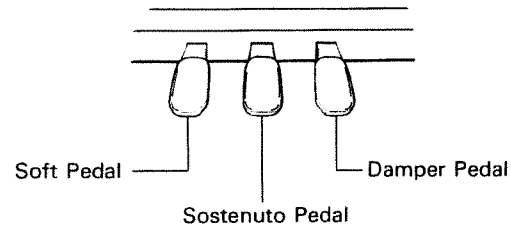
Sostenuto Pedal

● Damper Pedal (right)

The Damper Pedal makes the sound decay slowly.

● Sostenuto Pedal (center)

Pressing the Sostenuto Pedal will turn on the Damper of the note currently played. The following notes will not take on any effect.

● Soft Pedal (left)

The Soft Pedal serves to make the performance softer.

5. Brilliance

As you rotate the Brilliance Control knob clockwise, the tone will be brighter, and mellower when rotated counterclockwise.

BRILLIANCE

MELLOW ▼ BRIGHT
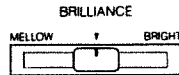
6. Chorus/Tremolo

The piano includes built-in Chorus and Tremolo effects.

a. Chorus

▶ By pressing the Chorus button, a lush stereo chorus effect can be obtained through the instrument's internal speaker/amplifier or via the stereo outputs.

CHORUS ────────TREMOLO────────
RATE
ON/OFF   ON/OFF   SLOW   FAST
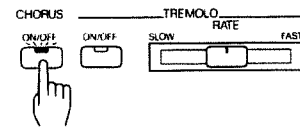
b. Tremolo

▶ The Tremolo button engages the tremolo effect. The Tremolo circuit is stereo and is especially useful when used with the electric piano and vibraphone sounds.

CHORUS ────────TREMOLO────────
RATE
ON/OFF   ON/OFF   SLOW   FAST
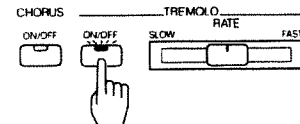
▶ The Tremolo Rate Knob is used to increase or decrease the speed of the tremolo effect. Rotaing it clockwise increases the tremolo speed while rotating it counterclockwise decreases the speed of the effect.

* On/Off of the Tremolo and/or the Chorus effect can be separately set in each voice and is retained until the piano is turned off.

When the piano is switched on, the effects of voices are set as follows:

Piano 1/2/3 .... OFF
Harpsichord .... OFF
Clavi .... OFF
Vibraphone .... ON (Tremolo)
E. Piano 1/2 .... ON (Chorus)

7. Reverb

Reverberation, different from the direct sound that reaches you directly from the sound source, reaches your ears after reflecting here and there. For example, when a musical instrument is played in a hall, even after the instrument stops giving sound, there is remaining sound in the hall for a while. This is the reverberation.

The Piano provides three different reverb effects, ROOM, STAGE and HALL.

● ROOM

This gives the reverberations of a live room.

● STAGE

This gives the reverberations of a stage.

● HALL

This gives the reverberations of a concert hall.

Simply press a relevant Reverb button, ROOM, STAGE or HALL (the coresponding indicator lights up) to select a reverb.
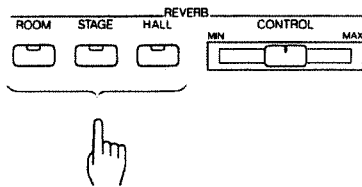
Pushing the same button again will turn off the reverb.

* STAGE is selected when the piano is switched on.

● Adjusting the intensity of the reverberation

The intensity of the reverberation can be changed with the Reverb Control knob.

At MIN, the effect is weak, and at MAX, it is strongest.
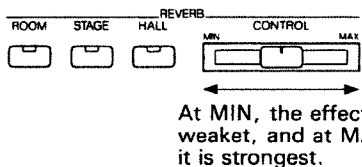
● Changing the reverberation time

The Reverb time of each effect, Room, Stage or Hall, can be adjusted.

Reverb Time

I	2	3	4	5	6	7	8

Shorter   Longer

<Procedure>
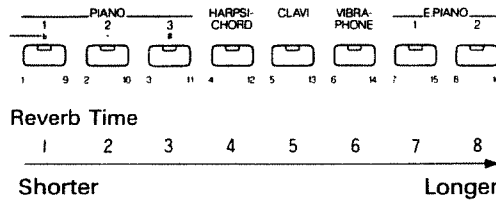
▶ **While holding down either of the Reverb buttons (Room, Stage or Hall), press the Tone Selector button that corresponds to the reverb time you want.**

Holding down the Reverb button will flash the Tone Selector button that corresponds to the reverb time previuously selected. At this stage, you can select a new reverb time.

starts flashing

keep holding down these buttons

flashing

While holding down these buttons

+
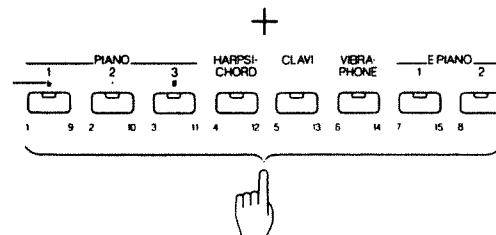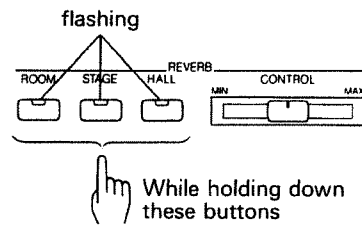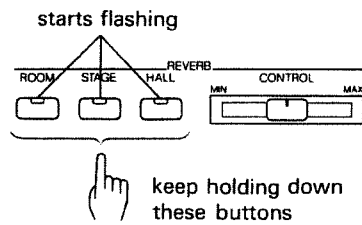
Push the button which corresponds to the reverb time you want.

8. Headphones

Standard stereo headphones can be used with the Roland Piano for private listening and practice. Connecting the headphone plug to the headphone socket will disconnect the internal speakers. The Volume knob on the front panel will adjust the headphone volume.
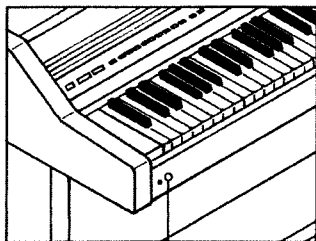
Headphone Socket

9. Key Transpose

The keyboard of your HP-3500s/4000sL/5000s/5000sL can be transposed within a range of a perfect 4th up and a diminished 5th down.

▶ **While holding the Transpose button down, press either of the following buttons as many times as necessary.**

KEY TRANSPOSE

MIDI

While holding down

+

PIANO
1   2   3

Press as many times as necessary for the amount of transposition.
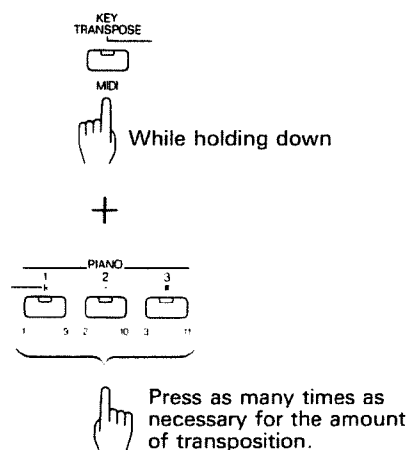
♯ Button (= Piano 3 Button)

Pressing this button will increase the pitch in semi-tone steps. (This button can be used up to 5 times.)

♭ Button (= Piano 1 Button)

Pressing this button will decrease the pitch in semi-tone stpes. (This button can be used up to 6 times.)

· Button (= Piano 2 Button)

This button returns the key to the normal condition.

♭ Button							♯ Button				
Augmented 4th	Perfect 4th	Major 3rd	Minor 3rd	Major 2nd	A Semi-tone (Minnor 2nd)	Standard	Semi-tone higher (Minnor 2nd)	2 Semi-tones (A whole Tone)	Minor 3rd (3 semi-tones)	Major 3rd	Perfect 4th
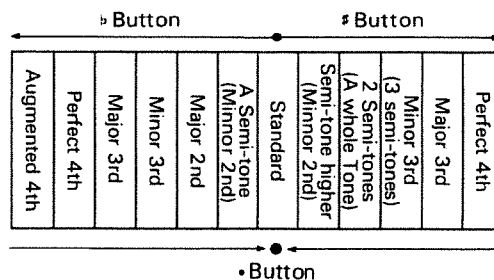
· Button

When the transposition is done, the Key Transpose button glows steadily.

Once the key is transposed, the Transpose On or Off can be selected by pressing the Key Transpose button.

* While you are taking the transposing procedure, the Piano cannot be played.

[e.g. 1] Transposing to E

While holding the Key Transpose button down, press the [♯] button four times.

While holding down

Push 4 times

F♯	G	G♯	A	A♯	B	C	C♯	D	D♯	E	F
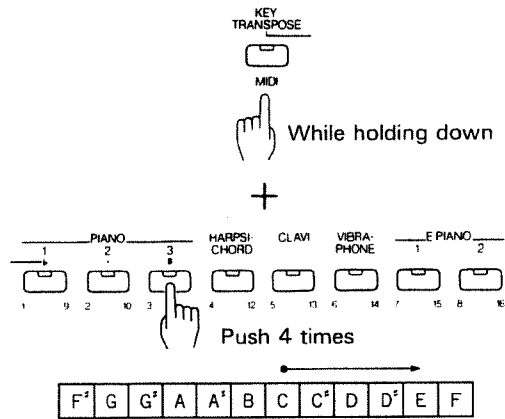
[e.g. 2] Transposing E to G

While holding the Key Transpose button down, press the [·] button once to return to the normal pitch, then press the [♭] button five times (wihtout releasing the Key Transpose button).

While holding down

Press • button, then ♭ button 5 times.

F♯	G	G♯	A	A♯	B	C	C♯	D	D♯	E	F
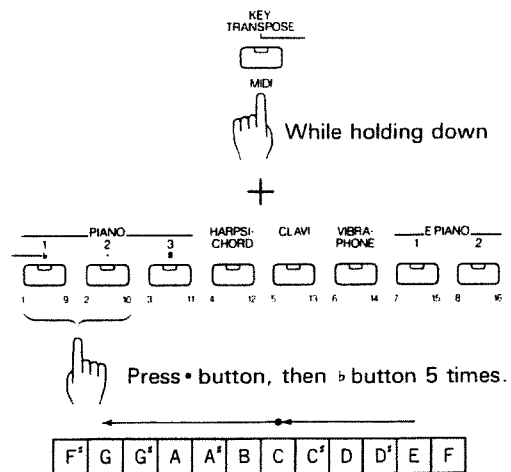
2 SETUP WITH AUXILIARY AUDIO EQUIPMENT

● Input Sockets

The external input sockets are provided for connecting the outputs of other electronic instruments (rhythm machines CR-1000, TR-626 or sound module MT-32, etc.) to the internal speakers and amplifier of the Roland Piano.

● Output Sockets

These Output Sockets are provided for connecting the Roland Piano to larger sound systems such as a home stereo system, multi-track recorders, mixers, and/or auxiliary instrument amplifiers.

<Setup>

① Turn down the volume of the external amplifier connected to the piano.

② Connect the Output Sockets of the piano to the Line In's (e.g. AUX) of the amplifier.

③ Adjust the volume of the amplifier.

* Connecting the headphone plug to the headphone socket will disconnect the internal speakers.

③ MIDI

Part of the power of your Roland Piano is in the use of the MIDI (Musical Instrument Digital Interface). To learn more about MIDI and the various music systems that can be added to your HP-Piano, refer to the enclosed booklet "MIDI" and the MIDI implementation chart in the back of this owner's manual.

1. MIDI Sockets

The Roland Piano has MIDI IN, MIDI OUT and MIDI THRU Sockets on the rear panel.

MIDI IN Socket
MIDI OUT Socket
MIDI THRU Socket
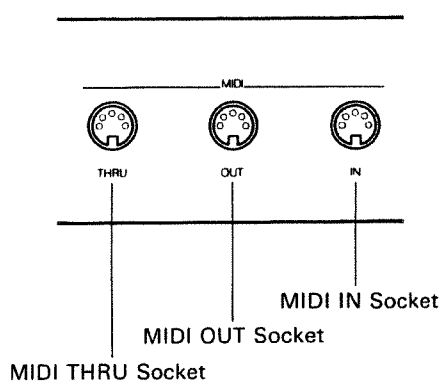
● MIDI IN Socket

When using the piano as a MIDI sound module controlled by the external MIDI device, connect the MIDI IN socket to the MIDI OUT or MIDI THRU on the external device.

● MIDI OUT Socket

When using the piano as a keyboard controller that drives the external device, connect the MIDI OUT socket to the MIDI IN on the external device.

● MIDI THRU Socket

Through this, the exact copy of the signal fed into the MIDI IN is sent out.

2. Setting MIDI Channels

For MIDI setup, it is necessary to set the MIDI channel of a transmitter device to the same number as the receiver device.

▶ **While holding the MIDI button down, push the key that corresponds to the MIDI Channel number you want. (See page 21.)**

Press the key that corresponds to the MIDI channel you want
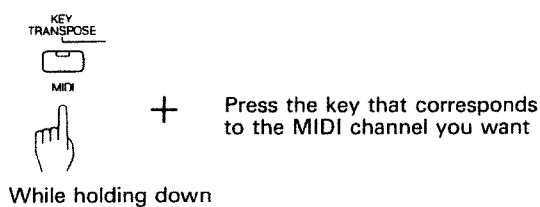
While holding down

* While holding the MIDI button down, press the highest key to set the transmit channel to 1 and the receie channel to 1 (and OMNI ON). (Refer to the MIDI Implementation Chart in the back of this owner's manual.)

The receive and transmit MIDI channels can be set separately.

● Setting the Transmit MIDI Channel

① **While holding the MIDI button down, press the Damper Pedal.**

② **While still holding both down, press the key that corresponds to the channel you wish. (See page 21.)**

KEY
TRANSPOSE

MIDI

+ + Press the key that corresponds to the MIDI channel you want

While holding down   Press the Damper Pedal
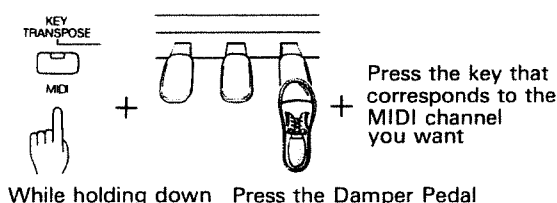
● Setting the Receive MIDI Channel

① **While holding the MIDI button down, press the Soft Pedal.**

② **While still holding both down, press the key that corresponds to the channel you wish. (See page 21.)**

KEY
TRANSPOSE

MIDI

+ Press the Soft Pedal + Press the key that corresponds to the MIDI channel you want
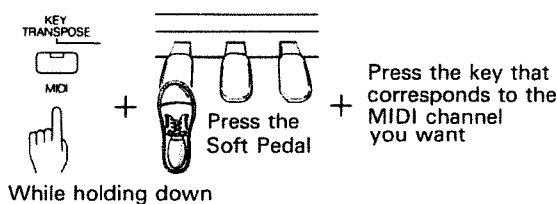
While holding down

* To set the receive channel to 1 (and OMNI ON), press the the highest key while holding the MIDI button down.

* At power up. The transmit channel is set to 1 and the receive channel is set to 1 (and OMNI ON).

You can see the current MIDI channel with the indicator of the corresponding Tone Selector button.

When the MIDI channel currently set is 1 to 8, the corresponding button flashes.

[e.g.] When MIDI channel 4 is currently set:

(Flashes)

PIANO   HARPSI- CLAVI VIBRA- E PIANO
1   2   3   CHORD   PHONE   1   2

1 9 2 10 3 11 4 12 5 13 6 14 7 15 8 16
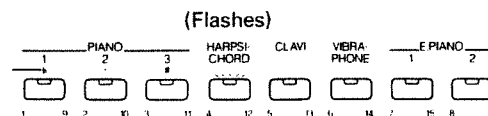
When the MIDI channel currently set is 9 to 16, the corresponding button flashes while all the other buttons are constantly lit.

[e.g.] When MIDI channel 13 is currently set:

PIANO   HARPSI- CLAVI VIBRA- E PIANO
1   2   3   CHORD   PHONE   1   2

1 9 2 10 3 11 4 12 5 13 6 14 7 15 8 16

(Lit Constantly)   (Flash) (Lit constantly)
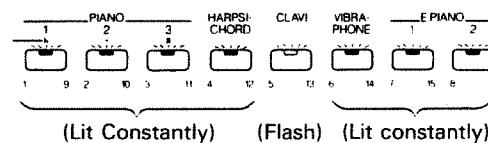
* Pressing only the MIDI button will cause the Display to show the current MIDI channel.

3. Program Change

Program Change messages are MIDI messages for sound (e.g. Patch, Voice) selection. Program Change numbers are assigned to the sound (e.g. Patch, Voice) numbers on each instrument individually.

a. Transmitting Program Change

The Piano can transmit Program Change numbers (Group, Bank and Number) to an external MIDI device using the keys within the set range (see page 21.)

The Group/Bank/Numbers on the correspond to the Program Change numbers as shown below.

Program Change Number Table

GROUP	NO. BANK	1	2	3	4	5	6	7	8
A	1	1	2	3	4	5	6	7	8
	2	9	10	11	12	13	14	15	16
	3	17	18	19	20	21	22	23	24
	4	25	26	27	28	29	30	31	32
	5	33	34	35	36	37	38	39	40
	6	41	42	43	44	45	46	47	48
	7	49	50	51	52	53	54	55	56
	8	57	58	59	60	61	62	63	64
B	1	65	66	67	68	69	70	71	72
	2	73	74	75	76	77	78	79	80
	3	81	82	83	84	85	86	87	88
	4	89	90	91	92	93	94	95	96
	5	97	98	99	100	101	102	103	104
	6	105	106	107	108	109	110	111	112
	7	113	114	115	116	117	118	119	120
	8	121	122	123	124	125	126	127	128

▶ **While holding the MIDI button down, press the keys that correspond to the Group, Bank and Number (see page 21.)**

KEY TRANSPOSE

MIDI

While holding down

+
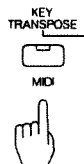
Press the key that corresponds to the Group/Bank/Number

b. Receive

When the piano receive Program Change messages 1 to 32, the corresponding voice is automatically selected.

How the Program Change numbers correspond to the voices is shown in "MIDI Implementation" at the back of the manual.

* The Roland Piano receives 1 to 32 Program Change messages, but ignores 33 to 128.

4. Chorus/Tremolo

On/Off of the Chorus or Tremolo effect of an external device can be controlled:

▶ **Push the Chorus or Tremolo button on the piano, while holding the MIDI button down.**

While holding down
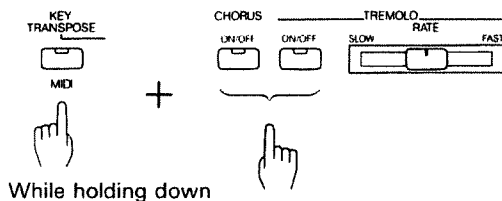
5. MIDI Functions

The Roland Piano can select any of the following three modes that decide how the messages are received and transmitted.

(I) Note On/Off, Pedal and Program Change and Chorus/Tremolo ON/OFF messages are transmitted and received.

(II) Notes On/Off, Pedal and Program Change and Chorus/Tremolo ON/OFF messages are transmitted. Program Change messages are not received.

(III) Note On/Off, Pedal and Program Change and Chorus/Tremolo ON/OFF messages are transmitted and received.
The moment a new voice is selected on the piano, the corresponding Program Change (1 to 8) is transmitted. On/Off of Chours and/or Tremolo is also tramsitted. Even without taking the Chorus/Tremolo procedure, Chorus and/or Tremolo On/Off messages are transmitted by turning on or off Chorus and/or Tremolo effect. This mode may be used when recording data into a MIDI sequencer.

<**How to select one of the three modes**>

(I) Turning the piano on will automatically select this mode.

(II) Turn the piano on while holding down the Tone Selector, Piano 1.

(III) Turn the piano on while holding the Key Transpose button down.

* MIDI Function modes II and III can be simultaneously selected.

6. Local ON/OFF

Usually, MIDI devices, including the Roland Piano, are not intended to transmit MIDI messages received at MIDI IN to MIDI OUT. However, MIDI sequencers are provided with the SOFT THRU function that enables to do that.

The Soft Thru function can be effective when using a MIDI Keyboard Controller and a separate MIDI sound module with a sequencer. That is, to record keyboard performance from a keyboard controller into a sequencer, and play it using the sound module, you connect the sound module to the MIDI THRU on the sequencer, play the keyboard controller, then disconnect it from the MIDI THRU, and connect it to the MIDI OUT of the sequencer to play it back. Such complication can be resolved by the Soft Thru function. Simply turn Soft Thru on, connect the sound module to the MIDI OUT on the sequencer, and you can record and playback without changing the setups.

The Soft Thru function, however, must not be on when using the sequencer with a Roland Piano type keyboard that contains both the keyboard and a sound module in it. If the Soft Thru on the sequencer is set to ON, the piano stutters, or the maximum voices are reduced. This is because the same performance information travels to the sound module section of the piano through the internal connection (①) and via sequencer (②).

Most of the sequencers are default to SOFT THRU OFF, and therefore free from such a trouble. However, if the sequencer cannot be set to SOFT THRU OFF, you can set LOCAL OFF on the piano by setting the Local Switch on the piano to the "OFF" position. LOCAL ON may be called a normal condition (① route is connected).

When the MIDI IN socket is not connected to a MIDI cable, this unit is always set to LOCAL ON no matter where the switch on the rear of the unit is set.

Ⓐ LOCAL SWITCH
Ⓑ SOFT THRU SWITCH

* These switches do not mechanically exist. These are the functions engaged in the software.

■ APPENDIX

**MIDI Channel and Program Change correspond to the
keyboard as shown below.**
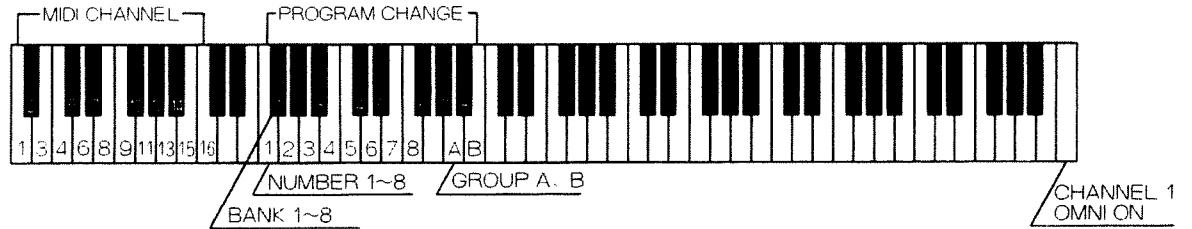
Sound Range Diagram
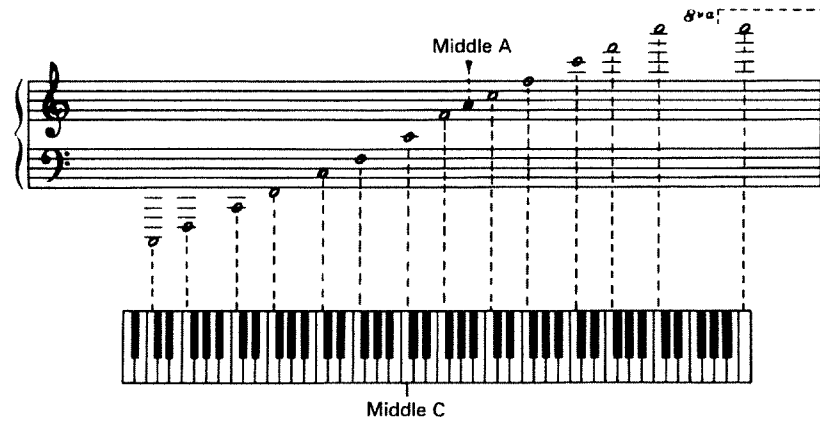
■ SPECIFICATIONS

	HP-3500s	HP-4000sL (A Keyboard Cover is Supplied.)	HP-5000s	HP-5000sL (A Keyboard Cover is Supplied.)
Keyboard	88 Keys, 16 Voice Polyphonic (10 Voice Polyphonic for Harpsichord, Clavi and Electric Piano 2)			
Preset Voices	Pianos 1,2,3, Harpsichord, Clavi, Vibraphone, Electric Pianos 1,2			
Effects	Chorus ON/OFF, Tremolo ON/OFF, Tremolo Rate Reverb (Room, Stage, Hall) ON/OFF, Reverb Control			
Connectors	Output Sockets (Mono, Stereo) Input Sockets (Mono, Stereo) MIDI IN Socket MIDI OUT Socket MIDI THRU Socket DC Outlet×2			
Switches	Power Switch Local ON/OFF Switch			
Speakers	20cm×2, 5cm×2, (9×5)cm×2		Main Unit : (9×5)cm×4, 5cm×2 Stand : 20cm×2, 5cm×2	
Output	20W×2	25W×2	35W×2	
Finish	Roland Original Oak			
Dimensions W×D×H	1383(W)×503.5(D)×184(H)mm 54 7/16"×19 3/4"×7 1/4"		1383(W)×547(D)×814(H)mm 54 7/16"×21 9/16"×32 1/16"(including a stand)	
Weight	43.5kg/95lb 11oz	47kg/103lb 6oz	86.5kg(including a stand) 190lb 5oz	89.5kg(including a stand) 196lb 14oz
Consumption	117V:65W 220/240V:110W	117V:75W 220/240V:140W	117V:100W 220/240V:160W	
Accessories	Power Cord Music Rest	Power Cord Keyboard Cover (KL-5000)	Power Cord Music Rest Stand (KS-5000)	Power Cord Keyboard Cover (KL-5000) Stand (KS-5000)
Options	Stand (KS-4000) Keyboard Cover (KL-5000) DC—DC plug (PCS-25)	Stand (KS-4000) DC—DC plug (PCS-25)	Keyboard Cover (KL-5000)	DC—DC plug (PCS-25)

Roland Exclusive Messages

1. Data Format for Exclusive Messages

Roland's MIDI implementation uses the following data format for all exclusive messages (type IV) :

Byte	Description
FOH	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
CMD	Command ID
[BODY]	Main data
F7H	End of exclusive

MIDI status : F0H, F7H

An exclusive message must be flanked by a pair of status codes, starting with a Manufacturer–ID immediately after F0H (MIDI version1.0).

Manufacturer– ID : 41H

The Manufacturer ID identifies the manufacturer of a MIDI instrument that triggers an exclusive message. Value 41H represents Roland's Manufacturer–ID.

Device– ID : DEV

The Device–ID contains a unique value that identifies the individual device in the multiple implementation of MIDI instruments. It is usually set to 00H – 0FH, a value smaller by one than that of a basic channel, but value 00H – 1FH may be used for a device with multiple basic channels.

Model– ID : MDL

The Model–ID contains a value that uniquely identifies one model from another. Different models, however, may share an identical Model–ID if they handle similar data.

The Model–ID format may contain 00H in one or more places to provide an extended data field. The following are examples of valid Model–IDs, each representing a unique model :

```
01H
02H
03H
00H, 01H
00H, 02H
00H, 00H, 01H
```

Command– ID : CMD

The Command–ID indicates the function of an exclusive message. The Command–ID format may contain 00H in one or more places to provide an extended data field. The following are examples of valid Command–IDs, each representing a unique function :

```
01H
02H
03H
00H, 01H
00H, 02H
00H, 00H, 01H
```

Main data : BODY

This field contains a message to be exchanged across an interface. The exact data size and contents will vary with the Model–ID and Command–ID.

2. Address– mapped Data Transfer

Address mapping is a technique for transferring messages conforming to the data format given in Section 1. It assigns a series of memory–resident records––waveform and tone data, switch status, and parameters, for example––to specific locations in a machine–dependent address space, thereby allowing access to data residing at the address a message specifies.

Address–mapped data transfer is therefore independent of models and data categories. This technique allows use of two different transfer procedures : one–way transfer and handshake transfer.

One– way transfer procedure (See Section3 for details.)

This procedure is suited for the transfer of a small amount of data. It sends out an exclusive message completely independent of a receiving device status.

Connection Diagram
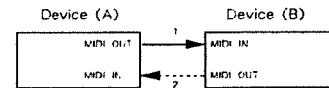
Connectional point2 is essential for "Request data" procedures. (See Section3.)

Handshake– transfer procedure (See Section4 for details.)

This procedure initiates a predetermined transfer sequence (handshaking) across the interface before data transfer takes place. Handshaking ensures that reliability and transfer speed are high enough to handle a large amount of data.

Connection Diagram
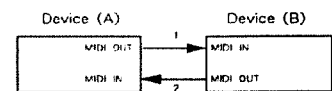
Connectional points1 and 2 is essential.

Notes on the above two procedures

* There are separate Command–IDs for different transfer procedures.
* DevicesA and B cannot exchange data unless they use the same transfer procedure, share identical Device–ID and Model ID, and are ready for communication.

3. One– way Transfer Procedure

This procedure sends out data all the way until it stops when the messages are so short that answerbacks need not be checked.
For long messages, however, the receiving device must acquire each message in time with the transfer sequence, which inserts intervals of at least 20milliseconds in between.

Types of Messages

Message	Command ID
Request data 1	RQ1 (11H)
Data set 1	DT1 (12H)

Request data # 1 : RQ1 (11H)

This message is sent out when there is a need to acquire data from a device at the other end of the interface. It contains data for the address and size that specify designation and length, respectively, of data required.
On receiving an RQ1 message, the remote device checks its memory for the data address and size that satisfy the request.

If it finds them and is ready for communication, the device will transmit a "Data set 1 (DT1)" message, which contains the requested data. Otherwise, the device will send out nothing.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
11H	Command ID
aaH	Address MSB
:	:
	LSB
ssH	Size MSB
:	:
	LSB
sum	Check sum
F7H	End of exclusive

* The size of the requested data does not indicate the number of bytes that will make up a DT1 message, but represents the address fields where the requested data resides.
* Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
* The same number of bytes comprises address and size data, which, however, vary with the Model-ID.
* The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

Data set 1 : DT1 (12H)

This message corresponds to the actual data transfer process. Because every byte in the data is assigned a unique address, a DT1 message can convey the starting address of one or more data as well as a series of data formatted in an address - dependent order.

The MIDI standards inhibit non-real time messages from interrupting an exclusive one. This fact is inconvenient for the devices that support a "soft-through" mechanism. To maintain compatibility with such devices, Roland has limited the DT1 to 256 bytes so that an excessively long message is sent out in separate segments.

Byte	Description
F0H	Exclusive
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
12H	Command ID
aaH	Address MSB
:	:
:	LSB
ddH	Data
:	:
:	:
sum	Check sum
F7H	End of exclusive

* A DT1 message is capable of providing only the valid data among those specified by an RQ1 message.
* Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
* The number of bytes comprising address data varies from one Model-ID to another.
* The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

Example of Message Transactions

● Device A sending data to Device B
Transfer of a DT1 message is all that takes place.

Device (A)		Device (B)

[Data set 1] ——————→
 *More than 20m sec time internal.
[Data set 1] ——————→

[Data set 1] ——————→

● Device B requesting data from Device A
Device B sends an RQ1 message to Device A. Checking the message, Device A sends a DT1 message back to Device B.

Device (A)		Device (B)

[Data set 1] ◄——————[Request data]
[Data set 1] ——————→
 *More than 20m sec time internal.
[Data set 1] ——————→

[Data set 1] ——————→

4. Handshake- Transfer Procedure

Handshaking is an interactive process where two devices exchange error checking signals before a message transaction takes place, thereby increasing data reliability. Unlike one-way transfer that inserts a pause between message transactions, handshake transfer allows much speedier transactions because data transfer starts once the receiving device returns a ready signal.

When it comes to handling large amounts of data--sampler waveforms and synthesizer tones over the entire range, for example--across a MIDI interface, handshaking transfer is more efficient than one-way transfer.

Types of Messages

Message	Command ID
Want to send data	WSD (40H)
Request data	RQD (41H)
Data set	DAT (42H)
Acknowledge	ACK (43H)
End of data	EOD (45H)
Communication error	ERR (4EH)
Rejection	RJC (4FH)

Want to send data : WSD (40H)

This message is sent out when data must be sent to a device at the other end of the interface. It contains data for the address and size that specify designation and length, respectively, of the data to be sent.

On receiving a WSD message, the remote device checks its memory for the specified data address and size which will satisfy the request. If it finds them and is ready for communication, the device will return an "Acknowledge (ACK)" message.
Otherwise, it will return a "Rejection (RJC)" message.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
40H	Command ID
aaH	Address MSB
:	:
:	LSB
ssH	Size MSB
:	:
:	LSB
sum	Check sum
F7H	End of exclusive

* The size of the data to be sent does not indicate the number of bytes that make up a "Data set (DAT)" message, but represents the address fields where the data should reside.
* Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
* The same number of bytes comprises address and size data, which, however, vary with the Model-ID.
* The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

Request data : RQD (41H)

This message is sent out when there is a need to acquire data from a device at the other end of the interface. It contains data for the address and size that specify designation and length, respectively, of data required.

On receiving an RQD message, the remote device checks its memory for the data address and size which satisfy the request. If it finds them and is ready for communication, the device will transmit a "Data set (DAT)" message, which contains the requested data. Otherwise, it will return a "Rejection (RJC)" message.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
41H	Command ID
aaH	Address MSB
⋮	⋮
	LSB
ssH	Size MSB
⋮	⋮
	LSB
sum	Check sum
F7H	End of exclusive

*The size of the requested data does not indicate the number of bytes that make up a "Data set (DAT)" message, but represents the address fields where the requested data resides.
*Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
*The same number of bytes comprises address and size data, which, however, vary with the Model-ID.
*The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

Data set : DAT (42H)

This message corresponds to the actual data transfer process. Because every byte in the data is assigned a unique address, the message can convey the starting address of one or more data as well as a series of data formatted in an address-dependent order.

Although the MIDI standards inhibit non-real time messages from interrupting an exclusive one, some devices support a "soft-through" mechanism for such interrupts. To maintain compatibility with such devices, Roland has limited the DAT to 256bytes so that an excessively long message is sent out in separate segments.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
42H	Command ID
aaH	Address MSB
⋮	⋮
	LSB
ddH	Data
⋮	⋮
sum	Check sum
F7H	End of exclusive

*A DAT message is capable of providing only the valid data among those specified by an RQD or WSD message.
*Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
*The number of bytes comprising address data varies from one model ID to another.
*The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

Acknowledge : ACK (43H)

This message is sent out when no error was detected on reception of a WSD, DAT, "End of data (EOD)", or some other message and a requested setup or action is complete. Unless it receives an ACK message, the device at the other end will not proceed to the next operation.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
43H	Command ID
F7H	End of exclusive

End of data : EOD (45H)

This message is sent out to inform a remote device of the end of a message. Communication, however, will not come to an end unless the remote device returns an ACK message even though an EOD message was transmitted.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
45H	Command ID
F7H	End of exclusive

Communications error : ERR (4EH)

This message warns the remote device of a communications fault encountered during message transmission due, for example, to a checksum error. An ERR message may be replaced with a "Rejection (RJC)" one, which terminates the current message transaction in midstream.

When it receives an ERR message, the sending device may either attempt to send out the last message a second time or terminate communication by sending out an RJC message.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
4EH	Command ID
F7H	End of exclusive

Rejection : RJC (4FH)

This message is sent out when there is a need to terminate communication by overriding the current message. An RJC message will be triggered when :

- a WSD or RQD message has specified an illegal data address or size.

- the device is not ready for communication.

- an illegal number of addresses or data has been detected.

- data transfer has been terminated by an operator.

- a communications error has occurred.

An ERR message may be sent out by a device on either side of the interface. Communication must be terminated immediately when either side triggers an ERR message.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
4FH	Command ID
F7H	End of exclusive

Example of Message Transactions

● Data transfer from device (A) to device (B).
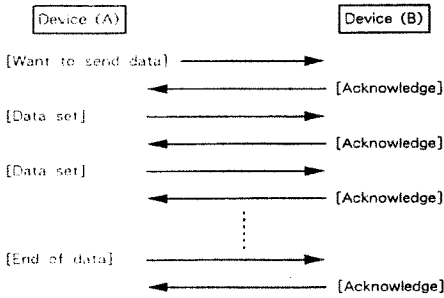
● Device (A) requests and receives data from device (B).
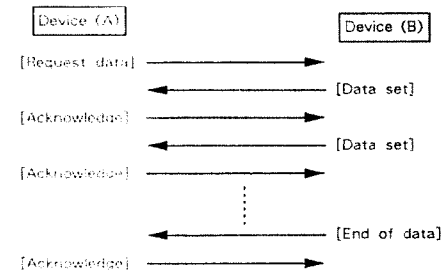
● Error occurs while device (A) is receiving data from device (B).

1) Data transfer from device (A) to device (B).
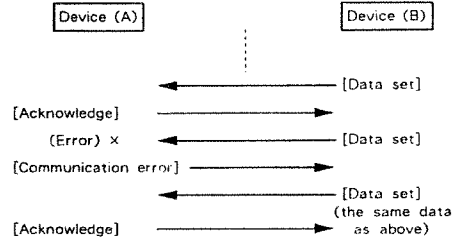
2) Device (B) rejects the data re-transmitted, and quits data transfer.
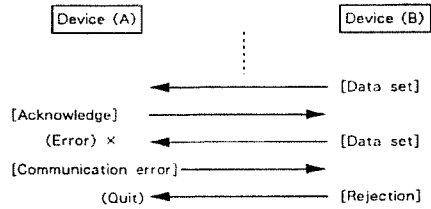
3) Device (A) immediately quits data transfer.
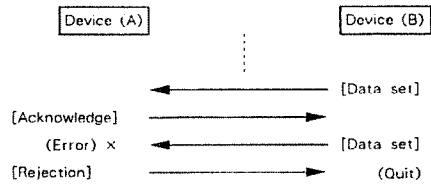
1. TRANSMITTED DATA

■**Note event**

Note Off

Status	Second	Third
9nH	kkH	00H

kk – note number   0FH – 71H (15 – 113)
n – MIDI channel number – 1 0H – FH (0 – 15)

Note On

Status	Second	Third
9nH	kkH	vvH

vv = Velocity   01H – 7FH (1 – 127)

The range of note numbers can be changed by transposition. The table below lists the degrees of the transposition.
The default value is 0.
To transpose the keyboard, hold down the TRANSPOSE/MIDI switch then press the [b] switch to key down or [#] to keyup, once for one semitone. Pressing the [b] switch more than 6 times ([#],5 times) does not introduce further effect. To return the keyboard back to the original notes, press the [.].

Transposed Value (semitones)	Transmitted note rane
– 6	15 – 102
– 5	16 – 103
– 4	17 – 104
– 3	18 – 105
– 2	19 – 106
– 1	20 – 107
0	21 – 108
+ 1	22 – 109
+ 2	23 – 110
+ 3	24 – 111
+ 4	25 – 112
+ 5	26 – 113

■**Control Change**

Hold – 1

Status	Second	Third
BnH	40H	vvH

vv = 00H : OFF
vv = 3FH : Half Damp
vv – 7FH : ON

Sostenuto

Status	Second	Third
BnH	42H	vvH

vv = 00H : OFF
vv = 7FH : ON

Soft

Status	Second	Third
BnH	43H	vvH

vv = 00H : OFF
vv = 7FH : ON

Tremolo

Status	Second	Third
BnH	5CH	vvH

vv = 00H : OFF
vv = 7FH : ON

When the CHORUS switch is pressed while the TRANSPOSE – MIDI switch is being held down, the CHORUS ON or OFF message is sent.
If the power has been applied with the TRANSPOSE – MIDI switch being held down, pressing CHORUS switch sends CHORUS ON or OFF message.

Chorus

Status	Second	Third
BnH	5DH	vvH

vv = 00H : OFF
vv = 7FH : ON

When the TREMOLO switch is pressed while the TRANSPOSE – MIDI switch is being held down, the CHORUS ON or OFF message is sent.
If the power has been applied with the TRANSPOSE – MIDI switch being held down, pressing TREMOLO switch sends CHORUS ON or OFF message.

■**Program Change**

Status	Second
CnH	ppH

pp = program change   (0   127)

The following table shows the GROUP, BANK and NUMBER value srelated with key position whitch is set while the TRANSPOSE – MIDI switch being held down.

| Key	GROUP, BANK, NUMBER
A 3	GROUP A
B 3	GROUP B
F # 2	BANK 1
G # 2	BANK 2
A # 2	BANK 3
C # 3	BANK 4
D # 3	BANK 5
F # 3	BANK 6
G # 3	BANK 7
A # 3	BANK 8
F 2	NUMBER 1
G 2	NUMBER 2
A 2	NUMBER 3
B 2	NUMBER 4
C 3	NUMBER 5
D 3	NUMBER 6
E 3	NUMBER 7
F 3	NUMBER 8

When one of the above – mentioned keys is pressed while the TRANSPOSE – MIDI switch being held down, a Program Change message will be transmitted. The transmitted program change numbers are related with the GROUP, BANK and NUMBER values as follows.

GROUP A	NUMBER	1	2	3	4	5	6	7	8
	BANK								
	1	0	1	2	3	4	5	6	7
	2	8	9	10	11	12	13	14	15
	3	16	17	18	19	20	21	22	23
	4	24	25	26	27	28	29	30	31
	5	32	33	34	35	36	37	38	39
	6	40	41	42	43	44	45	46	47
	7	48	49	50	51	52	53	54	55
	8	56	57	58	59	60	61	62	63

GROUP B	NUMBER	1	2	3	4	5	6	7	8
	BANK								
	1	64	65	66	67	68	69	70	71
	2	72	73	74	75	76	77	78	79
	3	80	81	82	83	84	85	86	87
	4	88	89	90	91	92	93	94	95
	5	96	97	98	99	100	101	102	103
	6	104	105	106	107	108	109	110	111
	7	112	113	114	115	116	117	118	119
	8	120	121	122	123	124	125	126	127

If the power has been applied with the TRANSPOSE – MIDI switch being held down, the following Program Change message and CHORUS TREMOLO ON/OFF message which has been memorized for that tone will be sent when respective number is selected by panel operation.

27

Switch	Program Chage Number
PIANO 1	0
PIANO 2	1
PIANO 3	2
HARPSICHORD	3
CLAVI	4
VIBRAPHONE	5
E.PIANO 1	6
E.PIANO 2	7

■Mode Message

Status	Second	Third
BnH	mmH	00H

mm = 7BH : ALL NOTES OFF * 1
mm = 7CH : OMNI OFF * 2
mm = 7FH : POLY ON * 2

* 1 When all held – keys on the keyboard are released, the ALL NOTES OFF (Bn, 7BH, 00H) is sent.
   If the power has been applied with the PIANO 2 switch being held down, this message is not sent.

* 2 When power is first applied or after Basic Channel is changed, OMNI OFF and POLY ON are sent in the current Basic Channel.

■Exclusive

Status
F0H : System Exclusive
F7H : EOX (End Of Exclusive)

These functions can be sent as Exclusive Message.
Reverb Mode Change (OFF, ROOM, STAGE, HALL)
Reverb Decay Time Change

If the power has been applied with the TRANSPOSE – MIDIswitch being held down, Reverb Mode Change and ReverbDecay Time Change message will be sent when respectivereverb is selected by panel operation.

(1) Reverb Mode Change (ROOM, STAGE, HALL, OFF)

The Exclusive Messages are as follows.

F0H	Staus of System Exclusive
41H	Roland ID
00H	Device ID
1AH	Model ID
12H	Command ID (data set)
00H	Address (msb)
01H	Address (lsb) = Reverb select
vvH	Data vv = 00H – 7FH
ssH	Sum ss
F7H	End of Exclusive

vv = 00H : REVERB OFF
vv = 16H : ROOM – ON
vv = 40H : STAGE – ON
vv = 6AH : HALL – ON

(2) Reverb Decay Time Change

The Exclusive Messages are as follows.

F0H	Staus of System Exclusive
41H	Roland ID
00H	Device ID
1AH	Model ID
12H	Command ID (data set)
00H	Address (msb)
02H	Address (lsb) = Decay time select
vvH	Data vv = 00H – 7FH
ssH	Sum ss
F7H	End of Exclusive

vv = 08H : Short
vv = 18H : ↑
vv = 28H : |
vv = 38H : |
vv = 48H : |
vv = 58H : |
vv = 68H : ↓
vv = 78H : Long

■Active Sensing

Status
FEH

The message is interleaved when a non – message time is expected to elapse more than 300ms.

2. RECOGNIZED RECEIVE DATA

■Note Event

Note Off

Status	Second	Third
8nH	kkH	vvH
9nH	kkH	00H

kk = Note number   00H – 7FH (0 – 127)
vv = Velocity   ignored
n = MIDI channel number – 1 0H – FH (0 – 15)

Note On

Status	Second	Third
9nH	kkH	vvH

vv = Velocity   01H – 7FH (1 – 127)

Note numbers outside of the range 15 – 113 are transposed to the nearest octave inside this range. The Key Transpose operation from the panel does not affect MIDI IN NOTE numbers.

■Control Change

Hold – 1

Status	Second	Third
BnH	40H	vvH

vv = 00H   : OFF
vv = 01H – 3FH   : Half Damp
vv = 40H – 7FH   : ON

Sostenuto

Status	Second	Third
BnH	42H	vvH

vv = 00H – 3FH   : OFF
vv = 40H – 7FH   : ON

Soft

Status	Second	Third
BnH	43H	vvH

vv = 00H – 3FH   : OFF
vv = 40H – 7FH   : ON

Tremolo   (Can be ignored)

Status	Second	Third
BnH	5CH	vvH

vv = 00H – 3FH   : OFF
vv = 40H – 7FH   : ON

Tremolo ON, OFF by Control Change is not memorized (volatile) for each tone.
If the power has been applied with the PIANO 1 switch being held down, this message is ignored.

Chorus   (Can be ignored)

Status	Second	Third
BnH	5DH	vvH

vv = 00H – 3FH   : OFF
vv = 40H – 7FH   : ON

Chorus ON, OFF by Control Change is not memorized (volatile) for each tone.
If the power has been applied with the PIANO 1 switch being held down, this message is ignored.

■**Program Change** (Can be ignored)

Status   Second
CnH   ppH

pp = Program change   (0 – 7)

When Program Change is received, Tone is change as follows and CHORUS TREMOLO
ON/OFF is set to the memorized status for that Tone.
If the power has been applied with the PIANO 1 switch being held down, this message
is ignored.

Program Change Number	Tone
0	PIANO 1
1	PIANO 2
2	PIANO 3
3	HARPSICHORD4、CLAVI
5	VIBRAPHONE
6	E.PIANO 1
7	E.PIANO 2

■**Mode Message**

Local Control

Status   Second   Third
BnH   7AH   vvH

vv = 00H   : OFF
vv = 7FH   : ON

ALL NOTES OFF

Status   Second   Third
BnH   7BH   00H

Recognized only when in OMNI OFF mode.

If the ALL NOTES OFF message is received before individual Note Off messages for
all the On notes are received, (the notes that are Note Off state and sounding by
damper or sostenuto are regarded as Note Off) all MIDI – on notes and MIDI – on
damper, soft and sostenuto are turned off.

OMNI OFF

Status   Second   Third
BnH   7CH   00H

OMNI ON

Status   Second   Third
BnH   7DH   00H

MONO ON

Status   Second   Third
BnH   7EH   mmH

mm = 00H – 10H

POLY ON

Status   Second   Third
BnH   7FH   00H

When one of the above listed mode messages (Second = 124 – 127) are received,
it is regarded as ALL NOTES OFF (whether it is in OMNI ON or OFF mode) and
sets its modeas follws.

```
                 | POLY ON (127) | MONO ON (126) | MONO ON (126)
                 |               |     mm = 1     |     mm  1
-----------------|---------------|---------------|---------------
OMNI OFF (124)   | OMNI = OFF    | OMNI = OFF     | OMNI = ON
                 | POLY          | POLY           | POLY

OMNI ON  (125)   | OMNI = ON     | OMNI = ON      | OMNI = ON
                 | POLY          | POLY           | POLY
```

■**Exclusive**

Status
FOH   : System Exclusive
F7H   : EOX (End Of Exclusive)

These functions are assigned for recognized ExclusiveMessage.
  Reverb Mode Change (OFF, ROOM, STAGE, HALL)
  Reverb Decay Time Change

(1) Reverb Mode Change (OFF, ROOM, STAGE, HALL)

When Reverb Mode Change is received, Reverb Mode is changed as follows, and Decay
Time is set to the memorized value for that Reverb Mode.

FOH	Staus of System Exclusive
41H	Roland ID
00H	Device ID
1AH	Model ID
12H	Command ID (data set)
00H	Address (msb)
01H	Address (lsb) = Reverb select
vvH	Data vv = 00H – 7FH
ssH	Sum ss
F7H	End of Exclusive

vv = 00H   : Reverb OFF
vv = 01H – 2AH   : ROOM – ON
vv = 2BH – 54H   : STAGE – ON
vv = 55H – 7FH   : HALL – ON

(2) Decay Time Change

Decay Time Change by Exclusive message is not memorized (volatile) for each Reverb
Mode.

FOH	Staus of System Exclusive
41H	Roland ID
00H	Device ID
1AH	Model ID
12H	Command ID (data set)
00H	Address (msb)
02H	Address (lsb) = Decay time select
vvH	Data vv = 00H – 7FH
ssH	Sum ss
F7H	End of Exclusive

vv = 00H – 0FH   : Short
vv = 10H – 1FH   : ↑
vv = 20H – 2FH   : |
vv = 30H – 3FH   : |
vv = 40H – 4FH   : |
vv = 50H – 5FH   : |
vv = 60H – 6FH   : ↓
vv = 70H – 7FH   : Long

■**Active Sensing**

Status
FEH

Upon receiving this message, measuring the time at the end of every message is started.
If no data is received within 300 ms, all the MIDI – on notes and MIDI – on Damper,
Sostenuto and Soft, will be turned off.

3. BASIC CHANNEL SETTING

When the power is first applied, the Transmit and Receive Basic Channel is set to
1, MODE 3 (OMNI OFF, POLY ON).

When the following key on the keyboard is pressed while the TRANSPOSE – MIDI
switch is held down, both Transmit and Receive Basic Channel will be Changed. In
this state, if the highest key (C8) is pressed, Both Transmit and Receive Channel
will be set to 1, MODE 1 (OMNI ON, POLY ON).
If the following key on the keyboard is pressed while the TRANSPOSE – MIDI switch
is held down and damper pedal is pressed, only Transmit Basic Channel will be changed.
If the following key on the keyboard is pressed while the TRANSPOSE – MIDI switch
is held down and soft pedal is pressed, only Receive Basic Channel will be changed.
In this state, if the highest key (C8) is pressed, Only Receive Channel will be set
to 1, MODE 1 (OMNI ON, POLY ON).

Key	Basic Channel	OMNI
Power – on	1	OFF
A 0	1	OFF
A # 0	2	OFF
B 0	3	OFF
C 1	4	OFF
C # 1	5	OFF
D 1	6	OFF
D # 1	7	OFF
E 2	8	OFF
F 2	9	OFF
F # 2	10	OFF
G 2	11	OFF
G # 2	12	OFF
A 2	13	OFF
A # 2	14	OFF
B 2	15	OFF
C 2	16	OFF
C 8	1	ON (receive only)

Digital Piano

Model HP-3500S/4000SL/5000S/5000SL **MIDI Implementation Chart**

Date : Aug. 1 1988

Version : 1.00

	Function ···	Transmitted	Recognized	Remarks
Basic Channel	Default Changed	1 1 – 16	1 1 – 16	
Mode	Default Messages Alterd	Mode 3 OMNI OFF、POLY ********	Mode 3 OMNI ON/OFF、POLY MONO (M ≠ 1) →1、(M = 1) →3	
Note Number	True Voice	15 – 113 ********	0 – 127 15 – 113	
Velocity	Note ON Note OFF	○ × 9n, v = 0	○ ×	v = 1 – 127
After Touch	Key's Ch's	× ×	× ×	
Pitch Bender		×	×	
Control Change	0 – 63 64 – 120 121	○ ○ ○ ○ ○	○ ○ ○ ○ ○	Hold 1 Sostenuto Soft Tremolo Chorus Tremolo, Chorus can be ignored by power-up setting.
Prog Change	True #	○ (0 – 127) ********	○ (0 – 7) 0 – 7	Can be ignored by power-up setting.
System Exclusive		○	○	
System Common	Song Pos Song Sel Tune	× × ×	× × ×	
System Real Time	Clock Commands	× ×	× ×	
Aux Message	Local ON/OFF All Notes OFF Active Sense Reset	× ○ ○ ×	○ ○ (123 – 127) ○ ×	
Notes		* 1 When power on, Ch – 1 OMNI OFF and POLY are sent. * 2 When Basic channel is changed, Mode is set to 3.		

Mode 1 : OMNI ON, POLY   Mode 2 : OMNI ON, MONO   ○ : Yes

Mode 3 : OMNI OFF, POLY   Mode 4 : OMNI OFF, MONO   × : No

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