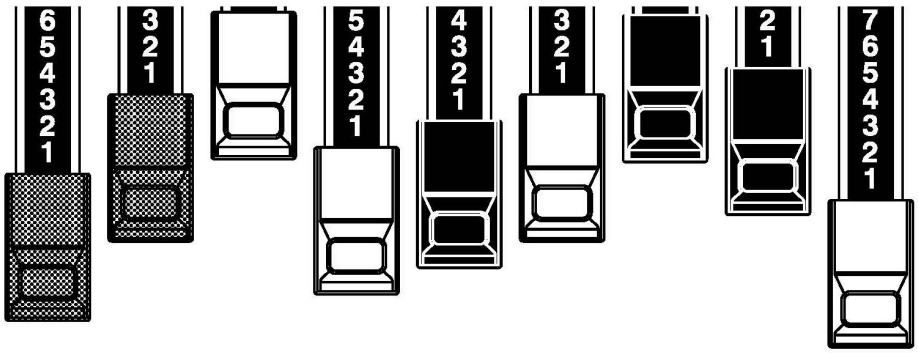


HAMMOND

Model: A-405

Thank You and congratulations on your choice of a genuine HAMMOND Organ.

The A-405 is a Console Organ featuring the traditional Drawbar sounds of a vintage Hammond Organ, Realistic Extra Voices, and a convenient MIDI sequencer onboard.

Please read this manual thoroughly before using your A-405 and refer to it as necessary.

Owner's Manual

IMPORTANT SAFETY INSTRUCTIONS

Read these instructions.

Keep these instructions.

Heed all warnings.

Follow all instructions.

Do not use this apparatus near water.

Clean only with dry cloth.

Do not block any ventilation openings.
Install in accordance with the manufacturer's instructions.

Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.

Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wider blade or third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

Only use attachments/accessories specified by the manufacturer.

Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When cart is used: use caution when moving the cart/apparatus combination to avoid injury from tip-over.

Unplug this apparatus during lightning storms, or when unused for long periods of time.

Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

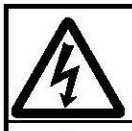
Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

注 意 ：感電の恐れあり キャビネットをあけるな

ATTENTION : RESQUE DE CHOC ERECTRIQUE NE PAS OUVRIR

WARNING :
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK.
DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.



The lightning flash with arrowhead symbol within an equilateral triangle, indicates that dangerous voltage constituting a risk of electric shock is present within this unit.

The exclamation point within equilateral triangle, indicates that there are important operating and maintenance instructions in the literature accompanying this unit.

In case in the future your instrument gets too old to play/use or malfunctions beyond repair, please observe the instructions of this mark, or, if any question, be sure to contact your dealer or your nearest town or municipal office for its proper disposal.

FOR UNITED KINGDOM:
FOR YOUR SAFETY, PLEASE READ THE FOLLOWING TEXT CAREFULLY
This appliance is supplied with a molded 3-pin mains plug for your safety and convenience.
The plug contains a 5 amp fuse.
Should the fuse need to be replaced, please ensure that the replacement fuse has a rating of 5 amps and that it is approved by ASTA or BSI to BSI1362.

Check for the ASTA mark or the BSI mark on the body of the fuse.

If the plug contains a removable fuse cover, you must ensure that it is refitted when the fuse is replaced.
If the fuse cover is lost, the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be obtained from your local Hammond Dealer.

IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME, THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.
THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT-OFF PLUG IS INSERTED INTO ANY 13 AMP SOCKET.

If a new plug is to be attached to the cord, please observe the wiring code as shown below.
If in any doubt, please consult a qualified electrician.
IMPORTANT - The wires in this mains lead are coloured in accordance with the following code:

Blue:	Neutral
Brown:	Live

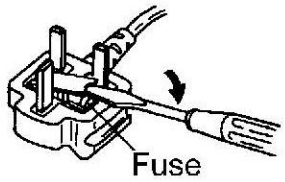
As the colours of the wires in the mains lead of this unit may not correspond with the coloured marking identifying the terminals in your plug, proceed as follows.

The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

Under no circumstances should either of these wires be connected to the earth terminal of the three-pin plug, marked with the letter E or the Earth Symbol ⏚.

To replace the fuse, open the fuse compartment with a screwdriver and replace the fuse and fuse cover.



IMPORTANT - PLEASE READ

Your Hammond Organ A-405 is designed to give you the true and authentic sound of Hammond Harmonic Drawbars, as well as provide you a large variety of features to allow great flexibility in how you want to use the keyboard. This Owner's Manual is designed to explain the operating features of your Hammond A-405 as simply and graphically as possible.

Because we want to make this manual, as well as the keyboard itself, as easy to understand as possible, the explanations in this manual are grouped by subject matter, and not in the order in which they necessarily appear in the display (the screen in the Great left end block). For example, all functions pertaining to Drawbars are grouped together, all Percussion features are treated as a group, and so on.

Also, each feature is treated as an explanation unto itself, and does not require you to already have prior working knowledge of some other feature. The explanations are presented such that, if you follow the steps, will be identical to that shown in the manual at that stage of the explanation.

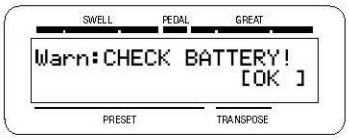
Do not be daunted by the number of steps required to perform each operation. Each step is simple. Simply bear these things in mind:

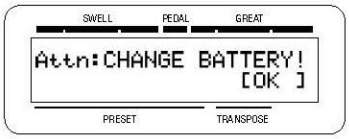
1. Read each step carefully.
2. Don't skip any of the steps.
3. Don't perform the steps out of sequence.

With these guidelines, you are well on your way to mastering all of the many sounds and features of your Hammond A-405.

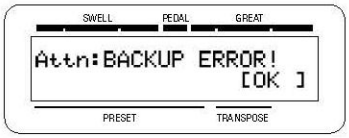
BATTERY BACK UP

Your A-405 uses a battery-backed RAM to remember your changes to the Parameters. When the battery voltage becomes low, the Display will show:





If you see these messages, you should immediately back up your parameter changes, if you have made any. If there is no battery installed in the unit, or if the battery is completely dead, the Display will show:



After the above message is displayed, the A-405 will re-initialize itself, and the factory default settings will be restored (except Combination Presets, Leslie Cabinets and Custom Tone-Wheels). Therefore, it is a good idea to periodically save your data to CompactFlash™ card.

CAUTION: In order to change batteries, be sure to ask your dealer or store.

Table Of Contents

Index

◆ACCURATELY REPRODUCES THE TONE-WHEEL SOUND

Your new A-405 contains 96 independent oscillating digital tone-wheels that accurately reproduce the sound of the Vintage B-3/C-3.

In addition, this organ has full polyphony

◆BUILT IN EXTRA VOICE

Such Extra Voices as the piano, strings, brass, wind, 880 instruments and 56 drum kits are built in for producing realistic instrumental sound.

16 part multi-timbral GM upper compatible sound engine is included for reproducing GM standard song data.

◆ADVANCED DIGITAL LESLIE / VIBRATO EFFECTS

The A-405 is equipped with a DSP effect generator to simulate the Scanner-Vibrato and Leslie Speaker. The range of sound that you can create is expanded by the use of Vibrato and Chorus effects, and by the real sounding Leslie effects which effectively simulates the rotation of the two Rotors which are present in traditional Leslie Speakers.

◆EQUALIZER AND TONE CONTROL

A 3-band equalizer and tone-control are now built in. The equalizer can make fine or course tonal adjustments to the bass, treble, and mid frequency ranges. The tone-control simulates the circuit built in on the vintage B-3/C-3 pre-amp to obtain a gently-cut treble.

◆SEQUENCER WITH CompactFlash™ CARD SLOT

A sequencer is built in for recording the player's performance. A Compact Flash card is utilized to record the performance data.

◆MIDI MASTER KEYBOARD

An external zone is available on each manual and pedalboard to enable this organ to be used as a master keyboard.

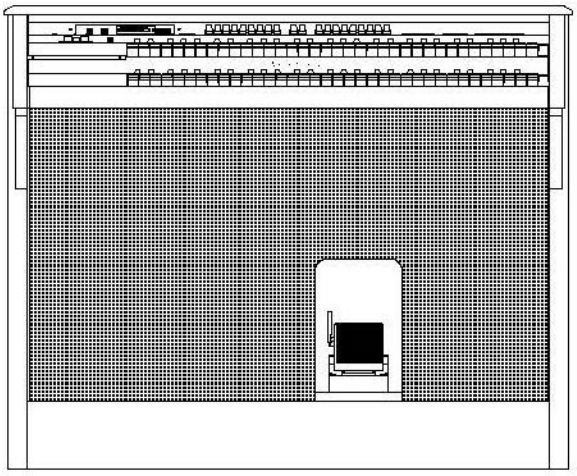
◆50W 3CH AUDIO AMPLIFIER

Built in a 50 watt Power Amp for each cahnnel of Left, Right and Center Bass.

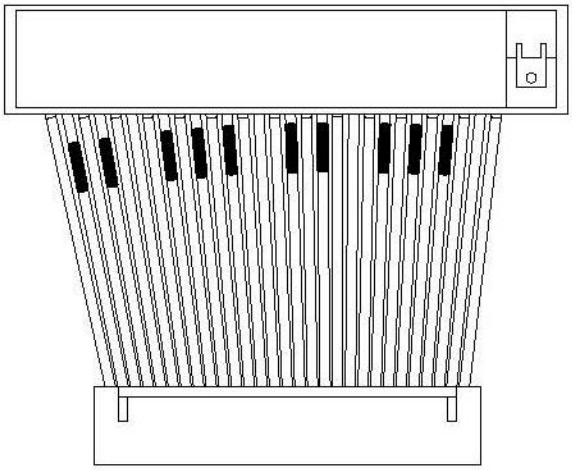
Thus you can enjoy a dynamic play with the organ itself.

Components

Organ



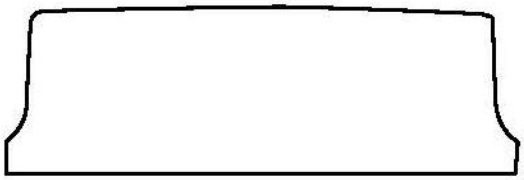
Pedalboard



Bench

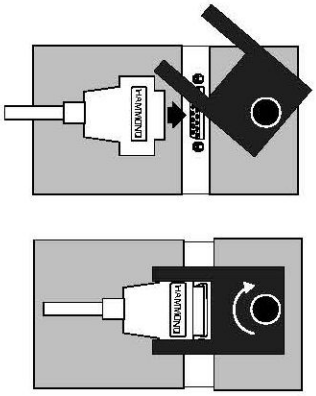
Music Rack

(Attached under the lid of bench)



Key

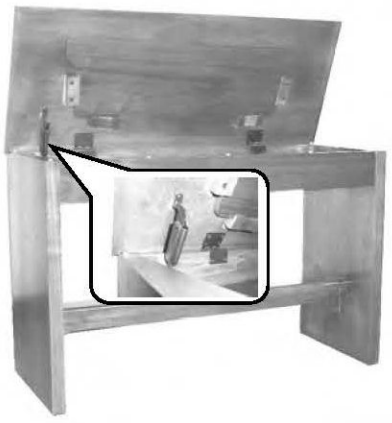
Connect the Pedalboard



1. Place the Pedalboard on the floor in front of the organ.
2. Take the Pedal Cable out of the organ and insert the plug into the connector on the Pedalboard.
3. Hold the plug with the "Retention Hook" and lock it on by turning the screw knob.
4. Slide and push in the Pedalboard beneath the organ until it stops.

Bench

The space underneath the top board of the bench is provided for storing scores, music rack, etc.



⚠CAUTION

Be careful not to pinch your fingers, by the folding metal arms when you close the lid.

Do not adjust the position of the bench while sitting. Avoid the risk of pinching your fingers between the lid and the box.

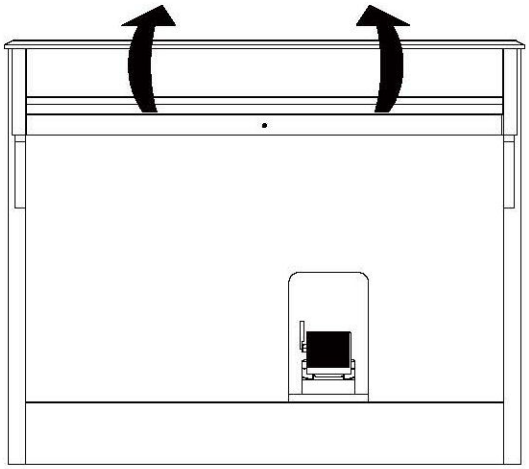
⚠ATTENTION

Don't tilt the bench when moving it to avoid books etc. from dropping out of the box.

Do not put in anything taller than 5cm (2″) into the bench.

The lid will not close and may damage the contents.

Manual Lid



1. When you open the lid, hold and lift the front gently with both hands and fold it.
2. When you close the lid, hold the front of the folded lid with both hands and put down gently to close.

⚠ATTENTION

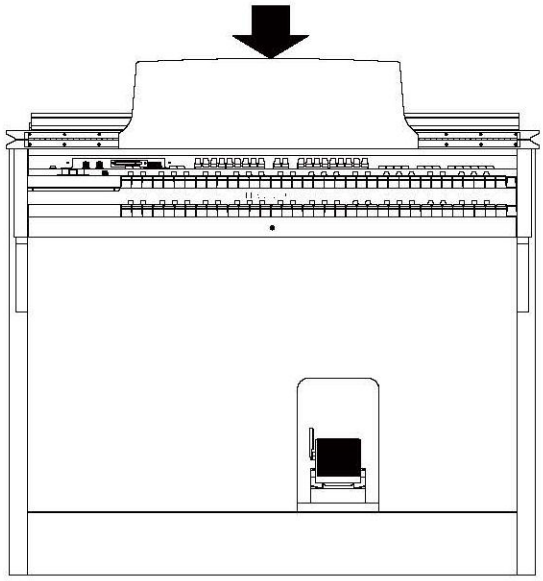
Be careful not to pinch your fingers when you open or close the lid. If the player is a small child, be sure to help him/her to open or close the lid.

Be sure to close and lock the lid before you move/carry the organ and avoid any risk of injury.

Do not leave the score or music rack on the manual when you close the lid.

Put on the Music Rack

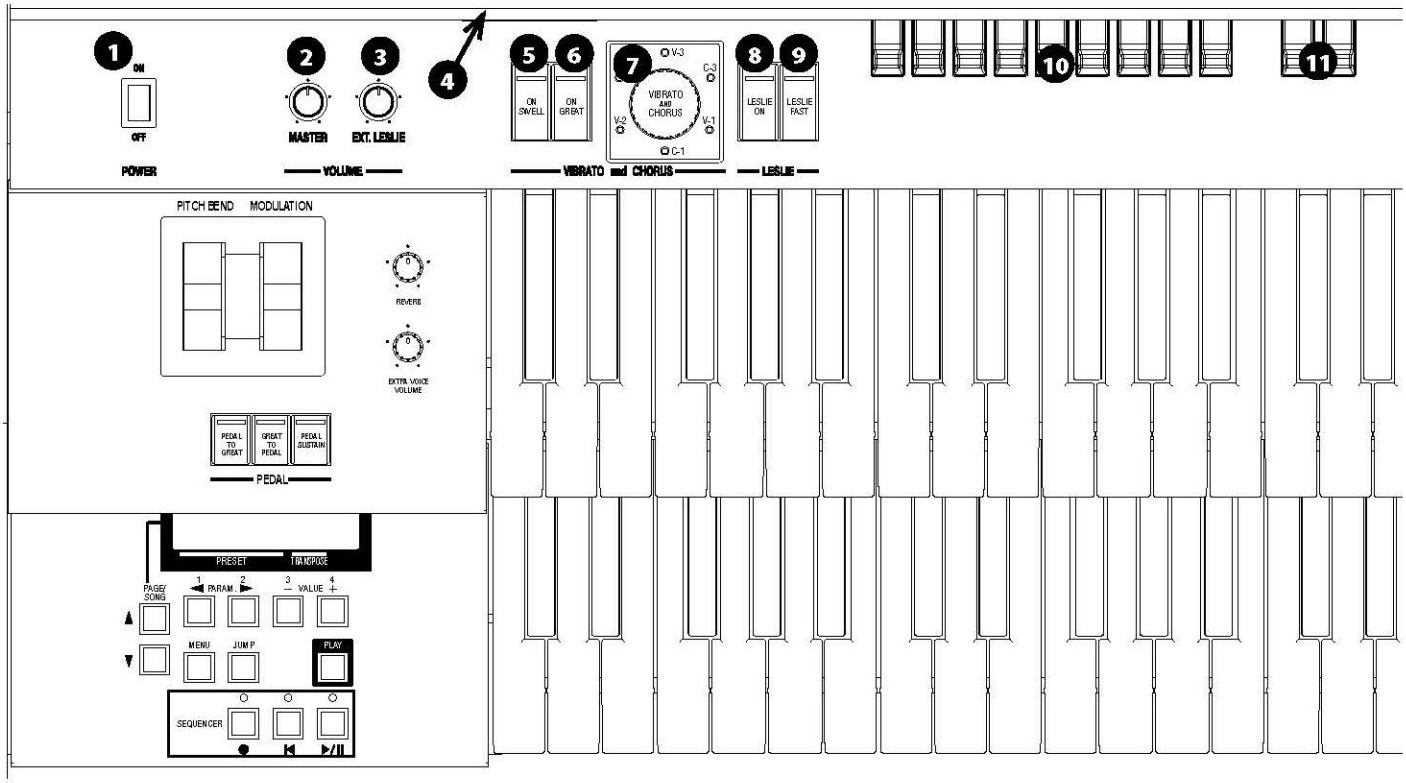
Insert the Music Rack into the rail whenever necessary.



⚠ATTENTION

Do not excessive pressure on the music rack.

Top Panel



◆UPPER LEFT

1. POWER Switch

This switch turns the power ON and OFF. (P. 22)

⚠CAUTION

Even when the POWER switch is turned off, electricity is still flowing to the instrument at the minimum level. When you are not using the instrument for a long time, make sure you unplug the power cord from the wall AC outlet.

2. MASTER VOLUME Knob

Controls the total volume of internal speaker, headphones and line out jack. (P. 22)

3. EXT. LESLIE VOLUME Knob

Controls the total volume of external Leslie Speaker.

4. CF Card Slot

Insert the CompactFlash™ Card here.

This is used to store the song and recall the rhythm style of this organ. Use required CompactFlash™ Card. (P. 96)

◆VIBRATO & CHORUS

5. SWELL ON Button

Switches on and off the Vibrato & Chorus Effects on the SWELL Drawbar part. (P. 40)

6. GREAT ON Button

Switches on and off the Vibrato & Chorus Effects on the GREAT Drawbar part. (P. 40)

7. VIBRATO & CHORUS MODE Knob

Changes the depth of Vibrato & Chorus Effects. (P. 40)

◆LESLIE

8. LESLIE ON Button

When it is turned ON, the rotor turns and the sound come from the Rotor.

When the lamp is lighting, it is "ON". (P. 41)

9. LESLIE FAST Button

Changes the speed of the Rotor from Slow to Fast and vice versa. When the lamp is lighting, it is "Fast". (P. 41)

◆DRAWBARS

10. SWELL DRAWBARS

Controls SWELL keyboard harmonics. (P. 34)

11. PEDAL DRAWBARS

Controls PEDAL keyboard harmonics. (P. 34)

12. GREAT DRAWBARS

Controls GREAT keyboard harmonics. (P. 34)

◆PERCUSSION

13. SECOND ON Button

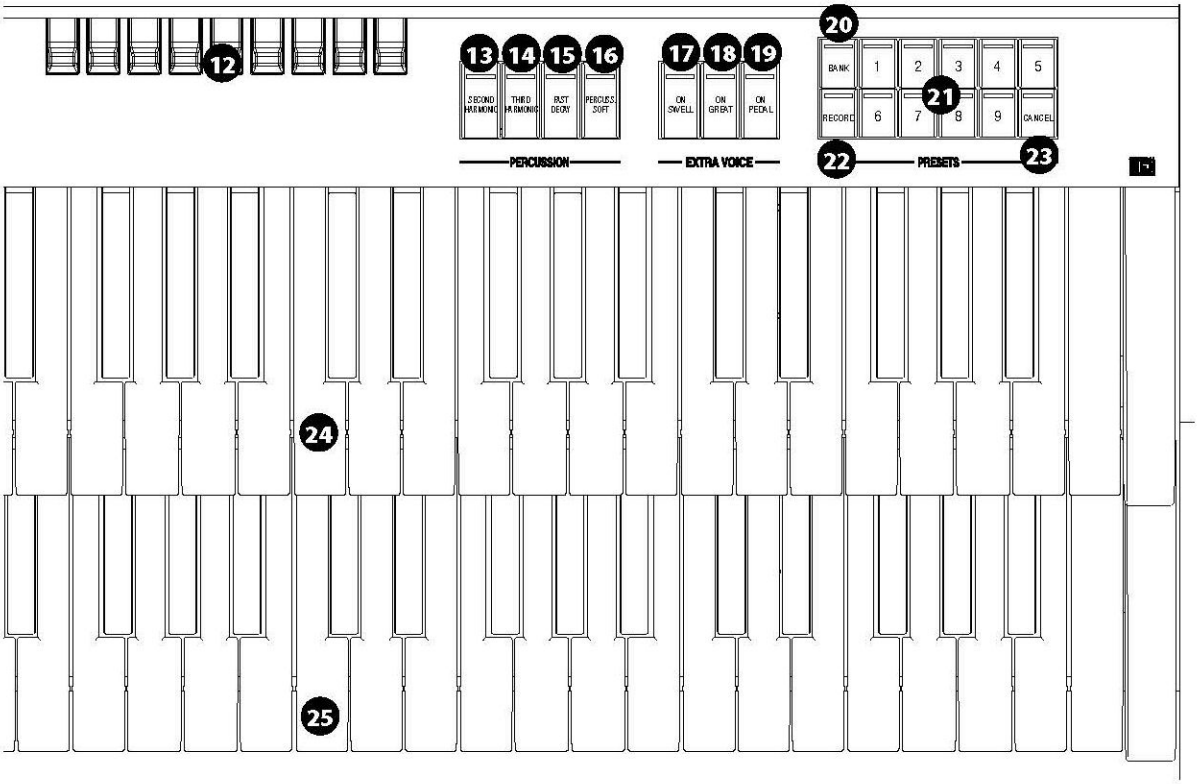
Adds 4′ Percussion (decay sound) to SWELL keyboard. (P. 39)

14. THIRD ON Button

Adds 2⅔′ Percussion (decay sound) to SWELL keyboard. (P. 39)

15. DECAY FAST Button

Changes decay time of Percussion. (P. 39)



16. VOLUME SOFT Button

Changes Percussion volume. (P. 39)

◆EXTRA VOICE

17. ON SWELL Button

Turns on/off the SWELL Extra Voice. (P. 28)

18. ON GREAT Button

Turns on/off the GREAT Extra Voice. (P. 28)

19. ON PEDAL Button

Turns on/off the PEDAL Extra Voice. (P. 28)

◆PRESETS

20. BANK Button

Switches Bank by pressing together the bank button with the number buttons (#21). (P. 24)

21. NUMBER Buttons

Recalls the Preset or switches the Bank by using together BANK button (#20). (P. 24)

22. RECORD Button

Records Presets. (P. 30)

23. CANCEL Button

Cancels Presets. Calls out the "CANCEL" setting.

The Drawbar registration and the actual one always agree. (P. 26)

◆KEYBOARDS

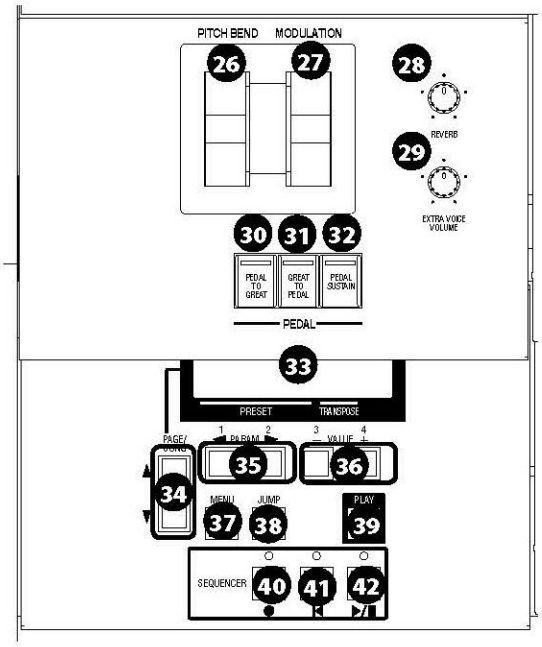
24. SWELL Keyboard

This is a keyboard with 61 notes, velocity-sensitive.

25. GREAT Keyboard

This is a keyboard with 61 notes, velocity-sensitive.

End Block



◆SWELL END BLOCK

26. PITCH BEND Wheel

Slides the pitch up or down.

The pitch goes up when moved up, and goes down when moved down. (P. 62)

27. MODULATION Wheel

Adds modulation for Extra Voice section. (P. 62)

28. REVERB Knob

This is for adjusting the depth of the Reverb effects. (P. 42)

29. EXTRA VOICE VOLUME Knob

This is for controlling the volume of Extra Voice section. (P. 42)

30. PEDAL TO GREAT Button

This is for playing the PEDAL parts using GREAT keyboard. (P. 43)

31. GREAT TO PEDAL Button

This is for playing the GREAT parts using PEDAL keyboard. (P. 43)

32. PEDAL SUSTAIN Button

Adds sustain effect for PEDAL Drawbar part. (P. 43)

◆GREAT END BLOCK

33. Display

Various information is displayed here. (P. 48)

34. PAGE Buttons

Used to scroll through the various pages of controls and parameters. (P. 48)

35. PARAM Buttons

This is used for selecting the parameter item to edit, also to select items #1 and #2 on the basic edit pages. (P. 48)

36. VALUE Buttons

This is used to increase or decrease values, also to select items #3 and #4 on the basic edit pages. (P. 48)

37. MENU Button

This is for calling the MENU mode, Also for exiting from various function modes, and jump to function modes. (P. 48)

38. JUMP Button

This allows you to quickly call a pre-selected menu item directly. (P. 48)

39. PLAY Button

This selects the basic Play mode. (P. 48)

40. ● Button

This is used for recording your performance to the built-in Sequencer. (P. 98)

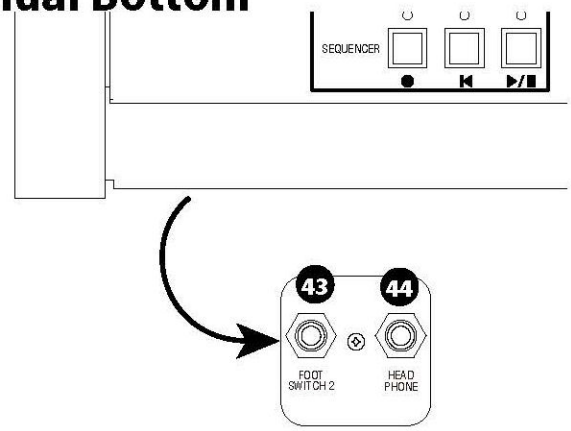
41. ⏮ Button

This stops the built-in Sequencer and returns to the top of the song. (P. 98)

42. ▶/II Button

This is used to run the built-in Sequencer or pause it. (P. 98)

Manual Bottom



43. FOOT SWITCH Jack

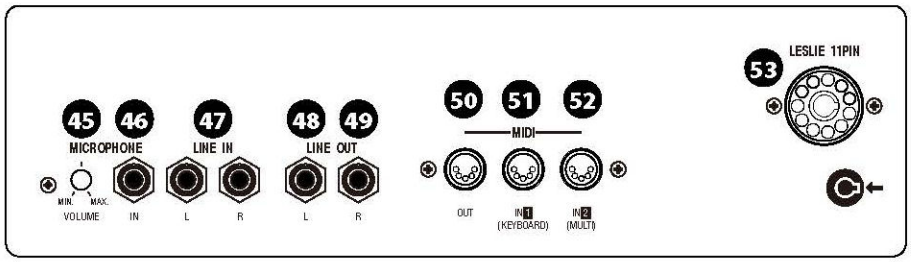
This jack is for Foot Switch (= FS-9H - optional) and the Leslie Switch (= CU-1 - optional).

You can switch the speed of the Leslie effect and the Combination Preset, etc. while playing. (P. 20)

44. HEADPHONES Jack

This is for connecting the stereo headphones. The speakers are turned off, when a plug is inserted to this jack. (P. 19)

Rear Panel



45. MICROPHONE VOLUME Knob

This adjusts the volume of the microphone (#46).

NOTE: The microphone volume can be adjusted with the MASTER VOLUME (#2) and EXT. LESLIE VOLUME (#3) knob.

46. MICROPHONE Jack

If you plug a microphone into the this jack, you can use the this organ as a public-address system.

NOTE: Feedback could be produced depending on the location of microphone relative to speakers. This can be prevented by:

- Changing the position of the microphone.

- Relocating microphone at a greater distance from speakers.

- Lowering volume levels.

47. LINE IN L, R Jack

This is the input for an external sound module or a CD player. The signals input to this jack are routed to the built-in speakers, LINE OUT jack, HEADPHONE jack, and the stationary channel of Leslie Speaker.

NOTE: The line in volume can be adjusted with the MASTER VOLUME (#2) and EXT. LESLIE VOLUME (#3) knob.

48. LINE OUT L Jack

This is the Left channel output of this organ.

49. LINE OUT R Jack

This is the Right channel output of this organ.

Use the Left and Right output jacks if your mixer or amplifier has a stereo input.

50. MIDI OUT Jack

Sends out the performance information of this organ. (P. 84)

51. MIDI IN1 (KEYBOARD) Jack

This jack is for playing the keyboard channels (SWELL, GREAT, PEDAL) from external MIDI equipment. (P. 84)

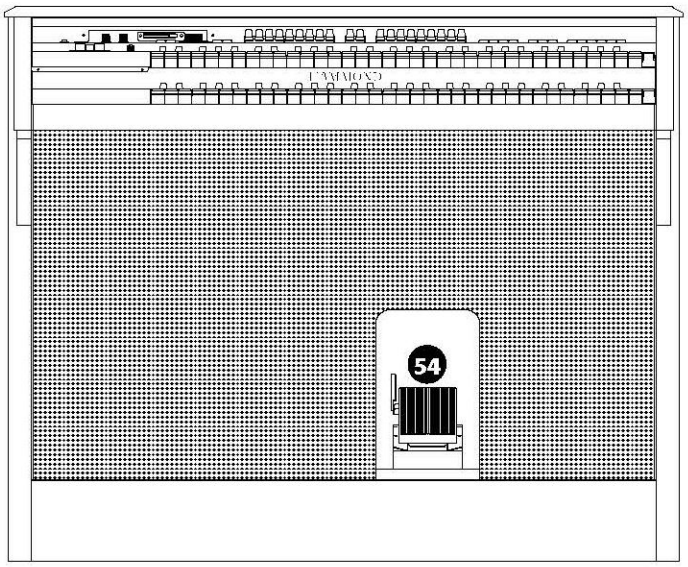
52. MIDI IN 2 (MULTI) Jack

This jack is for playing the built-in 16 part multi-timbral sound engine from external MIDI equipment. (P. 84)

53. LESLIE 11 PIN Socket

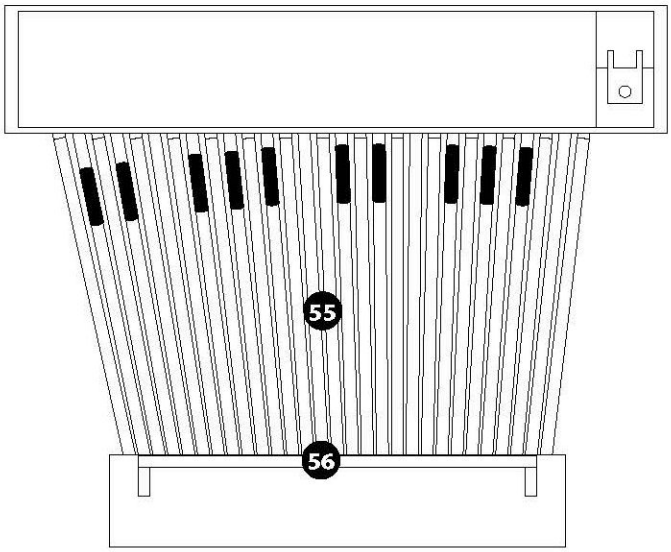
Connect the Leslie speaker here. (P. 18)

Pedals



54. EXPRESSION Pedal

This is for changing the total volume of the organ.
The Foot Switch is attached on the top left. (P. 25)

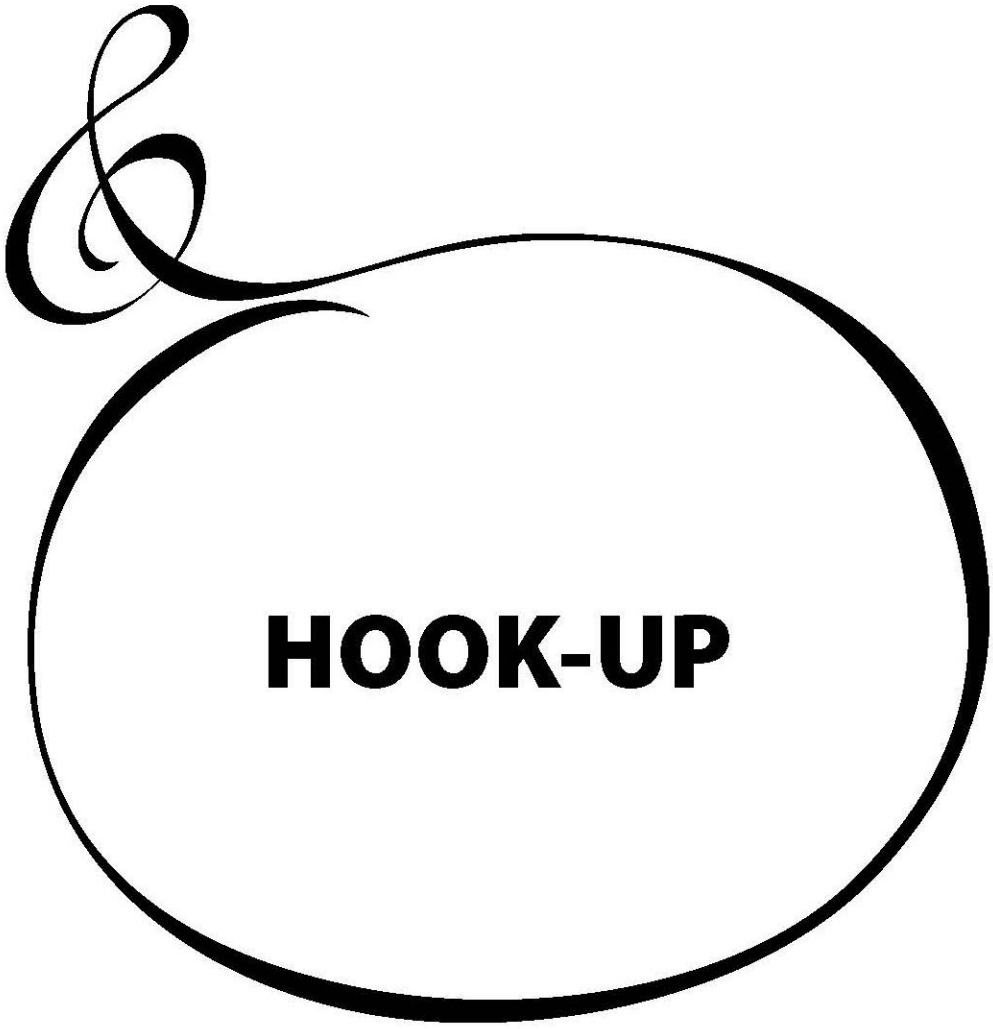


55. Pedalboard

25 notes. Radial flat type, non-velocity keyboard.

56. Foot Rest

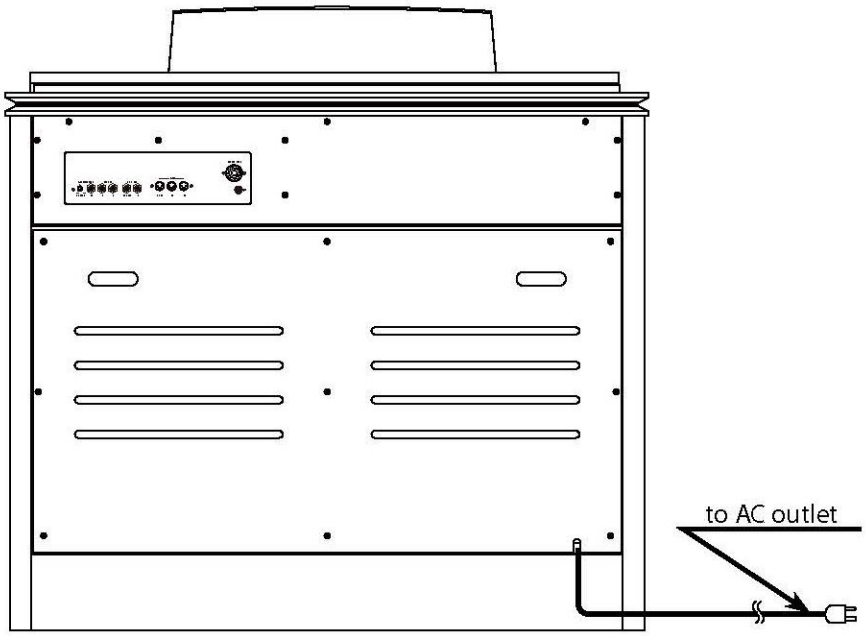
Rest your feet when you are not playing the Pedalboard.



HOOK-UP

BASIC HOOK-UP

This organ has a built-in speaker system, so you can start playing immediately after connecting to the power source by inserting the AC plug to the AC outlet.



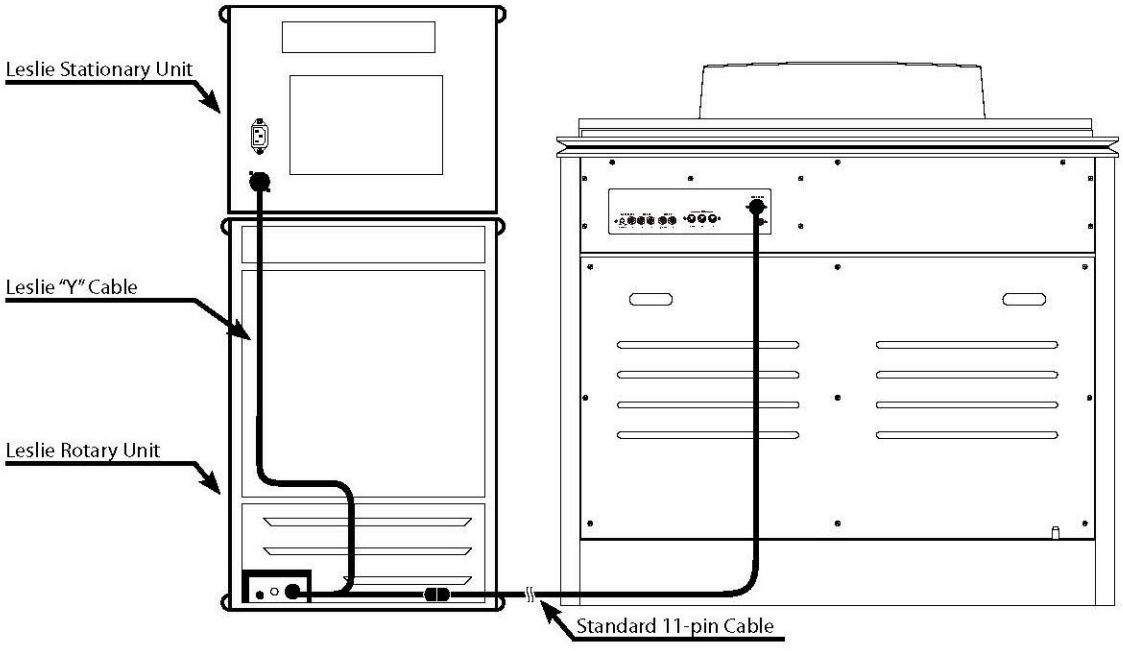
⚠CAUTION

Do not expose this organ to any excessive heat sources such as direct sunlight or flames.

CONNECTING THE LESLIE SPEAKER

This organ is equipped with a 11-pin Leslie connector, so you can directly connect the Leslie Speaker.

❖ *Make this connection with the Organ power OFF.*



Connect the Leslie Speaker to the 11-pin terminal on the organ, with the exclusive 11-pin Leslie Cable (to be separately purchased - with the other Leslie Speaker accessories).

Adjust the setting of the "EXT. LESLIE CH", in accordance with the Leslie Speaker connected. (P. 72)

eg. Typical Leslie Speaker Channel

122XB, 3300, 771, 971 -- 1CH

2101, 3300 / 971 with Stationary Unit -- 3CH

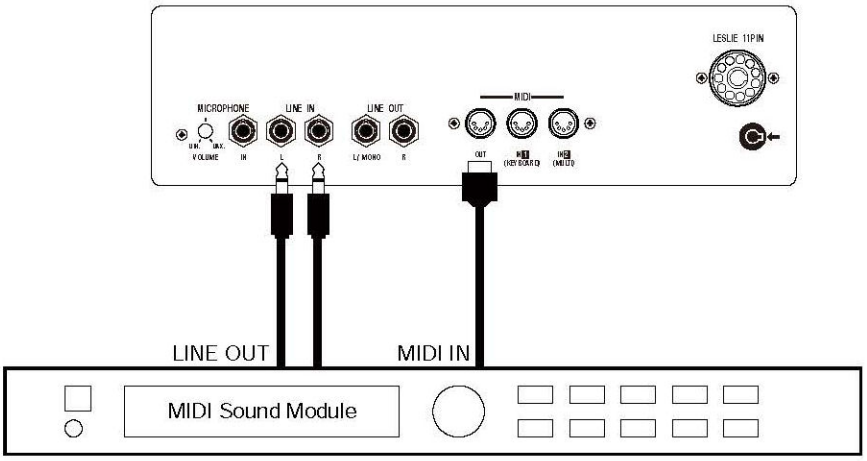
3301 / 525 with exclusive Y cable -- 3CH

Please carefully read the User's Guide of the Leslie Speaker.

USING A MIDI SOUND MODULE

Each Manual and the Pedalboard on this organ has a External Zone for controlling external MIDI sound modules. When Connected to the LINE IN jacks, the external MIDI sound module output is sent to the built in speakers, stationary channel of the Leslie terminal (on a so-equipped Leslie), the LINE OUT jack and the headphone jack.

NOTE: Adjust the volume of the equipment connected to the LINE IN jack on the external equipment itself.



USING HEADPHONES

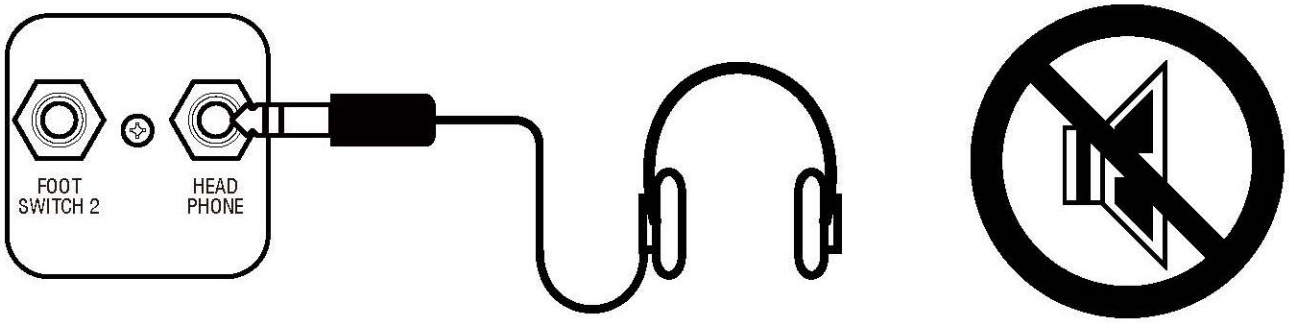
You can practice silently by connecting the stereo headphones to the HEADPHONE jack of this organ.

When the plug is inserted to the HEADPHONE jack, the built-in / external Leslie speakers are silenced.

⚠ATTENTION

Hold the molded part of the plug of the cord when you connect or disconnect it to avoid the risk of breaking the cable.

Do not use excessive volume with headphones, due to risk hearing damage.

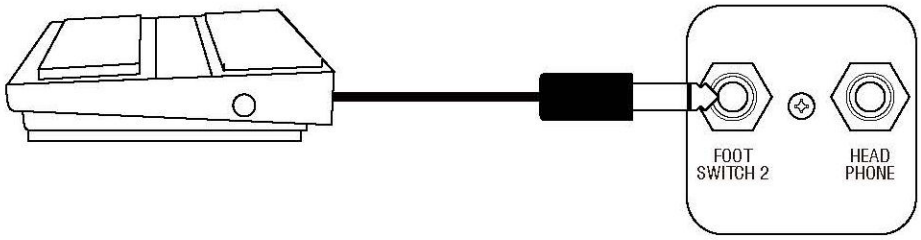


USING AN EXTERNAL FOOT SWITCH

This organ has a foot switch attached to the Expression Pedal. If necessary, you may also add an external foot switch to it. In that case, connect an unlatch-type foot switch to the "FOOT SWITCH" jack on the underside of the key bed. The Hammond FS-9H (optional) is recommended.

The "FOOT SWITCH" jack is tip-ring-sleeve. So you may connect a twin-pedal-type foot switch with a stereophonic plug to this jack.

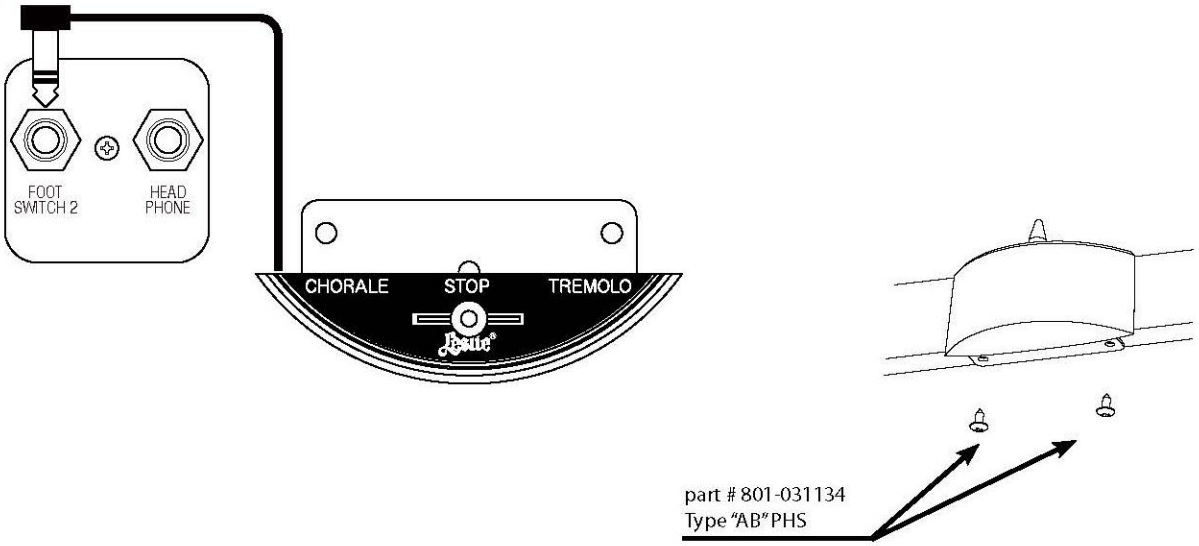
After this connection, set the FOOT 2 DEVICE at "PEDAL" in the "CONTROL - FOOT SW" mode. (P. 63)



USING A LESLIE MODE SWITCH

You may connect the traditional 'half-moon type' Leslie speed Switch to this organ for switching the Leslie mode as if a B-3/C-3. Mount the CU-1 (optional) on the front of the GREAT manual and then connect the plug to the "FOOT SWITCH" jack.

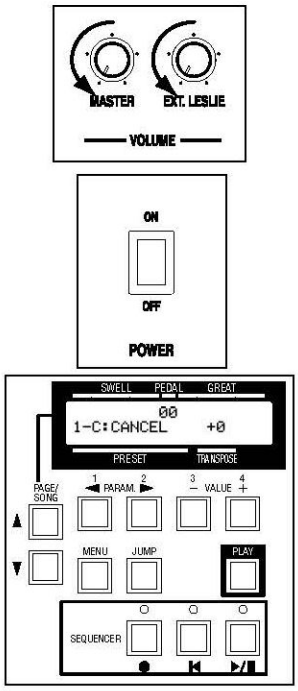
After this connection, set the FOOT 2 DEVICE to "CU-1" in the CONTROL - FOOT SW" mode. (P. 63)



TURN ON AND PLAY

POWER ON

How to power on



After connecting your A-405 to the power outlet, please perform the following procedure before switching on the power. To avoid possible damages to speakers, please do not vary the procedure.

STEPS TO TAKE

1. Set the [MASTER VOLUME] knob at 0 (minimum), before switching the power on.
2. Switch on the [POWER] on the top panel. "PLAY" mode appears, following the TITLE, in the Display window.
   - ❖ *The circuit protection devices create a few second delay before the A-405 is ready to play.*
3. Switch on the power of the external amplifiers etc. connected to the A-405.
4. Holding down a key, adjust the [MASTER VOLUME] by turning the knob.
   - ❖ *The Preset button [CANCEL] does not produce sound when initially first turned on. Draw the Drawbars, or press either of the Preset Buttons [1] - [9] to start.*
5. Adjust the volume of the amplifiers etc.
   - ❖ *Reverse the above steps when you switch off the power . (Switch off the power of the amplifiers etc. first.)*

Switch-off memory

Your A-405 memorizes the setting of the organ immediately before it is switched off. So, the organ will start with these settings when it is switched on again.

The A-405 is initially shipped from the factory with the Preset Button [CANCEL] in "pressed" status.

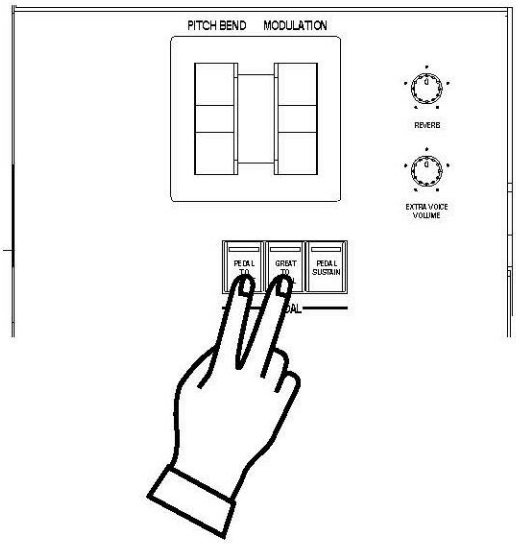
Reset to the initial status

Please perform the following steps to reset the A-405 to the initial default setting.

STEPS TO TAKE

1. Switch off the power of the A-405.
2. Holding the [RECORD] button, switch on the power.
3. Hold down / keep pressing the [RECORD] button until "Loading Default..." appears on the Display.
4. If everything is in order, "PLAY" mode appears on the Display. (Completed)

1

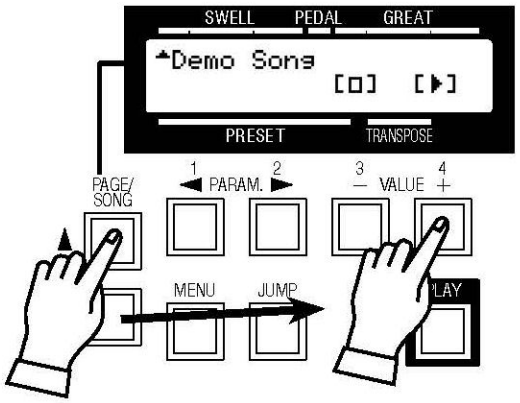


Touch and hold the [PEDAL TO GREAT] and [GREAT TO PEDAL] Buttons for 2 seconds.

The Display will be as shown in step 2.

NOTE: You can locate this mode another way. Touch the [MENU] Button to display the MENU, touch the [PAGE] Button and select page F, and touch the [1] DEMO.

2



Press the [PAGE] Button and select a desired song.

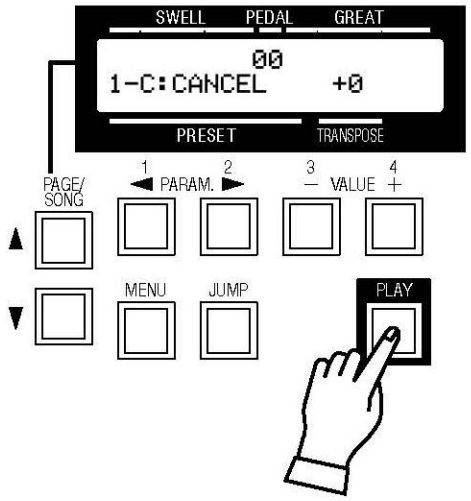
The performance starts when the [4] "▶" Button is pressed.

NOTE: After the song is over, the next one starts automatically.

To select a new song while you are playing, touch the [3] "□" Button. The performance that is playing will stop.

NOTE: You can not operate the controllers while playing the demonstration, except [MASTER VOLUME], [EXT. LESLIE VOLUME], [LESLIE ON], [LESLIE FAST] and [VIBRATO & CHORUS].

3

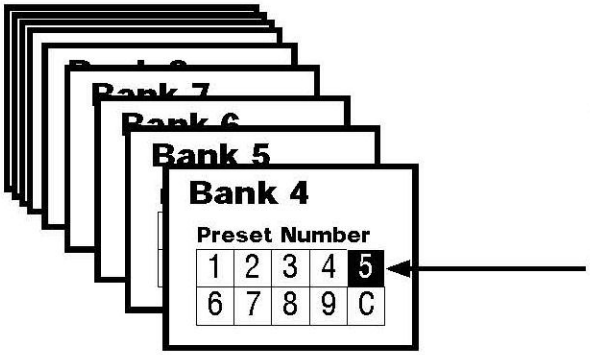


If you press the [PEDAL TO GREAT] and [GREAT TO PEDAL] Button for 2 seconds, press the [MENU] or [PLAY] Button, the performance stops.

PLAY WITH THE COMBINATION PRESETS

You can record various settings to the Preset buttons mounted on the right-hand side of the top panel. This is called "Combination Preset".

The Combination Preset consists of the "BANK" and "NUMBER" such as "3-2", and appears for each setting on the Display.

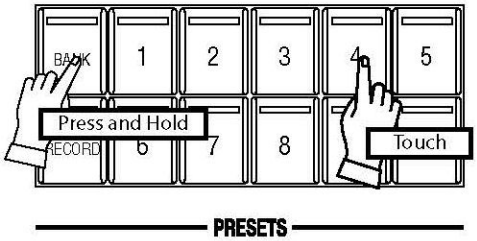


The chart on the left is for the Combination Preset.

The example below recalls this.

How to recall the Preset

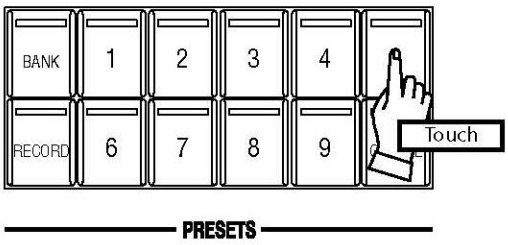
Ex. Select 4-5



1. Select the BANK

While holding down the [BANK] button, press the Number button [4].

NOTE: The LED for the Number button indicates the "BANK", while the [BANK] button is pressed.



2. Select the NUMBER

Press the Number button [5].

At this time the Preset is decided and the setting changes.

NOTE: While the [BANK] button is released, the LED indicates the "KEY".

"4-5" appears on the bottom left of the Display.

Recall various Combination Presets and play.

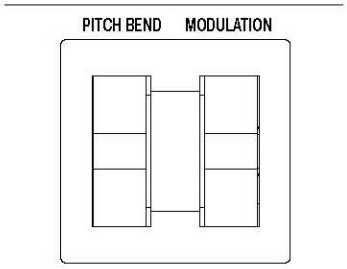
When you recall a Combination Preset, not only Drawbars but also the Effects such as Leslie and Reverb change altogether. However, the BANK 1 of the factory setting changes only the Drawbars. This action is the same as on B-3 or C-3.

NOTE: You can set the types of the Parameter you recall (P. 60).

PLAY WITH THE CONTROLLERS

Using the performance controllers will add expression to your playing. On this page you will learn how to use these controllers. The controllers exclusive to the Hammond are covered on the next page.

Pitch Bend / Modulation Wheel



The [PITCH BEND] wheel is used to slide the pitch up or down while playing.

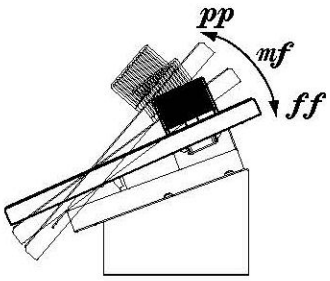
The frequency goes up when you move it back, and it goes down when you move it forward.

When you release your hand from the [PITCH BEND] wheel, it returns automatically to the center position.

NOTE: You can adjust the range of the pitch bend. (P. 62)

The [MODULATION] wheel on the right is not usually used with the Hammond Organ Drawbar voices. It is used when you modulate Extra Voice or External Zones.

Expression Pedal

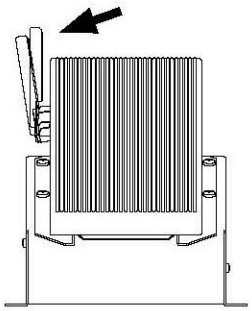


The organ's volume is controlled by using the Expression Pedal.

As you depress the pedal forward, the volume rises, and lowers when you return it.

NOTE: You can adjust the range of the expression pedal. (P. 63)

Foot Switch



The Foot Switch, on the left side of the Expression Pedal can be programmed for various functions. "Leslie Slow / Fast - Alternate" is the factory default. Every time you depress the Foot Switch, the Leslie changes mode.

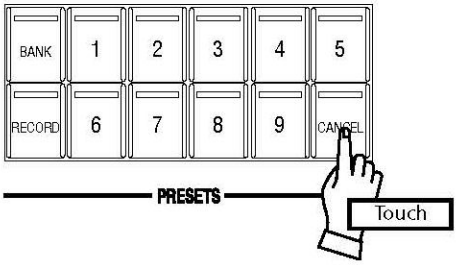
NOTE: You can change the Foot Switch assignment. (P. 64)

NOTE: You can add external Foot Switch or Leslie Mode switch. (P. 64)

TRY MAKING YOUR OWN SOUND

You will be able to produce your own sound by using the exclusive features of your Hammond Organ, such as Drawbars, Percussion, Vibrato & Chorus, Leslie effects, and Reverb. Let's go through the first steps:

Select the Preset Button [CANCEL]

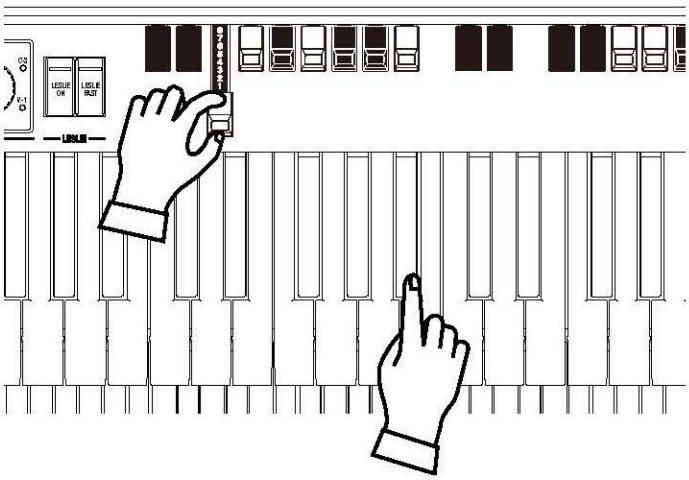


Select the Preset Button [CANCEL] first.

The Preset Button [CANCEL] makes all of the front panel controls (Drawbars, Tabs, etc.) current, and sounding at their physical position. This setting is used to create registrations "on the fly". It could also be referred to as "Manual" mode.

NOTE: You can initialize the contents to the default setting (P. 81 #1)

Pull out the SWELL Drawbars



Pull out the SWELL Drawbars on the left-hand side to your desired length, pressing a key on the SWELL keyboard to the certain.

The tone varies corresponding to the extent or the length of the Drawbar. It is the Drawbars that create the fundamental tones of this organ.

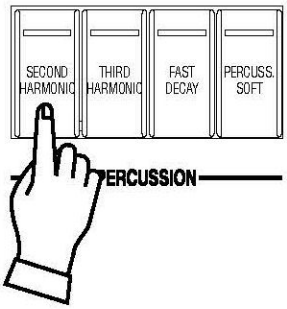
The volume gets louder as each Drawbar is pulled out to the full length. The sound gets silent when it is totally pressed back. The tones of the Drawbars gradually get higher in frequency from left to right.

The most popular patterns or registrations are (1) to pull out only all the three left side Drawbars to the full, (2) to pull the far-left and only the white bars to the full, or (3) to pull all the bars.

NOTE: You can change the characteristics of the Drawbars (P. 58).

NOTE: The present registration is shown on the "Play" mode display (P. 49).

Add Percussion



The "Percussion" referred to here is not a percussion instrument itself, but it is a "decay" to add a clear-cut "attack" to the organ sound. You can add this "attack" to mix with the Drawbar sound when you want.

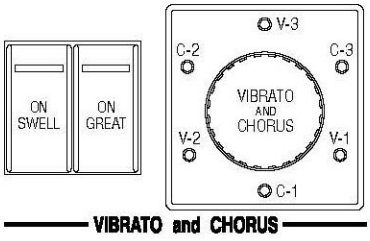
If you turn on the [SECOND], [THIRD] buttons, decays of the harmonic overtones (= one octave higher "C" and "G") are added.

If you turn on the [FAST] button, the percussion sounds fades quickly. Pressing the [SOFT] button reduces the volume of the Percussion sound.

NOTE: You can do fine volume setting etc. of the Percussion (P. 69).

Add effects

Vibrato & Chorus



"Vibrato & Chorus" slightly changes the Drawbar pitch at a certain ratio and adds warmth to the sound.

[ON SWELL], [ON GREAT] Button

Switches the Vibrato effect off and on. The LED illuminates when ON.

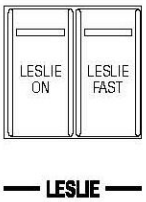
[VIBRATO & CHORUS MODE] Knob

Selects Chorus or Vibrato and the depth of each.

The degree of depth corresponds with the number.

NOTE: You can finely adjust the speed etc. of the Vibrato & Chorus. (P. 74)

Leslie



A digital LESLIE™ Effect with virtual "horn" and "rotor", duplicating the effect of the classic electro-mechanical Leslie™.

[ON] Button

Switches on the effect. When "On", the LED will light.

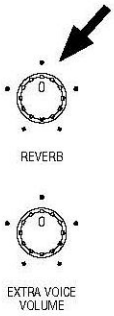
[FAST] Button

This button controls the rotor at two different speeds. When the LED is ON, it is FAST. When the LED is OFF, it is SLOW. The most effective and popular way to use this is to mainly play SLOW while switching to FAST at phrases end, or for emphasis FAST.

NOTE: These switches will also control as outboard genuine "Leslie" speaker.

NOTE: The speed, tonal characteristics and other parameters of the Digital LESLIE™ are easily adjustable. (P. 70)

Reverb



The reverb effect simulates performing in a concert-hall.

[REVERB] Knob

Controls the depth of the Reverb effect. At full left the Reverb effect is off. The effect deepens as you rotate the knob.

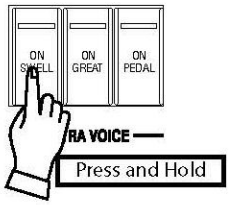
NOTE: You can fine-control time etc. of Reverb. (P. 79)

This organ has also built-in effects such as Overdrive(P. 74)and Equalizer(P. 78). See the details on these pages.

Using Extra Voice

Ex. Use "Positive Organ" for SWELL

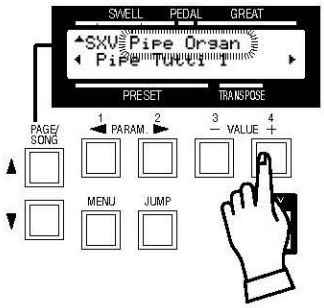
1



Hold down the [ON SWELL] button in the EXTRA VOICES section for a few seconds. As soon as the button turns on, the voice selecting page of the Extra Voice SWELL appears in the display.

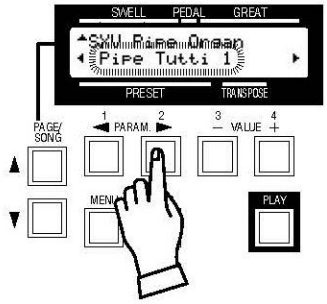
To turn on/off the Extra Voice, just touch the [ON SWELL] button.

2



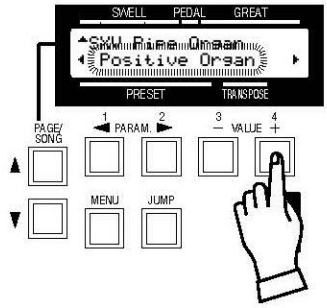
Select the group ("Pipe Organ" this time) with the [VALUE] button.

3



Press the [PARAM▶] button and move the cursor to "Instrument".

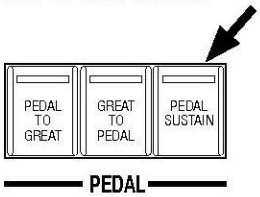
4



Select the instrument ("Positive Organ" this time) with the [VALUE] button.

Press the [PLAY] button to return to the PLAY mode.

Pedal Sustain



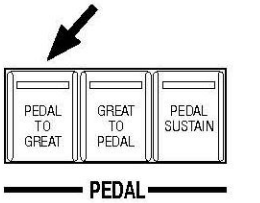
The Pedal Drawbar sound can be set to smoothly decay after the key is released. This is called "PEDAL SUSTAIN".

To use this "Pedal Sustain" function, switch ON the [PEDAL SUSTAIN] button.

If you release your foot off the Pedalboard (or your finger from the GREAT keyboard , if you are using the Pedal to Great, as explained later in this manual), the Pedal Drawbar sound smoothly decays.

NOTE: You can change the decay time of the Pedal Sustain. (P. 59 #10)

Pedal To Great



You can play Bass using the lowest keys of the GREAT keyboard. This is called "Pedal To Great".

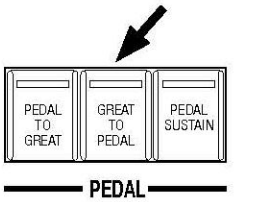
To use this "Pedal To Great" function, switch ON the [PEDAL TO GREAT] button.

When you playing the GREAT keyboard, the lowest note played will be sounded by the Pedal Parts.

The factory default Pedal To Great range is set to "C" of the third octave.

NOTE: You can set the upper key limit of the Pedal To Great. (P. 65 #31)

Great To Pedal



You can play GREAT Parts using the Pedalboard. This is called "Great To Pedal".

To use this "Great To Pedal" function, switch ON the [GREAT TO PEDAL] button.

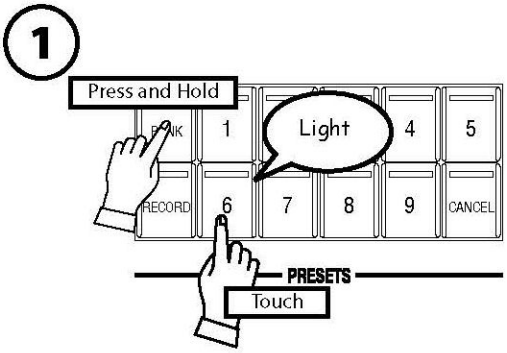
When you playing the Pedalboard, the note played will be sounded by the GREAT Parts.

The factory default Great To Pedal range is set to "C" of the third octave.

NOTE: You can set the upper key limit of the Great To Pedal. (P. 65 #32)

Storing registrations in Combination Preset

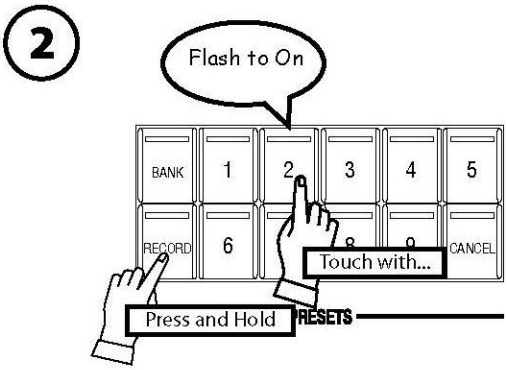
Ex. Memorize to "6-2"



While pressing the [BANK] button, press the Number button [6].

The LED on the Number button indicates BANK while the [BANK] button is pressed.

NOTE: The LED goes out if you release the button. This means the Number is not final.



While pressing the [RECORD] button, press the Number button [2].

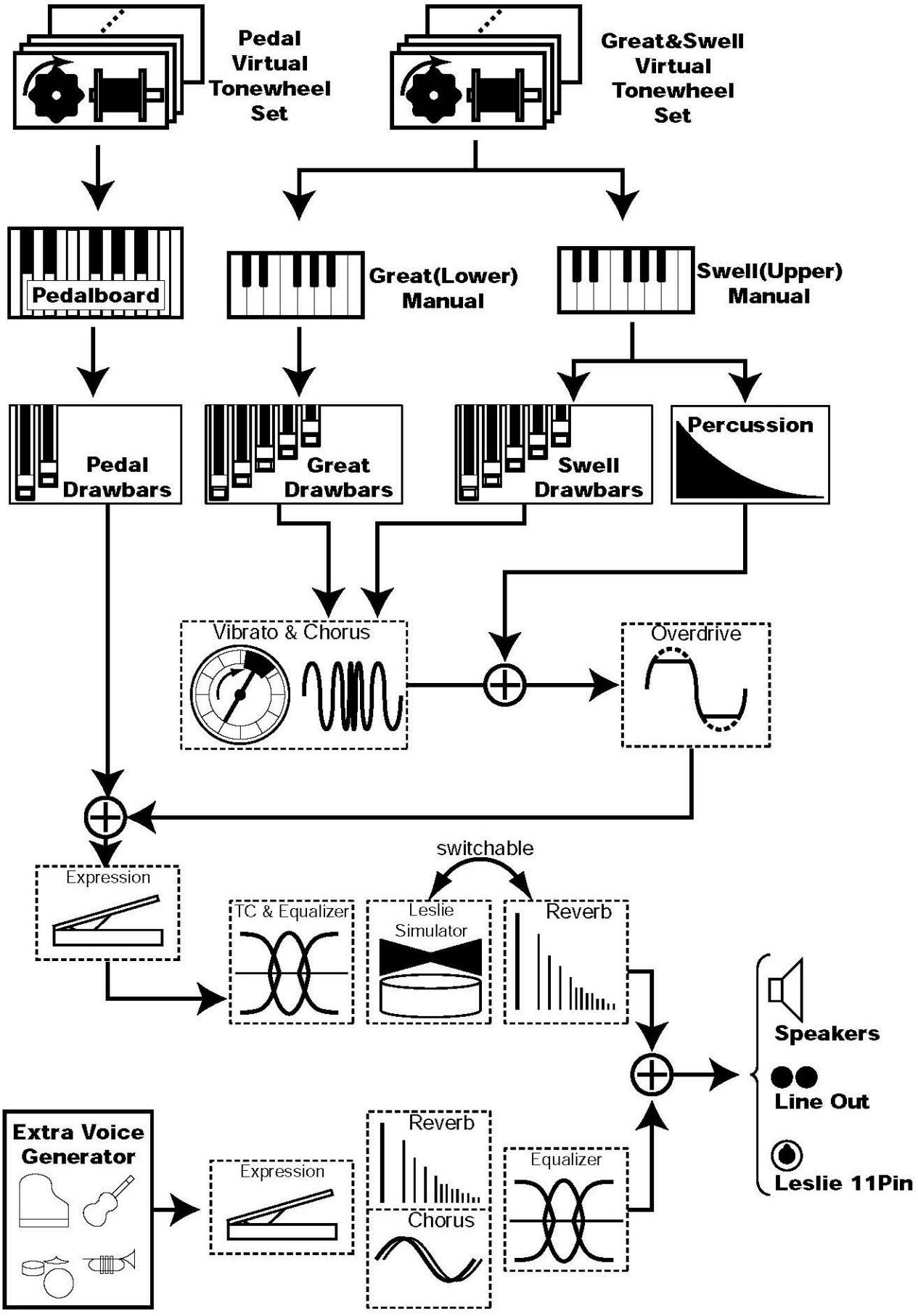
The Number is finalized and "Recording Preset" appears on the Display while the process completes. When the recording is completed, the LED on the Number button [2] flashes for a few seconds and then switches on. The Display returns to the previous mode.

The recorded Preset will be automatically selected.

NOTE: The Preset Data is preserved after power off.

SETTING UP

SOUND ENGINE STRUCTURE



To fully enjoy playing this organ, please read the following section in this manual.

See the illustrated system structures of this organ on the left page.

TONE-WHEELS

The sound source or "engine" of Hammond Organ are the virtual Tone-wheels. They are like the strings and pick-ups on the electric guitar. While running, each of the 96 virtual Tone-wheels oscillates at a different frequency.

KEYS

The keyboards of the A-405 are traditional 61-note organ keyboards, using the inclined and overhanging configuration. This is the same as fine church pipe organs, while retaining the quick response traditional of Hammond Organs.

DRAWBARS

The Drawbars select the basic sounds. Each bar adjusts the value of each harmonic.

PERCUSSION

The Percussion adds a sharp accent to the drawbar sounds. This is the same "Touch-response" Percussion section as found on the classic B-3/C-3.

VIBRATO & CHORUS

Vibrato raises and lowers the drawbar pitch slightly, at an even and adjustable depth and speed. The Chorus "doubles" the sound with the duplicate slightly sharp. This creates a distinct richness, and is an essential part of the genuine Hammond tone.

NOTE: On the classic B-3/C-3 the chorus/vibrato effect was obtained by an electro-mechanical "scanner". The A-405 uses a digital model of that scanner, that gives an accurate reproduction of the original.

OVERDRIVE

Overdrive adds the fuzzy, raspy, "dirty" sound created by the vacuum tubes of a tube-style Leslie Speaker when its volume is pushed past its sound limit.

The PEDAL Part, however, is designed not to pass through the Vibrato & Chorus or the Overdrive, in order to obtain a clear Bass-line.

EQUALIZER, LESLIE and REVERB

The Organ signal passes through: the Equalizer (for tone regulation), the Leslie simulator (for the rotating speaker effects) and the Reverb (for resonance).

If a physical Leslie speaker is connected to it, the sound of the Leslie simulator is output from the built-in speaker, and a dry sound from the 11-pin socket.

EXTRA VOICE

The Extra Voice section has its own DSP unit (Reverb, Chorus, and Equalizer) which is independent of the 96 virtual tone-wheel generator.

tips TONE-WHEEL SET

The Tone-wheel Sets are divided into the Manual Keyboard and the Pedalboard. This is to give the Pedalboard the Decay (= the sound gradually fading out while pressing the key) or Sustain effect (= the sound gradually fading out after the key is released).

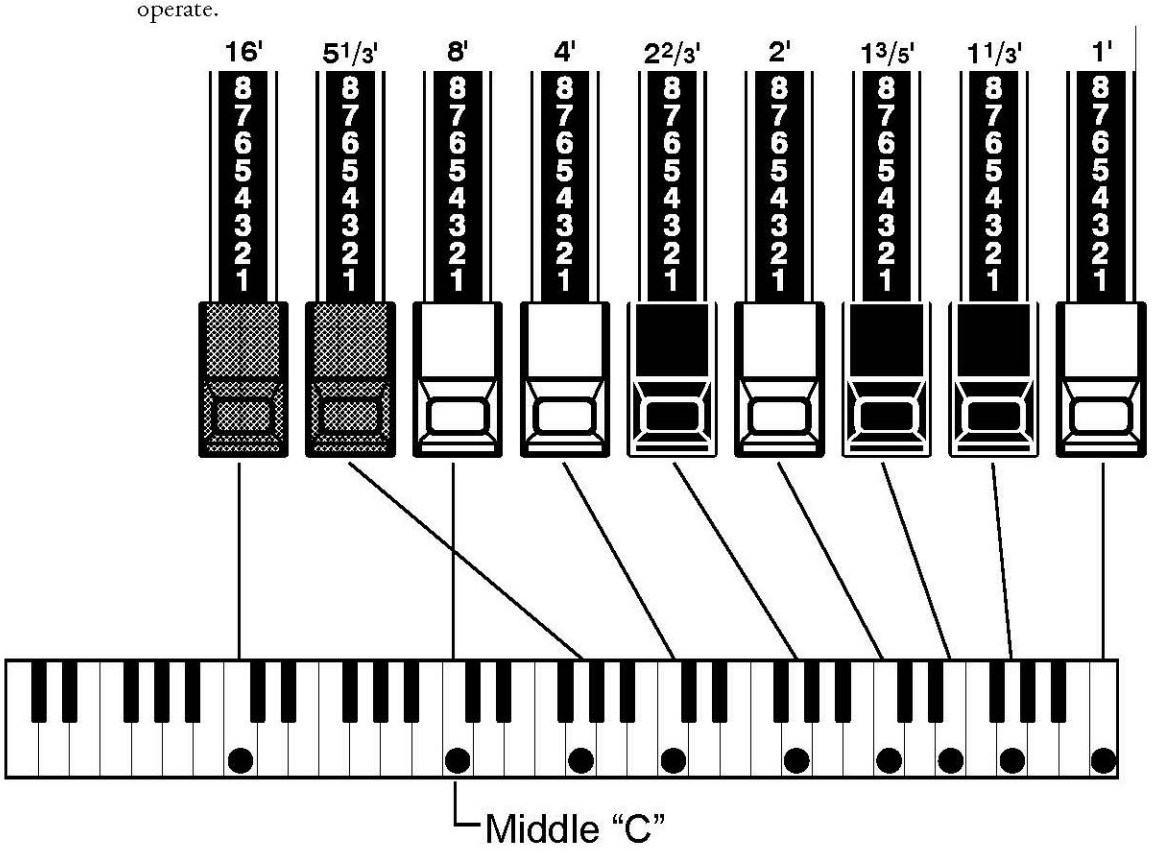
tips HARMONICS

Harmonic is a pitch of a different ratio to a certain pitch; for example, the one octave higher C to the middle C. The more Harmonics, the brighter and richer sound is obtained.

HARMONIC DRAWBARS™

The 9 Drawbars for each keyboard (plus 2 for the Pedal) of the A-405 organ are used to make the basic sounds. Each Drawbar is marked with the numbers 1 - 8. If you push back the Drawbar until you can not see any number at all, the sound of the Drawbar is not heard. If you pull it out to the fullest position the sound level is maximum.

Except when the Preset button is [CANCEL], the actual Drawbar Registration is the value displayed in the (display-)window. The "Drawbar Registration" shows the length of the pulled-out Drawbar(s). The display shows only the Drawbar(s) you operate.



The pitch of each Drawbar is as shown above, when the middle C is depressed. The footage marked (′) on each Drawbar is originated from the length of the pipes of a pipe organ.

The numbers 1 - 8 on each Drawbar indicate the volume of the sound to be produced as well as the guide to set the Drawbar.

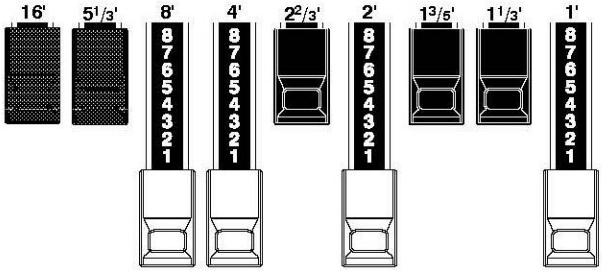
For example, when you play a clarinet, the internal air vibrates, and the fundamental (8′) and the third harmonic (2⅔′) plus the fifth harmonic (1⅗′) are the basic components of the tone. On the A-405 (or any Hammond Organ), if you pull out these 3 Drawbars, you can get a clarinet-like sound. If you pull out the 1⅗′ Drawbar and push in the 8′ Drawbar a little shorter, the element of the high pitch increases and a "hard" sound results. Conversely, if you pull out the 8′ one a little longer, the sound gets mellower.

The millions of combinations possible allow you to make delicate changes to the sound, depending on the flow of the tune or your choice, by fully utilizing the Drawbars.

NOTE: You can change the characters of the Drawbars. (P. 58)

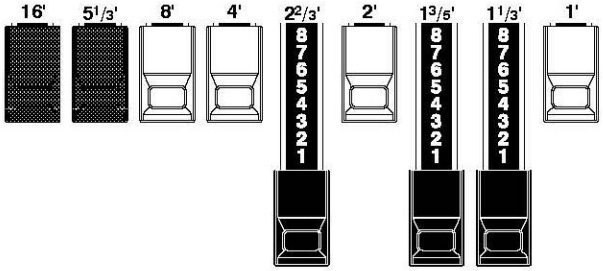
Manual Drawbars

White Drawbars



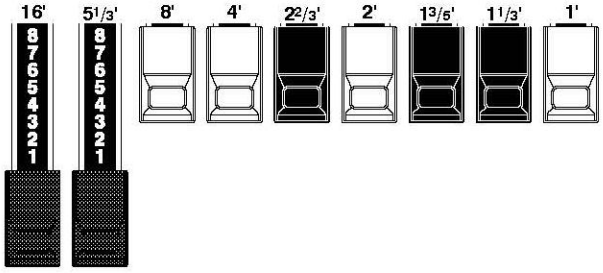
In each Drawbar set, the white Drawbar (8′) plays in the basic octave of the organ. The other drawbar pitches are figured in reference to this pitch, up or done. The other white Drawbars get higher by the octave to the right.

Black Drawbars



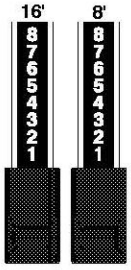
The sounds of the black Drawbars, play important roles in building rich tones. Their pitches are octave-fifth and octave-third to the fundamental. They contain the elements of all different harmonics such as those in the sounds of sweet and soft horn, mellow strings among others.

Brown Drawbars



The two brown Drawbars on the far left give depth and richness to the sound. The left 16′ is one octave lower than the 8, and 5⅓′ is the third harmonic of the 16′ fundamental.

Pedal Drawbars



The Pedal Part which plays the bass line uses the two Drawbars - 16′ and 8′.

The first Pedal Drawbar produces a tone at 16′ pitch for a deep foundation bass, while the second Pedal Drawbar produces a tone at 8′ pitch, or one octave higher.

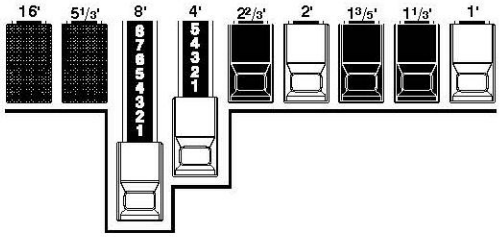
The registration of the Pedal Part is displayed on the center of the display, the left one is 16′, and the right is 8′.

Drawbar Registration Patterns

The Drawbar Registration is matched by digits. It is easy to remember the typical combination of the 9 Drawbars by their forms.

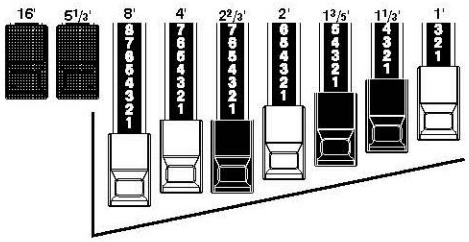
The Drawbar Registrations are grouped into the following 4 patterns:

Flute family (2 step pattern)



Accompaniment Flute 8′ I 00 8460 000
Accompaniment Flute 8′ II 00 3220 000
Accompaniment Flute 8′ III 00 8600 000
Chorus of Flutes 16′ 80 8605 002
Orchestral Flute 8′ 00 3831 000
Piccolo 2′ 00 0006 003
Stopped Flute 8′ 00 5020 000
Tibia 8′ 00 7030 000
Tibia 4′ 00 0700 030
Tibia (Theater) 16′ 80 8605 004
Wooden Open Flute 8′ 00 8840 000

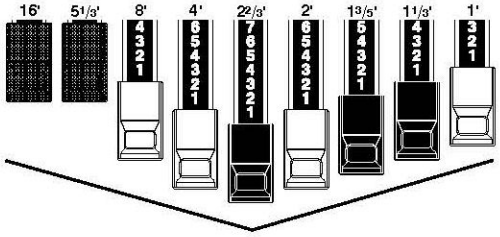
Diapason family (check mark pattern)



Accomp. Diapason 8′ 00 8874 210
Chorus Diapason 8′ 00 8686 310
Diapason 8′ 00 7785 321
Echo Diapason 8′ 00 4434 210
Harmonic Diapason 16′ 85 8524 100
Harmonic Diapason 8′ 00 8877 760
Harmonic Diapason 4′ 00 0606 045
Horn Diapason 8′ 00 8887 480
Open Diapason 8′ 01 8866 430
Solo Diapason 01 8855 331
Wood Diapason 8′ 00 7754 321

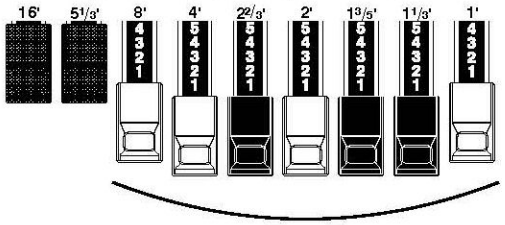
NOTE: Some of the names on this page may be unfamiliar. They represent the names of types of pipes on a pipe organ. The "Diapason" is the fundamental type of pipe on a pipe organ.

Reed family (triangle pattern)



Bassoon 16′ 44 7000 000
Clarinet 8′ 00 6070 540
English Horn 8′ 00 3682 210
Flugel Horn 8′ 00 5777 530
French Horn 00 7654 321
Kinura 8′ 00 0172 786
Oboe 8′ 00 4764 210
Trombone 8′ 01 8777 530
Trumpet 8′ 00 6788 650
Tuba Sonora 8′ 02 7788 640
Vox Humana 8′ 00 4720 123

String family (bow pattern)



Cello 8′ 00 3564 534
Dulciana 8′ 00 7770 000
Gamba 8′ I 00 3484 443
Gemshorn 8′ 00 4741 321
Orchestral String 8′ 00 1464 321
Salicional 8′ 00 2453 321
Solo Viola 8′ 00 2474 341
Solo Violin 8′ 00 3654 324
Viola da Gamba 8′ 00 2465 432
Violina 4′ 00 0103 064
Violone 16′ 26 3431 000

NOTE: The "Strings" and "Reeds" mentioned here are not analogous to orchestral voices. The names here refer to types of pipes found in a pipe organ and the sounds are not meant to sound as actual violins, trumpets, oboes, etc.

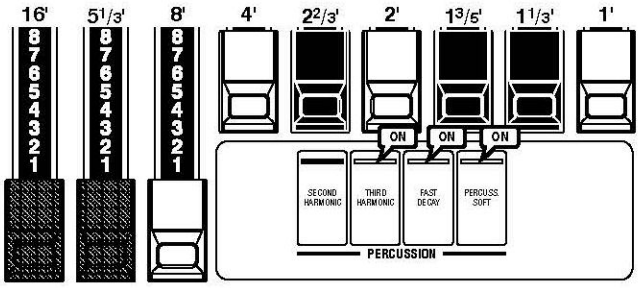
Modern Drawbar Registrations

The Drawbar registrations introduced on the previous page are typically for classical music.

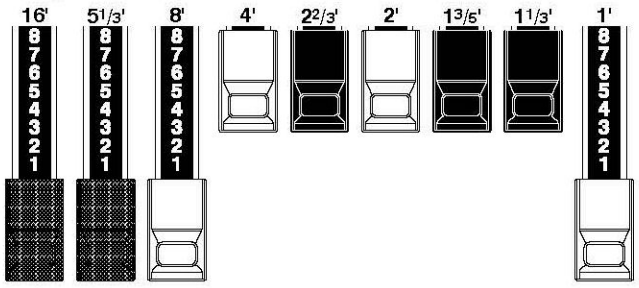
They were created at the dawn of the Hammond Organ, when it was intended to sound like a pipe or church organ (and you can certainly still use the A-405 for that purpose today).

Later on, as the Hammond Organ spread throughout Jazz, Pop, Rock and (especially) Gospel music, Some timeless registrations become common.

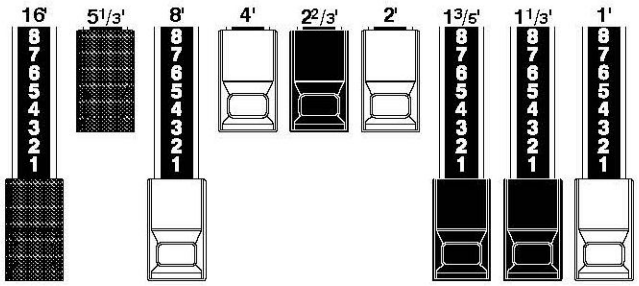
Jazz



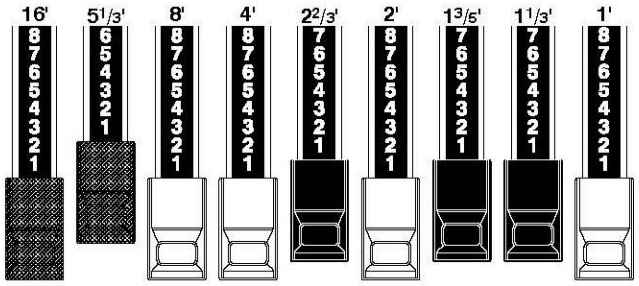
Bluesy



Groovy & Funky



Max Power



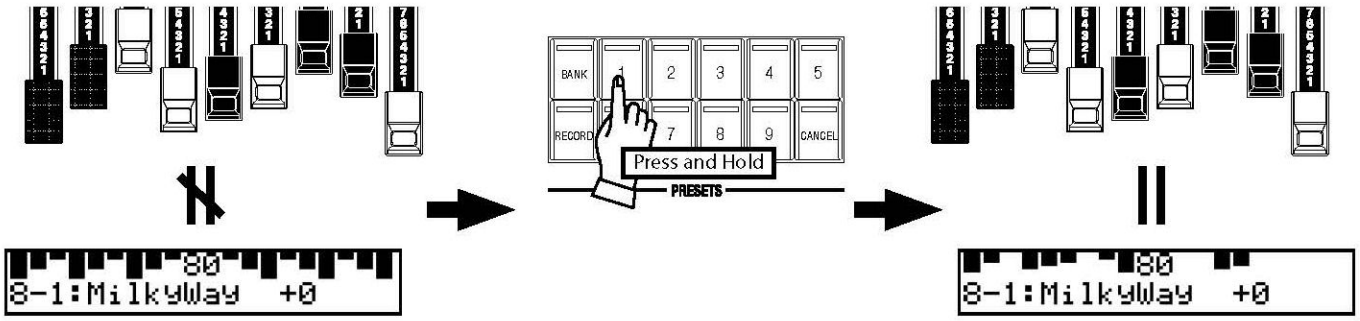
tips **APPLICATION OF PERCUSSION**

When Percussion is used, the sound of the 1 Drawbar is cancelled. This enables the technique of playing the organ switching "Jazz" or "Bluesy" by turning on/off [THIRD HARMONIC] while the registration itself is set at "Bluesy".

Match the Registration to Drawbars

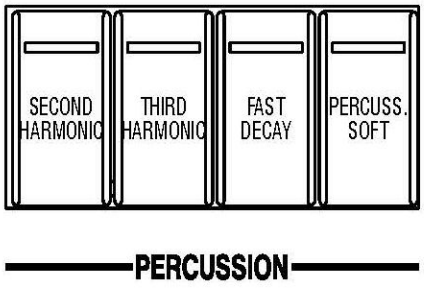
When you recall a Combination Preset, the Drawbar Registration is not changed physically but is replaced with the recorded one. If you move any Drawbar at this stage, only the one moved reflected.

To match only the Registration to the Drawbars, while using the content of the Combination Preset, keep depressing the Preset button for a while. Combination Preset is recalled and the physical Drawbar Registration is reflected.



PERCUSSION

The touch-response percussion adds a clear-cut "attack" to the organ sound. It is a Hammond exclusive. Percussion is usually combined with the Drawbar sound.



[SECOND HARMONIC] button

The second harmonic, or 4′ Drawbar decay, is added to the SWELL keyboard.

To use this, press the [SECOND HARMONIC] button, and the LED will light.

[THIRD HARMONIC] button

The third harmonic, or 2⅔′ Drawbar decay, is added to the SWELL keyboard.

To use this, press the [THIRD HARMONIC] button, and the LED will light.

[FAST DECAY] button

This speeds the decay time of Percussion.

It is effective if you use this to play with a clear-cut rhythm in an up-tempo piece.

When the LED is OFF, it is "SLOW". "FAST" is selected when you press the [FAST DECAY] button, and the LED is light.

[PERCUSS. SOFT] button

This reduces the volume of the Percussion.

When the LED is OFF, it is "NORMAL". If you press the [PERCUSS. SOFT] button, the Percussion level is "SOFT", and the LED will light.

NOTE: You can fine-adjust the levels, and decay times of the Percussion. (P. 69)

tips DECAY

A piano's sound gradually decreases in volume when keep the key down. This is called "decay". The violin, on the contrary, keeps sounding at a certain volume. This is called "Sustain".

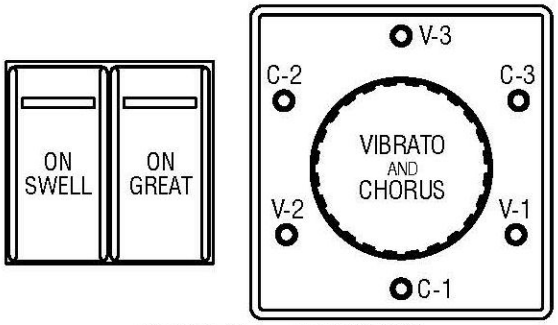
Drawbar Cancel

As was the specification on the original B-3/C-3, when either the [SECOND HARMONIC] or the [THIRD HARMONIC] button is ON, the SWELL 1′ Drawbar does not produce sound.

NOTE: The Drawbar Cancel feature can be defeated, if to your desire. (P. 69 #8)

VIBRATO & CHORUS

The VIBRATO gives warmth and variance to the organ's tone by slightly but rapidly raising and lowering the pitch. CHORUS adds a duplicate of the original sound, but at a slightly raised pitch.



VIBRATO and CHORUS

[ON SWELL] button

This switches ON and OFF Vibrato and Chorus effects.

It affects the SWELL Drawbars.

To get this effect, press the button and the LED will light.

[ON GREAT] button

This switches ON and OFF Vibrato and Chorus effects.

It affects the GREAT Drawbars.

To get this effect, press the button and the LED will light.

[VIBRATO & CHORUS MODE] knob

This knob controls the depth of Vibrato and switches ON and OFF the Chorus effect.

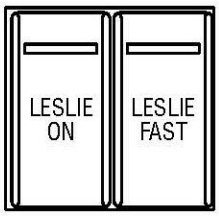
V-1: Comparatively slight Vibrato
V-2: Standard depth Vibrato
V-3: Deepest Vibrato
C-1: Comparatively slight Chorus
C-2: Standard depth Chorus
C-3: Deepest Chorus

NOTE: While the power is on, either of Vibrato and Chorus is selected.

NOTE: You can fine-adjust the Vibrato and Chorus effect (P. 74)

The A-405 features a Digital LESLIE™ system which accurately replicates the sound of the original electro-mechanical model through the A-405's built-in speakers.

If desired, a genuine LESLIE™ speaker system may be connected. The controls used for the on-board LESLIE™ system will also control the physical LESLIE™.



— LESLIE —

[ON] button

Routes the drawbars through the onboard Digital LESLIE system, (and through a LESLIE cabinet, if connected. When selected, the LED will light.

[FAST] button

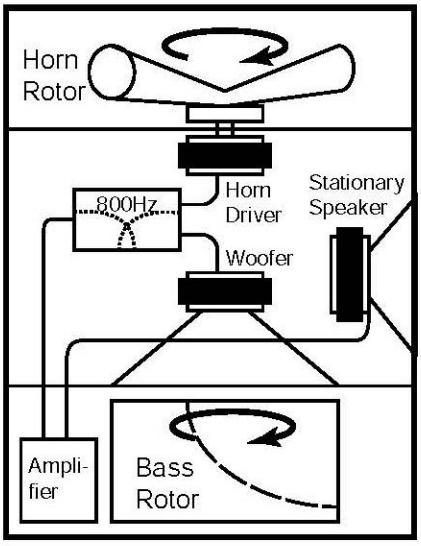
This toggles the speed of the virtual rotors (or the actual rotors in a Leslie cabinet. if connected) from SLOW to FAST.

NOTE: When the [ON] button is at OFF, you may select either to stop the rotor (BREAK) or to bypass (THROUGH) the Leslie effect. (P. 72 #20)

NOTE: You can fine-set the Leslie effect i.e. speeds. (P. 70)

tips BUTTONS AND LESLIE MODES

Button			Mode	
OFF MODE	ON	FAST	CH=1	CH=3 & Internal Leslie Effect
On	On	On	Fast	
Off	On	On		
On	On	Off	Slow	
Off	On	Off		
On	Off	On	Brake	
On	Off	Off		
Off	Off	On	Fast	Through
Off	Off	Off	Slow	Through



tips WHAT IS THE LESLIE EFFECT?

In the Leslie speakers, generally, an amplifier and two rotors are incorporated, i.e. the "Horn Rotor" responsible for the treble and the "Bass Rotor" for the bass.

Each Rotor has a speaker or speakers and a motor for controlling speed to give the unique trembling sound gained by the Doppler effect.

There also exist such models as have not only the rotors but stationary speakers - switchable.

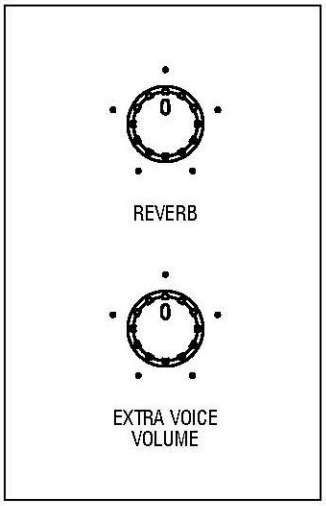
The circuit to send the sound to the rotor is called "Rotary Channel" and that to the stationary speaker is called "Stationary Channel".

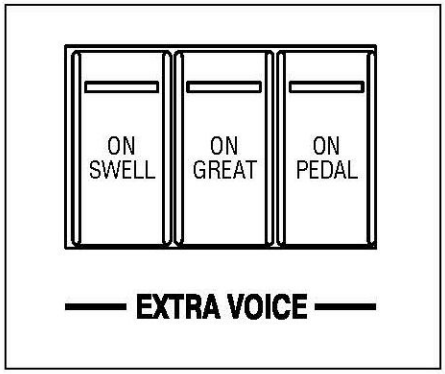
The A-405's built-in Digital Leslie effect simulates them and you can get the best effect when connected stereophonically.

EXTRA VOICES, REVERB

This organ has built-in [EXTRA VOICES] in addition to the Drawbar sound, containing various high quality instrumental sounds.

You can use one part of the Extra Voices per each manual.





[ON SWELL] button

Switches ON/OFF the Extra Voices of the SWELL manual. If you keep this button depressed for a few seconds, the display short-cuts to the Extra Voices - Swell function mode.

NOTE: The voice, volume, etc. of each Extra Voice is set in the Extra Voice function mode. See the "Extra Voices" section in "Setting the Parameters" for details. (P. 76)

[ON GREAT] button

Switches ON/OFF the Extra Voices of the Great manual. If you keep this button depressed for a few seconds, the display short-cuts to the Extra Voices - Great function mode.

[ON PEDAL] button

Switches ON/OFF the Extra Voices of the Pedal Board. If you keep this button depressed for a few seconds, the display short-cuts to the Extra Voices - Pedal Board mode.

[EXTRA VOICE VOLUME] knob

Controls the volume of the entire Extra Voices section.

[REVERB] knob

Controls the depth of Reverb Effects of both Drawbars and Extra Voices at the same time.

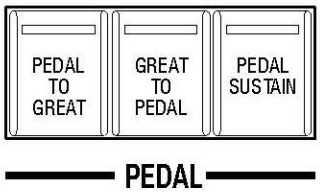
NOTE: You can fine-control time etc. of Reverb. (P. 79)

PEDAL SUSTAIN, COUPLER

Many Organists prefer their Pedal (Bass) voices to smoothly decay in the style of a String Bass. Depressing the [PEDAL SUSTAIN] tab turns on that function. When the function is active, the LED will light.

Some Organists prefer to play the Bass parts on the lower manual instead of the Pedals. Depressing the [PEDAL TO GREAT] tab will bring the pedal voice to the lowest range of the Great (lower) keyboard. When the function is active, the LED will light.

Some Classical and Sacred music requires a more complex sound to be available on the pedalboard. Depressing the [GREAT TO PEDAL] tab allows the current registration of the GREAT (lower) manual to be played with the pedalboard. When the function is active, the LED will light.



[PEDAL SUSTAIN] button

The Pedal Drawbar / Extra Voice sound can be set to smoothly decay after the key is released. This is called "Pedal Sustain".

To use this "Pedal Sustain" function, switch ON the [PEDAL SUSTAIN] button.

If you release your foot off the Pedalboard (or your finger from the GREAT keyboard, if you are using the Pedal to Great, as explained later in this page), the Pedal Drawbar / Extra Voice sound smoothly decays.

NOTE: You can change the decay time of the Pedal Sustain. (P. 59 #10, 11)

[PEDAL TO GREAT] button

You can play Bass using the lowest keys of the GREAT keyboard. This is called "Pedal to Great".

To use this "Pedal to Great" function, switch ON the [PEDAL TO GREAT] button.

When you playing the GREAT keyboard, the lowest note played will be sounded be the Pedal Parts.

The factory default Pedal to Great range is set to "B" of the second octave.

NOTE: You can move the upper limit of the Pedal to Great. (P. 65 #31)

[GREAT TO PEDAL] button

You can play GREAT Parts using the Pedalboard. This is called "Great to Pedal".

To use this "Great to Pedal" function, switch ON the [GREAT TO PEDAL] button.

When you playing the Pedalboard, the note played will be sounded by the GREAT Parts.

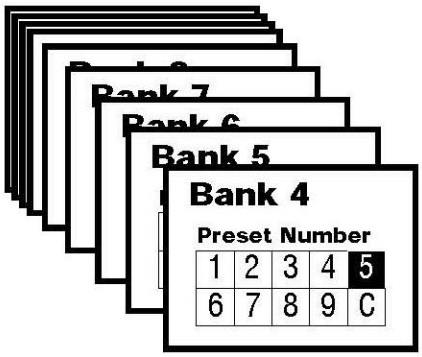
The factory default Great to Pedal range is set to "B" of the second octave.

NOTE: You can move the upper limit of the Great to Pedal. (P. 65 #32)

COMBINATION PRESETS

The settings you have made can be recorded into the Combination Presets.

Bank and Number



The combination preset chart to the left, shows the [BANK] and the [NUMBER], information.

Access is made by the Preset buttons. To select the [BANK], press the button, holding down the [BANK] button. To select the [NUMBER], just press the Preset button.

Recording and recall is determined when the Number is designated.

Only designating the Bank does not switch the recording or recall.

The [CANCEL] button on the right end is a special Preset, called "Adjust Preset". Here the Drawbar Registration on the panel always matches the internal registration.

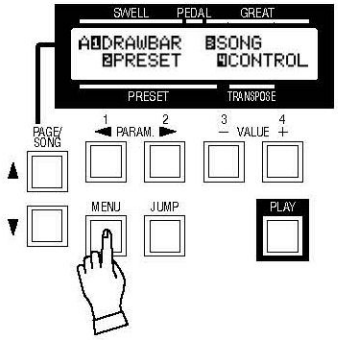
tips **COMBINATION PRESETS**

On the original B-3 organ the preset keys only stored drawbar registration information. On the A-405 however in addition to Drawbar Registration you can store many various parameters to a preset. Thus the name "Combination Preset".

NOTE: The parameters to be recalled by the Preset buttons can be limited Bank by Bank. (P. 60)

Name the current setting

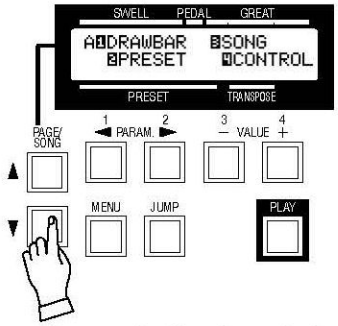
1 Go to the MENU.



Touch the [MENU] button.

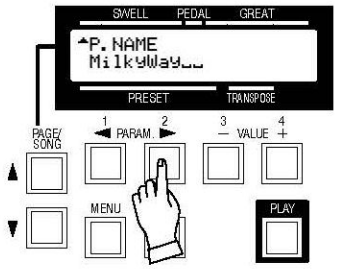
The MENU mode will be displayed.

2 Go to page A.



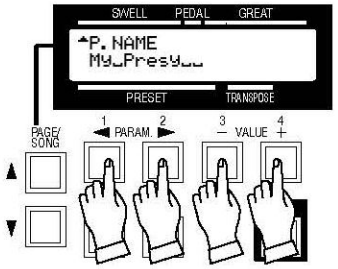
If the page A is not displayed, touch the [PAGE] button and go to page A.

3 Go to the PRESET function mode.



Touch the [2] PRESET button and go to the PRESET function mode.

4 Input the NAME.



You can store names up to 10 letters.

[PARAM] button: moves the cursor.

[VALUE] button: selects letters.

You can use all the Alphabet letters large and small, signs / symbols and digits.

To jump to the beginning of each list, hold down the [JUMP] button, and touch the [VALUE] button.

The name put here is only temporary. Do the recording operation to save it, as explained on the next page.

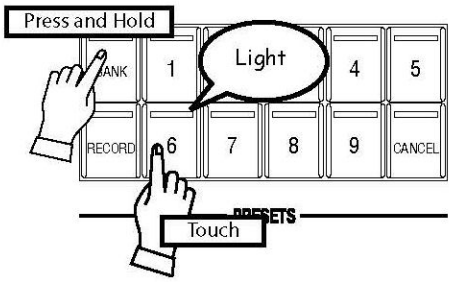
Record into the Combination Presets

Example: Record into "6-2"

1 Enter the Name

Enter the name for the Combination Preset if necessarry. (P. 60 #1)

2 Select the Bank

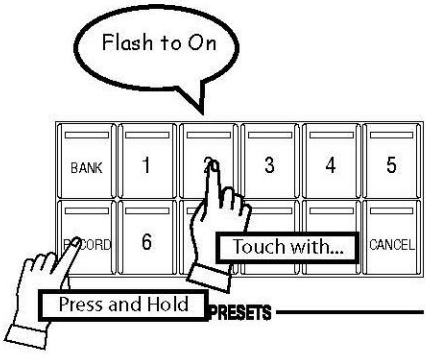


While holding down the [BANK] button, touch the Number button [6].

The LED on the Number button indicates the Bank while you are holding down the [BANK] button.

This operation is not necessary, if you do not wish to change the Bank.

3 Select the Number



To save the preset, press the Number button [2], while holding down the [RECORD] button. The Preset becomes final and the display shows as follows for a few seconds.

`Recording Preset...`

When the recording is completed, the LED on the Number button [2] flashes for a while. (The recorded Preset will be automatically selected.)

The display will return to the previous screen.

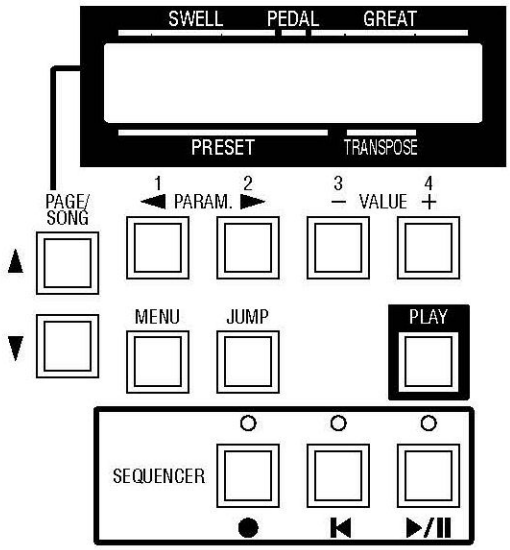
- ❖ *You can not record to the Number button [CANCEL] by this operation.*

NOTE: The Preset data recorded will not be lost even after you switch off the power.

USING THE CONTROL PANEL

OPERATION CONTROL PANEL

The CONTROL PANEL allows the deep editing of the adjustable parameters of the A-405, and shows the status of the organ at any given time. It is the "Nerve Center" of the Organ.

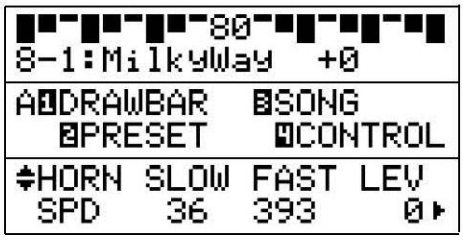


There are PLAY, MENU, and FUNCTION modes in the display.
The buttons and knobs in each mode is explained on the following pages.

PLAY mode

MENU mode

FUNCTION mode



The PLAY mode is the basic display for all the operations. The necessary information for normal play will be displayed.

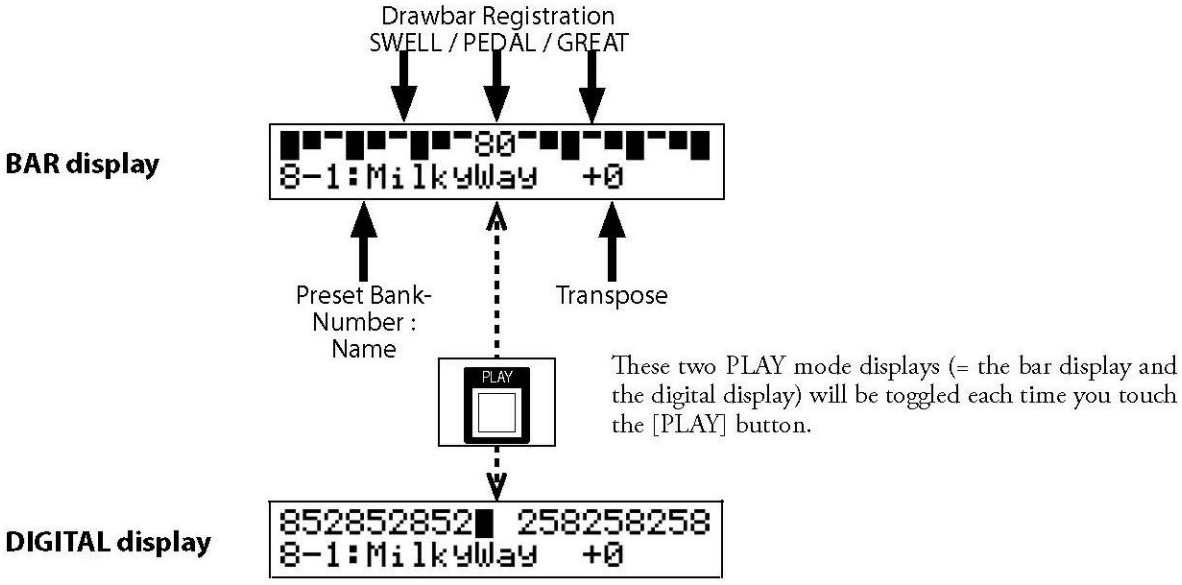
There are two types of PLAY mode screens to display the Drawbar Registration.

One is by showing the length of the bars in graphic display and the other by digits.

To Locate this mode:

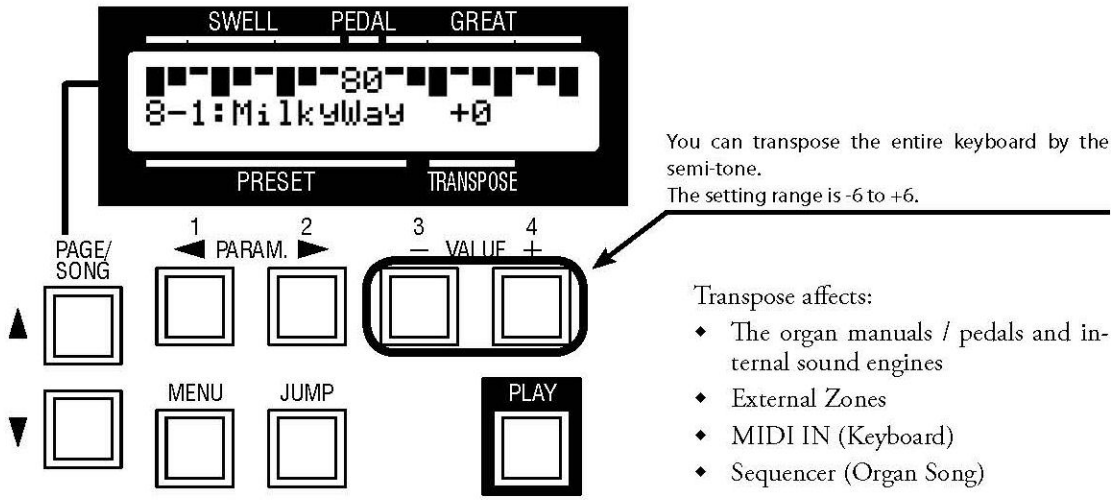
1. Immediately after powered ON and the start up process is complete, the PLAY mode is displayed.
2. If a different mode is displayed, touch the [PLAY] button.

How to read the display



These two PLAY mode displays (= the bar display and the digital display) will be toggled each time you touch the [PLAY] button.

Button operation in this mode



You can transpose the entire keyboard by the semi-tone.
The setting range is -6 to +6.

Transpose affects:

- The organ manuals / pedals and internal sound engines
- External Zones
- MIDI IN (Keyboard)
- Sequencer (Organ Song)

MENU MODE

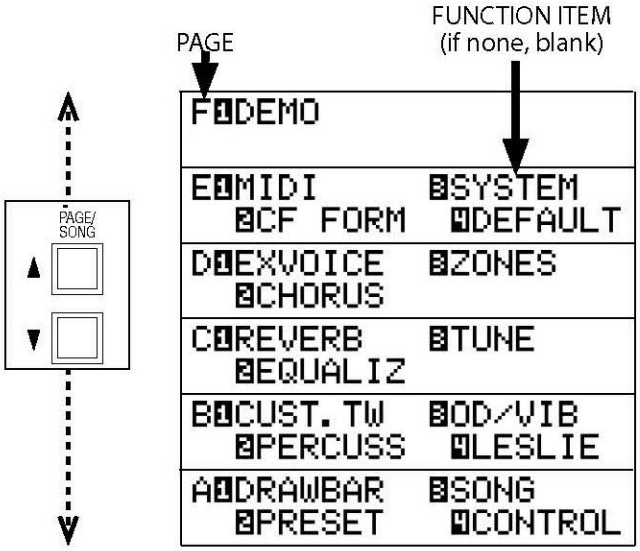
The MENU mode displays the path for each function.

To locate this mode:

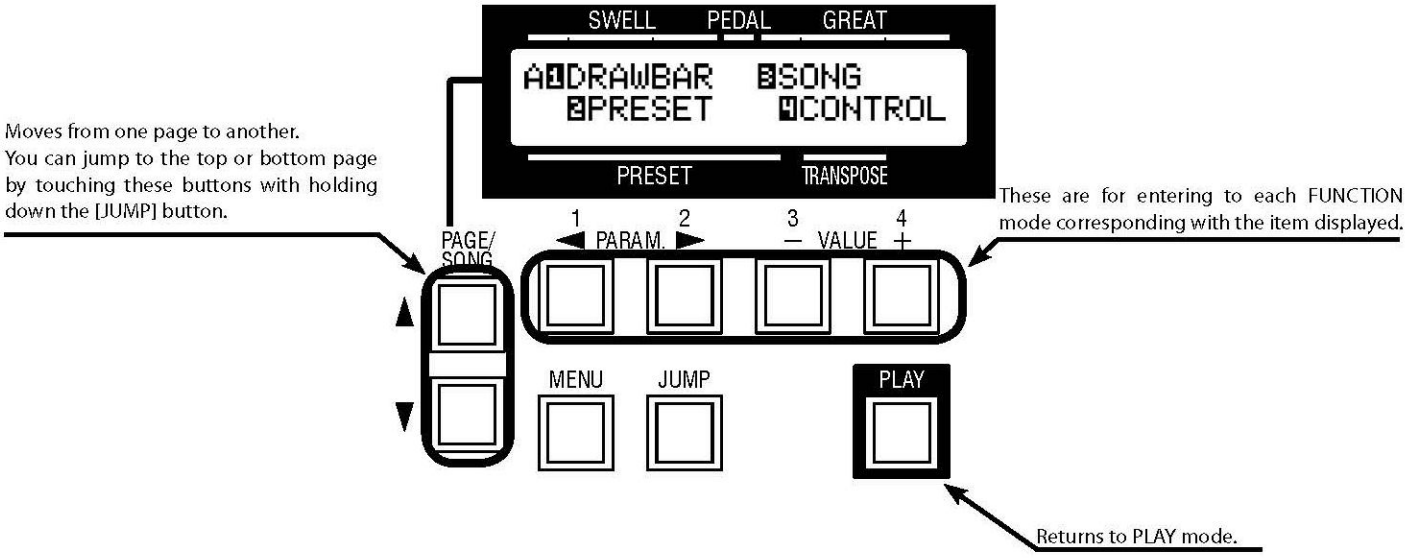
Touch the [MENU] button.

There are several pages which contains various FUNCTION displays. Move from page to page and find the item you wish to edit and touch the numbered button to view the desired display.

How to read the display



Button operation in this mode



Menu and their contents

Page A

1. **DRAWBAR**

   You can set the Parameter relating to the Drawbar sound of each keyboard. (P. 58)

2. **PRESET**

   You can name your Combination Presets and determine how to recall them. (P. 60)

3. **SONG**

   Song Player controls. (P. 98)

4. **CONTROL**

   Modify the controller settings. (P. 62)

Page B

1. **CUST. TW**

   Controls the voicing of the virtual Tonewheel set of the Manual Keyboard, wheel by wheel. (P. 66)

2. **PERSUSS**

   You can set the parameters of the Percussion sound. (P. 69)

3. **OD/VIB**

   You can change the settings relating to Overdrive, Vibrato and Chorus. (P. 74)

4. **LESLIE**

   Adjust the settings for the built-in virtual Leslie effect and the control of External Leslie Speaker. (P. 70)

Page C

1. **REVERB**

   Adjust the settings for the Reverb effect. (P. 79)

2. **EQUALIZ**

   Adjust the settings for the Equalizer. (P. 78)

3. **TUNE**

   Adjust the overall tuning of the A-405. (P. 61)

Page D

1. **EXVOICE**

   Adjust the settings of the Extra Voices. (P. 76)

2. **CHORUS**

   Adjust the settings of the Chorus effect. (P. 80)

3. **ZONES**

   Setting the internal and external zones. (P. 90)

Page E

1. **MIDI**

   Adjust the basic MIDI settings. (P. 92)

2. **CF FORM**

   Initializing the CF card. (P. 97)

3. **SYSTEM**

   Adjust the Global System Parameters and the display information. (P. 82)

4. **DEFAULT**

   Resets the A-405 to the default settings as shipped from the factory. (P. 81)

Page F

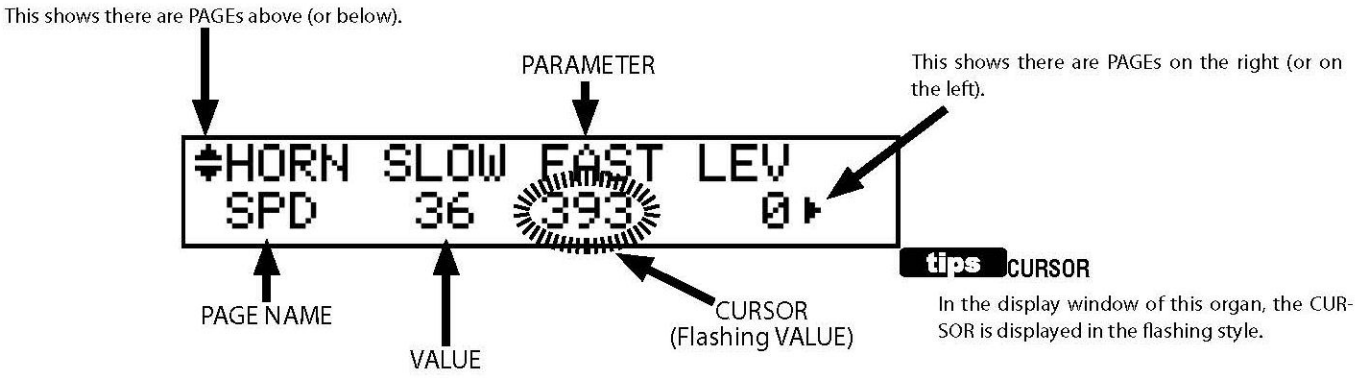
1. **DEMO**

   Plays demonstration performance. (P. 23)

FUNCTION MODE

The FUNCTION mode is for making each setting and adjustment.
There are many displays, but the basic operation is the same.

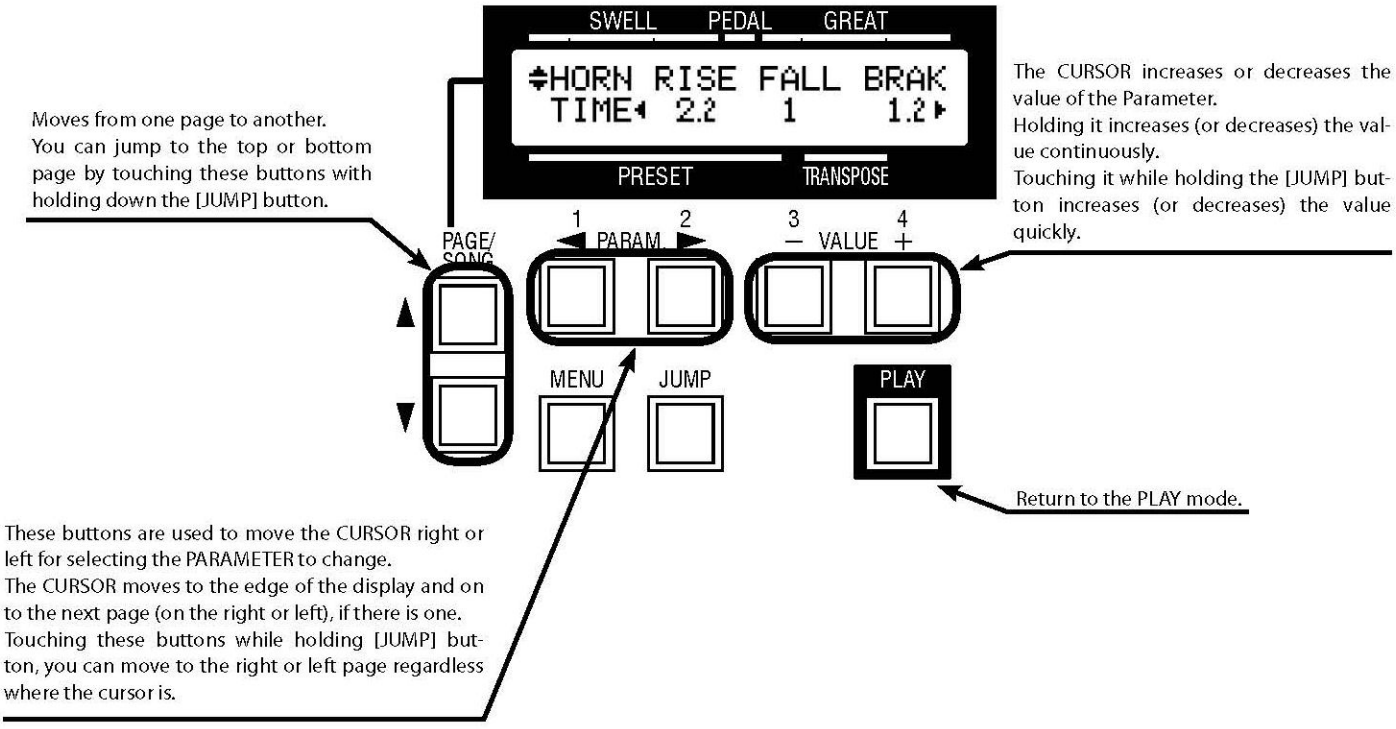
How to read the display



tips CURSOR

In the display window of this organ, the CURSOR is displayed in the flashing style.

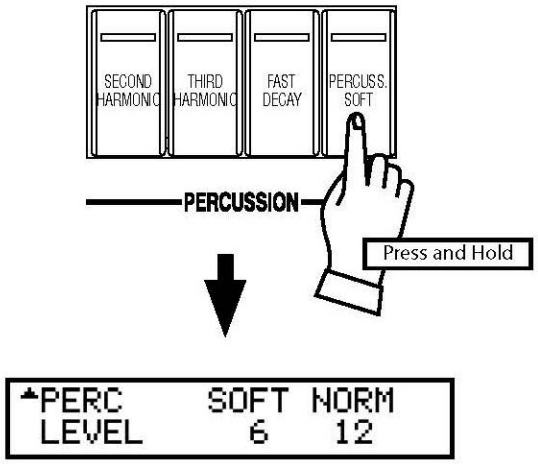
Button operation in this mode



Each button on the panel has a "SHORT-CUT" capability, so that you can easily move to each FUNCTION mode. By holding down the button, you move directly to the desired mode display. You can save time to search the page for the parameters you want to change.

Example of operation:

Move to the Percussion function mode.



For example, if you wish to "SHORT CUT" to the Percussion setting, go to the PERCUSSION function mode display, by holding down either [SECOND HARMONIC], [THIRD HARMONIC], [DECAY FAST], or [VOLUME SOFT] for a moment.

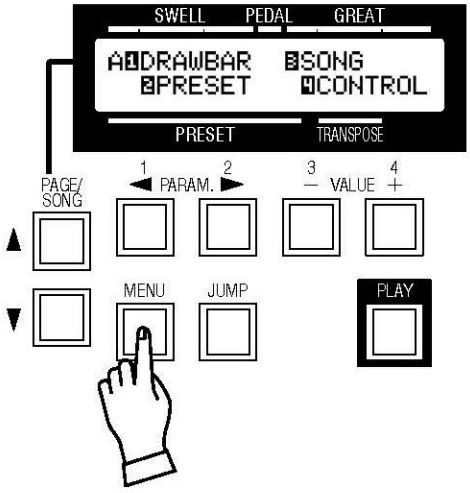
Short-cut buttons will be explained in the next Chapter "SETTING THE PARAMETERS".

NOTE: You can change the time for holding down the button for "SHORT CUT". (P. 65 #28)

Example of operation:

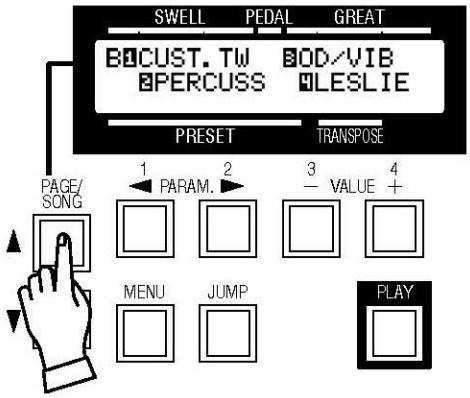
Adjusting the DECAY TIME of the Percussion [FAST]

1 Go to the MENU mode.



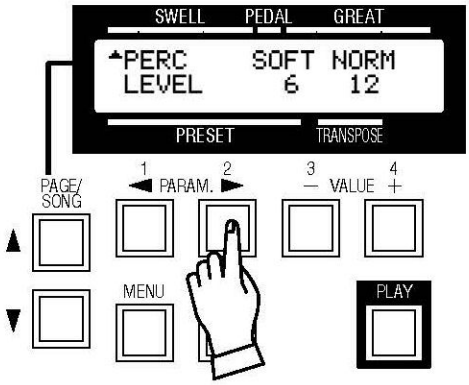
Touch the [MENU] button.
The MENU mode is displayed.

2 Select the PAGE.



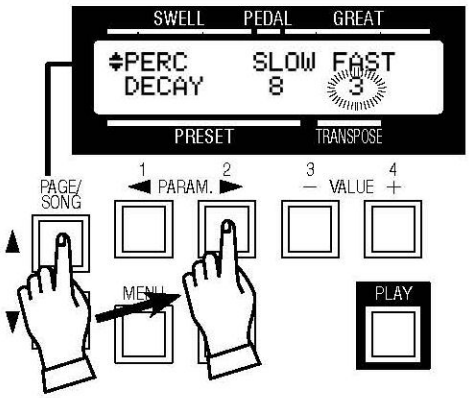
Search for the PERCUS page, using the [PAGE] button.
"PERCUS" is on page B. Select page [B].

3 Select the menu item.



Touch the [2] button for "PERCUSS".
Now you are on the first page of the Percussion function display.

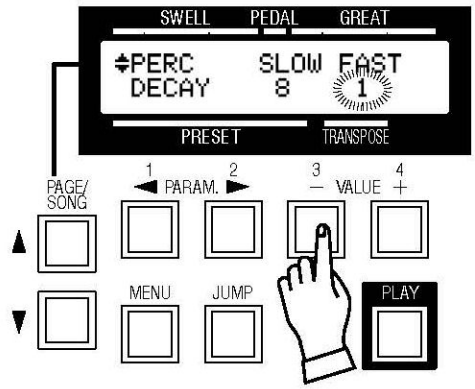
4 Move the CURSOR to the Parameter you want to change.



DECAY TIME is on the "DECAY" page. Move to that page using the [PAGE] button.

"FAST" is on the right side of the display. Move the CURSOR (flashing value) to "FAST" using the [PARAM] button.

5 Change the value.



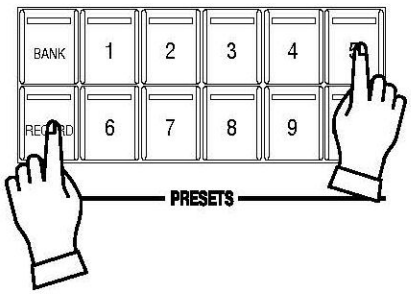
Decrease the value, using the [VALUE] button.

NOTE: Repeat the operation 1 - 5, if you also wish to change the other parameter.

6 Record into the Combination Presets.

Changing this or any other Preset Parameters are temporary unless saved into a Combination Preset.

If you want to continue to use the changed value hereafter, you must record the value into the Combination Preset.



tips PRESET PARAMETERS

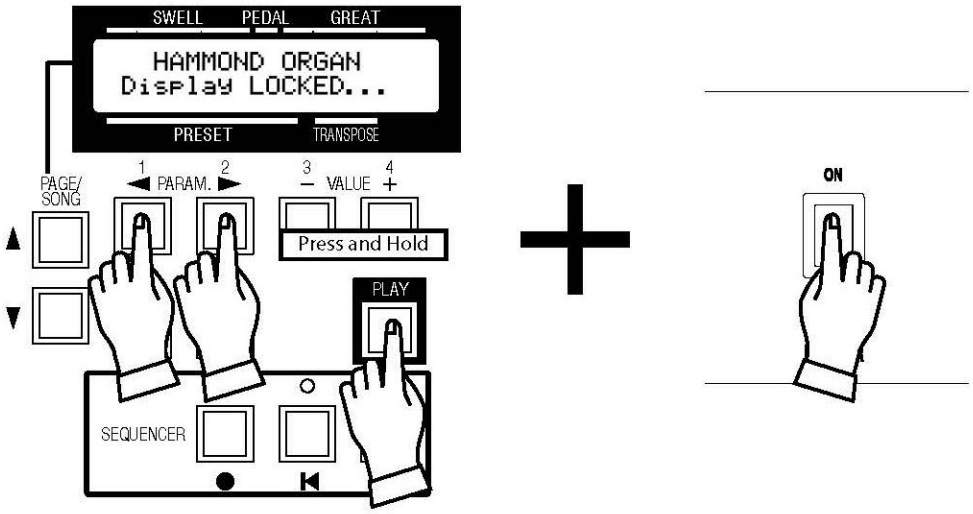
Preset Parameters are the Parameters to be recorded into each Combination Preset.

They include the Parameters for setting the status of the buttons/knobs on the panel, such as "Decay Fast" and many others.

The general common Parameters (which are not included in the Combination Presets) are called "Global Parameters".

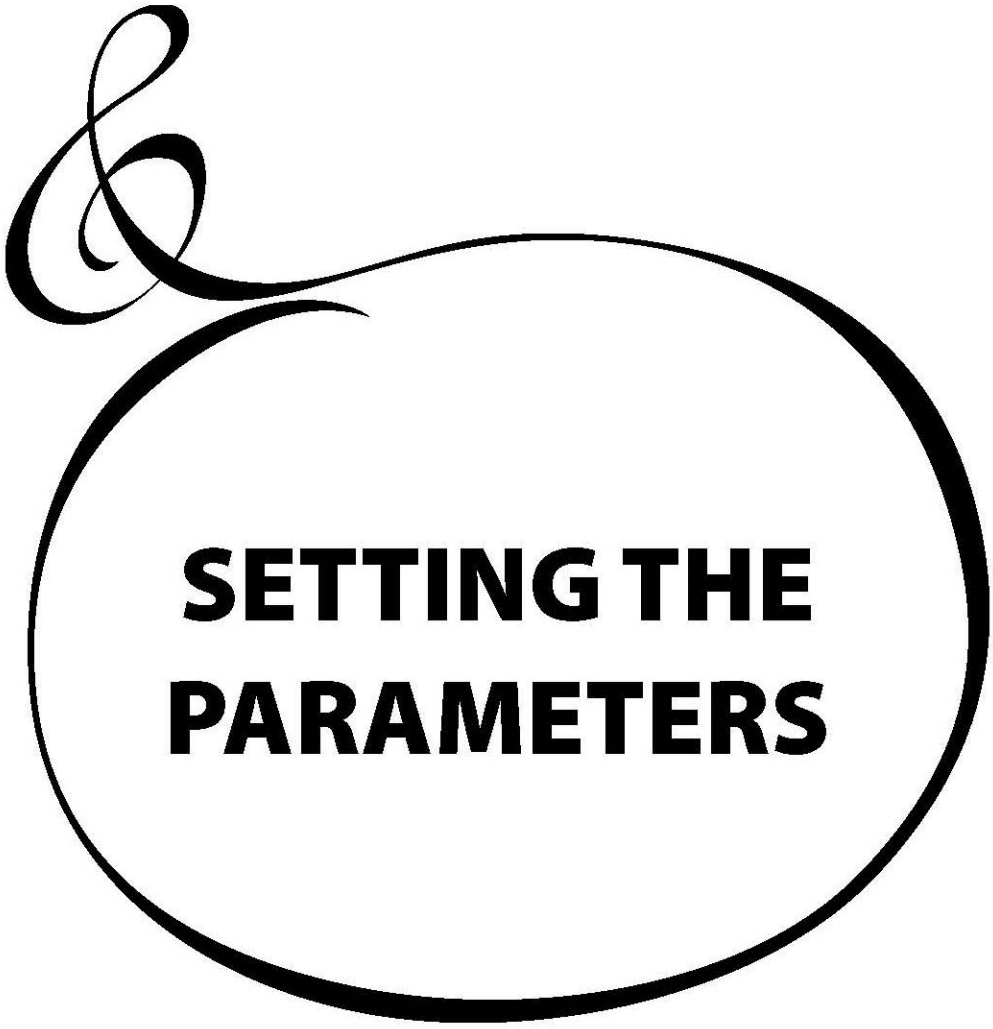
LOCK THE DISPLAY IN PLAY MODE

This advanced featyre allows youto put the organ into a special playing mode whereby the Control Panel is rendered inoperative. Pressing any of the Select Touch Buttons will have no effect. This is useful when you want to place the organ in public halls, Churches or auditoriums.



To initate the Display Lock function, switch on the power pressing and holding both PARAM [◄], [►] buttons and the [PLAY] button together. "Display LOCKED..." will be displayed for a few seconds. To unlock it, do the same thing as above. This time "Display UNLOCKED.." will appear for a few seconds.

NOTE: You can operate the Transpose while the Display Lock function is on.

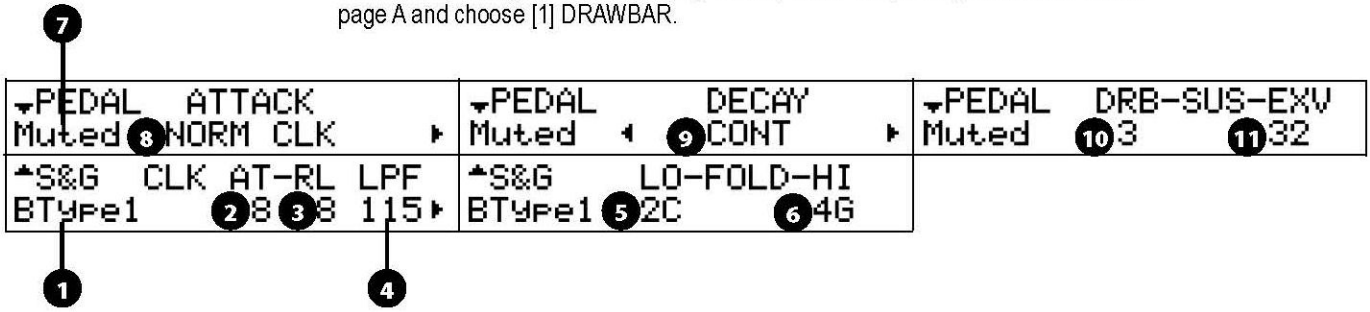


SETTING THE PARAMETERS

In this mode, you can set the Parameter relating to the Drawbar sound of each keyboard.

To locate this mode:

Touch the [MENU] button and display MENU, touch the [PAGE] button and select page A and choose [1] DRAWBAR.



◆MANUAL DRAWBARS (SWELL and GREAT)

1. TONEWHEELS

Select the Virtual TONEWHEEL set (waveform) for the manual drawbars.

- **BType1:** The traditional Tonewheel sound of B-3/C-3.
- **BType2:** This sound includes more leakage noise and flutter.
- **Mellow:** Transparent sine wave.
- **Brite:** The analog-oscillating sound of the Vintage Hammond X-5.
- **Saw:** Sawtooth waveform (Non-Hammond "Combo Organ" Style).

2. CLICK - ATTACK LEVEL

The higher the value, the louder the click volume. At 4 no key click is pronounced. Also, when the value is below 4, the attack speed of the drawbar voices slows.

3. CLICK - RELEASE LEVEL

The higher the value, the louder the click volume. At 4 no key click is pronounced. Also, when the value is below 4, the release rate slows.

4. CLICK - LPF

This allows you to set the tone of the Key-Click.

The setting range is 0 - 127. The larger the value, the brighter the Key-Click.

5. FOLD-BACK - LOW

This allows you to set at which key the 16′ Drawbars starts to FOLD-BACK. (Fold-back: Repeating the same octave in a certain range on the keyboard.)

The first key (= the far left key on the manual) is displayed as "1C". The setting range is 1C - 2C.

6. FOLD-BACK - HIGH

This allows you to set at which key the 1′ Drawbar starts to FOLD-BACK (repeat the same octave) in the upper-most range. The set range is 4G - 5C.

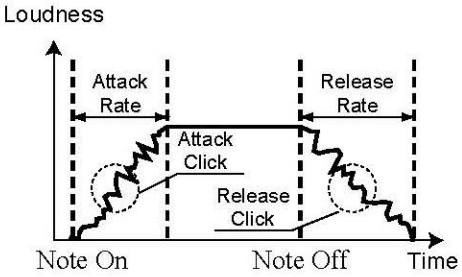
NOTE: The FOLD-BACK sets not only the 1′ but also 1⅓′, 1⅗′, 2′ and 2⅔′ Drawbars.

tips TONE-WHEEL SET

Each Tone-wheel set allow you to make finer adjustment. (P. 66)

tips KEY-CLICK

The "Key Click" is the noise heard every time the key is touched or released on the B-3/C-3, as the voice is generated by mechanically switching ON and OFF on these models. The function on this model simulates the good old noise.



tips EXAMPLE OF CLICK

Simulating the multi-contact keyboard represented by the B-3/C-3: AT=8, RL=8

Simulating the PCM synthesizer that only attack pronounces the key click: AT=8, RL=4

Simulating the single-contact keyboard represented by the X-66: AT=4, RL=4

The slow envelope like the pipe organ: AT=0, RL=0

tips FOLD-BACK

As the number of the tonewheels was limited on the B-3/C-3, the organs were designed to repeat the same octave in the upper-most or lower-most range. This feature of this model reproduces that.

◆PEDAL DRAWBARS

7. TONEWHEELS

This allows you to select the Tonewheel set (waveform) of the PEDAL Drawbars.

Normal: The traditional B-3/C-3 Tonewheel sound.
Muted: Analog-oscillating sound represented by the vintage Hammond X-5.
Synth1: Sawtooth waveform with sweep filter.
Synth2: Dull square waveform.

8. ATTACK

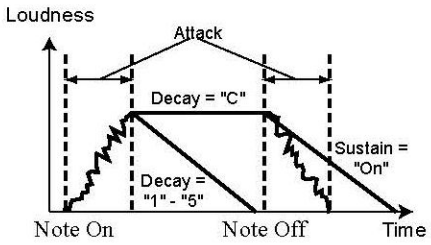
This allows you to set the Attack Rate and the Key-Click Volume at ATTACK and RELEASE.

MAX CLK: Immediate attack and the key-click is loud.
NORM CLK: Immediate attack and the key-click is normal.
SOFT CLK: Immediate attack and the key-click is soft.
NO CLK: A slightly slower attack without key-click.
SLOW ATK: Slow attack without key-click.

9. DECAY RATE

This allows you to determine whether the Pedal voice remains at the same volume as a note is held, or if the voice decays, as like a plucked string.

The setting range is 1 - 5 and C. The higher the value, the longer the decay time. There is no decay at C.



10. SUSTAIN LENGTH - DRAWBAR

This allows you to set the Release Rate (= the decay time after you release the key), when the [PEDAL SUSTAIN] button is ON.

1 is the shortest, and 5 is the longest decay time.

NOTE: You can locate this page by holding down the [PEDAL SUSTAIN] button as well.

tips SUSTAIN

Unlike Synthesizer nomenclature, on the A-405 "Sustain" refers to note decay after note release. On a synth envelope generator this setting would be called "T4" or "Release".

11. SUSTAIN LENGTH - EXTRA VOICE

This sets the sustain length for Extra Voice (P.76), when the [PEDAL SUSTAIN] button is ON.

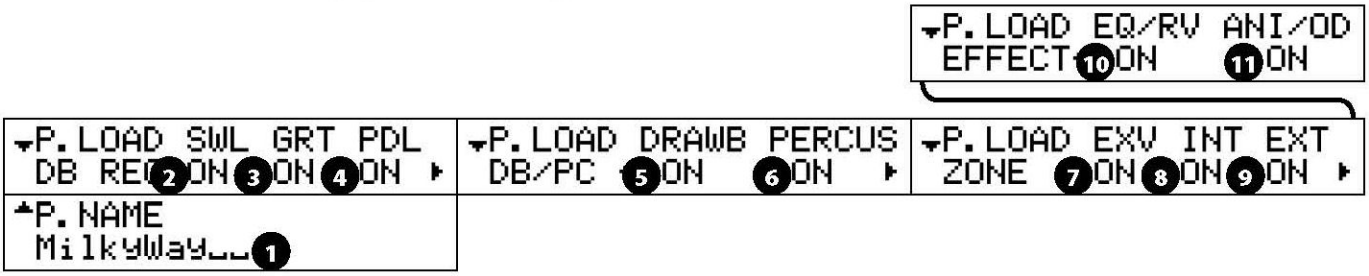
0 is the shortest, and 63 is the longest decay time.

NOTE: All the parameters in these modes are Preset Parameters. They are recorded into the Combination Preset.

In this mode, you can name your Combination Presets and determine how to recall them.

To locate this mode:

Touch the [MENU] button and display MENU, then touch the [PAGE] button to select page A and touch the [2] PRESET button.



◆PRESET NAME

1. PRESET NAME (P)

This allows you to name the present Combination Preset using up to 10 letters.

Move the cursor by the [PARAM] button, and choose the letters by the [VALUE]button.

This change will be lost if you do not record it, same as the other Preset Parameters.

NOTE: The parameters by the names with (P) on the end are Preset Parametes, and are recorded to each Combination Preset.

◆PRESET LOAD

These allows you to set the operation when you depress the Preset button.

2. PRESET LOAD - SWELL REGISTRATION (B)

This allows you to set whether or not to recall the Drawbar Registration of SWELL manual.

3. PRESET LOAD - GREAT REGISTRATION (B)

This allows you to set whether or not to recall the Drawbar Registration of GREAT manual.

4. PRESET LOAD - PEDAL REGISTRATION (B)

This allows you to set whether or not to recall the Drawbar Registration of PEDAL keyboard.

5. PRESET LOAD - DRAWBAR (B)

This allows you to determine whether or not to recall the Parameters relating to the Drawbars of each keyboard, such as the Tonewheel Set.

6. PRESET LOAD - PERCUSSION (B)

This allows you to determine whether or not to recall the Parameters relating to the Percussion.

7. PRESET LOAD - EXTRA VOICE (B)

This allows you to determine whether or not to recall the Parameters relating to the Extra Voice.

8. PRESET LOAD - INTERNAL ZONE (B)

This allows you to determine whether or not to recall the Parameters relating to the Internal Zone and Coupler such as [PEDAL to GREAT], and [GREAT to PEDAL].

9. PRESET LOAD - EXTERNAL ZONE (B)

This allows you to determine whether or not to recall the Parameters relating to the External Zone to control the external MIDI equipment.

10. PRESET LOAD - EQUALIZER / REVERB (B)

This allows you to determine whether or not to recall the Parameters relating to the Equalizer, Reverb and Chorus (Extra Voice).

11. PRESET LOAD - ANIMATION / OVERDRIVE (B)

This allows you to determine whether or not to recall the Parameters relating to the Vibrato, Leslie and Overdrive.

NOTE: Each Parameter (B) of Preset Load is a Bank Parameter. It is set only for the BANK currently selected.

TUNE

In this mode, you adjust the overall tuning of the A-405.

To locate this mode:

Touch the [MENU] button and display MENU, select page C by the [PAGE] button and touch the [3] TUNE button.

1. MASTER TUNE

This is changing the tuning or "pitch" of the entire organ.

The setting range is A = 430 - 450 Hz.

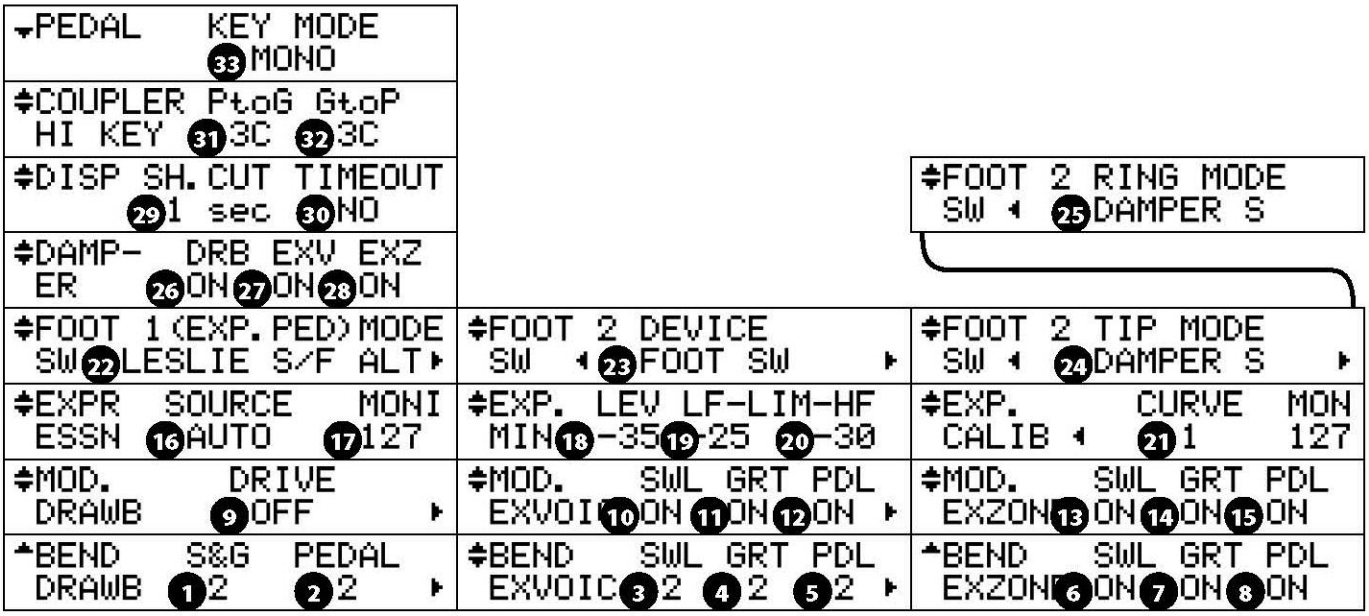
NOTE: The Parameter in this mode is a Global Parameter. It is recorded when the value is set. Also, It is common at each Combination Preset.

In this mode, you can adjust the settings of each controller.

You may change the roles of several knobs and switches mounted on this organ. Also, on the underside of the key bed is a jack for connecting the foot switch. You must choose either of them in this mode.

To locate this mode:

Touch the [MENU] button and display the MENU and select page A by the [PAGE] button, and then touch the [4] CONTROL button.



◆PITCH BEND

1. **BEND - DRAWBAR SWELL & GREAT (P)**
2. **BEND - DRAWBAR PEDAL (P)**
3. **BEND - EXTRA VOICE SWELL (P)**
4. **BEND - EXTRA VOICE GREAT (P)**
5. **BEND - EXTRA VOICE PEDAL (P)**

These set the range of the Pitch Bend wheel by semi-tone. Both the SWELL and GREAT Drawbar parts change at the same time, as they use the same Virtual Tone-Wheels.

The setting range is 0 - 12.

6. **BEND - EXTERNAL ZONE SWELL (P)**
7. **BEND - EXTERNAL ZONE GREAT (P)**
8. **BEND - EXTERNAL ZONE PEDAL (P)**

These are for deciding whether or not to send the Pitch Bend information to each External Zone. It is sent at ON, and not sent at OFF.

◆MODULATION

9. **MODULATION - DRAWBAR OVERDRIVE (P)**

This is for deciding whether or not to control the Overdrive amount of the Drawbars with the Modulation Wheel. To use this, the OD-SW (P. 74 #1) must be turned ON.

10. **MODULATION - EXTRA VOICE SWELL (P)**
11. **MODULATION - EXTRA VOICE GREAT (P)**
12. **MODULATION - EXTRA VOICE PEDAL (P)**

These are for deciding whether or not to send the Modulation Wheel information to each part of the Extra Voices. If you turn these switches ON and operate the Modulation Wheel, Vibrato effect etc. is added to the Extra Voices.

13. MODULATION - EXTERNAL ZONE SWELL (P)

14. MODULATION - EXTERNAL ZONE GREAT (P)

15. MODULATION - EXTERNAL ZONE PEDAL (G)

These are for deciding whether or not to send the Modulation Wheel information to each External Zone. It is sent at ON, and cut at OFF.

◆EXPRESSION

16. EXPRESSION - SOURCE (G)

Determines what to use for controlling the Expression.

AUTO: The Expression is controlled usually with the Expression Pedal, and with the Sequence Data when the Sequencer is playing.

INT: The Expression Pedal is always controlled with the Expression Pedal. You may use this when you want to control the Expression Pedal with your foot, even while the Sequencer is playing.

MIDI: The Expression is controlled by receiving CC#11 from the MIDI IN terminal through the control channel. You may use this when you want to control the Expression with the external sequencer.

17. EXPRESSION - MONITOR

Displays the present Expression value. You can find the causes for such trouble as "no sound", or "non-function" of the Expression Pedal, by checking if the Expression value changes normally. Also, this can be a guide when you want to "fade in" from "quiet".

18. EXPRESSION - MINIMUM LEVEL (G)

It sets the output level when the Expression is minimum.

The setting range is OFF, -40dB to 0dB. "OFF" makes no sound when the Expression is minimum, "0dB" does not reduce volume level.

19. EXPRESSION - LIMIT LF (G)

20. EXPRESSION - LIMIT HF (G)

These are for setting the level to maintain for low and high frequencies when the Expression is minimum.

The setting range is OFF, -40dB to -5dB. This function does not work at "OFF". Otherwise the level is maintained even if the Expression is minimum.

21. EXPRESSION - CURVE (S)

This parameter sets how the velue should vary corresponding to the depth of the expression pedal. The setting range is 1 to 3. Refer to the curves on the bottom right figure.

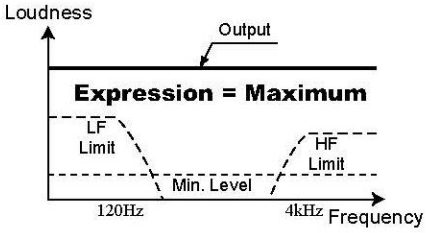
NOTE: Thie parameter is System Parameter. This parameter will be recorded when set. It is common in each Combination Preset. It is not recorded to the setup.

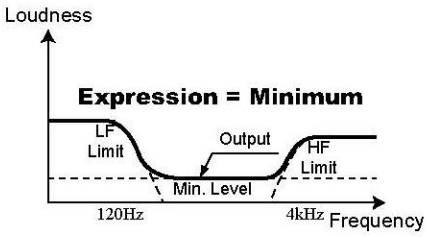
tips EXPRESSION LIMIT

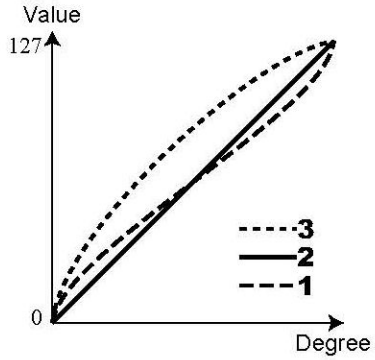
One of the human ear's characteristics is that when the volume falls, the sound of high or low frequencies becomes difficult to hear.

On this model, it is rectified. The perceived frequency range is maintained no matter what overall volume is chosen.

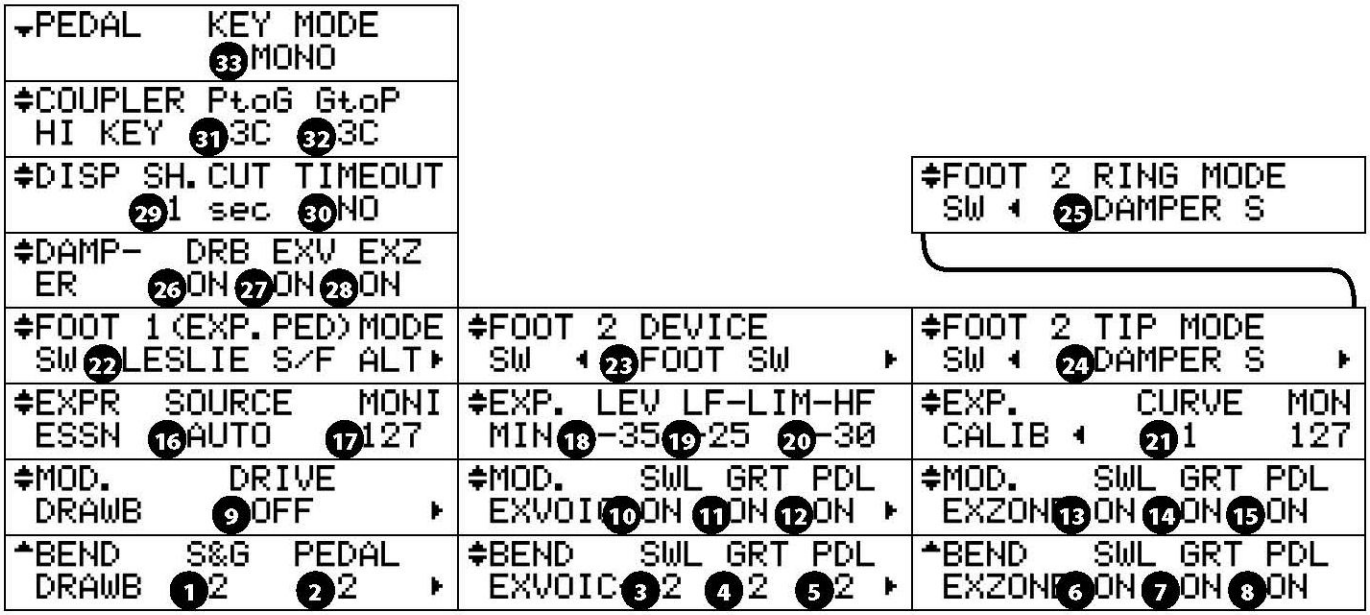
The similar function is adopted on most home audio equipment. It is called the "loudness" function.







NOTE: The parameters by the names with (P) on the end are Preset Parameters, and the recorded to each Combination Preset. (G) is for "Global". These parameters will be recorded when set, and are common in each Combination Preset.



◆FOOT SWITCH

22. FOOT SWITCH 1 - MODE (G)

This is for setting the function of the Foot Switch on the Expression Pedal.

OFF: Does not work.

LESLIE S/F ALT, MOM, TRI:

These are for switching SLOW/FAST of the Leslie effect.
At ALT, SLOW/FAST is alternately switched at each press of the Foot Switch, and at TRI, it switched OFF it pressed for longer than 1 second.
At MOM, the Leslie effect gets faster, as long as you keep pressing the foot switch, and it gets slower if you release it.

DAMPER SWELL, GREAT, PEDAL:

They hold the Notes of the SWELL, GREAT and PEDAL keyboards, respectively as long as you keep depressing the Foot Switch.

PRESET FWD, REV:

They are for switching one Combination Preset to the right (FWD) or the left (REV).

SPRING:

This is for producing a springing sound of the Spring Reverb.

DELAY TIME:

This function sets the delay time (P. 79 #4) of the Reverb effect for Drawbars, by the interval of pressing the Foot Switch. By pressing and holding the Foot Switch, the delay sound will be erased.

RHY. START:

This is used for controlling Start/Stop of the rhythm, when a Rhythm file is read into the Sequencer.

RHY. FILL IN:

This is used for controlling Fill-in of the rhythm, when a Rhythm file is read into the Sequencer.

23. FOOT SWITCH 2 - DEVICE (G)

This is for deciding which equipment is connected to the Foot Switch 2 jack.

PEDAL: for Foot Switch.

CU-1: for the Leslie Switch CU-1 (= optional).

24. FOOT SWITCH 2 - TIP MODE (G)

This is for setting the function of the function of the Foot Switch 2 jack.

25. FOOT SWITCH 2 - RING MODE (G)

This is for setting the function on the RING contact, if you use the Foot Switch equipped with the stereo jack.

tips DAMPER

The word "Damper" comes from the damper pedal of the piano.

It is also referred to as a "Sustain" pedal. Notes are held as long as the pedal is depressed.

tips SPRING REVERB

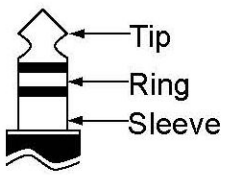
The Spring Reverb is a reverb effect to obtain the reverberation using the spring resilience. It was easily affected by a shock and it use to give a big "clang".

However, this drawback has come to be used as an effect in the genre of progressive rock. This organ gives the simulated sound.

tips TIP AND RING

When you look at the plug of the stereo headphones, there are 3 metal parts. The head portion is called "Tip" and the middle portion is the "Ring". The part on the cord side is called "Sleeve".

The ordinary Foot Switch has only the Tip and the Sleeve, but the Foot Switch with two switches in one plug or two Foot Switches using the L/R converting cable can be connected.



◆DAMPER

26. DAMPER - DRAWBAR (G)

27. DAMPER - EXTRA VOICE (G)

28. DAMPER - EXTERNAL ZONE (G)

This is for determining whether to send the Damper information to each section. The combination of the foot switch and these Damper parameters decide on which part of which section the Damper effect is added.

For example, if you want to add the Damper effect on the Extra Voices of the Swell manual with the foot switch on the Expression Pedal, set FOOT SWITCH 1 - MODE (#21) at "DAMPER SWELL", and DAMPER - EXTRA VOICES (#26) at "ON".

◆DISPLAY

29. DISPLAY - SHORT CUT (G)

It sets the time limit to the short cut function.

The range 0s to 2s and NO short cut. The short cut function does not work when the value is in "NO".

30. DISPLAY - TIME OUT (G)

It sets the time limit to return to the previous screen from the one displayed by using the short cut operation.

The range is 4s to 16s and NO time out. The time out function does not work when the value is "NO".

◆COUPLER

31. COUPLER - HI KEY PEDAL TO GREAT (P)

This is used for determining the highest note on which the Pedal-to-Great will work. This value is set also if you touch the desired note on the Great manual holding down the [JUMP] button, instead of using the [VALUE] button.

NOTE: You can locate this page by holding down the [PEDAL TO GREAT] button as well.

32. COUPLER - HI KEY GREAT TO PEDAL (P)

This is used for determining the highest note on which the Great-to-Pedal function will work. This value is set also if you touch the desired note on the Great manual holding down the [JUMP] button, instead of using the [VALUE] button.

NOTE: You can locate this page by holding down the [GREAT TO PEDAL] button as well.

◆PEDALBOARD

33. PEDAL - KEY MODE (P)

This allows you to set the Pedal voice mode.

POLY: Makes is possible to play harmony (up to 8 notes).

MONO:

Only one note sounds. If multiple notes are played, only the last note depressed will sound.

NOTE: The previously released note will be cut when you touch the new one, even when the PEDAL Part is in the POLY mode and SUSTAIN is ON.

NOTE: The parameters by the names with (P) on the end are Preset Parameters, and the recorded to each Combination Preset. (G) is for "Global". These parameters will be recorded when set, and are common in each Combination Preset.

CUST. TW (CUSTom ToneWheels)

In this mode, you can regulate each virtual Tonewheel set of the Manual Keyboard, wheel by wheel.

The virtual Tonewheel set consists of 96 virtual Tonewheels of different pitches, and one wheel corresponds with plural notes and the footage of the Drawbars.

The relation is complicated. For example, the middle C of the 8′ and the C one octave lower of the 4′ use the identical wheel.

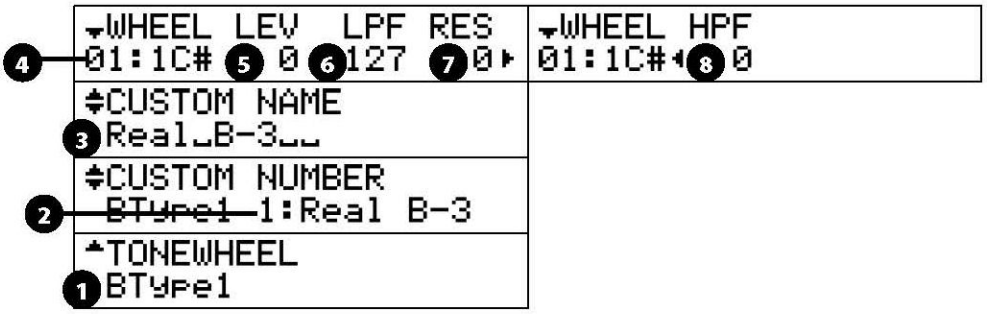
In this organ, you can save 5 types of settings per 1 Tonewheel set.

We call this "CUSTOM TONEWHEELS".

As a sample for customization, the typical 3 (or 4) types of settings are recorded when delivered from the factory.

To locate this mode:

Touch the [MENU] button and display MENU, select page B by the [PAGE] button, and then touch [1] CUST.TW button.



1. TONEWHEEL SET

This is for selecting the virtual Tonewheel set. Also, the temporary (= the present setting) automatically switches to the selected virtual Tonewheel set just selected now.

2. CUSTOM NUMBER

This is for selecting the "CUSTOM NUMBER" to use or compile. The "*" will be displayed when the virtual Tonewheel Parameters are changed from this Custom Number.

NOTE: This parameter is a Preset Parameter. It is recorded into the Combination Preset.

3. CUSTOM NAME

You can name the CUSTOM virtual TONEWHEELS set using up to 10 letters.

Move the cursor by the [PARAM] button and choose the letters by the [VALUE] button.

By touching the [VALUE] button while holding down the [JUMP] button, it jumps to the first of each letter type (space, 0, A, a).

The name set here, as well as the Tonewheel Parameters below, will be deleted, if you do not do the recording operation as explained on the next paragraph.

4. WHEEL NUMBER

Select the Number of the Wheel you want to regulate.

To select the Wheel Number, select the [VALUE] button here, or slightly move the footage of the Drawbar while depressing the key you want to regulate (see the illustration on the right).

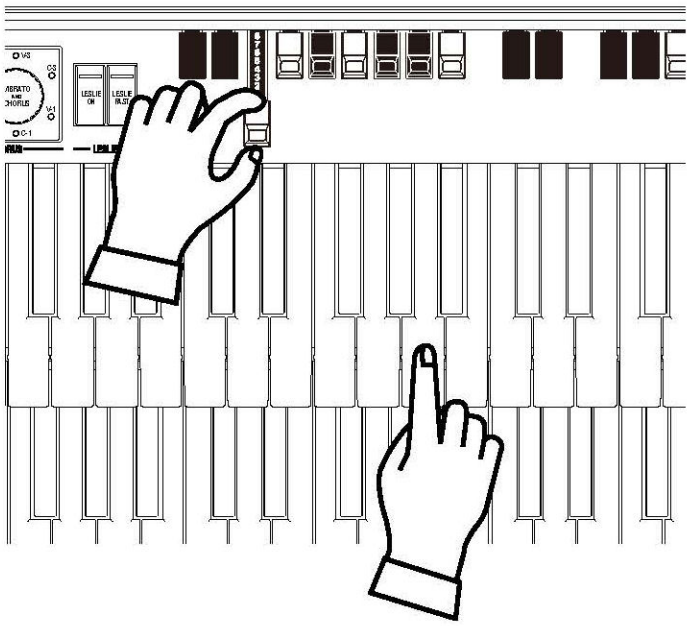
When the Wheel Number is selected, each parameter for the wheel (#5, #6, #7, #8) is displayed.

tips

INITIAL VALUE OF THE CUSTOM NUMBER

The typical settings are saved to the Number 1 - 3 (or 4), as the initial value.

For example, to the BType1, "Real B-3" simulating the well-preserved B-3/C-3 and "80's Clean" with less noise, rough sound "Noisy", and "Noisy 60" with louder leakage noise is stored.



How to select the WHEEL NUMBER

5. LEVEL

This is for setting the volume of a virtual wheel.

The setting range is -20 to +2dB. If you increase the value, it gets louder.

6. CUT OFF FREQUENCY - LPF

This is for setting the FREQUENCY to cut the TREBLE of a virtual wheel.

If you increase the value, a leakage noise is heard besides the original Tonewheel pitch.

If you decrease the value, the sound gets sweet and mild, as the treble is cut off.

The setting range is 0 - 127.

NOTE: If you decrease the value too low below the fundamental Tonewheel pitch, the wheel volume will be reduced.

7. RESONANCE - LPF

This is setting the boost or reducion of the level around the Cut Off Frequency - LPF (#6).

The setting range is -100 to +100. The higher value boosts treble, and lower values cut treble smoothly.

8. CUT OFF FREQUENCY - HPF

This is for setting the FREQUENCY to cut the BASS of this wheel.

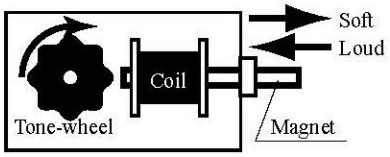
If you decrease the value, a motor hum (= noise) is heard besides the original virtual Tonewheel sound.

The setting range is 0 - 127.

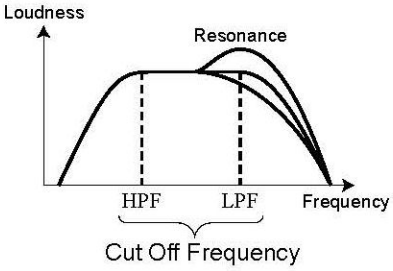
NOTE: If you increase the value too high above the original tonewheel pitch, the sound will get "thin".

NOTE: The parameters 3 - 8 are the virtual Tonewheel Parameters. If you do the recording operation of the next page, it works in common with the same virtual Tonewheel set of each Combination Preset.

NOTE: When you operate the parameters 3 - 8, if you do not the recording operation of the next page, it is lost when you turn off the power.



Concept of the LEVEL ADJUSTMENT



tips LEAKAGE NOISE

In the vintage electro-mechanical Hammonds, sometimes the signal from adjacent tonewheels would be picked up (or "leaked") along with the current tonewheel in play. This "hash" noise, another Hammond anomaly originally considered to be a defect grew to be an integral part of the Hammond sound.

"Mellow", "Brite", and "Saw" does not include the Leakage Noise.

tips DISTORTION

If you raise the Level and Resonance values too much, it changes the gain in the sound engine and may sometimes cause distortion, i.e. unpleasant noise.

In such a case, please lower these values.

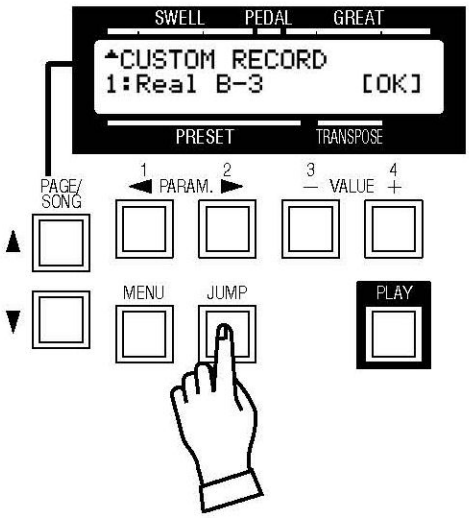
Record the CUSTOM virtual TONEWHEELS

The Tonewheel Parameters (= 3 - 8 of the previous paragraph) are for determining the Custom Number for recording. The Custom Number is selected and used, when you play.

1

Enter the Custom Name if desired.

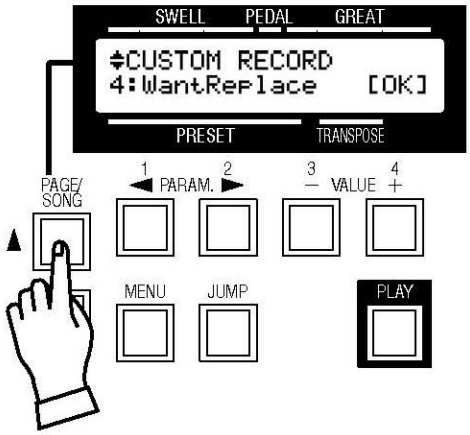
2



Touch the [JUMP] button in the setting mode of the Tonewheel Parameters.

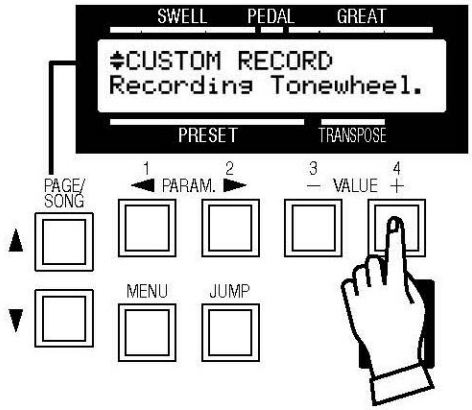
The mode for selecting the Custom Number to be recorded will be displayed.

3



Select the Custom Number to be recorded by the [PAGE] button.

4



It will be recorded if you touch [4] OK button.

The display will be as illustrated, while the recording is treated.

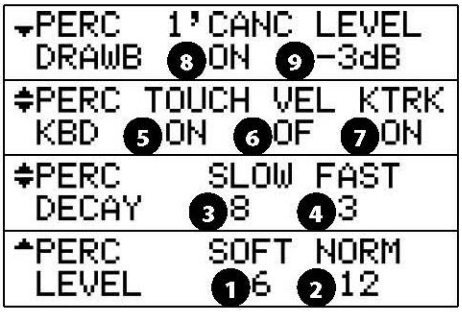
NOTE: If you do not want to record it, just touch the [MENU] button.

PERCUSS (PERCUSSion)

In this mode, you can set the parameter of the PERCUSSION sound.

To locate this mode:

1. Touch the [MENU] button and display MENU, then select page B by the [PAGE] button and touch [2] PERCUSS button.
2. Or, hold down either [SECOND HARMONIC], [THIRD HARMONIC], [DECAY FAST], or [VOLUME SOFT] button for a few moments.



1. LEVEL - SOFT

2. LEVEL - NORMAL

These are for setting the Volume of Percussion. SOFT is the volume when the [VOLUME SOFT] button is ON, and NORMAL is the volume when the [VOLUME SOFT] button is OFF.

3. DECAY - SLOW

4. DECAY - FAST

These are for setting the speed of the decay of the Percussion. SLOW is the speed when the [FAST] button is OFF, and FAST is the speed when the [FAST] button is ON.

The setting range is 1 - 9 and C. The higher the value, the longer gets the Decay Time. At C, there is no decay (= continuous).

5. KEYBOARD - TOUCH

This is for setting the method of triggering of Percussion.

ON: If you play legato, the notes including and after the second note do not sound (the envelope will not be reset).

OFF: Even If you play legato, all the notes produce sound, like a piano.

6. KEYBOARD - VELOCITY

Corresponds the Volume of Percussion with the Velocity.

ON: Percussion volume rises with increased keyboard velocity.

OFF: Percussion volume remains constant, regardless of velocity.

7. KEYBOARD - KEY TRACK

Changes the Percussion Volume by the position on the keyboard.

ON: As you play higher, the Percussion volume decreases.

OFF: Keyboard position has no effect on Percussion volume.

8. DRAWBAR - 1´CANCEL

This mutes the 1´ SWELL Drawbars while using Percussion.

ON: Mute.

OFF: Does not mute.

9. DRAWBAR - LEVEL

Decrease the volume of SWELL Drawbars while using Percussion.

-5dB: Decreases the volume by B-3/C-3 frequency response.

-3dB: Decreases the volume flatly.

0dB: Does not decrease the volume.

NOTE: This parameter works only when the [VOLUME SOFT] is OFF.

NOTE: The parameters in these modes are all Preset Parameters.

tips TOUCH

The B-3/C-3 had only one built-in Envelope Generator, and was not recharged until all the keys of the SWELL manual were released. This looks like a drawback, but it had the advantage that the sound did not get loose when chords were roughly played.

tips 1´ CANCEL

The B-3/C-3 had no key contact exclusive for Percussion but uses the 1´ contact for Percussion. On this organ, this is simulated.

tips DRAWBAR LEVEL

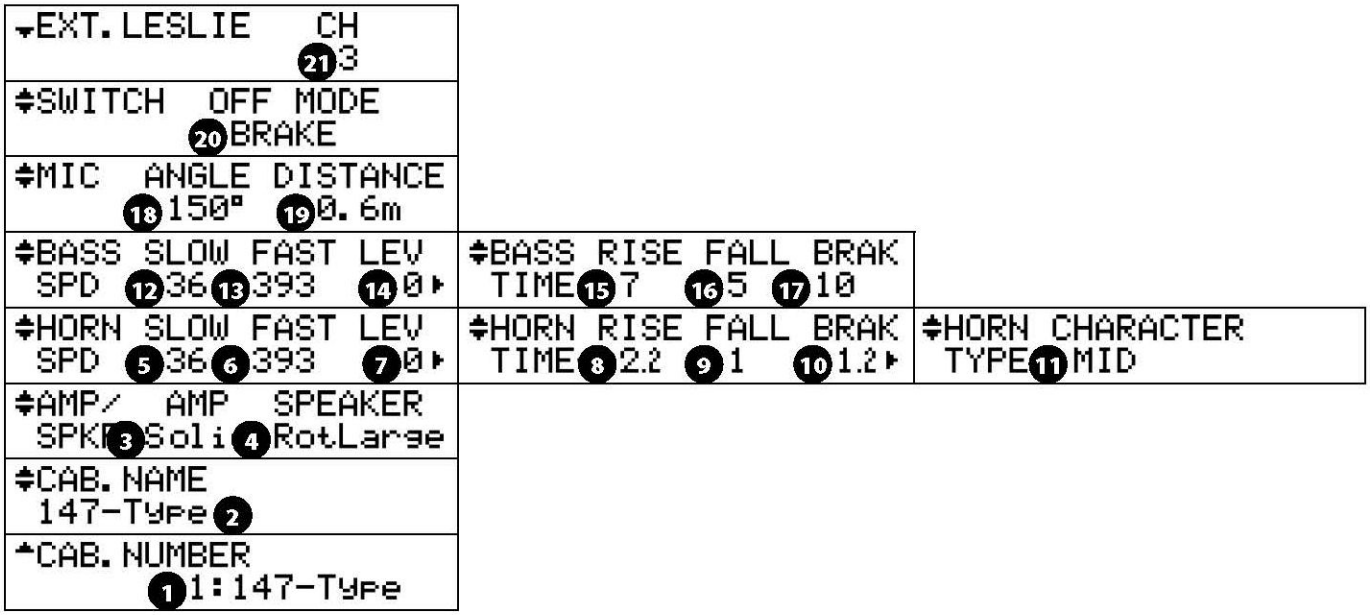
On the B-3/C-3, the Drawbar Volume was slightly reduced when the Percussion was engaged. This characteristic is modeled on this organ.

In this mode, you adjust the settings for the built-in Digital Leslie Effect and the External Leslie Speaker.

The Digital Leslie has many parameters to address. As you set these parameters to your liking. you will be creating a virtual Leslie "Cabinet". That is how the collection of Digital Leslie Parameters are stored, and exactly how they are named. You select the CABINET NUMBER in each Combination Preset.

To locate this mode:

1. Touch the [MENU] button to display the MENU. Then select page B by the [PAGE] button and touch [4] LESLIE.
2. Or, hold down either [LESLIE ON] or [LESLIE FAST].



◆CABINET NUMBERS

1. CABINET NUMBER (P)

Here you select the CABINET NUMBER to use in the Combination Presets.

The setting range is 1 - 8. the "*" will displayed when the Leslie Parameters are edited from the stored Cabinet Number.

◆LESLIE PARAMETERS

2. CABINET NAME (L)

This is for assigning the Cabinet Names.

Move the cursor by the [PARAM] button and select letters by the [VALUE] button.

You must save your changes, or they will be lost when you exit this edit window. See "Recording the Cabinet" in the next paragraph.

3. AMPLIFIER (L)

This sets the type of the virtual power amplifier.

Solid: Amplifier with a flat characteristic.
Tube: Simulated Tube Amplifier with a mild characteristic.

4. SPEAKER (L)

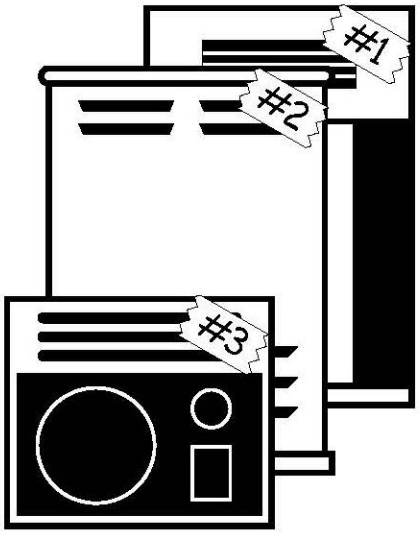
This sets the type of the virtual speaker.

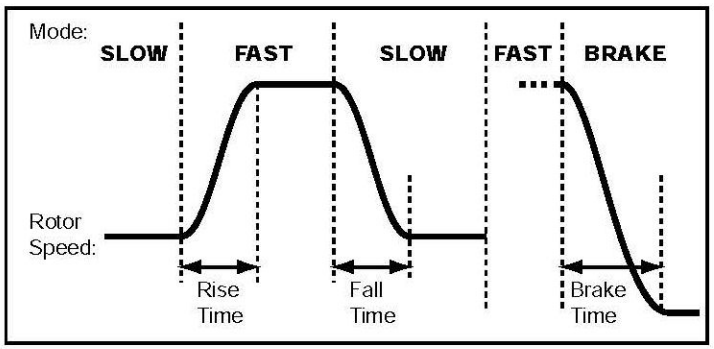
RotSmall: A small Leslie such as the Leslie 145.
RotLarge: A large Leslie such as the Leslie 122.
Station: A stationary speaker such as the Hammond PR-40.

tips CONCEPT OF THE CABINET NUMBERS

Each Cabinet represents one virtual Leslie Speaker prepared by the Leslie Parameter.

This parameter is the only Preset Parameter in this mode.





5. SLOW SPEED - HORN (L)

12. SLOW SPEED - BASS (L)

Here the Speed of the Rotor is set for Slow mode.

The setting range is 0, 24 - 318 rpm. It does not rotate at 0.

6. FAST SPEED - HORN (L)

13. FAST SPEED - BASS (L)

Here the Speed of the Rotor is set for Fast mode.

The setting range is 0, 24 - 453 rpm. It does not rotate at 0.

7. HORN LEVEL (L)

14. BASS LEVEL (L)

The Volume of each Rotor is set. The setting range is 0 to -12dB.

8. RISE TIME - HORN (L)

15. RISE TIME - BASS (L)

Here the Time is set for the Rotor to reach the Fast Speed, when you go from Slow or Break to Fast mode. The setting range for the Horn Rotor is 0.2 - 5.0s, and the for Bass Rotor is 0.5 - 12.5s.

9. FALL TIME - HORN (L)

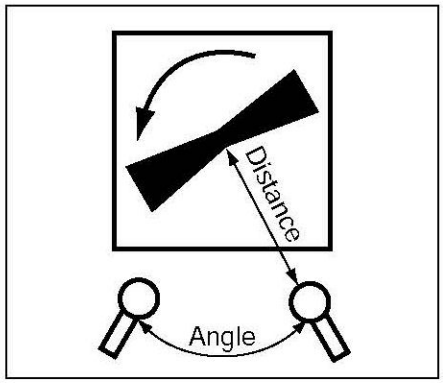
16. FALL TIME - BASS (L)

Here the Time is set for the Rotor to reach the Slow Speed, when you go from Fast to Slow mode. The setting range for the Horn Rotor is 0.2 - 5.0s, and the for Bass Rotor is 0.5 - 12.5s.

10. BRAKE TIME - HORN (L)

17. BRAKE TIME - BASS (L)

Here the Time is set for the Rotor to stop, when you go from Fast mode to Brake. The setting range for the Horn Rotor is 0.2 - 5.0s, and the for Bass Rotor is 0.5 - 12.5s.



11. HORN CHARACTER (L)

Here the Tone of the Horn Rotor is set.

"FLAT" has no cut or boost. The others exhibit various harmonic "peaks".

18. MIC - ANGLE (L)

This is the parameter to set the locations of the two virtual microphones for the imaginary Leslie Speaker.

The ANGLE decides the distance between the two mikes.

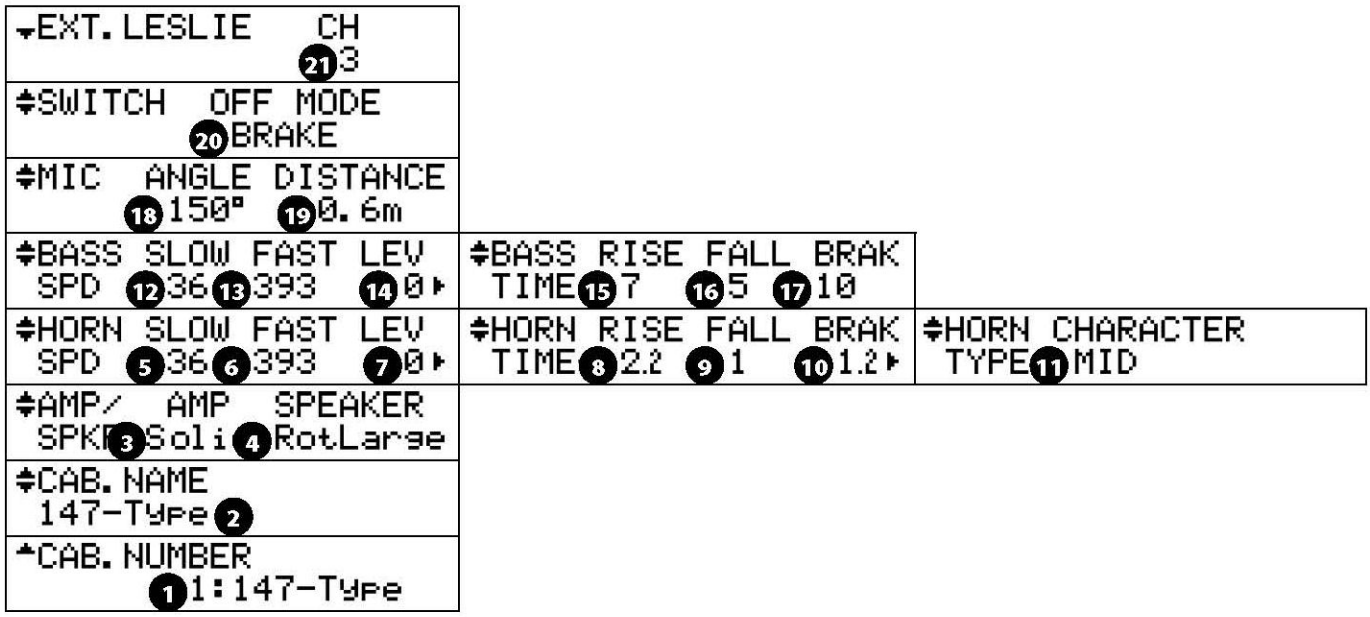
The setting range is 0 - 180°. As you increase the range, the stereophonic image is enhanced.

19. MIC - DISTANCE (L)

This is the parameter to set the DISTANCE between the imaginary Leslie Speaker and the Microphones.

The setting range is 0.3 - 2.7m. As the "distance" grows, the Leslie is less effective.

NOTE: When you operate the parameters 2 - 19 (L), the setting range will be lost after the power is switched off, if you do not do the recording operation of the next paragraph.



◆SWITCH OFF MODE

20. OFF MODE (P)

This parameter sets the action when [LESLIE ON] button is OFF.

When BRAKE is selected, the speed gradually slows down and stops. When if THROUGH is selected, the Leslie effect is by-passed and the voice comes out of the stationary channel.

NOTE: You may not be able to control the Brake or Through on some Leslie models.

NOTE: This parameter is the Preset Parameter, and it is recorded to each Combination Preset.

◆EXTERNAL LESLIE SPEAKER

21. LESLIE CHANNEL (S)

The Channel is set for the Leslie Speaker connected to the 11-pin terminal.

1ch: Use this setting when connecting to a 122XB, 971/3300(not expanded), 147, 771, or other single-channel Leslie cabinet. The Drawbar and Percussion sounds will be heard through the single Rotary channel.

3ch: Use this setting when connecting to an 2101, 971/3300(expanded with stationary speakers), 814, a 914, or other 3-channel Leslie cabinet. The Drawbar and Percussion sounds will be heard through the Rotary channel, the Extra Voice LEFT signal will come through the Stationary MAIN channel and the Extra Voice RIGHT signal will be fed through the Stationary AUX channel.
If you connect this organ and Leslie 3301/525 with the exclusive Y cable, the Drawbar sound the built-in Leslie effect is mixed with Extra Voice output to the stationary channel.

NOTE: This parameter is the System Parameter. It is recorded when the value is set. Also, it is common at each Combination Preset, and it is not saved into the song.

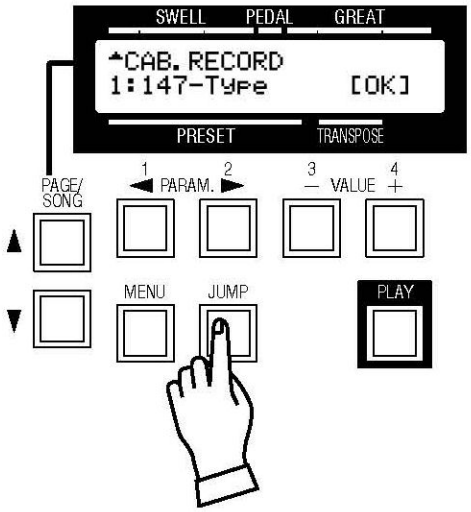
Record the Cabinets

The Leslie parameters (#2 - 19 of the previous paragraph) can be recorded with the Cabinet Numbers, and you can choose and use them in each Combination Preset.

1

Enter the name for the Cabinet as you want.

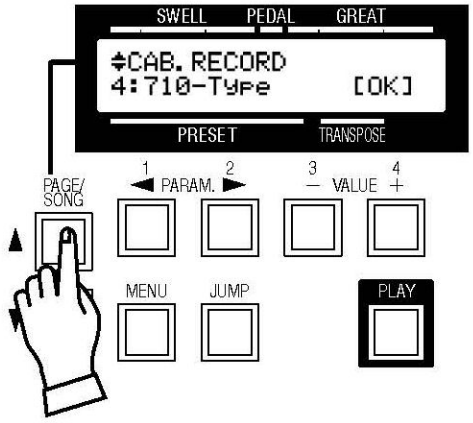
2



Touch the [JUMP] button in the setting mode (#2 - 19) of the Leslie Parameter.

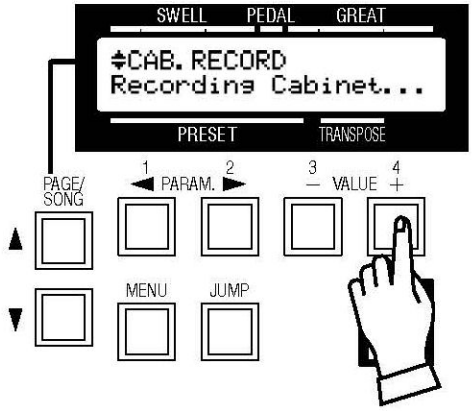
The Cabinet Selection mode is displayed.

3



Select the Cabinet Number to record by the [PAGE] button.

4



Touch [4] OK, and it is recorded.

The display during the recording treatment shows as illustrated.

NOTE: If you do not want to record it, just touch the [MENU] button.

OD/VIB (OverDrive / VIBrato)

In this mode, you can change the settings relating to each Effect for Overdrive, Vibrato and Chorus.

To locate this mode:

1. Touch the [MENU] button to display the MENU, select page B by the [PAGE] button, and then touch the [3] OD/VIB button.
2. Or, hold down the Vibrato & Chorus [ON SWELL] or [ON GREAT] button for a few moments.

◆OVERDRIVE

1. OVERDRIVE - SWITCH

Turn ON/OFF the Overdrive effect.

2. OVERDRIVE - DRIVE

This is for adjusting the Overdrive Value.

The higher the value gets, the more distortion.

3. OVERDRIVE - EXPRESSION

This is for varying the amount of Overdrive by changing the Expression value.

EX-OD:
If you operate the Expression pedal, not only the volume but also the distortion will be changed.

OD-EX:
The Expression Pedal affects only the volume and not the distortion value.

OD ONLY:
The Expression pedal affects only the distortion value and not the volume.

◆VIBRATO & CHORUS

4. VIBRATO - RATE

This is for setting the Speed of the Vibrato and Chorus effect.

The setting range is 6.10 - 7.25 Hz.

5. VIBRATO - TREMOLO

This is for setting the Tremolo (amplitude modulation) of the Vibrato and Chorus effect.

The setting range is 0 - 15.

6. VIBRATO - EMPHASIS

This is for setting the Emphasis (boost the high frequency) of the Chorus effect (C1 / C2 / C3).

The setting range is 0 - 9 dB.

7. VIBRATO - DEPTH V1

8. VIBRATO - DEPTH V2

9. VIBRATO - DEPTH V3

10. VIBRATO - DEPTH C1

11. VIBRATO - DEPTH C2

12. VIBRATO - DEPTH C3

These are for setting the Depth of each Vibrato and Chorus effect mode.

The setting range is 0 - 15.

NOTE: The parameters in these modes are Preset Parameters and are recorded to each Preset.

Vibrato and Chorus of Hammond Organs

On string instruments, the vibrato effect is created by changing the string tension by one's fingers. On wind instruments, by changing the strength of breath. On electronic instruments with analog circuitry, by modulating the oscillator. As the rotation of the tone-wheels of the original B-3 was stabilized by the synchronous motor, it was not possible to provide a vibrato effect. On these models, the vibrato effect was obtained by modulating the signal post-generator.

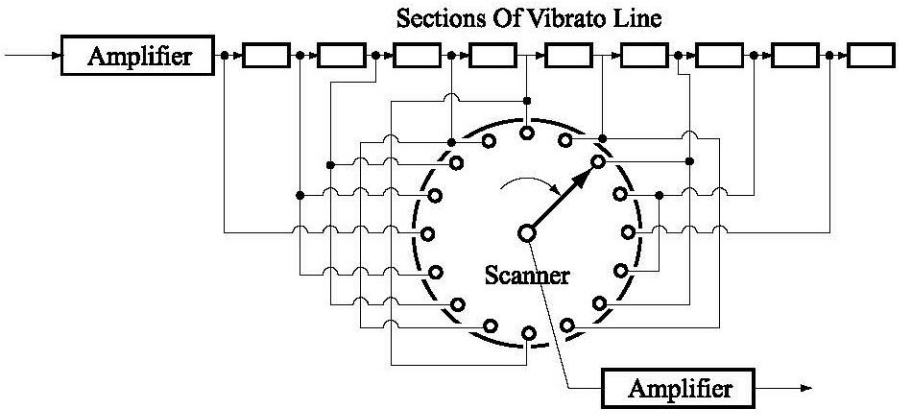
The vibrato & chorus system of the original B-3 consisted of a 9 stage delay line using LC phase shift circuits. This produced a very short delay of about 1 ms. Tones were passed through coils, delaying the phase. Several coils were connected in tandem and when the output of each tap was passed from the top to the last by turns, the pitches gradually lowered. By taking the output of each tap from the last to the top by turns on the contrary, the pitch would gradually rise. These operations were automatically made by turning the scanner with a motor.

The scanner was used to select one of multiple input terminals by the static connection. As each terminal was selected by the "blades" which approached each other, a popping noise like that of a switch did not occur and the signals of neighboring terminals cross-faded and switched themselves.

The mode-selection of vibrato effects was made by changing the range of the connecting tap.

As this system modulated the produced tonal signals and not the oscillator, the original sound could be heard without the vibrato effect. By mixing the sound with the vibrato effect and the original sound, the chorus effect was obtained.

On this model, the chorus and vibrato effects are simulated and modeled in the original fashion digitally, by the DSP, without using moving parts.



Hammond Classic "Scanner Vibrato" (Physically Modeled on the A-405)

EXVOICE (EXtra VOICE)

In this mode you adjust the settings of the Extra Voice Section.

The Extra Voices are sound sources of recorded sounds of various musical instruments, and they are independent of the Drawbar sound engine. You can use one Extra Voice per each manual.

To locate this mode:

1. Touch the [MENU] button for the MENU, select page D by the [PAGE] button, and then touch the [1] EXVOICE button.
2. Or, hold down the any [EXTRA VOICE] button for a few moments.

◆Using Extra Voices

To use the Extra Voices, press and turn ON either of the [ON SWELL], [ON GREAT], [ON PEDAL] buttons you want in the Extra Voices group on the front panel. The Extra Voices and the Drawbars can be used at the same time.

◆Controlling the volume of the entire Extra Voices

The volume of the entire Extra Voices can be controlled with the [EXTRA VOICE VOLUME] knob on the left of the Swell manual.

◆What are in upper left corner of the screen?

In the upper left corner of the Extra Voices mode screen the parts to be operated are displayed as follows:

SXV: Swell Extra Voice
GXV: Great Extra Voice
PXV: Pedal Extra Voice

1. ZONE - OCTAVE

Sets the octave of this part.

The setting range is -2 to +2 Octave.

2. ZONE - LO

3. ZONE - HI

Set the zone where the Extra Voices sound on each manual. The lowest note is set with LO and the highest with HI. These settings can be made also by touching the desired key holding down the [JUMP] button, instead of pressing the [VALUE] button.

4. VOICE - GROUP

5. VOICE - INSTRUMENT

The voices of the Extra Voices on this organ are controlled by the layers called [GROUPS] and [INSTRUMENTS]. To choose the voice, first select a group, then select an instrument in it.

For Example, to choose "Dyno Tine EP", select "Elec. Piano" in the group, then "Dyno Tine EP" in the instruments.

NOTE: Even if you change the group, the instrument played in the group immediately before the change is memorized. For example, if you want to use the "Grand Piano RX" in the "Piano" group and "Vintage EP" in the "Elec. Piano" alternately, you can call out both instruments only by switching the groups, once the instruments have been selected in both groups.

See Appendix (P. 125) for the details of Voices.

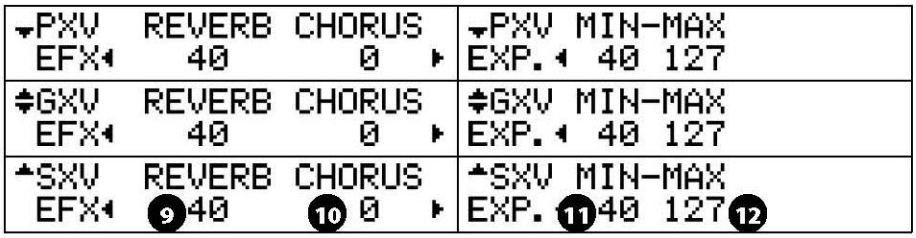
6. NOTE - VOLUME

Controls the volume of this part.

The setting range is 0 - 127.

tips SPLIT THE KEYBOARD

You may split the keyboard, for producing both the Drawbar voice and the Extra Voice on one manual at the same time. To set the Drawbar voice zone, see [ZONES]. (P. 90).



7. NOTE - PAN

Sets the pan (Position in the Stereo Field) of this part.

The setting range is L64 (far left) - C (center) - 64R (far right).

8. NOTE - VELOCITY

Sets how the sound engine should responds to touch.

The setting range is OFF, 1 - 4. The velocity of OFF is fixed at 100. At 1 - 4, the higher the value increases, the higher velocity is transmitted regardless how the key is played.

9. EFFECTS - REVERB

Sets the depth of the Reverb effect.

The setting range is 0 to 127. See REVERB (P. 79) for setting the Reverb effect.

10. EFFECTS - CHORUS

Sets the depth of the Chorus effect.

The setting range is 0 to 127. See CHORUS (P. 80) for setting the Chorus effect.

11. EXPRESSION - MINIMUM

12. EXPRESSION - MAXIMUM

Set how the sound engine responds operation of the Expression Pedal operation.

Set MIN as the minimum volume and MAX as the maximum.

For example, if you want to totally turn off the sound when you fully return the Expression Pedal, set MIN at 0.

NOTE: All the parameters in these modes are Preset Parameters. They are recorded into the Combination Preset.

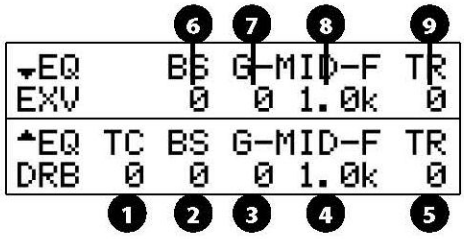
EQUALIZ (EQUALIZer)

In this mode, you can adjust the settings for the Equalizer.

An Equalizer is used to adjust the tonal quality. The built-in Equalizer consists of 3 bands and Tone Control. With the 3 bands ranging bass to treble, you can boost or cut any of them.

To locate this mode:

Touch the [MENU] button for the MENU, select page C by the [PAGE] button, and then touch the [2] EQUALIZ button.



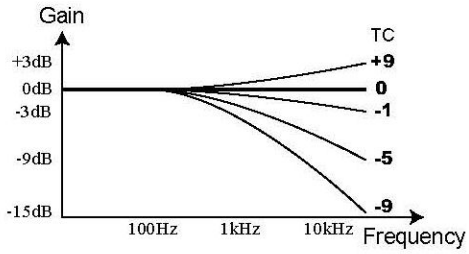
◆DRAWBARS

1. TONE CONTROL

This models the "screw-set" tone control that was present on the preamp inside of the vintage Hammond B-3. It gently cuts the treble.

The setting range is -9 to +9, and it becomes neutral when set at "0".

"-1" corresponds to the maximum of the B-3/C-3 tone control, "-5", the middle, "-9" the minimum. The tone control found on the B-3/C-3, it's value can not be set at "+", but on this model it's possible to boost treble to some extent.

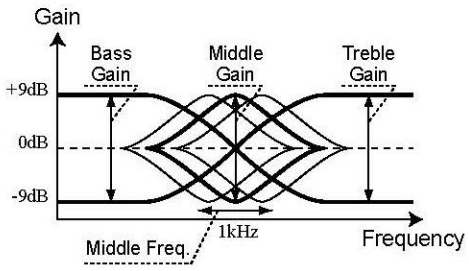


2. GAIN - BASS

3. GAIN - MIDDLE

5. GAIN - TREBLE

These are for doing the Boost / Cut of Bass, Middle and Treble respectively. The setting range is -9 to +9. It gets neutral at 0.



4. FREQUENCY - MIDDLE

This is for setting the Central Frequency to vary at Gain - Middle (#3).

The setting range is 480Hz - 2.9Hz.

◆EXTRA VOICE

6. GAIN - BASS

7. GAIN - MIDDLE

8. GAIN - TREBLE

These are for doing the Boost / Cut of Bass, Middle and Treble respectively. The setting range is -9 to +9. It gets neutral at 0.

9. FREQUENCY - MIDDLE

This is for setting the Central Frequency to vary at Gain - Middle (#7).

The setting range is 480Hz - 2.9Hz.

tips

THE EFFECTIVE USE OF THE MIDDLE FREQUENCY

The frequency response of the horn rotor in the Leslie speaker is not flat. It has a peak from 1kHz to 3kHz that it is another component of the classic HAMMOND sound.

When you use this organ on line out without a Leslie speaker, you can get the similar effect by setting the FREQUENCY - MIDDLE to about 2kHz, and the GAIN - MIDDLE to "+".

tips

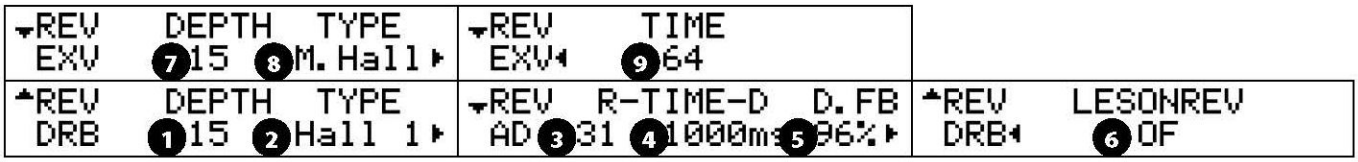
PRESET PARAMETERS

Equalizer is a Preset Parameter, designed to actively use as one of the tone-making parameters. However, it is not practical to use Equalizer as a tonal complementary tool to match the location. In such a case, if you switch OFF the P. LOAD RV/EQ in the PRESET function mode, the Equalizer value does not change when the preset is recalled. (P. 60)

In this mode, you adjust the setting for the Reverb effect.

To locate this mode:

1. Touch the [MENU] button for the MENU, select page C by the [PAGE] button, and then touch [1] REVERB button.
2. Or, turn the [REVERB] knob with pressing the [MENU] button.



◆DRAWBARS

1. DEPTH

This sets the Depth (= volume) of the Reverb effect.

The setting range is 0 - 127. This parameter is linked with [REVERB] knob.

2. TYPE

This sets the Types of Reverb effect.

- **Room 1:** Inside the room (short)
- **Room 2:** Inside the room (long)
- **Live:** Live house
- **Hall 1:** Concert Hall (long)
- **Hall 2:** Concert Hall (short)
- **Church:** Church
- **Plate:** Iron-plate Reverb
- **Spring:** Spring Reverb
- **Delay:** Delay
- **PanDly:** Panning Delay
- **RevDly:** Reverb + Delay

3. REVERB TIME

When the Type (#2) is set at Room 1 to Plate, it sets the Time for Reverb to fade out.

The setting range is 0 - 31. The higher the value, the greater the impression of a larger building.

4. DELAY TIME

When the Type (#2) is set at Delay, PanDly, RevDly, it sets the delaying time.

The setting range is 4.7 - 2000 ms. The higher the number, the longer the delay gets.

NOTE: You can set the delay time with the foot switch (P. 64)

5. DELAY FEEDBACK

When the Type (#2) is set at Delay, PanDly, RevDly, it sets the amount of the Feedback (the delaying sound repeats).

The setting range is 0 - 96%. The higher the value, the more Feedback you get.

6. LESLIE ON REVERB

This sets the route of the Reverb and Leslie effect.

- **OFF:** Leslie to Reverb
- **ON:** Reverb to Leslie

NOTE: REVERB - TYPE is a macro parameter that allows global setting of reverb parameters. When you select the REVERB - TYPE, each reverb parameter (except #6) will be set to the most suitable value.

◆EXTRA VOICE

7. DEPTH

This sets the Depth (= volume) of the Reverb effect.

The setting range is 0 - 127. This parameter is linked with [REVERB] knob.

8. TYPE

This sets the Types of Reverb effect.

- **Room 1:** Small room
- **Room 2:** Medium room
- **Room 3:** Large room
- **Hall 1:** Medium Concert Hall
- **Hall 2:** Large Concert Hall
- **Plate:** Iron-plate Reverb

9. REVERB TIME

It sets the Time for Reverb to fade out.

The setting range is 0 - 127. The higher the value, the greater the impression of a larger building.

NOTE: When you select the REVERB - TYPE, reverb time will be set to the most suitable value.

NOTE: All the parameters in these modes are Preset Parameters. They are recorded into the Combination Preset.

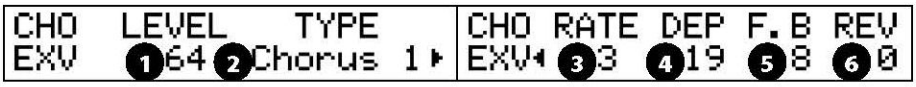
tips PRESET PARAMETERS

Reverb is a Preset Parameter, designed to actively use as one of the tone-making parameters. However, it is not practical to use Equalizer as a tonal complementary tool to match the location. In such a case, if you switch OFF the P. LOAD RV/EQ in the PRESET function mode, the Equalizer value does not change when the preset is recalled. (P. 60)

In this mode, you adjust the setting for the Chorus effect. Chorus affects only for the Extra Voice division.

To locate this mode:

Touch the [MENU] button for the MENU, select page D by the [PAGE] button, and then touch [2] CHORUS button.



◆EXTRA VOICE

1. LEVEL

This sets the Level of the Chorus effect.

The setting range is 0 - 127.

2. TYPE

This sets the Types of Chorus effect.

Chorus 1, 2, 3, 4:
These are conventional chorus effects. They give spaciousness and depth to the sound.

FB Chorus:
This is a chorus that produces an effect similar to a flanger. It softens the sound.

Flanger:
This creates an effect reminiscent of a jet airplane taking off and landing.

3. RATE

Sets the modulation frequency of the Chorus effect.

The setting range is 0 to 127. The higher the value, the faster the frequency.

4. DEPTH

Sets the modulation depth of the Chorus effect.

The setting range is 0 to 127. The higher the value gets, the deeper gets the modulation.

5. FEEDBACK

Sets the amount of feed back of the Chorus effect output to the Chorus effect again.

The setting range is 0 to 127. The higher the value, the more feed back.

6. SEND TO REVERB

Sets the amount of the output of the Chorus effect to send to the Reverb effect.

The setting range is 0 to 127.

NOTE: CHORUS - TYPE is a macro parameter that allows global setting of chorus parameters. When you select the CHORUS - TYPE, each chorus parameter (except #6) will be set to the most suitable value.

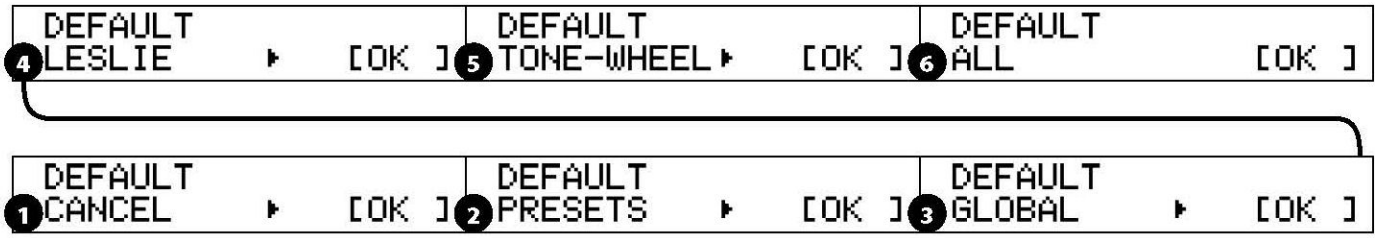
NOTE: All the parameters in these modes are Preset Parameters. They are recorded into the Combination Preset.

DEFAULT

In this mode, you can recall the default settings entirely or partially as shipped from the factory.

To locate this mode:

Touch the [MENU] button for the MENU, select page E by the [PAGE] button, and then touch the [4] DEFAULT button.



To initialize each parameter, touch the [PARAM] button and then [4] OK.

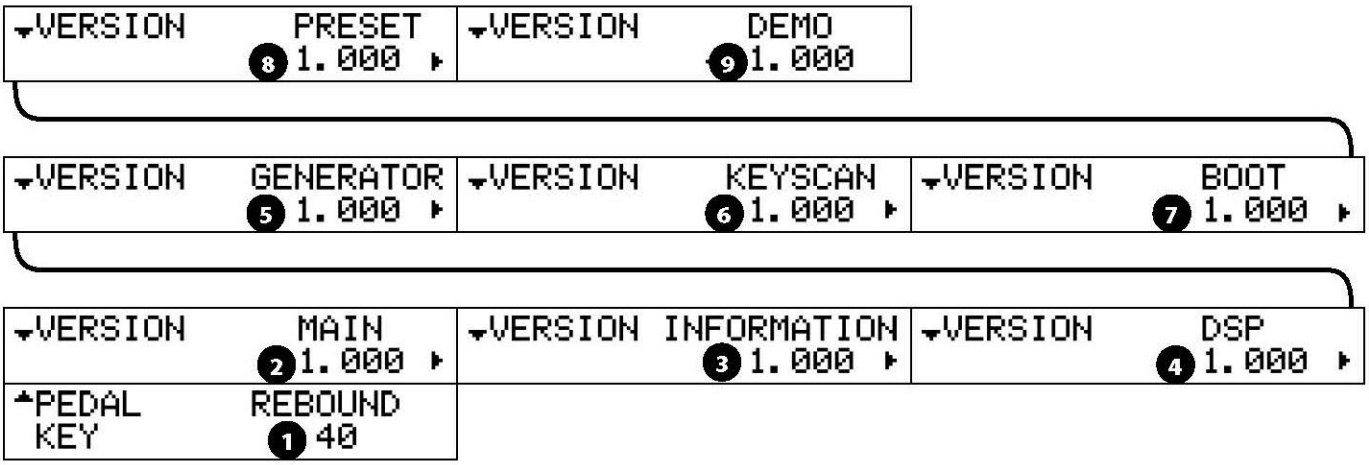
1. **CANCEL**
   Initializes the content of the Preset button [CANCEL].
   This is helpful for creating fresh presets.
2. **PRESETS**
   Initializes the content of all Combination Presets.
3. **GLOBAL**
   Initializes the Global Parameters such as Master Tune or assignment of the Foot Switch.
4. **LESLIE**
   Initializes the content of all Cabinets.
5. **TONE-WHEEL**
   Initializes the content of all Custom virtual Tonewheels.
6. **ALL**
   Initializes all parameters of this organ.
   If anything caused an unstable condition on this organ system, the trouble would be cleared.

NOTE: You can also totally initialize your organ by switching the Power ON while touching and holding [RECORD] button.

In this mode, you can set the System Parameters of this organ and the display information.

To locate this mode:

Touch the [MENU] button to display the MENU, select page E by [PAGE] button, and the touch the [3] SYSTEM button.



1. **PEDALBOARD - REBOUND**

   The Pedalboard sometimes sound twice caused by the "rebound" which happens when the keys are played staccato and released, depending on the condition of the sheet spring used on it. This can be avoided by adjusting the "rebound time"

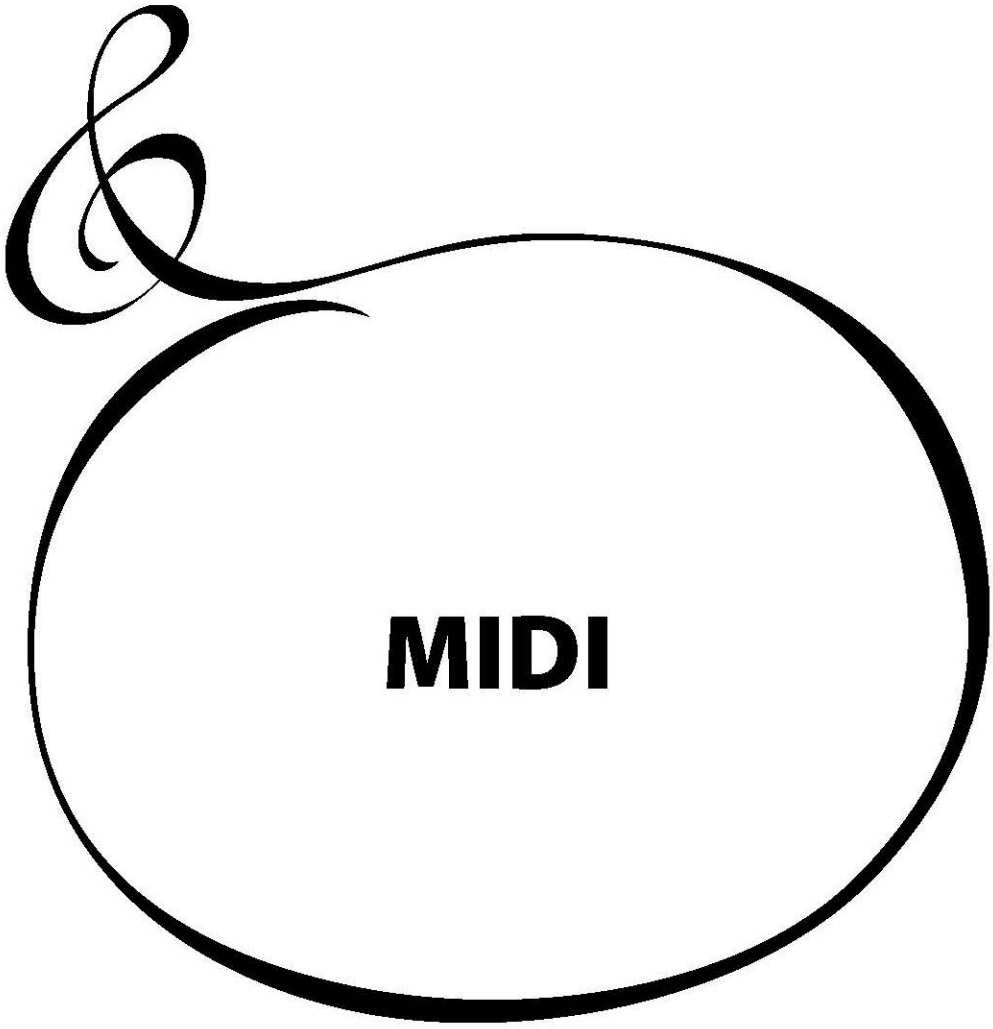
   The setting range is 1 - 128 x 1.4 msec. The initial value is 40 x 1.4 msec.

   NOTE: If the rebound time is too long, it causes a sound delay.

2. **VERSION - MAIN**
3. **VERSION - INFORMATION**
4. **VERSION - D. S. P.**
5. **VERSION - GENERATOR**
6. **VERSION - KEY SCANNER**
7. **VERSION - BOOTSTRAP PROGRAM**
8. **VERSION - FACTORY PRESETS**
9. **VERSION - DEMONSTRATION**

   These are the versions of each software built in this organ.

   These are only for the displaying the version number.



MIDI

What is "MIDI" ?

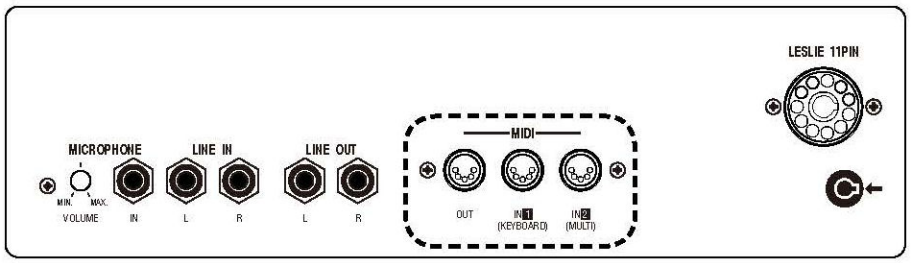
MIDI is an abbreviation of **M**usical **I**nstrument **D**igital **I**nterface.

MIDI is the musical instrument industry standard for exchanging performance information between electronic musical instruments and a sequencer, effects, lighting, and sound reinforcement gear, etc.

The MIDI standard allows instruments made by different manufacturers to effectively communicate with each other.

Many types of data can be transmitted and received, including all performance information, settings of parameters, and global commands.

MIDI terminals on this Organ



MIDI OUT Jack

Sends Performance Information.

This is used for playing an external MIDI sound module from this organ, or for recording the performance on this organ to the external sequencer.

MIDI IN1 (KEYBOARD) Jack

This jack is for playing the keyboard channel (SWELL, GREAT, PEDAL) from external MIDI equipment.

MIDI IN 2 (MULTI) Jack

This jack is for playing the built-in 16 part multi-timbral sound engine from the external MIDI equipment. The information received at this jack does not affect the local sound engine (Drawbar, Extra Voices) for the manuals.

What the MIDI can do on your Organ

On this organ, the MIDI terminals are intended to do the following:

- control an external sound generator such as synthesizer or sampler.
- record or playback your performance to external computer or sequencer.
- Play the 16-part GM upper compatible sound engine on the external MIDI equipment, independent of the sound engine for playing the manual on this organ.

Also, to do the setting simply, the "MIDI Template" function is prepared.

MIDI CHANNEL

MIDI utilizes 16 channels, that are sent down one cable.

However, the channel must match between the sender and the receiver. Otherwise, you can not "hear" what the other "says".

CHANNEL MESSAGE

◆ NOTE ON

This is composed of three types of data: which key (Note Number), at what Speed (Velocity) and Press/Release (Note ON).

◆ PROGRAM CHANGE

CONTROL CHANNEL:

Switches the Combination Presets.

EXTERNAL ZONE CHANNEL:

Switches the program of the External MIDI equipment.

◆ CONTROL CHANGE

Data will be sent/received corresponding to the action of the Expression Pedal, Foot Switch, Modulation, etc.

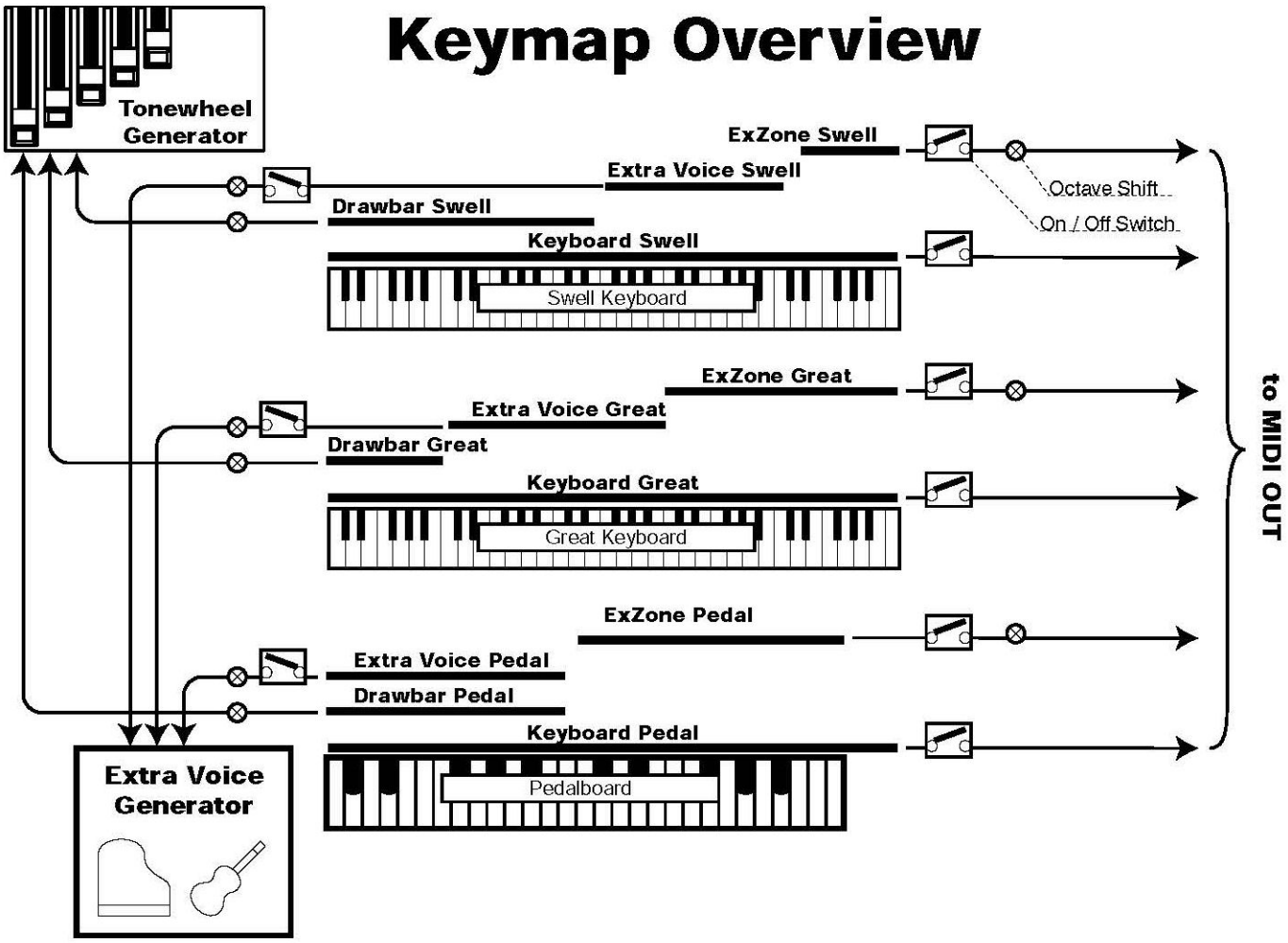
SYSTEM MESSAGE

◆ SYSTEM EXCLUSIVE MESSAGE

These messages are for sending and receiving the characteristic data between the same model or the products made by the same manufacturer.

This organ is the Memory Dump capable (transmit the total present setting) and can record the data to the External Sequencer.

This organ has a "Keyboard Channel" for transmitting (sending/receiving) the playing information of each manual as well as an "External Zone Channel" for controlling the external MIDI equipment.



◆KEYBOARD CHANNELS

These are for sending and receiving the SWEELL, GREAT, and PEDAL keyboard performance and control information.

Use these channels for exchanging playing information with an external sequencer.

◆EXTERNAL ZONE CHANNELS

These channels are for controlling external MIDI equipment using this organ as a master keyboard.

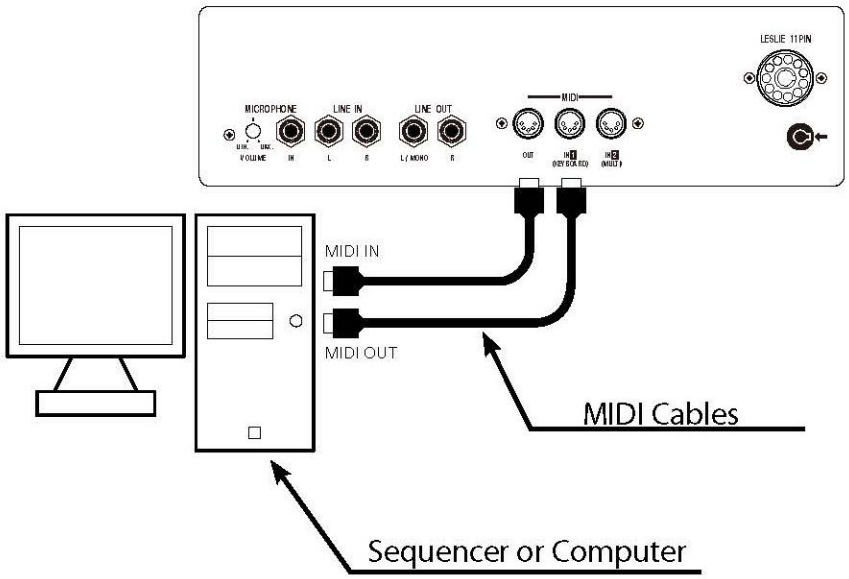
You can save different configurations and program changes in the Combination Presets.

◆MULTI

In addition to these, a GM System Level 1 upper compatible 16-part multi-timbral sound engine is built in. This is used through the exclusive input jack MIDI IN 2 (MULTI).

USING EXTERNAL SEQUENCER

This is the method to record and playback your performance, by connecting the Sequencer or Computer to your organ.



◆Recording to the Sequencer or the Computer

1. Hook up as illustrated.
2. Recall "Seq. Local" or "Seq. No Local" by the MIDI template.

Select "Seq. Local" if you do not use the "Echo" (or "MIDI Thru") function of the external sequencer, or select "Seq. No Local" if you use it.

3. Set the Keyboard Channel and Control Channel that you wish to use.

Set the MIDI channel of the external sequencer to the same channel as the organ.

4. Start the Sequencer recording.
5. Send the Memory Dump (if desired).
6. Start the playing.

◆Playback from the Sequencer or the Computer

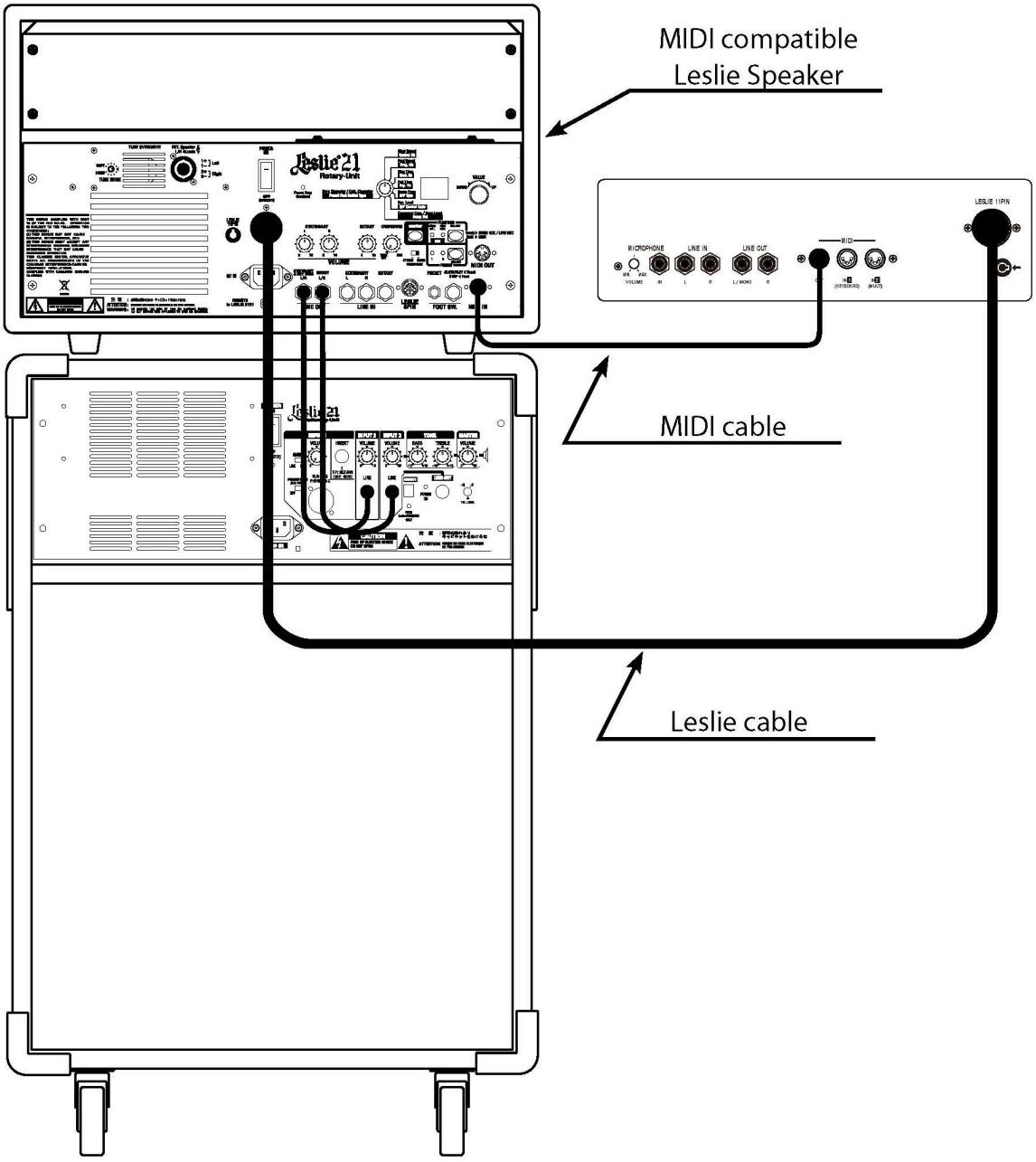
1. Hook up as illustrated.
2. Recall "Seq. Local" or "Seq. No Local" by the MIDI template.
3. Set the Keyboard Channel and Control Channel that you want.

Set the MIDI channel of the external sequencer to the same channel as the organ.

4. Start the Sequencer playing.

USING A MIDI COMPATIBLE LESLIE SPEAKER

If you connect this organ and the Leslie speaker through MIDI, you can send the Leslie parameters such as the rotor speed and the rise time to the Leslie speaker and can make finer adjustment than connecting them only with the Leslie cable.



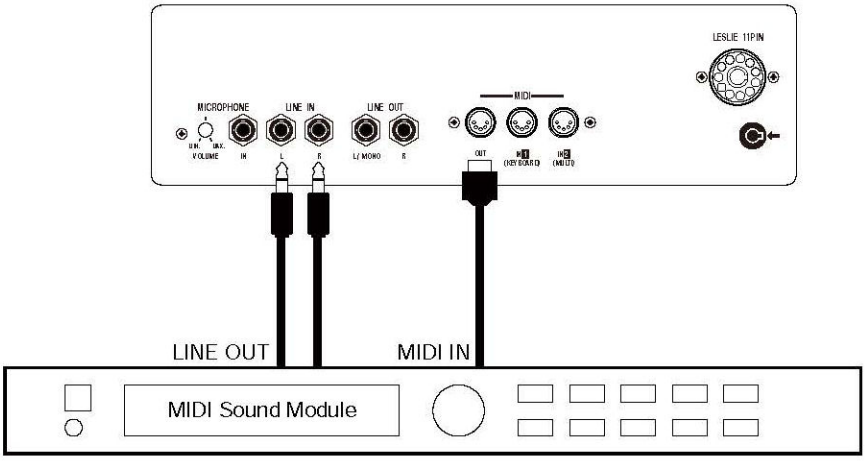
1. Hook up as illustrated.
2. Recall the "Seq. Local" by the MIDI template.
3. Set MIDI MAST - LES (P. 92 #4) at "21".
4. Set the Leslie MIDI Channel (P. 93 #14).

Set the Leslie MIDI channel of the organ at the same value as the Leslie speaker MIDI channel.

5. If you operate the Leslie parameters on this organ or call out the Combination Presets, these Leslie parameters are sent to the Leslie speaker.

USING A MIDI SOUND MODULE

You can control external MIDI equipment with a zone per each of the Swell, Great manuals and Pedalboard.



1. Hook up as shown above.

Connect the MIDI OUT of this organ to the MIDI IN of the equipment you want to control.

2. Recall the MIDI Template "Use Ex. Zone" (P. 92 #1).

By this, the transmission of the Keyboard Channel stops and the infos. of the External Zone is sent from MIDI OUT.

3. Set the Zone, and the data that is to be recorded to the Combination Preset, if necessary.

See "ZONES" on the next page for how to set the Zones.

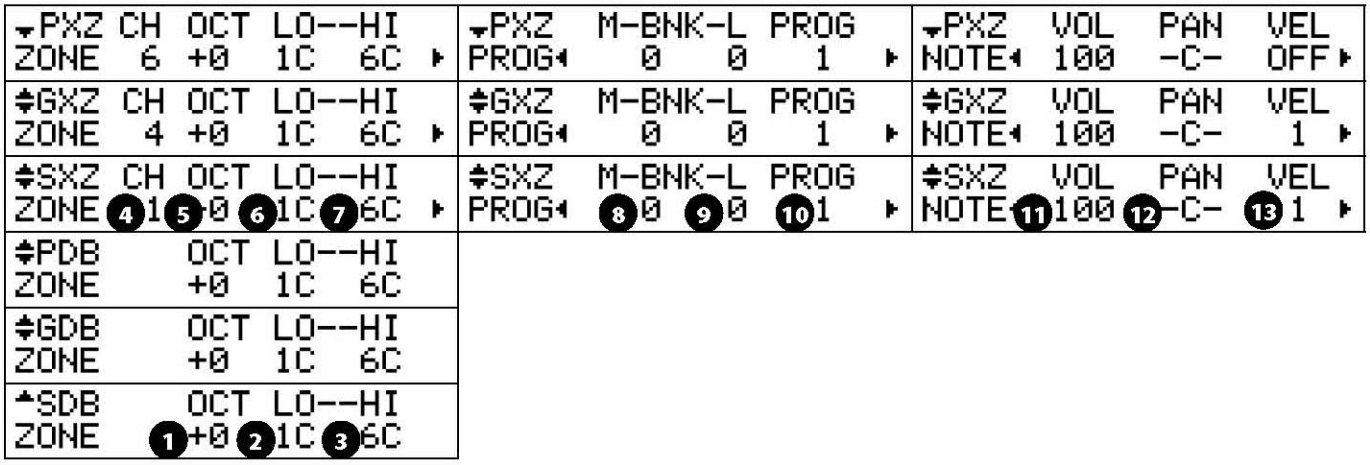
To control external MIDI equipment, You must dedicate any portion or all of a keyboard to that control. These are called "EXTERNAL ZONES"

You are also able to play the Drawbar Voices simultaneously with the EXTERNAL ZONES.

The Swell, Great and Pedal Zones that play the Drawbar Voices are pre-set at the factory to play all notes of the keyboard.

To locate this mode:

Touch the [MENU] button to display the MENU, select page D by the [PAGE] button, and then touch [3] ZONES.



◆Items in the top left corner

The current ZONE you are editing is displayed in the top left corner of the Zone mode.

- **SDB:** Swell Drawbars
- **GDB:** Great Drawbars
- **PDB:** Pedal Drawbars
- **SXZ:** Swell External Zone
- **GXZ:** Great External Zone
- **PXZ:** Pedal External Zone

◆DRAWBARS

1. ZONE - OCTAVE

This sets the octave the Drawbar sound engine produces.

Setting Range: -2 to +2.

2. ZONE - LO

3. ZONE - HI

These are for setting the zone the Drawbar sound engine produces on each manual; the lowest by LO and the highest by HI. Setting can also be made by touching the desired key holding down the [JUMP] button, instead of pressing the [VALUE] button.

◆EXTERNAL ZONES

4. MIDI CHANNEL

This is the choosing the External Zone's transmitting MIDI channel.

The range is 1 - 16, and OFF.

5. NOTE - OCTAVE

This is for selecting the octave to be transmitted by this zone. The octave that is transmitted may be set to be different than the octave that you may be playing.

6. ZONE - LO

7. ZONE - HI

These set the playing range of the chosen External Zone on each of the Swell, Great manuals and Pedalboard.

Set the lowest note at LO and the highest one at HI. To forbid sending note data, set the HI parameter to "OFF".

NOTE: For 5 and 6, you can set the value by pressing [JUMP] button, while holding down the desired note on the manual (or pedalboard).

8. PROGRAM - BANK MSB

9. PROGRAM - BANK LSB

10. PROGRAM - PROGRAM CHANGE

These are for setting the Bank Select and the Program Change data to be transmitted by this zone.

Please consult the users guide/manual for your specific piece of outboard gear that you wish to control for the exact combination of commands that allow bank and program change.

You can choose 0 - 127 in the Bank MSB and the Bank LSB, and 1 - 128 in the Program Change.

11. NOTE - VOLUME

This is for setting the volume (= Control Change #7) of this zone. However, the set value will null, if the CC# (item #16) is at "7.VOL".

12. NOTE - PAN

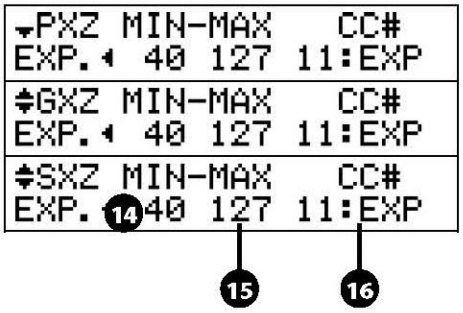
This is for setting the Pan (= Control Change #10) of this zone.

13. NOTE - VELOCITY

This is for setting the Velocity Curve to send to this zone.

The setting range is OFF, 1 - 4. The velocity of OFF is fixed at 100. At 1 - 4, the higher the value increases, the higher velocity is transmitted regardless how the key is played.

NOTE: As the Pedalboard of this organ has no velocity sensing function, the velocity of PXZ is fixed at OFF.



14. EXPRESSION - MINIMUM

15. EXPRESSION - MAXIMUM

These set range of expression to "compress" to send to this zone.

If the Expression Pedal of this organ is fully returned the organ will still be heard.

With many types of external sound gear, the volumes do not react the same. This parameter allows a smooth and equal flow in the Expression Pedal.

You can select 0 - 63 by MIN, and 64 - 127 by MAX.

16. EXPRESSION - CONTROL NUMBER

This is for setting the MIDI continuous Control Number of the Expression Pedal.

Depending on your external equipment, it may react CC#7 (Volume) or CC#11 (Expression). This parameter allows you to make that choice.

NOTE: All the parameters in these modes are Preset Parameters. They can be recorded to the Combination Presets. See the Appendix for details of the Preset Parameters.

PANIC FUNCTION and PARAMETER RELOAD

If any problem happens in the MIDI system, it may cause ciphering (sticking notes). Immediately after this organ and an external MIDI equipment are connected, a glitch or "MIDI hang-up" may occur.

If this occurs, press PAGE[▲]and[▼]at the same time. [All Notes Off] and [Reset All Controller] will be transmitted to all External Zone MIDI channels (Panic Function) and then all the EXTERNAL ZONE settings will be resent.

This adjusts the basic settings of the MIDI.

To locate this mode:

Touch the [MENU] button to display the MENU, select page E by the [PAGE] button, and then touch the [1] MIDI button.

◆MIDI TEMPLATE

1. MIDI TEMPLATE

This is a preset mode enabling you to quickly set up various MIDI configurations.

Typical settings can be recalled, by touching the [PARAM] button to select the template and touching [4] RECL.

◆MASTER

2. LOCAL

This is for switching ON/OFF the Local Control (internal).

If ON, the keyboard of this organ and the sound engine are connected.

If OFF, the internal sound engine is disengaged from the keyboards and pedalboard. This allows you to play an external module while a sequencer plays the internal engines of the A-405.

You can treat this organ as if it was two different pieces of equipment: a MIDI keyboard and a Sound Module.

3. NRPN

This is for switching ON/OFF the transmission of (= send and receive) NRPN (Non-Registered Parameter Number).

On this organ, it switches ON/OFF whether to send receive the message of Drawbar Fold-Back, Leslie ON, etc.

When ON, the message is sent/received. When OFF, it is not.

4. LESLIE

This is for controlling how to send Leslie Parameters.

The Leslie Parameters sent on Control Channel.

OR:

- The Leslie Parameters will be sent out on this organ original NRPN address and data.

21:

- The Leslie Parameters will be sent out for Leslie 21 series NRPN address and data.
- When the Cabinet Number is selected (i.e. by Preset button), the parameters are sent out also.

5. DEVICE ID

This sets the Device ID for sending/receiving the system exclusive messages such as Memory Dump.

The setting range is 1 - 32.

6. RECEIVE DUMP

This is for determining whether or not to receive the Memory Dump.

On this organ, you can transmit/receive the current settings by the System Exclusive Message as the Memory Dump, but you must switch this OFF if you do not want the settings of this organ to be changed.

When ON, it receives. But at OFF, it does not.

7. TEMPORARY DUMP

This is for sending the Memory Dump.

If you touch [4] SEND in this page, this organ sends the whole TEMPORARY (= the current setting information) data from the MIDI OUT jack. This is for recording the TEMPORARY data to a external MIDI Sequencer.

8. ALL DUMP

This is for sending the Memory Dump too.

If you touch [4] SEND in this page, this organ sends ALL data from the MIDI OUT jack. This is for recording the ALL data to a external MIDI Sequencer.

◆CHANNELS

These are for setting which MIDI Channel you use to send / receive each keyboard.

You can choose 1 - 16 and OF. If OF, nothing is sent / received.

9. SWELL

This is for setting the MIDI channel to send and receive the playing information of the Swell manual.

10. GREAT

This is for setting the MIDI channel to send and receive the playing information of the Great manual.

11. PEDAL

This is for setting the MIDI channel to send and receive the playing information of the Pedal Board.

12. EXTERNAL ZONE

This is for switching ON/OFF the total MIDI transmission to the the External Zone.

13. CONTROL

This is for setting the MIDI channel to send and receive the operating information of buttons, knobs and the Expression Pedal.

14. LESLIE

This is for setting the MIDI channel to send and receive the Leslie parameter information.

❖ *To avoid confusion of the MIDI signals, be careful not to duplicate each MIDI channel, including the External Zone (P. 90 #4).*

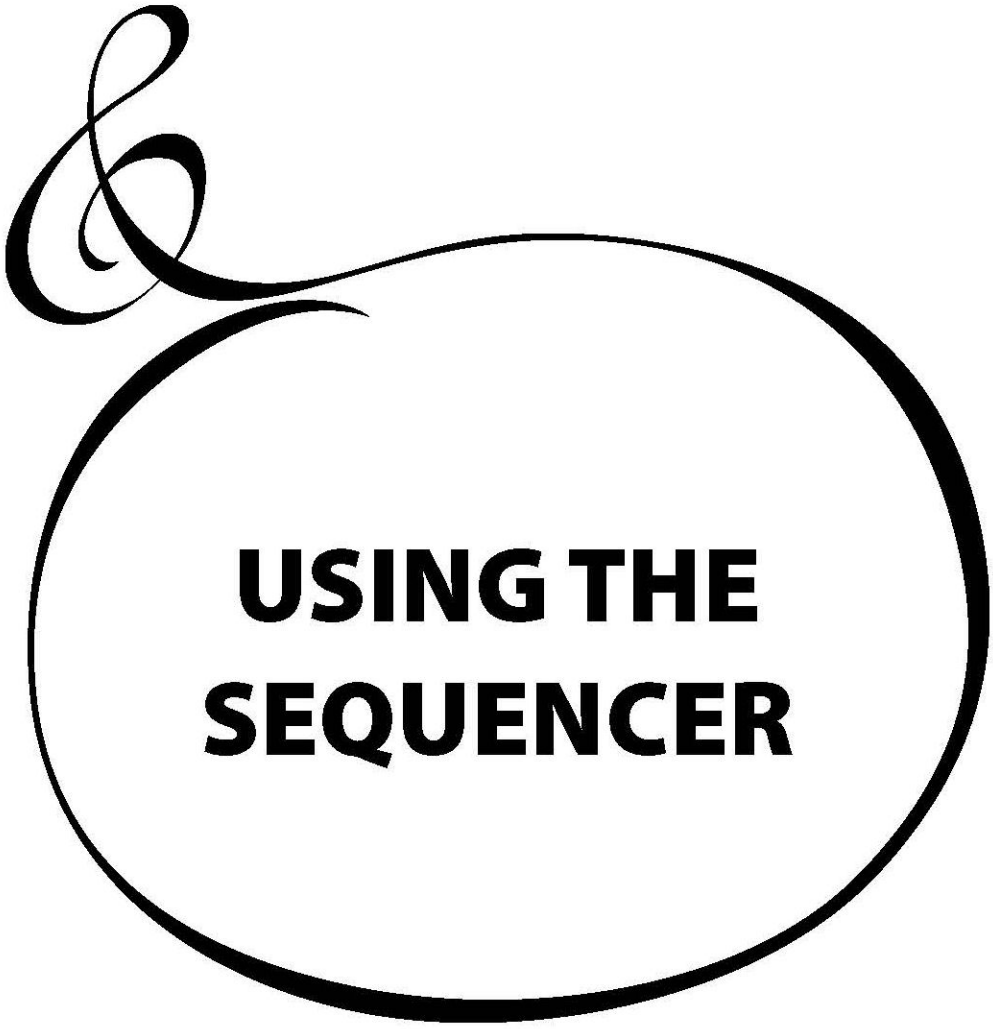
NOTE: All the parameters in these modes are not recorded into the Combination Presets. This is common with all Presets.

tips CONTENT OF TEMPORARY DUMP

The PRESET Parameters, GLOBAL Parameters and SYSTEM Parameters of TEMPORARY (= current status) are sent and received.

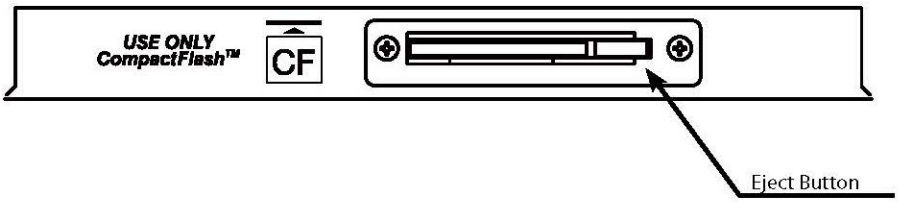
The content of each Combination Preset and that of each Leslie Cabinet is not sent or received.

To save these, you must use the ALL DUMP or CF Card.



USING THE SEQUENCER

This organ has a built-in Sequencer and a CompactFlash Card (CF Card hereinafter) Slot for recording your play and settings to the CF Card and play them or use them as a rhythm player.



What you can do with the sequencer

- Recording and playing your performance. If you do not record your play, only the settings are recorded and reproduced.
- Playing the GM standard SMF Song Data. You may enjoy playing the organ to the accompaniment of the song data.
- Using it as a rhythm player with exclusive rhythm data. You may enjoy playing the organ to the accompaniment of the rhythm.
- It is possible to record up to 192 K byte (approx. 24,000 notes) as the capacity of a song. If you use the Expression Pedal or the Pitch Bend Wheel, it will be less than this.
- You can make songs up to 99 files per a folder. If you want to record over 99 files, make a new folder and record into the folder.

About CF Card

CF CARD YOU CAN USE

The manufacturer recommends genuine Hammond 65971-02128 as your CF Card.

Please consult http://www.hammondorganco.com before you try to use other cards in this organ.

CF CARD SLOT

1. First please read the label on the CF Card carefully and insert it correctly.
2. To take out the card, push the Eject Button on the right hand side of the slot.
3. Don't eject the card or switch the power off during initializing or setting it up.

About Song File

General MIDI

The General MIDI system is a set of recommendations which seeks to provide a way to go beyond the limitations of proprietary designs, and standardize the MIDI capabilities of sound generating devices. Sound generating devices and music data that meets the General MIDI standard bears the General MIDI logo. Music data bearing the General MIDI logo can be played back using any General MIDI sound generating unit to produce essentially the same musical performance.

SMF Standard MIDI File

The SMF (= Standard MIDI File) is a data format made for standardizing the formats of song data of all manufacturers. This organ corresponds with the SMF Format 0 and 1.

For the SMF song data ask the sales person at your dealer from whom you purchased your organ.

INITIALIZE THE CF CARD

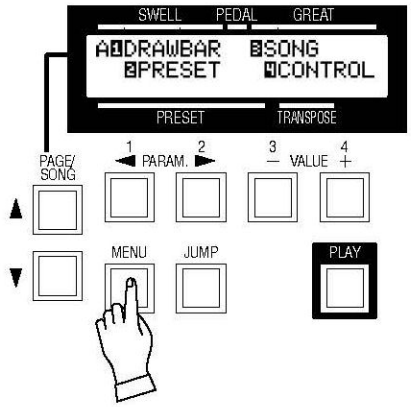
The CF Card must be "INITIALIZED" first (= before you use it). Perform the following, step by step, to do the initialize operation.

❖ *This operation erases all data in the CF Card.*

1

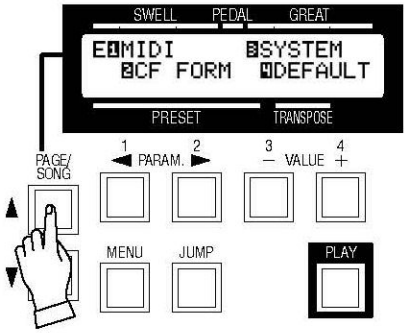
Insert the CF Card into the slot.

2



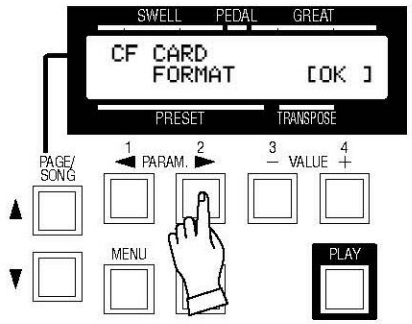
Touch the [MENU] button to display the menu.

3



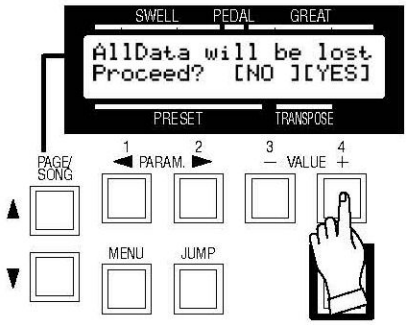
Select page E by the [PAGE] button.

4



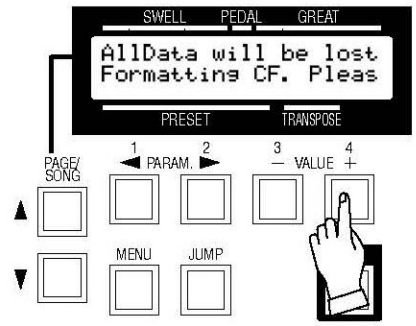
Touch the [2] CF FORM.
The FORMAT mode is displayed.

5



Touch the [4] OK button.
The confirmation message is displayed.

6



Touch the [4] YES button.
The initialization starts. It takes only a few seconds.

NOTE: If you do not want to initialize, just touch the [3] NO button.

7

To return to the PLAY mode, touch [PLAY].

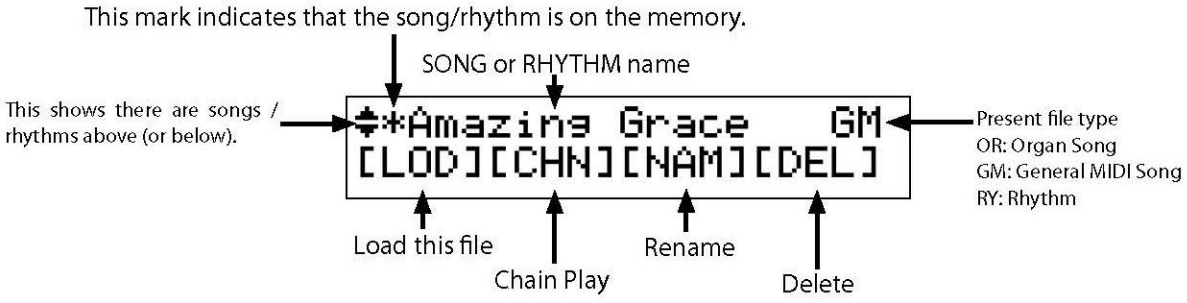
SONG PROCEDURES

Recording your play to the CF Card and playing/reproducing it is done in the SONG mode. In this mode, all operation is possible except initialization of the CF Card.

To locate this mode:

Touch the [MENU] button to display the MENU, select page A by the [PAGE] button and touch the [3] SONG button.

How to read the display



Record a song

1

Check that the CF Card is correctly inserted.

2

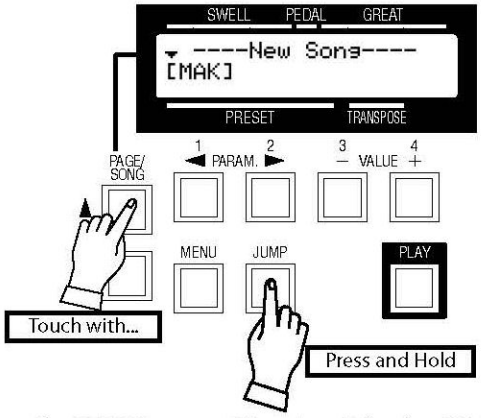
Go to the SONG mode.

What does this mean?

CF is not ready

The CF Card is not correctly inserted.

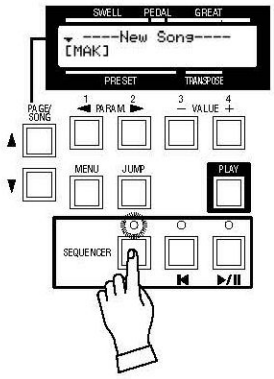
3



Select the SONG name "New Song" by the [PAGE/SONG] button.

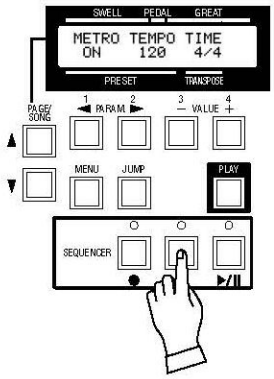
If you want to overwrite the existing song, select the song.

4



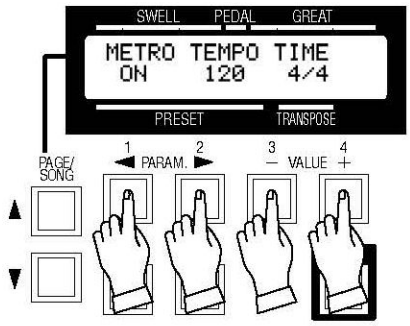
Press the [●] button. The light above the button blinks and it gets ready for recording. The Metronome starts tick-tacking.

5



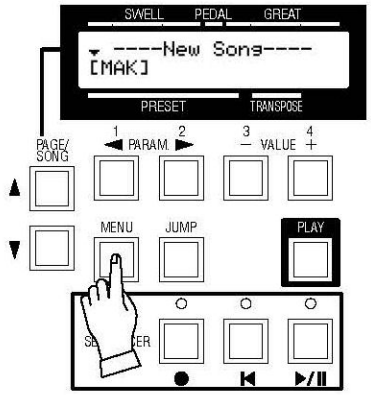
Press the [⏮] button to set the Metronome. The page for setting the Metronome appears.

6



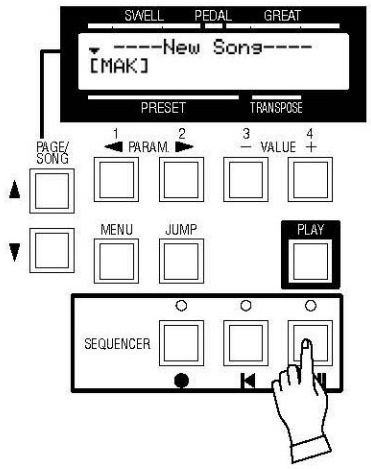
Set the Metronome ON/OFF, time and tempo with the [PARAM] and [VALUE] buttons.

7



Press the [MENU] or [⏮] button to return to the SONG mode.

8

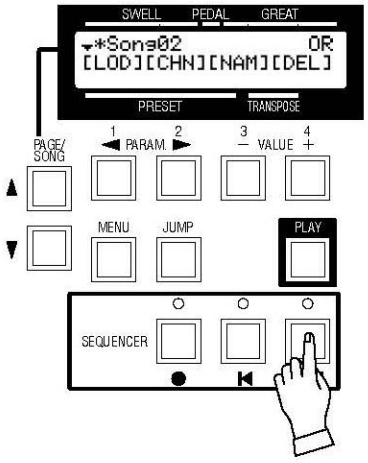


Press the [▶/II] button. After counting 2 measures, recording starts. If the Metronome has been turned OFF, the [●] light indicates it is ready for recording by turning from blinking to fully ON.

9

Play. If you do not want to record your play but only the set-up data, you may skip this step.

10



After playing, press either of [●], [⏮], [▶/II].
Recording stops and the song is written to the CF Card with a provisional name.

tips **WHAT WILL SAVED?**

A song file contains both set-up data and playing performance data.

Setup: Global Parameters, Bank Parameters, Preset Parameters, Leslie Cabinets, Custom Tone-wheels, Temporary (except expression source and device ID)

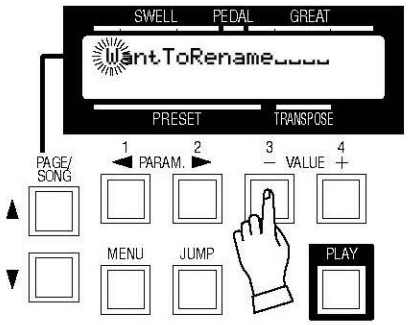
The file will named "xxxx.BOT" automatically.

Change the song name

1

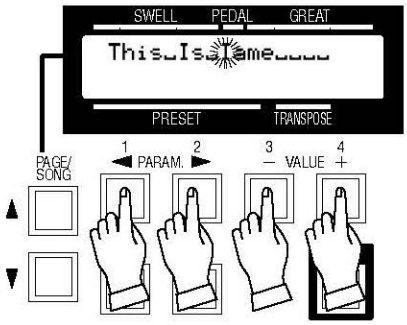
Select the song file you want to change the name.

2



Touch the [3] NAM button. You have come to SONG NAME INPUT mode.

3



Input the new SONG NAME.

[PARAM] button

Move the cursor.

You can use up to 16 letters.

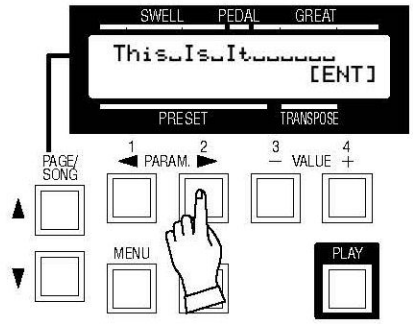
[VALUE] button

Choose the letters by this.

You can use Large and small Alphabets, digits and symbols.

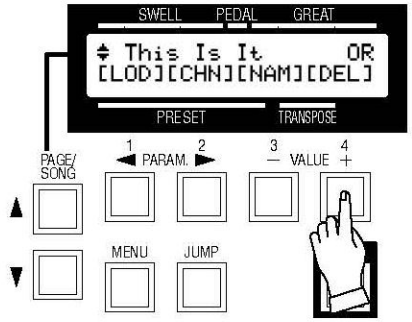
If you touch this button, holding down the [JUMP] button, you can move to the first letter of each type (= space, 0, A, a).

4



Move the cursor to the right end by the [PARAM] button.
[ENT] will be displayed.

5



Touch the [4] ENT button.
The SONG NAME will be changed.

Playback the song

❖ *After the operation, the settings already in this organ will be replaced by the newly loaded SONG. So you had better save them as new song in advance.*

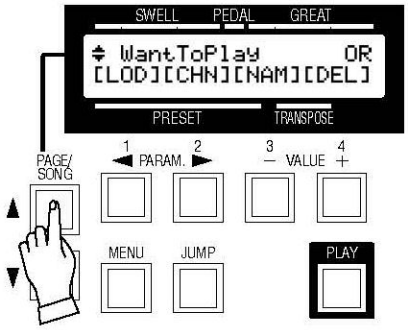
1

Check that the CF Card is correctly inserted.

2

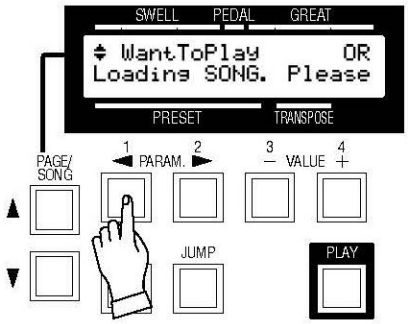
Come to the SONG mode.

3



Choose the SONG file to load by the [PAGE/SONG] button.

4

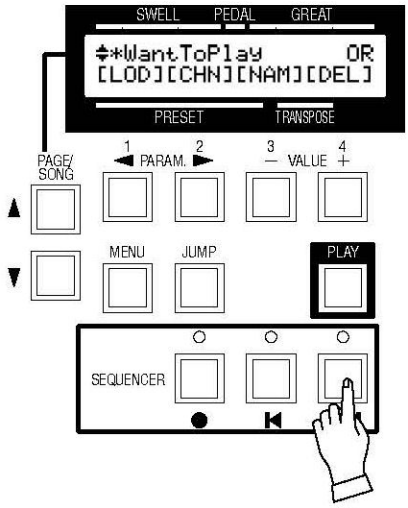


Touch the [1] LOD button.

The SONG will be loaded in a few seconds.

Once loading is completed, "*" appears on the left of the song name.

5



Touch the [▶/II] button.

The SONG starts.

[▶/II] Play / Pause

Temprarilly stops playing. If you press this button again, it re-starts playing from the point.

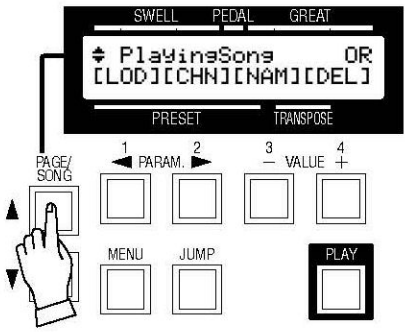
[⏮] Rewind

Stops playing and jumps to the top of the song.

Chain Play

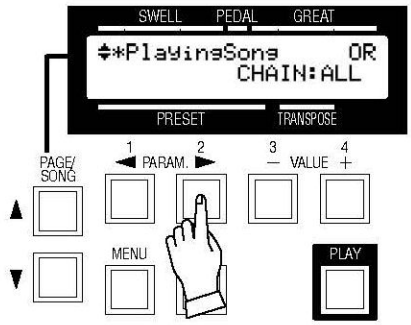
You can play back plural song data continuously (= Chain Play), or repeat playing back the same song.

1



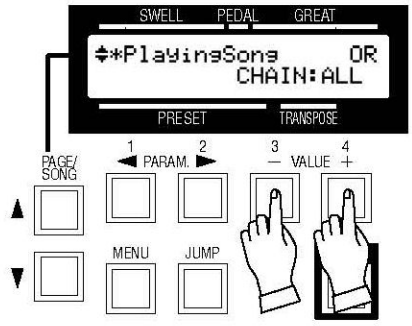
Come to the SONG mode, Press the [PAGE/SONG] button and select the first song you want to chain-play.

2



Press the [2] CHN button. CHAIN mode appears.

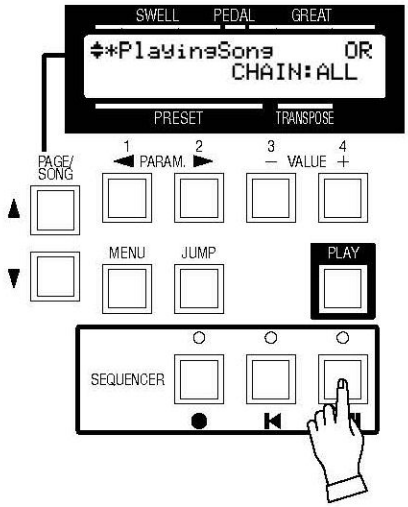
3



Press the [VALUE] button and select a type you want to playback.

ONE: Repeat the same song.
ALL: Repeat all songs.
SHUF: Shuffle all songs.

4



Press the [▶/II] button. Chain Play starts.

NOTE: The Chain Play runs on the song in the currently selected folder. It, however, does not run over plural folders.

How to delete the song

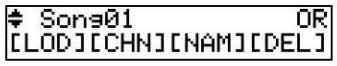
You may delete any unnecessary song data.

You cannot delete the information on commercially available GM song data/or rhythm data cards.

1

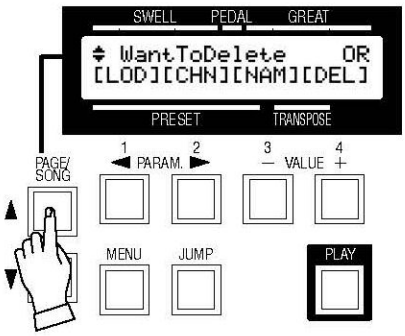
Check that the CF Card is correctly inserted.

2



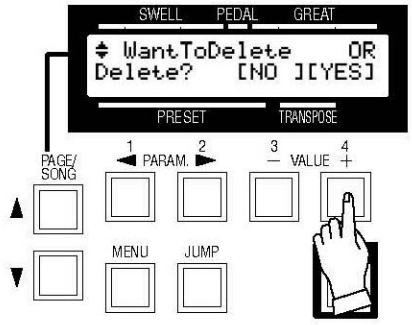
Come to the SONG mode.

3



Choose the SONG file you want to delete by the [PAGE/ SONG] button.

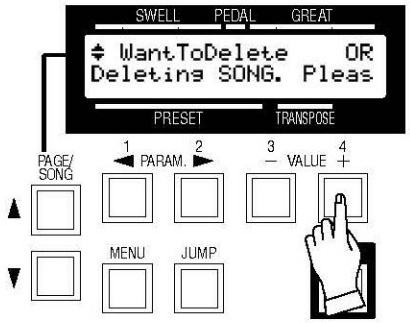
4



Touch the [4] DEL button.

The Confirmation message will be displayed.

5



Touch the [4] YES button.

The Delete operation starts.

NOTE: If you do not want to delete the file, touch [3] NO button.

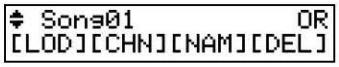
Using Rhythm

By using the exclusive (optional) rhythm data, the Sequencer functions as a simple rhythm player. You may enjoy your organ performance to the back ground of the rhythm you select.

1

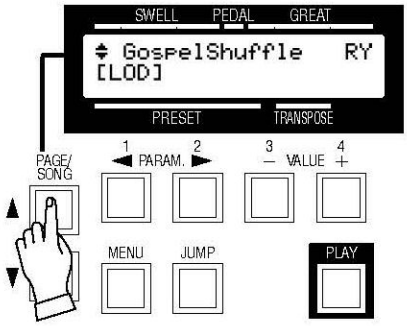
Check that the CF Card is correctly inserted.

2



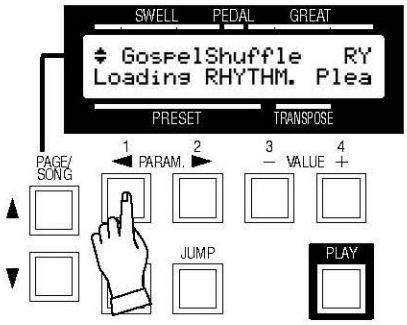
Come to the SONG mode.

3



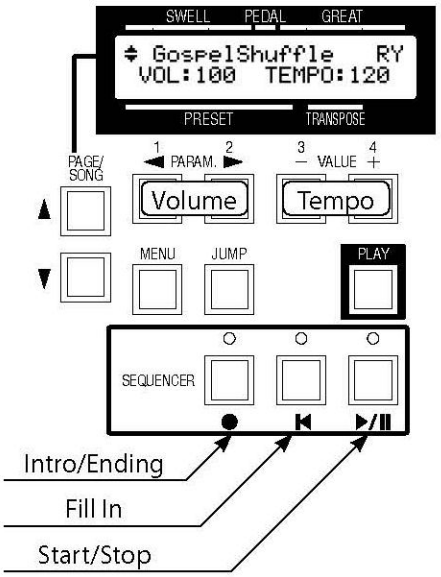
Press the [PAGE/SONG] button and select the Rhythm file you want to playback. ("RY" for the Rhythm file appears on the top right of the screen.)

4



Press the [1] LOD button. The Rhythm file will loaded.

5



USING BUTTONS

If the Rhythm file is in the memory, the Sequencer buttons function as follows:

[▶/II] Start/Stop

Starts/Stops the Rhythm.

The light above the button blinks to the tempo, while the rhythm is running.

[⏮] Fill In

Fill-in turns on in the measure where this button was pressed.

The pattern immediately after the rhythm starts is the basic one, but "variation" and "basic" change in turn every time the Fill-in turns on.

If you press and turn on this button while the rhythm is off, the normal pattern starts after Fill-in is played, when you start the rhythm again.

[●] Intro/Ending

If you press and turn on this button while the rhythm is off, the normal pattern starts after the Intro is played, when you start the rhythm again. If you press this button while the rhythm is running, the rhythm stops after the Ending is played.

[PARAM◀], [PARAM▶] Volume

Changes the Rhythm volume.

[VALUE -], [VALUE +] Tempo

Changes the Rhythm tempo.

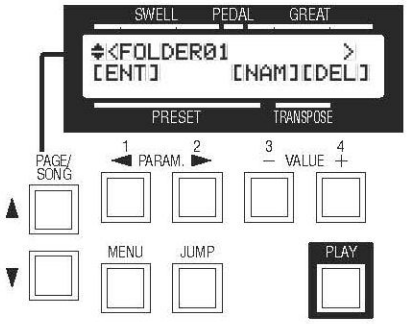
NOTE: You can not record the song to the Sequencer, if you make it using the Rhythm file.

NOTE: You can control Start/Stop and Fill-in with the foot-switch. (P. 63)

Because a CF Card can contain a large number of Songs, it may be desirable to put different songs into different groups - for example, group all of the Rock songs together, all of the Jazz songs together, all Love Ballads together, etc. You can create Folders on a CF Card specifically for this purpose. A Folder is simply a location on a CF Card where you can store group of files - similer to a drawer of a file cabinet.

How to Enter and Exit

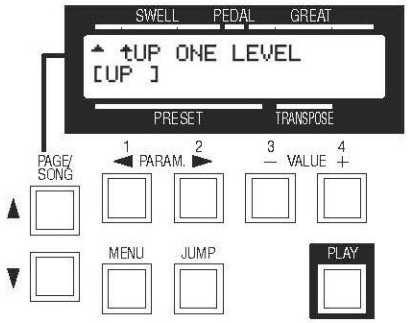
If a CF Card already contains a Folder, when you view the contents using the Display you will see something similar to this:



A Song name will be shown normally, while a Folder name will be shown in brackets "<>". If you choose a Folder name, a box [ENT] will appear, allowing you to enter, or see the contents of that Folder.

Touch the [1] button to select ENT and see the contents of the selected Folder.

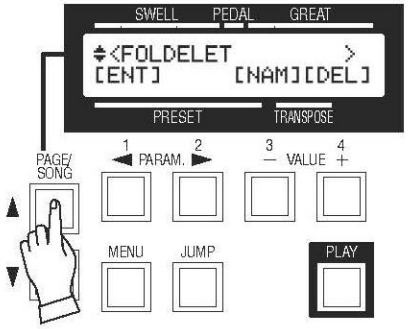
To see the contents of other Folders while then contents of a Folder are displaying, holding [JUMP] and press [PAGE/ SONG ▼] to move up to the top line in the list, which should read, "UP ONE LEVEL".



Touch the [1] button to select UP, which will move you out of the Folder that is currently displaying. Nou you may choose another Folder name and follow the avobe instructions to see its contents.

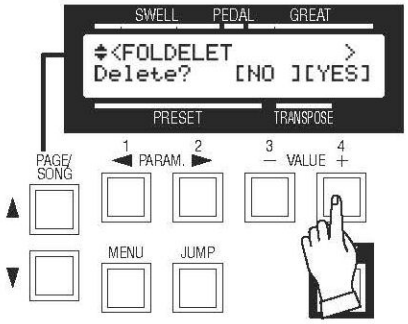
How to delete a Folder

1



Choose the FOLDER you want to delete by the [PAGE] button.

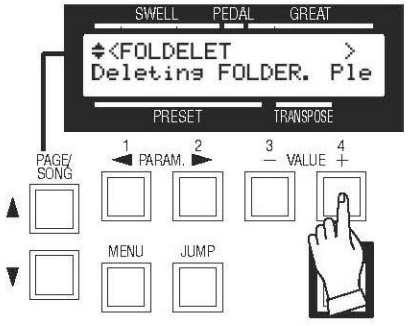
2



Touch the [4] DEL button.

The Confirmation message will be displayed.

3



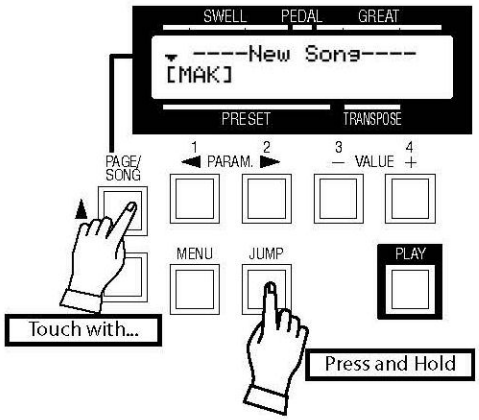
Touch the [4] YES button.

The Delete operation starts.

NOTE: If you do not want to delete the file, touch [3] NO button.

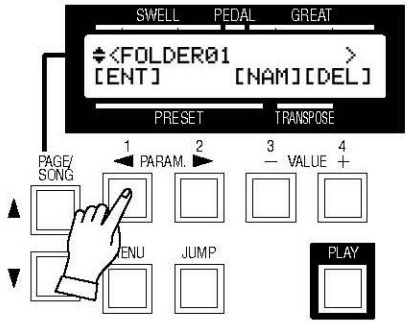
Creating a Folder

1



Select the Song name "New Song" by the [PAGE] button.

2

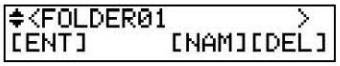


Touch the [1] MAK button.

The Folder is created to the CF Card with a provisional name.

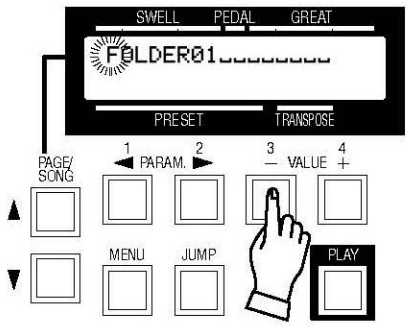
Change the Folder name

1



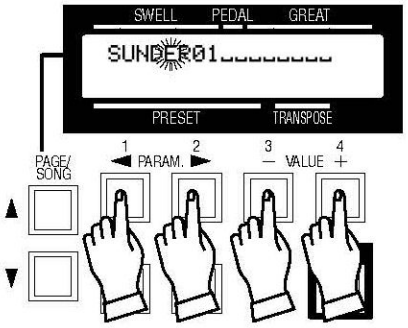
Select the Folder you want to change the name.

2



Touch the [3] NAM button. You have come to Folder name input mode.

3



Input the new SONG NAME.

[PARAM] button

Move the cursor.

You can use up to 16 letters.

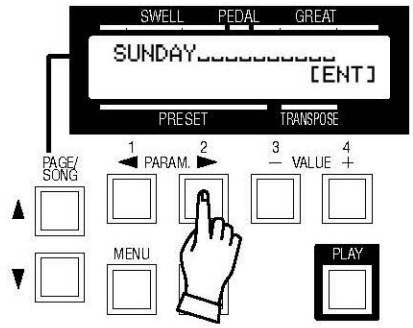
[VALUE] button

Choose the letters by this.

You can use Capital Letters, digits and symbols.

If you touch this button, holding down the [JUMP] button, you can move to the first letter of each type (= space, 0, A, a).

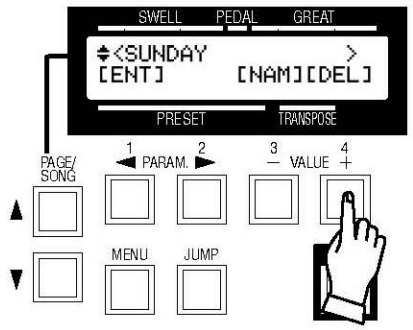
4



Move the cursor to the right end by the [PARAM] button.

[ENT] will be displayed.

5



Touch the [4] ENT button.

The Folder name will be changed.

FREQUENTLY ASKED QUESTIONS

◆ Malfunction of the buttons, the keys, etc.

- Turn off the POWER switch once, then turn it on again. If this procedure is not successful, turn off the POWER switch. While pressing the [RECORD] button, turn the POWER switch on again. (Note that in this case, all parameters return to their factory-preset status.)

◆ No sound is produced when the keys are pressed.

- The MASTER VOLUME is at the minimum setting. ⇨

  Adjust the volume with the MASTER VOLUME control. (P. 12 #2)

- A plug is inserted to the HEADPHONE jack. ⇨

  While a plug is inserted here, the built-in or the Leslie speaker is disabled.

◆ The Foot Switch does not work.

- The Foot Switch settings are not correct. ⇨

  Reset the Foot Switch correctly in the CONTROL mode. (P. 64 #21)

◆ The rotor of the external Leslie speaker does not stop, if the Leslie off mode is switched to [BRAKE].

- Some Leslie Speaker models do not [BRAKE]. [BRAKE] is possible on 2101/2102, 122XB, 971 and 3300 (current models).

◆ Audio is interrupted when a Combination Preset is selected.

- Between the Combination Preset with different Tonewheel Settings, the sound will be cut off while the Tonewheel Settings are switched.
- The sound is once cut between the presets with different key mode (MONO/POLY) on the Pedal Drawbars, for switching the sound algorithm.

◆ AC Power

Be sure to turn the instrument "OFF" after use, and do not turn the unit "ON" and "OFF" in quick succession, as this places an undue load on the electronic components.

◆ Cabinet And Bench

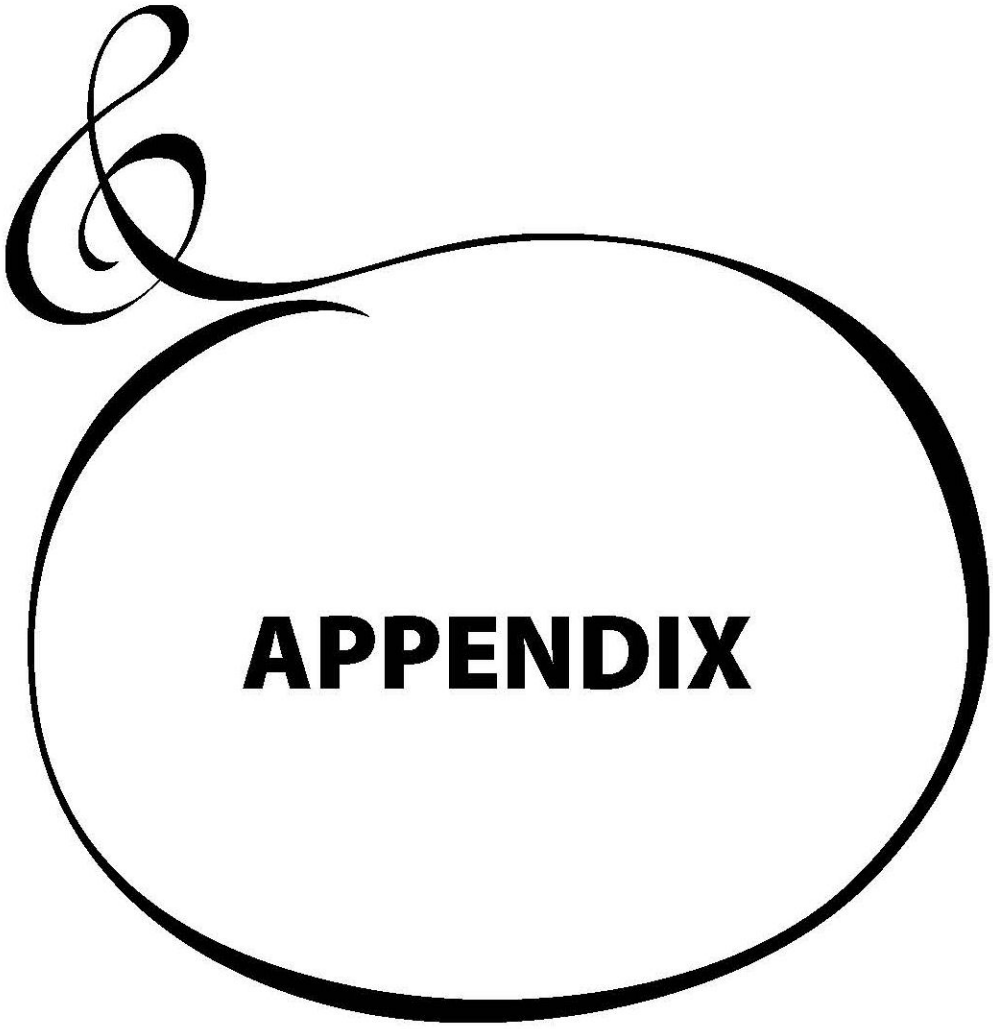
As with any piece of furniture, direct sunlight can damage the finish of your instrument. Use a soft dry cloth for dusting. To remove fingerprints or dulling film, use a soft cloth slightly moisten with water and a little mild soap. Immediately wipe dry a soft dry cloth.

◆ Keys And Buttons

To clean keys and buttons, use a clean soft cloth moistened with water. Do not use any solvents, thinners or dryers such as alcohol, gasoline, lighter fluid, carbon tetrachloride, etc. These solutions may affect the letters and/or finish on the buttons and keys.

◆ Moving Your Instrument

It is not necessary to bolt or fasten any parts of the instrument when moving. Careful consultation with your mover will assure you of a satisfactory moving job.



APPENDIX

CUSTOM TONEWHEELS PRESETS

◆BType1, BType2

Real B-3

This preset faithfully simulates the classic model, B-3. It contains low motor hum and some leakage noise.

80's Clean

This preset simulates the B-3 sounds in the 80's It contains reduced leakage noise.

Noisy

Thie preset is for passing all sounds of picked-up signal. It contains full motor hum and leakage noise.

Noisy 60

This preset boosts noise sounds. It contains full motor hum and leakage noise.

◆Mellow

Full Flats

This preset simulates the most ideal tone-wheel set. Their values are the same at each wheel.

Husky

This preset has the characteristic of lower middle range.

Flute Lead

This preset has the characteristic of lower bass and treble, contrasting "Husky".

◆Brite

Classic X-5

This preset faithfully simulates the classic model, X-5. It contains dull triangle waveform and flat output levels on every wheel.

Voxy Full

This preset has brightest sounds. It is suitable for surf and oldies music.

Cheap Tr. s

This preset simulates an old transistor organ. It has a limited sonic range.

◆Saw

Farf. Norm

This preset faithfully simulates the classic Farf. organ. It contains dull sawtooth waveform and flat output levels on every wheel.

Farf. Boost

This preset has the most bright sounds of the presets.

Cheap Tr. s

This preset simulates an old transistor organ. It has a limited sonic range.

Template		Seq. Local	Seq. No Local	Use Ex Zone
Messages	Local Control	On	Off	On
	NRPN	On	On	On
	Leslie Control Code	Organ	Organ	Organ
Transmit Channel	Swell Keyboard	1	1	Off
	Great Keyboard	2	2	Off
	Pedal Keyboard	3	3	Off
	External Zone	Off	Off	On
	Control	16	16	Off
	Leslie	Off	Off	Off
Comments		Use this template for connecting the organ to an external MIDI sequencer without the "Echo Back" (or MIDI thru) function, and recording songs.	Use this template for connecting the organ to an external MIDI sequencer with the "Echo Back" (or MIDI thru) function, and recording songs.	Use this template for connecting the organ to an external MIDI sound generator, such as a synthesizer or a sound module, to play it from the organ.

CHANNELS AND MIDI MESSAGES

		External Zone (Tx. only)	Swell Keyboard	Great Keyboard	Pedal Keyboard	Control
Note		O	O	O	O	X
Pitch Bend		O	X	X	X	O *1
Modulation	(1)	O	X	X	X	O *1
Volume, Pan	(7, 10)	O	X	X	X	X
Expression	(11)	O	X	X	X	O *2
Hold 1	(64)	O	O	O	O	X
Drawbar Reg.	Swell: 12 - 20 Great: 21 - 29 Pedal: 33,35	X	X	X	X	O
Spring Shock	(48)	X	X	X	X	O
Extra Voice Volume	(83)	X	X	X	X	O
RPN	(100, 101)	X	X	X	X	X
NRPN	(98, 99)	X	X	X	X	O
All Notes Off	(123)	O	O	O	O	X
All Sounds Off	(120)	X	O *3	O *3	O *3	X
Reset All Ctrl.	(121)	O	O	O	O	O
After Touch		X	X	X	X	X
Bank Select	(0, 32)	Change the voice for each zone.	X	X	X	Combination Presets
Program Change			X	X	X	

*1: It works for both Swell, Great and Pedal.

*2: It works for all parts (audio controlled)

*3: For Rx. only.

MIDI Implementation

Channel Voice Message

Note Off

Status	2nd Byte	3rd Byte
8nH	kkH	vvH, or
9nH	kkH	00H

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
kk=Note Number: 00H - 7FH (0 - 127)
vv=Velocity(disregard): 00H - 7FH (0 - 127)

Note On

Status	2nd Byte	3rd Byte
9nH	kkH	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
kk=Note Number: 00H - 7FH (0 - 127)
vv=Velocity: 00H - 7FH (0 - 127)

Control Change

The value set by the Control Change is not reset even when Program Change messages etc. are received.

Bank Select (CC#0, 20)

Status	2nd Byte	3rd Byte
BnH	00H	mmH
BnH	20H	llH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
mm,ll=Bank Number: 00 00H - 7F 7FH
Until you send the Program Change, the Bank Select process is reserved.

Modulation (CC#1)

Status	2nd Byte	3rd Byte
BnH	01H	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Modulation Depth: 00H - 7FH (0 - 127)

Expression (CC#11)

Status	2nd Byte	3rd Byte
BnH	0BH	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Expression: 00H - 7FH (0 - 127)

Spring Shock (CC#48)

Status	2nd Byte	3rd Byte
BnH	30H	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Velocity: 00H - 7FH (0 - 127)

Damper (CC#64)

Status	2nd Byte	3rd Byte
BnH	40H	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Control Value: 00H - 7FH (0 - 127)
0 - 63=Off, 64 - 127=On

NRPN MSB/LSB (CC#98, 99)

Status	2nd Byte	3rd Byte
BnH	63H	mmH
BnH	62H	llH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
mm=upper byte of the parameter number specified by NRPN
ll=lower byte of the parameter number specified by NRPN

Data Entry (CC#6, 38)

Status	2nd Byte	3rd Byte
BnH	06H	mmH
BnH	26H	llH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
mm,ll=the value of the parameter specified by NRPN

Extra Voice Volume (CC#83)

Status	2nd Byte	3rd Byte
BnH	53H	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Volume: 00H - 7FH (0 - 127)

Program Change

Status	2nd Byte
CnH	ppH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
pp=Program Number: 00H - 7FH (prog. 1 - prog. 128)

Pitch Bend Change

Status	2nd Byte	3rd Byte
EnH	llH	mmH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
mm,ll=Pitch Bend Value: 00 00H - 40 00H - 7F 7FH
(-8192 - 0 - +8191)

Channel Mode Message

All Sounds Off (CC#120)

Status	2nd Byte	3rd Byte
BnH	78H	00H

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
When this message is received, all currently-sounding notes on the corresponding channel will be turned off immediately.

Reset All Controllers (CC#121)

Status	2nd Byte	3rd Byte
BnH	79H	00H

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
When this message is received, the following controllers will be set to their reset values.
Pitch Bend Change: 0 (center)
Expression: 127
Hold 1: 0
NRPN: unset; previously set data will not change

All Sounds Off (CC#123)

Status	2nd Byte	3rd Byte
BnH	7BH	00H

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
When All Notes Off is received, all notes on the corresponding channel will be turned off. However if Hold 1 or Sostenuto is ON, the sound will be continue-duntil these are turned off.

Drawbar Data List

	Control Number								
Part	16′	5 1⁄3′	8′	4′	2 2⁄3′	2′	1 3⁄5′	1 1⁄3′	1′
Swell	0CH(12)	0DH(13)	0EH(14)	0FH(15)	10H(16)	11H(17)	12H(18)	13H(19)	14H(20)
Great	15H(21)	16H(22)	17H(23)	18H(24)	19H(25)	1AH(26)	1BH(27)	1CH(28)	1DH(29)
Pedal	21H(33)	-	23H(35)	-	-	-	-	-	-

	Level								
	0	1	2	3	4	5	6	7	8
Value	00 - 0FH (0 - 15)	10 - 1FH (16 - 31)	20 - 2FH (32 - 47)	30 - 3FH (48 - 63)	40 - 4FH (64 - 79)	50 - 5FH (80 - 95)	60 - 6FH (96 - 111)	70 - 7EH (112-126)	7FH (127)

ex: Set Great 8′ to level 7 via MIDI... Bx 17 70 (x=Control Channel)

System Exclusive Message

Memory Dump

1. Each Packet

F0	System Exclusive
55	SUZUKI ID
dd	Device ID (refer to P. 92 #5)
10	Model ID MSB
1D	Model ID LSB
11	Command: Data Packet
[TYPE]	Data Type 02H = All Data Dump 07H = Combi. Temp. Dump 09H = Global Dump 0AH = System Dump
[PNH]	Packet Number MSB
[PNL]	Packet Number LSB
[DATA]	128 Bytes Data 256 Bytes nibblized ASCII ex: 7EH = 37H, 45H
[CHD]	Check Digit Lower 7 bits of XOR [DATA]
F7	End Of Exclusive

2. Acknowledge

F0	System Exclusive
55	SUZUKI ID
dd	Device ID
10	Model ID MSB
1D	Model ID LSB
14	Command: Acknowledge
[TYPE]	Data Type
[AK]	Result 00H = OK 05H = Check Digit Error 06H = Receive Protected
[PNH]	Packet Number MSB
[PNL]	Packet Number LSB
F7	End Of Exclusive

3. # of Packets

All Data Dump:	480
Combi. Temp Dump:	4
Global Dump:	4
System Dump:	1

Dump Request (Rx. only)

F0	System Exclusive
55	SUZUKI ID
dd	Device ID
10	Model ID MSB
1D	Model ID LSB
12	Command: Dump Request
[TYPE]	Data Type 02H = All Data Dump 07H = Combi. Temp. Dump 09H = Global Dump 0AH = System Dump
F7	End Of Exclusive

Mode Setting Exclusive Message

Full Parameters Reset (Rx. only)

F0	System Exclusive
55	SUZUKI ID
dd	Device ID
42	Mode ID for DT1
12	Command: DT1
40	Address MSB
00	Address
7F	Address LSB
7F	Reset
42	Check Sum
F7	End Of Exclusive

NRPN Switch

F0	Suzuki Exclusive
55	SUZUKI ID
dd	Device ID
10	Model ID MSB
19	Model ID LSB
02	Command: NRPN Sw.
[DATA]	00H = Off, 7FH = On
F7	End Of Exclusive

When this device receives this message, switch Tx & Rx NRPN in Control channel.

Data Set (Rx. only)

F0	System Exclusive
55	SUZUKI ID
dd	Device ID
10	Model ID MSB
1D	Model ID LSB
13	Command: Data Set
aa	Address MSB
bb	Address
cc	Address LSB
[DATA]	Data (Flexible bytes)
F7	End Of Exclusive

Identity Request (Rx. only)

F0	System Exclusive
7E	Universal non real-time
dd	Device ID
06	Sub ID #1
01	Sub ID #2
F7	End Of Exclusive

Identity Reply (Tx. only)

F0	System Exclusive
7E	Universal non real-time
dd	Device ID
06	Sub ID #1
02	Sub ID #2
55	SUZUKI ID
00 10	Device Family code
00 1D	Device Family number
00 00	
00 00	
F7	End Of Exclusive

When Identity Request is received, Identity Reply will be transmitted.

Global Parameters

Category	Parameter	NRPN		SysEx Address			SysEx Length	Data	Default	Description
		LSB (62)	MSB (63)	MSB to LSB						
Tune	Transpose	01	00	00	01	00	01	3A - 40 - 46 (-6 - 0 - 6)	40	0
	Master Tune	01	02	00	01	02	02	032E - 0338 - 0342 (430 - 440 - 450)	0338	440
Expression	Source	02	00	00	02	00	01	00 - 02 00: Auto 01: Internal 02: MIDI	01	Auto
	Min. Level	02	08	00	02	08	01	00 - 09 (Off, -40dB - 0dB)	06	-35dB
	Min. Limit LF	02	09	00	02	09	01	00 - 08	05	-20dB
	Min. Limit HF	02	0A	00	02	0A	01	(Off, -40dB - -5dB)	03	-30dB
Foot Switch	FS1 Mode	02	01	00	02	01	01	00 - 0B 00: Off 01: Leslie Fast (alternate) 02: Leslie Fast (momentarily) 03: Dampler Swell 04: Damper Great 05: Damper Pedal 06: Preset Fwd. 07: Preset Rev. 08: Spring Shock 09: Delay Time 0A: Rhythm Start/Stop 0B: Rhythm Fill In	01	Leslie Fast (alternate)
	FS2 Device	02	02	00	02	02	01	00 - 01 (Foot Sw., Leslie Sw.)	00	Foot Sw.
	FS2 Tip Mode	02	03	00	02	03	01	same as FS1 mode	01	Leslie Fast (alternate)
	FS2 Ring Mode	02	04	00	02	04	01	same as FS1 mode	01	Leslie Fast (alternate)
	Damper Drawbars	02	05	00	02	05	01	00, 01 (Off/On)	01	On
	Damper Extra Voice	02	06	00	02	06	01	00, 01 (Off/On)	01	On
	Damper External Zone	02	07	00	02	07	01	00, 01 (Off/On)	01	On

Example Set Transpose 0 via NRPN.....Bx 62 01 63 00 06 40 (x = Control channel)
Set Transpose 0 via System Exclusive.....F0 55 dd 10 1D 13 00 01 00 40 F7 (dd = Device ID)

Bank Parameters

Category	Parameter	NRPN		SysEx Address			SysEx Length	Data	Default	Description
		LSB (62)	MSB (63)	MSB to LSB						
Preset Load	Drawbar Regist. Swell	6b	00	00	6b	00	01	00, 01 (Off/On)	01	On
	Drawbar Regest. Great	6b	01	00	6b	01	01	00, 01 (Off/On)	01	On
	Drawbar Regist. Pedal	6b	02	00	6b	02	01	00, 01 (Off/On)	01	On
	Internal Zone (INT)	6b	03	00	6b	03	01	00, 01 (Off/On)	01	On
	External Zone (EXT)	6b	04	00	6b	04	01	00, 01 (Off/On)	01	On
	Extra Voice (EXV)	6b	05	00	6b	05	01	00, 01 (Off/On)	01	On
	Equalizer / Reverb (EQ/REV)	6b	06	00	6b	06	01	00, 01 (Off/On)	01	On
	Animation / Overdrive (ANI/OD)	6b	07	00	6b	07	01	00, 01 (Off/On)	01	On
	Drawbar (DRAWB)	6b	08	00	6b	08	01	00, 01 (Off/On)	01	On
	Percussion (PERCUS)	6b	09	00	6b	09	01	00, 01 (Off/On)	01	On

Example "b" means Bank number.
Set Bank 2 Animation On via NRPN.....Bx 62 61 63 07 06 01 (x = Control channel)
Set Bank 2 Animation On via System Exclusive....F0 55 dd 10 1D 13 00 61 07 01 F7 (dd = Device ID)

Preset Parameters

Category	Parameter	NRPN		SysEx Address			SysEx Length	Data	Preset Load
		LSB (62)	MSB (63)	MSB to LSB					
Name	10 Characters	--	--	01	00	00	0A	7 bit ASCII	always
Internal Zone	Pedal To Great	07	00	00	07	00	01	00, 01 (Off/On)	INT
	P to G Range Hi	07	01	00	07	01	01	24 - 60 (MIDI note number)	
	Great To Pedal	07	02	00	07	02	01	00, 01 (Off/On)	
	G to P Range Hi	07	03	00	07	03	01	24 - 3C (MIDI note number)	
	Swell Drb Octave Shift	07	04	00	07	04	01	3E - 40 - 42 (-2 - 0 - +2)	
	Swell Drb Key Range Lo	07	05	00	07	05	01	24 - 60 (MIDI note number)	
	Swell Drb Key Range Hi	07	06	00	07	06	01	24 - 60 (MIDI note number)	
	Great Drb Octave Shift	07	07	00	07	07	01	3E - 40 - 42 (-2 - 0 - +2)	
	Great Drb Key Range Lo	07	08	00	07	08	01	24 - 60 (MIDI note number)	
	Great Drb Key Range Hi	07	09	00	07	09	01	24 - 60 (MIDI note number)	
	Pedal Drb Octave Shift	07	0A	00	07	0A	01	3E - 40 - 42 (-2 - 0 - +2)	
	Pedal Drb Key Range Lo	07	0B	00	07	0B	01	24 - 60 (MIDI note number)	
	Pedal Drb Key Range Hi	07	0C	00	07	0C	01	24 - 60 (MIDI note number)	
External Zone	MIDI Channel	4p	00	00	4p	00	01	00 - 10 (1 - 16, Off)	EXT
	Key Range Lo	4p	02	00	4p	02	01	24 - 60 (MIDI note number)	
	Key Range Hi	4p	03	00	4p	03	01	24 - 61 (MIDI note number)	
	Bank Select MSB	4p	04	00	4p	04	01	00 - 7F	
	Bank Select LSB	4p	05	00	4p	05	01	00 - 7F	
	Program Change	4p	06	00	4p	06	01	00 - 7F	
	Octave Shift	4p	07	00	4p	07	01	3E - 40 - 42 (-2 - 0 - +2)	
	Volume	4p	08	00	4p	08	01	00 - 7F	
	Pan	4p	09	00	4p	09	01	00 - 40- 7F (L64 - C - R64)	
	Velocity	4p	0A	00	4p	0A	01	00 - 04 (Off, Normal - Easy)	
	Expression Minimum	4p	0B	00	4p	0B	01	00 - 3F (0 - 63)	
	Expression Maximum	4p	0C	00	4p	0C	01	40 - 7F (64 - 127)	
	Expression CC#	4p	0D	00	4p	0D	01	00, 01 (7, 11)	
	Tx. Bend On	4p	0E	00	4p	0E	01	00, 01 (Off/On)	
	Tx. Modulation On	4p	0F	00	4p	0F	01	00, 01 (Off/On)	
Extra Voice	Switch	5p	00	00	5p	00	01	00, 01 (Off/On)	EXV
	Octerve Shift	5p	01	00	5p	01	01	3E - 40 - 42 (-2 - 0 - +2)	
	Key Range Lo	5p	02	00	5p	02	01	24 - 60 (MIDI note number)	
	Key Range Hi	5p	03	00	5p	03	01	24 - 60 (MIDI note number)	
	Voice Number	5p	04	00	5p	04	02	0000 - 03A7 (1 - 936)	
	Volume	5p	05	00	5p	05	01	00 - 7F	
	Pan	5p	06	00	5p	06	01	00 - 40- 7F (L64 - C - R64)	
	Velocity	5p	07	00	5p	07	01	00 - 04 (Off, Normal - Easy)	
	Reverb Level	5p	08	00	5p	08	01	00 - 7F	
	Chorus Level	5p	09	00	5p	09	01	00 - 7F	
	Expression Minimum	5p	0A	00	5p	0A	01	00 - 3F (0 - 63)	
	Expression Maximum	5p	0B	00	5p	0B	01	40 - 7F (64 - 127)	
	Pitch Bend Range	5p	0C	00	5p	0C	01	00 - 0C (0 - 12)	
	Modulation On	5p	0D	00	5p	0D	01	00, 01 (Off/On)	
	Sustain Length	5p	0E	00	5p	0E	01	00 - 3F(0 - 63)	

Example "p" means Zone number. Swell =0, Great=1, Pedal=2
Turn Great Extra Voice On via NRPN.....Bx 62 51 63 00 06 01 (x = Control channel)
Turn Great Extra Voice On via System Exclusive....F0 55 dd 10 1D 13 00 51 00 01 F7 (dd = Device ID)

Category	Parameter	NRPN		SysEx Address			SysEx Length	Data	Preset Load
		LSB (62)	MSB (63)	MSB to LSB					
Percussion	Second On	08	00	00	08	00	01	00, 01 (Off/On)	PERCUS
	Third On	08	01	00	08	01	01	00, 01 (Off/On)	
	Decay Fast	08	02	00	08	02	01	00, 01 (Off/On)	
	Volume Soft	08	03	00	08	03	01	00, 01 (Off/On)	
	Level On Soft	08	04	00	08	04	01	00 - 0F (1 - 16)	
	Level On Normal	08	05	00	08	05	01	00 - 0F (1 - 16)	
	Decay Fast	08	06	00	08	06	01	00 - 09 (1 - 9, Cont)	
	Decay Slow	08	07	00	08	07	01	00 - 09 (1 - 9, Cont)	
	Touch	08	08	00	08	08	01	00, 01 (Off/On)	
	Velocity	08	09	00	08	09	01	00, 01 (Off/On)	
	Key Track	08	0A	00	08	0A	01	00, 01 (Off/On)	
	Drawbar 1′ Cancel	08	0B	00	08	0B	01	00, 01 (Off/On)	
	Drawbar Level	08	0C	00	08	0C	01	00, 01 (0, -3dB)	
Swell & Great	Tonewheel Set	20	00	00	20	00	01	00 - 04 00: B-Type 1 01: B-Type 2 02: Mellow 03: Brite 04: Sawtooth	DRAWB
	Key Click Attack	20	01	00	20	01	01	00 - 0F (0 - 15)	
	Key Click Release	20	02	00	20	02	01	00 - 0F (0 - 15)	
	Fold Back Lo	20	03	00	20	03	01	00 - 0C (C1 - C2)	
	Fold Back Hi	20	04	00	20	04	01	2B - 30 (G4 - C5)	
	Pitch Bend Range	20	05	00	20	05	01	00 - 0C (0 - 12)	
	Key Click LPF	20	06	00	20	06	01	00 - 7F (0 - 127)	
	Custom TW B-Type 1	20	07	00	20	07	01	00 - 04 (1 - 5)	
	Custom TW B-Type 2	20	08	00	20	08	01	00 - 04 (1 - 5)	
	Custom TW Mellow	20	09	00	20	09	01	00 - 04 (1 - 5)	
	Custom TW Brite	20	0A	00	20	0A	01	00 - 04 (1 - 5)	
	Custom TW Sawtooth	20	0B	00	20	0B	01	00 - 04 (1 - 5)	
Swell Drawbars	16′	--	--	01	01	00	01	00 - 08 (0 - 8)	SWL
	5 1/3′	--	--	01	01	01	01	00 - 08 (0 - 8)	
	8′	--	--	01	01	02	01	00 - 08 (0 - 8)	
	4′	--	--	01	01	03	01	00 - 08 (0 - 8)	
	2 2/3′	--	--	01	01	04	01	00 - 08 (0 - 8)	
	2′	--	--	01	01	05	01	00 - 08 (0 - 8)	
	1 3/5′	--	--	01	01	06	01	00 - 08 (0 - 8)	
	1 1/3′	--	--	01	01	07	01	00 - 08 (0 - 8)	
	1′	--	--	01	01	08	01	00 - 08 (0 - 8)	
Great Drawbars	16	--	--	01	02	00	01	00 - 08 (0 - 8)	GRT
	5 1/3′	--	--	01	02	01	01	00 - 08 (0 - 8)	
	8′	--	--	01	02	02	01	00 - 08 (0 - 8)	
	4′	--	--	01	02	03	01	00 - 08 (0 - 8)	
	2 2/3′	--	--	01	02	04	01	00 - 08 (0 - 8)	
	2′	--	--	01	02	05	01	00 - 08 (0 - 8)	
	1 3/5′	--	--	01	02	06	01	00 - 08 (0 - 8)	
	1 1/3′	--	--	01	02	07	01	00 - 08 (0 - 8)	
	1′	--	--	01	02	08	01	00 - 08 (0 - 8)	

Category	Parameter	NRPN		SysEx Address			SysEx Length	Data	Preset Load
		LSB (62)	MSB (63)	MSB to LSB					
Pedal	Tonewheel Set	22	00	00	22	00	01	00 - 03 00: Normal 01: Muted 02: Synth 1 03: Synth 2	DRAWB
	Attack	22	01	00	22	01	01	00 - 04 00: Slow Attack 01: No Click 02: Soft Click 03: Normal Click 04: Max Click	
	Pitch Bend Range	22	02	00	22	02	01	00 - 0C (0 - 12)	
	Sustain On	22	03	00	22	03	01	00, 01 (Off/On)	
	Sustain Length	22	04	00	22	04	01	00 - 04 (1 - 5)	
	Decay Length	22	05	00	22	05	01	00 - 05 (1 - 5, Cont)	
	Key Mode	22	07	00	22	07	01	00, 01 (Mono/Poly)	
Pedal Drawbars	16′	--	--	01	03	00	01	00 - 08 (0 - 8)	PDL
	8′	--	--	01	03	01	01	00 - 08 (0 - 8)	
Drawbar Effect	Leslie On	09	00	00	09	00	01	00, 01 (Off/On)	ANI/OD
	Leslie Fast	09	01	00	09	01	01	00, 01 (Off/On)	
	Leslie Brake	09	07	00	09	07	01	00, 01 (Off/On)	
	Leslie Cabinet Number	09	08	00	09	08	01	00 - 07 (1 - 8)	
	Vibrato On Swell	09	02	00	09	02	01	00, 01 (Off/On)	
	Vibrato On Great	09	03	00	09	03	01	00, 01 (Off/On)	
	Vibrato Mode	09	04	00	09	04	01	00 - 05 (V1 - C3)	
	Vibrato Rate	09	05	00	09	05	01	00 - 04 (6.1 - 7.25Hz)	
	Vibrato V1 Depth	09	0D	00	09	0D	01	00 - 0F (1 - 16)	
	Vibrato V2 Depth	09	0E	00	09	0E	01	00 - 0F (1 - 16)	
	Vibrato V3 Depth	09	0F	00	09	0F	01	00 - 0F (1 - 16)	
	Vibrato C1 Depth	09	10	00	09	10	01	00 - 0F (1 - 16)	
	Vibrato C2 Depth	09	11	00	09	11	01	00 - 0F (1 - 16)	
	Vibrato C3 Depth	09	12	00	09	12	01	00 - 0F (1 - 16)	
	Vibrato Tremolo	09	13	00	09	13	01	00 - 0F (0 - 15)	
	Vibrato Cho. Emphasis	09	14	00	09	14	01	00 - 09 (0 - 9)	
	OD On	09	0A	00	09	0A	01	00, 01 (Off/On)	
	OD Drive Level	09	06	00	09	06	01	00 - 3F (0 - 63)	
	OD Exp. Control	09	0B	00	09	0B	01	00, 01 (Off/On)	
	OD Mod. Control	09	0C	00	09	0C	01	00, 01 (Off/On)	
	EQ Bass Gain	0A	00	00	0A	00	01	00 - 09 - 12 (-9 - 0 - +9)	EQ/REV
	EQ Mid Gain	0A	01	00	0A	01	01	00 - 09 - 12 (-9 - 0 - +9)	
	EQ Treble Gain	0A	02	00	0A	02	01	00 - 09 - 12 (-9 - 0 - +9)	
	EQ Mid Frequency	0A	03	00	0A	03	01	00 - 0A (480 - 2.9kHz)	
	EQ Tone Control	0A	0A	00	0A	0A	01	00 - 09 - 12 (-9 - 0 - +9)	
	Reverb Type	0A	04	00	0A	04	01	00 - 0A 00: Room 1 01: Room 2 02: Live House 03: Hall 1 04: Hall 2 05: Church 06: Plate 07: Spring 08: Delay 09: Panning Delay 0A: Reverb + Delay	
	Reverb Depth	0A	05	00	0A	05	01	00 - 0F (0 - 15)	
	Reverb Time	0A	06	00	0A	06	01	00 - 1F (0 - 31)	
	Reverb Delay Feedback	0A	07	00	0A	07	01	00 - 1F (0 - 96%)	
	Reverb Delay Time	0A	08	00	0A	08	01	00 - 44 (4.7 - 2000ms)	
	Leslie On Reverb	0A	09	00	0A	09	01	00,01 (Off/On)	

Category	Parameter	NRPN		SysEx Address			SysEx Length	Data	Preset Load
		LSB (62)	MSB (63)	MSB to LSB					
Extra Voice	EQ Bass Gain	0A	0B	00	0A	0B	01	00 - 09 - 12 (-9 - 0 - +9)	EQ/REV
	EQ Mid Gain	0A	0C	00	0A	0C	01	00 - 09 - 12 (-9 - 0 - +9)	
	EQ Mid Frequency	0A	0D	00	0A	0D	01	00 - 0A (480 - 2.9kHz)	
	EQ Treble Gain	0A	0E	00	0A	0E	01	00 - 09 - 12 (-9 - 0 - +9)	
	Reverb Type	0A	0F	00	0A	0F	01	00 - 05 00: Small Room 01: Medium Room 02: Large Room 03: Medium Hall 04: Large Hall 05: Plate	
	Reverb Depth	0A	10	00	0A	10	01	00 - 7F (0 - 127)	
	Reverb Time	0A	11	00	0A	11	01	00 - 7F (0 - 127)	
	Chorus Type	0A	12	00	0A	12	01	00 - 05 00: Chorus 1 01: Chorus 2 02: Chorus 3 03: Chorus 4 04: FB Chorus 05: Flanger	
	Chorus Level	0A	13	00	0A	13	01	00 - 7F (0 - 127)	
	Chorus Rate	0A	14	00	0A	14	01	00 - 7F (0 - 127)	
	Chorus Depth	0A	15	00	0A	15	01	00 - 7F (0 - 127)	
	Chorus Feedback	0A	16	00	0A	16	01	00 - 7F (0 - 127)	
	Chorus Send to Reverb	0A	17	00	0A	17	01	00 - 7F (0 - 127)	

Leslie Parameters

Category	Parameter	NRPN (OR)		NRPN (21)		SysEx Address			SysEx Length	Data
		LSB (62)	MSB (63)	LSB (62)	MSB (63)	MSB to LSB				
Cabinet	Name	--	--	--	--	03	00	00	0A	(10 Characters)
	Slow Speed Horn	06	00	7F	00	00	06	00	01	
	Slow Speed Bass	06	01	7F	01	00	06	01	01	
	Fast Speed Horn	06	02	7F	02	00	06	02	01	
	Fast Speed Bass	06	03	7F	03	00	06	03	01	
	Rise Time Horn	06	04	7F	04	00	06	04	01	
	Rise Time Bass	06	05	7F	05	00	06	05	01	
	Fall Time Horn	06	06	7F	06	00	06	06	01	
	Fall Time Bass	06	07	7F	07	00	06	07	01	
	Brake Time Horn	06	08	7F	08	00	06	08	01	
	Brake Time Bass	06	09	7F	09	00	06	09	01	
	Level Horn	06	0A	--	--	00	06	0A	01	
	Level Bass	06	0B	--	--	00	06	0B	01	
	Mic. Angle	06	0C	7F	0A	00	06	0C	01	
	Mic. Distance	06	0D	7F	0B	00	06	0D	01	
	Horn Character	06	0E	7F	0D	00	06	0E	01	
	Amplifier	06	0F	--	--	00	06	0F	01	
	Speaker	06	10	--	--	00	06	10	01	

MIDI Implementation

Channel Voice Message

Note Off

Status	2nd Byte	3rd Byte
8nH	kkH	vvH, or
9nH	kkH	00H

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
kk=Note Number: 00H - 7FH (0 - 127)
vv=Velocity(disregard): 00H - 7FH (0 - 127)

Note On

Status	2nd Byte	3rd Byte
9nH	kkH	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
kk=Note Number: 00H - 7FH (0 - 127)
vv=Velocity: 00H - 7FH (0 - 127)

Control Change

The value set by the Control Change is not reset even when Program Change messages etc. are received.

Bank Select (CC#0, 20)

Status	2nd Byte	3rd Byte
BnH	00H	mmH
BnH	20H	llH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
mm,ll=Bank Number: 00 00H - 7F 7FH
Until you send the Program Change, the Bank Select process is reserved.

Modulation 1 (CC#1)

Status	2nd Byte	3rd Byte
BnH	01H	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Modulation depth: 00H - 7FH (0 - 127)

Modulation 2 (CC#2)

Status	2nd Byte	3rd Byte
BnH	01H	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Modulation depth: 00H - 7FH (0 - 127)

Portamento Time (CC#5)

Status	2nd Byte	3rd Byte
BnH	05H	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Portamento Time: 00H - 7FH (0 - 127)
This adjusts the rate of pitch change when Portamento is on. A value of 0 results in the fastest change.

Volume (CC#7)

Status	2nd Byte	3rd Byte
Bn	07	vv

n=MIDI Channel Number: 0 - F (Ch. 1 - 16)
vv=volume: 00 - 7F (0 - 127)
The volume message is used to set the volume balance of each External Zone and Extra Voice.

Pan (CC#10)

Status	2nd Byte	3rd Byte
BnH	0AH	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Pan: 00H(Left) - 40H(Center) - 7FH(Right)

Expression (CC#11)

Status	2nd Byte	3rd Byte
BnH	0BH	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Expression: 00H - 7FH (0 - 127)

Damper (CC#64)

Status	2nd Byte	3rd Byte
BnH	40H	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Control Value: 00H - 7FH (0 - 127)
0 - 63=Off, 64 - 127=On

Portamento (CC#65)

Status	2nd Byte	3rd Byte
BnH	41H	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Control Value: 00H - 7FH (0 - 127)
0=Off, 1 - 127=On

Sostenuto (CC#66)

Status	2nd Byte	3rd Byte
BnH	42H	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Control Value: 00H - 7FH (0 - 127)
0 - 63=Off, 64 - 127=On

Soft (CC#67)

Status	2nd Byte	3rd Byte
BnH	43H	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Control Value: 00H - 7FH (0 - 127)
0 - 63=Off, 64 - 127=On

Filter Resonance (CC#71)

Status	2nd Byte	3rd Byte
BnH	47H	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Control Value: 00H(-64) - 40H(0) - 7FH(+63)

Release Time (CC#72)

Status	2nd Byte	3rd Byte
BnH	48H	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Control Value: 00H(-64) - 40H(0) - 7FH(+63)

Attack Time (CC#73)

Status	2nd Byte	3rd Byte
BnH	49H	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Control Value: 00H(-64) - 40H(0) - 7FH(+63)

Filter Cut Off (CC#74)

Status	2nd Byte	3rd Byte
BnH	4AH	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Control Value: 00H(-64) - 40H(0) - 7FH(+63)

Decay Time (CC#75)

Status	2nd Byte	3rd Byte
BnH	4BH	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Control Value: 00H(-64) - 40H(0) - 7FH(+63)

Vibrato Rate (CC#76)

Status	2nd Byte	3rd Byte
BnH	4CH	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Control Value: 00H(-64) - 40H(0) - 7FH(+63)

Vibrato Depth (CC#77)

Status	2nd Byte	3rd Byte
BnH	4DH	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Control Value: 00H(-64) - 40H(0) - 7FH(+63)

Vibrato Delay (CC#78)

Status	2nd Byte	3rd Byte
BnH	4EH	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Control Value: 00H(-64) - 40H(0) - 7FH(+63)

Effect 1 (Reverb Send Level) (CC#91)

Status	2nd Byte	3rd Byte
BnH	5BH	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Control Value: 00H - 7FH (0 - 127)

Effect 3 (Chorus Send Level) (CC#93)

Status	2nd Byte	3rd Byte
BnH	5BH	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Control Value: 00H - 7FH (0 - 127)

NRPN MSB/LSB (CC#98, 99)

Status	2nd Byte	3rd Byte
BnH	63H	mmH
BnH	62H	llH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
mm=upper byte of the parameter number specified by NRPN
ll=lower byte of the parameter number specified by NRPN

NRPN for MULTI 1 - 16

NRPN MSB	NRPN LSB	Data Entry MSB	Data Entry LSB	Function and range
01H	08H	mmH	--	Vibrato Rate (Relative change) mmH: 00H - 40H - 7FH (-64 - 0 - +63)
01H	09H	mmH	--	Vibrato Depth (Relative change)
01H	0AH	mmH	--	Vibrato Delay (Relative change)
01H	20H	mmH	--	Filter Cut Off (Relative change)
01H	21H	mmH	--	Filter Resonance (Relative change)
01H	63H	mmH	--	Attack Time (Relative change)
01H	64H	mmH	--	Decay Time (Relative change)
01H	66H	mmH	--	Release Time (Relative change)
14H	ddH	mmH	--	Drum Filter Cut Off (Relative change) ddH: Drum Instrument note number mmH: 00H - 40H - 7FH (-64 - 0 - +63)
15H	ddH	mmH	--	Drum Filter Resonance (Relative change)
16H	ddH	mmH	--	Drum Attack Time (Relative change)
17H	ddH	mmH	--	Drum Decay Time (Relative change)
18H	ddH	mmH	--	Drum Coarse Tune (Relative change)
19H	ddH	mmH	--	Drum Fine Tune (Relative change)
1AH	ddH	mmH	--	Drum Volume (Absolute change) ddH: Drum Instrument note number mmH: 00H - 7FH (0 - 127)
1CH	ddH	mmH	--	Drum Pan (Absolute change)
1DH	ddH	mmH	--	Drum Reverb Send Level (Absolute change)
1EH	ddH	mmH	--	Drum Chorus Send Level (Absolute change)

RPN MSB/LSB (CC#100, 101)

Status	2nd Byte	3rd Byte
BnH	65H	mmH
BnH	64H	llH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
mm=upper byte of the parameter number specified by RPN
ll=lower byte of the parameter number specified by RPN

RPN for MULTI 1 - 16

RPN MSB	RPN LSB	Data Entry MSB	Data Entry LSB	Function and range
00H	00H	mmH	--	Pitch Bend Range mmH: 00H - 18H (0 - 24 semitones)
00H	01H	mmH	llH	Master Fine Tuning mm,ll: 00 00H - 40 00H - 7F 7FH (-100 - 0 - +99 cents)
00H	02H	mmH	--	Master Coarse Tuning mmH: 28H - 40H - 58H (-24 - 0 - +24 semitones)

Data Entry (CC#6, 38)

Status	2nd Byte	3rd Byte
BnH	06H	mmH
BnH	26H	llH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
mm,ll=the value of the parameter specified by NRPN, RPN

Program Change

Status	2nd Byte
CnH	ppH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
pp=Program Number: 00H - 7FH (prog. 1 - prog. 128)

Channel Pressure

Status	2nd Byte
DnH	vvH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
vv=Channel Pressure: 00H - 7FH (0 - 127)

Pitch Bend Change

Status	2nd Byte	3rd Byte
EnH	llH	mmH

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
mm,ll=Pitch Bend Value: 00 00H - 40 00H - 7F 7FH
(-8192 - 0 - +8191)

Channel Mode Message

All Sounds Off (CC#120)

Status	2nd Byte	3rd Byte
BnH	78H	00H

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
When this message is received, all currently-sounding notes on the corresponding channel will be turned off immediately.

Reset All Controllers (CC#121)

Status	2nd Byte	3rd Byte
BnH	79H	00H

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
When this message is received, the following controllers will be set to their reset values (MULTI 1 - 16 only).

Pitch Bend Change:	0 (center)
Modulation 1:	0
Modulation 2:	0
Expression:	127
Hold 1:	0
Sostenuto:	0
Soft:	0

RPN: unset; previously set data will not change
NRPN: unset; previously set data will not change

All Sounds Off (CC#123)

Status	2nd Byte	3rd Byte
BnH	7BH	00H

n=MIDI Channel Number: 0H - FH (Ch. 1 - 16)
When All Notes Off is received, all notes on the corresponding channel will be turned off. However if Hold 1 or Sostenuto is ON, the sound will be continued until these are turned off.

System Realtime Message

Active Sensing

Status

FEH

When Active Sensing is received, the unit begin monitoring the intervals of all further messages. While monitoring, if the interval between messages exceeds 420 ms, the same processing will be carried out as when All sounds Off, All Notes Off and Reset All Controllers are received, and message interval monitoring will be halted.

System Exclusive Message

GM System On

F0 7E 7F 09 01 F7

This is a command message that resets the internal settings of unit to the General MIDI initial state. After receiving this message, this unit will automatically be set to the proper condition for correctly playing a General MIDI score. There must be an interval at least 50 ms between this message and the next message.

INSTRUMENTS LIST

CC0	CC32	PC	Name	Group
121	0	0	AcousticPiano GM	Piano
121	1	0	Ac.Piano Wide	Piano
121	2	0	Ac.Piano Dark	Piano
121	3	0	Grand Piano	Piano
121	4	0	Classic Piano	Piano
121	5	0	Jazz Piano	Piano
121	6	0	Piano & Vibes	Piano
121	7	0	Piano & Strings	Piano
121	8	0	Rock Piano	Piano
121	9	0	Grand Piano RX	Piano
121	10	0	Grand RX DEMO	Piano
121	0	1	Bright Piano GM	Piano
121	1	1	Bright PianoWide	Piano
121	2	1	Piano Pad 1	Piano
121	3	1	Piano Pad 2	Piano
121	4	1	Piano & Pad	Piano
121	0	2	E.Grand Piano GM	Piano
121	1	2	E.Grand Wide	Piano
121	2	2	M1 Piano	Piano
121	3	2	90's Piano	Piano
121	4	2	2000's Piano	Piano
121	5	2	Chorus Piano	Piano
121	6	2	Piano Layers	Piano
121	0	3	Honky-Tonk GM	Piano
121	1	3	Honky Wide	Piano
121	0	4	E.Piano 1 GM	Elec.Piano
121	1	4	Detuned EP 1	Elec.Piano
121	2	4	EP1 Veloc.sw	Elec.Piano
121	3	4	60's E.Piano	Elec.Piano
121	4	4	Vintage EP	Elec.Piano
121	5	4	Pro Dyno EP	Elec.Piano
121	6	4	Pro Stage EP	Elec.Piano
121	7	4	Studio EP	Elec.Piano
121	8	4	R&B E.Piano	Elec.Piano
121	9	4	Thin E.Piano	Elec.Piano
121	10	4	Dyno Tine EP	Elec.Piano
121	11	4	Club E.Piano	Elec.Piano
121	12	4	Classic Wurly	Elec.Piano
121	13	4	Soft Wurly	Elec.Piano
121	14	4	Hard Wurly	Elec.Piano
121	15	4	Vel.Wurly	Elec.Piano
121	16	4	Tremolo Wurly	Elec.Piano
121	0	5	E.Piano 2 GM	Elec.Piano
121	1	5	Detuned EP 2	Elec.Piano
121	2	5	EP2 Veloc.sw	Elec.Piano
121	3	5	EP Legend	Elec.Piano
121	4	5	EP Phase	Elec.Piano
121	5	5	Syn Piano X	Elec.Piano
121	6	5	Stereo Dig.EP	Elec.Piano
121	7	5	Classic Dig.EP	Elec.Piano
121	8	5	Hybrid EP	Elec.Piano
121	9	5	Classic Tines	Elec.Piano
121	10	5	Phantom Tine	Elec.Piano
121	11	5	DW8000 EP	Elec.Piano
121	12	5	Sweeping EP	Elec.Piano
121	13	5	White Pad EP	Elec.Piano
121	0	6	Harpsichord GM	Harpsichord
121	3	6	Harpsi KeyOff RX	Harpsichord
121	4	6	Harpsi Korg	Harpsichord
121	5	6	Harpsi 16'RX	Harpsichord
121	0	7	Clav GM	Harpsichord
121	1	7	Pulse Clav	Harpsichord
121	2	7	Clav Wah RX	Harpsichord
121	3	7	Clav Snap	Harpsichord
121	4	7	Sticky Clav	Harpsichord
121	0	8	Celesta GM	ChromaPerc
121	0	9	Glockenspiel GM	ChromaPerc
121	1	9	Sistro	ChromaPerc
121	0	10	Music Box GM	ChromaPerc
121	1	10	Orgel	ChromaPerc
121	0	11	Vibraphone GM	ChromaPerc
121	1	11	Vibrap.Wide	ChromaPerc
121	2	11	Vibraphone 2	ChromaPerc
121	0	12	Marimba GM	ChromaPerc
121	1	12	Marimba Wide	ChromaPerc
121	2	12	Marimba Key Off	ChromaPerc
121	3	12	Monkey Skuls	ChromaPerc
121	4	12	Log Drum	ChromaPerc
121	5	12	Mallet Clock	ChromaPerc
121	6	12	Balaphon	ChromaPerc
121	0	13	Xylophone GM	ChromaPerc
121	0	14	Tubular Bell	ChromaPerc
121	1	14	Church Bell 1	ChromaPerc
121	2	14	Carillon	ChromaPerc
121	3	14	Church Bell 2	ChromaPerc
121	0	15	Dulcimer GM	ChromaPerc
121	1	15	Santur	ChromaPerc
121	0	16	Drawbars Org.GM	Elec.Organ
121	1	16	Det.DrawbarsOrg.	Elec.Organ
121	2	16	It.60's Organ	Elec.Organ
121	3	16	Drawbars Organ2	Elec.Organ
121	4	16	Dark Jazz Organ	Elec.Organ
121	5	16	Iper Dark Organ	Elec.Organ
121	6	16	Full Drawbars	Elec.Organ
121	7	16	DWGS Organ	Elec.Organ
121	8	16	Jazz Organ	Elec.Organ
121	9	16	Gospel Organ	Elec.Organ
121	10	16	Good Old B	Elec.Organ
121	11	16	VOX Legend	Elec.Organ
121	12	16	Arabian Organ	Elec.Organ
121	13	16	Gospel Organ Vel	Elec.Organ
121	14	16	Drawbars Organ3	Elec.Organ
121	15	16	Tibia	Elec.Organ
121	16	16	Tibia 16/8/4'	Elec.Organ
121	17	16	Tibia & Vox	Elec.Organ
121	18	16	Post Horn Trem.	Elec.Organ
121	19	16	Big Theatre Org.	Elec.Organ
121	20	16	Tibia & Kinura	Elec.Organ
121	21	16	Tibia Vox Glock	Elec.Organ
121	0	17	Perc.Organ GM	Elec.Organ
121	1	17	Det.Perc.Organ	Elec.Organ
121	2	17	Perc.Organ 2	Elec.Organ
121	3	17	Old Wheels	Elec.Organ
121	4	17	Percuss.BX3	Elec.Organ
121	5	17	M1 Organ	Elec.Organ
121	7	17	BX3 Short Decay	Elec.Organ
121	8	17	Rotary Organ	Elec.Organ
121	9	17	Perc.StereoOrgan	Elec.Organ
121	10	17	Perc.Organ 3	Elec.Organ
121	0	18	Rock Organ GM	Elec.Organ
121	1	18	BX3 Vel.Sw	Elec.Organ
121	2	18	Killer B	Elec.Organ
121	3	18	Dirty B	Elec.Organ
121	4	18	Classic Click	Elec.Organ
121	5	18	Distortion Organ	Elec.Organ
121	6	18	Super BX Perc.	Elec.Organ
121	7	18	Dirty Jazz Organ	Elec.Organ
121	8	18	Perc.Short Decay	Elec.Organ
121	9	18	Perc.Wheels	Elec.Organ
121	10	18	Jimmy Organ	Elec.Organ
121	11	18	Rock Organ 2	Elec.Organ
121	0	19	Church Organ GM	Pipe Organ
121	1	19	Church Oct.Mix	Pipe Organ
121	2	19	Detuned Church	Pipe Organ
121	3	19	Pipe Mixture	Pipe Organ
121	4	19	Church Pipes	Pipe Organ
121	5	19	Full Pipes	Pipe Organ
121	6	19	Pipe Tutti 1	Pipe Organ
121	7	19	Positive Organ	Pipe Organ
121	8	19	Pipe Tutti 2	Pipe Organ
121	9	19	Pipe Tutti 3	Pipe Organ
121	0	20	Reed Organ GM	Pipe Organ
121	1	20	Puff Organ	Pipe Organ
121	2	20	Small Pipe	Pipe Organ

CC0	CC32	PC	Name	Group
121	3	20	Flauto Pipes	Pipe Organ
121	4	20	Pipe Flute	Pipe Organ
121	0	21	Accordion GM	Accordion
121	1	21	Accordion 2	Accordion
121	2	21	Akordeon	Accordion
121	3	21	Musette 1	Accordion
121	4	21	Musette 2	Accordion
121	5	21	Musette Clar.	Accordion
121	6	21	Fisa 16 8'	Accordion
121	7	21	Fisa 16 4'	Accordion
121	8	21	Fisa Master	Accordion
121	9	21	Cassotto	Accordion
121	10	21	Arabic Accordion	Accordion
121	11	21	Sweet Musette	Accordion
121	12	21	Cassotto 16'	Accordion
121	13	21	Cassotto Or.Tune	Accordion
121	14	21	Cassotto NorTune	Accordion
121	15	21	Detune Accordion	Accordion
121	16	21	2 Voices Musette	Accordion
121	17	21	3 Voices Musette	Accordion
121	18	21	French Musette	Accordion
121	19	21	Acc.Clarinet OT	Accordion
121	20	21	Acc.Clarinet NT	Accordion
121	21	21	Acc.Piccolo OT	Accordion
121	22	21	Acc.Piccolo NT	Accordion
121	23	21	Master Accordion	Accordion
121	24	21	Accordion 3	Accordion
121	0	22	Harmonica GM	Accordion
121	1	22	Sweet Harmonica	Accordion
121	2	22	Harmonica 2	Accordion
121	3	22	Harmonica Expr.1	Accordion
121	4	22	Harmonica Expr.2	Accordion
121	0	23	Tango Accord.GM	Accordion
121	1	23	Fisa Tango!	Accordion
121	2	23	Accordion 16 8'	Accordion
121	3	23	Accordion16 8 4'	Accordion
121	4	23	Acc.16 8'&Bass	Accordion
121	5	23	Accordion Bass	Accordion
121	6	23	Acc.Voice Change	Accordion
121	7	23	Accordion 16 4'	Accordion
121	8	23	Acc.16 8 4'Plus	Accordion
121	9	23	Acc.& Acc.Bass	Accordion
121	10	23	Tango Accord.2	Accordion
121	0	24	Nylon Guitar GM	Nylon Guitar
121	1	24	Ukulele	Nylon Guitar
121	2	24	Nylon Key Off	Nylon Guitar
121	3	24	Nylon Guitar 3	Nylon Guitar
121	4	24	Nylon Bossa	Nylon Guitar
121	5	24	Ac.Guitar KeyOff	Nylon Guitar
121	6	24	Spanish Guitar	Nylon Guitar
121	7	24	Guitar Strings	Nylon Guitar
121	8	24	Nylon Gtr Pro1	Nylon Guitar
121	9	24	Brazilian Guitar	Nylon Guitar
121	10	24	Nylon Vel.Harm.	Nylon Guitar
121	11	24	Nylon Gtr Pro2	Nylon Guitar
121	12	24	Nylon Gtr RX1	Nylon Guitar
121	13	24	Nylon Gtr RX2	Nylon Guitar
121	14	24	Nylon Slide Pro	Nylon Guitar
121	15	24	Nylon Guitar 2	Nylon Guitar
121	16	24	RealNylon Gtr ST	Nylon Guitar
121	17	24	Real Nylon Gtr	Nylon Guitar
121	0	25	Steel Guitar GM	Steel Guitar
121	1	25	12 Strings Gtr	Steel Guitar
121	2	25	Mandolin	Steel Guitar
121	3	25	Steel & Body	Steel Guitar
121	4	25	Steel Guitar 2	Steel Guitar
121	5	25	Steel 12 Strings	Steel Guitar
121	6	25	Hackbrett	Steel Guitar
121	7	25	Finger Key Off	Steel Guitar
121	8	25	Finger Tips	Steel Guitar
121	9	25	Steel Folk Gtr	Steel Guitar
121	10	25	Mandolin Key Off	Steel Guitar

CC0	CC32	PC	Name	Group
121	11	25	Mandolin Trem.	Steel Guitar
121	12	25	Reso.Guitar	Steel Guitar
121	13	25	Steel Slide Pro1	Steel Guitar
121	14	25	Steel Slide Pro2	Steel Guitar
121	15	25	Steel Guitar RX1	Steel Guitar
121	16	25	Steel Guitar RX2	Steel Guitar
121	17	25	12 Strings Pro	Steel Guitar
121	18	25	12 Strings RX	Steel Guitar
121	19	25	Steel Guitar Pro	Steel Guitar
121	20	25	Steel Guitar 3	Steel Guitar
121	21	25	RealSteel Gtr ST	Steel Guitar
121	22	25	RealFolk Gtr ST	Steel Guitar
121	23	25	Real Folk Gtr	Steel Guitar
121	24	25	Real 12 Strings	Steel Guitar
121	0	26	Jazz Guitar GM	Clean Guitar
121	1	26	Pedal Steel Gtr1	Clean Guitar
121	2	26	Club Jazz Gtr 1	Clean Guitar
121	3	26	Club Jazz Gtr 2	Clean Guitar
121	4	26	Pedal Steel Gtr2	Clean Guitar
121	5	26	Soft Jazz Guitar	Clean Guitar
121	6	26	JazzGtr SlidePro	Clean Guitar
121	0	27	Clean Guitar GM	Clean Guitar
121	1	27	Det.Clean Gtr	Clean Guitar
121	2	27	Mid Tone Gtr	Clean Guitar
121	3	27	Chorus Guitar	Clean Guitar
121	4	27	Vintage S.2	Clean Guitar
121	5	27	Proces.E.Guitar	Clean Guitar
121	6	27	Single Coil	Clean Guitar
121	7	27	New Stra.Guitar	Clean Guitar
121	8	27	Guitarish	Clean Guitar
121	9	27	L&R E.Guitar 1	Clean Guitar
121	10	27	L&R E.Guitar 2	Clean Guitar
121	11	27	Country Nu	Clean Guitar
121	12	27	Funky Wah RX	Clean Guitar
121	13	27	Clean Gtr Pro1	Clean Guitar
121	14	27	Single Coil Pro	Clean Guitar
121	15	27	Clean Gtr Pro2	Clean Guitar
121	16	27	Stra.Vel.Pro	Clean Guitar
121	17	27	Stra.Gtr Slide	Clean Guitar
121	18	27	Chorus Gtr Pro	Clean Guitar
121	19	27	Vintage S.1	Clean Guitar
121	20	27	Clean Guitar 2	Clean Guitar
121	21	27	Solid Guitar	Clean Guitar
121	22	27	Stein Guitar 1	Clean Guitar
121	23	27	Stein Guitar 2	Clean Guitar
121	24	27	Stein Guitar 3	Clean Guitar
121	25	27	Clean Guitar 3	Clean Guitar
121	26	27	Real El.Gtr ST1	Clean Guitar
121	27	27	Real El.Gtr ST2	Clean Guitar
121	28	27	Real El.Guitar	Clean Guitar
121	0	28	Muted Guitar GM	Clean Guitar
121	1	28	Funky Cut Gtr	Clean Guitar
121	2	28	Mute Vel.Gtr	Clean Guitar
121	3	28	Jazz Man	Clean Guitar
121	4	28	R&R Guitar	Clean Guitar
121	5	28	Stra.Chime	Clean Guitar
121	6	28	Clean Mute Gtr	Clean Guitar
121	7	28	Rhythm E.Guitar	Clean Guitar
121	8	28	Clean Funk	Clean Guitar
121	9	28	Disto Mute	Clean Guitar
121	10	28	Clean Funk RX1	Clean Guitar
121	11	28	Clean Funk RX2	Clean Guitar
121	12	28	Funk Stein RX1	Clean Guitar
121	13	28	Funk Stein RX2	Clean Guitar
121	14	28	Clean Guitar RX1	Clean Guitar
121	15	28	Clean Guitar RX2	Clean Guitar
121	16	28	Clean Guitar RX3	Clean Guitar
121	17	28	Clean Guitar RX4	Clean Guitar
121	18	28	Clean Guitar RX5	Clean Guitar
121	19	28	Muted Guitar 2	Clean Guitar
121	0	29	Overdrive Gtr GM	DrivenGuitar
121	1	29	Guitar Pinch	DrivenGuitar

CC0	CC32	PC	Name	Group
121	2	29	Soft Overdrive	DrivenGuitar
121	0	30	Distortion GtrGM	DrivenGuitar
121	1	30	Feedback Guitar	DrivenGuitar
121	2	30	Dist.Rhytmic Gtr	DrivenGuitar
121	3	30	Joystick Gtr Y-	DrivenGuitar
121	4	30	Power Chords	DrivenGuitar
121	5	30	Mute Monster	DrivenGuitar
121	6	30	Wet Dist.Guitar	DrivenGuitar
121	7	30	Solo Dist.Guitar	DrivenGuitar
121	8	30	Stereo Dist.Gtr	DrivenGuitar
121	9	30	Dist.Guitar RX1	DrivenGuitar
121	10	30	Dist.Guitar RX2	DrivenGuitar
121	11	30	Dist.Clean Gtr	DrivenGuitar
121	12	30	Dist.Steel Gtr	DrivenGuitar
121	0	31	Gtr Harmonic GM	DrivenGuitar
121	1	31	Guitar Feedback	DrivenGuitar
121	2	31	E.Gtr Harmonics	DrivenGuitar
121	0	32	Acoustic Bass GM	Acou.Bass
121	1	32	Ac.Bass Buzz	Acou.Bass
121	2	32	Bass & Ride 2	Acou.Bass
121	3	32	Acous.Bass Pro1	Acou.Bass
121	4	32	Acous.Bass Pro2	Acou.Bass
121	5	32	DarkWoody A.Bass	Acou.Bass
121	6	32	Bass & Ride 1	Acou.Bass
121	7	32	Acous.Bass RX	Acou.Bass
121	8	32	Acoustic Bass 2	Acou.Bass
121	0	43	Contrabass GM	Orch.Bass
121	0	47	Timpani GM	Orch.Bass
121	0	58	Tuba GM	Orch.Bass
121	1	58	Oberkr.Tuba	Orch.Bass
121	2	58	Tuba Gold	Orch.Bass
121	3	58	Dynabone	Orch.Bass
121	4	58	Ob.Tuba&E.Bass 1	Orch.Bass
121	5	58	Ob.Tuba&E.Bass 2	Orch.Bass
121	0	33	Finger Bass GM	Elec.Bass
121	1	33	Finger Slap 2	Elec.Bass
121	2	33	Finger E.Bass 1	Elec.Bass
121	3	33	Finger E.Bass 2	Elec.Bass
121	4	33	Finger E.Bass 3	Elec.Bass
121	5	33	Stick Bass	Elec.Bass
121	6	33	Finger Bass 2	Elec.Bass
121	7	33	Finger Bass 3	Elec.Bass
121	8	33	Chorus Fing.Bass	Elec.Bass
121	9	33	Bright Finger B.	Elec.Bass
121	10	33	Finger Bass 4	Elec.Bass
121	11	33	More mid! Bass	Elec.Bass
121	12	33	Finger Slap 1	Elec.Bass
121	13	33	Finger Bass RX	Elec.Bass
121	14	33	FingerB.& Guitar	Elec.Bass
121	15	33	Finger Bass 5	Elec.Bass
121	0	34	Picked E.Bass GM	Elec.Bass
121	1	34	Picked E.Bass 2	Elec.Bass
121	2	34	Picked E.Bass 3	Elec.Bass
121	3	34	Stein Bass	Elec.Bass
121	4	34	Bass & Guitar	Elec.Bass
121	5	34	Bass Mute	Elec.Bass
121	6	34	Bass&Gtr Double	Elec.Bass
121	7	34	Pick Bass 1	Elec.Bass
121	8	34	Pick Bass 2	Elec.Bass
121	9	34	Ticktacing Bass	Elec.Bass
121	10	34	Picked Bass RX	Elec.Bass
121	11	34	Picked E.Bass 4	Elec.Bass
121	0	35	Fretless Bass GM	Elec.Bass
121	1	35	Fretless Bass 2	Elec.Bass
121	2	35	Fretless Bass 3	Elec.Bass
121	3	35	Sweet Fretless	Elec.Bass
121	4	35	Dark R&B Bass1	Elec.Bass
121	5	35	Dark R&B Bass2	Elec.Bass
121	6	35	Woofer Pusher B.	Elec.Bass
121	7	35	Fretless Bass 4	Elec.Bass
121	0	36	Slap Bass 1 GM	Elec.Bass
121	1	36	Super Bass 1	Elec.Bass

CC0	CC32	PC	Name	Group
121	2	36	Super Bass 2	Elec.Bass
121	3	36	FunkSlap Bass RX	Elec.Bass
121	4	36	SlapFing Bass RX	Elec.Bass
121	5	36	SlapPick Bass RX	Elec.Bass
121	6	36	Slap Bass 3	Elec.Bass
121	0	37	Slap Bass 2 GM	Elec.Bass
121	1	37	Thumb Bass	Elec.Bass
121	2	37	Dyna Bass	Elec.Bass
121	3	37	Dyna Slap Bass	Elec.Bass
121	4	37	Chorus Slap Bass	Elec.Bass
121	5	37	The Other Slap	Elec.Bass
121	6	37	Slap Bass 4	Elec.Bass
121	7	37	Slap Bass 5	Elec.Bass
121	0	38	Synth Bass 1 GM	Synth.Bass
121	1	38	Syn Bass Warm	Synth.Bass
121	2	38	Syn Bass Reso	Synth.Bass
121	3	38	Clav Bass	Synth.Bass
121	4	38	Hammer	Synth.Bass
121	5	38	30303 Bass	Synth.Bass
121	6	38	30303 Square	Synth.Bass
121	7	38	Bass Square	Synth.Bass
121	8	38	Syn Bass Res	Synth.Bass
121	9	38	Digi Bass 1	Synth.Bass
121	10	38	Digi Bass 2	Synth.Bass
121	11	38	Digi Bass 3	Synth.Bass
121	12	38	Blind as a Bat	Synth.Bass
121	13	38	Jungle Bass	Synth.Bass
121	14	38	Auto Pilot 1	Synth.Bass
121	15	38	Hybrid Bass	Synth.Bass
121	16	38	Dr.Octave	Synth.Bass
121	17	38	Drive Bass	Synth.Bass
121	18	38	Synth Bass 3	Synth.Bass
121	0	39	Synth Bass 2 GM	Synth.Bass
121	1	39	Attack Bass	Synth.Bass
121	2	39	Rubber Bass	Synth.Bass
121	3	39	Attack Pulse	Synth.Bass
121	4	39	Euro Bass	Synth.Bass
121	5	39	Jungle Rez	Synth.Bass
121	6	39	Nasty Bass	Synth.Bass
121	7	39	Phat Bass	Synth.Bass
121	8	39	Poinker Bass	Synth.Bass
121	9	39	Synth Bass 80ish	Synth.Bass
121	10	39	Autofilter Bass	Synth.Bass
121	11	39	Monofilter Bass	Synth.Bass
121	12	39	Reso Bass	Synth.Bass
121	13	39	Auto Pilot 2	Synth.Bass
121	14	39	Bass4 Da Phunk	Synth.Bass
121	15	39	Synth Bass 4	Synth.Bass
121	6	17	Techno Org.Bass	Synth.Bass
121	0	40	Violin GM	Str.Solo
121	1	40	Slow Att.Violin	Str.Solo
121	2	40	Violin Expr.	Str.Solo
121	3	40	Slow Violin	Str.Solo
121	0	41	Viola GM	Str.Solo
121	0	42	Cello GM	Str.Solo
121	0	44	Trem.Strings GM	Str.Ensemble
121	0	45	Pizzicato Str.GM	Str.Ensemble
121	1	45	Pizz.Ensemble	Str.Ensemble
121	2	45	Pizz.Section	Str.Ensemble
121	3	45	Double Strings	Str.Ensemble
121	0	46	Harp GM	Str.Ensemble
121	1	46	Yang Chin	Str.Ensemble
121	0	48	Strings Ens.1 GM	Str.Ensemble
121	1	48	Strings & Brass	Str.Ensemble
121	2	48	60's Strings	Str.Ensemble
121	3	48	Stereo Strings	Str.Ensemble
121	4	48	Legato Strings	Str.Ensemble
121	5	48	i3 Strings	Str.Ensemble
121	6	48	N Strings	Str.Ensemble
121	7	48	Arco Strings	Str.Ensemble
121	8	48	Octave Strings	Str.Ensemble
121	9	48	Strings Quartet	Str.Ensemble

CC0	CC32	PC	Name	Group
121	10	48	Symphonic Bows	Str.Ensemble
121	11	48	Ensemble & Solo	Str.Ensemble
121	12	48	Chamber Strings	Str.Ensemble
121	13	48	Arabic Strings	Str.Ensemble
121	14	48	Orchestra Tutti1	Str.Ensemble
121	15	48	Strings & Horns	Str.Ensemble
121	16	48	Orch.& Oboe 1	Str.Ensemble
121	17	48	Orch.& Oboe 2	Str.Ensemble
121	18	48	Strings & Glock.	Str.Ensemble
121	19	48	Orchestra Tutti2	Str.Ensemble
121	20	48	Orchestra&Flute	Str.Ensemble
121	21	48	Strings Ens.3	Str.Ensemble
121	0	49	Strings Ens.2 GM	Str.Ensemble
121	1	49	Sweeper Strings	Str.Ensemble
121	2	49	Full Strings	Str.Ensemble
121	3	49	Strings Ens.4	Str.Ensemble
121	0	50	Synth Strings1GM	Syn.Strings
121	1	50	Synth Strings 3	Syn.Strings
121	2	50	Analog Strings 2	Syn.Strings
121	3	50	Analog Velve	Syn.Strings
121	4	50	Odissey	Syn.Strings
121	5	50	Analog Strings 1	Syn.Strings
121	6	50	Synth Strings 4	Syn.Strings
121	0	51	Synth Strings2GM	Syn.Strings
121	1	51	Synth Strings 5	Syn.Strings
121	0	52	Choir Aahs GM	Choir
121	1	52	Choir Aahs 2	Choir
121	2	52	Ooh Voices	Choir
121	3	52	Ooh Slow Voice	Choir
121	4	52	Take Voices 1	Choir
121	5	52	Take Voices 2	Choir
121	6	52	Ooh Choir	Choir
121	7	52	Aah Choir	Choir
121	8	52	Mmmh Choir	Choir
121	9	52	Oh-Ah Voices	Choir
121	10	52	Slow Choir	Choir
121	11	52	Grand Choir	Choir
121	12	52	Choir Light	Choir
121	13	52	Strings Choir	Choir
121	0	53	Voice Oohs GM	Choir
121	1	53	Humming	Choir
121	2	53	Doolally	Choir
121	3	53	Airways	Choir
121	0	54	Synth Voice GM	Choir
121	1	54	Analog Voice	Choir
121	2	54	Vocalesque	Choir
121	3	54	Vocalscape	Choir
121	4	54	Classic Vox	Choir
121	5	54	Dream Voice	Choir
121	0	55	Orchestra Hit GM	Hit
121	1	55	Bass Hit Plus	Hit
121	2	55	6th Hit	Hit
121	3	55	Euro Hit	Hit
121	4	55	Brass Impact	Hit
121	5	55	Hit in India	Hit
121	6	55	Wild Arp	Hit
121	7	55	Flip Blip	Hit
121	8	55	Netherland Hit	Hit
121	0	56	Trumpet GM	Brass Solo
121	1	56	Dark Trumpet	Brass Solo
121	2	56	Trumpet 2	Brass Solo
121	3	56	Mono Trumpet	Brass Solo
121	4	56	Trumpet Expr.	Brass Solo
121	5	56	Trumpet Pitch	Brass Solo
121	6	56	Dual Trumpets	Brass Solo
121	7	56	Flugel Horn	Brass Solo
121	8	56	Warm Flugel	Brass Solo
121	9	56	BeBop Cornet	Brass Solo
121	10	56	Trumpet Pro 1	Brass Solo
121	11	56	Trumpet Pro 2	Brass Solo
121	12	56	Sweet FlugelHorn	Brass Solo
121	13	56	Flugel Horn Pro	Brass Solo

CC0	CC32	PC	Name	Group
121	14	56	Trumpet 3	Brass Solo
121	0	57	Trombone GM	Brass Solo
121	1	57	Trombone 2	Brass Solo
121	2	57	Bright Trombone	Brass Solo
121	3	57	Hard Trombone	Brass Solo
121	4	57	Soft Trombone	Brass Solo
121	5	57	Pitch Trombone	Brass Solo
121	6	57	Trombone Expr.1	Brass Solo
121	7	57	Trombone Expr.2	Brass Solo
121	8	57	Trombone Vel.1	Brass Solo
121	9	57	Trombone Vel.2	Brass Solo
121	10	57	Trombone Vel.3	Brass Solo
121	11	57	Trombone Pro Vel	Brass Solo
121	12	57	Trombone 3	Brass Solo
121	0	59	Mute Trumpet GM	Brass Solo
121	1	59	Mute Trumpet 2	Brass Solo
121	2	59	Wah Trumpet	Brass Solo
121	3	59	Mute Ensemble 1	Brass Ens.
121	4	59	Mute Ensemble 2	Brass Ens.
121	0	60	French Horn GM	Brass Ens.
121	1	60	French Horn 2	Brass Ens.
121	2	60	French Section	Brass Ens.
121	3	60	Classic Horns	Brass Ens.
121	4	60	Horns & Ensemble	Brass Ens.
121	0	61	Brass Section GM	Brass Ens.
121	1	61	Brass Section 2	Brass Ens.
121	2	61	Tight Brass 3	Brass Ens.
121	3	61	Glen & Friends	Brass Ens.
121	4	61	Big Band Brass	Brass Ens.
121	5	61	Sax & Brass	Brass Ens.
121	6	61	Glen & Boys	Brass Ens.
121	7	61	Trumpet & Brass	Brass Ens.
121	8	61	Attack Brass	Brass Ens.
121	9	61	Trumpet Ens.	Brass Ens.
121	10	61	Trombone Ens.	Brass Ens.
121	11	61	Trombones	Brass Ens.
121	12	61	Tight Brass 4	Brass Ens.
121	13	61	Fat Brass	Brass Ens.
121	14	61	Dyna Brass 1	Brass Ens.
121	15	61	Brass Expr.	Brass Ens.
121	16	61	Brass & Sax	Brass Ens.
121	17	61	Film Brass	Brass Ens.
121	18	61	Brass Slow	Brass Ens.
121	19	61	Fanfare	Brass Ens.
121	20	61	Movie Brass	Brass Ens.
121	21	61	Power Brass	Brass Ens.
121	22	61	Dyna Brass 2	Brass Ens.
121	23	61	Sforzato Brass	Brass Ens.
121	24	61	Double Brass	Brass Ens.
121	25	61	Brass Hit	Brass Ens.
121	26	61	Brass Fall	Brass Ens.
121	27	61	Tight Brass 1	Brass Ens.
121	28	61	Tight Brass Pro	Brass Ens.
121	29	61	Tight Brass 2	Brass Ens.
121	30	61	Brass of Power	Brass Ens.
121	31	61	Brass Section 3	Brass Ens.
121	0	62	Synth Brass 1GM	Synth.Brass
121	1	62	Synth Brass 3	Synth.Brass
121	2	62	Analog Brass 1	Synth.Brass
121	3	62	Jump Brass	Synth.Brass
121	4	62	Electrik Brass	Synth.Brass
121	5	62	Synth Brass 5	Synth.Brass
121	0	63	Synth Brass 2GM	Synth.Brass
121	1	63	Synth Brass 4	Synth.Brass
121	2	63	Analog Brass 2	Synth.Brass
121	3	63	Brass Pad	Synth.Brass
121	4	63	Big Panner	Synth.Brass
121	5	63	Synth Brass 6	Synth.Brass
121	0	64	Soprano Sax GM	Saxophone
121	1	64	Sweet Soprano 3	Saxophone
121	2	64	Soprano Pro	Saxophone
121	3	64	Sweet Soprano 1	Saxophone

CC0	CC32	PC	Name	Group
121	4	64	Sweet Soprano 2	Saxophone
121	0	65	Alto Sax GM	Saxophone
121	1	65	Alto Breath	Saxophone
121	2	65	Sax Ensemble	Saxophone
121	3	65	Breathy Alto Sax	Saxophone
121	4	65	Alto Sax Growl	Saxophone
121	5	65	Sweet Alto Sax 1	Saxophone
121	6	65	Sweet Alto Sax 2	Saxophone
121	7	65	Soft Alto Sax	Saxophone
121	8	65	Alto Sax Pro	Saxophone
121	9	65	Alto Sax Expr.	Saxophone
121	10	65	Alto Sax RX	Saxophone
121	11	65	Cool Sax Ens.	Saxophone
121	0	66	Tenor Sax GM	Saxophone
121	1	66	Tenor Sax Noise1	Saxophone
121	2	66	Soft Tenor	Saxophone
121	3	66	Tenor Breath	Saxophone
121	4	66	Tenor Growl	Saxophone
121	5	66	Folk Sax	Saxophone
121	6	66	Tenor Sax Noise2	Saxophone
121	7	66	Tenor Sax Expr.1	Saxophone
121	8	66	Tenor Sax Expr.2	Saxophone
121	9	66	Jazz Tenor 1	Saxophone
121	10	66	Jazz Tenor 2	Saxophone
121	11	66	Reed of Power	Saxophone
121	0	67	Baritone Sax GM	Saxophone
121	1	67	Baritone Growl	Saxophone
121	2	67	Breathy Baritone	Saxophone
121	3	67	Baritone Sax Pro	Saxophone
121	4	67	Baritone Sax 2	Saxophone
121	0	68	Oboe GM	Woodwind
121	1	68	Double Reed	Woodwind
121	0	69	English Horn GM	Woodwind
121	1	69	English Horn 2	Woodwind
121	0	70	Bassoon GM	Woodwind
121	0	71	Clarinet GM	Woodwind
121	1	71	Jazz Clarinet	Woodwind
121	2	71	Clarinet G	Woodwind
121	3	71	Section Winds 1	Woodwind
121	4	71	Section Winds 2	Woodwind
121	5	71	Clarinet Ens.	Woodwind
121	6	71	Woodwinds	Woodwind
121	7	71	Folk Clarinet	Woodwind
121	0	72	Piccolo GM	Flute
121	1	72	Small Orchestra	Flute
121	2	72	Nay	Flute
121	0	73	Flute GM	Flute
121	1	73	Jazz Flute Expr.	Flute
121	2	73	Flute Switch	Flute
121	3	73	Flute Dyn.5th	Flute
121	4	73	Flute Frullato	Flute
121	5	73	Orchestra Flute	Flute
121	6	73	Flute Muted	Flute
121	7	73	Wooden Flute	Flute
121	8	73	Bambu Flute	Flute
121	9	73	Flute 2	Flute
121	0	74	Recorder GM	Flute
121	1	74	Recorder 2	Flute
121	0	75	Pan Flute GM	Flute
121	1	75	Kawala	Flute
121	0	76	Blown Bottle	Flute
121	0	77	Shakuhachi GM	Flute
121	1	77	Old Shakuhachi	Flute
121	2	77	Shakuhachi 2	Flute
121	0	78	Whistle GM	Flute
121	1	78	Whistle 2	Flute
121	0	79	Ocarina GM	Flute
121	0	80	Lead Square GM	Synth Lead
121	1	80	Lead Square 2	Synth Lead
121	2	80	Lead Sine	Synth Lead
121	3	80	Old Portamento	Synth Lead
121	4	80	Dance Lead	Synth Lead

CC0	CC32	PC	Name	Group
121	5	80	Wave Lead	Synth Lead
121	6	80	Sine Wave	Synth Lead
121	7	80	Analog Lead	Synth Lead
121	8	80	Old & Analog	Synth Lead
121	9	80	Gliding Square	Synth Lead
121	10	80	Sine Switch	Synth Lead
121	11	80	Square Rez	Synth Lead
121	12	80	Port Whine	Synth Lead
121	13	80	2VCO Planet	Synth Lead
121	0	81	Lead Saw GM	Synth Lead
121	1	81	Lead Saw 2	Synth Lead
121	2	81	Lead Saw Pulse	Synth Lead
121	3	81	Lead Double Saw	Synth Lead
121	4	81	Seq.Analog	Synth Lead
121	5	81	Power Saw	Synth Lead
121	6	81	Octo Lead	Synth Lead
121	7	81	Seq Lead	Synth Lead
121	8	81	Phat Saw Lead	Synth Lead
121	9	81	Glide Lead	Synth Lead
121	10	81	Fire Wave	Synth Lead
121	11	81	Rezbo	Synth Lead
121	12	81	Synth Pianoid	Synth Lead
121	0	82	Calliope GM	Synth Lead
121	0	83	Chiff GM	Synth Lead
121	0	84	Charang GM	Synth Lead
121	1	84	Wire Lead	Synth Lead
121	2	84	Synchro City	Synth Lead
121	3	84	Sync Kron	Synth Lead
121	4	84	Metallic Rez	Synth Lead
121	5	84	Brian Sync	Synth Lead
121	6	84	Arp Twins	Synth Lead
121	7	84	LoFi Ethnic	Synth Lead
121	0	85	Voice Lead GM	Synth Lead
121	1	85	Ether Voices	Synth Lead
121	2	85	Cyber Choir	Synth Lead
121	0	86	Fifths Lead	Synth Lead
121	1	86	Crimson 5ths	Synth Lead
121	0	87	Bass & Lead GM	Synth Lead
121	1	87	Soft Wrl	Synth Lead
121	2	87	Electro Lead	Synth Lead
121	3	87	Rich Lead	Synth Lead
121	4	87	Thin Analog Lead	Synth Lead
121	5	87	Express.Lead	Synth Lead
121	6	87	HipHop Lead	Synth Lead
121	7	87	Square Bass	Synth Lead
121	8	87	Big & Raw	Synth Lead
121	9	87	Cat Lead	Synth Lead
121	10	87	OB Lead	Synth Lead
121	11	87	A Leadload	Synth Lead
121	0	88	New Age Pad GM	Synth Pad
121	1	88	Virtual Traveler	Synth Pad
121	2	88	Arp Angeles	Synth Pad
121	0	89	Warm Pad GM	Synth Pad
121	1	89	Sine Pad	Synth Pad
121	2	89	Master Pad	Synth Pad
121	3	89	Power Synth	Synth Pad
121	4	89	The Pad	Synth Pad
121	5	89	Money Pad	Synth Pad
121	6	89	Dark Pad	Synth Pad
121	7	89	Freedom Pad	Synth Pad
121	8	89	Analog Pad 1	Synth Pad
121	9	89	Analog Pad 2	Synth Pad
121	10	89	Analog Pad 3	Synth Pad
121	11	89	Vintage Pad	Synth Pad
121	12	89	OB Pad	Synth Pad
121	13	89	Dark Anna	Synth Pad
121	14	89	Symphonic Ens.	Synth Pad
121	0	90	Polysynth GM	Synth Pad
121	1	90	Reso Sweep	Synth Pad
121	2	90	Sky Watcher	Synth Pad
121	3	90	Synth Sweeper	Synth Pad
121	4	90	Super Sweep	Synth Pad

CC0	CC32	PC	Name	Group
121	5	90	Wave Sweep	Synth Pad
121	6	90	Cross Sweep	Synth Pad
121	7	90	Digital PolySix	Synth Pad
121	8	90	Noisy Stabb	Synth Pad
121	9	90	Mega Synth	Synth Pad
121	10	90	Tecno Phonic	Synth Pad
121	11	90	Farluce	Synth Pad
121	12	90	Big Sweep Stab	Synth Pad
121	13	90	Korgmatose	Synth Pad
121	0	91	Choir Pad GM	Synth Pad
121	1	91	Itopia Pad	Synth Pad
121	2	91	Fresh Air	Synth Pad
121	3	91	Heaven	Synth Pad
121	4	91	Pop Synth Pad	Synth Pad
121	5	91	Future Pad	Synth Pad
121	6	91	Tsunami Wave	Synth Pad
121	7	91	Fresh Breath	Synth Pad
121	8	91	Ravelian Pad	Synth Pad
121	9	91	Full Vox Pad	Synth Pad
121	10	91	Dance ReMix	Synth Pad
121	0	92	Bowed Glass GM	Synth Pad
121	0	93	Metallic Pad GM	Synth Pad
121	1	93	Cosmic	Synth Pad
121	0	94	Halo Pad GM	Synth Pad
121	0	95	Sweep Pad GM	Synth Pad
121	1	95	Astral Dream	Synth Pad
121	2	95	Meditate	Synth Pad
121	3	95	Dark Element	Synth Pad
121	4	95	Mellow Pad	Synth Pad
121	5	95	Cinema Pad	Synth Pad
121	6	95	Reoccuring Astra	Synth Pad
121	7	95	Vintage Sweep	Synth Pad
121	8	95	You Decide	Synth Pad
121	0	96	Ice Rain GM	Synth FX
121	1	96	Motion Ocean	Synth FX
121	2	96	Caribbean	Synth FX
121	0	97	Soundtrack	Synth FX
121	1	97	Air Clouds	Synth FX
121	2	97	Reso Down	Synth FX
121	3	97	Tinklin Pad	Synth FX
121	4	97	Pods In Pad	Synth FX
121	5	97	Noble Pad	Synth FX
121	6	97	Rave	Synth FX
121	7	97	Elastick Pad	Synth FX
121	0	98	Crystal GM	Synth FX
121	1	98	Synth Mallet	Synth FX
121	2	98	Vs Bell Boy	Synth FX
121	3	98	Krystal Bell	Synth FX
121	4	98	Digi Bell	Synth FX
121	5	98	Moving Bell	Synth FX
121	6	98	Bell Pad	Synth FX
121	7	98	Bell Choir	Synth FX
121	0	99	Atmosphere	Synth FX
121	0	100	Brightness GM	Synth FX
121	1	100	Lonely Spin	Synth FX
121	2	100	Synth Ghostly	Synth FX
121	0	101	Goblins GM	Synth FX
121	1	101	Motion Raver	Synth FX
121	2	101	Digi Ice Pad	Synth FX
121	3	101	VCF Modulation	Synth FX
121	0	102	Echo Drops GM	Synth FX
121	1	102	Echo Bell	Synth FX
121	2	102	Echo Pan	Synth FX
121	3	102	Band Passed	Synth FX
121	4	102	Pan Reso	Synth FX
121	5	102	Moon Cycles	Synth FX
121	0	103	Star Theme GM	Synth FX
121	0	104	Sitar GM	Ethnic
121	1	104	Sitar 2	Ethnic
121	2	104	Sitar Tambou	Ethnic
121	3	104	Indian Stars	Ethnic
121	4	104	Indian Frets	Ethnic

CC0	CC32	PC	Name	Group
121	5	104	Bouzouki	Ethnic
121	6	104	Tambra	Ethnic
121	7	104	Sitar Sitar	Ethnic
121	0	105	Banjo GM	Ethnic
121	1	105	Banjo Key Off	Ethnic
121	2	105	Oud	Ethnic
121	3	105	Jaw Harp	Ethnic
121	4	105	Banjo RX	Ethnic
121	0	106	Shamisen GM	Ethnic
121	0	107	Koto GM	Ethnic
121	1	107	Taisho Koto	Ethnic
121	2	107	Kanoun	Ethnic
121	3	107	Kanoun Tremolo	Ethnic
121	4	107	Kanoun Mix	Ethnic
121	0	108	Kalimba GM	Ethnic
121	1	108	Kalimba 2	Ethnic
121	0	109	Bag Pipes GM	Ethnic
121	1	109	War Pipes	Ethnic
121	2	109	Uillean BagPipes	Ethnic
121	3	109	HighlandBagPipes	Ethnic
121	0	110	Fiddle GM	Ethnic
121	0	111	Shanai GM	Ethnic
121	1	111	Zurna	Ethnic
121	2	111	Hichiriki	Ethnic
121	0	112	Tinkle Bell GM	Ethnic
121	1	112	Gamelan	Ethnic
121	2	112	Bali Gamelan	Ethnic
121	3	112	Garbage Mall	Ethnic
121	0	113	Agogo GM	Drum & Perc.
121	0	114	Steel Drums GM	Drum & Perc
121	1	114	Warm Steel	Drum & Perc
121	0	115	Woodblock GM	Drum & Perc.
121	1	115	Castanets	Drum & Perc.
121	0	116	Taiko Drum GM	Drum & Perc.
121	1	116	Concert BassDrum	Drum & Perc.
121	0	117	Melodic Tom GM	Drum & Perc.
121	1	117	Melodic Tom 2	Drum & Perc.
121	2	117	Reverse Tom	Drum & Perc.
121	0	118	Synth Drum GM	Drum & Perc.
121	1	118	Rhythm Box Tom	Drum & Perc.
121	2	118	Electric Drum	Drum & Perc.
121	3	118	Reverse Snare	Drum & Perc.
121	0	119	Reverse CymbalGM	Drum & Perc.
121	1	119	Dragon Gong	Drum & Perc.
121	2	119	Reverse Cymbal 2	Drum & Perc.
121	0	120	Gtr FretNoise GM	SFX Inst.
121	1	120	Guitar Cut Noise	SFX Inst.
121	2	120	Ac.Bass String	SFX Inst.
121	3	120	Vox Wah Chick RX	SFX Inst.
121	0	121	Breath Noise GM	SFX Inst.
121	1	121	Flute Click	SFX Inst.
121	0	122	Seashore GM	SFX Nature
121	1	122	Rain	SFX Nature
121	2	122	Thunder	SFX Nature
121	3	122	Wind	SFX Nature
121	4	122	Stream	SFX Nature
121	5	122	Bubble	SFX Nature
121	0	123	Bird Tweet GM	SFX Nature
121	1	123	Dog	SFX Nature
121	2	123	Horse Gallop	SFX Nature
121	3	123	Bird Tweet 2	SFX Nature
121	0	124	Telephone GM	SFX Life
121	1	124	Telephone 2	SFX Life
121	2	124	Door Creak	SFX Life
121	3	124	Door	SFX Life
121	4	124	Scratch	SFX Life
121	5	124	Wind Chime	SFX Life
121	0	125	Helicopter GM	SFX Traffic
121	1	125	Car Engine	SFX Traffic
121	2	125	Car Stop	SFX Traffic
121	3	125	Car Pass	SFX Traffic
121	4	125	Car Crash	SFX Traffic

CC0	CC32	PC	Name	Group
121	5	125	Siren	SFX Traffic
121	6	125	Train	SFX Traffic
121	7	125	Jet Plane	SFX Traffic
121	8	125	Starship	SFX Traffic
121	9	125	Burst Noise	SFX Traffic
121	0	126	Applause GM	SFX Human
121	1	126	Laughing	SFX Human
121	2	126	Screaming	SFX Human
121	3	126	Punch	SFX Human
121	4	126	Heart Beat	SFX Human
121	5	126	Footsteps	SFX Human
121	6	126	Stadium	SFX Human
121	0	127	Gun Shot GM	SFX Hit&Fire
121	1	127	Machine Gun	SFX Hit&Fire
121	2	127	Laser Gun	SFX Hit&Fire
121	3	127	Explosion	SFX Hit&Fire
120	0	0	Standard Kit GM	Drum Set
120	0	1	Standard Kit RX2	Drum Set
120	0	2	Standard Kit RX3	Drum Set
120	0	3	Acoustic Kit	Drum Set
120	0	4	Pop Std.Kit RX	Drum Set
120	0	5	Standard Kit RX1	Drum Set
120	0	7	Standard Kit 1	Drum Set
120	0	8	Room Kit GM	Drum Set
120	0	9	HipHop Kit 1	Drum Set
120	0	10	Jungle Kit	Drum Set
120	0	11	Techno Kit 1	Drum Set
120	0	12	Room Kit 2	Drum Set
120	0	13	HipHop Kit 2	Drum Set
120	0	14	Techno Kit 2	Drum Set
120	0	15	Techno Kit 3	Drum Set
120	0	16	Power Kit GM	Drum Set
120	0	17	Power Kit 2	Drum Set
120	0	18	Power Kit RX1	Drum Set
120	0	19	Power Kit RX2	Drum Set
120	0	24	Electro Kit GM	Drum Set
120	0	25	Analog Kit GM	Drum Set
120	0	26	House Kit 1	Drum Set
120	0	27	House Kit 2	Drum Set
120	0	28	House Kit 3	Drum Set
120	0	30	House Kit RX1	Drum Set
120	0	31	House Kit RX2	Drum Set
120	0	32	Jazz Kit GM	Drum Set
120	0	33	Jazz Kit RX1	Drum Set
120	0	34	Jazz Kit RX2	Drum Set
120	0	35	Jazz Kit RX3	Drum Set
120	0	40	Brush Kit GM	Drum Set
120	0	41	Brush Kit 2	Drum Set
120	0	42	Brush Kit RX1	Drum Set
120	0	43	Brush Kit RX2	Drum Set
120	0	44	Brush Kit RX3	Drum Set
120	0	48	Orchestra Kit GM	Drum Set
120	0	50	Bdrum&Sdrum Kit	Drum Set
120	0	51	Arabian Kit 1	Drum Set
120	0	56	SFX Kit GM	Drum Set
120	0	64	Percussion Kit	Drum Set
120	0	65	Latin Perc.Kit	Drum Set
120	0	66	Trinity Perc.Kit	Drum Set
120	0	67	i30 Perc.Kit	Drum Set
120	0	72	Hip Hop Kit RX	Drum Set
120	0	73	Techno Kit RX	Drum Set
120	0	74	Dance Kit RX	Drum Set
120	0	89	Pop Std.Kit 1	Drum Set
120	0	90	Pop Std.Kit 2	Drum Set
120	0	96	Elektro Kit 1	Drum Set
120	0	97	Elektro Kit 2	Drum Set
120	0	117	Arabian Kit 2	Drum Set
120	0	120	Room Kit 1	Drum Set
120	0	121	Power Kit 1	Drum Set
120	0	122	Electro Kit	Drum Set
120	0	123	Analog Kit	Drum Set
120	0	125	Brush Kit 1	Drum Set

MIDI IMPLEMENTATION CHART

Chapel Console Organ
Model: A-405 TW Division

MIDI Implementation Chart

Date: 1-Jun-2009
Version: 1.0

Function		Transmitted	Regognized	Remarks
Basic	Default	*1	*1	*1: Swell = 1, Great = 2,
Channel	Changed	1 - 16	1 - 16	Pedal = 3, Control = 16
	Default	3	3	
Mode	Messages	X	X	
	Altered	*****	X	
Note		12 - 120	36 - 96	
Number	: True Voice	*****	36 - 96	
Velocity	Note ON	O	O	
	Note OFF	X	X	
After Touch	Key's	X	X	
	Ch's	X	X	
Pitch Bend		O	O	
Control Change	0, 32	O	O	Bank Select MSB, LSB
	1	O	O	Modulation
	6, 38	O	O	Data Entry MSB, LSB
	7	O	X	Volume
	10	O	X	Pan
	11	O	O	Expression
	12 - 20	O	O	Drawbar Reg. Swell
	21 - 29	O	O	Drawbar Reg. Great
	33, 35	O	O	Drawbar Reg. Pedal
	48	O	O	Spring Shock
	64	O	O	Damper
	83	O	O	Extra Voice Volume
	98, 99	O	O	NRPN MSB, LSB
Program		O	O	
Change	: True #	0 - 127	0 - 81	
System Exclusive		O	O	
System	: Song Position	X	X	
	: Song Select	X	X	
Common	: Tune	X	X	
System	: Clock	X	X	
Real Time	: Commands	X	X	
Aux Messages	: All Sounds Off	X	O	(120)
	: Reset All Controllers	O	O	(121)
	: Local On/Off	X	X	
	: All Notes Off	O	O	
	: Active Sense	O	O	
	: Reset	X	X	

Mode 1: OMNI ON, POLY Mode 2: OMNI ON, MONO O: Yes
Mode 3: OMNI OFF, POLY Mode 4: OMNI OFF, MONO X: No

Chapel Console Organ
Model: A-405 Multi 16 Division

MIDI Implementation Chart

Date: 26-Feb-2009
Version: 1.0

Function		Transmitted	Regognized	Remarks
Basic	Default	X	1 - 16	
Channel	Changed	X	1 - 16	
Mode	Default	X	3	
	Messages	X	X	
	Altered	*****	X	
Note Number	: True Voice	X *****	0 - 127 0 - 127	
Velocity	Note ON	X	O 9n, V = 1 - 127	
	Note OFF	X	X	
After Touch	Key's	X	O	
	Ch's	X	O	
Pitch Bend		X	O	
Control Change	0, 32	X	O	Bank Select MSB, LSB
	1	X	O	Modulation
	6, 38	X	O	Data Entry MSB, LSB
	7	X	O	Volume
	10	X	O	Pan
	11	X	O	Expression
	64	X	O	Damper
	66	X	O	Sostenuto
	67	X	O	Soft
	65, 5	X	O	Portament On, Time
	71, 74	X	O	Resonance, Cut Off Freq.
	72, 73, 75	X	O	Release, Attack, Decay
	76, 77, 78	X	O	Vib. Rate, Depth, Delay
	98, 99	X	O	NRPN MSB, LSB
	100, 101	X	O	RPN MSB, LSB
Program Change	: True #	X	O 0 - 127	
System Exclusive		X	O	
System Common	: Song Position	X	X	
	: Song Select	X	X	
	: Tune	X	X	
System Real Time	: Clock	X	X	
	: Commands	X	X	
Aux Messages	: All Sounds Off	X	O	(120)
	: Reset All Controllers	X	O	(121)
	: Local On/Off	X	X	
	: All Notes Off	X	O	(123 - 127)
	: Active Sense	X	O	
	: Reset	X	X	

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

O: Yes
X: No

SPECIFICATIONS

Sound Generator

Drawbars

2 - VASE III as Digital Tone-wheels, 61 polyphony

Extra Voice

80 polyphony

Keyboards

Swell: C1 to C6 61-key
Great: C1 to C6 61-key
Pedal: 25-note radiating, detachable

Harmonic Drawbars

Drawbars

Swell: 9 Pitches
Great: 9 Pitches
Pedal: 2 Pitches

Voicing

Manuals: 5 choices (B-Type1, B-Type2, Mellow, Brite, Sawtooth), valiable key-click
Pedal: 4 choices (Normal, Muted, Synth1, Synth2), 5 choices key-click

Touch Response Percussion

Buttons

Second Harmonic, Third Harmonic, Fast Decay, Volume Soft

Adjustable

Touch, Velocit, Decay (Fast, Slow), Level (Normal, Soft)

Extra Voice

Instruments

880 Instruments, 56 Drum Kits
General MIDI Level 1 upper compatible

Parts

1 Part per keyboard

Effects

Internal Leslie

Advanced Digital, 2 Rotors
Buttons: On, Fast

Vibrato and Chorus

Digital Scanner
Rotary Mode Knob: V1, V2, V3, C1, C2, C3
Buttons: Swell On, Great On

Overdrive

Digital

Equalizer

Drawbars: Bass, Mid (sweep), Treble, Tone
Extra Voice: Bass, Mid (sweep), Treble

Reverb

Digital, 11 programs (Drawbars), 6 programs (Extra Voice)
Knob: Reverb Depth

Chorus

6 programs (Extra Voice)

Sustain

Pedal Drawbars, Pedal Extra Voice

Tuning

Master

430 - 450 1Hz Steps

Transpose

-6 to +6 semitones

Coupler

Buttons

Pedal to Great, Great to Pedal

Adjustable

Highest note

Combination Presets

Capacity

9 Banks, 9 Presets

Preset Load Option

Drawbar Registration, Drawbar Parameters, Percussion, Extra Voice, Internal Zone, External Zone, EQ/Reverb, Animation/OD

Controllers

Volumes

Master Volume, External Leslie Volume, Extra Voice Volume

Wheels

Pitch Bend, Modulation

Pedal

Expression Pedal w/1 - Foot Switch

Sequencer

SMF compatible Sequence Recorder w/ Simple Rhythm Player
3 Control Buttons

Storage

Compactflash Card Slot

Display

20 - Characters, 2 - Lines
9 Control Buttons

MIDI

Templates

3 Templates

External Zones

1 Zone per keyboard

Connections

MIDI

In (Keyboard), In (Multi), Out

Audio

Line In L, R, Microphone In w/Volume control,
Line Out L, R, Headphones

Leslie

11 - pin, 1 to 3 channels available

Other

Foot Switch

Sound System

Amplification

3 - 50 watt RMS amplifier

Speakers

2 - 2" Tweeter, 8" and 6" Full Range, 15" Woofer

Dimensions

Closed, without pedal keyboard
37 ¾"(H), 46 ¼"(W), 26"(D)
Open, with rack & pedal keyboard
45"(H), 46 ¼"(W), 41 ½"(D)

Weight

225 lbs

Hammond maintains a policy of continuously improving and upgrading its instruments and therefore reserves the right to change specifications without notice. Although every attempt has been made to insure the accuracy of the descriptive contents of this Manual, total accuracy cannot be guaranteed.

Should the owner require further assistance, inquiries should first be made to your Authorized Hammond Dealer.

If you still need further assistance, contact Hammond at the following addresses:

In the United States Contact:

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Web site: www.hammondoraganco.com

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Web site: www.suzuki-music.co.jp

Technical materials are available and can be obtained by mailing a request to the appropriate address listed above marked ATTENTION: SERVICE DEPARTMENT.

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