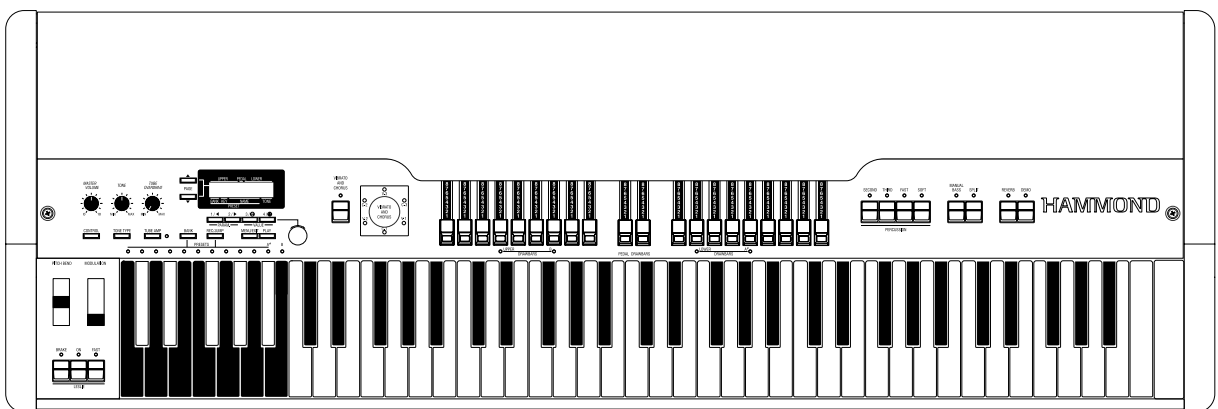# HAMMOND

Model XK-3

Thank you, and congratulations on your choice of a Hammond XK-3.
In order to get the most out of this instrument for many years to come, first take the time to read this manual in full.

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.

PORTABLE CART WARNING

S3125A

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.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

注 意 ： 感電の恐れあり キャビネットをあけるな
ATTENTION : RISQUE DE CHOC ELECTRIQUE 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 witnin equilateral triangle, indicates that there are important operating and maintenance instructions in the literature accompanying this unit.

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.
A 5 amp fuse is fitted in this plug.
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 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 DIS-POSED OF SAFELY.
THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT-OFF PLUG IS IN-SERTED INTO ANY 13 AMP SOCKET.

If a new plug is to be fitted 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 ⏚ .

How to replace the fuse. Open the fuse compartment with a screwdriver and replace the fuse and fuse cover.

Fuse
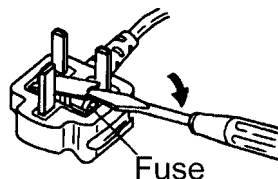
IMPORTANT - PLEASE READ

Your Hammond XK-3 Drawbar Keyboard 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 XK-3 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 apper in the display (the screen in the left of the keyboard front panel). 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.
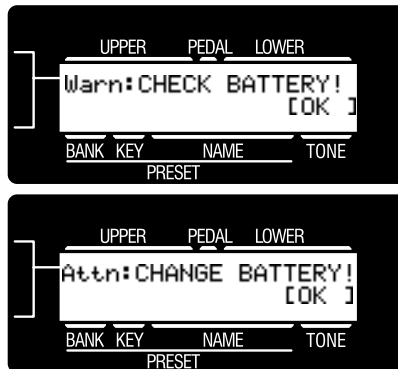
Do not be daunted by the number of steps required to perform each operation. Each step is simple. Simply bear these things in mind:

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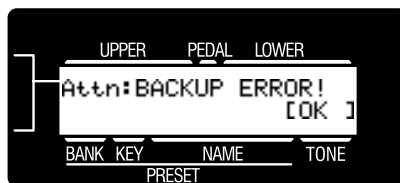3. Don't perform the steps out of sequence.

With these guidelines, you are well on your way to mastering all of the many sounds and features of your Hammond XK-3.

BATTERY BACK UP

Your XK-3 uses a battery-backed RAM to remember your changes to the Parameters. When the battery voltage becomes low, the Display will show:

```
      UPPER     PEDAL   LOWER
┌─
│   Warn:CHECK BATTERY!
│                   [OK ]
└─
   BANK KEY        NAME      TONE
            PRESET
```

```
      UPPER     PEDAL   LOWER
┌─
│   Attn:CHANGE BATTERY!
│                   [OK ]
└─
   BANK KEY        NAME      TONE
            PRESET
```

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 compeletely dead, the Display will show:

```
     UPPER     PEDAL   LOWER
┌─
│  Attn:BACKUP ERROR!
│                  [OK ]
└─
  BANK KEY       NAME     TONE
           PRESET
```

After the above message is displayed, the XK-3 will re-initialize itself, and the factory default settings will be restored. 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

> IN THIS MANUAL:
>
> **NOTE:**s and ▐ **tips** ▌ appear frequently.
>
> The **NOTE:** is a supplementary explanation.
>
> The ▐ **tips** ▌ are explanations of terms and
> applications.

♦ACCURATELY REPRODUCES THE TONE-WHEEL SOUND.

Your new XK-3 contains (96) independent oscillating digital tone-wheels and accurately reproduces the sound of the Vintage B-3.
In addition, this keyboard has full polyphony.

♦KEYBOARD OPERATES LIKE THE VINTAGE MODELS.

This keyboard operates exactly like the vintage B-3, C-3, etc did.
Presets are selected by means of the Reverse Colored Keys.
Vibrato effects can be selected by the rotary Vibrato control.
The keyboard has Waterfall keys and you can also attach a Leslie Switch (optional) to the front rail as well.

♦VACUUM TUBE PREAMPLIFIER.

Your XK-3 is equipped with a vacuum tube preamplifier.
This will provide you with the warm, crunch, and hard overdrive sounds.
The Overdrive circuit consists of two bands. Thus even if the sound is distorted hard, you can still obtain purer harmony.

♦DIGITAL LESLIE / VIBRATO EFFECTS.

The XK-3 keyboard is equipped with a DSP effect generator to simulate the Scanner-Vibrato and Leslie Speaker.
The range of sounds 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.

♦11 PIN LESLIE SPEAKER SOCKET.

Your new XK-3 contains a 11 pin Leslie speaker socket for direct connection to Leslie Speakers.

♦CAN BE EXPANDED BY USE OF EXTERNAL MIDI PRODUCTS.

You can expand your keyboard by connecting and playing with additional external MIDI equipment.
This includes keyboards, sequencers, etc.

♦CompactFlash™ CARD

You can use a CompactFlash Card (not included) to save various Parameter files.

Front Panel
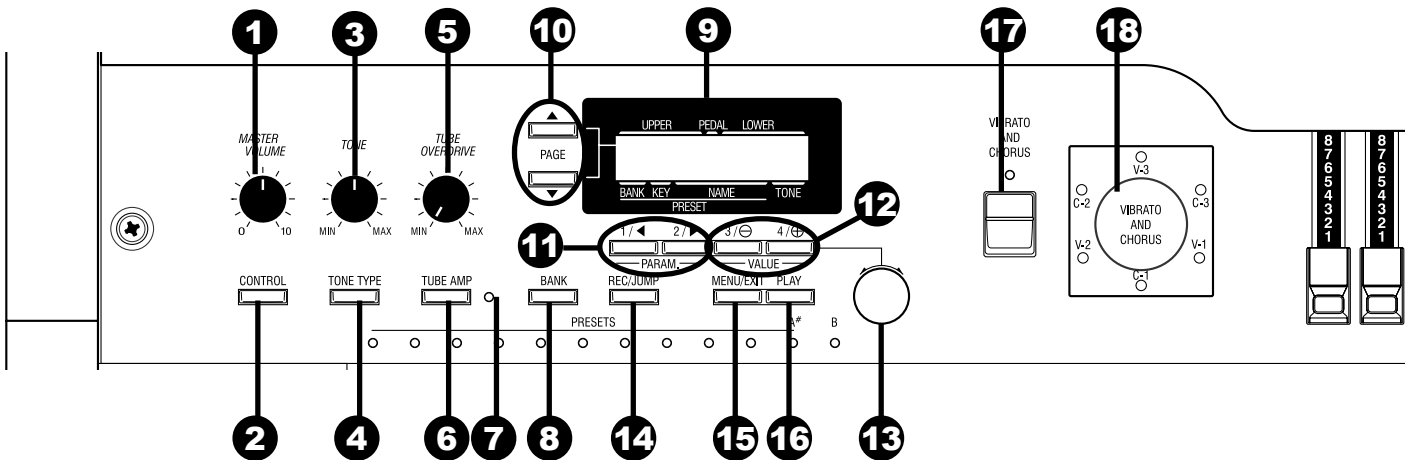
♦UPPER LEFT

1. MASTER VOLUME Knob

Controls the total volume.

2. CONTROL Button

Sets up various controls.

3. TONE Knob

Controls the tone quality.

4. TONE TYPE Button

Assigns the function of TONE CONTROL (3).

5. TUBE OVERDRIVE Knob

Controls the distortion of TUBE AMP (6).

6. TUBE AMP Button

Switches whether the sound of the Upper/Lower parts pass the tube amp circuit.

7. TUBE AMP. LED

Indicates the status of the TUBE AMP.

8. BANK Button

Switches Bank by pressing together the bank switch with the Preset key (37).

♦CONTROL PANEL

9. DISPLAY

Indicates various information.

10. PAGE Button

Selects Pages.

11. PARAM Button

Selects Parameters.

12. VALUE Button

Increases and decreases the value.

13. VALUE Knob

Adjusts the value.

14. REC/JUMP Button

Records Presets. This is also used to allow you to quickly page through the various choices within each function.

15. MENU/EXIT Button

Recall the MENU screen. This is also used to return from each function screen.

16. PLAY Button

Jumps to the PLAY screen, the basic screen.
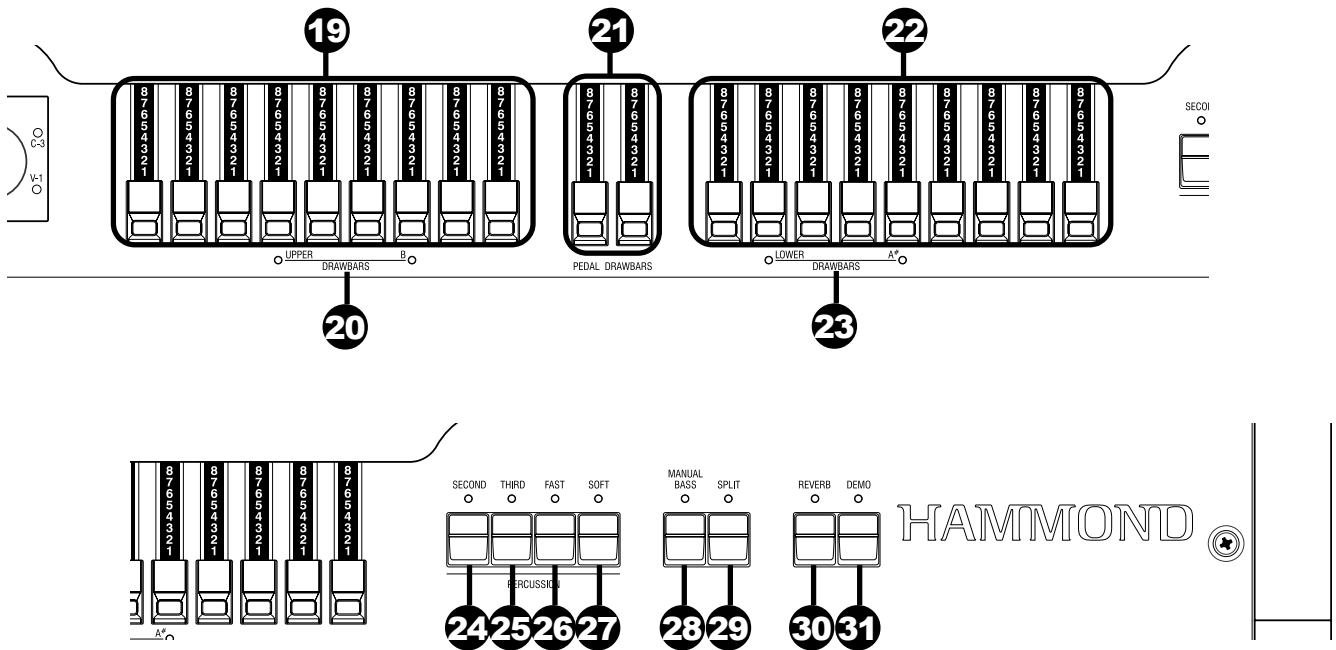
♦VIBRATO/CHORUS

17. VIBRATO/CHORUS Button

Switches on and off the Vibrato/Chorus Effects on the keyboard.

18. VIBRATO/CHORUS MODE Knob

Changes the depth of Vibrato and Chorus Effects.

♦DRAWBARS

19. LEFT DRAWBARS

Controls UPPER part or B key harmonics.

20. LEFT DRAWBARS LED

Indicates the function of the left drawbars.

21. PEDAL DRAWBARS

Controls PEDAL part harmonics.

22. RIGHT DRAWBARS

Controls LOWER part or A# key harmonics.

23. RIGHT DRAWBARS LED

Indicates the function of the right drawbars.

♦PERCUSSION

24. SECOND Button

Adds 4' Percussion (Decay sound) to UPPER part.

25. THIRD Button

Adds 2 2/3' Percussion (Decay sound) to UPPER part.

26. FAST Button

Changes Decay time of Percussion.

27. SOFT Button

Changes Percussion volume.

♦UPPER RIGHT

28. MANUAL BASS Button

Produces Pedal sound by playing the lowest notes on the manual keyboard.

29. SPLIT Button

Divides the keyboard into two parts: UPPER and LOWER.

30. REVERB Button

Switches on and off the REVERB Effect.

31. DEMO Button

Plays the built-in demo songs.

End Block
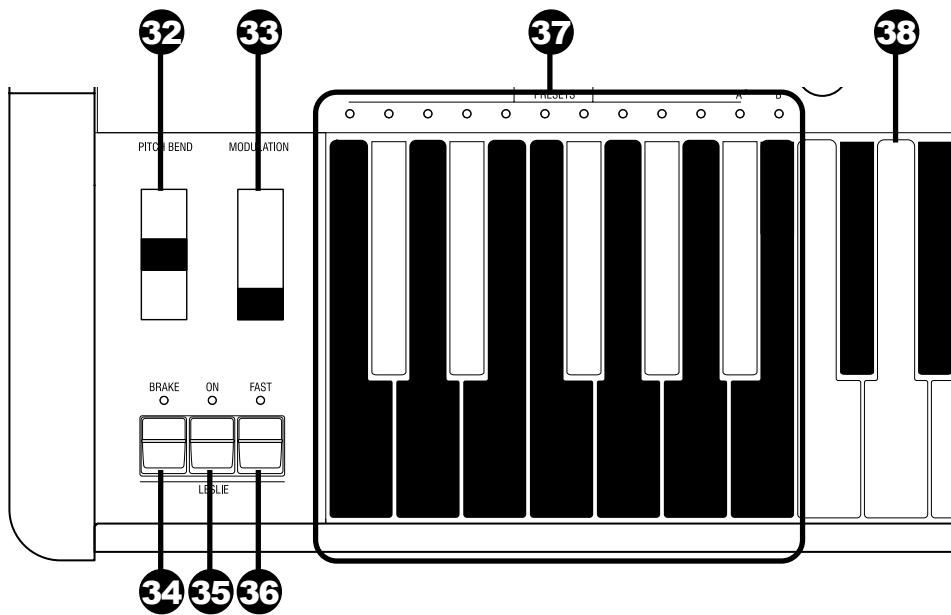
♦WHEEL

32. PITCH BEND Wheel

Slides the pitch up or down.

The pitch goes up when moved up, and goes down when moved down.

33. MODULATION Wheel

On this keyboard, this is used mainly to send MIDI information to connected MIDI equipment.

♦LESLIE

34. LESLIE BRAKE Button

This button selects whether to produce sound from the stopped rotor (=Brake) or not to use the Leslie effect (= Through) when the LESLIE ON(35) Button is "off".

Brake is ON when the LED is on.

35. 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'.

36. LESLIE FAST Button

Changes the speed of the Rotor from Slow to Fast and vice versa.

It is FAST when the LED is on.

♦KEYBOARD

37. PRESET Key

This is used to select the Combination Presets.

The Bank is selected by pressing this key, holding down BANK (8).

The selected BANK/PRESET is indicated by the LED above the Preset Key.

The "C" key is used to cancel all presets or drawbar settings.

38. MANUAL KEYBOARD

This keyboard contains 61 waterfall shaped keys.

Keyboard is velocity sensitive.

Rear Panel
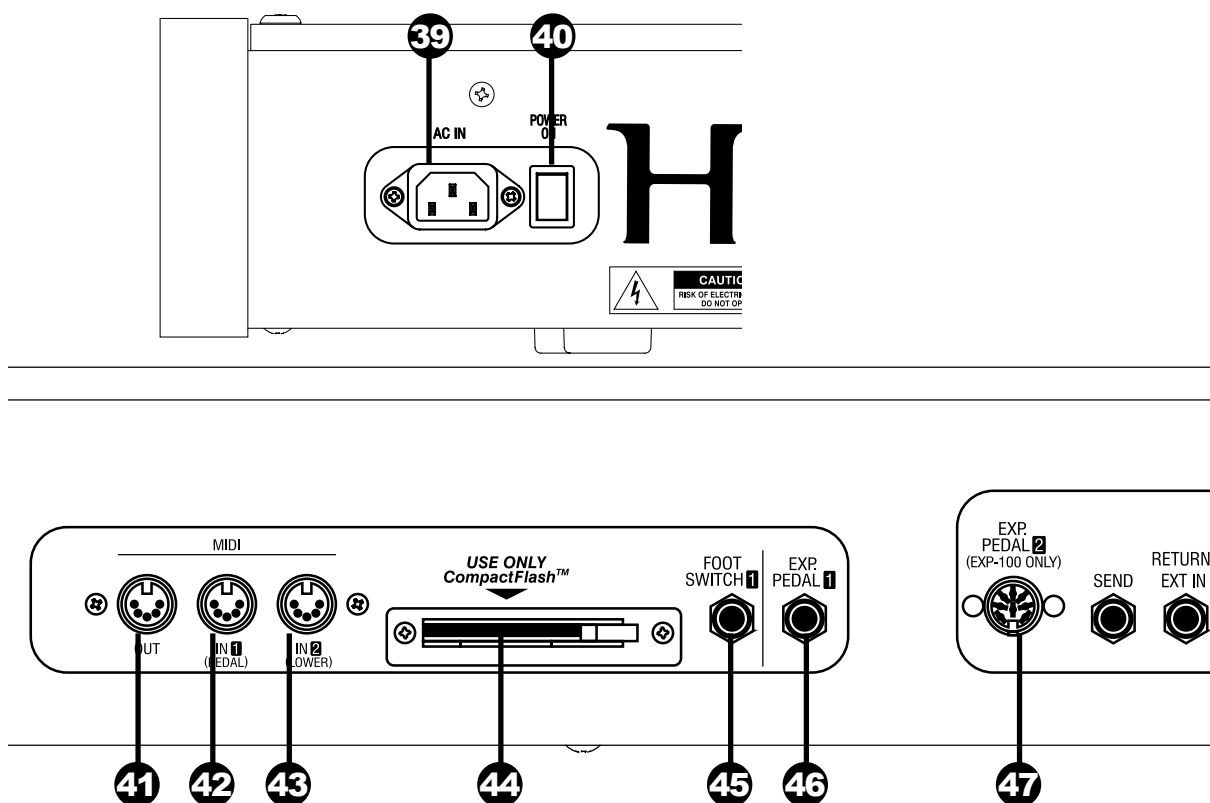
♦LEFT SIDE OF REAR

39. AC Inlet

Connects the A.C. Power Cable.

40. POWER Switch

This switches on and off the keyboard.

♦MIDI TERMINAL

41. MIDI OUT

Sends out the performance information of this keyboard.

42. MIDI IN 1(PEDAL)

This is the MIDI IN Terminal used mainly for the Pedal Keyboard.

[The factory setting] The MIDI information received by channel. You can set that through this terminal functions as PEDAL, regardless of the channel.

43. MIDI IN 2(LOWER)

This is the MIDI IN Terminal used mainly for the Lower Keyboard.

[The factory setting] The MIDI information received by channel. You can set that through this terminal functions as LOWER, regardless of the channel.

♦STORAGE

44. CF CARD SLOT

Insert the CompactFlash™ Card here.

This is used to store the setting of this keyboard.

Use required CompactFlash™ Card.

♦CONTROLLER TERMINAL

45. FOOT SWITCH1

This terminal is for the 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.

46. EXP. PEDAL1

This terminal is for the Expression Pedal (= V-20R etc. - optional.)

You can control the volume while you play.

47. EXP. PEDAL2

This terminal is for the exclusive Expression Pedal (= EXP-100F or EXP-100AN - optional).

LESLIE 11PIN

XP.
)AL **2**
)0 ONLY)

SEND

RETURN/
EXT IN

LINE OUT
R   L/MONO

HEAD
PHONE

48 **49** **51** **50** **52** **53**
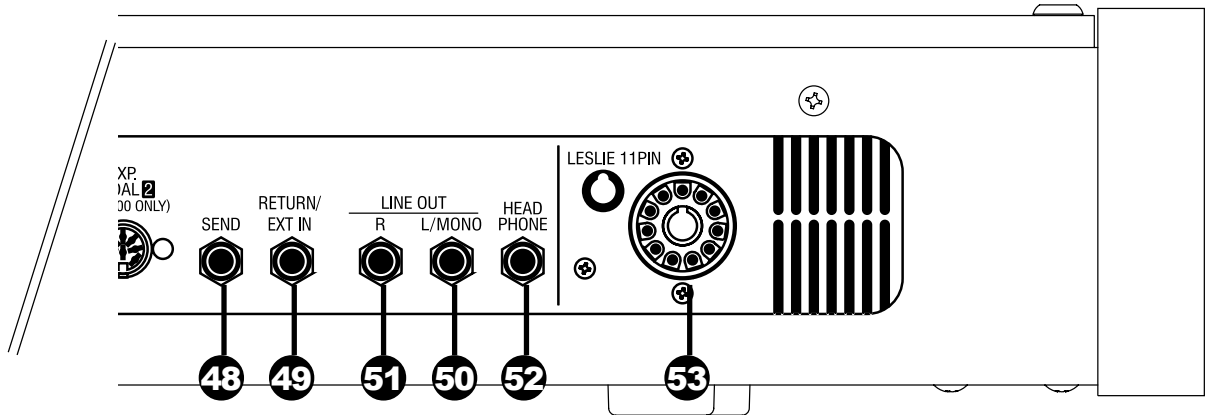
♦EFFECT LOOP

48. SEND

This jack is for sending the external Effects.

The signal after passing through the built-in Tube Amp. is sent out.

If you insert a plug into this jack, it disconnects the internal unit, and signals are not put out from the output jack, except the signal input from RETURN jack.

(The rated output level is 1.23V + 4 dBm. The output impedance is 600Ω.)

49. RETURN/EXT IN

This jack is for receiving external Effects.

This jack can be used as the input jack of the external sound source.

(The rated input level is 1.23V + 4dBm. The input impedance is 10kΩ.)

NOTE: Depending on the connected equipment, a setting may be required for the RETURN jack. (P. 75)

♦SOUND OUTPUT TERMINAL

50. LINE OUT L/MONO

If your amplifier has only a single (1) female 1/4" audio input connector (MONO input), use this Jack.

51. LINE OUT R

This is the Right channel output of the XK-3.

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

Use only the L/MONO terminal, if the input is monaural.

The built-in Leslie Effect is only on L (the left), when the Leslie Speaker (53) is connected.

52. HEADPHONE

This is for connecting the stereo headphone.

Sound is sent out from the LINE-OUT (50, 51) and LESLIE 11PIN (53), also when this terminal is used.

The built-in LESLIE is only on L (the left), when the LESLIE SPEAKER (53) is connected.

53. LESLIE 11PIN

This is for connecting the Leslie Speaker.

Read "CONNECTING THE LESLIE SPEAKER" for more details.

HOOK-UP
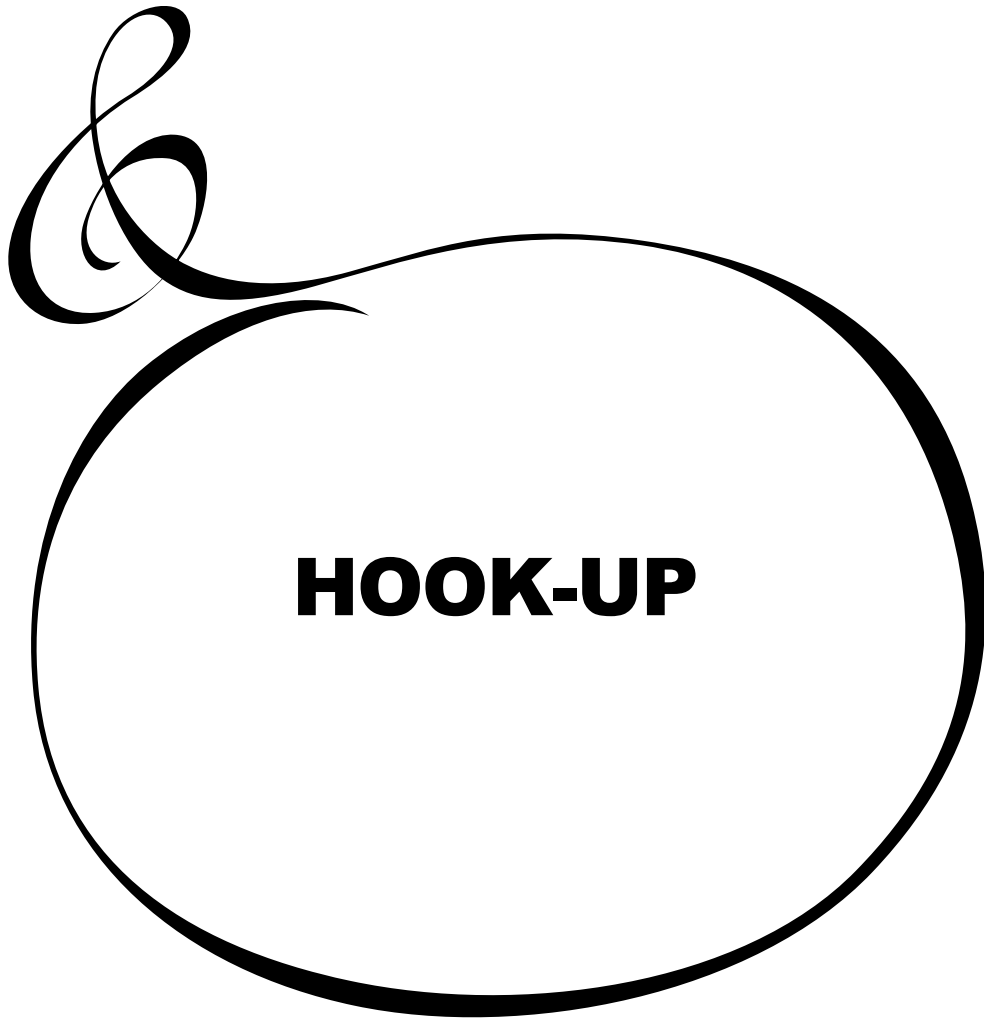
See the figure below for connection.

Amplifiers or speakers are not mounted in this keyboard.

You must connect an external amplifiers and speakers (or Powerd Speaker) in order
to hear the keyboard sounds.

You can also enjoy playing this keyboard by connecting Stereo Headphones to the
Headphone Terminal.

Be sure to do the connection after you switch the Power OFF on this keyboard and
all connected equipment.

Stereo
Headphone

AC Power Cable
(provided)

Foot Switch FS-9H
(optional)

Amplifier, Speakers etc.
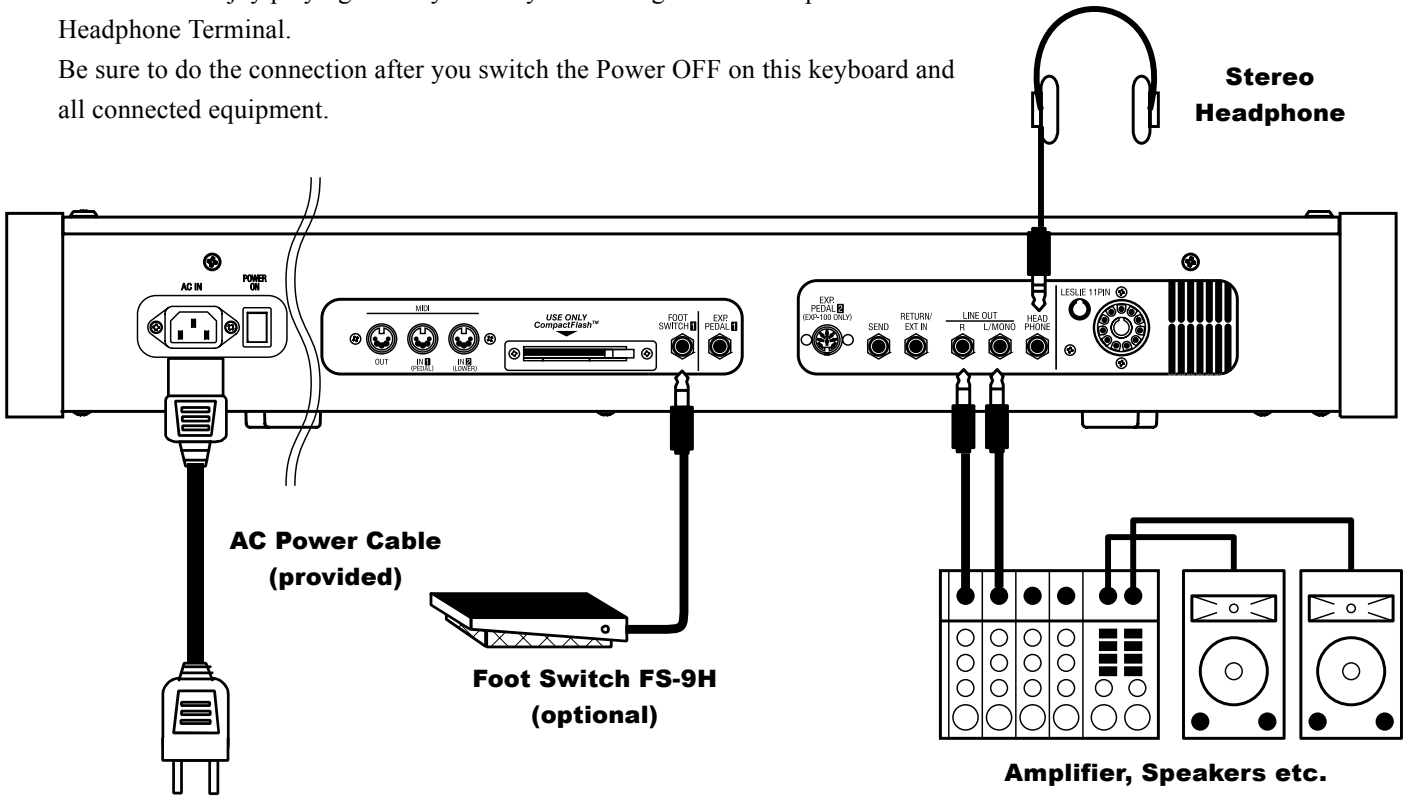
USING EFFECT LOOP

The Effect Loop is used when you want to connect the Leslie Speaker and the
external Effects module which provides audio prior to the built-in Leslie Effect.

IN   OUT
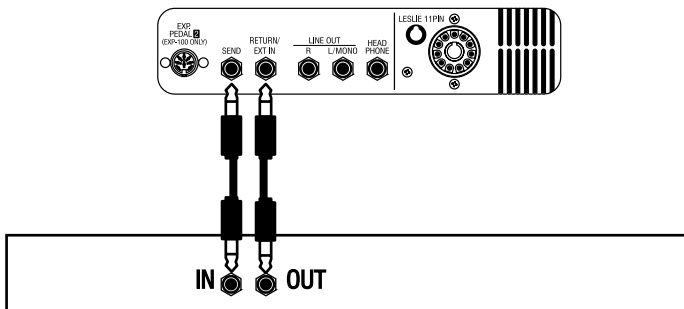
Use effects modules which have a output gain of less
than +4dB.

NOTE: The Effect Loop is inserted between built-in Tube
Amp and built-in Effect (Leslie, Reverb, etc.)

NOTE: Depending on the connected equipment, a setting
may be required for the RETURN jack. (P. 75)

This keyboard is equipped with a 11 Pin Leslie Connector, so you can directly connect the Leslie Speaker.

❖ *Do this connection after switching OFF the keyboard.*
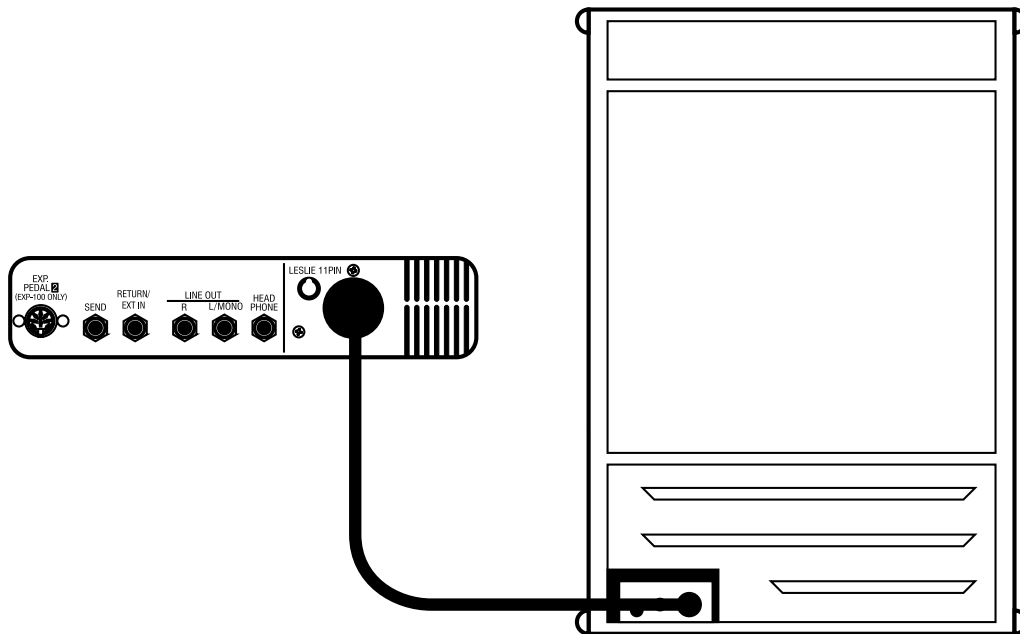
Connect the Leslie Speaker to the 11 Pin Terminal on the keyboard, with the exclusive 11 Pin Leslie Cable (= LC-11-7M - to be separately purchased - with the other Leslie Speaker accessories).
Adjust the setting of the "EXT. LESLIE CH", in accordance with the Leslie Speaker connected. (P. 69)

eg. Typical Leslie Speaker Channel

122XB, 771 -- 1CH
2101/2102, 812/814 -- 3CH

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

You can upgrade this keyboard to an organ by connecting an external MIDI Keyboard and pedal keyboard.

Expression Pedal
EXP-100F

MIDI Keyboard

MIDI Pedal Keyboard
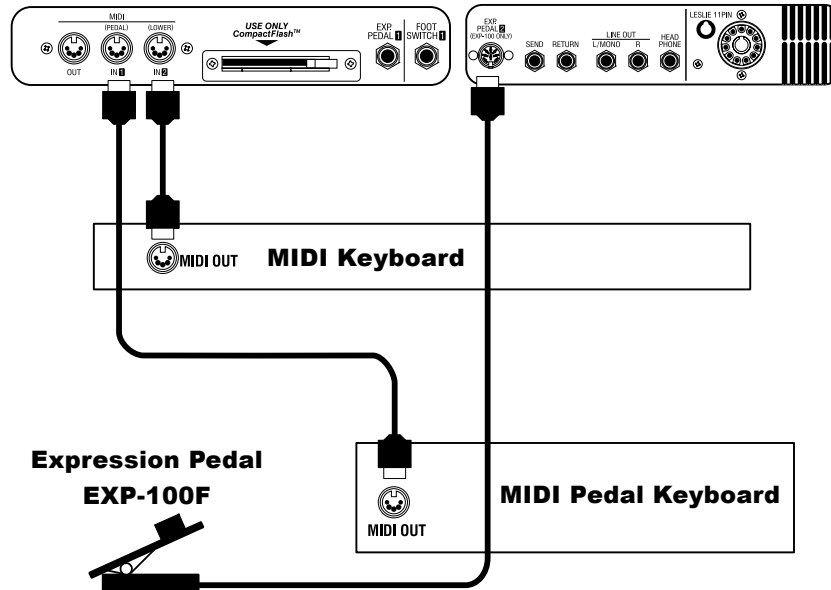
1. Hook-up external MIDI keyboard and pedal keyboard per the figure above.
2. Use the MIDI Template "Seq. Record" of this keyboard. (P. 86)
3. To use Expression Pedal, set the parameter "EXPRESSION SOURCE" for the model of expression pedal that you have connected. (P. 60)

The MIDI Keyboard connected to the PEDAL Terminal functions as the PEDAL (part), and the one connected to the LOWER Terminal as the LOWER (part).

Please also read the User's Guide of the connected MIDI Keybaord.

TURN ON AND PLAY
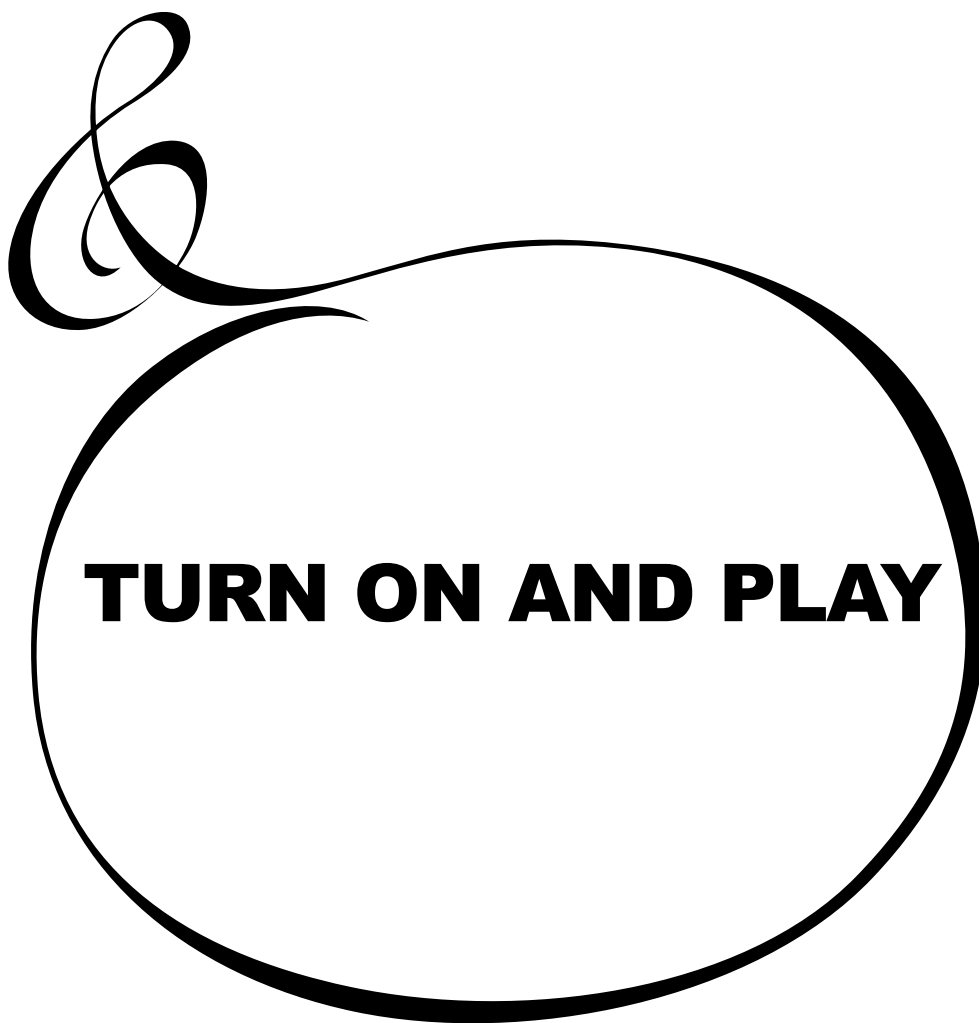
HOW TO POWER ON

After connecting your XK-3 to the power outlet, please perform the following steps before switching on the power. To avoid possible damages to speakers, please do not change the order of the steps.
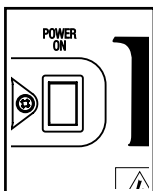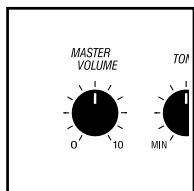
STEPS TO TAKE

1. Set the MASTER VOLUME Knob at 0 (minimum), before switching the power on.
2. Switch on the POWER on the rear panel. "PLAY" Mode appears, following the TITLE, in the Display window.
    - ❖ *It takes a few seconds before the XK-3 gets ready, because of the circuit-protection devices.*
    - ❖ *It requires 10 to 20 seconds to warm up the tubes to get ready, when the [TUBE AMP] Button is ON.*
3. Switch on the power of the amplifiers etc. connected to the XK-3.
4. Holding down a key, adjust the MASTER VOLUME by turning the Knob.
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.)*
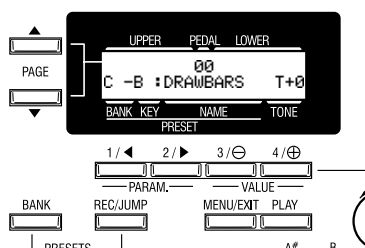
BACK-UP

Your XK-3 memorizes the setting of the keyboard immediately before it is switched off. So, The keyboard will start with these settings when it is switched on again. This is called "Back-up".
The XK-3 is initially shipped from the factory with the Preset Key [B] in "pressed" status.
- ❖ *The Preset Key [B] does not produce sound when initially first turned on. Draw the left Drawbar(s), or press either of the Preset keys [C#] - [A] to start.*

RESET TO THE INITIAL STATUS

Please perform the following steps to reset the XK-3 to the initial default setting.

STEPS TO TAKE

1. Switch off the power of the XK-3.
2. Holding the [REC/JUMP] Button, switch on the power.
3. Hold down / Keep pressing the [REC/JUMP] Button until "Loading Default..." appears on the Display.
4. If everything is in order, PLAY Mode appears on the Display. (Completed)

In your XK-3, the demonstration performance is built in for introducing the features and sound.

STEPS

1

THIRD FAST SOFT   MANUAL SPLIT   REVERB DEMO
                    BASS
PERCUSSION
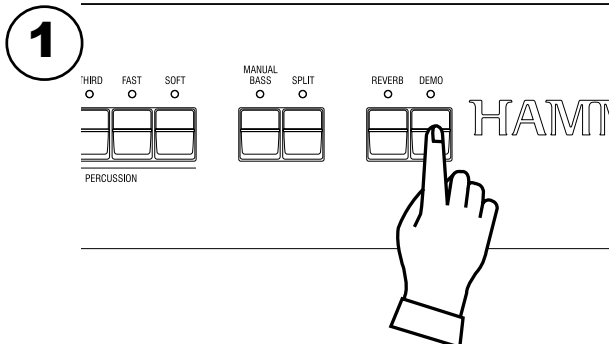
Touch the [DEMO] Button for a while.
The Display will be as shown lower left.

> **NOTE:** If the Display does not change, touch the [MENU] Button to display the MENU, touch the [PAGE] Button and select page A, and touch the [3]"DEMO".

2

UPPER PEDAL LOWER

▲B-3 Crazy
              [□] [▶]

BANK KEY   NAME   TONE
        PRESET

1/◀   2/▶   3/⊖   4/⊕
PARAM.   VALUE
BANK REC/JUMP   PLAY
PRESETS
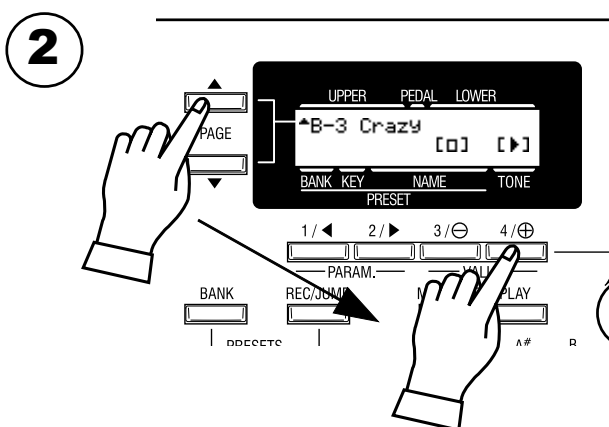
Press the [PAGE] Button and select a desired song.
The performance starts when the [4] "▶" Button is pressed.

> **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], [LESLIE BRAKE], [LESLIE ON], [LESLIE FAST], [VIBRATO & CHORUS] and [REVERB].

3

UPPER PEDAL LOWER
          00
C -C :   0

BANK KEY   NAME   TONE
        PRESET

1/◀   2/▶   3/⊖   4/⊕
PARAM.   VALUE
BANK REC/JUMP MENU/EXIT PLAY
PRESETS
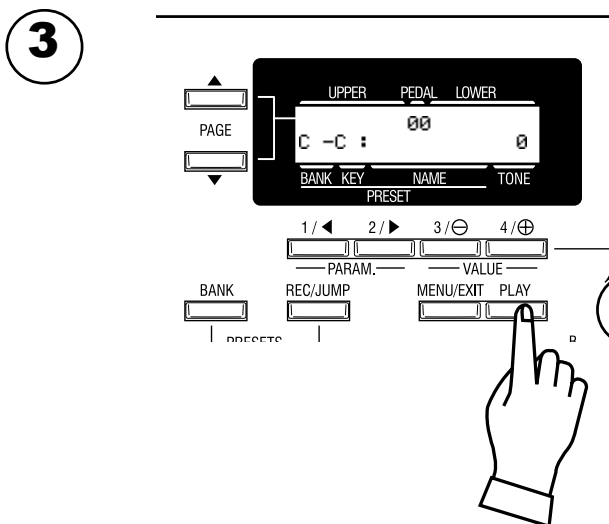
If you press the [DEMO], [MENU/EXIT] or [PLAY] Button, the performance stops.

> **NOTE:** The demonstration performance does not destroy the previous settings.

You can record various settings to the Preset Keys mounted on the left-hand side of the XK-3. This is called "Combination Preset".

The Combination Preset consists of the "BANK" and the "KEY" (2-dimensional), and Such as "C - D" appears for each setting on the Display.

The Preset data is recorded in the Banks C to B at the factory. Thus you can start playing immediately.

Combination Presets

Bank	Key											
	C	C#	D	D#	E	F	F#	G	G#	A	A#	B
C												
C#												
D												
D#												
E												
F												
F#												
G												
G#												
A												
A#												
B												

Adjust B

The chart on the left is for the Combination Preset. The "BANK" is shown vertically (line) and the "KEY" horizontally (column). Select one combination from this chart and play. "C - B" is initially selected at the factory.

The example below recalls this.

> **NOTE:** The Preset Key "C" creates no sound (, if combined) with any Bank in default. This is called "Cancel".

HOW TO RECALL THE PRESET
EX. Select "F - G"

Light

Press and Hold

Touch

Light

Touch
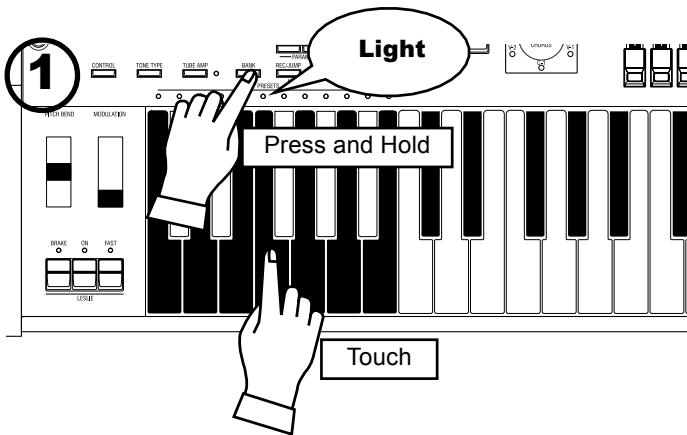
1. Select the BANK

While holding down the [BANK] Button, press the Preset Key [F].

> **NOTE:** The LED for the Preset Key indicates the "BANK", while the [BANK] Button is pressed.
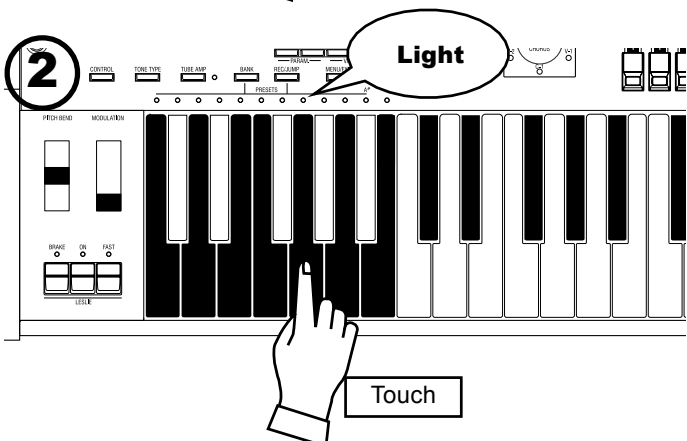
2. Select the KEY.

Press the Preset Key [G].

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

> **NOTE:** While the [BANK] Button is released, the LED indicates the "KEY".

"F - G" 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 B 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. 56)

Your performance will be more expressive, if you play on the manual using the controllers. You will see on this page how to use the controllers generally used with the electronic musical instruments. (How to use the exclusive Hammond Organ controllers is shown on the next page.)

PITCH BEND WHEEL
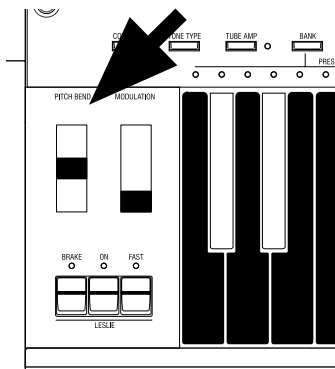
This is used to slide the pitch up or down while playing.

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 value of the wheel change. (P. 58)

The [MODULATION WHEEL] on the right is not usually used. It is used when you transmit the modulation information to external MIDI equipments.
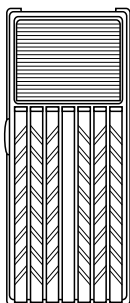
EXPRESSION PEDAL

Generally, organs can not express dynamics or the velocity of the key touch, while all the piano can.

However, if you connect the Expression Pedal to the organ, you can express the velocity, corresponding to the degree of your foot-pressure on the pedal, and add intonation to make your music more expressive. [The Expression Pedal is to be separately purchased.]

The volume is loudest when you fully press down by means of your toe, and it is quietest when you fully press down by means of your heel.

NOTE: Set the parameter at "Expression source" for the model of expression pedal that you have conneted. (P. 60)

Fig.: V-20R (optional)

FOOT SWITCH

This switch is used to operate and control the organ by your foot instead of pressing various switches by your hand while playing. [The Foot Switch is to be separately purchased.]

The initial factory assignment is "LESLIE FAST".

NOTE: You can change the Foot switch assignment. (P. 61)

Fig.: FS-9H (optional)

You will be able to freely produce your own sound by using the exclusive features of your HAMMOND ORGAN, such as Drawbars and Percussion sound, as well as Vibrato and the Leslie effects. The steps to take after you receive your XK-3 from your dealer are as follows:

SELECT THE PRESET KEY [B]
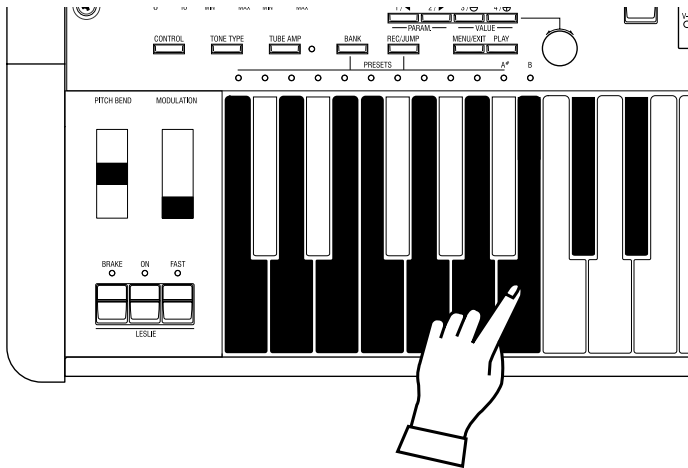
First select the Preset Key [B].

This is a special key, also called "Adjust Preset". While this key is selected, your setting is always memorized, and the Drawbar registration on the panel (= the length of the Draw-bars) always corresponds with the internal registration.

> **NOTE:** You can initialize the contents to the default setting. (P. 74)

PULL OUT THE LEFT DRAWBARS
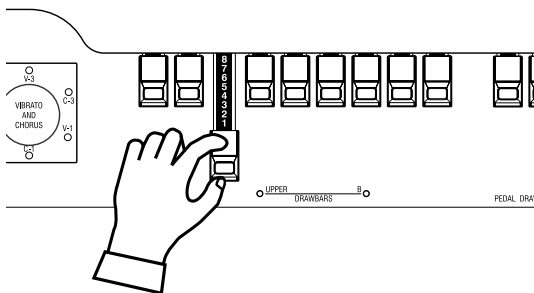
Pull out the Left Drawbars on the left-hand side to your desired length, pressing a key on the keyboard to be certain.

The tone varies corresponding to the extent or the length of the Drawbar. So it is the Drawbars that make the fundamental tones of this keyboard.

The volume gets loudest when each Drawbar is pulled out to the full length. The XK-3 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 Draw-bars 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 Draw-bars. (P. 54)
> **NOTE:** The present registration is shown on the "Play" mode display. (P. 47)

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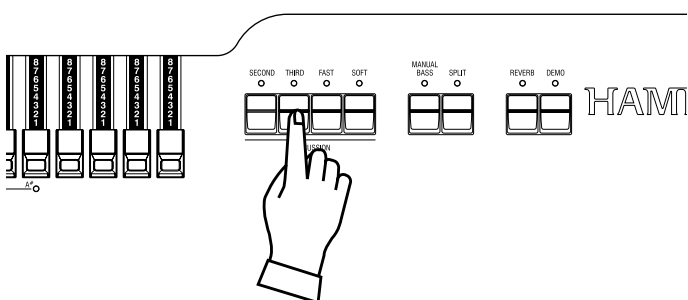
The "Percussion" referred to here is not a percussion instrument itself, but it is a "decay" to add a clear-cut "attack" to the organ sound. You can add this "attack" to mix with the Drawbar sound when you want.

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 decay goes quick. And, if you press on the [SOFT] Button, the Percussion volume reduces.

> **NOTE:** You can do fine volume setting etc. of the percussion. (P. 67)

ADD EFFECTS

VIBRATO/CHORUS
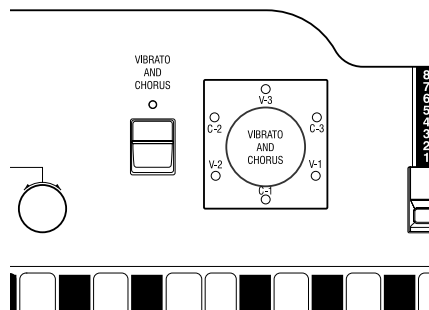
"Vibrato and Chorus" slightly changes the Drawbar pitch at a certain ratio and add warmth to the sound.

[VIBRATO/CHORUS] Button

Switches on and off the Vibrato effect. The LED turns on when it is ON.

[VIBRATO/CHORUS MODE] Knob

Controls the Vibrato Depth and switches to and from the Chorus effect.

The degree of the depth corresponds with the number. Also "V" adds only Vibrato sound by changing the pitch, "C" mixes Vibrato and original sound (= Chorus Effect) and adds richness to the sound.

> NOTE: You can set the speed of Vibrato/Chorus. (P. 71)

OVERDRIVE
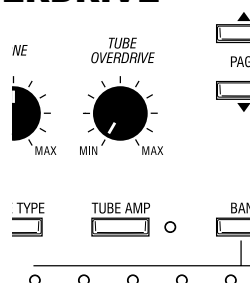
The overdrive effect simulates the effect of applying an excessively high signal to the amplifiers input which causes distortion of the sound.

[TUBE AMP] Button

Press this button to switch on the LED, and get the Overdrive Effect.

[TUBE OVERDRIVE] Knob

This knob controls the degree of distortion.

> NOTE: The LED for the TUBE AMP Button varies the color according to the distortion degree. When it is through the TUBE AMP without distortion, it is green. It goes red when the distortion degree increases.

LESLIE
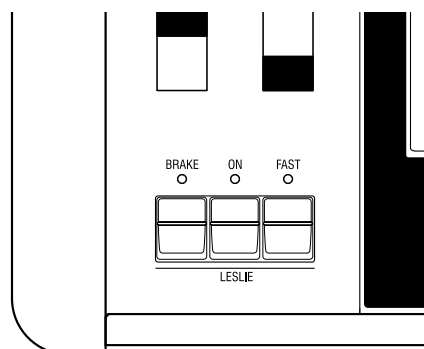
The rotor and the rotating horns produce the effect of the spatial and dynamic and lively theater stage performance.

[LESLIE ON] Button

Touch "ON" to switch on the LED.

[LESLIE 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 and lead to the climax by changing to FAST.

[LESLIE BRAKE] Button

This is to set the action when the LESLIE ON Button is OFF.

When the LED is ON, BRAKE is on. The rotation gradually slows down and stops finally).

When the light is OFF, it is THROUGH. The Leslie effect is by-passed.

> NOTE: You can control the rotors by these buttons when you connect the LESLIE to the external equipment.
> NOTE: You can finely adjust the rotation speed etc. of the internal LESLIE Effect. (P. 68)

REVERB
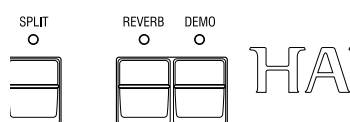
This gives the reverberation effect of being in a concert-hall.

[REVERB] Button

To get the Reverb Effect, touch the button and switch on the LED.

> NOTE: You can finely control time etc. of Reverb. (P. 73)

Divide the keyboard into two parts - left and right. [SPLIT]

Lower Split Point **Upper**

SOFT   MANUAL BASS   SPLIT   REVERB
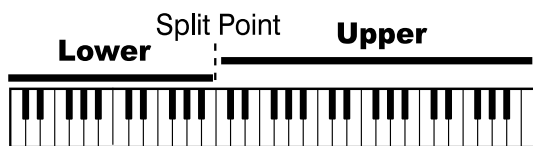
This keyboard has only a single manual. But you can change the setting and play it as it was a double keyboard organ, using this "SPLIT" function.

[SPLIT] Button

Switch on the LED by pressing the button, to "split" the manual.

The factory "SPLIT" setting is to divide it between B and C in the center.

> **NOTE:** **Split Point or Octave can be moved. (P. 84)**
> **NOTE:** **The Split function does not work, when the MIDI IN jack is used for "LOWER/PEDAL". (P. 86)**

The right-hand side of the split point is called UPPER to make sound by the left Drawbars and Percussion. The left-hand side is called LOWER and makes sound with the right Drawbars. Percussion does not sound with LOWER.
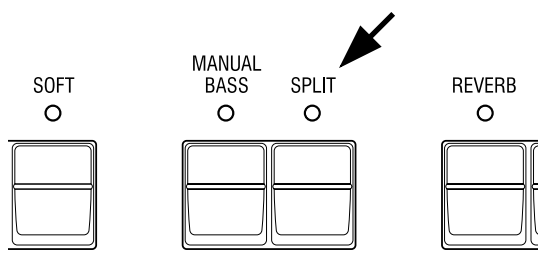
Add bass part on the manual keyboard. [MANUAL BASS]

Manual Bass

SOFT   MANUAL BASS   SPLIT   REVERB

You can play the Bass using the lowest keys.
This is called "Manual Bass".

[MANUAL BASS] Button

To use the Manual Bass function, press the button and switch on the LED.

Not to interfere with the Melody performance, this function is limited only upto B in the center when it leaves the factory.

> **NOTE:** **You can move the upper limit of the Manual Bass. (P. 84)**
> **NOTE:** **The Manual Bass function is controlled by connected MIDI keyboard when the purpose of the MIDI IN jack is at "LOWER/PEDAL". (P. 86)**

The bass part obtained by the Manual Bass is called the PEDAL, and makes sound controlled by the Pedal Drawbars. This is designed so that the Bass is played by the pedal keyboard as on the three-keyboard organ.

> **NOTE:** **You can choose sounding polyphonic (POLY) or lowest note (MONO). (P. 55)**

You can use both the Manual Bass and the Split at the same time. So, you will be able to play Bass, Chord and Melody all by yourself.

What is "Part"?

A "PART" plays like a "player" in a band or an orchestra does.

Like the three-keyboard organs, this keyboard has three parts, UPPER, LOWER and PEDAL, and so you can play three different tones.

This keyboard has only a single manual, but it is possible to play plural parts, using the SPLIT and/or using the MIDI keyboards to expand the keyboard.

> **NOTE:** **The function for plural tones is called "Multi-timbre".**

STORING REGISTRATIONS IN COMBINATION PRESET

All the afore-mentioned settings can be memorized to the Combination Preset.

The data stored at the factory can also be freely re-written.

EX. Memorize to "F - D".
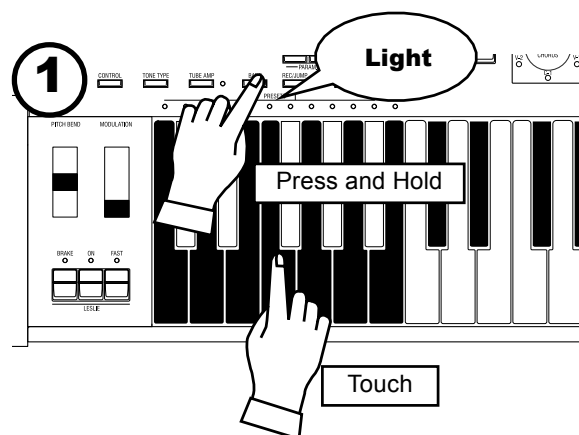
1. While pressing the [BANK] Button, press the Preset Key [F].

   The LED on the Preset Key indicates BANK while the [BANK] Button is pressed.

   > NOTE: The LED goes out if you release the button. This means the Preset is not final.
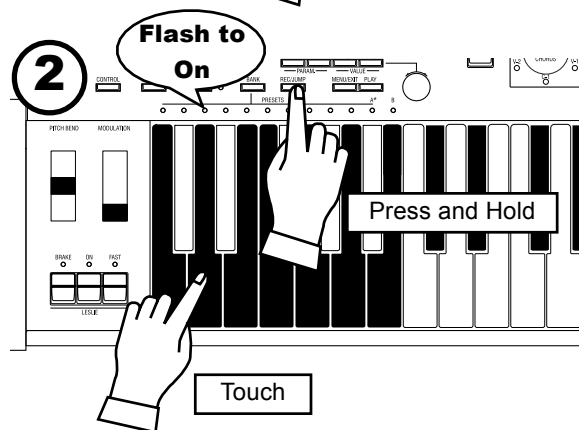
2. While pressing the [REC/JUMP] Button, press the Preset Key [D].

   The Preset is finalized and Recording Preset appears on the display for a while. When the recording is completed, the LED on the Preset Key [D] flashes for a few seconds and then switches on. The Display returns to the previous mode. The recorded Preset will be automatically selected.

   ❖ *The Preset Key [B] (or [A#] - when the control mode is in "Upper A#/B") does not memorize registrations by this operation.*

   > NOTE: The recorded Preset data does not go out if the power is switched off.

SETTING UP

SYSTEM STRUCTURE OF THIS KEYBOARD

Pedal Tonewheel Set

Lower&Upper Tonewheel Set

Pedal Keyboard

Lower Keyboard

Upper Keyboard

Pedal Drawbars

Lower Drawbars

Upper Drawbars

Percussion

Vibrato / Chorus

Tube Amp / Overdrive

Effect Loop

send

return

Equalizer

Digital Leslie

Reverb

●● **Line Out**

Leslie 11Pin
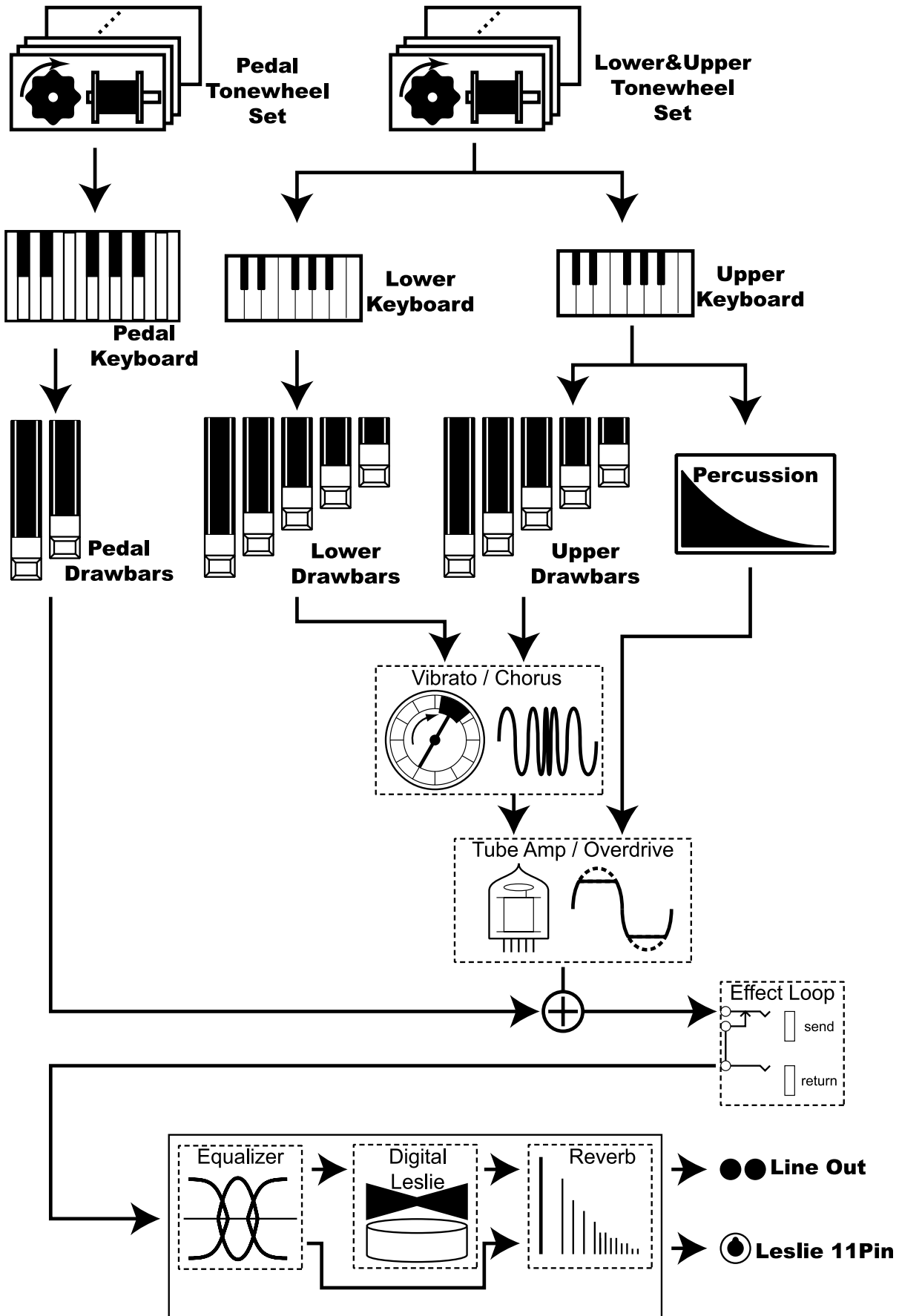
To fully enjoy playing this keyboard, please read the following section of this manual.

See the illustrated System Structure of your keyboard on the left page.

TONE-WHEELS

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

KEYS

Each of the sound signals made by the 96 Tone-wheels is switched at each key. Each signal corresponding with each pitch and harmonic is distributed to each key (as an example, 9 signals for the manual keyboard). The keys are switched on and off by depressing (= touching) and releasing the keys.

DRAWBARS

The Draw-bars prepare the basic sounds. Each bar adjusts the value of each harmonic (as an example, 9 harmonics for the manual keyboard).

PERCUSSION

The Percussion makes decay sound, synchronizing with the key touch of the UPPER part.

VIBRATO/CHORUS

Vibrato gives vibration to the pitch. By mixing the vibrato sound with the fundamental sound, Chorus effect is obtained.

> NOTE: **On this keyboard the scanner circuit of the B-3/C-3 is simulated, which gives more effects than the changes of the pitch.**

TUBE AMP

Having a real tube in the Amp gives the XK-3 a unique tube sound. By changing the amount of the drive you can obtain various tube sounds from "clean" no clipping, to the hard-distorted fuzzy and raspy "overdrive".
The PEDAL Part, however, is designed not to pass through the Vibrato/Chorus or the Tube Amp, in order to obtain the clear Bass-line.

EFFECT LOOP

If you connect an effector to the effect-loop input(send/return) which is located on the back of the keyboard, it will no pass thru the overdrive tube amp.

EQUALIZER, LESLIE and REVERB

The sound comes out of the output terminal, after passing the spatial effects: the Equalizer (for tone regulation), the Leslie (for the rotating speaker effects) and the Reverb (for resonance). (The built-in Leslie Effect does not work at the Leslie 11-pin terminal.

> NOTE: **The built-in Leslie Effect is designed to smoothly simulate the rotations of the two rotors.**

tips TONE-WHEEL SET

The Tone-wheel Sets are divided into the Manual Keyboard and the Pedal Part. This is to give the Pedal Part 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.

The 9 Drawbars (plus 2 for the Pedal) on this keyboard 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 Key is B, the actual Drawbar Registration is the value displayed in the (display-)window. The "Drawbar Registraion" shows the length of the pulled-out Drawbar(s). The display shows only the Drawbar(s) you operate.
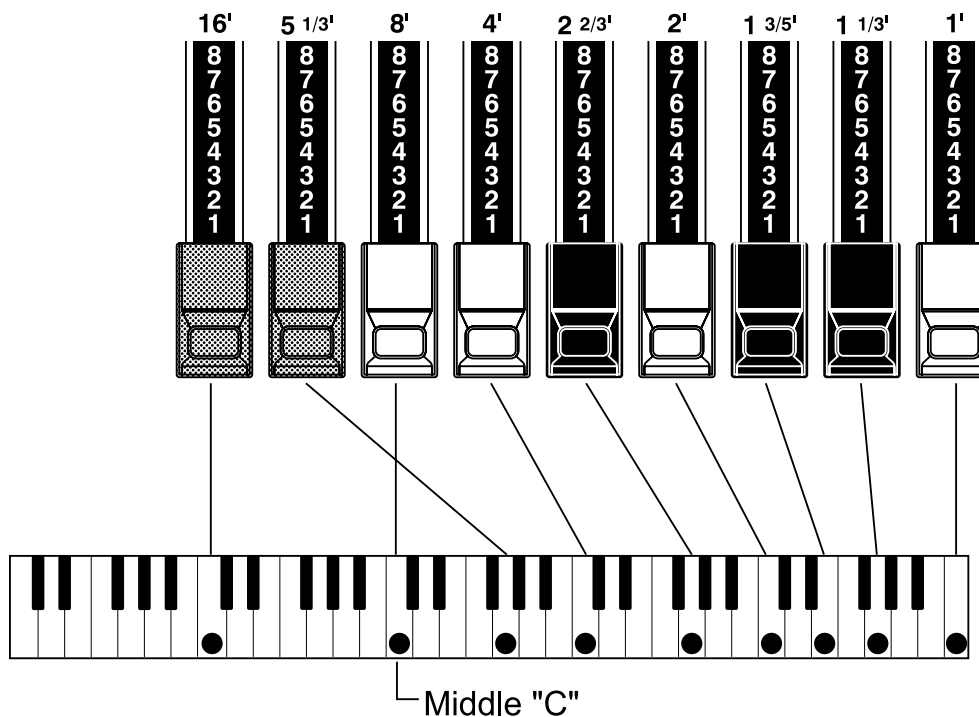
Middle "C"

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 the pipe organ.

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

For example, when you blow clarinet, the internal air vibrates, and the fundamental (8') and the third harmonic (2 2/3') plus the fifth harmonic (1 3/5') come out at the same time. On this keyboard, if you pull out 3 Drawbars, you can get the clarinet sound. If you pull out the right hand side one of the 3 Drawbars a little longer and the left hand side one a little shorter, the element/component of the high pitch increases and a hard sound comes out. If you pull out the left hand one a little longer, on the contrary, the sound gets mellow.

   Thus, you can make delicate changes to the sound, depending on the flow of the tune/music or your choice/preference, by fully utilizing the Drawbars.

   NOTE: You can change the characters of the Drawbars. (P. 54)

WHITE DRAWBARS
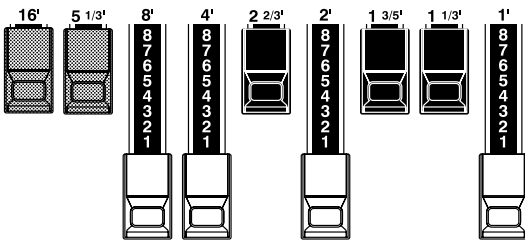
In each Drawbar set, the white Drawbar (8') on the left end makes the basic/fundamental sound. The other white Drawbars get higher by the octave to the right.

BLACK DRAWBARS
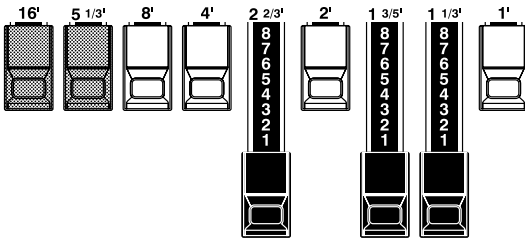
The sounds of the black Drawbars, too, play important roles in building rich tones. Their pitches are fifth and third to the fundamental. They contain the elements of all different harmonics of such as the sweet and soft horn, mellow strings and so on.

BROWN DRAWBARS
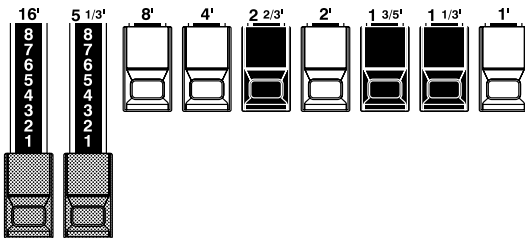
The two brown Drawbars on the far left have the role to give depth and richness to the sound. The left 16' is one (1) octave lower than the 8,' and 5 1/3' is the third harmonic of the 16' fundamental.

Normally, the tones are built on the 8' fundamental, but, if you want to add depth to the tone or to expand the playing range on the manual by one (1) octave, the tones are built on the 16' fundamental.

DRAWBAR REGISTRATION PATTERNS

The Drawbar Registration is matched by digits, if precisely. However, in the usual play, it is rather reasonable to remember the typical combinations of the 9 Drawbars by their forms/shapes.

The Drawbar Registrations are roughly grouped into the following 4 patterns:

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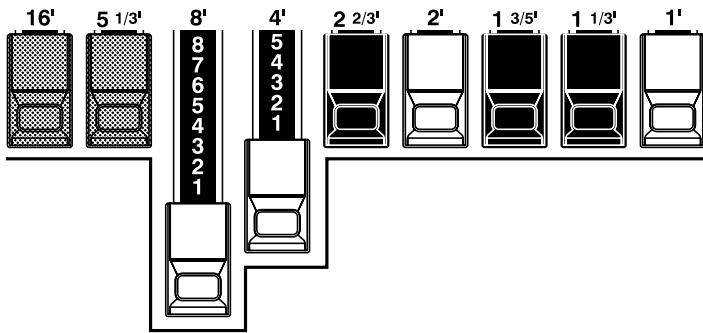
Accompaniment Flute 8' I	00 8460 000
Accompaniment Flute 8' II	00 3220 000
Accompaniment Flute 8' III	00 8600 000
Chorus of Flutes 16'	80 8605 002
Orchestral Flute 8'	00 3831 000
Piccolo 2'	00 0006 003
Stopped Flute 8'	00 5020 000
Tibia 8'	00 7030 000
Tibia 4'	00 0700 030
Tibia (Theater) 16'	80 8605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

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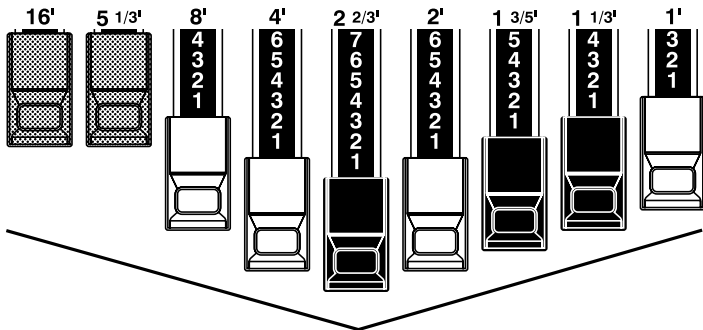
Bassoon 16'	44 7000 000
Clarinet 8'	00 6070 540
English Horn 8'	00 3682 210
Flugel Horn 8'	00 5777 530
French Horn	00 7654 321
Kinura 8'	00 0172 786
Oboe 8'	00 4764 210
Trombone 8'	01 8777 530
Trumpet 8'	00 6788 650
Tuba Sonora 8'	02 7788 640
Vox Humana 8'	00 4720 123

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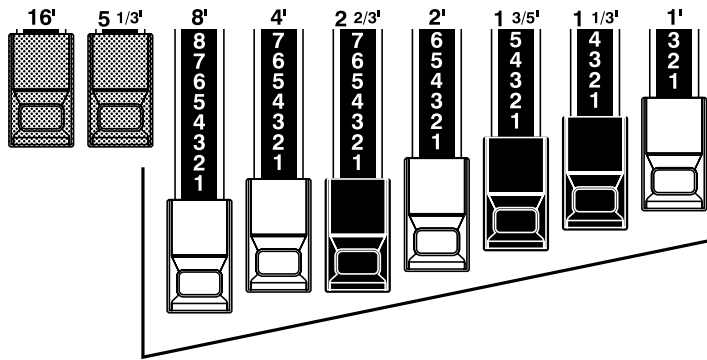
Accomp. Diapason 8'	00 8874 210
Chorus Diapason 8'	00 8686 310
Diapason 8'	00 7785 321
Echo Diapason 8'	00 4434 210
Harmonic Diapason 16'	85 8524 100
Harmonic Diapason 8'	00 8877 760
Harmonic Diapason 4'	00 0606 045
Horn Diapason 8'	00 8887 480
Open Diapason 8'	01 8866 430
Solo Diapason	01 8855 331
Wood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

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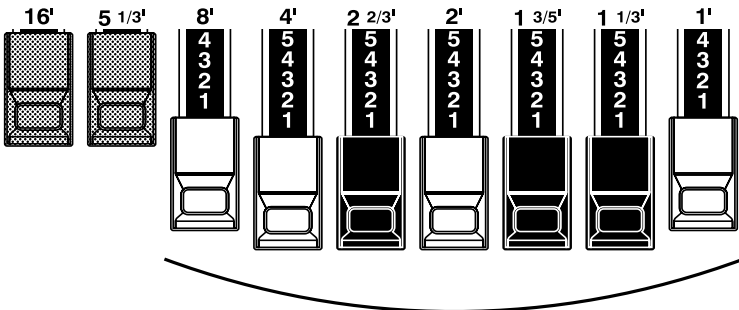
Cello 8'	00 3564 534
Dulciana 8'	00 7770 000
Gamba 8' I	00 3484 443
Gemshorn 8'	00 4741 321
Orchestral String 8'	00 1464 321
Salicional 8'	00 2453 321
Solo Viola 8'	00 2474 341
Solo Violin 8'	00 3654 324
Viola da Gamba 8'	00 2465 432
Violina 4'	00 0103 064
Violone 16	26 3431 000

3 SETS OF DRAWBARS AND PARTS
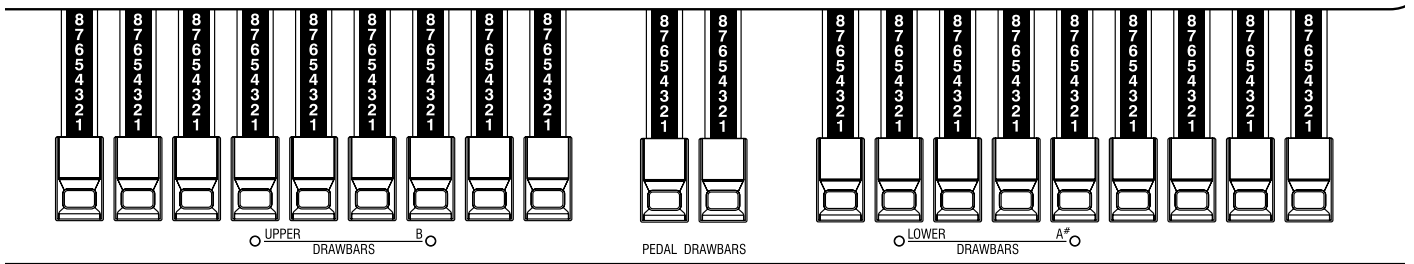
On this keyboard, there are 3 Parts: UPPER, LOWER and PEDAL, and each of them has the corresponding Drawbars.

The manual on the keyboard is usually assigned to the UPPER position. If you want to play the LOWER or PEDAL Part, use the Split or Manual Bass functions, or connect the MIDI keyboard and assign each part.

There are lamps(= LED's) in front of the two sets of 9 Drawbars, marked with "UPPER/ B" and "LOWER/A#". They indicate the assignment of the Drwabar Sets. They are assigned to UPPER and LOWER when shipped from the factory.

A# and B are used when you want to operate it like the Upper Manual of the B-3/C-3. In this case, both Drawbar Sets correspond with the Preset Key A# and B, and control only the UPPER Part. The LOWER Part is not controled. Please read the CONTROL Chapter for further details. (P. 58)

MATCH THE REGISTRATION TO DRAWBARS

If you recall the Combination Preset, the Drawbar Registration is not physical but is replaced with the recorded/memorized one. If you move any Drawbar at this stage, only the Footage moved is reflected.

To match only the Registration to the Drawbars, while using the content of the Combination Preset, keep depressing the Preset Key for a while. Combination Preset is recalled and then the physical Drawbar Registration is reflected.
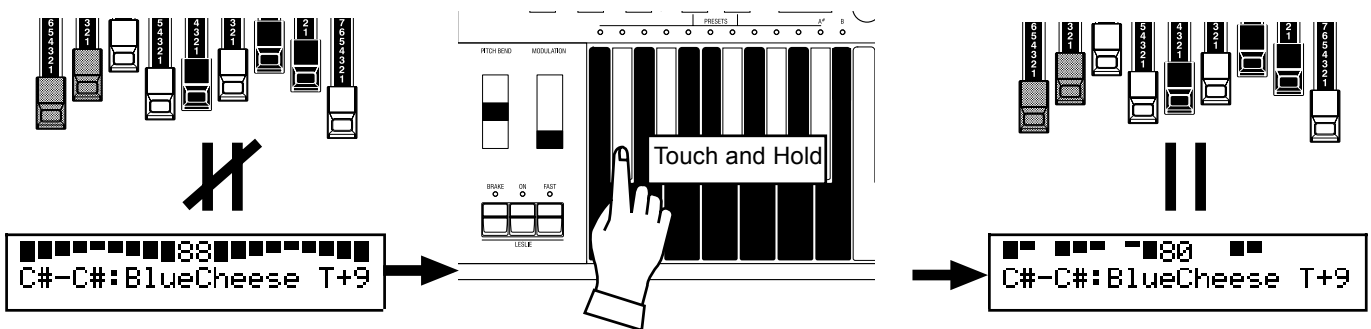
The attack feeling of the percussion is a Hammond exclusive.

Percussion is usually used with the Drawbar sound.
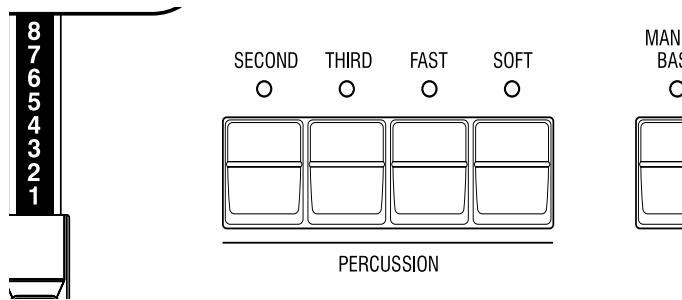
[SECOND] BUTTON

The second harmonic, or 4' Drawbar decay, is added to the UPPER Part.

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

[THIRD] BUTTON

The third harmonic, or 2 2/3' Drawbar decay, is added to the UPPER Part. By mixing it with the Drawbars, power and solidness is obtained.

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

[FAST] BUTTON

This cuts short 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. It gets "FAST" when you press the [FAST] button , and the LED will light.

[SOFT] BUTTON

This reduces the volume of Percussion.

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

NOTE: You can fine-adjust Percussion. (P. 67)

tips DECAY

The piano sound gradually goes out even if you keep the key down. This is called "decay". The violin, on the contrary, keeps sounding at a certain volume. This is called "sustain".

NOTES

"Percussion does not sound!"

The factory default setting: Percussion does not produce sound except at the Preset Key [B], if the Combination Preset is Bank B. (See left.) This setting is the same as on the B-3/C-3.

NOTE: You can set any Preset Key to sound Percussion. (P. 67)

DRAWBAR CANCEL

When either the [SECOND] or the [THIRD] button is ON, 1' in the Upper Part Drawbars does not produce sound. This is the same action as on the B-3/C-3.

NOTE: You can set to play 1' Drawbar, while Percussion is ON. (P. 67)
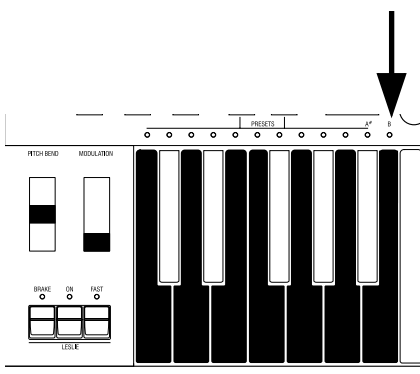
VIBRATO adds warmth to the tone, by slightly changing the Drawbar pitch at a certain speed.

You can also add richness to the sound by mixing the Vibrato sound with the fundamental (= Chorus Effect).
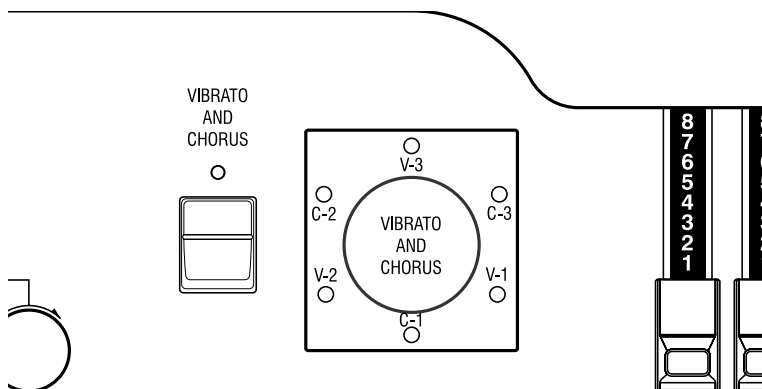
[VIBRATO/CHORUS] BUTTON

This switches ON and OFF Vibrato/Chorus Effects.

It affects on the UPPER and LOWER Part.

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/Chorus is selected.

NOTE: You can change the speed of the Vibrato Effect. (P. 71)

The TUBE (= Vacuum Tube) AMP produces a unique "Tube Feeling" sound.
By changing the amount of the Drive, various Tube Sound is obtained, from the unclipped clean to the hard-distorted fuzzy, raspy Overdrive sound.
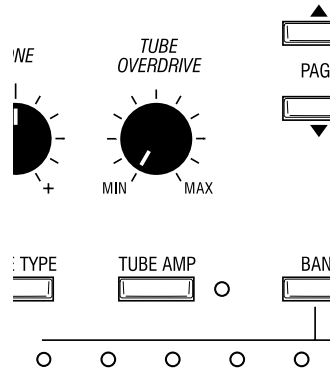
[TUBE AMP] BUTTON

This is for determining whether or not to go through the Tube Amp circuit.
To get this effect, touch the button and and the LED will light.

NOTE: **You can see the tube through the ventilation hole on the back.**

[TUBE OVERDRIVE] KNOB

This is for adjusting the distortion value of the Tube Amp circuit.
It does not clip, if turned to the left all the way, but the tone quality is slightly different from when the [TUBE AMP] button is OFF, because it passes through the Tube Amp circuitry.
As you turn it to the right, the distortion value increases, and the color of the LED of the [TUBE AMP] button changes from green to red, in accordance with the amount of distortion.

NOTE: **You can fine-set the distortion degree. (P. 71)**

tips **TUBE AMP CIRCUIT**

Tubes are rarely used in modern electric apparatuses but because semi-conductors are better characteristics and because tubes are inferior in many aspects.
However, in some areas, tubes are again popular because of their specific characteristics, which are produced only by tubes. People are still searching for the sound simulating that of tubes for effectors.
In this keyboard, a real Tube circuit is used.

LESLIE EFFECT is the simulated sound of the rotating speakers.

If you connect the real Leslie speakers to this keyboard, it controls those (speakers)
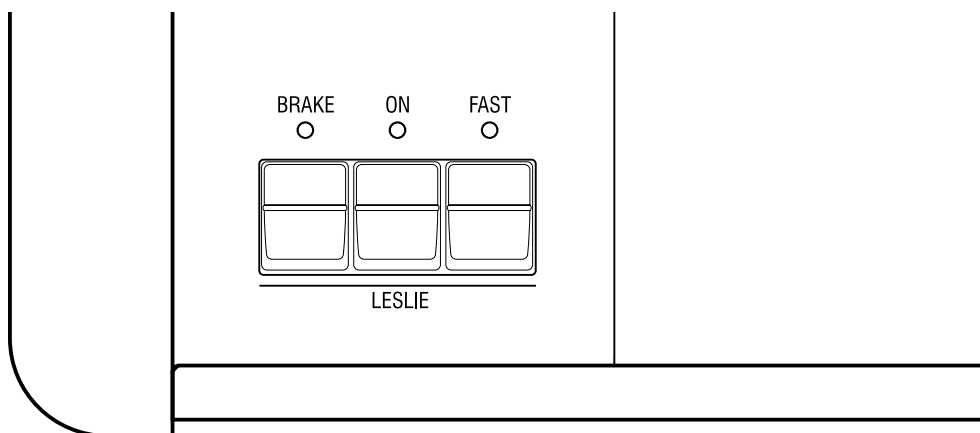
[ON] BUTTON

If you touch this button, the LED will light, and the rotor starts turning. Also the voice is heard thru the rotary channel.

[FAST] BUTTON

This switches the speed of the rotor in two steps. It switches every time you touch it. When the LED is ON, it is FAST, and when the LED is off, it is SLOW.

[BRAKE] BUTTON

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

When the LED is light, it is BRAKE (= The speed gradually slows down and stops.) and if the LED is OFF, it is THROUGH. (= The Leslie effect is by-passed and the voice comes out of the stationary channel.)

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

NOTE: **You can fine-set the LESLIE effect i.e. speeds. (P. 68)**

tips BUTTONS AND LESLIE STATES

Button			State	
BRAKE	ON	FAST	CH=1	CH=2or3 & 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
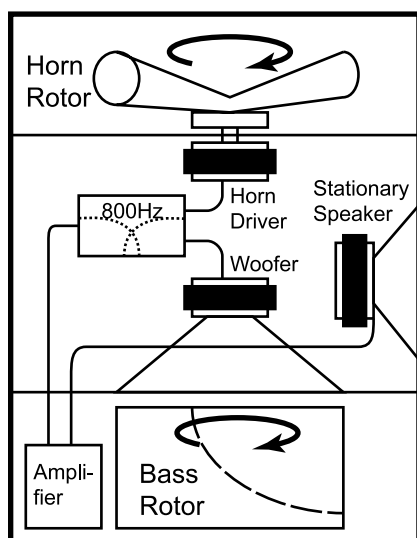
tips WHAT IS THE LESLIE EFFECT?

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 built-in Leslie Effect simulates them and you can get the best effect when connected stereophonic.

The Equalizer and the Reverb effects give the final touch to the tone.

The Equalizer regulates the tone, and the Reverb adds the resonance of the hall performance.

You can control portions of their functions on the panel buttons and knobs

EQUALIZER
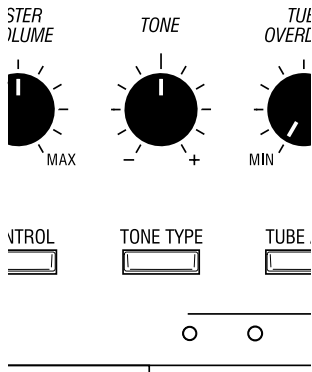
[TONE] KNOB

One optional Parameter out of the Equalizer is assigned and regulated.

When delivered from the factory, TREBLE is assigned, and, as you turn it to the right, the treble is emphasized, and, to the left, the trebel is reduced.

[TONE TYPE] BUTTON

This assigns the settings to the [TONE] KNOB.

At every touch, the assignment changes in the order of TREBLE, MIDDLE and BASS. The initial letter of the word is displayed in the PLAY mode.

NOTE: For further details, please read the section "EQUALIZER" (P. 72)

C#-C#:BlueCheese T+9

The illustration indicates
TREBLE is at +9.

REVERB
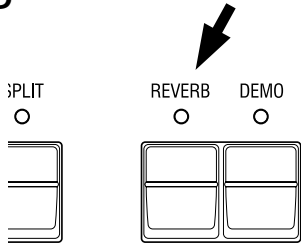
[REVERB] BUTTON

This is for switching ON and OFF the Reverb Effect.

To get the Reverb Effect, press the button and the LED will light.

NOTE: You can change the time and the depth of the Reverb. (P. 73)

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

BANK AND KEY

Combination Presets

		Key												
		C	C#	D	D#	E	F	F#	G	G#	A	A#	B	
Bank	C													**Adjust B**
	C#													
	D													
	D#													
	E													
	F													
	F#													
	G													
	G#													
	A													
	A#													
	B													

The combination preset chart to the left, shows the [BANK] and the [KEY], information.
Access is made by the Preset Keys. To select the [BANK], press the key, holding down the [BANK] button. To select the [KEY], just press the Preset Key.
Recording and recall is determined when the Key is designated. Only designating the Bank does not switch the recording or recall.
Refer to the illustration on the left bottom for each Key and Name.
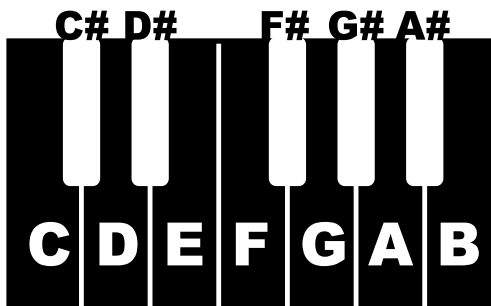
The [B] key on the right end is a special Preset, called "Adjust Preset". Here the Drawbar Registration on the panel always matches the internal registration.

> **NOTE:** The setting of the Preset Keys [C] to [A] on the B-3/C-3 is fixed, and the [A#] and [B] are used to switch the Drawbar Registration on the panel. However, on this model, you can change the setting by moving the Drawbars, even while using the keys [C] to [A].

---

tips COMBINATION PRESETS

On the original B-3 organ the preset keys only stored drawbar registration information. On the XK-3 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 Keys can be limited Bank by Bank. (P. 56)

NAME THE COMBINATION PRESETS

1 Go to the MENU.
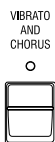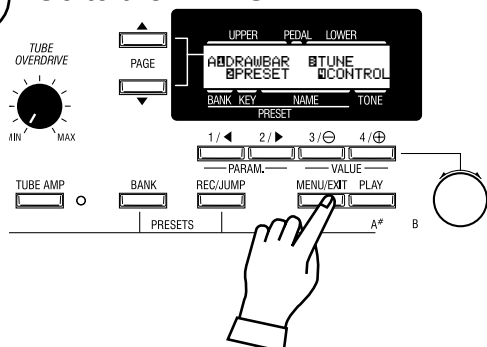
Touch the [MENU/EXIT] button.
The MENU mode will be displayed.

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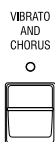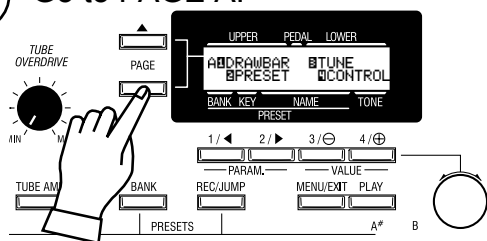
If the PAGE A is not displayed, touch the [PAGE] button and go to PAGE A.

3 Go to the PRESET FUNCTION mode.
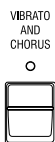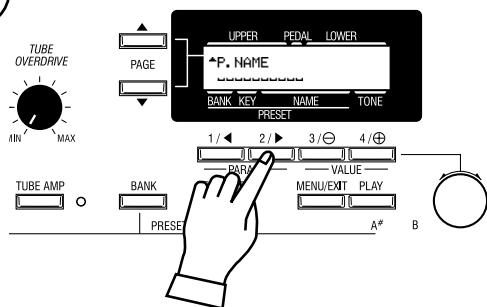
Touch the [2] PRESET button and go to the PRESET FUNCTION mode.

4 Input THE NAME.
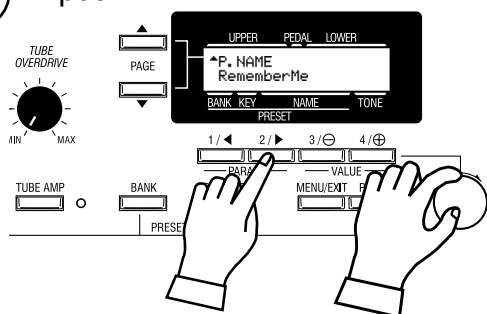
You can store names up to 10 letters.
  [PARAM] BUTTON: moves the cursor.
  [VALUE] BUTTON: selects letters.
You can use all the Alphabet letters large and small, signs/symbols and digits.
To jump to the beginning of each list, hold down the [REC/JUMP] button, and touch the [VALUE] button. You can select letters etc. by the [VALUE] knob, as well.
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 "F-D".

(1) Select the Bank.
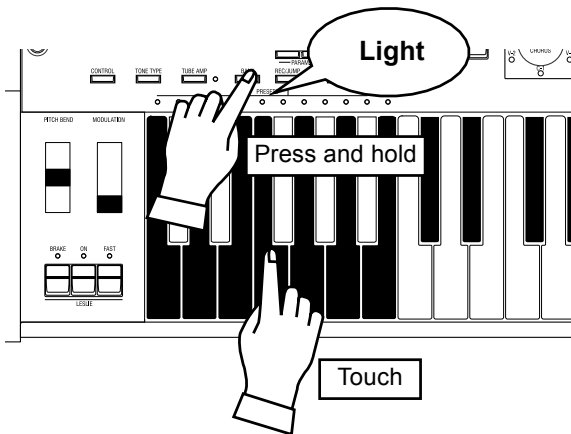
While holding down the [BANK] button, touch the Preset Key [F].
The LED on the Preset Key indicates the BANK while you are holding down the [BANK] button.

NOTE: The LED will be OFF, if you release the button. This means the Preset is not stored.

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

(2) Select the Key.
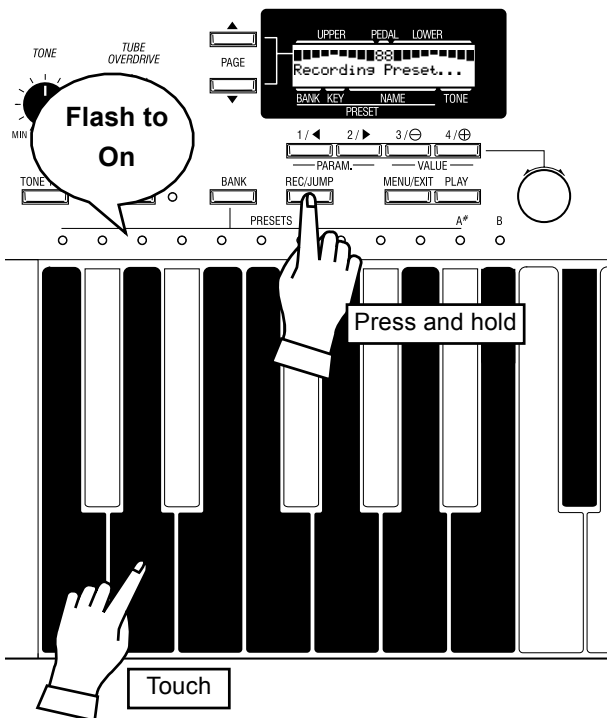
Press the Preset Key [D], while holding down the [REC/JUMP]. The Preset becomes final and the display shows as follows for a few seconds.

    Recording Preset...

When the recording is completed, the LED on the Preset Key [D] 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 Preset Key [B] (or [A#] - when the control mode is in "Upper A#/B") by this operation.

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

USING THE CONTROL PANEL

You now know you can do many settings by using the buttons and knobs on your keyboard. You can do even finer settings like the delicate speed of the Leslie Effect or the MIDI equipments, using the display buttons on the Control Panel.
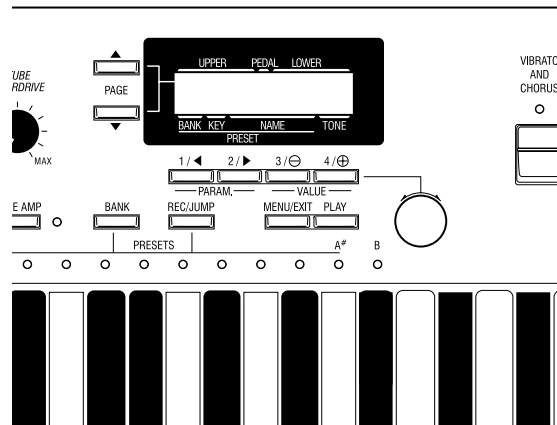
There are PLAY, MENU and FUNCTION modes in the display.
The buttons and knobs in each mode is explained on the following pages.

PLAY mode

MENU mode

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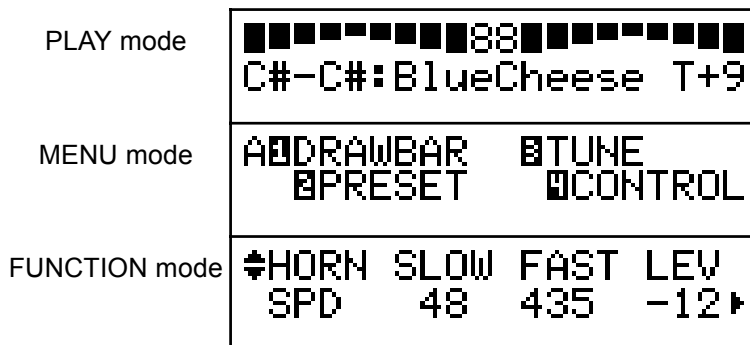
The PLAY MODE is the basic display for all the operations. The necessary informations for the normal play will be displayed.

There are two types of PLAY MODE screens to display the Drawbar Registration. One is by showing the length of the bars and the other by digits.

How to come to this display:

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

Drawbar registration
UPPER Part/ PEDAL Part/ LOWER Part

BAR display

```
■■■■■■■■■■88■■■■■■■■■■
C#-C#:BlueCheese T+9
```

These two PLAY mode displays (= the bar display and the digital display) will be switched every time you touch the [PLAY] button.
In the bar display, the Combination Preset name is shown but another Preset Key, if assigned to the LOWER Part is not shown.
Also, the function assigned to the [TONE] knob and its value is displayed.

Preset Bank -
Key :
Name

PLAY

[TONE] knob
Assignment:
Value

DIGITAL display

```
765434567■■765434567
C#-C#/D#        OD:63*
```

The Preset name is not shown in the digital mode display, but you can see the Preset Key of the LOWER Part.
Also, the value of the Overdrive and the MIDI IN Note Information is displayed.

Preset Bank -
Key on UPPER Part/
Key on LOWER Part

Value of
OVERDRIVE

Sounding on MIDI Note
Message

The MENU mode is the path for each function.

How to come to this display:

Touch the [MENU] button.

There are several pages which contains many various FUNCTION displays. Move from page to page and find the item where you want to go and touch the numbered button to see the desired display.

HOW TO READ THE DISPLAY

FUNCTION ITEM
(If none, blank.)

PAGE

```
E1DEFAULT   5DEMO
  2SYSTEM
```

```
D1ZONES     5SETUP
  2MIDI      6CF FORM
```

```
C1MOD/VIB   5LESLIE
  2EQUALIZ   6REVERB
```

```
B1B-TYPE    5BRITE
  2MELLOW    6PERCUSS
```

```
A1DRAWBAR   5TUNE
  2PRESET    6CONTROL
```

PAGE

BUTTON OPERATION IN THIS MENU

Moves from a page to another.
You can jump to the top or bottom page by touching these buttons with holding down the [REC/JUMP] Button.

These are for entering to each FUNCTION MODE corresponding with the item displayed.

Returns to the PLAY 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

This shows there are PAGEs above (or below).

PARAMETER

This shows there is a PAGE on the right (or on the left).

```
‡HORN SLOW FAST LEV
 SPD   48  435  -12▸
```

PAGE NAME

VALUE

CURSOR (Flashing VALUE)
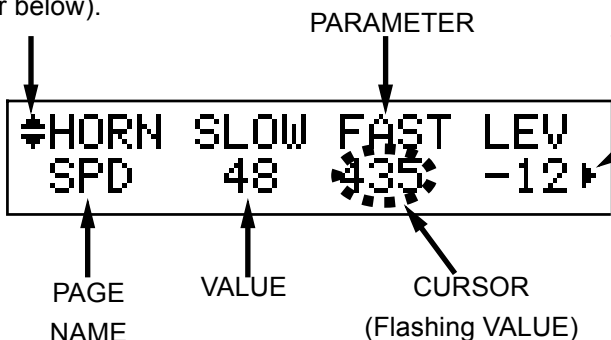
tips CURSOR

In the display window of this keyboard, the CURSOR is displayed in the flashing style, while the most popular indicator-cursor used on the PC, the mobo, etc. is in the shape of an arrow, a square or an I-shape.

BUTTON OPERATION IN THIS MODE

Moves from a page to another.

You can jump to the top or bottom page by touching these buttons with holding down the [REC/JUMP] Button.

The CURSOR increases or decreases the value of the Parameter.

Holding it increases (or decreases) the value continuously.

Touching it while holding the [REC/JUMP] button increases (or decreases) the value quickly.

The value can also be changed by the [VALUE] knob on the right bottom

Returns to the PLAY mode.
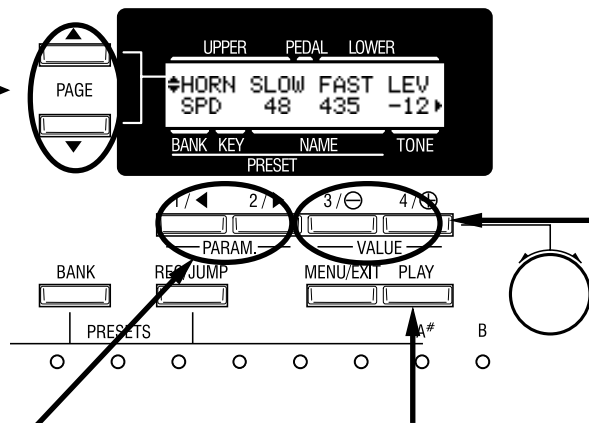
This button is used to move the CURSOR right or left for selecting the PARAMETER to change.

The CURSOR moves to the edge of the display and on to the next page (on the right or left), if there is one.

Touching this button while holding [REC/JUMP] button, you can move to the right or left page regardless where the cursor is.

Example of operation:
Adjusting the DECAY TIME of the Percussion [FAST]

1 Go to the MENU Mode.
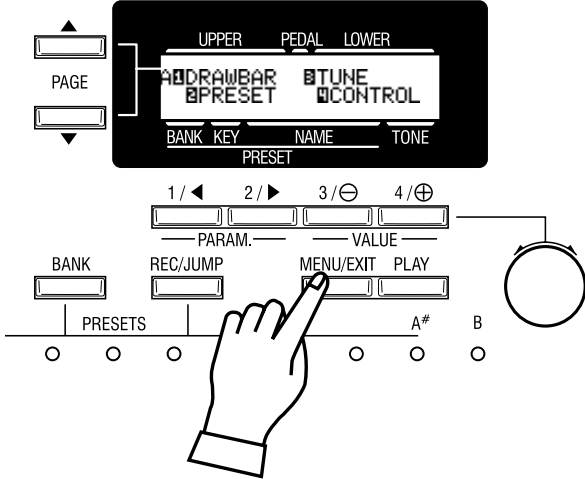
Touch the [MENU] button.
The [MENU] mode is displayed.

```
         UPPER   PEDAL   LOWER
A█DRAWBAR  █TUNE
    █PRESET    █CONTROL
         BANK  KEY    NAME      TONE
                PRESET
```
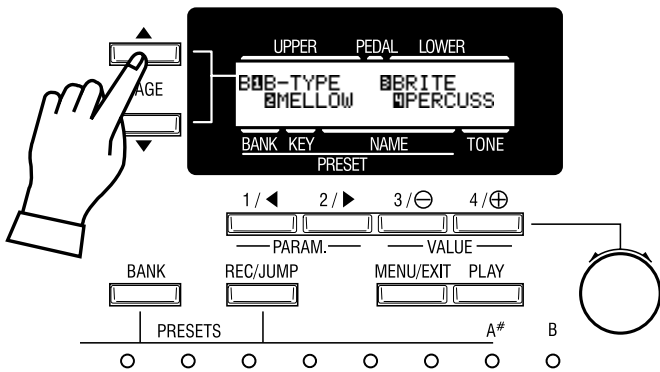
2 Select the PAGE.

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

```
         UPPER   PEDAL   LOWER
B█B-TYPE   █BRITE
    █MELLOW    █PERCUSS
         BANK  KEY    NAME      TONE
                PRESET
```

3 Touch the Number button.
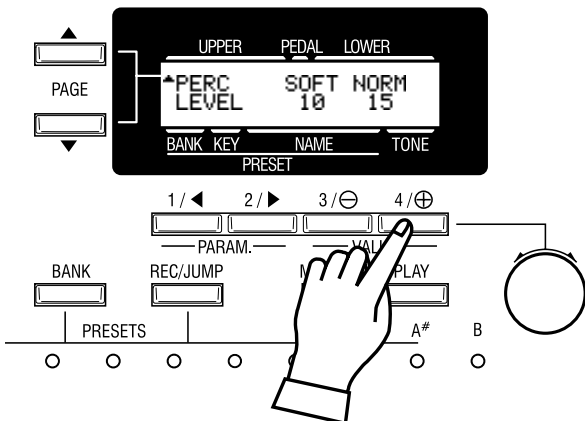
Touch the [4] button for "PERCUS".
Now you are on the (first page) of the Percussion Function display.

```
         UPPER   PEDAL   LOWER
▲PERC      SOFT NORM
  LEVEL      10    15
         BANK  KEY    NAME      TONE
                PRESET
```

④ Move the CURSOR to the Parameter you want to change.
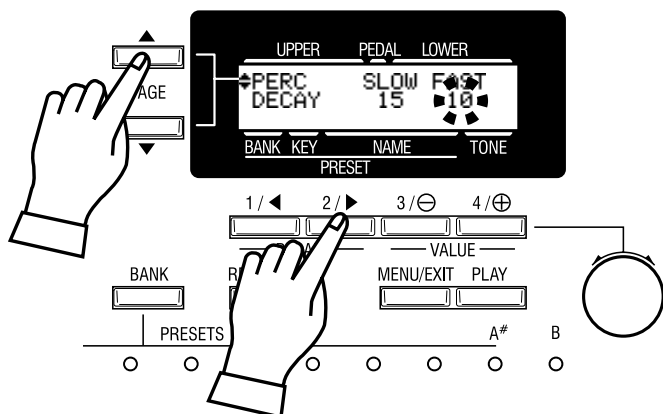
DECAY TIME is on the "DECAY" PAGE. Move to that page using the [PAGE] button.
"FAST" is on the right end. Move the CURSOR (flashing value) to underneath "FAST" using the [PARAM] button.

⑤ Change the value.
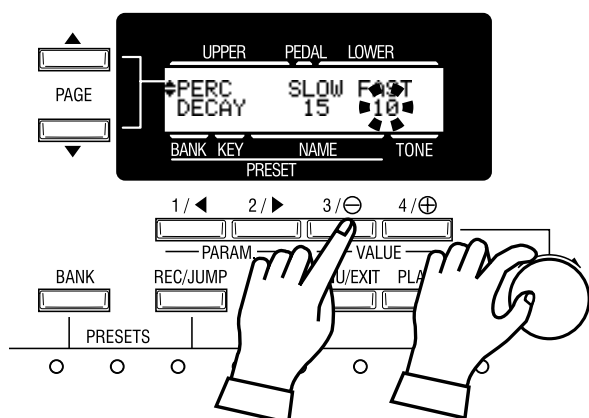
Decrease the value, using the [VALUE] button or the [VALUE] knob on the right bottom.
NOTE: Repeat the operation 1 - 5, if you want to change the other parameter, too.

⑥ Record into the Combination Presets.

The "DECAY FAST" is a Preset Parameter, it will go back to the set value, if you call out the other (or current) Combination Preset.
If you want to continue to use the changed value hereafter, you must record the value into the Combination Preset.

Touch and Hold

Touch
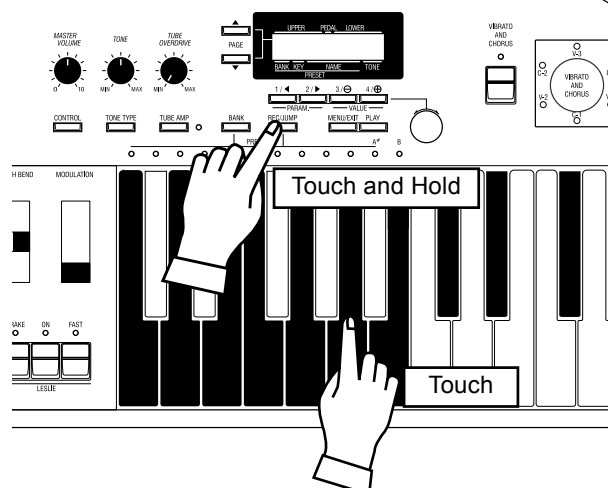
tips **PRESET PARAMETERS**
They are the Parameters to be recorded into each Combination Preset.
They include the Parameters for setting the status of the buttons/knobs on the panel, "Decay Fast" and many others. The overall/general common Parameters (which are not included in the Combination Presets) are called "Global Parameters."

SHORT CUT TO THE FUNCTION MODE

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

Example of operation: Move to the Percussion Function Mode.

Touch and Hold
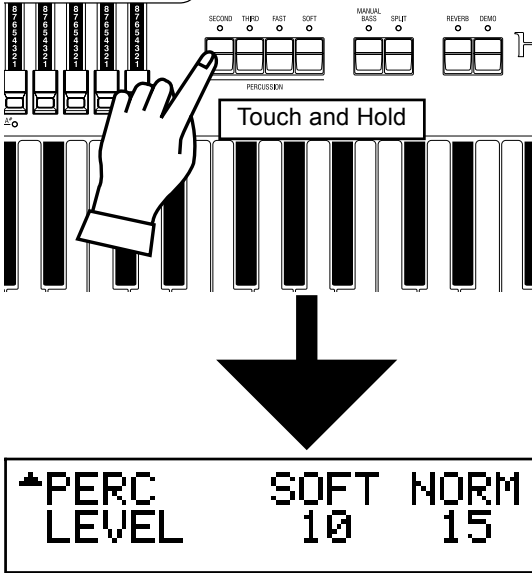
For example, if you want change the Percussion setting, you can go to the PERCUSSION FUNCTION MODE display, by holding down either [SECOND], [THIRD], [FAST], or [SOFT] for a while. This is called "SHORT CUT".

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

NOTE: You can change the time for holding down the button for "SHORT CUT". (P. 61)

RECORD THE PAGE YOU FREQUENTLY USE

You can record the page which your usually use, and go to that page by only touching the [CONTROL] button.

Example of operation: Record the Drawbar - Pedal Function

1

Go to the page to be recorded by using MENU etc.

2

Touch and Hold
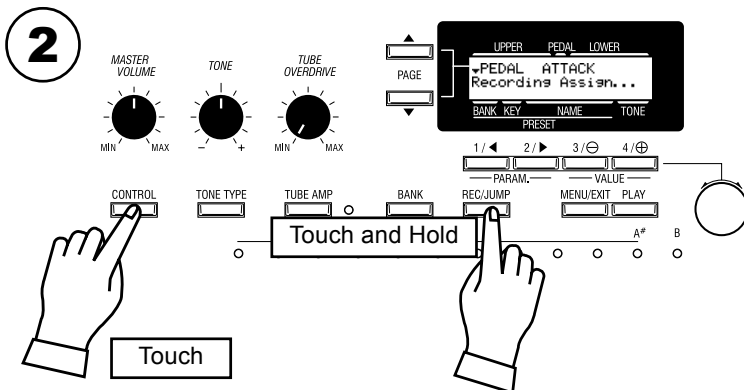
Touch

Touch and hold the [REC/JUMP] , and touch the [CONTROL] button.

Next time, you can come to this page by only touching the [CONTROL] button.
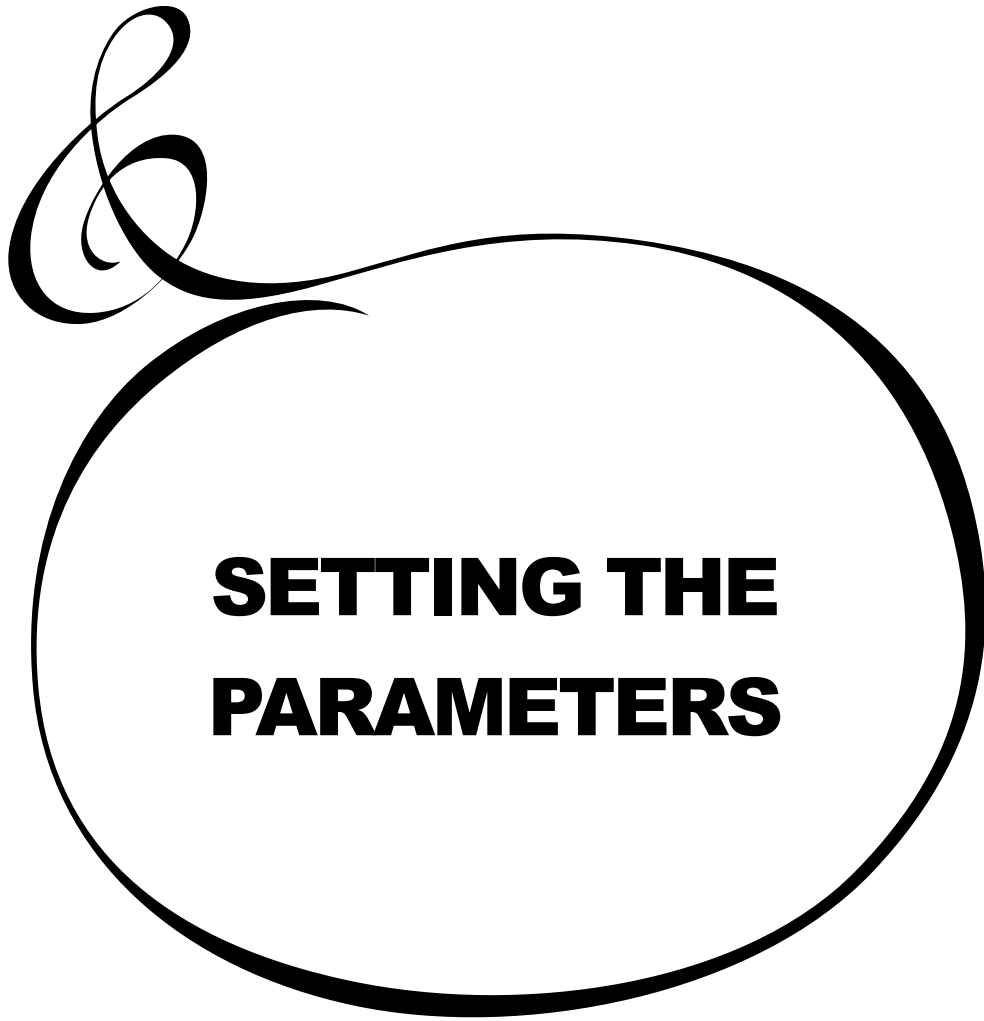
SETTING THE PARAMETERS

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

To come to this mode:

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

```
▼PEDAL   ATTACK           ▼PEDAL   DCY SUST VEL     ▼PEDAL   MODE
Muted  NORM CLK     ▶      Muted    C  OF 3 OF▶      Muted    POLY
▲L&U   CLK-AT RL LPF       ▲L&U       AT-ENV-RL      ▲L&U     LO-FOLD-HI
B-Type  10 5 00▶           B-Type  ◀ 0     10 ▶      B-Type   2C    4G
```
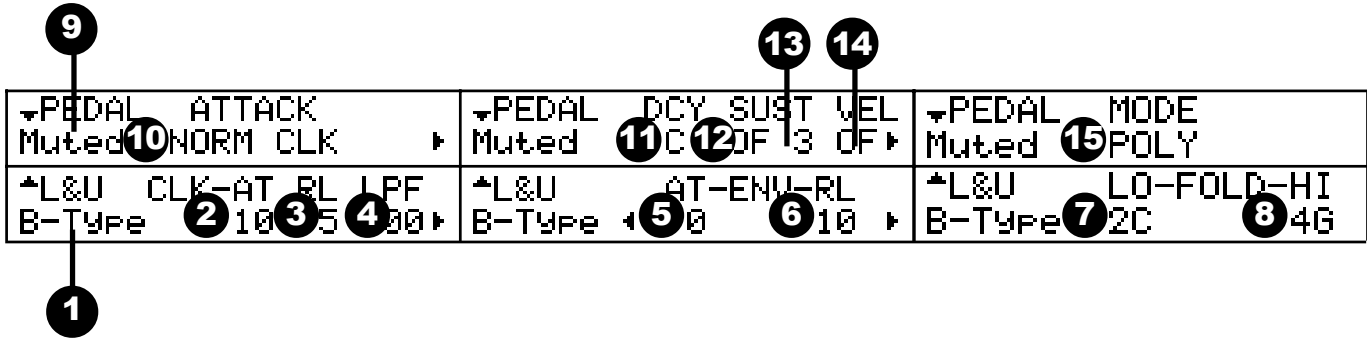
♦Setting the Manual Part (LOWER and UPPER)

1. **TONE-WHEEL**

   Select the TONE-WHEEL SET (waveform) for the manual part.

   B-type: The traditional Tonewheel Sound of B-3/C-3
   Mellow: Transparent sine wave
   Brite: The analog-oscillating sound represented by X-5

2. **CLICK - ATTACK LEVEL**

   This allows you to set the Key-Click VOLUME of the ATTACK (= when you touch
   the key). The larger the value, the louder it gets. No key-click at 0.

3. **CLICK - RELEASE LEVEL**

   This allows you to set the volume of the Key-Click at RELEASE (= when you release
   the key). The larger the value, the louder it gets. No Key-Click at 0.

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 it gets.

5. **ENVELOPE - ATTACK RATE**

   This allows you to set the speed of the volume of the Drawbars at Attack (when you
   touch the key). The more the value, the slower it gets. The volume will be maxi-
   mum(= loudest) at 0 at the time you touch the key.

6. **ENVELOPE - RELEASE RATE**

   This allows you to set the Decaying Speed of the Drawbar Sound at Release (when
   you release the key). The more the value, the slower the RELEASE gets. The sound
   dies at 0 at the same time as you release the key.

7. **FOLD-BACK - LOW**

   This allows you to set at which key the 16' Drawbar starts the 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, next to the Preset Keys) is displayed as
   "1C". The setting range is 1C - 2C.

tips TONE-WHEEL SET

Each Tone-wheel Set allows you to make finer
adjustment. (P. 64)

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.

Loudness
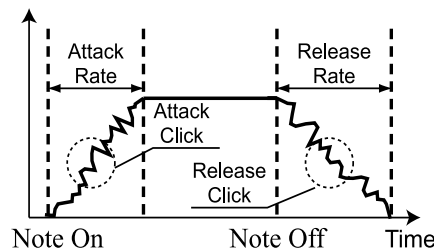
tips FOLD-BACK

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.
The feature of this model is to simulate that.

8. 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 can be set not only on the 1' but also 1 1/3', 1 3/5', 2' and 2 2/3' Drawbars.

♦Setting the PEDAL Part

9. TONE-WHEELS

This allows you to select the Tone-wheel set (waveform) of the PEDAL Part.

Normal: The traditional B-3/C-3 Tone-wheel sound
Muted: Analog-oscillating sound represented by the X-5.
Synth: Sawtooth waveform with sweeped filter.

> **NOTE:** You can come to this page by holding down the [MANUAL BASS] Button as well.

10. ATTACK

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

MAX CLK: Immediately attacks and the key-click is loud.
NORM CLK: Immediately attacks and the key-click is normal.
SOFT CLK: Immediately attacks and the key-click is soft.
NO CLK: A slightly slowly attacks without key-click
SLOW ATK: Slowly attacks without key-click

11. DECAY RATE

This allows you to determine whether to keep voicing or to decay, or set the decay time, while holding down the key.

The setting range is 1 - 5 and C. The longer the value gets, the longer gets the decay time. No decay at C.

12. SUSTAIN - ON

This allows you to set whether or not to use the Sustain function.
It functions at ON.

13. SUSTAIN - LENGTH

This allows you to set the Release Rate (= the decay time after you release the key), when the SUSTAIN - ON (item #12) is ON.
1 is the shortest. And 5 is the longest.

14. VELOCITY

This allows you to set the response to the Velocity. The setting range is OF and 1 - 4. At OF, the volume does not change on how hard you touch the key. As the value increases from 1 - 4, the sound gets louder even if you touch the key softly.

> ❖ *When the velocity is 1 - 4, it sounds when you touch the key slightly deeper than OF.*

15. KEY MODE

This allows you to set the way to voice the Pedal Part.

POLY: Makes it possible to play harmony (up to 3 notes)
MONO: Only the lowest note will sound, when you play a harmony.

> **NOTE:** The previously relased 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:** When the note-data of the Pedal Part are received from the MIDI IN terminal while the value of the parameter [MIDI IN] (P. 86 #2) is "IN1/IN2", the Pedal Part produces polyphonic sound, regardless of the value.

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

Loudness
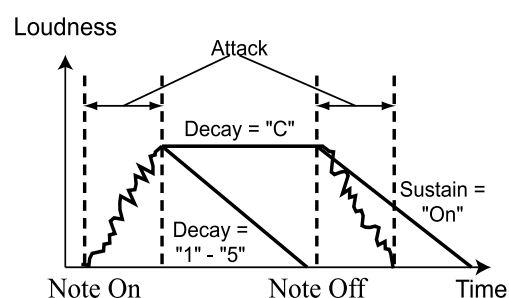
tips SUSTAIN

This is the function that the volume slowly fades out after the key is released, not like that of the synthesizers.

tips VELOCITY

"Velocity" is the strength to touch the key.
When you touch the piano hard, the hammer hits the string hard and so the sound gets loud.
The organ key is, on the other hand, generally only the switch to open the valve, and so the sound does not change on how hard you may touch the key.
So this function is effective if you use when the Decay Rate is other than C, or Decay.

In this mode, you can name the Combination Presets and determine how to call it.

To come to this mode:

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

```
▼P.LOAD   UP LINK-L/P      ▼P.LOAD DRAWB PERCUS      ▼P.LOAD   INT    EXT
 DB REG 2 ON  3 ON     ▶    DB/PC 4 ON  5 ON    ▶    ZONE   6 ON  7 ON    ▶
▲P.NAME
 RememberMe 1
```

```
▼P.LOAD EQ/RV ANI/OD
 EFFECT 8 ON    9 ON
```
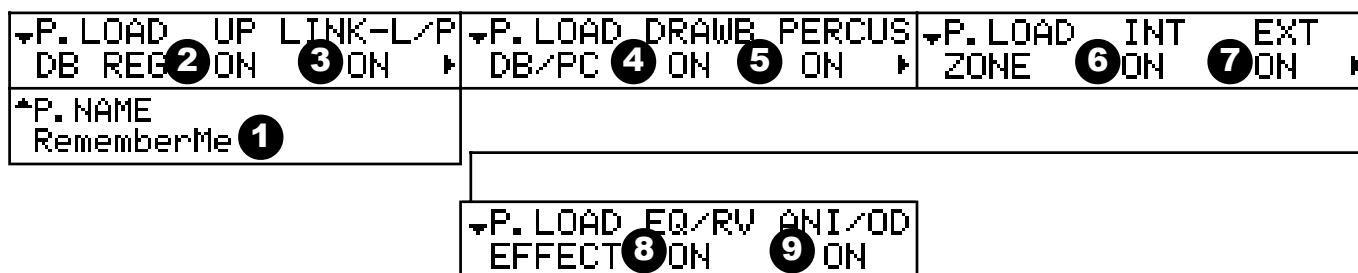
♦ PRESET NAME

1. **Preset Name (P)**

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

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

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 tail are Preset Parameters, and are recorded to each Combination Preset.**

♦ PRESET LOAD

This allows you to set the operation when you depress the Preset Key.

2. **PRESET LOAD - UPPER (B)**

This allows you to set whether or not to recall the Drawbar Registration of UPPER Part.

3. **PRESET LOAD - LINK LOWER/PEDAL (B)**

This allows you to determine whether or not to recall the Drawbar Registration of the LOWER and PEDAL Part.

4. **PRESET LOAD - DRAWBAR (B)**

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

5. **PRESET LOAD - PERCUSSION (B)**

This allows you to determine whether or not to sound PERCUSSION by the other Preset Keys than [B] Key and recall the Parameters relating to Percussion.

6. **PRESET LOAD - INTERNAL ZONE (B)**

This allows you to determine whether or not to recall the Parameters relating to the Internal Zone such as SPLIT or MANUAL BASS.

7. **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 outside MIDI equipment.

8. **PRESET LOAD - EQ/RV (B)**

This allows you to determine whether or not to recall the Parameters relating to the EQUALIZER and REVERB.

9. **PRESET LOAD - ANI/OD (B)**

This allows you to determine whether or not to recall the Parameters relating to VIBRATO, OVERDRIVE and LESLIE.

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

EFFECTIVE USE OF LINK-LOWER/PEDAL

This is the function to switch/record only from the connected MIDI equipment, and not to operate the Preset for LOWER and PEDAL Part on this keyboard.

The Preset Keys on B-3/C-3 are independent, key by key, and so they were operated independently. This function simulates that.

WHEN LINK LOWER/PEDAL IS ON:

When you recall the Combination Preset by the Preset Key, the content of all UPPER/LOWER and PEDAL Parts will change. If you want to change the Lower Part to another Preset Key, send the Program Change corresponding with the key by the MIDI keyboard connected to MIDI IN (LOWER) (hereinafter "Lower Keyboard").

> **NOTE:** Refer to the Appendix for the details on Program Change and Keys.

The recording to the Combination Preset is made to all the UPPER/ LOWER and PEDAL Parts on this keyboard. It is made only to the LOWER Part on the Lower Keyboard.

To record to the LOWER Part Preset, send the Program Change from the Lower Keyboard, depressing the [REC/JUMP] button of this keyboard.

WHEN LINK LOWER/PEDAL IS OFF:

If you recall the Combination Preset by the Preset Key of this keyboard, the content of only the UPPER Parts will be switched.

To recall LOWER Part Preset, send the Program Change corresponding to the key by the Lower Keyboard.

To the Combination Presets, on this keyboard, only the UPPER Part is recorded by the Preset Keys, and only the LOWER Part is recorded by the Lower Keyboard.

If different Preset Keys are selected between the UPPER and the LOWER/PEDAL Part, the display will be like this.
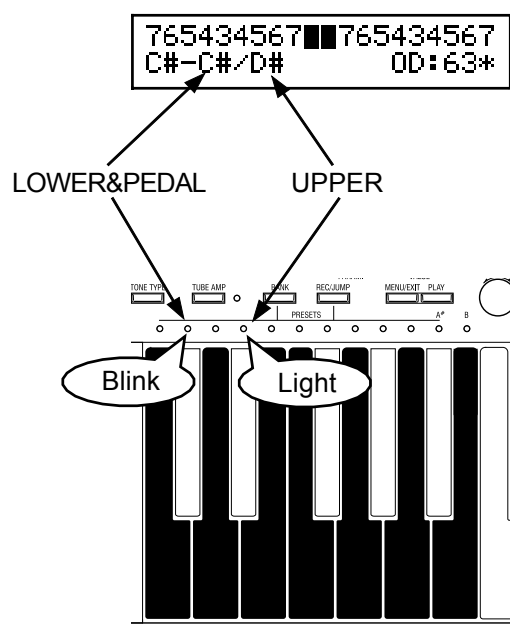
In this mode, you can do the setting relating to each controller.

You may change the roles of several knobs and switches mounted on this keyboard. Also, on the rear panel are two terminals for connecting the Foot-switch and the Expression Pedal. You must choose either of them in this mode.

To come to this mode:

1. Touch the [MENU/EXIT] button and display the MENU and select PAGE A by the [PAGE] button, and then touch the [4] CONTROL button.
2. Or, you may touch the [CONTROL] button (in default).

```
▼DISP SH. CUT TIMEOUT
 ㉑1 sec ㉒NO
⬍DEMO   ASSIGN
 ⑳DEMO PLAY
⬍FOOT 1(PHONE)DEV        ⬍FOOT 1(PHONE) TIP        ⬍FOOT 1(PHONE) RING
 SW      ⑯PEDAL        ▶  SW⑰LESLIE S/F ALT▶       SW ◀⑱SLIE S/F ALT▶
⬍EXP-     SOURCE    MON   ⬍EXP. LEV LF-LIM-HF       ⬍EXP.    GAIN      MON
 RESS⑩ED1(NORM)⑪127       MIN ⑫-35 ⑬25 ⑭-30▶        CALIB⑮100%        127
⬍MOD   LES.FAST
 ⑨OF
⬍BEND  -L&U+  -PED+       ⬍BEND MODE  TIME AMP
 RAN�②12 ③2 ④12⑤2▶         OPT⑥BEND⑦3.5⑧OF
▲DRAW-   CTRL.MODE
 BAR ①UPPER/LOWER
```

1. **DRAWBAR - CONTROL MODE (G)**

   This is for setting how the right and left Drawbars function, when [A#] or [B] of the Preset key is selected.

   UPPER/LOWER:
   > The left Drawbar controls the UPPER and the right one the LOWER Part respectively.

   A#/B:
   > While [A#] is ON, the right Drawbar controls the UPPER Part and the left Drawbar does not operate. Also, while [B] is ON, the right Drawbar does not operate but the left Drawbar controls the UPPER Part. While [A#] or [B] is ON, you can not operate the Drawbar Registration of the LOWER Part.

2. **BEND - L&U DOWN (P)**

3. **BEND - L&U UP (P)**

4. **BEND - PEDAL DOWN (P)**

5. **BEND - PEDAL UP (P)**

   These are for setting the changing range of the PITCH-BEND WHEEL by the semi-tone.

   Both the LOWER and the UPPER PARTS change at the same time, as they use the same Tone-Wheels.

   The setting range is 0 - 12 for up, 0 - 24 for down.

There is no pitch-bend function on the B-3/C-3. So some musicians turned off the power while playing in order to get that effect.

If the B-3/C-3 is turned off, the Tone-wheel motor gradually slows down and stops, and the amplifier does as well. This function is to simulate that on this model.

```
÷FOOT 2(EXP-100)MODE
SW❶❾LESLIE S/F ALT
```

tips **HOW PITCH BEND MODE WORKS**

BEND: The pitch immediately rises.
MOTOR: The pitch gradually rises up to the set point.

6. BEND - MODE (P)

It switches the function of the PITCH BEND wheel.

BEND:
You can slide the pitch by rotating the PITCH BEND wheel.

MOTOR:
You can control the TONE-WHEEL motor. The motor turns on when it is in the center or in the neutral position, stops when you rotate it forward (toward yourself), and accelerates when you push it back.

7. BEND - TIME (P)

This sets the time for slowing down to stop or accelerating the motor when it [= MODE(6)] is in the MOTOR mode.

The value ranges from 0.1[s] to 5.0[s].

8. BEND - AMPLIFIER (P)

This decides whether to turn off the amplifier or not by rotating the PITCH BEND wheel forward (toward yourself).

When the value of this parameter is "OF", the pitch goes down and the sound gradually fades out.

9. MODULATION - LESLIE (P)

Assigns the Modulation Wheel to Leslie Fast Function.

ON: If you push back the Modulation Wheel, it is FAST, and if you pull it forward, SLOW speed.

OF: Does not function.

BEND: The pitch immediately comes to normal.
MOTOR: The pitch gradually comes to normal.
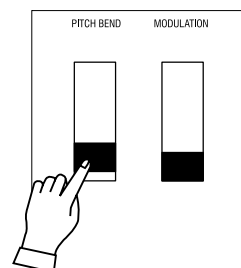
BEND: The pitch immediately falls.
MOTOR: The pitch gradually falls down to the set point.

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

10. EXPRESSION - SOURCE (G)

Determines what to use for operating the Expression.

PED1(NORM):
> Uses V-20R etc.

PED1(REV):
> Uses KORG XVP-10 etc.

EXP-100:
> Uses EXP-100F etc.

MIDI IN:
> Uses the Expression Information received at the keyboard channnel UPPER.

11. EXPRESSION - MONITOR

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

12. EXPRESSION - MINIMUM LEVEL (G)

It sets the output level when the Expression is minimum.

The setting range is OFF, -60db to 0db. "OFF" makes no sound when the Expression is minimum, "0dB" does not reduce volume level.

13. EXPRESSION - LIMIT LF (G)

14. 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, -60dB to 0dB. This function does not work at "OFF". Otherwise the level is maintained even if the Expression is minimum.

15. EXPRESSION - GAIN (S)

This is for adjusting the gain (=range of the change) of the connected expression pedal.

It sometimes occurs that, even if you press the expression pedal to the full, the expression value does not reach the maximum value (127), due to the difference of each expression pedal model from model. In such a case, adjust this parameter for getting the maximum range of the change.

NOTE: **This parameter is a System Parameter. This parameter will be recorded when set. It is common in each Combination Preset. It is not recorded to the "Setup".**

16. FOOT-SWITCH - 1 DEVICE (G)

This is for deciding which equipment is connected to the Foot-Switch terminal.

PEDAL: for Foot switch.

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

tips **EXPRESSION LIMIT**

One of the human ear's characteristics is that, when the volume falls, the sound of high or low frequency becomes difficult to hear.
On this model, it is rectified. The volume is maintained above a certain level even when the volume goes down by using the Expression, in order to keep the sound of high or low frequency audible.
The similar function is adopted on most home audio equipments. It is called the "loudness" function.
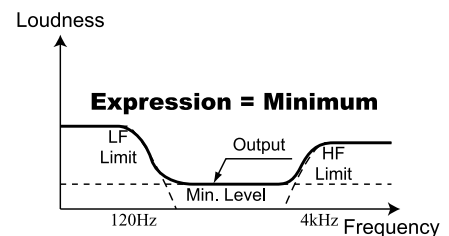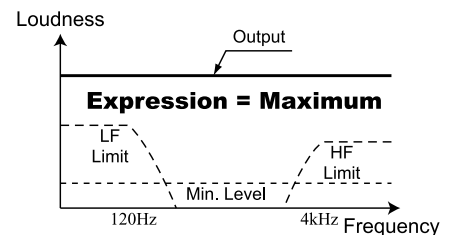
17. FOOT-SWITCH - 1 TIP (G)

This is for setting the function for the Foot Switch 1 terminal.

If you are using the Foot Switch with the stereo plug, this sets the function on the tip side.

OFF:
>Does not work.

LESLIE S/F ALT:

LESLIE S/F MOM:
>These are for switching SLOW/FAST of the Leslie Effect.
>At ALT, it switches at each step/press and, at MOM, the Leslie effect gets Fast, as long as you keep pressing the foot switch, and it gets Slow if you release it.

DAMPER UPPER:

DAMPER LOWER:

DAMPER PEDAL:
>They hold the Notes of the UPPER, LOWER and PEDAL Parts, respectively, as long as you keep depressing the footswitch.

PRESET FWD:

PRESET 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:
>It sets the delay time of the reverb effect (P. 73) along the kicked intervals.

18. FOOT-SWITCH - 1 RING (G)

This is for setting the function on the RING side, if you use the FOOT SWITCH equipped with the Stereo plug.

19. FOOT-SWITCH - 2 MODE (G)

This is for setting the function of the FOOT SWITCH attached to the Expression Pedal EXP-100F (= optional).

20. DEMO (G)

This is for setting the function of the [DEMO] BUTTON.

DEMO PLAY: Plays the demonstration performance.

PEDAL SUS: Switches On/Off Sustain of the PEDAL Part.

EX. ZONE: Switches On/Off the External Zone transmission.

LOWER OCT: Switches 0/+1 of the LOWER Octave.

LES. BRAKE: Means the [LESLIE BRAKE] Button.

LES. ON: Means the [LESLIE ON] Button.

LES. FAST: Means the [LESLIE FAST] Button.

VIB. ON: Means the [VIBRATO/CHORUS] Button.

21. DISPLAY - SHORT CUT (G)

It sets the time limit to the short cut function.

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

22. 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 in "NO".
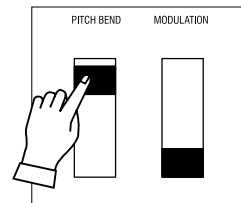
NOTE: The parameters by the names with (P) on the tail are Preset Parameters, and are recorded to each Combination Preset. (G) is for "Global". These parameters will be recorded when set, and are common in each Combination Preset.

---

tips DAMPER

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

The piano stops sounding when you release your finger from the key. This is because of the damper system. While you hold the damper pedal, the system does not work and so it keeps sounding even after you release the key.

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 used to give a big "clang".

However, this drawback has come to be used as an effect in the genre of progressive rock. This keyboard 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". And the part on the cord side is called "Sleeve".

The ordinary foot-switch has only the Tip and the Sleeve, but the footswitch with two switches in one plug or two footswitches using the L/R converting cable can be connected.
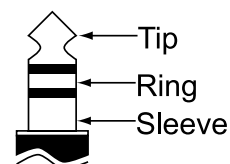
THE EFFECTIVE USE OF THE CONTROL MODE

The DRAWBAR - CONTROL MODE is normally set on the "UPPER/LOWER" side.

"UPPER A#/B" is used when you want to quickly switch to the Drawbar Registration, improvised during the performance.

It is like the House DJ's preparing the next tune while playing a certain tune, using the Cross-Fader.

You can prepare the next registration by the Drawbars for [A#] during your play by [B]. (No need for the recording operation.) By pressing the [A#] key next, it is switched to that. You can do vice versa.

In this case, if you select [A#] or [B] by the Preset Key, the left and right Drawbars work only for the UPPER Part.

Operate the [B] Registration by the left Drawbars, and the [A#] Registration by the right ones. (Note the order of the Drawbars and the Key is different.)

Also, the registration of the LOWER Part succeeds the content of the currently selected Combination Preset.

Control Mode: UPPER/LOWER
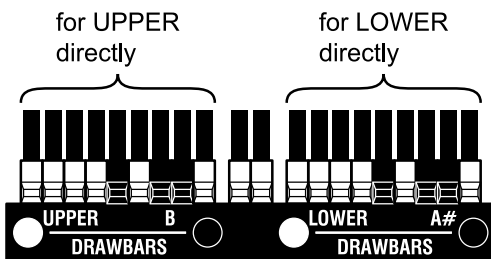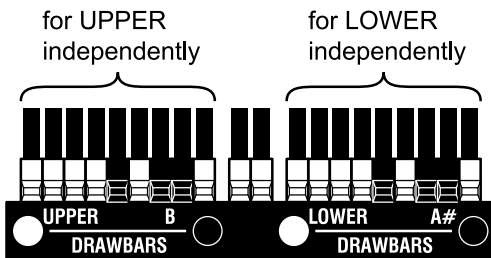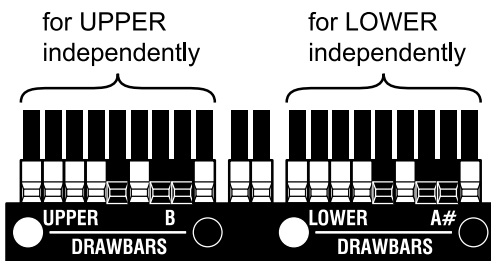
Control Mode: UPPER A# / B
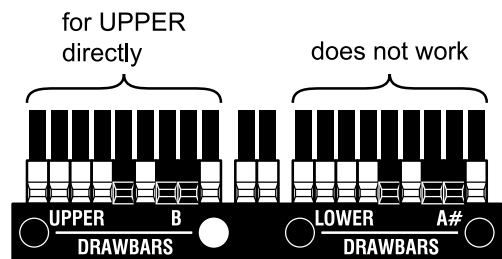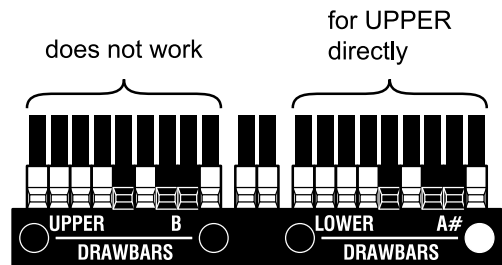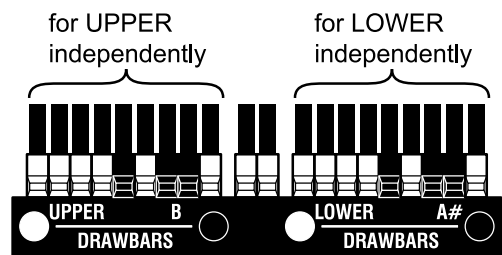
In this mode, you can tune and transpose for playing in ensemble with the other instruments.

To come to this mode:

Touch the [MENU/EXIT] button (MENU will displayed), select PAGE A by the [PAGE] button and touch the [3] TUNE button.

```
TUNE XPOSE MASTER
MAST ❶+0    A=440❷
```

1. **TRANSPOSE**

   You can transpose the entire keyboard by the semi-tone.

   The setting range is -6 to +6.

   Transpose effects:

   * between the manual keyboard and the built-in sound engine, and
   * between MIDI IN and the built-in sound engine.
   * The Master Course Tune of RPN is sent to the External Zone.
   * If you connect the MIDI Pedalboard XPK-100, the parameter will be changed by the transpose operation, too.

2. **MASTER TUNE**

   This is for changing the PITCH of this entire keyboard.

   The setting range is A = 430 - 450 Hz.

   > **NOTE:** The parameters in this mode are the Global Parameters. They are recorded when the value is set. Also, they are common at each Combination Preset.

tips

TRANSPOSE AND TONEWHEELS

If you set the transpose value at other than 0, the relation between the keys and the Tonewheels gets off. So, if you try to tune the Tonewheels by the keyboard and the Drawbars at this time, you cannot select the desired wheels.

In this mode, you can regulate each Tone-Wheel Set of the Manual Keyboard, wheel by wheel.

The Tonewheel Set consists of 96 Tonewheels of different pitches, and one wheel corresponds with plural notes and the feet 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 keyboard, you can save 5 types of settings per 1 Tone-Wheel Set. We call this "CUSTOM TONEWHEELS".

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

To come to this mode:

Touch the [MENU/EXIT] button and display MENU, select PAGE B by the [PAGE] button, and then touch either [1] B-type, [2] Mellow, or [3] Brite button for the desired Tonewheel Set.

Also, the Temporary (= the present setting) automatically switches to the selected Tone-Wheel Set just selcted now.

1. **CUSTOM NUMBER**

   This is for selecting the "CUSTOM NUMBER" to use or compile. The "✻" will be displayed when the Tone-wheel Parameters are changed from this Custom Number.

   NOTE: **This parameter is a Global Parameter. It is common for the same Tone-wheel Set (= "B-type" here) of each Combination Preset.**

2. **CUSTOM NAME**

   You can put the name on the CUSTOM TONEWHEELS using up to 10 letters.

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

   By touching the [VALUE] button while holding down the [REC/JUMP] button, it jumps to the head/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 page.

3. **WHEEL NUMBER**

   Select the Number of the Wheel you want to regulate.

   To select the Wheel Number, select the [VALUE] button or the [VALUE] knob here, or slightly move the feet 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 (4, 5, 6, 7) is displayed.

tips

INITIAL VALUE OF THE CUSTOM NUMBER

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

For example, to the B-type, "Real B-3" simulating the well-preserved B-3/C-3 and "80's Clean" with less noise, and rough sound "Noisy" is stored.
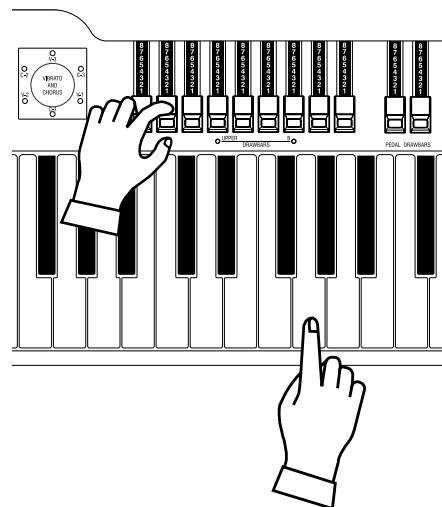
How to select the WHEEL NUMBER

4. LEVEL

This is for setting the volume of this wheel.

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

5. CUT OFF FREQUENCY - LPF

This is for setting the FREQUENCY to cut the TREBLE of this 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 original Tonewheel pitch, the wheel volume will be reduced.

6. RESONANCE - LPF

This is for setting the boost or reduce the level in and around frequency by Cut-Off Frequency - LPF(5).

The setting range is -100 to +100. The more the value gets boost, and less the value treble is cut smoothly.

7. 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 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 2 - 7 are the Tonewheel parameters. If you do the recording operation of the next page, it works commonly to the same Tonewheel Set of each Combination Preset.

> NOTE: When you operate the parameters 2 - 7, if you do not the recording operation of the next page, it is lost when you turn off the power.
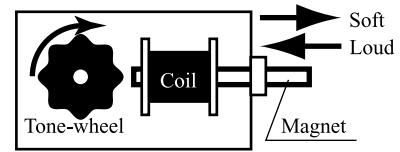
CONCEPT OF THE LEVEL ADJUSTMENT

Cut Off Frequency
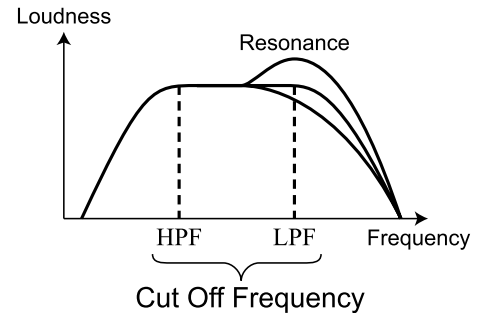
tips LEAKAGE NOISE

On the B-3/C-3, the signal leakes in the route from the pick-up mounted for the Topnewheels to the output terminal, thus noise (= mixed Tone-wheel sound) was also heard, This is called "Leakage Noise".

The "Leakage Noise" is an obstacle in making pure tones, but it is recognized as a character now.

"Mellow" and "Brite" 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 TONEWHEELS

The Tonewheel Parameters (= 2 - 6 of the previous Section)
are for determining the Custom Number for recording. The
Custom Number is selected and used, when you play.

1

```
⬍CUSTOM NAME
My_Wheels_
```

Enter the Custom Name if necessary.

2
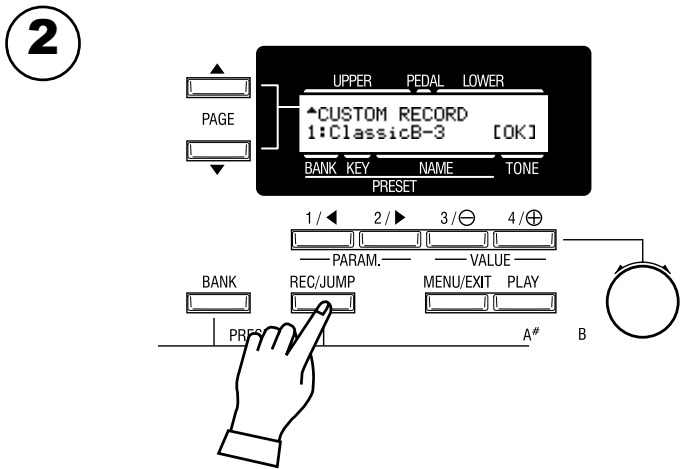
Touch the [REC/JUMP] button in the setting mode of the
Tonewheel Parameters.
The mode for selecting the Custom Number to be recorded will
be displayed.

3
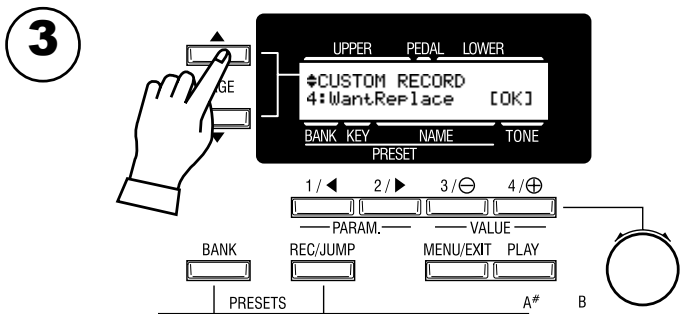
Select the Custom Number to be recorded by the [PAGE]
button.

4
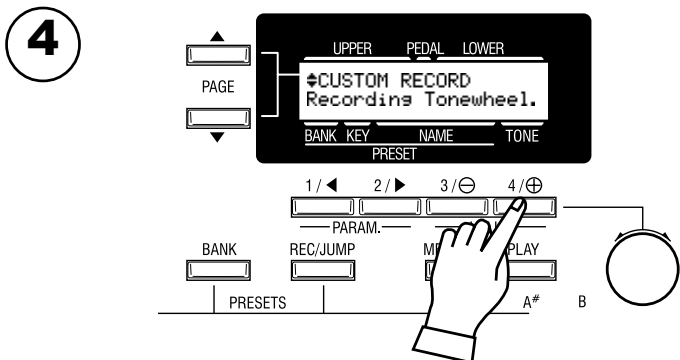
It will be recorded if you touch the [4] OK button.
The display will be as illustrated, while the recording is treated.

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

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

To come to this mode:

1. Touch the [MENU/EXIT] button and display MENU, then select PAGE B by the [PAGE] button and touch [4] PERCUSS button.
2. Or, hold down either [SECOND],[THIRD],[FAST],or [SOFT] button for a certain length of time.

```
▼PERC   1'CANC LEVEL
 DRAWB  ⑧ON  ⑨-3dB

⬍PERC TOUCH VEL KTRK
 KBD   ⑤ON  ⑥OFF ⑦ON

⬍PERC      SLOW FAST
 DECAY  ③15   ④10

▲PERC      SOFT NORM
 LEVEL  ①10   ②15
```
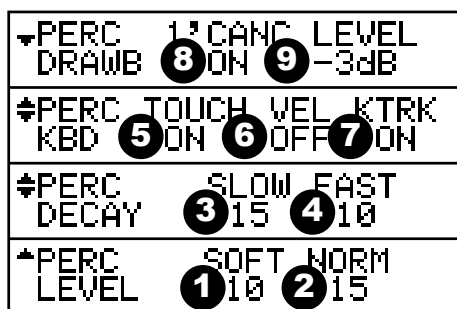
1. **LEVEL - SOFT**

2. **LEVEL - NORMAL**

   These are for setting the Volume of Percussion. SOFT is the volume when the [SOFT] button is ON, and NORMAL is the volume when the [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 more the value gets, the longer gets the Decay Time. At C, no decay (= continuous).

5. **KEYBOARD - TOUCH**

   This is for setting the method of sound production of Percussion.

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

   OF: Even if you play legato, all the notes produce sound, like the piano.

6. **KEYBOARD - VELOCITY**

   Corresponds the Volume of Percussion with the Velocity.

   ON: If you play forte, it sounds loud.

   OF: It sounds at a certain volume regardless of the play.

   ❖ *When the Velocity is ON, it sounds at a slightly deeper point of the key action.*

7. **KEYBOARD - KEY TRACK**

   Changes the Percussion Volume by the note.

   ON: The higher notes reduce more volume.

   OF: It sounds at a certain volume regardless of notes.

8. **DRAWBAR - 1' CANCEL**

   This mutes the 1' of the UPPER PART while using PERCUSSION.

   ON: Mute

   OF: Does not mute.

9. **DRAWBAR - LEVEL**

   Decreases the volume of UPPER DRAWBARS while using PERCUSSION.

   -3dB: Decreases the volume

   0dB: Does not decrease the volume

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

   NOTE: The parameters in those modes are all Preset Parameters. They are recorded to each Combination Preset.

   tips **TOUCH**

   The B-3/C-3 had only one built-in Envelope Generator, and was not recharged until all the UPPER Manuals 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 keyboard, this is simulated.

   tips **DRAWBAR LEVEL**

   On the B-3/C-3, the Drawbar Volume got slightly smaller, if percussion works This is simulated on this keyboard.

In this mode, you can do the setting for the built-in Leslie Effect and the External Leslie Speaker.

There are many parameters for the built-in Leslie Effect, and so you can do various settings, but not per each Combination Preset independently.

The parameters are treated by the group called "CABINET". You can select the CABINET NUMBER in the Combination Presets.

To come to this mode:

1. Touch the [MENU/EXIT] button to display the MENU. Then select PAGE C by the [PAGE] button and touch [3] LESLIE.
2. Or, hold down either [LESLIE BREAK], [LESLIE ON] or [LESLIE FAST].

```
┌─────────────────────────────┐
│▼EXT.LESLIE  CH              │
│           ⑱2or3            │
├─────────────────────────────┤
│⬍MIC   ANGLE DISTANCE       │
│     ⑯120°  ⑰0.6m          │
├──────────────┬──────────────┐
│⬍BASS SLOW FAST LEV │⬍BASS RISE FALL BRAK │
│ SPD ⑩36⑪393  ⑫0 ▶│ TIME⑬7  ⑭8  ⑮9 ▶│
├──────────────┼──────────────┼──────────────┐
│⬍HORN SLOW FAST LEV │⬍HORN RISE FALL BRAK│⬍HORN CHARACTER │
│ SPD ❸36❹393  ❺0 ▶│ TIME❻1.2 ❼1 ❽1.2▶│ TYPE❾FLAT │
├──────────────┴──────────────┴──────────────┘
│⬍CAB.NAME                   │
│ 147-Type ❷                │
├─────────────────────────────┤
│▲LESLIE CABINET             │
│     ❶1:147-Type          │
└─────────────────────────────┘
```

♦CABINET NUMBERS

1. LESLIE CABINETS

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 changed from this Cabinet Number.

♦LESLIE PARAMETERS

2. CABINET NAME

This is for putting the Cabinet Names.

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

In this mode, only the present value "Temporary" changes and there is no determining operation. You must record the name by doing "Recording the Cabinet" as explained in the next paragraph. Otherwise the data will be lost.

3. SLOW SPEED - HORN

10. SLOW SPEED - BASS

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

The setting range is 0, 24 - 48 rpm. It does not rotate at 0.

4. FAST SPEED - HORN

11. FAST SPEED - BASS

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

The setting range is 0, 375 - 435 rpm. It does not rotate at 0.

CONCEPT OF THE CABINET NUMBERS

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

This parameter is the only Preset Parameter in this mode.
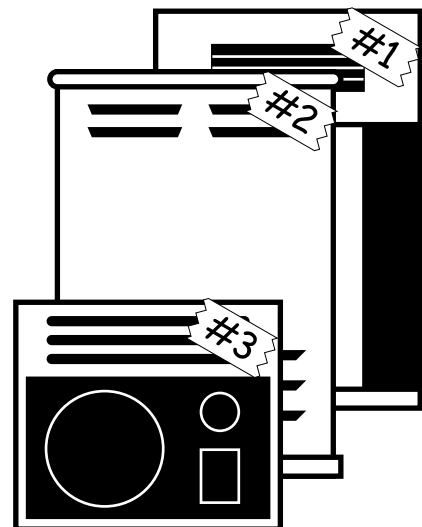
5.   HORN LEVEL

12. BASS LEVEL

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

6.   RISE TIME - HORN

13. RISE TIME - BASS

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

7.   FALL TIME - HORN

14. FALL TIME - BASS

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

8.   BREAK TIME - HORN

15. BREAK TIME - BASS

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

9.   HORN CHARACTER

Here the Tone of the Horn Rotor is set.
"FLAT" is a flat tone, and the others are the tones with each "peaky" characteristic.

16. MIC - ANGLE

This is the parameter to set the LOCATIONS of the two Microphones for the imaginary Leslie Speaker.
The ANGLE decides the distance between the two mikes.
The setting range is 0 - 180 degrees. The farther, the more stereophonic feeling it gives.

17. MIC - DISTANCE

This is the parameter to set the DISTANCE between the imaginary Leslie Speaker and the Microphones.
The setting range is 0.3 - 2.7m. The more the value increases, the less effective it gets.

> **NOTE:**   When you operate the parameters 2 - 17, the setting range will be lost after the power is switched off, if you do not do the recording operation of the next page.

◆EXTERNAL LESLIE SPEAKER

18. LESLIE CHANNEL

The Channel is set for the Leslie Speaker connected to the 11-pin terminal.
At "1", the sounds always comes out of the Rotary Channel.
At "2 or 3", the sounds are put out to the stationary channel when the [LESLIE] button gets OFF and the [BREAK] button gets OFF. Otherwise, the sound comes out of the Rotary Channel.

state: **SLOW**   **FAST**   **SLOW**   **FAST**   **BRAKE**

Rotor Speed:

Rise Time   Fall Time   Brake Time

Distance

Angle
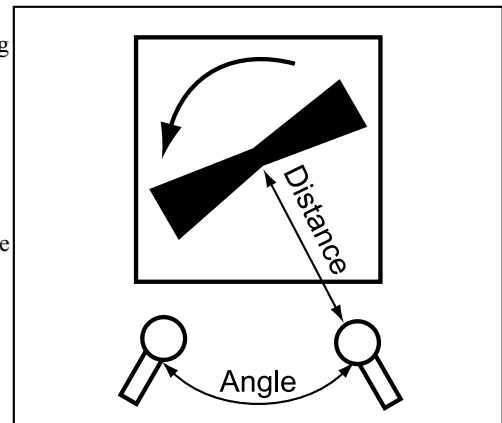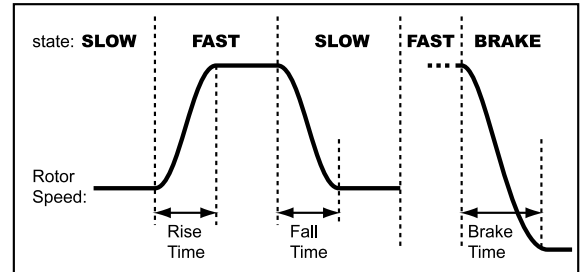
tips

CHANNELS OF CURRENT LESLIE MODELS

122XB: 1ch
2101/2102:   3ch

RECORD THE CABINETS

The Leslie parameters (2 - 17 of the previous paragraph)
can be recorded with the Cabinet Numbers, and you can
choose and use them in each Combination Preset.

1

```
‡CAB. NAME
 MyCab___
```

Enter the name for the Cabinet as you want.

2
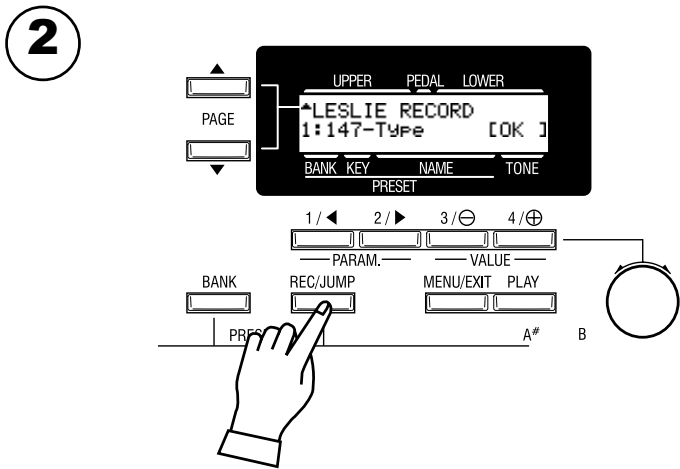
Touch the [REC/JUMP] button in the setting mode of the Leslie
Parameter.
The Cabinet Selection mode is displayed.

3
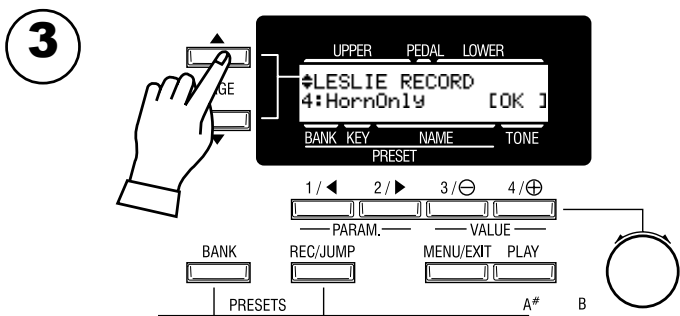
Select the Cabinet Number to record by the [PAGE] button.

4
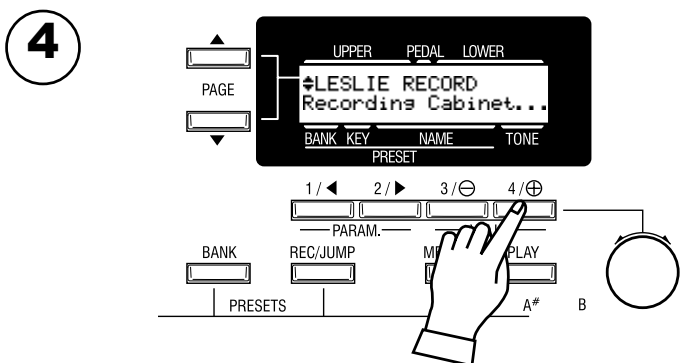
Touch [4] OK, and it is recorded.
The display during the recording treatment shows as illustrated.
 NOTE: If you do not want to record, just touch the [MENU/EXIT].

In this mode, you can do the setting relating to each Effect for Overdrive and Vibrato/Chorus.

To come to this mode:

1. Touch the [MENU/EXIT] button to display the MENU, select PAGE C by the [PAGE] button, and then touch the [1] OD/VIB button.
2. Or, hold down the [TUBE AMP] button for a while.

```
↧VIBRATO RATE
     ❼6.83Hz
↥OD DRIV BLND EXP.     ↥OD   TYPE Ø XOVR
MAS❶15 ❷15❸EX→OD ▸     PREAMP❹ual1❺N❻00
```
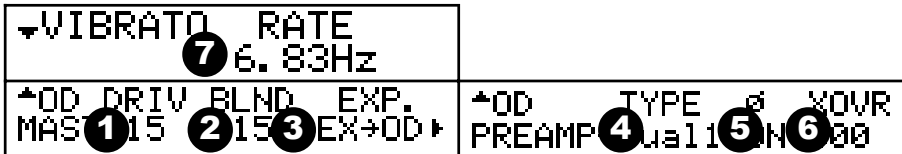
♦OVERDRIVE

1. DRIVE

This is for adjusting the Overdrive Value.

The more the value gets, the more distortion you can get.

This is linked with the [TUBE OVERDRIVE] knob on the front panel.

2. BLEND

This is for setting the Tone Range for Distortion.

The setting range is 0 to 63. The more the value increases, the easier gets the treble to distort. The less the value gets, on the contrary, the easier gets the bass to be distorted. It is in the same ratio at 32.

> NOTE: This parameter functions when the Preamp - Type (4) is at "Dual 1" or "Dual 2".

3. EXPRESSION

This is for varying the Overdrive value by operating the Expression.

EX-OD:

If you operate the Expression, not only the volume but also the distortion will be changed.

OD-EX:

The Expression affects only the volume and not the distortion value.

4. PREAMP - TYPE

This is for choosing the Tube Amp Circuit.

Dual 1:

This is an amp with two circuits for low and high frequency band. The separation is loose.

Dual 2:

This is an amp with two circuits for low and high frequency band. The separation is tight.

Singl:

This is an amp with a single circuit, same as the ordinary overdrive effects. It treats all ranges by 1 circuit.

5. PHASE

This parameter reverses the phases of the two tube amp circuits.

ON: Reverse

OFF: Normal

Usually, it should be "ON".

> NOTE: This Parameter functions when the Pre-amp - Type (4) is at "Dual 1" or "Dual 2".

6. CROSSOVER

Here you can set the Crossover Frequency of two bands of the Tube-Amp circuits.

The setting range is 125 - 800 Hz.

> NOTE: This parameter functions when the Preamp - Type (4) is at "Dual 1" or "Dual 2".

♦VIBRATO/CHORUS

7. VIBRATO - RATE

This is for setting the Speed of the Vibrato/Chorus Effect.

The setting range is 6.10 - 7.25 Hz.

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

In this mode, you can do the setting for the Equalizer.

Equalizer is an effect to adjust the tonal quality. The built-in Equalizer consists of 3 bands. With the 3 bands from bass to treble, you can boost or cut them.

To come to this mode:

1. Touch the [MENU/EXIT] button for the MENU, select PAGE C by the [PAGE] button, and then touch the [2] EQUALIZE button.
2. Touch and hold the [TONE TYPE] button.

```
▼TONE  ASSIGN
 KNOB  ❺TREB
▲EQ  BAS G-MID-F TRE
   ❶+0 ❷+0 ❸ 0K ❹+0
```

1. GAIN - BASS

2. GAIN - MIDDLE

4. GAIN - TREBLE

This is for doing the Boost/Cut of Bass, Mid-range and Treble respectively.

The setting range is -9 to +9. It gets neutral at 0.

3. FREQUENCY - MIDDLE

This is for setting the Central Frequency to vary at Gain - Middle (2).

The setting range is 480Hz - 2.9kHz.

5. TONE - ASSIGN

This sets the function to assign the parameter of each gain: either Bass, Middle or Treble, to the [TONE] knob. You can change this while playing.

NOTE: **These parameters are Preset Parameters and are recorded to each Combination Preset.**
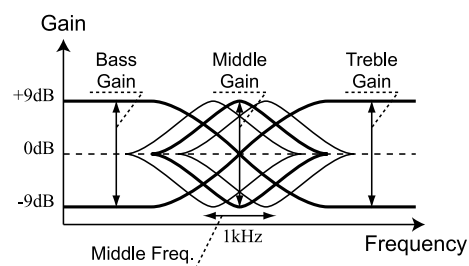
tips

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 sensitive range for human ears. The character is the well-through sound in the band ensemble.

When you use this keyboard on line out, without 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. 56)

In this mode, you can do the setting for the REVERB EFFECT.

To come to this mode:

1. Touch the [MENU/EXIT] button for the MENU display, select PAGE C by the [PAGE] button, and then touch the [4] REVERB button.

2. Or, hold down the [REVERB] button for a while.

```
▼REV  R-TIME-D  D.FB
AD ❸31 ❹1000ms ❺96%
▲REV     DEPTH   TYPE
MAST  ❶15  ❷Hall 1
```
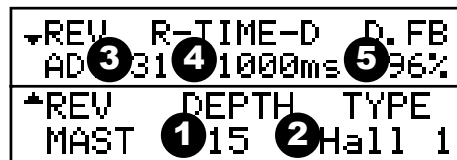
1.   DEPTH

This sets the Depth (= Volume) of the REVERB.

The setting range is 0 - 15. If you increase the value, it will give the audience the impression that the player's performance comes from farther away.

2.   TYPE

This sets the Types of REVERB.

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
Delay:	Delay
PanDly:	Panning Delay
RevDly:	Reverb + Delay

3.   REVERB TIME

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

The setting range is 0 - 31. The more value, the wider it gives the impression of the space.

4.   DELAY TIME

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

The setting range is 4.7 - 1000 ms. The more value, the slower gets the delaying sound.

5.   DELAY FEEDBACK

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

The setting range is 0 - 96%. The more value, the more Feedbacks you can get.

> **NOTE:**   **These parameters are Preset Parameters and are recorded to each Combination Preset.**

tips PRESET PARAMETERS

Reverb is a Preset Parameter, designed to be actively used as one of the tone-making parameters. However, it is not practical to use Reverb as a tonal complementary tool to match the room/stage/hall. In such a case, if you switch off the PLOAD RV/EQ in the Preset function mode, the Reverb On/Off value does not change when the preset is recalled. (P. 56)

In this mode, you can go back entirely or partially to the default setting as per shipped from the factory.

To come to this mode:

Touch the [MENU/EXIT] button for the MENU display, select PAGE E by the [PAGE] button, and then touch the [1] DEFAULT button.

```
DEFAULT          DEFAULT               DEFAULT
 ADJ.PRESET ▸ ❶ [OK]   ◂PRESETS ❷ ▸    [OK]   ◂GLOBAL ❸  ▸   [OK]
```

```
DEFAULT               DEFAULT               DEFAULT
◂LESLIE ❹   ▸    [OK]  ◂TONE-WHEEL❺  [OK]   ◂ALL ❻            [OK]
```

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

1. ADJUST PRESET

   Initializes the content of the Preset Key [B].

   If the Drawbar Control mode is at "UPPER A#/B", the content of [A#] is also initialized.

   If you do this operation before you start a new setting, you can start from the fresh status.

2. PRESET

   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 Custom Tonewheels.

6. ALL

   Initializes all parameters of this keyboard.

   If anything caused an unstable trouble on this keyboard system, the trouble would be cleared.

   NOTE: **You can also totally initialize your module by switching the Power ON while touching the [REC/JUMP] button.**

In this mode, you can set the SYSTEM PARAMETERS of this keyboard and the display information.

To come to this mode:
Touch the [MENU/EXIT] button to display the MENU, select PAGE E by the [PAGE] button, and then touch the [2] SYSTEM button.

```
▼VERSION  ❷MAIN        ▶    ▼VERSION INFORMATION    ▼VERSION  KEY SCAN
           0.000                    ❸0.000      ▶           ❹0.000
▲NOISE     RETURN
 GATE     ❶OPEN
```

1. **NOISE GATE - RETURN**

   Switches the action of the Noise-Gate of the Effect Loop and the Return terminal.
   THRESHOLD 1,
   THRESHOLD 2:
       The voice output is switched ON/OFF according to the volume input to the Return jack.
       THRESHOLD 2 switches ON/OFF at lower volume than THRESHOLD 1.
   OPEN:
       The voice output is always ON.

2. **VERSION - MAIN PROGRAM**

3. **VERSION - TONE INFORMATION**

4. **VERSION - KEY SCAN PROGRAM**

   These are the versions of each software built in this keyboard.
   These are only for displaying, and not the items to set.

tips **NOISE GATE**

The Noise Gate is a device to eliminate noises while you are not playing. If the input tone signal goes down below a certain level (= "Threshold Level"), this automatically "close"s the gate and gets silent, to cut the noise.
However, this sometimes could be a problem. This happens when a sound signal with a slow attack or release is put in, for example, when such an Effector as Slow Gear or Delay is connected to the Effect Loop of this keyboard. The sound may suddenly come out or be cut off all of a sudden.
In such a case, you must always "open" the gate to pass all signals.
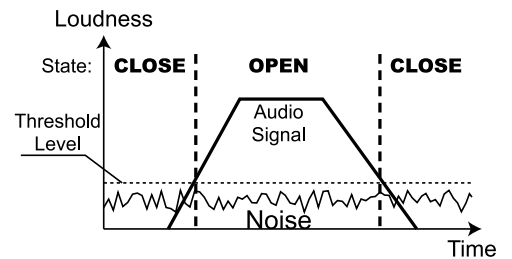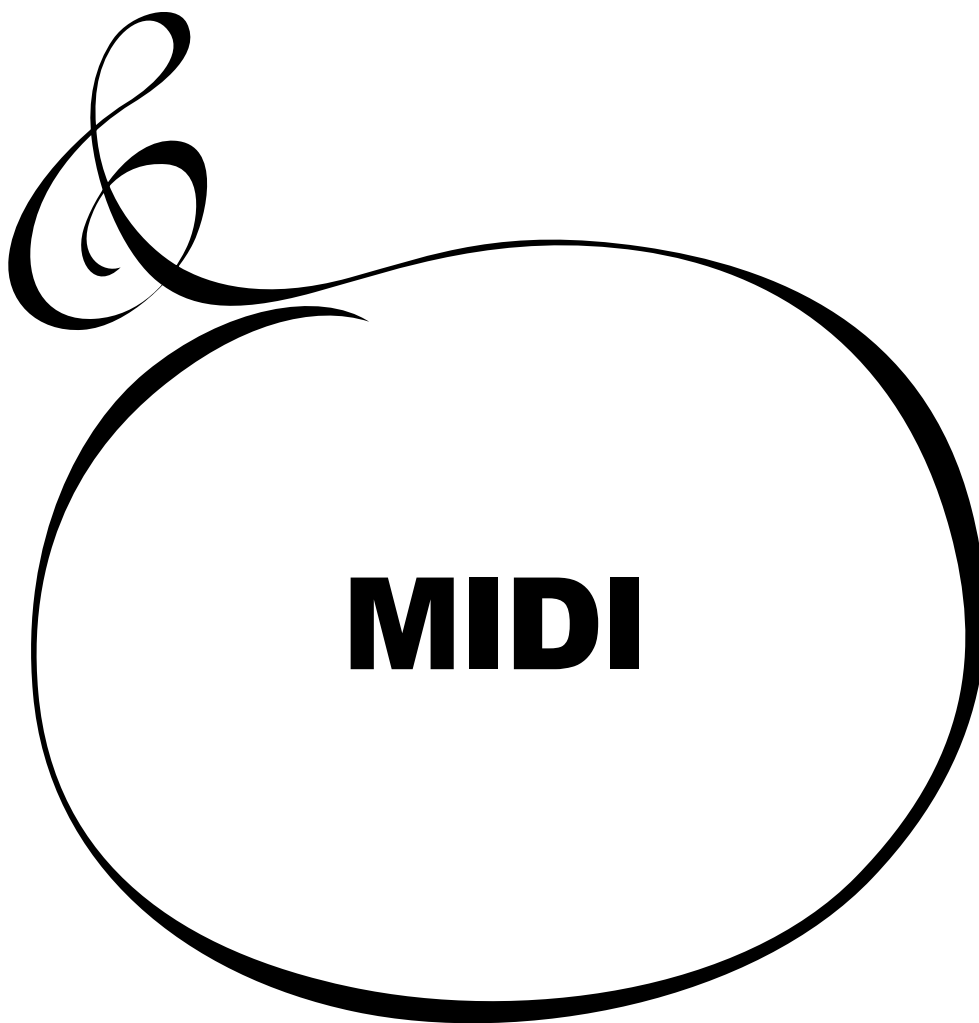
MIDI

What is "MIDI"?

MIDI stands for Musical Instrument Digital Interface. (The capital letters of these four words.)

MIDI is for exchanging the performance information between an electronic musical instrument and a sequencer etc.

MIDI is an international standard, by which instruments made by different manufacturers can be connected to communitate with each other.

The control information is exchanged, such as the performance infos. of a key being touched/released and the tone being switched, the damper pedal being pressed/released.

MIDI TERMINALS ON THIS KEYBOARD
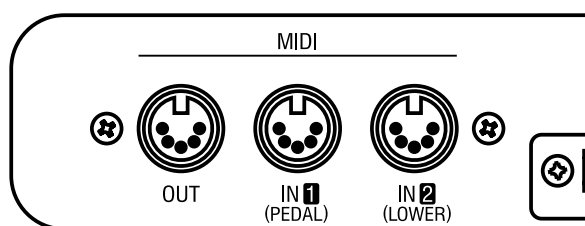
MIDI OUT

Sends Performance Informations.

MIDI IN 1 (PEDAL)

MIDI IN 2 (LOWER)

These receives the MIDI Signal. Each MIDI terminal is set to do the same function, when this keyboard is delivered from the factory.

> **NOTE:** **Each MIDI IN terminal can be set for exclusively receiving the LOWER and PEDAL PART. (P. 86)**

WHAT THE MIDI CAN DO ON YOUR KEYBOARD

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

- expand the keyboard and use this as an organ.
- record or playback your performance to external computer or sequencer.
- control the external sound source such as a synthesizer and a sampler.

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

MIDI CHANNEL

MIDI has the "MIDI CHANNELS" 1 - 16. Thus, you can send your playing information divided into 16 channels through one MIDI cable.

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

MAJOR MIDI MESSAGE

The MIDI infomation is grouped into the channel message per each of the 16 channels and the system message for the total channels. The main MIDI message is as follows: See for details in the MIDI IMPLEMENTATION CHART.

CHANNEL MESSAGE

♦   NOTE ON

This is for the 3 data: which key (Note Number), at what Speed (Velocity) and Play (Note ON).

The sound engine of this keyboard receives velocity only for Percussion and Pedal.

Manual Drawbars oscillates at a certain volume, regardless of the velocity.

♦   PROGRAM CHANGE

KEYBOARD CHANNEL:

Switches the Combination Presets.

EXTERNAL ZONE:

Switches the program of the External Sound Modules.

♦   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 keyboard has the Current Dump (transmit the total present setting) and can record the data to the External Sequencer.

The XK-3 has only a single keyboard but the sound engine has the three parts:
UPPER, LOWER and PEDAL.
Also this has three "EXTERNAL ZONES" to control the external (= outside)
MIDI equipments.
For these reasons, there are 6 MIDI CHANNELS on this keyboard.

Keymap Overview

Tonewheel Generator

Zones

Int. U&L Lo to Hi

Split Point

Upper   Upper Kbd.

Lower   Lower Kbd.

Manual Bass   Pedal Kbd.

ExZone 1

ExZone 2

ExZone 3

to MIDI OUT

Octave Shift

On / Off Switch
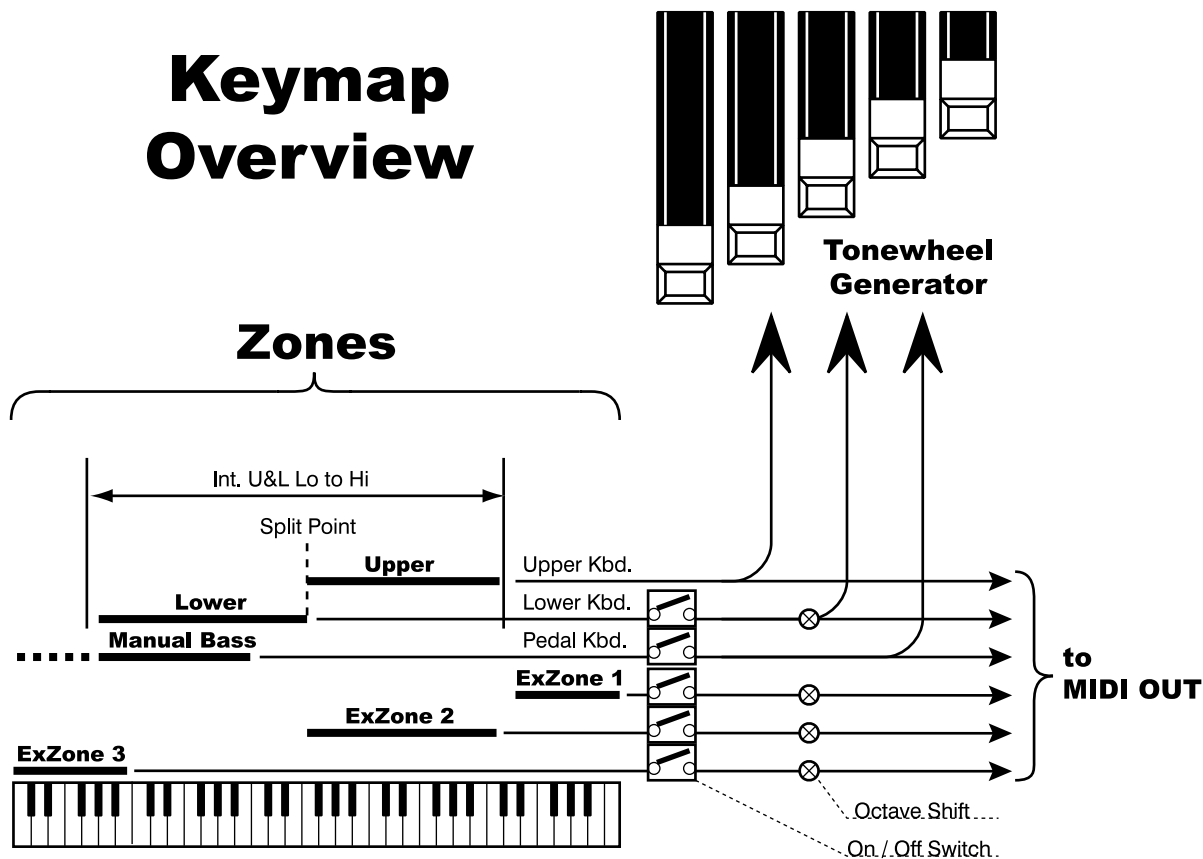
♦KEYBOARD CHANNEL

UPPER

This is for sending and controlling the UPPER Part performance informaion, switching the Combination Presets and sending/receiving Expression.

LOWER

This is for the LOWER Part performance informaiton not only for controlling but switching data of the Preset for the LOWER Part independently.

PEDAL

This is for sending and receiving the PEDAL Part performance information and controlling.

♦EXTERNAL ZONE CHANNEL

EX. ZONE 1, EX. ZONE 2, EX. ZONE 3

You can use your XK-3 as a simple Master Keyboard, by assigning the range of the full scale keyboard through the channel to control each External MIDI equipment. You can do the different setting per each Combination Preset.

This is the method how to connect the XK-3 to the MIDI keyboard and play on the full manual (3 keyboard) instrument.
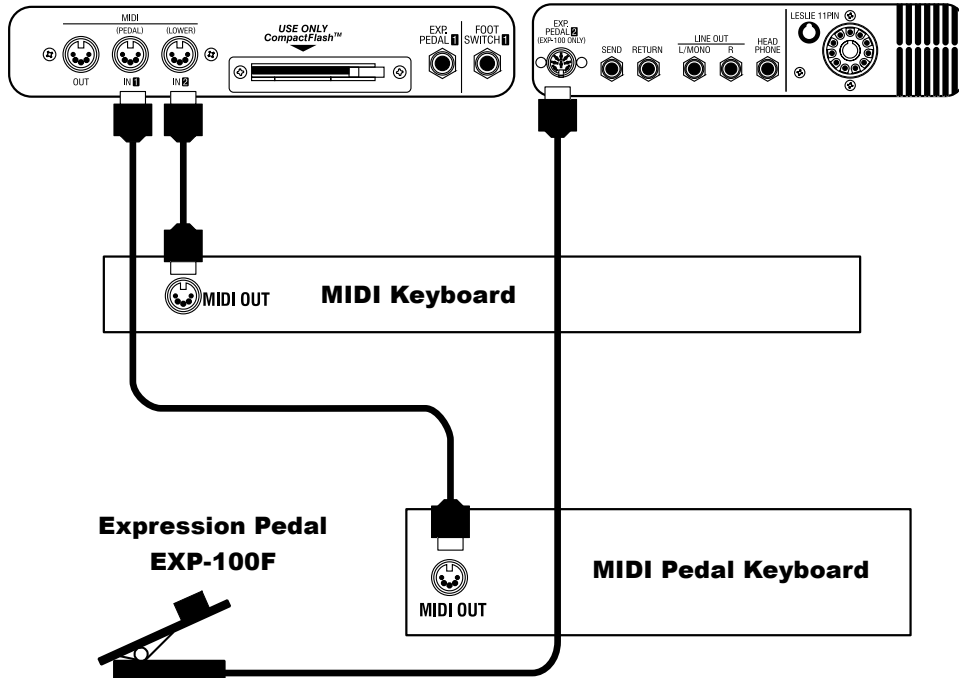
1. Hook up as shown above.
2. Recall "Seq. Record" by the MIDI template.
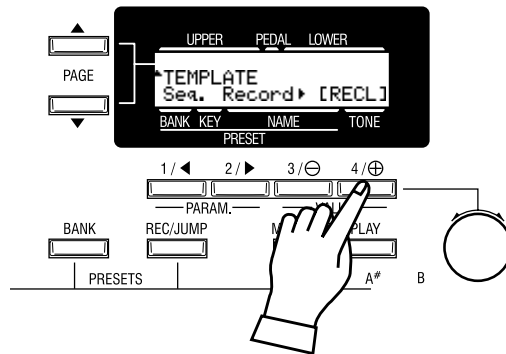
3. If you use the Expression Pedal, set the "Expression Source" corresponding to the connected Expression Pedal. (P. 60)

When you play the MIDI keyboard connected to the MIDI IN (LOWER) terminal of the XK-3 (hereinafter LOWER keyboard), the LOWER Part will sound, and when you play the MIDI keyboard connected to the MIDI IN (PEDAL) terminal, the PEDAL Part will sound.
Also, if you send the Program Change by the LOWER Keyboard, the Preset of the LOWER Part will be switched.
The Manual Bass Function is effective on the Lower Keyboard instead of the Manual of itself.

This is the method to record and playback your performance, by connecting the Sequencer or Computer to your XK-3.

♦Recording to the Sequencer or the Computer
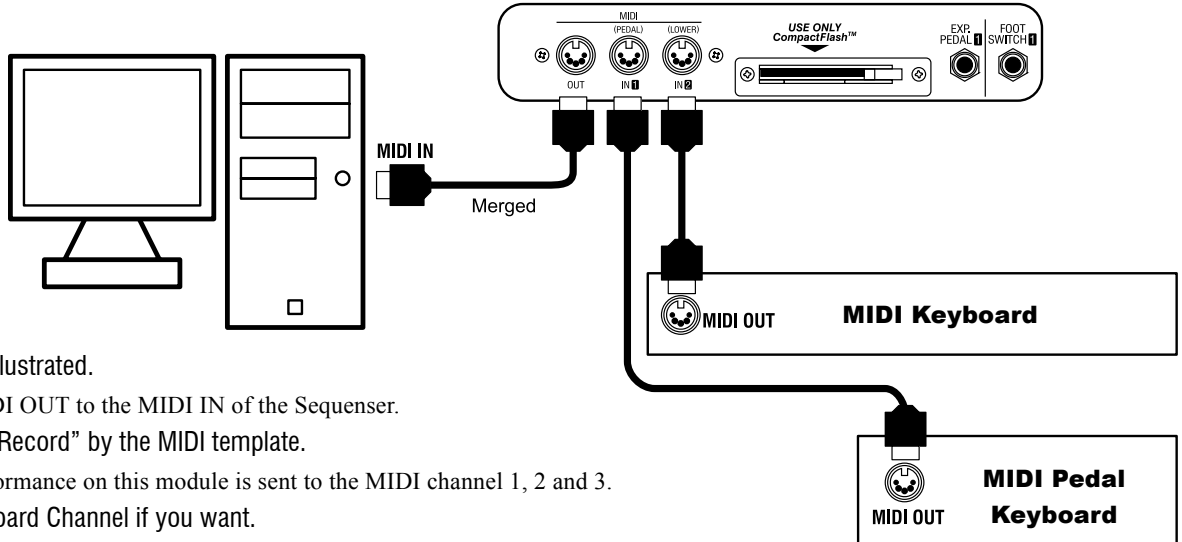
1. Hook up as illustrated.

   Connect the MIDI OUT to the MIDI IN of the Sequenser.
2. Recall "Seq. Record" by the MIDI template.

   By this, the performance on this module is sent to the MIDI channel 1, 2 and 3.
3. Set the Keyboard Channel if you want.
4. Start the Sequencer recording.
5. Send the Memory Dump if you want.
6. Start the playing.

   NOTE: If the MIDI Keyboard is connected to the MIDI IN terminal of this keyboard, these performance information will be transmitted to each MIDI channel and sent out of the MIDI OUT terminal.

♦Playback from the Sequencer or the Computer
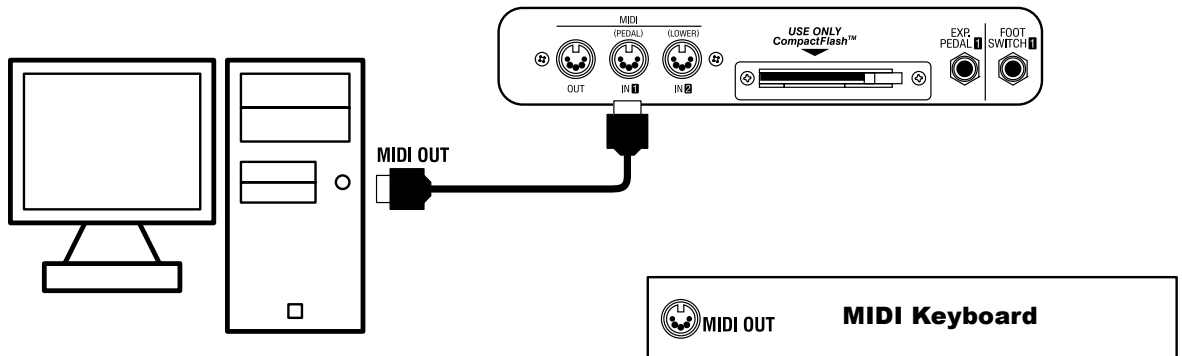
1. Hook up as illustrated above.

   If a MIDI keyboard is connected, unplug it and connect the MIDI OUT of the Sequencer to the MIDI IN of this keyboard.
2. Recall "Seq. Play" by the MIDI Template.

   By this, the messages received at the MIDI Channels 1,2 and 3 are distributed to each Part.
3. Do the setting of the Keyboard Channel if necesary.
4. Starts Playback on the Sequencer.

   ❖ Only the built-in sound source can be recorded. The control of the External Zone is not played back.

You can control the External MIDI Equipments such as Sound Modules upto 3 Zones by your XK-3.
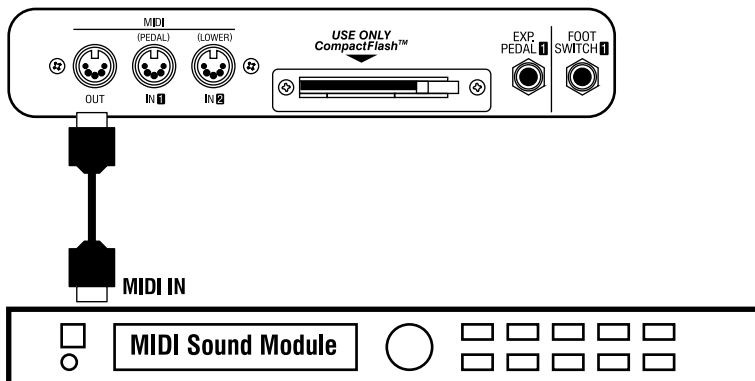
1.   Hook up as illustrated above.

    Connect the MIDI OUT to the MIDI IN of the Equipment you want to control.

2.   Recall the MIDI template "Use EX Zone".

    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 is recorded to the Combination Preset, if necessary.

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

tips **NOTE ON THE SOUNDING POINT**

The External Zone sounds at a little deeper point of the key than the Drawbar tone.
This is for outputting the velocity infos. to the External Zone.

To control the external sound module, a certain range of the manual keyboard of this keyboard is used for that. Each of them is called the "EXTERNAL ZONE". At the same time, you can set the oscillating range (= "INTERNAL ZONE") of the built-in sound engine and play on the same single keyboard.

To come to this mode:

Touch the [MENU/EXIT] button to display the MENU, select PAGE D by the [PAGE] button, and then touch [1] ZONES.

```
▼EX3 CH  LO-MAP-HI  ▼EX3     M-BNK-L PROG ▼EX3 OCT VOL PAN VEL
ZONE  3  1C     2B ▶ PROG  ◀  0   0     1▶ NOTE◀+0  100 -C- OF▶
━━━━━━━━━━━━━━━━━━━━ ━━━━━━━━━━━━━━━━━━━━ ━━━━━━━━━━━━━━━━━━━━━
♦EX2 CH  LO-MAP-HI  ♦EX2     M-BNK-L PROG ♦EX2 OCT VOL PAN VEL
ZONE  2  1C     2B ▶ PROG  ◀  0   0     1▶ NOTE◀+0  100 -C-  2▶
━━━━━━━━━━━━━━━━━━━━ ━━━━━━━━━━━━━━━━━━━━ ━━━━━━━━━━━━━━━━━━━━━
♦EX1 CH  LO-MAP-HI  ♦EX1     M-BNK-L PROG ♦EX1 OCT VOL PAN VEL
ZONE ❻1 ❼3C    ❽6C ▶ PROG  ◀❾0 ❿0   ⓫1▶ NOT⓬+0⓭100⓮C-⓯2▶
━━━━━━━━━━━━━━━━━━━━ ━━━━━━━━━━━━━━━━━━━━
▲INT PED LO-L&U-HI  ▲INT    POINT   L OCT
ZONE❶3C ❷1C    ❸6C ▶ SPLIT❹3C      ❺+1
```

♦INTERNAL ZONE

1. PEDAL

2. LOWER & UPPER - LOW

3. LOWER & UPPER - HIGH

This is for setting the playing range of each part of the built-in sound engine by the keyboard.

Set the lowest note at LO and the upper most note at HI. The upper most function of the manual bass is set at PED.

4. SPLIT POINT

If you use the Split function, set the KEY on where to split the LOWER and the UPPER Parts on the keyboard.

The setting value is the highest note used in the LOWER Part.

NOTE: You can come to this mode by holding down the [SPLIT] button as well.

NOTE: For 1 to 4, you can set the value by touching the [REC/ JUMP] button, while holding down a note on the keyboard.

5. LOWER OCTAVE

This is for setting the pitch of the split LOWER Part by the octave.

If you use the SPLIT function, the pitch of the LOWER Part may go down too low for the harmony play. In that case, you can move up the Lower octave upto the pitch suitable for harmony play.

♦EXTERNAL ZONE

6. MIDI CHANNEL

This is for choosing the MIDI channel to send to the External Zone.

The range is 1 - 16 and OF. At 0, no sending to this Zone.

7. MAP - LOW

8. MAP - HIGH

This is for setting the playing range of this zone on the keyboard.

NOTE: For 7 and 8, you can set the value by touching the [REC/ JUMP] button, while holding down a note on the keyboard.

9. PROGRAM - BANK MSB

10. PROGRAM - BANK LSB

11. PROGRAM - BANK PROGRAM CHANGE

This is for setting the Bank Select and Program Change to send to this Zone.

Generally, the tone of the synthesizer or the Sampler is switched by the Bank Select and the Program Change. There are such models as do not receive the Bank Select. The receiving range is different from equipment to equipment. You can choose 0 - 127 in the Bank MSB and the Bank LSB, and 1 - 128 in the Program Change.

12. NOTE - OCTAVE

This is for moving the octave to send to this zone. You can set the pitch to be sent to the key by the octave, if the desired range is different from that prepared by MAP LO/HI.

```
┌─────────────────────────┬─────────────────────────┐
│▾EX3 MIN-MAX    CC#      │▾EX3   BND DMP MOD       │
│EXP.◂ 40 127  11:EXP▸    │MSGS ◂ON  1T  ON         │
├─────────────────────────┼─────────────────────────┤
│≑EX2 MIN-MAX    CC#      │≑EX2   BND DMP MOD       │
│EXP.◂ 40 127  11:EXP▸    │MSGS ◂ON  1T  ON         │
├─────────────────────────┼─────────────────────────┤
│≑EX1 MIN-MAX    CC#      │≑EX1   BND DMP MOD       │
│EXP.⑯40⑰127  ⑱:EXP▸     │MSGS⑲ON⑳1T⑪ON           │
└─────────────────────────┴─────────────────────────┘
```

13. NOTE - VOLUME

This is for setting the volume (= Control Change #7) of this zone. However, the set value will be null, if the CC# (item #18) is at "7.VOL".

14. NOTE - PAN

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

15. NOTE - VELOCITY

This is for setting the Velocity Curve to send to this zone. The setting range is OF, 1 - 4. The velocity of OF is fixed at 100. At 1 - 4, the more the value increases, the intense velocity is sent regardless how light the key is touched.

16. EXPRESSION - MINIMUM

17. EXPRESSION - MAXIMUM

This is for setting the range of the expression to "compress" to send to this Zone.

If the expression pedal is connected to this keyboard, generally, the electronic organ will sound, even when the expression pedal is fully returned or at 0.

With the GM sound engine, the sound does not come out at the same setting. This parameter is to balance it.

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

18. EXPRESSION - CONTROL NUMBER

This is for setting the Control Number of the Expression Pedal. There are various methods of the volume control, depending on the connected equipment. you can here set the number to nicely control the volume of the connected equipment by this parameter.

19. MESSAGE - PITCH BEND

20. MESSAGE - DAMPER

21. MESSAGE - MODULATION

This is for determining whether or not to send the control information to this zone.

For example, by using two zones, suppose you have set to sound the piano and sax by touching one key. The damper is effective on the piano but strange on sax. On the other hand, Pitch Bend is suitable for sax but not necessary for the piano. Now, you need to limit the message to send to each zone. ON sends the message, but OF does not.

You can also select which footswitch to use for sending the damper.

OF:
   does not send the damper information.

1T, 1R 2:
   each sends the damper information by the tip of the footswitch 1, ring, and EXP-100F.

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

This is the mode to do the basic setting of the MIDI.

To come to this mode:

Touch the [MENU] button to display the MENU, select PAGE D by the [PAGE] button, and then touch the [2] MIDI button.

```
↓CH UPPER LOWER PEDL
  ❿1     ⓫2    ⓬ 3
↕MAST    MIDI IN      ↕MAST     LOCAL NRPN   ↕MAST PROG REGI WHEL
  ❷LOWER/PEDAL   ▶    ❸ON   ❹ON  ▶  Tx&Rx❺ON  ❻ON  ❼ON▶
↑TEMPLATE            ↑TEMPLATE           ↑TEMPLATE
❶eq. Record▶ [RECL]  ◀Seq. Play  ▶ [RECL] ◀Use EX Zone [RECL]
```

♦MIDI TEMPLATE

1.   MIDI TEMPLATE

This is the mode for setting each function simply.

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

♦MASTER

2.   MIDI IN

This is for setting the behavior if the two MIDI IN terminals.

UPPER / PEDAL:

> Each MIDI IN terminal acts as a receiving terminal for the LOWER and PEDAL Parts, regardless of the channel.
> This assigns the Manual Bass Function to the MIDI IN (LOWER) terminal.
> The Split function will disabled (Disregards the [SPLIT] Button).
> The input from each MIDI IN terminal will be resent by each Keyboard Channel of 11 and 12.

IN 1/IN 2:

> Each acts in accordance with each designated channel.
> Assigns the Manual Bass Function to the Manual Keyboard of this keyboard.
> The Pedal Part produces polyphonic sound, regardless of the value of the Key Mode (POLY/MONO).

3.   LOCAL

This is for switching ON/OFF the LOCAL CONTROL (internal).

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

If OFF, the keyboard and the sound engine are cut off. The keyboard does not sound, if touched. You can treat this module as if it is a two different equipment: a MIDI keyboard and a Sound Module.

4.   NRPN

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

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

At ON, the message is sent/received. At OFF, not.

5.   PROGRAM CHANGE

This is for switching the sending and receiving of the Program Change/Bank Select by the Keyboard Channel.

On this keyboard, this is for switching the Combination Preset using the Program Change and the

```
⬍MAST     RECV. DUMP   ⬍MASTER   SEND DUMP
          ❽◀ ON    ▶            ❾◀[SEND]
```
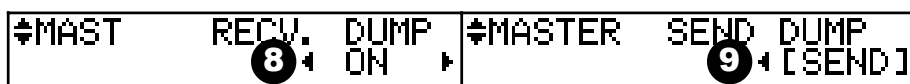
Bank Select.

When ON, this does send/receive. When OFF, not.

6. REGISTRATION

This is for switching ON/OFF the Drawbar Registration send/receive at the Keyboard Channel.

This is to select whether or not to send/return the information of the movement of each footage of the Drawbars.

When ON, it transmits/receives. When OFF, not.

7. WHEEL

This switches ON/OFF the Send/Receive of the Pitch Bend and Modulation informations at the Keyboard Channel.

When ON, it transmits/receives. When OFF, not.

8. RECEIVE DUMP

This is for determining whether or not to receive the MEMORY DUMP.

On this module, 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 keyboard to be changed.

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

9. SEND DUMP

This is for sending the MEMORY DUMP.

If you touch [4] SEND in this mode, the whole TEMPORARY (= the current setting information) from the MIDI OUT terminal. This avoids later "confusion" if you record the TEMPORARY by doing this before recording your performance to the Sequencer.

◆KEYBOARD CHANNEL

10. UPPER

11. LOWER

12. PEDAL

This is for setting which MIDI CHANNEL you use to send/receive each Part.

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

❖ *To avoid confusion of the MIDI signals, be careful not to duplicate each MIDI channel, including the External Zone.*

NOTE: The settings in this MENU are not recorded in to the Combination Presets. This is common with all Presets.

tips **CONTENT OF MEMORY DUMP**

The PRESET Parameters, GLOBAL Parameters and SYSTEM Parameters of TEMPORARY (= the 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 CF CARD.

tips **THE "PANIC" FUNCTION**

When any trouble happens in the MIDI system, it sometimes causes sticking notes. In such a case, you can send the command messages "All Notes Off" and "Reset All Controllers" by touching the [BANK] button and the [REC/JUMP] button at the same time. This is called "Panic" function.
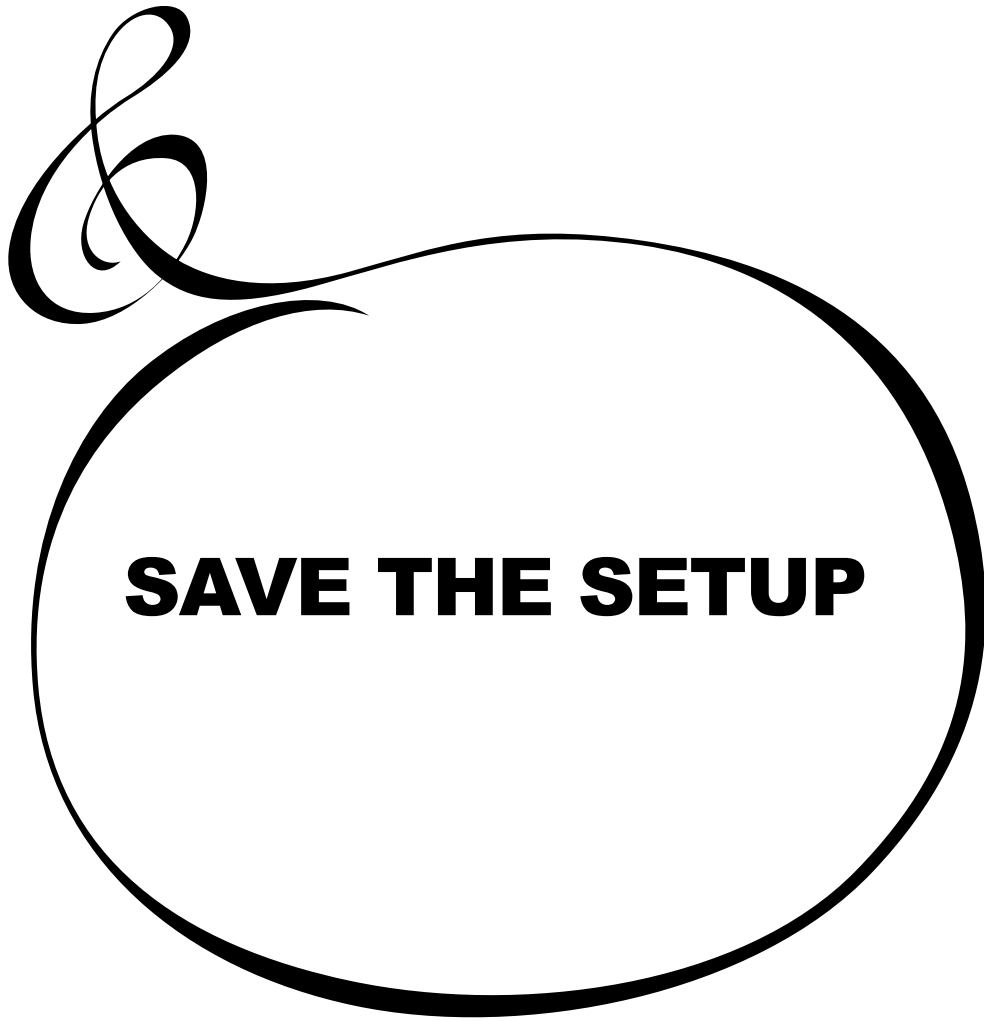
SAVE THE SETUP

On this keyboard you can save the setting of each Parameter, as a file, into the CompactFlash™ card (hereinafter "CF card").

Eject Button
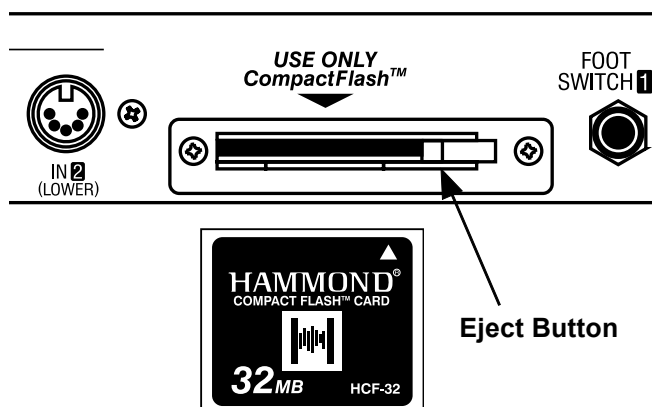
CF CARD YOU CAN USE

The manufacturer recommends HCF-32, as your CF card.

Please consult URL: http://www.hammondsuzuki.com before you try to use other cards on the market.

CF CARD SLOT

1. First please read the lavel 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.

THE CONTENT AND CAPACITY TO BE SAVED

The content the CF CARD can save are:

- Combination Presets
- Global Parameters
- Custom Tonewheels
- Leslie Cabinets
- Adjust Presets [A#], [B]
- Temporary Parameters

Also, this card can save/read out all of them as a whole by the unit called "SET-UP".

The capacity of one SET-UP is approximately 28 KB.

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

❖*This operation losts the all data in the CF card.*

1

Insert the CF card into the slot.

2

Touch the [MENU/EXIT] button.

3

Select PAGE D by the [PAGE] button.

4

Touch [4] 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.
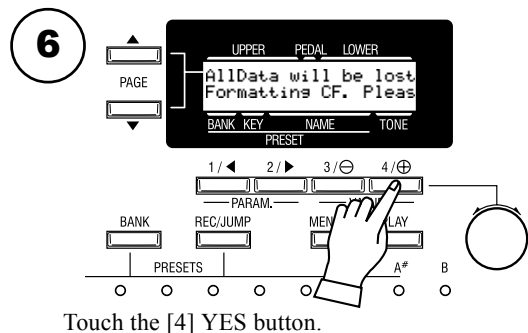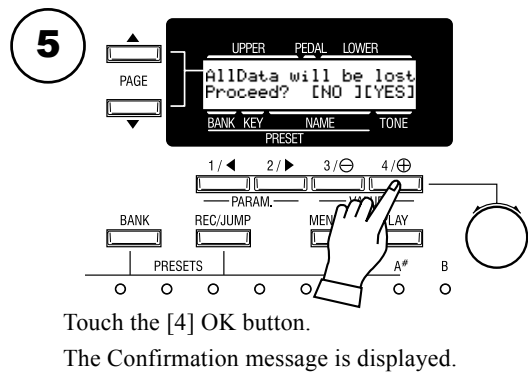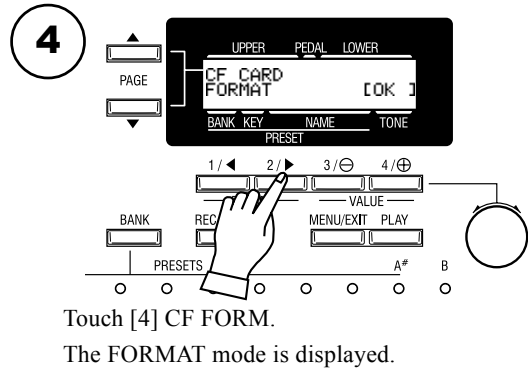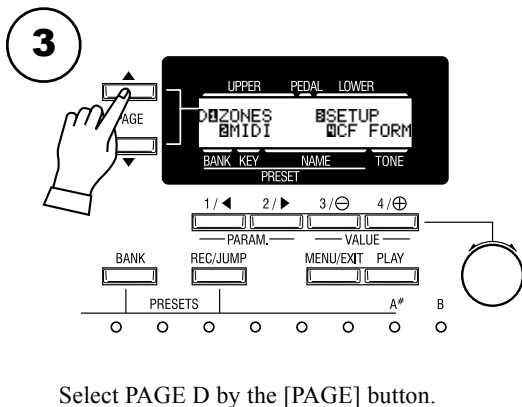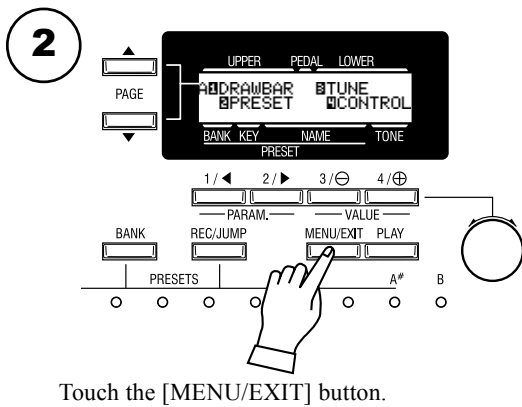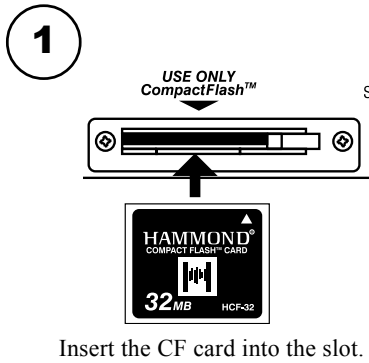
NOTE: If you do not want to initialize, just touch the [3]
NO button.

7

To return to the PLAY mode, touch [PLAY].
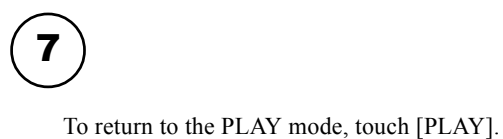
Save the Set Up

Save or Load the SET UP to/from the CF card in the SETUP mode. In this mode, you can do all the operations except the initialization of the CF card.

To come to this menu:

Touch the [MENU] button to display the MENU, select PAGE D by the [3] SETUP button.

HOW TO READ THE DISPLAY

Setup Name

This indicates there is another SETUP file above (or below).

```
‡Amazing Grace     100
[LOD][SAV][NAM][DEL]
```

The capacity left in this CF card (%)

Load

Save

Rename

Delete

SAVE THE SETUP

1

Check the CF CARD is correctly inserted.

2

```
‡Amazing Grace     100
[LOD][SAV][NAM][DEL]
```
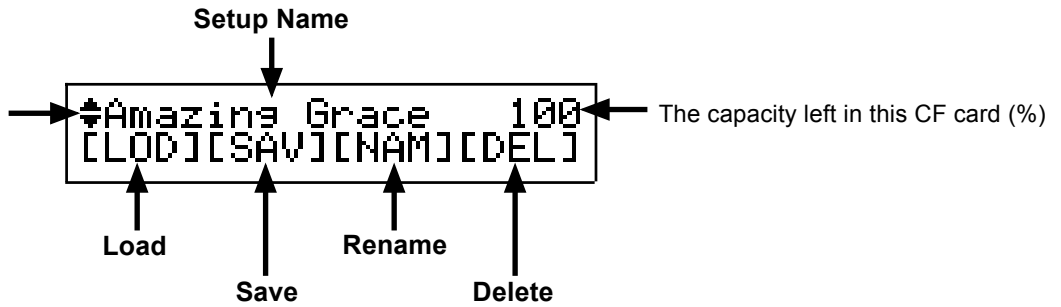
Come to the SETUP mode.

WHAT DOES THIS MEAN?

```
CF is not ready
```

The CF CARD is not correctly inserted.

3
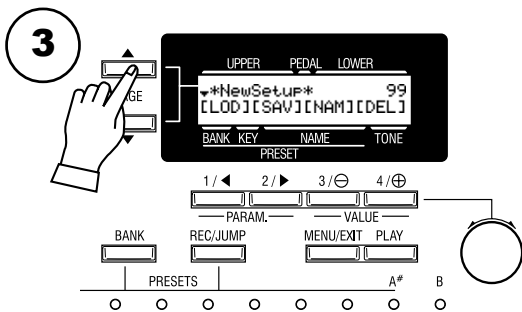
Select the SET UP NAME "NewSetup" by the [PAGE] button.

NOTE: **"NewSetup" means a fresh save. If you select an existing SET UP NAME, it will be deleted and written over (= renewed).**

4
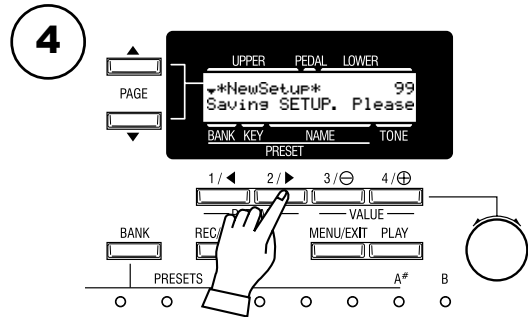
Touch the [2] SAV button.
SAVE starts.

5

```
▾Setup01            98
[LOD][SAV][NAM][DEL]
```
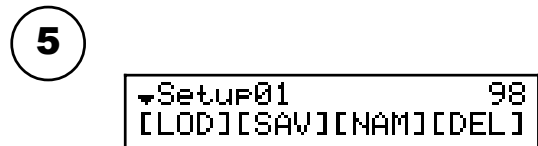
A temporary name is put to the saved SET UP "Setup xx" automatically.

CHANGE THE SETUP NAME

1

```
‡WantToRename        98
[LOD][SAV][NAM][DEL]
```

Select the SETUP file you want to change the name.

2
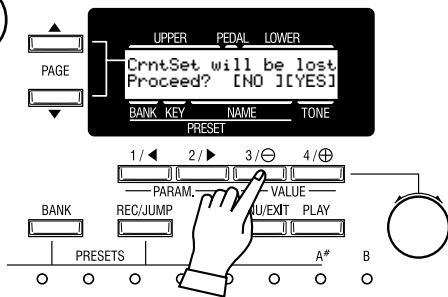
Touch the [3] NAM button.

WHAT DOES THIS MEAN?

CrntSet will be lost Proceed?

If you change the SETUP NAME, the SETUP previously saved in this keyboard will be rewritten to that you are changing. If you do not want to lose the current SETUP, touch [3] NO button and save the new one as a "NewSetup".

If you touch the [4] YES button, the SET UP will be loaded (= read into) and then the SETUP NAME input mode will be displayed.

3
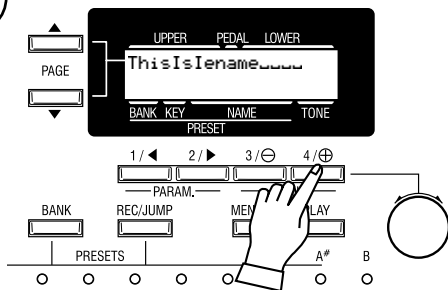
You have come to the SETUP NAME INPUT mode.

4

Input the new SET UP 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 signs/symbols.
If you touch this button, holding down the [REC/JUMP] button, you can move to the head/the first letter of each type (= space, 0, A, a).
The [VALUE] knob can also be used to choose letters etc.

5
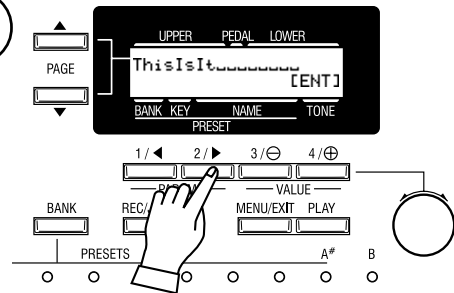
Move the cursor to the right end by the [PARAM] button.
[ENT] will be displayed.

6
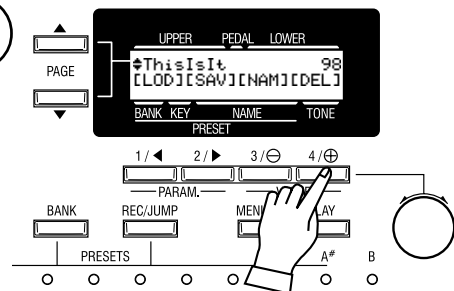
Touch the [4] ENT button.
The SETUP NAME will be changed.

LOADING THE SETUP

❖ *After the operation, the settings already in this keyboard will be replaced by the newly loaded SET UP. So, you had better save them in advance.*

1

Check the CF card is correctly inserted.

2

‡Amazing Grace   100
[LOD][SAV][NAM][DEL]

Come to the SETUP mode.

3
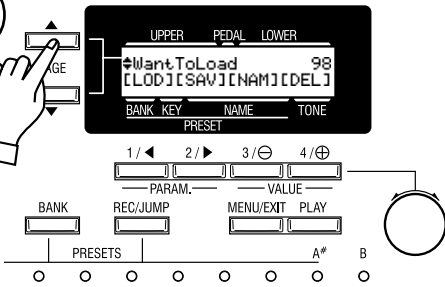
Choose the SETUP file to load by the [PARAM] button.

4
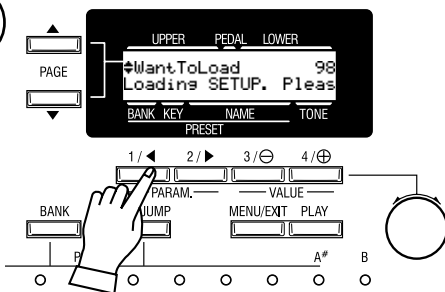
Touch the [1] LOD button.

The SETUP will be loaded in a few seconds.

HOW TO DELETE THE SETUP

1

Check the CF card is correctly inserted.

2

‡Amazing Grace   100
[LOD][SAV][NAM][DEL]

Come to the SETUP mode.

3
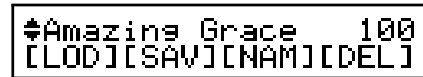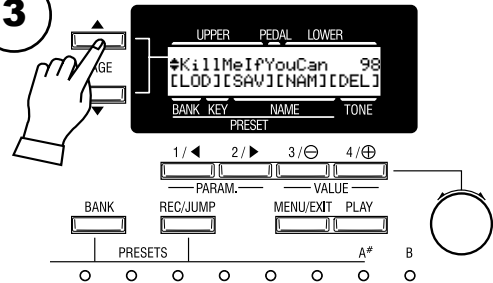
Choose the SETUP file you want to delete by the [PAGE] button.

4
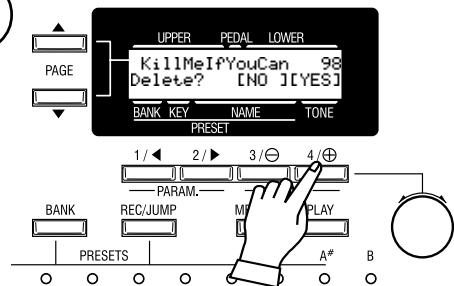
Touch the [4] DEL button.

The Confirmation message will be displayed.

5
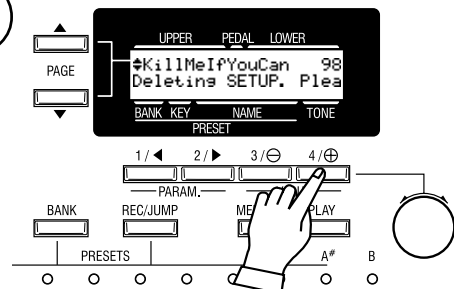
Touch the [4] YES button.

The Delete operation starts.

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

TROUBLE SHOOTING

◆ 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 once. Then, while pressing [REC/JUMP] 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. 10)
  ⬩ The LOCAL CONTROL is set to OFF. Set the local control to ON. (P. 86)
  ⬩ The SEND terminal is plugged in. Use RETURN terminal for return signal. (P. 16)

◆ Expression does not change.

  ⬩ The EXPRESSION - SOURCE is not the correctly set. Set the EXPRESSION - SOURCE in the "CONTROL" screen correctly. (P.60)

◆ The sound is distorted.

  ⬩ The sound is distorted not as the [TUBE OVERDRIVE] knob screen shows. If you are playing this keyboard using the Combination Preset, the actual value of the drive is different from the position of the knob.
    Switch OFF the [TUBE AMP] button, or, turn the [TUBE OVERDRIVE] knob to the left, to the point where it is not distorted. You can easily check the actual drive value by the [TUBE AMP]. (P. 39)
  ⬩ Depending on the headphones you use, the sound is sometimes distorted when you turn the [MASTER VOLUME] to the maximum. In such a case, set the [MASTER VOLUME] in the middle.

◆ The sound does not come out immediately after switched on.

  ⬩ The [TUBE AMP] button is ON. A Vacuum Tube circuit is mounted in this keyboard. It takes approximately 10 to 20 seconds after the [TUBE AMP] button is switched ON. Before you will hear the sound.

◆ The sound is not distorted if the [TUBE OVERDRIVE] knob is turned.

  ⬩ When the Overdrive Expression is at "EX-OD", it does not distort if the value of Expression is low. In such a case, increase the Expression value, or, set the Overdrive Expression at "OD-EX", if you want to distort regardless of the Expression value. (P. 71)

APPENDIX
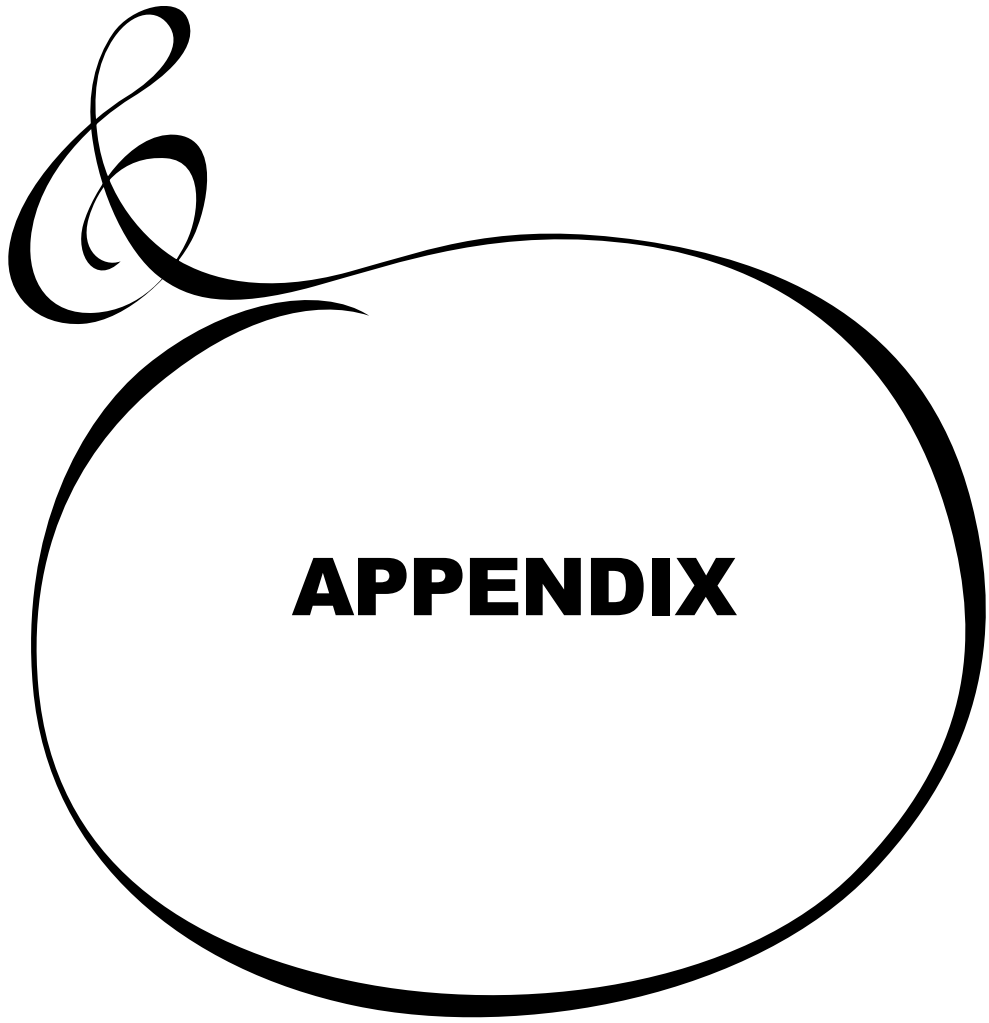
Custom Tone-wheel Templates

B-Type
Real B-3
This template simulates B-3 the classic model in good condition. It contains low motor hum and some leakage noise.
80's Clean
This template simulates B-3 tuned like in 80's sound. It contains reduced leakage noise.
Noisy
This template for passing all sounds of pickuped signal. It contains fully motor hum and leakage noise.

Mellow
Full Flats
This template simulates ideal tone-wheel set. They are in same values at every wheel.
Husky
This template has the character that dropped middle range.
Flute Lead
This template has the character that dropped bass and treble in contrast to "Husky".

Brite
Classic X-5
This template simulates X-5 the classic model in good condition. It contains dull triangle waveform and flat output levels on every wheel.
Voxy Full
This template has the most bright sounds. It is suitable for surfin' music.
Cheap Tr.s
This template simulates junk transistor organ. It contains insufficient bass and treble.

MIDI Templates

Template		Seq. Record	Seq. Play	Use Ex.Zone	Data Range
MIDI In		Lower / Pedal	In1 / In2	Lower / Pedal	Lower / Pedal , In1 / In2
Messages	Local Control	On	Off	On	Off/On
	NRPN	On	On	Off	Off/On
	Program Chg.	On	On	Off	Off/On
	Registration	On	On	Off	Off/On
	Wheel	On	On	Off	Off/On
Transmit Channel	Upper Kbd.	1	1	Off	Off, 1 - 16
	Lower Kbd.	2	2	Off	Off, 1 - 16
	Pedal Kbd.	3	3	Off	Off, 1 - 16
Receive Channel	Upper Kbd.	1	1	Off	Off, 1 - 16
	Lower Kbd.	2	2	Off	Off, 1 - 16
	Pedal Kbd.	3	3	Off	Off, 1 - 16
		Use this template for connecting the organ to an external MIDI sequencer without the "Echo Back" function, and recording songs.	Use this template for connecting the organ to an external MIDI sequencer for playing back songs.	Use this template for connecting the organ to an external MIDI sound generator, such as a synthesizer or sound module, and playing it from the organ.	

[Hammond Combo Organ]
Model: XK-3

MIDI Implementation Chart

Date: 1-Apr-2004
Version: 1.0

Function		Transmitted	Recognized	Remarks
Basic	Default	1	1	Upper Channel *1
Channel	Changed	1 - 16	1 - 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	Key's	X	X	
Touch	Ch's	X	X	
Pitch Bender		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
	16	O	O	Spring Shock
	64	O	O	Hold 1
	80,81,82	O	O	Drawbar Reg. U, L, P
	98,99	O	O	NRPN LSB, MSB
	100, 101	O	X	RPN LSB, MSB
	120	X	O	All Sound Off
	121	O	O	Reset All Controllers
Program		O 0 - 127	O 0 - 11	
Change	: True #	*****	O 0 - 11	
System Exclusive		O	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	: 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
*1: Lower Channel = 2, Pedal Channel = 3

Part and MIDI Messages

		External Zone (Tx. Only)	Upper Keyboard	Lower Keyboard	Pedal Keyboard
Note		O	O	O	O
Pitch Bend		O	O *1	X	O
Modulation	(1)	O	O	X	X
Volume, Pan	(7, 10)	O	X	X	X
Expression	(11)	O *2	O *3	X	X
Hold 1	(64)	O	O	O	O
Drawbar Reg.		X	CC#80	CC#81	CC#82
Spring Shock	(16)	X	O	X	X
RPN	(100, 101)	O *4	X	X	X
NRPN	(98, 99)	X	O	X	X
All Notes Off	(123)	O	O	O	O
All Sounds Off	(120)	X	O *5	O *5	O *5
Reset All Ctrl.	(121)	O	O	O	O
After Touch		X	X	X	X
Bank Select	(0, 32)	Change voice each zone.	Combination Presets	X Lower Presets	Combination Presets
Program Change					

*1: It works for both Upper and Lower.
*2: It works for each zone.
*3: It work for all parts (audio controlled).
*4: Coarse Tune (for transpose)
*5: For Rx. only.

MIDI Information

[Channel Voice Message]

Note Off

Status	2nd Byte	3rd Byte
8n	kk	vv	or
9n	kk	00

n=MIDI Channel Number: 0 - F(Ch.1 - 16)
kk=Note Number: 00 - 7F(0 - 127)
vv=Velocity(disregard):   00 - 7F(0 - 127)

Note On

Status	2nd Byte	3rd Byte
9n	kk	vv

n=MIDI Channel Number: 0 - F(Ch.1 - 16)
kk=Note Number: 00 - 7F(0 - 127)
vv=Velocity: 00 - 7F(0 - 127)

Control Change

The value set by the Control Change is not reset even when
Program Change messages etc. are received.

Bank Select

Status	2nd Byte	3rd Byte
Bn	00	mm
Bn	20	ll

n=MIDI Channel Number: 0 - F(Ch.1 - 16)
mm,ll=Bank Number: 00 00 - 7F 7F
     Default Value = 00 00

This device process the Lower Byte (ll) of the Bank Number as 00.
However, when you send the Bank Select, be sure to send
both Upper Byte(mm) and Lower Byte(ll).
Until you send the Program Change, the Bank Select process is
reserved.

Modulation

Status	2nd Byte	3rd Byte
Bn	01	vv

n=MIDI Channel Number: 0 - F(Ch.1 - 16)
vv=Modulation Depth: 00 - 7F

Volume

Status	2nd Byte	3rd Byte
Bn	07	vv

n=MIDI Channel Number: 0 - F(Ch.1 - 16)
vv=Volume: 00 - 7F(0 - 127)
     Default Value = 64(100)

It controls the volume of the Part corresponding to the MIDI Channel of
the received message.
The volume message is used to set the volume balance of each Ex. zone.

Pan

Status	2nd Byte	3rd Byte
Bn	0A	vv

n=MIDI Channel Number: 0 - F(Ch.1 - 16)
vv=Pan: 00(Left) - 40(Center) - 7F(Right)
     Default Value = 40(64)

Expression

Status	2nd Byte	3rd Byte
Bn	0B	vv

n=MIDI Channel Number: 0 - F(Ch.1 - 16)
vv=Expression: 00 - 7F(0 - 127)
     Default Value = 7F(127)

Spring Shock

Status	2nd Byte	3rd Byte
Bn	10	vv

n=MIDI Channel Number: 0 - F(Ch.1 - 16)
vv=Any:

Hold 1

Status	2nd Byte	3rd Byte
Bn	40	vv

n=MIDI Channel Number: 0 - F(Ch.1 - 16)
vv=Control Value: 00 - 7F(0 - 127) 0-63 = Off, 64-127 = On

Program Change

Status	2nd Byte
Cn	pp

n=MIDI Channel Number: 0 - F(Ch.1 - 16)
pp=Program Number
Upper Channel: Change Combination Preset.
Lower Channel: Change Lower Preset only.

Pitch Bend Change

Status	2nd Byte	3rd Byte
En	ll	mm

n=MIDI Channel Number: 0 - F(Ch.1 - 16)
mm=Upper Byte
ll=Lower Byte   00 00(-8192) - 40 00(0) - 7F 7F(8191)

[Channel Mode messages]

All Sounds Off

Status	2nd Byte	3rd Byte
Bn	78	00

n=MIDI Channel Number: 0 - F(Ch.1 - 16)
When this message is received, all currently-sounding notes on the
corresponding channel will be turned off immediately.

Reset All Controllers

Status	2nd Byte	3rd Byte
Bn	79	00

n=MIDI Channel Number: 0 - F(Ch.1 - 16)
When this message is received, the following controllers will be set to
their reset values.

Controller	Reset Value
Pitch Bend Change	±0 (Center)
Modulation	0 (off)
Expression	127 (Maximum)
Hold 1	0 (off)
RPN	unset; previously set data will not change
NRPN	unset; previously set data will not change

All Notes Off

Status	2nd Byte	3rd Byte
Bn	7B	00

n=MIDI Channel Number: 0 - F(Ch.1 - 16)
When All Notes Off is received, all notes on the corresponding channel
will be turned off. However if Hold 1 is On, the sound will be continued
until these are turned off.

NRPN MSB/LSB

Status	2nd Byte	3rd Byte	
Bn	63	mm	(MSB)
Bn	62	ll	(LSB)

n=MIDI Channel Number: 0 - F(Ch.1 - 16)
mm=Upper Byte of the Parameter Number designated by NRPN[MSB].
ll=Lower Byte of same[MSB].
The value set by NRPN is not reset even if "Program Change",
"Reset All controllers", etc. are received.

NRPN- "Non Registered Parameter Number"
The expansive range named NRPN is provided in the Control Change,
which function is specific on each equipment and not defined in the
MIDI Standard.
When you use it, designate the parameter to control, by giving NRPN MSB
and NRPN LSB (cc#98 and 99), and the set the value of the designated
parameter by the Data Entry MSB(cc#6).
Once the NRPN parameter is designated, all the data entry received into
the same channel after that is regarded as the change of the value of the
parameter. To avoid any mis-operation, we suggest you to set RPN Null
(RPN = 7F 7F), after setting the necessary parameter value.
On this sound module you can change the voice parameter by using
NRPN.

Data Entry

Status	2nd Byte	3rd Byte	
Bn	06	mm	(MSB)
Bn	26	ll	(LSB)

n=MIDI Channel Number: 0 - F(Ch.1 - 16)
mm,ll=Value for the Parameter designated by RPN/NRPN.

RPN MSB/LSB

Status	2nd Byte	3rd Byte	
Bn	65	mm	(MSB)
Bn	64	ll	(LSB)

n=MIDI Channel Number: 0 - F(Ch.1 - 16)
mm=Upper Byte of the Parameter Number designated by RPN[MSB].
ll=Lower Byte of same[MSB].
The Value set by RPN is not reset by receiving the "Program Change",
"Reset All Controllers", etc.

RPN- "Registered Parameter Number"
The expansive range named RPN is provided in the Control Change,
which function is specific on each equipment and not defined in the
MIDI Standard.
When you use it, designate the parameter to control, by giving RPN MSB
and RRN LSB(cc#101 and 100), and then set the value of the desgnated
parameter by the Data Entry MSB(cc#6).
Once the RPN parameter is designated, all the data entry received into
the same channel after that is regarded as the change of the value of the
parameter. To avoide any mis-operation, we suggest you to set RPN Null,
after setting the necessary parameter value.

Master Coarse Tuning

RPN MSB	RPN LSB	DATA MSB
00	02	3A - 40 - 46 (-6 - 0 - +6 semitones)

This message will sent as Transpose for external zones.

Drawbar Data List

Control number: Upper   50h(80)
                    Lower   51h(81)
                    Pedal   52h(82)

Data Map:

Level	Upper/Lower									Pedal	
	16'	5 1/3'	8'	4'	2 2/3'	2'	1 3/5'	1 1/3'	1'	16'	8'
0	00h(0)	09h(9)	12h(18)	1Bh(27)	24h(36)	2Dh(45)	36h(54)	3Fh(63)	48h(72)	00h(0)	09h(9)
1	01h(1)	0Ah(10)	13h(19)	1Ch(28)	25h(37)	2Eh(46)	37h(55)	40h(64)	49h(73)	01h(1)	0Ah(10)
2	02h(2)	0Bh(11)	14h(20)	1Dh(29)	26h(38)	2Fh(47)	38h(56)	41h(65)	4Ah(74)	02h(2)	0Bh(11)
3	03h(3)	0Ch(12)	15h(21)	1Eh(30)	27h(39)	30h(48)	39h(57)	42h(66)	4Bh(75)	03h(3)	0Ch(12)
4	04h(4)	0Dh(13)	16h(22)	1Fh(31)	28h(40)	31h(49)	3Ah(58)	43h(67)	4Ch(76)	04h(4)	0Dh(13)
5	05h(5)	0Eh(14)	17h(23)	20h(32)	29h(41)	32h(50)	3Bh(59)	44h(68)	4Dh(77)	05h(5)	0Eh(14)
6	06h(6)	0Fh(15)	18h(24)	21h(33)	2Ah(42)	33h(51)	3Ch(60)	45h(69)	4Eh(78)	06h(6)	0Fh(15)
7	07h(7)	10h(16)	19h(25)	22h(34)	2Bh(43)	34h(52)	3Dh(61)	46h(70)	4Fh(79)	07h(7)	10h(16)
8	08h(8)	11h(17)	1Ah(26)	23h(35)	2Ch(44)	35h(53)	3Eh(62)	47h(71)	50h(80)	08h(8)	11h(17)

ex: Set Lower 8' to level 7 via MIDI...   Bx 51 19   *(x=Lower Channel)*

System Exclusive Message

Current Dump/Global Dump

1.Each Packet

F0	System Exclusive
55	SUZUKI ID
00	Device ID
10	Model ID MSB
14	Model ID LSB
11	Command: Data Packet
[TYPE]	Data Type
	07h= Combi.Preset Dump
	08h= Lower Preset Dump
	09h= Global 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
00	Device ID
10	Model ID MSB
14	Model ID LSB
14	Command: Acknowledge
[AK]	Result: 00h=OK
	05h=Check Digit Error
	06h=Receive Protected
[PNH]	Packet Number MSB
[PNL]	Packet Number LSB
F7	End of Exclusive

3.Hand shake communication

Master		Slave
Packet 0	->	
	<-	Acknowledge 0
Packet 1	->	
	<-	Acknowledge 1
	.....	

This device will wait for 20ms if no acknowledges is received and transmit the next data of the packet number. (One Way Transfer)

NRPN Switch

F0	System Exclusive
55	SUZUKI ID
00	Device ID
10	Model ID MSB
14	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.

Mode Setting Exclusive Message

Full Parameters Reset

F0	System Exclusive
55	SUZUKI ID
10	Device ID for DT1
42	Model ID for DT1
12	Command: DT1
40	Address MSB
00	Address
7F	Address LSB
7F	Reset
42	Check Sum
F7	End of Exclusive

When this device receives this message, it is reset to the initial status of Full Parameter, and gets ready for receiving the music data for the this device correctly. It takes about 50ms to process this message. Take an interval before the next message.

Global Parameters

Category	Global Parameters					
	Parameter	NRPN		DATA	Default	Description
		LSB (62)	MSB (63)	MSB (06)		
Tune	Transpose	01	00	3A - 40 - 46 (-6 - 0 - 6)	40	0
	Master Tune	01	02	032E - 0338 - 0342 (430 - 440 - 450)	0338	440
Expression	Source	02	00	00 - 03 00: Exp. Pedal 1 (Normal) 01: Exp. Pedal 1 (Reverse) 02: EXP-100 03: MIDI IN	02	EXP-100
	Min. Level	02	08	00 - 0D (Off, -60dB - -0dB)	06	-35dB
	Min. Limit LF	02	09		09	-20dB
	Min. Limit HF	02	0A		07	-30dB
Foot Switch	FS1 Device	02	01	00 - 01 (Foot Sw, CU-1)	00	Foot Sw
	Mode FS1 Tip	02	02	00 - 09 00: Off 01: Leslie Fast(alternate) 02: Leslie Fast(momentaly)	01	Leslie Fast (alternate)
	Mode FS1 Ring	02	03	03: Damper Upper 04: Damper Lower 05: Damper Pedal 06: Preset Fwd.	01	Leslie Fast (alternate)
	Mode FS2	02	04	07: Preset Rev. 08: Spring Shock 09: Delay Time	01	Leslie Fast (alternate)
Tone Knob	Mode	02	05	00 - 02 (Bass / Mid / Treble)	02	Treble
Drawbar Knob	Mode	02	06	00 - 01 00: Upper / Lower 01: A# / B	00	Upper / Lower
Demo Switch	Mode	02	07	00 - 07 00: Demo Play 01: Pedal Sustain 02: External Zone 03: Lower Octave 04: Leslie Brake 05: Leslie On 06: Leslie Fast 07: Vibrato On	00	Demo Play
Combi. Preset Load	Link Lower/Pedal(Link L/P)	50	00	00, 01 (Off/On)	01	On
	Upper Regist. (UK)	6b	00	00, 01 (Off/On)	01	On
	Split, ManBs (INT)	6b	01	00, 01 (Off/On)	01	On
	External Zone (EXT)	6b	02	00, 01 (Off/On)	01	On
	Reverb, Equalizer (RV/EQ)	6b	03	00, 01 (Off/On)	01	On
	Leslie, Vibrato (ANI/OD)	6b	04	00, 01 (Off/On)	01	On
	Drawbar (DRAWB)	6b	05	00, 01 (Off/On)	01	On
	Percussion (PERCUS)	6b	06	00, 01 (Off/On)	01	On
Tone-Wheel set	B-Type	03	00	00 - 04	00	Classic B-3
	Mellow	03	01	00 - 04	00	Full Flats
	Brite	03	02	00 - 04	00	Classic X-5

b: Bank Number
00 - 0B (C - B)

Tone-wheel Parameters

Category	Tone-wheel Parameters		
	Wheel #	Parameter	Value
B-Type, Mellow, Brite	01: 1C - 96: 8B	Level	-20 - +2 [dB]
		HPF Cut Off	0 - 127
		LPF Cut Off	0 - 127
		LPF Resonance	-100 - +100

Preset Parameters

Category	Combination Preset Parameters				
	Parameter	NRPN LSB (62)	MSB (63)	DATA MSB (06)	P. load
Name	10 Characters				always
Drawbar Effect	Leslie On	09	00	00, 01 (Off/On)	
	Leslie Fast	09	01	00, 01 (Slow/Fast)	
	Leslie Brake	09	06	00, 01 (Through / Brake)	ANI/OD
	Leslie Cabinet	09	07	00 - 07 (1 - 8)	
	Leslie Mod. Ctrl	09	08	00, 01 (Off/On)	
	Vibrato On	09	02	00, 01 (Off/On)	
	Vibrato Mode	09	03	00 - 05 (V1 - C3)	ANI/OD
	Vibrato Rate	09	04	00 - 04 (6.1 - 7.25Hz)	
	OD On	09	09	00, 01 (Off/On)	
	OD Preamp Type	09	0A	00 - 02 (Dual1, Dual2, Single)	
	OD Drive Level Master	09	05	00 - 3F (0 - 63)	ANI/OD
	OD Blend Master	09	0B	00 - 3F (0 - 63)	
	OD Exp. Ctrl	09	0C	00, 01 (Off/On)	
	OD Crossover Freq	09	0D	00 - 05 (125 - 800Hz)	
	OD HF Phase Invert	09	0E	00, 01 (Off/On)	
	EQ Bass Gain	0A	00	00 - 09 - 12 (-9 - 0 - +9 dB)	
	EQ Mid Gain	0A	01	00 - 09 - 12 (-9 - 0 - +9 dB)	EQ/REV
	EQ Treble Gain	0A	02	00 - 09 - 12 (-9 - 0 - +9 dB)	
	EQ Mid Freq	0A	03	00 - 0A (480 - 2.9kHz)	
	Reverb On	0A	04	00, 01 (Off/On)	
	Reberb Type	0A	05	00 - 09 00: Room 1 01: Room 2 02: Live House 03: Hall 1 04: Hall 2 05: Church 06: Plate 07: Delay 08: Pannning Delay 09: Reverb + Delay	EQ/REV
	Reverb Depth	0A	06	00 - 0F (0 - 15)	
	Reverb Time	0A	07	00 - 1F (0 - 31)	
	Reverb Delay Feedback	0A	08	00 - 1F (0 - 96%)	
	Reverb Delay Time	0A	09	00 - 3F (4.7 - 1000ms)	

Category	Combination Preset Parameters				
	Parameter	NRPN LSB (62)	MSB (63)	DATA MSB (06)	P. load
Internal Zone	Split On	07	00	00, 01 (Off/On)	
	Manual Bass On	07	01	00, 01 (Off/On)	
	L&U Key Range Low	07	02	24 - 5F	
	L&U Key Range High	07	03	25 - 60	INT
	Pedal Key Range High	07	04	24 - 60	
	Split Point	07	05	24 - 5F	
	Split Lower Octave	07	06	00, 01 (0, +1)	
External Zone	Channel	4p	00	00 - 10 (1 - 16 , Off)	
	Bank MSB	4p	01	00 - 7F	
	Bank LSB	4p	02	00 - 7F	
	Program Change	4p	03	00 - 7F	
	Octave Shift	4p	0A	3E - 40 - 42 (-2 - 0 - +2)	
	Volume	4p	04	00 - 7F	
	Pan	4p	05	00 - 40 - 7F (Left - Center - Right)	
	Vel. Curve	4p	06	00 - 04 (Off, Normal - Easy)	EXT
	Exp. Min	4p	08	00 - 3F (0 - 63)	
	Exp. Max	4p	09	40 - 7F (64 - 127)	
	Exp. CC#	4p	07	00 , 01 (7, 11)	
	Tx. Bend On	4p	0B	00, 01 (Off/On)	
	Tx. Modulation On	4p	0C	00, 01 (Off/On)	
	Tx. Damper Source	4p	0D	00 - 03 (Off, 1T, 1R, 2)	
	Key Range Low	4p	0E	24 - 5F	
	Key Range High	4p	0F	25 - 60	
				p: Zone Number *00 - 02 (Zone 1 - 3)*	

Category	Combination Preset Parameters				
	Parameter	NRPN		DATA	P. load
		LSB (62)	MSB (63)	MSB (06)	
Upper/ Lower Drawbar Voice	Voice Type	20	00	00 - 02 00: B-Type 01: Mellow 02: Brite	DRAWB
	Drawbar Click Attack	20	01	00 - 0F (0 - 15)	
	Drawbar Click Release	20	02	00 - 0F (0 - 15)	
	Drawbar Env. Attack	20	03	00 - 0F (0 - 15)	
	Drawbar Env. Release	20	04	00 - 0F (0 - 15)	
	Fold Back Low	20	05	00 - 0C (C1 - C2)	
	Fold Back High	20	06	2B - 30 (G4 - C5)	
	Bend Range Down	20	07	00 - 18 (0 - 24)	
	Bend Range Up	20	08	00 - 0C (0 - 12)	
	Bend Mode	20	0A	00 - 01 (Bend / Motor)	
	Bend Time	20	0B	00 - 31 (0.1 - 5.0s)	
	Bend Amplitude	20	0C	00 - 01 (Off/On)	
	Drawbar Click LPF	20	09	00 - 7F (0 - 127)	
Percussion Voice	Second On	08	00	00, 01 (Off/On)	PERCUS
	Third On	08	01	00, 01 (Off/On)	
	Decay Fast	08	02	00, 01 (Off/On)	
	Soft	08	03	00, 01 (Off/On)	
	Level Soft	08	04	00 - 0F (1 - 16)	
	Level Normal	08	05	00 - 0F (1 - 16)	
	Decay Fast	08	06	00 - 09 (1 - 9, C)	
	Decay Slow	08	07	00 - 09 (1 - 9, C)	
	Touch	08	08	00, 01 (Off/On)	
	Velocity	08	09	00, 01 (Off/On)	
	Key Track	08	0A	00, 01 (Off/On)	
	Drawbar 1' Cancel	08	0B	00, 01 (Off/On)	
	Drawbar Level	08	0C	00, 01 (0, -3dB)	
Upper Drawbars	16'				UK
	5 1/3'				
	8'			see Drawbar Data List for details	
	4'				
	2 2/3'				
	2'				
	1 3/5'				
	1 1/3'				
	1'				

Category	Lower Preset Parameters				
	Parameter	NRPN		DATA	P. load
		LSB (62)	MSB (63)	MSB (06)	
Lower Drawbars	16'				Link L/P
	5 1/3'				
	8'				
	4'			see Drawbar Data List for details	
	2 2/3'				
	2'				
	1 3/5'				
	1 1/3'				
	1'				
Pedal Drawbar Voice	Voice Type	22	00	00 - 02 00: Normal 01: Muted 02: Synth	Link L/P
	Drawbar Attack	22	01	00 - 04 00: Slow Attack 01: No Click 02: Soft Click 03: Normal Click 04: Max Click	
	Bend Range Down	22	02	00 - 18 (0 - 24)	
	Bend Range Up	22	03	00 - 0C (0 - 12)	
	Sustain On	22	04	00, 01 (Off/On)	
	Sustain Length	22	05	00 - 04 (1 - 5)	
	Pedal Key Mode	22	06	00, 01 (Mono/Poly)	
	Decay Length	22	07	00 - 05 (1 - 5, Cont.)	
	Velocity	22	08	00 - 04 (Off, 1 - 4)	
Pedal Drawbars	16'			see Drawbar Data List for details	Link L/P
	8'				

Leslie Parameters

Category	Combination Preset Parameters				
	Parameter	NRPN		DATA	Default
		LSB (62)	MSB (63)	MSB (06)	
Cabinet #1 - 8	Name			(10 Characters)	
	Slow Speed Horn	06	00	00 - 09(0, 24 - 48rpm)	05 (36rpm)
	Slow Speed Bass	06	01	00 - 09(0, 24 - 48rpm)	05 (36rpm)
	Fast Speed Horn	06	02	00 - 15(0, 375 - 435rpm)	07 (393rpm)
	Fast Speed Bass	06	03	00 - 15(0, 375 - 435rpm)	07 (393rpm)
	Rise Time Horn	06	04	00 - 18(0.2 - 5.0s)	0A (2.2s)
	Rise Time Bass	06	05	00 - 18(0.5 - 12.5s)	0D (7.0s)
	Fall Time Horn	06	06	00 - 18(0.2 - 5.0s)	04 (1.0s)
	Fall Time Bass	06	07	00 - 18(0.5 - 12.5s)	0F (8.0s)
	Brake Time Horn	06	08	00 - 18(0.2 - 5.0s)	05 (1.2s)
	Brake Time Bass	06	09	00 - 18(0.5 - 12.5s)	13 (10s)
	Volume Horn	06	0A	00 - 0C(-12 - 0dB)	0C (0dB)
	Volume Bass	06	0B	00 - 0C(-12 - 0dB)	0C (0dB)
	Mic. Angle	06	0C	00 - 06(0 - 180deg)	04 (120deg)
	Mic. Distance	06	0D	00 - 08(0.3 - 2.7m)	01 (0.6m)
	Horn Character	06	0E	00 - 02(Flat, Mid, Deep)	00 (Flat)

System Parameters

Category	System Parameters		
	Parameter	Data Range	Default
MIDI	MIDI In Port	Lower/Pedal , In1/In2	In1/In2
	Local	Off / On	On
	TRx. NRPN	Off / On	On
	TRx. Prog. Change	Off / On	On
	TRx. Drawbar Regi.	Off / On	On
	TRx. Wheel Control	Off / On	On
	Rx. Dump	Off / On	On
	TRx. Channel Upper	1 - 16, Off	1
	TRx. Channel Lower	1 - 16, Off	2
	TRx. Channel Pedal	1 - 16, Off	3
Display	To Shortcut	0, 1, 2s, No	1s
	Time Out	4, 8, 16, No	No
Ext. Leslie	Channel	1, 2or3	1
Noise Gate	Return	Threshold1, Threshold2, Open	Threshold1

Program Change	1	2	3	4	5	6	7	8	9	10	11	12
Bank Select MSB / Bank	Preset Key											
	C	C#	D	D#	E	F	F#	G	G#	A	A#	B
0 / C												
1 / C#												
2 / D												
3 / D#												
4 / E												
5 / F												
6 / F#												
7 / G												
8 / G#												
9 / A												
10 / A#												
11 / B												

Adjust B

ex: Change to Bank E - Key C# via MIDI...   Bx 00 04 Cx 01 (x=Upper Channel)

Specifications

Sound Generator
2 x VASE III as
Digital Tone-wheels

Keyboard
73 (61 + 12 Preset keys)
Water Fall with Velocity

Harmonic Drawbars
Upper
9 Pitches, B-type/Mellow/Brite
Lower
9 Pitches
Pedal
2 Pitches, Muted/Normal/Synth

Percussion
Tabs
Second On, Third On,
Fast Decay, Soft
Adjustable
Touch, Velocity,
Decay (Fast, Slow)
Level (Soft, Normal)

Tuning
Master
430 - 450 1Hz Steps
Transpose
-6 - 0 - +6 semitones

Effects
Internal Leslie
On, Fast, Brake
Digital, 2 Rotors
Vibrato and Chorus
V1, V2, V3, C1, C2, C3
Upper&Lower On/Off
Speed: 5(6.10 - 7.25Hz)
Pre-amp
Preamp On, Overdrive
Vacuum tube amplifier
Equalizer
3 Bands
Reverb
10 Programs
Sustain
5 Lengths (Pedal)

Internal Zone
Tabs
Split
Manual Bass
Adjustable
Map Low, High
Split Point
Lower Octave
Pedal Top key

Combination Presets
12 banks x 11 Presets
+ Adjust B
Switchable: Link/Independent

Controllers
Switches
Power On / Off
Rotary Controllers
Master Volume
Tube Overdrive
Tone
Wheels
Pitch Bend
Modulation

Display
20-characters, 2 lines
with 9 control switches
and Rotary encoder

Storage
CompactFlash card slot

MIDI
Templates: 3 modes
Zoned 3 parts
and Keyboard Ch.

Connections
AC Inlet
MIDI In1, In2, Out
Exp. Pedal 1, 2,
Foot Switch 1,
Effect Send, Return,
Line Out L/Mono, R,
Headphone,
11-pin Leslie

Dimension
119(W) x 40 (D) x 12(H)cm

Weight
19.5kg

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:	In Europe contact:	All other countries contact:
HAMMOND SUZUKI USA, Inc. 733 Annoreno Dr. Addison, IL 60101 UNITED STATES	HAMMOND SUZUKI EUROPE B.V. IR. D.S. Tuynmanweg 4A 4131 PN Vianen THE NETHERLANDS	HAMMOND SUZUKI Ltd. 25-11, Ryoke 2 Chome Hamamatsu 430-0852 (Shizuoka) JAPAN
Website: www.hammondorganco.com	E-mail: Info@hammondsuzuki.com Website: www.hammondsuzuki.com	Website: 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.

Manufacturer:
SUZUKI MUSICAL INSTRUMENT MFG. CO., Ltd.
25-12, Ryoke 2 Chome
Hamamatsu 430-0852 (Shizuoka)
JAPAN