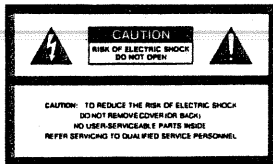

Owner's Manual

Roland Piano

600/700/800



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of un-insulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

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

IMPORTANT SAFETY INSTRUCTIONS

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

1. Read all the instructions before using the product.
2. To reduce the risk of injury, close supervision is necessary when a product is used near children.
3. Do not use this product near water- for example, near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimming pool, or the like.
4. This product should be used only with a cart or stand that is recommended by the manufacture.
5. This product, either alone or in combination with an amplifier and headphones or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level or at level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
6. The product should be located so that its location or position does not interfere with its proper ventilation.
7. The product should be located away from heat sources such as radiators, heat registers or other products that produce heat.
8. The product should avoid using in where it may be effected by dust.
9. The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.
10. The power-supply cord of the product should be unplugged from the outlet when left unused for a long period of time.
11. Do not tread on the power-supply cord.
12. Do not pull the cord but hold the plug when unplugging.
13. When setting up with any other instruments, the procedure should be followed in accordance with instruction manual.
14. Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
15. The product should be serviced by qualified service personnel when:
 - A: The power-supply cord or the plug has been damaged; or
 - B: Objects have fallen, or liquid has been spilled into the product; or
 - C: The product has been exposed to rain; or
 - D: The product does not appear to operate normally or exhibits a marked change in performance; or
 - E: The product has been dropped, or the enclosure damaged.
16. Do not attempt to service the product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified service personnel.

SAVE THESE INSTRUCTIONS

WARNING

THIS APPARATUS MUST BE EARTH GROUNDED.

The three conductors of the mains lead attached to this apparatus are identified with color as shown in the table below, together with the matching terminal on the UK type power plug. When connecting the mains lead to a plug, be sure to connect each conductor to the correct terminal, as indicated. **"This instruction applies to the product for United Kingdom."**

MAINS LEADS		PLUG
Conductor	Color	Mark on the matching terminal
Live	Brown	Red or letter L
Neutral	Blue	Black or letter N
Grounding	Green-Yellow	Green, Green-Yellow, letter E or symbol

Bescheinigung des Herstellers /Importeurs

Hiermit wird bescheinigt, daß der/die/das

ROLAND DIGITAL PIANO HF-600/700/800

(Gerät. Typ. Bezeichnung)

in Übereinstimmung mit den Bestimmungen der

Amtsbl. Vfg 1046 / 1984

(Amtsblattverfügung)

funkt-entstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Roland Corporation Osaka / Japan

Name des Herstellers/Importeurs

RADIO AND TELEVISION INTERFERENCE

"Warning - This equipment has been verified to comply with the limits for a Class B computing device, pursuant to Subpart J, of Part 15, of FCC rules. Operation with non-certified or non-verified equipment is likely to result in interference to radio and TV reception."

The equipment described in this manual generates and uses radio-frequency energy. If it is not installed and used properly, that is, in strict accordance with our instructions, it may cause interference with radio and television reception.

This equipment has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J, of Part 15, of FCC Rules. These rules are designed to provide reasonable protection against such a interference in a residential installation. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by the following measure:

- Disconnect other devices and their input/output cables one at a time. If the interference stops, it is caused by either the other device or its I/O cable.
- These devices usually require Roland designated shielded I/O cables. For Roland devices, you can obtain the proper shielded cable from your dealer. For non-Roland devices, contact the manufacturer or dealer for assistance.
- If your equipment does cause interference to radio or television reception, you can try to correct the interference by using one or more of the following measures:
 - Turn the TV or radio antenna until the interference stops.
 - Move the equipment to one side or the other of the TV or radio.
 - Move the equipment farther away from the TV or radio.
 - Plug the equipment into an outlet that is on a different circuit than the TV or radio. (That is, make certain the equipment and the radio or television set are on circuits controlled by different circuit breakers or fuses.)
 - Consider installing a rooftop television antenna with coaxial cable lead-in between the antenna and TV.

If necessary, you should consult your dealer or an experienced radio/television technician for additional suggestions. You may find helpful the following booklet prepared by the Federal Communications Commission:

"How to Identify and Resolve Radio-TV Interference Problems"
This booklet is available from the U.S. Government Printing Office, Washington, D.C., 20402. Stock No. 004-000-00345-4.

FEATURES

The Roland pianos HP-600/700/800 utilize 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, harpsichord, vibraphone and electric piano.

The piano includes two built-in Chorus effects.

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

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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 panel. Be sure that it meets the voltage system in your country.

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.

Cleaning

- Use a soft cloth and clean only with a mild detergent.
- Do not use solvents such as paint thinner.

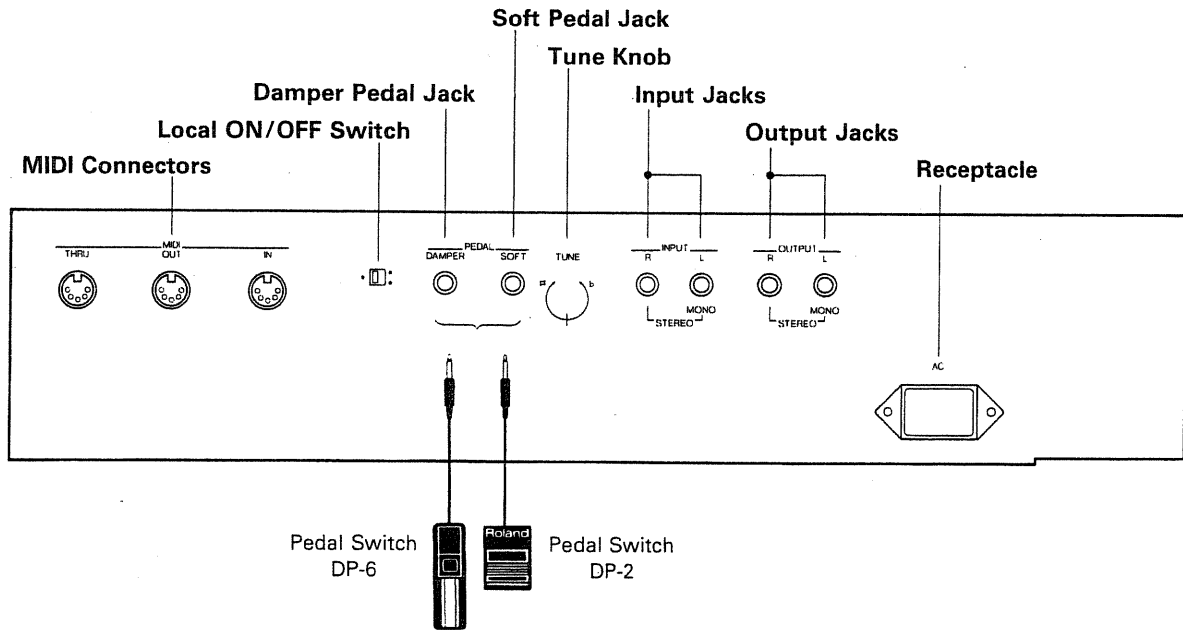
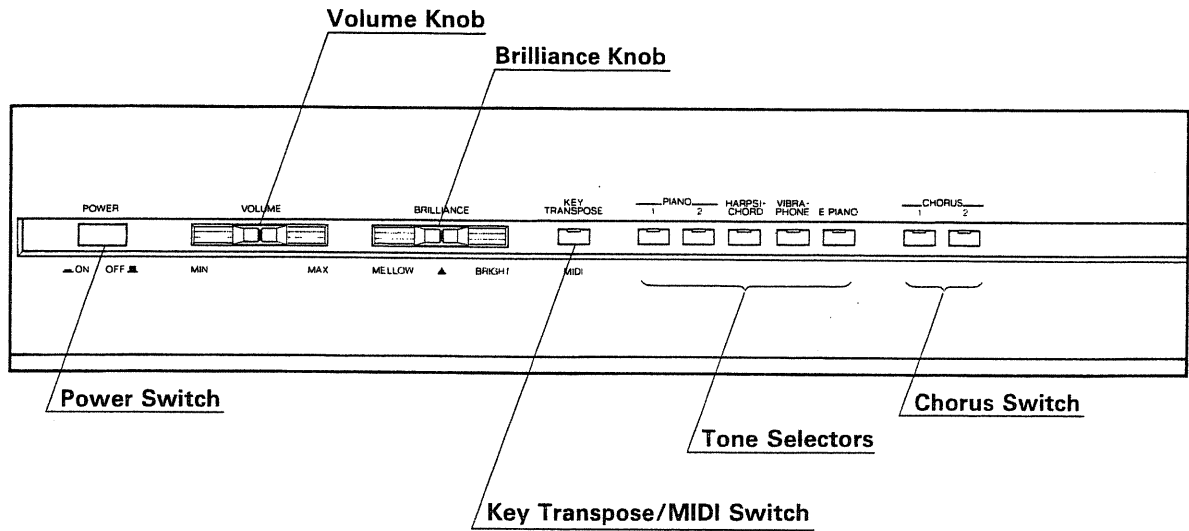
HOW TO SETUP THE PIANO

① Connect the supplied power cord to the Receptacle on the rear panel.

② Connect the plug to the wall socket.

* Be sure to take the step 1 then 2. Do not do it the other way round.

1 PANEL DESCRIPTION



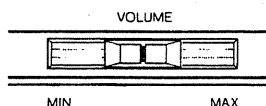
2 PROCEDURE

1. Basic Procedure

① Turn the piano on.

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

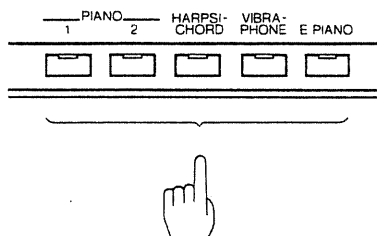
② Adjust the volume with the Volume Knob.



2. Tone Selection

The HP-600/700/800 feature 5 keyboard sounds; two acoustic grand pianos, harpsichord, vibraphone and electric piano.

► To select one of these voices, press one of the Tone Selector buttons. One keyboard sound can be selected at a time.



VOICE PRESERVE FUNCTION

The HP-600/700/800 feature the Voice Preserve Function, that is, while you are playing the keyboard using a certain tone color, you can request the next tone color to be used, without the tone actually changing until you release all the keys.

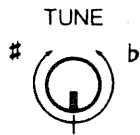
When the piano is being played or Damper ON (the damper pedal is being depressed), the tone color does not change. (the indicator of the corresponding sound flashes.) To change the voices, lift all Notes and turn the Damper OFF. (Now, the indicator of the new voice is constantly lighted.)

3. Tuning

The Tune Knob is provided for controlling the overall tuning center of the piano. This is especially useful for tuning to other acoustic instruments, synthesizers, and synthesizer sound modules. Since the piano incorporates S/A Synthesis, the tuning of individual notes will never be necessary. At its center position;

Middle A = 442Hz.

At the Center Position,
middle A = 442Hz



4. Damper/Soft Pedal

The Damper Pedal Jack and Soft Pedal Jack are provided to connect the cables from the stand's pedals or the DP-2/DP-6. These pedals function just like the damper and soft pedal on an acoustic piano.

* **The Soft Pedal can be used as a Sostenuato pedal.**

● Damper Pedal

The Damper Pedal makes the sound decay slowly.

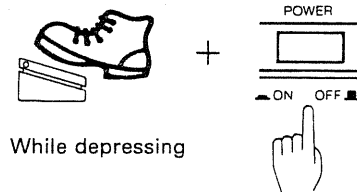
● Soft Pedal

The Soft Pedal serves to make the performance softer.

● Sostenuato Pedal

How to turn the Soft Pedal to Sostenuato Pedal.

Connect the Soft Pedal to the Soft Pedal Jack, and turn the piano on while holding the pedal down.



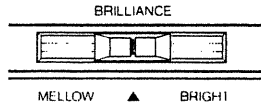
Pressing the Sostenuato Pedal will turn on the Damper of the note currently played. The following notes will not take on any effect.

* When the pedal is turned to a Sostenuato Pedal, it loses the Soft Pedal function.

* To retrain the pedal to the Soft Pedal, turn the piano off once, then turn it on again.

5. Brilliance

As you move the Brilliance knob to the right, the tone will be brigher, and mellower when moved to the left.



6. Chorus

The HP-Piano includes two built-in Chorus effects.

• Chorus 1

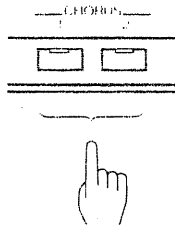
A lush stereo chorus effect can be obtained.

• Chorus 2

Even a deeper chorus effect can be obtained.

How to turn Chorus on:

- ▶ Select Chorus 1 or 2 by pushing the relevant Chorus Button. (The indicator lights up.)



Chorus On or Off can be set individually for each voice, and it is retained until the piano is switched off.

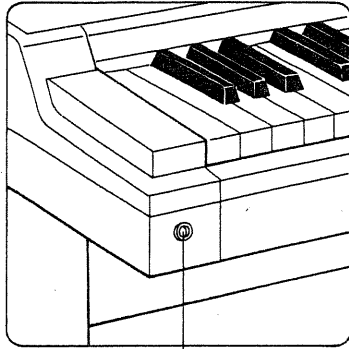
When the piano is switched on, Chorus of each voice is set as follows:

Piano 1	OFF
Piano 2	OFF
Harpsichord	OFF
Vibraphone	ON (Chorus 2)
E. Piano	ON (Chorus 1)

* Both Choruses 1 and 2 cannot be turned on simultaneously.

7. Headphones

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



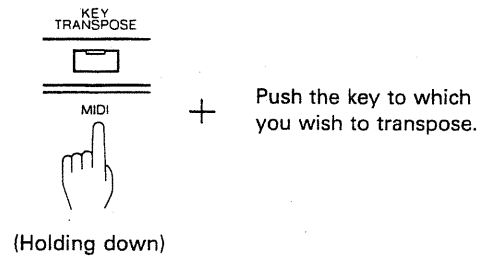
Headphone Jack

8. Key Transpose

The keyboard of the piano can be transposed within a range of up a perfect 4th and down a diminished 5th.

<Procedure>

- ▶ While holding the Transpose Button down, press the key (F# to F) to which you wish to transpose.



* While in Key Transposing procedure, the piano cannot be played.

While the button is being held down, the indicator flashes. When the button and the key are both released, the indicator will glow steadily showing that transposition is done.

Now, pressing the Transpose Button will alternately select Key Transpose ON and OFF (the normal condition = C key).

3 SETUP WITH AUXILLARY AUDIO EQUIPMENT

● Input Jakcs

The external input jacks are provided for connecting the outputs of other electronic instruments (such as the CR-1000, TR-505, EM-101, etc.) to the internal speakers and amplifier of the piano.

● Ouput Jacks

These Output Jacks are provided for connecting the piano to larger sound systems such as a home stereo system, multi-track recorders, mixers, and/or auxillary instrument amplifiers. Output Jacks can be used in a stereo or monoural configuration.

<Setup>

- ① Turn down the volume of the external amplifier connected to the piano.
- ② Connect the Output Jacks of the piano to the Line In's (e.g. AUX) of the amplifier.
- ③ Adjust the volume of the amplifier.

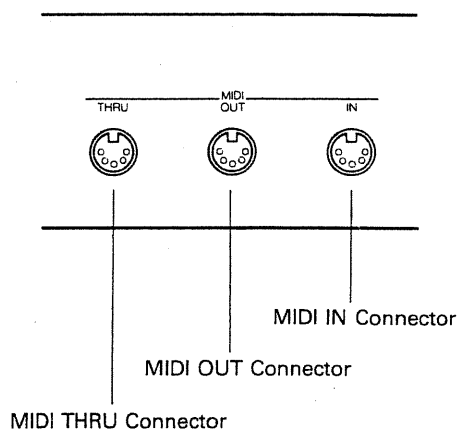
* Connecting the headphone plug to the headphone jack will disconnect the internal speakers.

4 MIDI

Part of the power of your HP-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 Connectors

The piano has MIDI IN, MIDI OUT and MIDI THRU Connectors on the rear panel.



● MIDI IN Connector

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

● MIDI OUT Connector

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

● MIDI THRU Connector

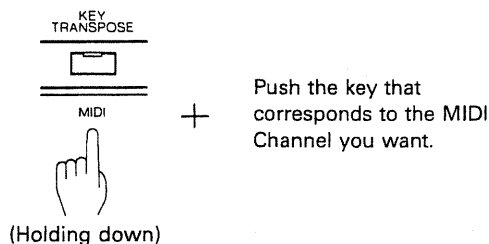
Through this, the exact copy of the signal fed into the MIDI IN is sent out.

2. Setting MIDI Channels

The MIDI Channel of the piano should be set to the same number as the external MIDI device.

<How to set MIDI Channel of the piano>

- ▶ While holding the MIDI Button down, push the key that corresponds to the MIDI Channel number you want. (See page 16.)



- * Usually, the piano defaults to MIDI channel 1 (OMNI OFF).

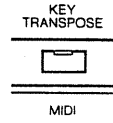
3. Program Change

MIDI Program Change messages are used for sound selection. Program Change numbers are assigned to the sounds in each MIDI instrument. When a Program Change number is received, the corresponding sound will be selected.

▶ While holding the MIDI Button down, press the keys that correspond to the Group, Bank and Number you need. (See page 16.)

a. Transmitting Program Change to an external MIDI device:

1 to 128 Program Change numbers can be transmitted using the appropriate keys for Group, Bank and Number. (See page 16.) The following table shows how the Group/Bank/Numbers on the piano correspond to the Program Change numbers.



(Holding down)



Push the keys that correspond to the Group, Bank and Number you want.

Program Change Number Table

	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

Now, the selected Program Change number is transmitted through the MIDI OUT connector on the piano.

b. Changing Voices on the piano using the Program Change messages sent from an external MIDI device

When Program Change number (1 to 8) is received, the corresponding voice is selected on the piano as shown below.

Received Program Change No.	Selected Voice
1	Piano 1
2	Piano 2
3	Piano 2
4	Harpsichord
5	Piano 2
6	Vibraphone
7	E. Piano
8	E. Piano

* Program Change numbers 9 to 128 cannot be received.

4. Chorus ON/OFF

When the MIDI device connected to the piano features a built-in chorus, the chorus can be turned on or off as follows.

- ▶ While holding the MIDI Button down, push the Chorus 1 or 2 Button.
- * If the external MIDI device has only one chorus, you can use either of the Chorus Buttons.
- * The above procedure does not affect the chorus effect on the piano.

5. MIDI Functions

The HP-Piano can select any of the following four modes that decide how the messages are received and transmitted.

- (I) Note On/Off, Pedal and Program Change messages are transmitted and received.
- (II) Notes On/Off, Pedal and Program Change messages are transmitted. Program Change messages are not received.
- (III) Note On/Off, Pedal and Program Change messages are transmitted and received. The moment a new voice is selected on the piano, the corresponding Program Change (1 to 5) is transmitted. The Chorus On/Off is also transmitted. Even without taking the Chorus ON/OFF procedure. Chorus On/Off messages are transmitted by turning on or off Chorus effect. This mode may be used when recording data into a MIDI sequencer.
- (IV) Performance information (messages) sent from an external MIDI device (e.g. sequencer) can play more than one voice of the piano.

* Refer to "Multi Timbre Mode" on the following page.

<How to select one of the four modes>

- (I) Turning the piano on will automatically select this mode.
- (II) Turn the piano on while holding down the MIDI Button.
- (III) Turn the piano on while holding the Program Change button down.
- (IV) Turn the piano on while holding the PIANO-2 button down.

* It is also possible to select Mode IV by using MIDI Exclusive messages. Refer to "MIDI Implementation Chart".

6. Multi Timbre Mode

More than one voice on the HP-Piano can be played at the same time, by using the performance information (messages) sent from an external MIDI device. This is called Multi Timbre mode. This mode allows you to play one voice by messages sent from a sequencer while playing a different voice from the keyboard.

* Multi Timbre mode, however, does not include PIANO 1.

<Voices and MIDI Channels>

In Multi Timbre Mode, a different MIDI channel is assigned to each voice as shown below.

Voice	MIDI Channel
Piano 2	1
Harpsichord	11
Vibraphone	12
E. Piano	13

* These MIDI channel number assigned cannot be changed.

Performance information (Note ON messages) is transmitted on the MIDI channel currently selected on the piano.

<Pedal Messages>

The piano's pedal works only on the sound created from the piano's keyboard, and the Pedal messages sent from an external MIDI device works only on the sound created by the MIDI performance messages sent from the external MIDI device.

<Chorus ON/OFF>

When Chorus ON messages are received, all the four voices will take on chorus effect, and Chorus OFF turns off the chorus of all voices. Receive MIDI channel can be set to 1, 11, 12 or 13. The messages received last has priority.

Also, the chorus effect on the piano affects all the four voices at the same time. The Chorus ON/OFF messages are sent on the MIDI channel used in the voice currently selected on the piano.

<Program Change>

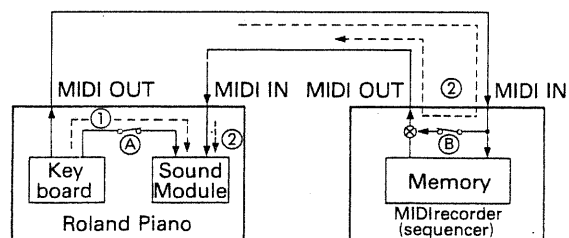
In Multi Timbre mode, Program Change messages are not sent or received.

7. 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).



- Ⓐ LOCAL SWITCH
- Ⓑ SOFT THRU SWITCH

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

Most of the sequencers are default to SOFT THRU OFF, and therefore free from the above 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 " : " position. LOCAL ON may be called a normal condition (① route is connected).

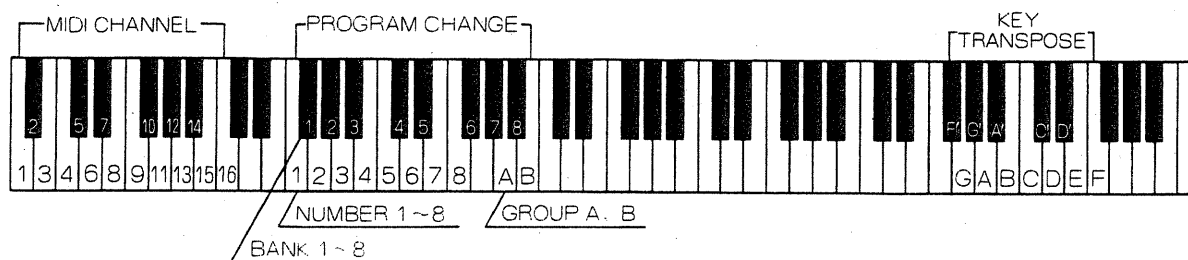
- position → LOCAL ON
- : position → LOCAL OFF

* Unless a MIDI cable is connected to the MIDI IN connector on the piano, LOCAL OFF cannot be set.

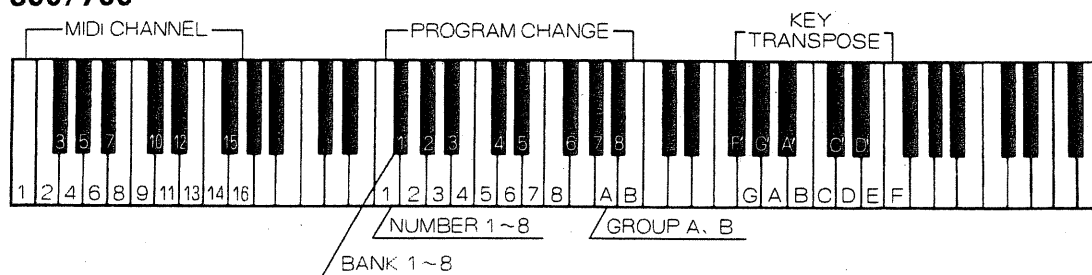
APPENDIX

MIDI Channel, Program Change and Key Transpose correspond to the keyboard as shown below.

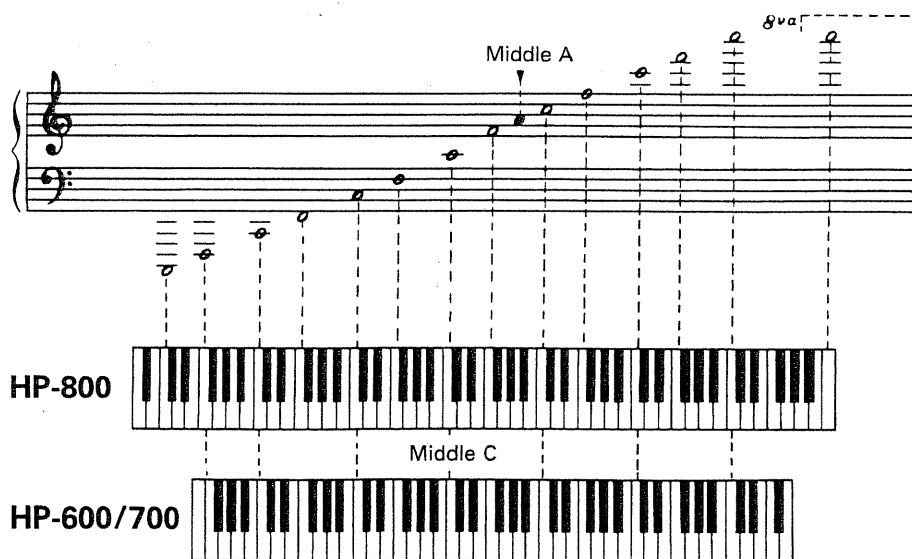
HP-800



HP-600/700



Sound Range Diagram



SPECIFICATIONS

Keyboard	HP-800: 88 Keys HP-700: 76 Keys HP-600: 76 Keys (light action)
Sound Source	SA Sound
Maximum number of voices	15 voice polyphonic
Preset Voices	Piano 1, 2, Harpsichord, Vibraphone, Electric Piano
Effects	Chorus 1, 2 (ON/OFF)
Connectors	Output Jacks (Mono, Stereo) Input Jacks (Mono, Stereo) Damper Pedal Jack Soft Pedal Jack MIDI IN Connector MIDI OUT Connector MIDI THRU Connector
Switches	Power Switch
Speakers	16cm × 2
Output	HP-700/800: 15W × 2 HP-600 : 8.5W × 2
Finish	Roland Original Oak
Dimensions	HP-800 : 1318(W) × 407(D) × 126(H)mm/51-7/8" × 16" × 4-15/16" HP-600/700: 1155(W) × 407(D) × 126(H)mm/45-1/2" × 16" × 4-15/16"
Weight	HP-800: 34.5 kg/76 lb 30z HP-700: 30.5 kg/67 lb 50z HP-600: 19.5 kg/43 lb 10z
Consumption	HP-700/800: 45W (117V), 85W (220/240V) HP-600 : 30W (117V), 45W (220/240V)
Accessories	Music Rest, Power Cord, DP-6 (for HP-600)
Options	Stand: KS-800 for HP-800 KS-700 for HP-700 KS-600 for HP-600 Pedal Switch: DP-6, DP-2

MIDI Implementation Chart

Function...		Transmitted	Recognized	Remarks
Basic Channel	Default Changed	1 1-16	1 1-16	
Mode	Default Messages Altered	3 POLY, OMNI OFF *****	3 POLY, OMNI ON/OFF MONO (M≠1) → 1, (M=1) → 3	
Note Number	True Voice	22-108, 15-113 (HP-800) *****	0-127 15-113, 15-108 (HP-600)	
Velocity	Note ON Note OFF	○ × (9n, v=0)	○ ×	v=1-127
After Touch	Key's Ch's	× ×	× ×	
Pitch Bender		×	×	
Control Change		64 ○ 66 ○ 67 ○ 93 ○ (v=0) (v=64) (v=127)	○ ○ ○ ○ (v=0-41) (v=42-84) (v=85-127)	Damper pedal Sostenuto pedal Soft pedal Chorus off Chorus1 on Chorus2 on
Prog Change	True #	○ (0-127) *****	○ (0-6) can be ignored by 0-6 power-up setting	
System Exclusive		×	○	multi timbre
System common	Song Pos Song sel True	× × ×	× × ×	
System Real Time	Clock Commands	× ×	× ×	
Aux Message	Local ON/OFF All Notes OFF Active Sense Reset	× ○ ○ ×	× ○ (123-127) ○ ×	
Notes	When power on, ch-1 OMNI OFF and POLY are sent. When Basic Channel is changed, Mode is set to 3.			

Mode 1 : OMNI ON, POLY
Mode 3 : OMNI OFF, POLY

Mode 2 : OMNI ON, MONO
Mode 4 : OMNI OFF, MONO

○ : Yes
× : No

MIDI Implementation

Roland Piano
600/700/800

 Roland

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
F0H	Exclusive status
41H	Manufactures ID (Roland)
DEV	Device ID
MDL	Model ID
CMD	Command ID
[BODY]	Maindata
F7H	End of exclusive

MIDI status : F0H, F7H

An exclusive message must be flanked by a pair of status codes, starting with a Manufactures-ID immediately after F0H (MIDI version 1.0).

Manufactures-ID : 41H

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

0111
0211
0311
0011, 0111
0011, 0211
0011, 0011, 0111

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:

0111
0211
0311
0011, 0111
0011, 0211
0011, 0011, 0111

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

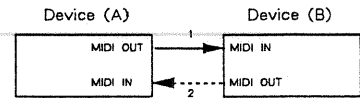
Address mapping is a technique for transferring messages conforming to the data format given in Section 1. It assigns a series of memory-resident records--waveform and tone data, switch status, and parameters, for example--to specific locations in a machine-dependent address space, thereby allowing access 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 Section 3 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

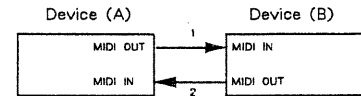


Connectional point 2 is essential for "Request data" procedures. (See Section 3.)

Handshake-transfer procedure (See Section 4 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 points 1 and 2 is essential.

*There are separate Command-IDs for different transfer procedures.

*Devices A 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 20 milliseconds in between.

Types of Messages

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

Request data # 1 : RQ1 (11H)

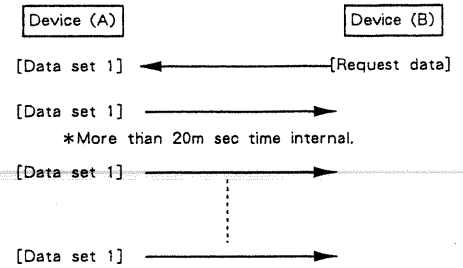
This message is sent out when there is a need to acquire data from a device at the other end of the interface. It contains data for the address and size that specify designation and length, respectively, of data required.

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	Manufactures 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 and data 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 lower seven 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 (es) of one or more data as well as a series of data formatted in an address-dependent order.

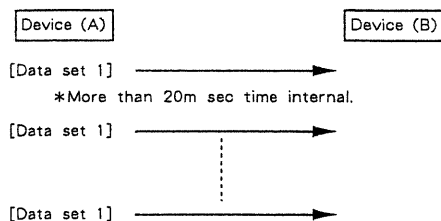
Although the MIDI standards inhibit non-real time messages from interrupting an exclusive one, some devices support a "soft-through" mechanism for such interrupts. To maintain compatibility with such devices, Roland has limited the DT1 to 256bytes so that an excessively long message is sent out in separate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

Byte	Description
F0H	Exclusive
41H	Manufactures 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 and data 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 lower seven 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 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.

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	Manufactures 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 and data 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 lower seven 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	Manufactures 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 and data 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 lower seven 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 (es) 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	Manufactures 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 and data 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 lower seven 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	Manufactures 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	Manufactures 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	Manufactures 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, or 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.

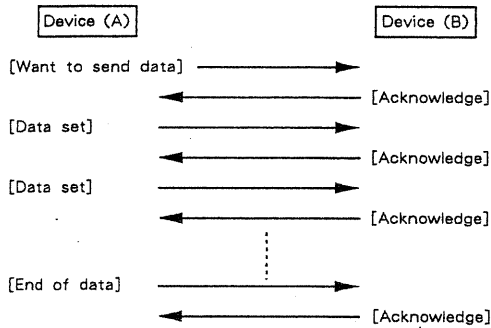
a communications error has occurred.

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.

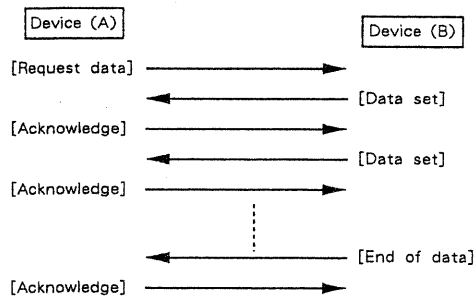
Byte	Description
F0H	Exclusive status
41H	Manufactures ID (Roland)
DEV	Device ID
MDL	Model ID
4FH	Command ID
F7H	End of exclusive

Example of Message Transactions

- Data transfer from device (A) to device (B).

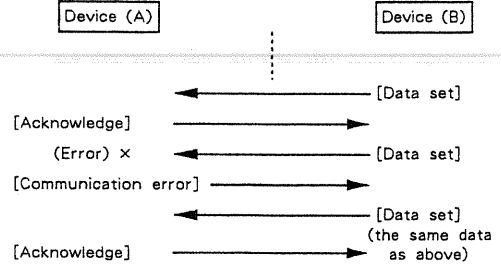


- Device (A) requests and receives data from device (B).

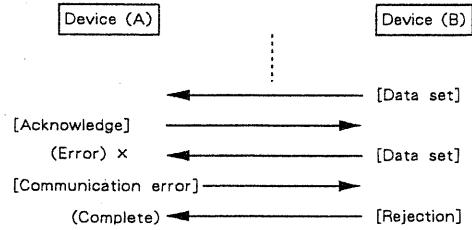


- Error occurs while device (A) is receiving data from device (B).

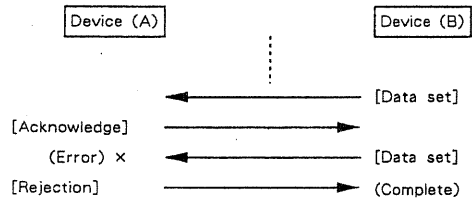
- 1) Data transfer from device (A) to device (B).



- 2) Device (B) rejects the data re-transmitted, and completes data transfer.



- 3) Device (A) immediately completes data transfer.



1. TRANSMITTED DATA

Note event

Note off

Status	Second	Third
9nH	kkH	00H

kk=Note number 16H-6CH (22-108) /HP-600, 700
 OFH-71H (15-113) /HP-800
 n=MIDI Channel 0H-FH (1-16)

Note on

Status	Second	Third
9nH	kkH	vvH

vv=Velocity 01H-7FH (1-127)

The range may be changed by transposition.

When the power is first applied, the default transposition is set at 0.
 The following chart shows the relation of the key position and transposed value. (While the TRANSPOSE switch is held down.)

HP-600/700

Key	Transposed value (semi tones)	Transmitted note range
Power-on	0	28-103
F#5	-6	22-97
G5	-5	23-98
G#5	-4	24-99
A5	-3	25-100
A#5	-2	26-101
B5	-1	27-102
C6	0	28-103
C#6	+1	29-104
D6	+2	30-105
D#6	+3	31-106
E6	+4	32-107
F6	+5	33-108

HP-800

Key	Transposed value (semi tones)	Transmitted note range
Power-on	0	21-108
F#6	-6	15-102
G6	-5	16-103
G#6	-4	17-104
A6	-3	18-105
A#6	-2	19-106
B6	-1	20-107
C7	0	21-108
C#7	+1	22-109
D7	+2	23-110
D#7	+3	24-111
E7	+4	25-112
F7	+5	26-113

Control change

Hold-1

Status	Second	Third
BnH	40H	vvH

vv=7FH : On
 vv=00H : Off

Sostenuto

Status	Second	Third
BnH	42H	vvH

vv=7FH : On
 vv=00H : Off

If the power has been applied while the SOFT pedal is held down, the SOFT pedal will be changed to the SOSTENUTO pedal.

Soft

Status	Second	Third
BnH	43H	vvH

vv=7FH : SoftOn
 vv=00H : SoftOff

Chorus

Status	Second	Third
BnH	5DH	vvH

vv=7FH : Chorus 2 ON
 vv=40H : Chorus 1 ON
 vv=00H : Chorus OFF

When the CHORUS 1/2 switch is pressed while the TRANSPOSE/MIDI switch is held down, chorus 1/2 ON or OFF message is sent.

Also, if the power has been applied while the TRANSPOSE/MIDI switch is held down, chorus 1/2 ON or OFF message can be sent by only pressing the CHORUS 1/2 switch, and memorized chorus 1/2 ON or OFF message is sent by pressing one of the Tone Selector buttons.

Program change

Status	Second
CnH	ppH

pp=Program Change (0-127)

If the power has been applied while the TRANSPOSE/MIDI switch is held down, the PROGRAM CHANGE message can be sent by only pressing the following switches.

Switch	Prog#
PIANO1	0
PIANO2	1
HARPSICHORD	3
VIBRAPHONE	5
E.PIANO	6

The following table shows the GROUP, BANK and NUMBER values related with key position which is set while the TRANSPOSE/MIDI switch is held down.

HP-600/700		HP-800	
Key	Related value	Key	Related value
A 4	GROUP A	A 3	GROUP A
B 4	GROUP B	B 3	GROUP B
F# 3	BANK 1	F# 2	BANK 1
G# 3	BANK 2	G# 2	BANK 2
A# 3	BANK 3	A# 2	BANK 3
C# 4	BANK 4	C# 3	BANK 4
D# 4	BANK 5	D# 3	BANK 5
F# 4	BANK 6	F# 3	BANK 6
G# 4	BANK 7	G# 3	BANK 7
A# 4	BANK 8	A# 3	BANK 8
F 3	NUMBER 1	F 2	NUMBER 1
G 3	NUMBER 2	G 2	NUMBER 2
A 3	NUMBER 3	A 2	NUMBER 3
B 3	NUMBER 4	B 2	NUMBER 4
C 4	NUMBER 5	C 3	NUMBER 5
D 4	NUMBER 6	D 3	NUMBER 6
E 4	NUMBER 7	E 3	NUMBER 7
F 4	NUMBER 8	F 3	NUMBER 8

When one of the above-mentioned keys is pressed while the TRANSPOSE/MIDI switch is held down, a PROGRAM CHANGE message will be transmitted.

The transmitted program change numbers are related to 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									
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

Mode message

Status	Second	Third
BnH	mmH	00H

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

*1 When all keys on the keyboard are released, the ALL NOTES OFF (BnH, 7BH, 00H) is sent.
 *2 When power is first applied or Basic Channel is changed, OMNI OFF and POLY ON are sent in the Basic Channel.

Active sensing

Status
FEH

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 : 0H-FH (1-16)

Note on

Status	Second	Third
9nH	kkH	vvH

vv=Velocity : 01H-7FH (1-127)

Note numbers outside of the range 15-108 (HP-600) or 15-113 (HP-700/800) are transposed to the nearest octave inside this range.
 The transpose function does not affect the recognized NOTE numbers.

■ Control change

Hold-1

Status	Second	Third
BnH	40H	vvH

vv=00H-3FH : Off
 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

Chorus

Status	Second	Third
BnH	5DH	vvH

vv=00H-29H : Off
 vv=2AH-54H : Chorus 1 ON
 vv=55H-7FH : Chorus 2 ON

If the power has been applied while the PIANO 1 switch is held down, this message is ignored.

■ Program change

Status	Second
CnH	ppH

pp=Program Change (0-7)

If the power has been applied while the PIANO 1 switch is held down, this message is ignored.

Received Program Change messages are assigned as follows.
 The program numbers 8-127 are ignored.

Prog#	Voice
0	PIANO1
1	PIANO2
2	PIANO2
3	HARPSICHORD
4	PIANO2
5	VIBRAPHONE
6	E.PIANO
7	E.PIANO

■ Mode message

All note off

Status	Second	Third
BnH	7BH	00H

When the ALL NOTES OFF is recognized, all the notes which have been turned ON only by MIDI IN note ON messages are turned OFF. However, if the damper ON message has been recognized, these ON notes will be not turned OFF until the Damper OFF message is received.

OMNI OFF

Status	Second	Third
BnH	7CH	00H

OMNI ON

Status	Second	Third
BnH	7DH	00H

MONO

Status	Second	Third
BnH	7EH	0mH

POLY

Status	Second	Third
BnH	7FH	00H

These Mode Messages (2nd byte=123-127) are also recognized as ALL NOTES OFF.

Mode Messages are recognized as follows :

	POLY ON (127)	MONO ON (126) mmmm=1	MONO ON (126) mmmm≠1
OMNI OFF (124)	OMNI=OFF POLY	OMNI=OFF POLY	OMNI=ON POLY
OMNI ON (125)	OMNI=ON POLY	OMNI=ON POLY	OMNI=ON POLY

■ Exclusive

Status

FOH : System Exclusive
 F7H : EOX (End of Exclusive)

Refer to Section 4.

■ Active sensing

Status

FEH : Active Sensing

3. BASIC CHANNEL SETTING

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

However, the Basic Channel may be changed when the following key on the keyboard is pressed while the TRANPOSE/MIDI switch is held down.
 The receiver will be set to the MODE 3 (OMNI OFF, POLY ON).

When the highest key (G7 : HP-600/700, C8 : HP-800) on the keyboard is pressed while the TRANPOSE/MIDI switch is held down. The Basic Channel will be set to 1, and the receiver is set to the MODE 1 (OMNI ON, POLY ON).

HP-600/700

Key	Basic Channel	OMNI
Power-on	1	OFF
E1	1	OFF
F1	2	OFF
F#1	3	OFF
G1	4	OFF
G#1	5	OFF
A1	6	OFF
A#1	7	OFF
B1	8	OFF
C2	9	OFF
C#2	10	OFF
D2	11	OFF
D#2	12	OFF
E2	13	OFF
F2	14	OFF
F#2	15	OFF
G2	16	OFF
G7	1	ON

HP-800

Key	Basic Channel	OMNI
Power-on	1	OFF
A0	1	OFF
A#0	2	OFF
B0	3	OFF
C1	4	OFF
C#1	5	OFF
D1	6	OFF
D#1	7	OFF
E1	8	OFF
F1	9	OFF
F#1	10	OFF
G1	11	OFF
G#1	12	OFF
A1	13	OFF
A#1	14	OFF
B1	15	OFF
C2	16	OFF
C8	1	ON

4. MULTI TIMBRE MODE

If the power has been applied while the PIANO 2 switch is held down, or the System Exclusive Message (Multi Timbre ON) has been received, the HP-600/700/800 turns to MULTI TIMBRE MODE.

Also, if the power is applied again while no switches or any except PIANO 2 are held down, or the System Exclusive message (Multi Timbre OFF) has been received, the HP-600/700/800 returns from this mode.

The Exclusive Messages are following.

Multi Timbre ON

F0H Status of System Exclusive
41H Roland ID
00H Device ID
1AH Model ID
12H Command ID (dataset)
00H Address (msb)
00H (lsb) = multi timbre
vvH Data vv=01H-7FH
ssH Sum ss : 00H+00H+vvH+ssH=0
F7H EOX End of Exclusive

Multi Timbre OFF

F0H Status of System Exclusive
41H Roland ID
00H Device ID
1AH Model ID
12H Command ID (dataset)
00H Address (msb)
00H (lsb) = multitimbre
00H Data
00H Sum
F7H EOX End of Exclusive

Data 00H is recognized as return from Multi Timbre.
Data 01H-7FH is recognized as turn to Multi Timbre.

Transmit and receive channels are followig

<u>Tone</u>	<u>Channel</u>
PIANO 2	1
HARPSICHORD	11
VIBRAPHONE	12
E.PIANO	13

Chorus

Receive chorus 1/2 ON or OFF messages in channel 1,11,12 and 13. The last ON/OFF message received has priority.

Transmit chorus 1/2 ON or OFF messages in channel fixed upon each Tone.

When the CHORUS 1/2 switch is pressed while the TRANSPOSE/MIDI switch is held down, chorus 1/2 ON or OFF message is sent.

Pedals

Damper Pedal, Soft Pedal and Sostenuto Pedal can be recognized individually as manual and MIDI message.

Program Change, Mode Message

NOT transmitted and CAN NOT be recognized Program Change.

CAN NOT be recognized Mode Messages, always in Mode 3 (omni off poly).

Basic Channel

Basic Channel CAN NOT be changed.

 **Roland**