HAMMOND

M-solo

49key Single Drawbar Keyboard

Owner's Manual

English

Thank you for purchasing this Hammond instrument.
Your Hammond M-solo 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 other sounds and features, such as transistor Combo Organs, String and Vocal Ensembles and a Polyphonic Synthesizer, to allow you great flexibility in how you want to play. This Manual is designed to explain the operating features of your Hammond M-solo as simply as possible.
To take full advantage of your M-solo and use it safely, be sure to read this Manual carefully.

- For safety purposes, please make sure you read "SAFETY INSTRUCTIONS" and "PRECAUTIONS FOR USE" before using this unit.

INTRODUCTION

Features

The Hammond M-solo is a brand-new compact Drawbar Keyboard. It has been designed for extreme ease of use - there is no display or a large number of Parameters. Therefore, you can play the instrument using your favorite sounds by controlling the Drawbars and top panel controls in real time.
The M-solo contains six (6) Instrument Types, all of which can be controlled with the Drawbars and controls on the top panel:

- **B-3 (Tone-wheel organ)**
- **Vx (British combo organ)**
- **Farf (Italian combo organ)**
- **Ace (Japanese combo organ)**
- **Ens (string/vocal ensemble)**
- **Syn (polyphonic synthesizer)**

Origin of the name “M-solo”
From 1949 through 1968, Hammond manufactured a series of organs known as the “M” series (M, M-2, M-3 and M-100). The Model M was the first spinet-type organ (2 44-note manuals and 12 pedals) to be made. Some players referred to the M--series as a “Baby-B” because the tone was very similar to that produced by a B-3.
The Hammond “M-solo,” with a single 49-note keyboard, is a successor to the M-series organs.

ABOUT THIS MANUAL

The contents of this HTML manual and the attached instruction manual may differ. In that case, the HTML manual is the latest.

M-solo Product Information Page:
https://www.suzuki-music.co.jp/support/hammond/

NOTE:

- The illustrations in this Manual are intended as examples only. The actual settings of the controls may differ from the illustration.

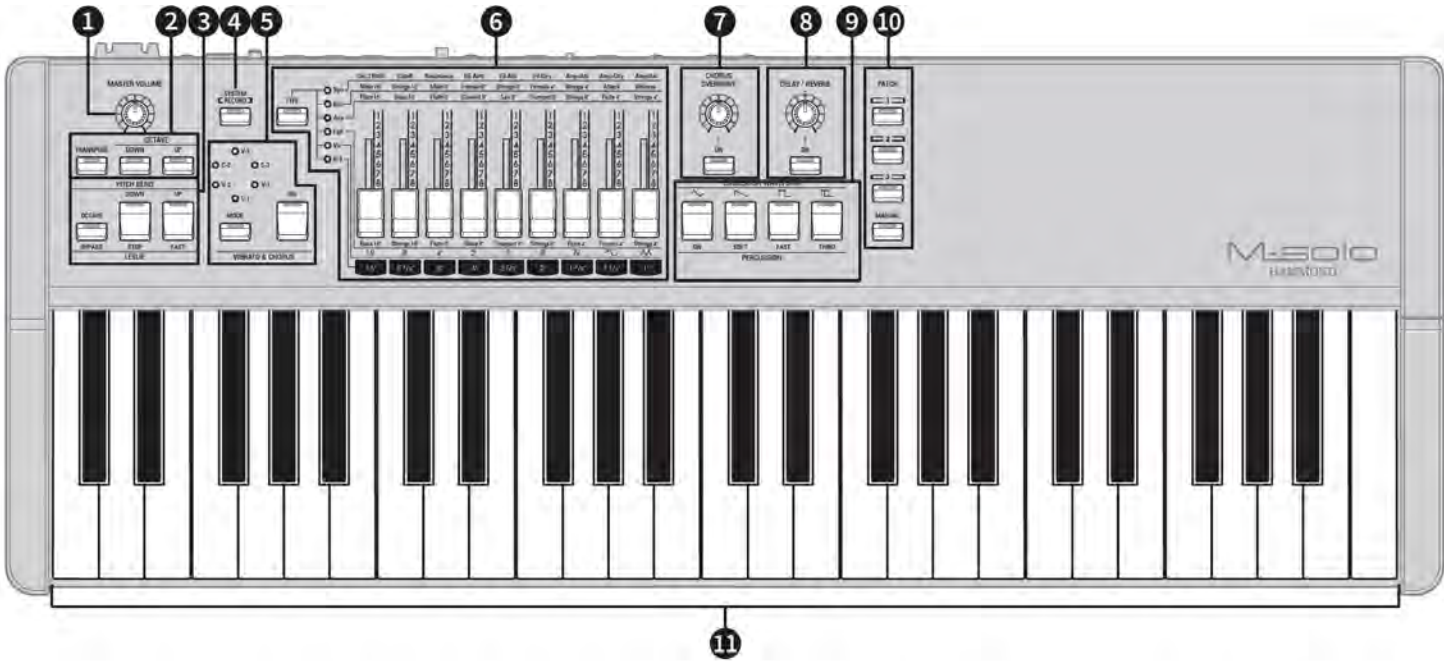
Accessories

Check that the following accessories are supplied with the product.

- ☐ **AC adaptor (AD3-1230-2P) x1**
- ☐ **Power cable x1**
- ☐ **Owner's manual x1**

Names and functions

Top panel



Tips

- The functions unique to a particular Instrument Type will be indicated by an icon (such B-3) showing which Instrument Types those functions are assigned to.

❶ [MASTER VOLUME] knob

Use this knob to control the volume of the entire instrument (⇒).

❷ [OCTAVE UP/DOWN] buttons

Use these buttons to transpose the instrument “UP” or “DOWN” by one (1) octave (⇒).

[TRANSPOSE] button

Press and Hold this button and press the [OCTAVE UP/DOWN] buttons to transpose the instrument up or down by half-steps (semitones) (⇒).

❸ [LESLIE] buttons B-3 Vx Farf Ace

Use these buttons to control the Leslie effect (⇒).

[BYPASS] button: Use this button to Bypass or disable the Leslie effect.

[STOP] button: Use this button to switch between SLOW and STOP Modes when the FAST button is "OFF" (LED not lit).

[FAST] button: Use this button to switch the Leslie effect to FAST Mode.

[PITCH BEND] buttons Ens Syn

Use these buttons to control pitch (⇒).

[UP/DOWN] buttons: Use these buttons to raise or lower the pitch by two (2) half steps or one whole step.

[OCTAVE] button: Press and Hold this button and press the OCTAVE [UP] or [DOWN] button to raise or lower the pitch one (1) octave.

❹ [RECORD] button

Press and Hold this button and press the [PATCH] button to Save a registration to one of the three [PATCH] buttons (⇒).

[SYSTEM] button

Use this button to access SYSTEM Mode (⇒).

❺ [VIBRATO & CHORUS] buttons

Use this button to add Vibrato/Chorus to the sound (⇒, ⇒).

[ON] button: Use this button to turn the Vibrato effect "ON" or "OFF."

[MODE] button: Use this button to select the amount of Vibrato or Chorus (V-1~V-3/C-1~C-3).

Tips

- The function of the [VIBRATO & CHORUS] buttons differs depending on the selected Instrument Type.

❻ [TYPE] button

Use this button to select the Instrument Type (⇒). For details, refer to the following pages.

B-3: B-3 (Tone-wheel organ)

Vx: Vx (British combo organ)

Farf: Farf (Italian combo organ)

Ace: Ace (Japanese combo organ)

Ens: Ens (string/vocal ensemble)

Syn: Syn (polyphonic synthesizer)

Drawbars

Use the Drawbars to adjust the tones or amount of harmonic content of the **B-3**, **Vx**, **Farf** and **Ace** Instrument Types, the tones of the **Ens** Instrument Type or the parameters of the **Syn** Instrument Type. For details, refer to the description of each Instrument Type.

❼ [CHORUS/OVERDRIVE] knob

Use this knob to adjust the level of the Chorus/Overdrive effect (⇒, ⇒).

[ON] button

Use this button to turn the Chorus/Overdrive effects "ON" and "OFF."

❽ [DELAY/REVERB] knob

Use this knob to adjust the level of the Delay/Reverb effect (⇒, ⇒).

[ON] button

Use this button to turn the Delay/Reverb effects "ON" or "OFF."

❾ [PERCUSSION] buttons B-3

Use these buttons to add and control the Percussion tone. (⇒).

[ON] button: Turns Percussion "ON" and "OFF."

[SOFT] button: Selects the volume of the Percussion tone.

[FAST] button: Selects the decay rate of the Percussion tone.

[THIRD] button: Selects the harmonic (second/third) of the Percussion tone.

[OSCILLATOR WAVEFORM] buttons Syn

Use these buttons to select an oscillator waveform (⇒).

 : Triangular wave, smooth odd-harmonic

 : Sawtooth wave, even- and odd-harmonic

 : Square wave, heavy odd-harmonic

 : Pulse wave, variable width pulse

❿ [PATCH 1~3] buttons

Use these buttons to select preset registrations (Patches) (⇒).

[MANUAL] button

Use this button to cancel the current [PATCH] button selection in order to play using only the top panel settings (⇒).

Press this button when you want to create and Save a new Patch, or to make adjustments to the sound manually while playing.

⓫ Keyboard

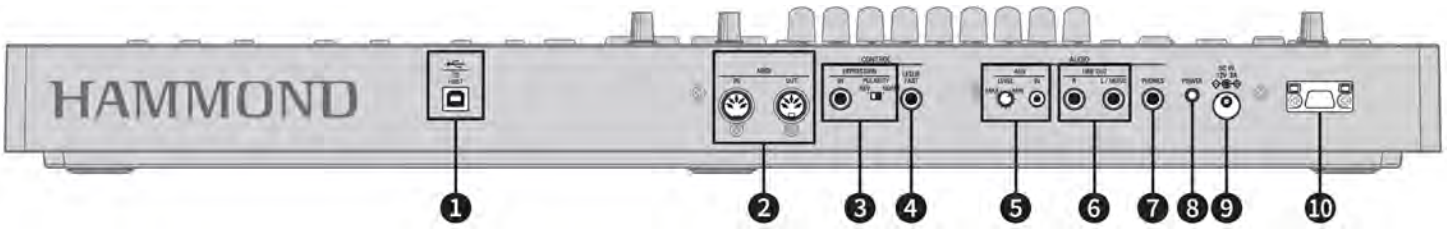
49-note lightweight keyboard (with velocity).

Tips

- The keyboard of the M-solo supports Note Velocity: however, the internal sound generators are not affected. The volume of notes played on the keyboard is controlled either by the [MASTER VOLUME] knob or a connected Expression Pedal.

  On the M-solo. the Velocity feature controls the Virtual Multi-Contact (VMC) of the **B-3** Instrument Type, as well as controlling the volume of note data transmitted via MIDI to a device which supports Note Velocity.

Rear panel



❶ USB TO HOST port

Use this port to Send and Receive MIDI data, Save and Load Setup files and to update the M-solo's software (⇒).

❷ MIDI IN/OUT ports

Use these ports to transmit or receive MIDI data to or from a connected MIDI device (⇒).

❸ EXPRESSION IN jack

Use this jack to connect an Expression Pedal to control volume while playing (⇒).

[EXPRESSION POLARITY] switch

Use this switch to select the polarity of a connected Expression Pedal (⇒).

❹ LESLIE FAST jack

Use this jack to connect a Foot Switch to control Leslie speeds (⇒).

❺ [AUX LEVEL] knob

Use this knob to adjust the volume of the sound coming in from the AUX IN jack (⇒).

AUX IN jack

Use this jack to connect an external audio source. When connected, the sound will be mixed with the internal keyboard sounds and sent out to the LINE OUT jacks (⇒).

❻ LINE OUT R/L(MONO) jacks

Use these jacks to connect external audio equipment. If the connected mixer or monitor speaker is stereophonic, connect both the L and R jacks. If it is monaural, connect only the L/MONO jack (⇒).

❼ PHONES jack

Use this jack to connect a set of stereo headphones (⇒).

❽ [POWER] button

Use this button to turn the power to the M-solo “ON” and “OFF” (⇒).

❾ DC IN jack

Connect the AC Adapter (included) to this receptacle (⇒).

❿ AC Cord Strain Relief

Use to prevent the AC adapter from disconnecting from the instrument (⇒).

MAKING THE CONNECTIONS

Connections

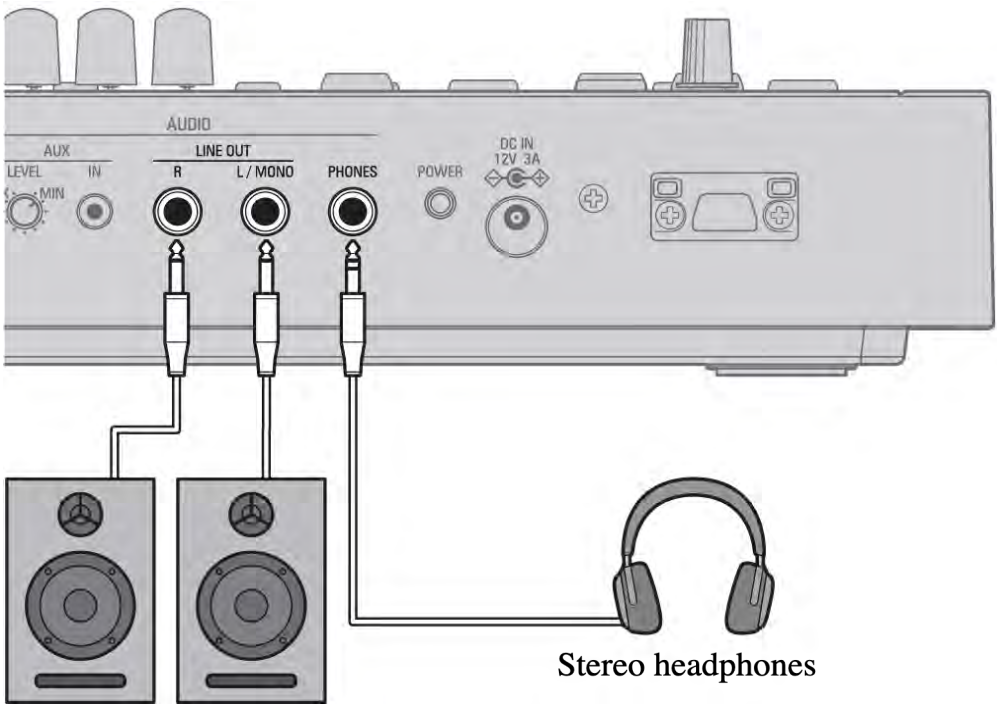
Connect audio cables and accessories as shown below.
The M-solo is not self-contained - an external amplifier/speaker system or headphones are required in order to hear the sound.

NOTE:

- Be sure that both the instrument and amplifier are “OFF” before connecting amplifiers or headphones.

Connecting audio devices

Audio output



LINE OUT R/L(MONO) jacks

Connect an audio device (such as powered speakers or a mixer) using the LINE OUT jacks.
Use Monaural cables (standard 1/4-inch plug) to make the connections.

NOTE:

- If your amplifier has only a single (1) 1/4" phono plug audio input, connect the L/MONO jack to the 1/4" audio input connector of your amplifier.

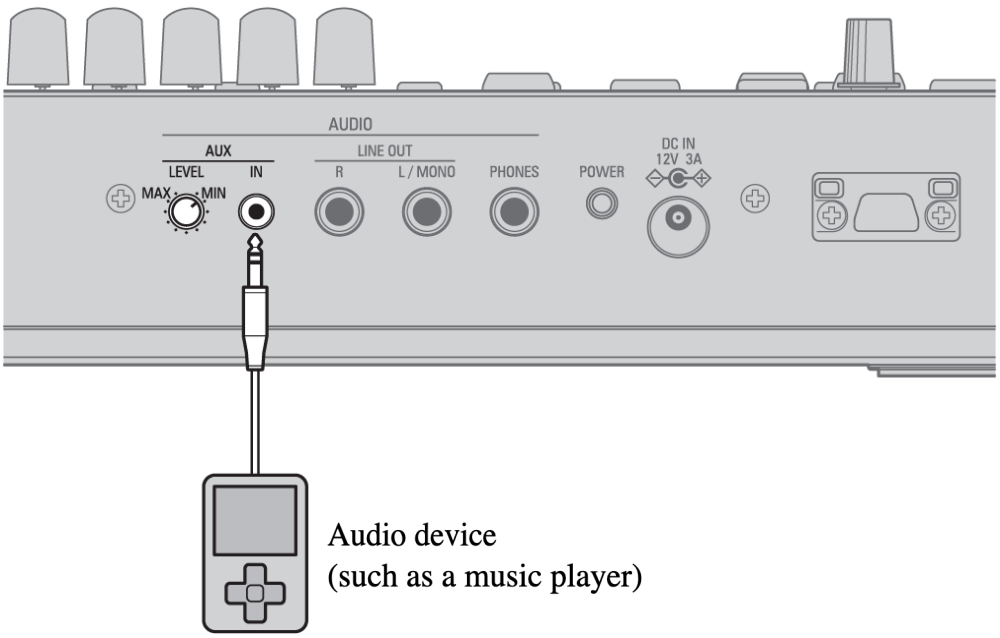
PHONES jack

Connect a set of stereo headphones to the PHONES jack (1/4" connection).

Tips

- Connecting Headphones does NOT mute the LINE OUT outputs. If you wish the sound to go through the Headphones only, make sure the LINE OUT jacks are disconnected.

Audio input



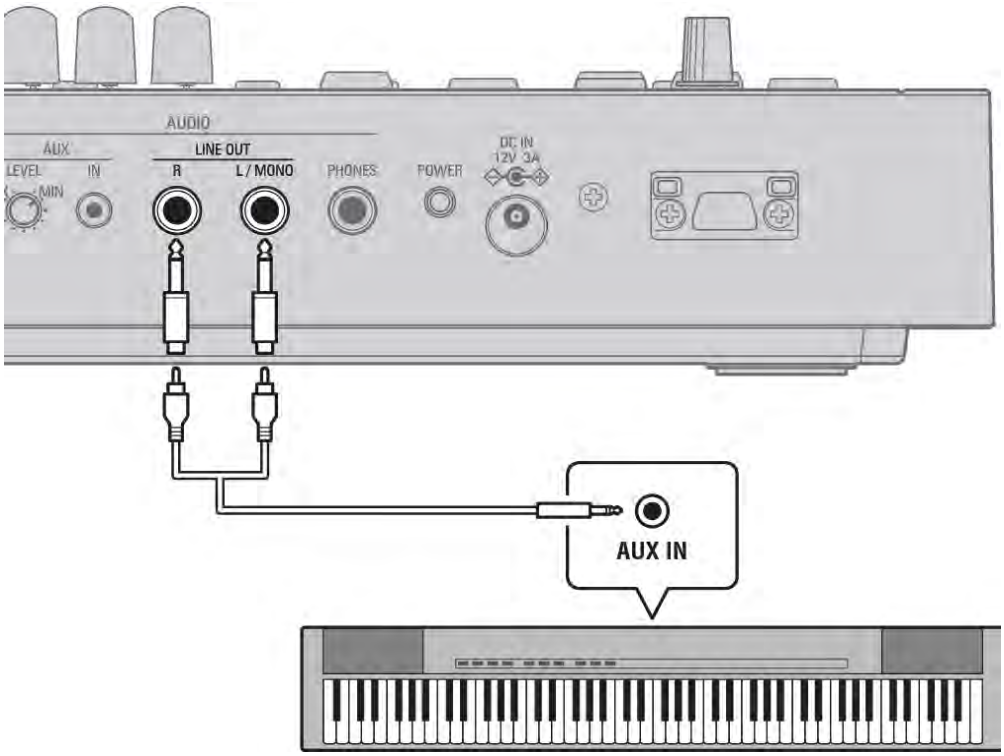
AUX IN jack

Use this jack to connect an external audio device (music player, phone, etc.) via a stereo mini-plug (1/8") to hear the audio from the device through the amplifier, speakers or headphones connected to the M-solo.

Tips

- Use the AUX LEVEL knob to control the AUX IN level. (The [MASTER VOLUME] knob does not control the AUX IN level.)
- The audio from the AUX IN connection is combined with sounds played on the M-solo and all of the sounds will then be heard through the amplifier, speakers or headphones connected to the M-solo via the [LINE OUT] and/or [PHONES] jacks.

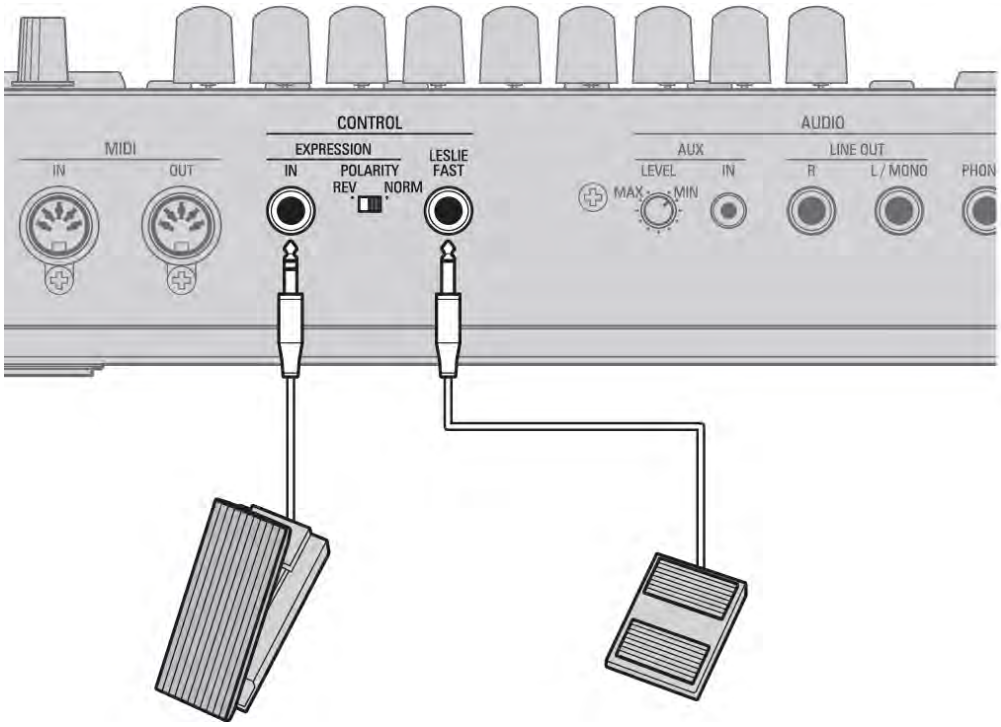
Using the M-solo in conjunction with another instrument



Electronic piano

You can play the M-solo through the speakers of another instrument such as an electronic piano by connecting the LINE OUT jacks of the M-solo to an AUX IN jack (if provided) on the other instrument (see the illustration above).

Connecting controllers



Expression Pedal Foot Switch

EXPRESSION IN jack

Use this jack to connect an Expression Pedal to the EXPRESSION IN jack. (Polarity: NORM)

Recommended Expression Pedals:

HAMMOND ... EXP-50J, EXP-20, V-20H, V-20R

Tips

- Use the [EXPRESSION POLARITY] switch to ensure correct operation of a connected Expression Pedal.
- For the latest information on compatible models, check the "M-solo Product Information Page:".

LESLIE FAST jack

Use this jack to connect a Foot Switch to control Leslie Speeds.

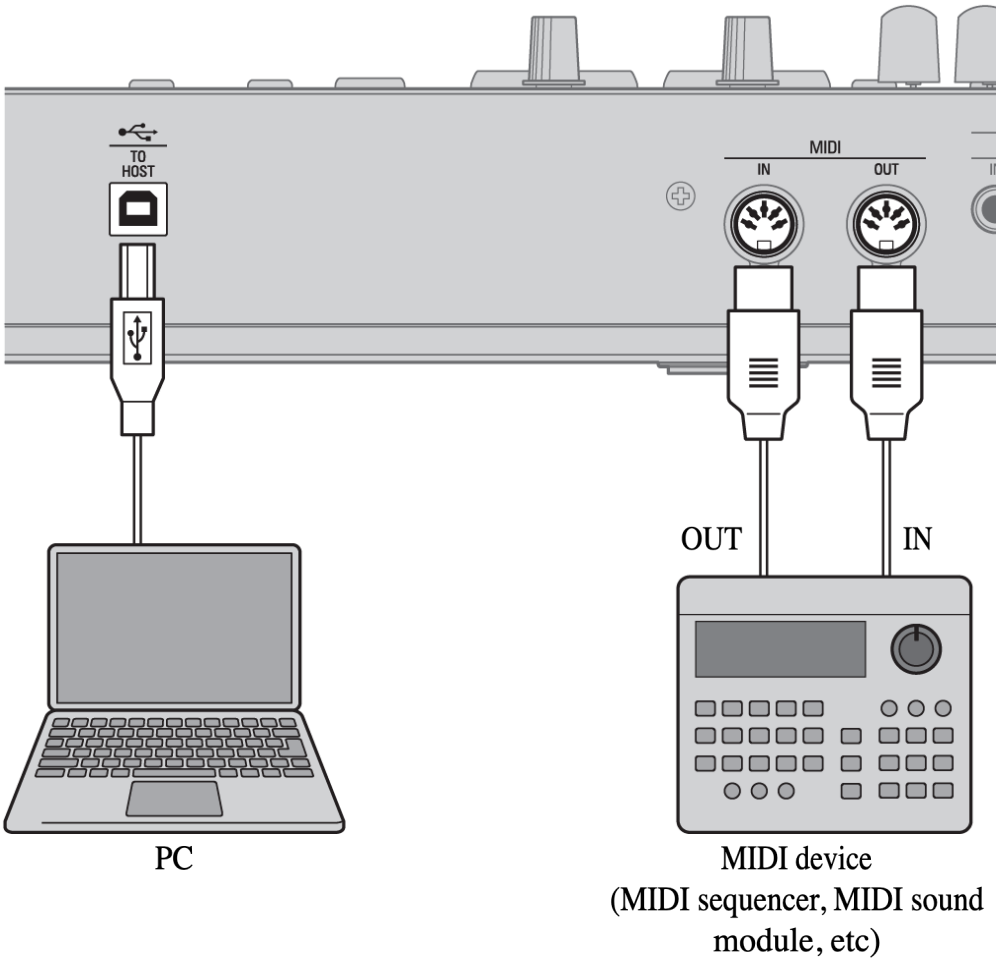
Recommended Foot Switches (non-latching, normally open):

HAMMOND ... FS-9H, VFP1

Tips

- A Foot Switch connected to the LESLIE FAST jack will duplicate the function of the [FAST button] on the top panel (⇒).
- For the latest information on compatible models, check the "M-solo Product Information Page:".

Connecting a MIDI device or PC



MIDI IN/OUT ports

Use these ports to transmit or receive MIDI data to or from a connected MIDI device. Use MIDI cables (5-pin DIN) to make the connection(s).

NOTE:

- The M-solo has a single sound generator; therefore the keyboard cannot be “expanded” to include an additional keyboard or a pedal clavier.

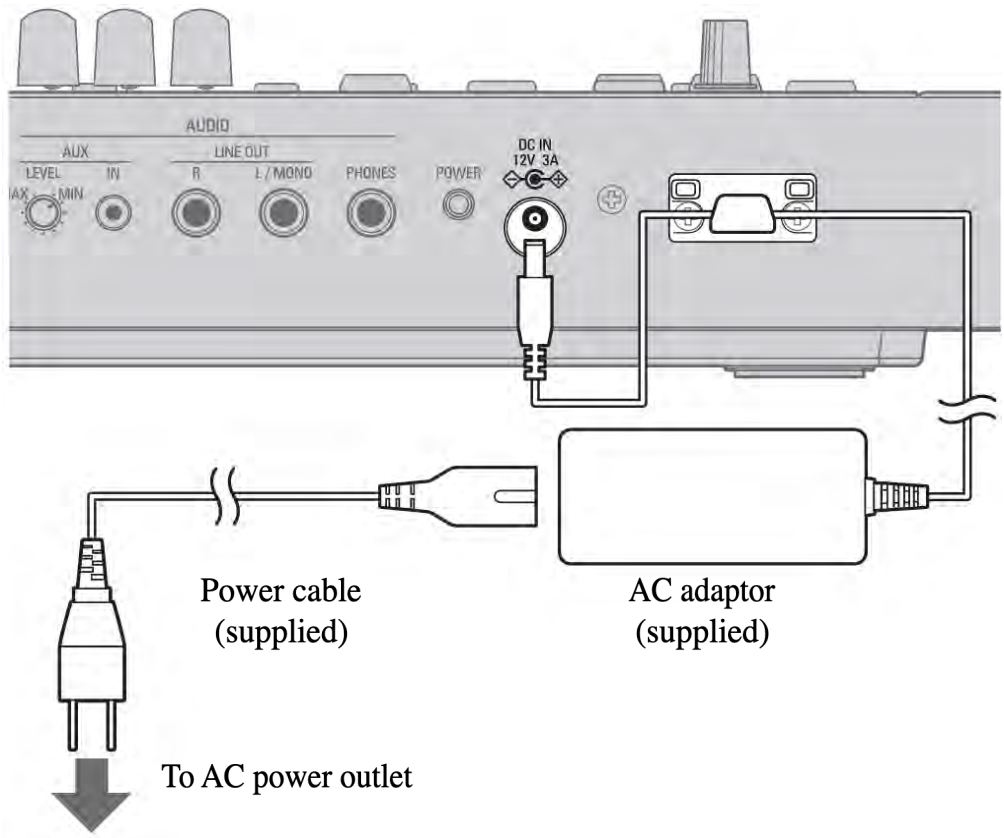
USB TO HOST port

Use this port to Send and Receive MIDI data, Save and Load Setup files and to update the M-solo’s software.

Tips

- The USB TO HOST port is normally configured for USB MIDI. To update system software or Load/Save/Delete backups, set the USB TO HOST port to MASS STORAGE Mode (⇒).

Connecting the power cable

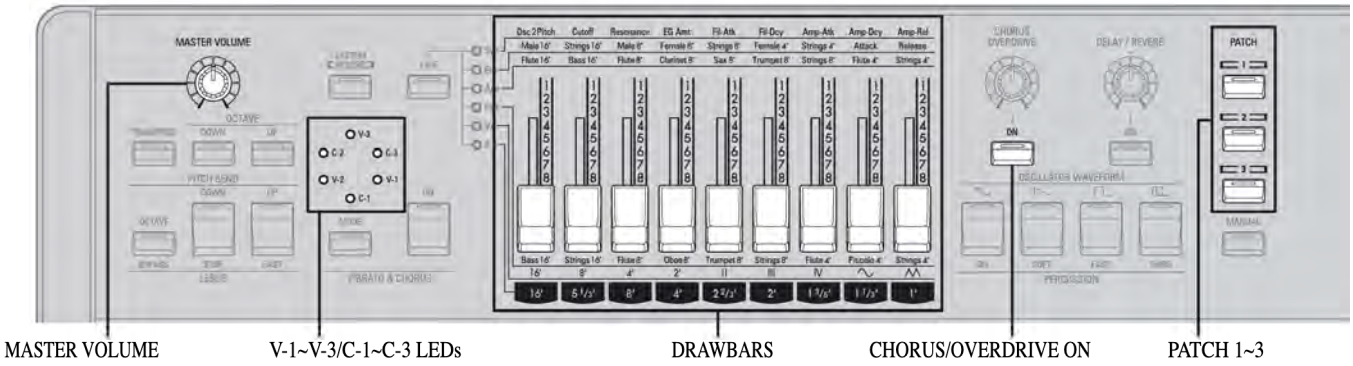


Connect the AC adapter to the DC IN jack on the M-solo, then connect the AC Power Cord to the Adapter and to an AC power outlet.

NOTE:

- Use ONLY the AC adapter included with the M-solo to connect the instrument to AC power. Also, do not attempt to use the M-solo AC adapter with another instrument.

Turning the power “ON” and “OFF”



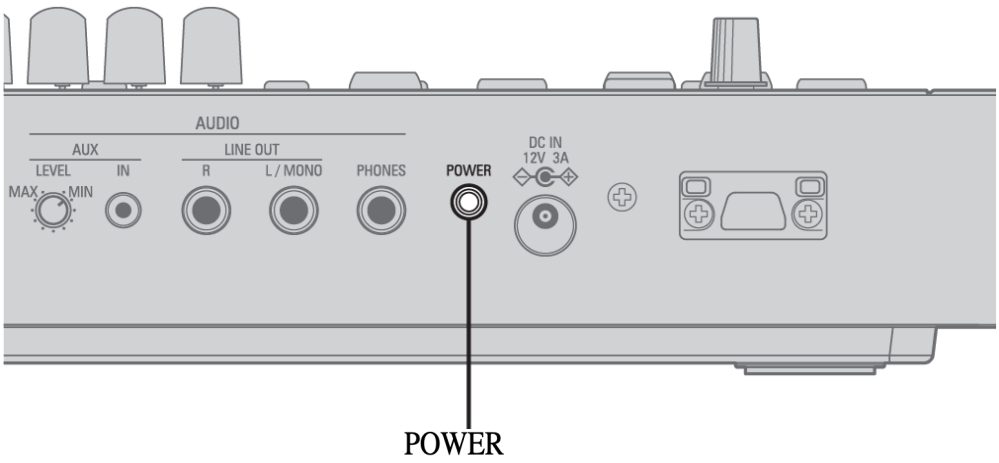
Turning the power “ON”

NOTE:

- To turn the power to the M-solo “ON,” follow the procedure below to prevent malfunction or damage.
- Make sure you have connected all peripherals (Expression Pedal, Foot Switch(es), etc.) properly.

1 Rotate the [MASTER VOLUME] knob counterclockwise to set the volume at minimum.

2 Press and Hold the [POWER] button on the rear panel.



The M-solo will turn “ON.” The V-1~V-3/C-1~C-3 LEDs will light in succession, then one of them will turn “ON.”

NOTE:

- Do not engage a connected Foot Switch while the instrument is powering “ON.” The polarity of the Foot Switch is automatically detected at startup.

3 **Turn “ON” external devices (if connected).**

4 **While playing on the keyboard, gradually rotate the [MASTER VOLUME] knob clockwise to adjust the volume.**

5 **Adjust the volume of the external device (such as a powered speaker).**

NOTE:

- When adjusting the volume, press any [PATCH] button or pull the Drawbars to enable sound.

Turning the power “OFF”

1 **Set the volume of an external device (such as a powered speaker) at minimum.**

2 **Turn “OFF” external devices.**

3 **Press and Hold the [POWER] button on the rear panel for two seconds.**

The LEDs on the top panel will turn “OFF” and the power will then turn “OFF.”

Tips

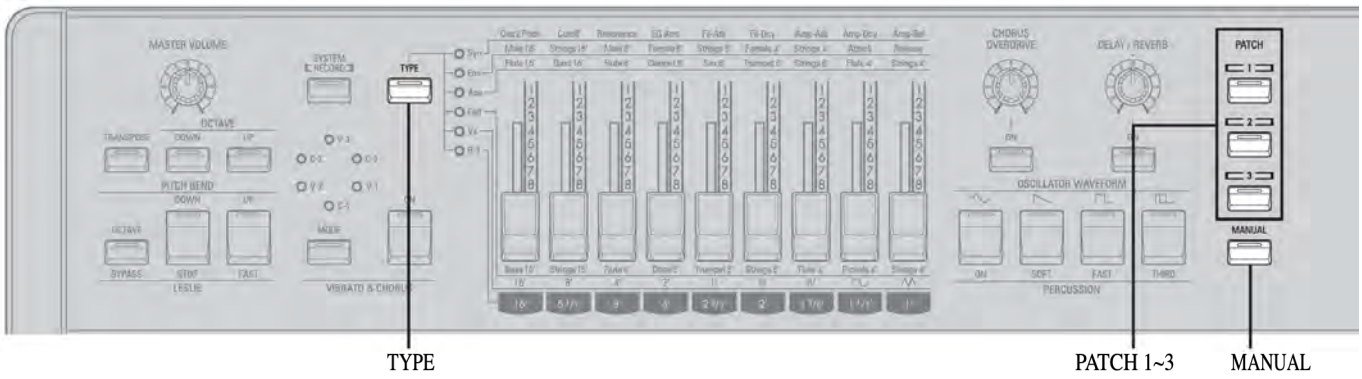
- The M-solo has an “AUTO POWER OFF” feature. If no keys, buttons or knobs are used for 30 minutes, the M-solo will automatically turn “OFF.”

  1. Press and Hold the [CHORUS/OVERDRIVE ON] button.
  2. Press the [POWER] button until the [CHORUS/OVERDRIVE ON] button blinks.

  The setting of the AUTO POWER OFF feature is available in Setting Mode (⇒).

PLAYING THE M-SOLO

Creating sounds



Playing using the Patches

The M-solo includes three (3) preset registrations or **Patches** to get you started making music right away.
To start with, try playing the instrument using the Patches.

1 Press any of the [PATCH] buttons.

Use these buttons to select any of the three (3) preset Patches.

Tips

- The [PATCH] buttons are programmed at the factory for the following sounds:

  [PATCH 1] button: Classic B-3 Jazz (⇒)
  [PATCH 2] button: Octave Strings (⇒)
  [PATCH 3] button: Synthesizer Resonance & Sweep (⇒)

2 Play the keyboard.

You will hear the registration of the Patch you selected.

Selecting an Instrument Type

The M-solo has six (6) Instrument Types, allowing you to play a wide variety of music.

1 If any of the [PATCH] buttons is selected, press the [MANUAL] button.

The [MANUAL] button is automatically selected after the M-solo is turned on.

2 Press the [TYPE] button repeatedly to select an Instrument Type.

For details about each Instrument Type, refer to the following pages:

B-3: B-3 (Tone-wheel organ)

Vx: Vx (British combo organ)

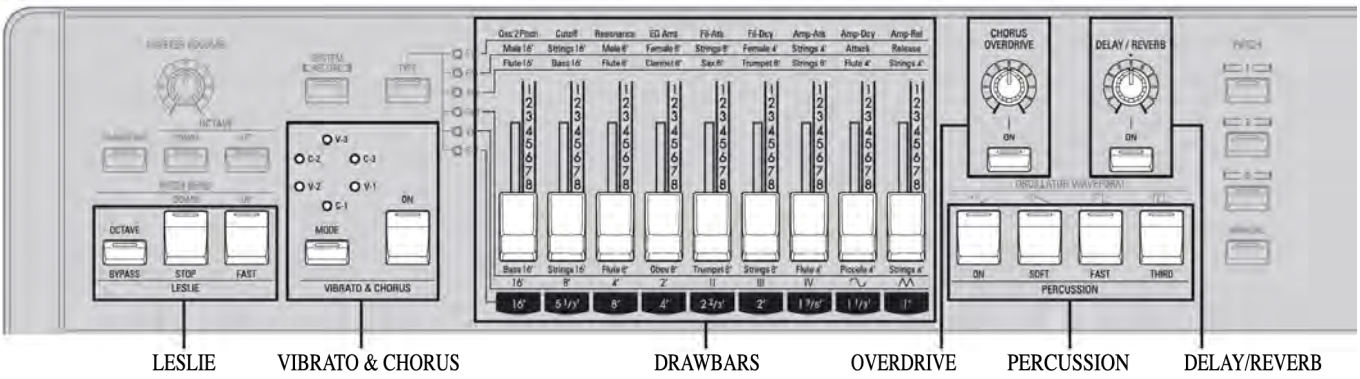
Farf: Farf (Italian combo organ)

Ace: Ace (Japanese combo organ)

Ens: Ens (string/vocal ensemble)

Syn: Syn (polyphonic synthesizer)

B-3 (Tone-wheel organ)



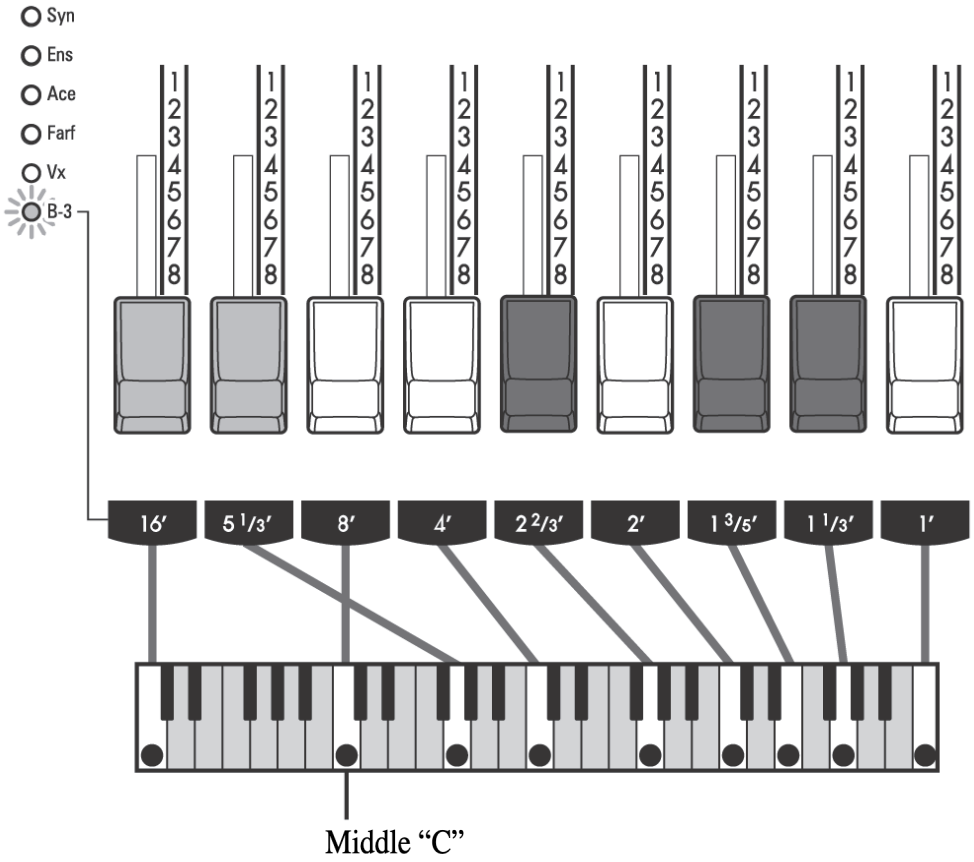
This Instrument Type replicates the classic B-3 tone-wheel organ which has been a staple of many genres of music, including Jazz, Rock, Rhythm & Blues, etc.
Each Drawbar controls an individual harmonic.

Tips

- This Instrument Type incorporates unique features of a tone-wheel generator, such as Leakage Tone and Virtual Multi-Contacts. For more information, consult the "Glossary of terms".

Creating a favorite sound (registration)

Moving a Drawbar forward (toward you) will increase the volume of that Drawbar. Pushing the Drawbar back in (away from you) decreases the volume of that Drawbar.
The illustration below shows the function of each Drawbar for the **B-3** Instrument Type.



Each Drawbar has a footage mark associated with it. For example, the first white Drawbar is marked “8′.” This is pipe organ terminology indicating that the pipe used to produce the lowest note on the keyboard on a pipe organ is actually eight feet (8′) long. The numbers from “1” to “8” on each Drawbar represent degrees of loudness - number 1 being the softest, and number 8 being the loudest.

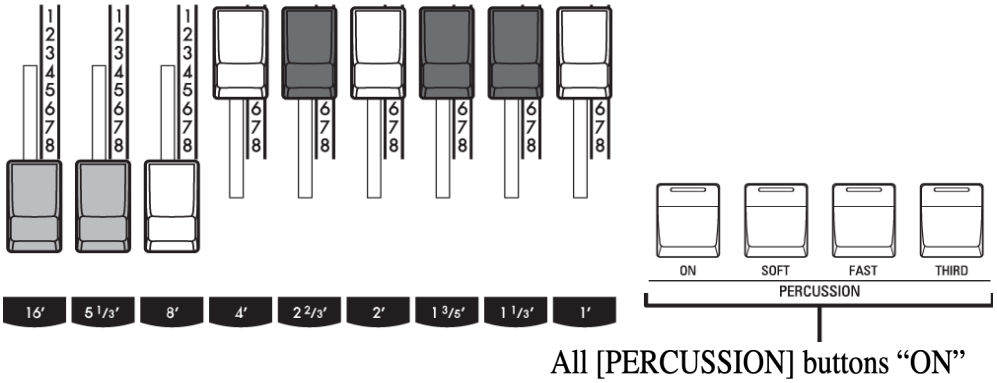
Drawbar	Function
White (8′, 4′, 2′, 1′)	The 8′ Drawbar generates the fundamental tone. The 4′, 2′ and 1′ Drawbars generate B-3 (Tone-wheel organ) harmonics, going up one octave from left to right.
Black (2 $^{2}/_{3}$′, 1 $^{3}/_{5}$′, 1 $^{1}/_{3}$′)	The black Drawbars generate odd number harmonics, having fifth or third relation to the fundamental tone. These harmonics are very important to create harmonically complex sounds such as strings, woodwinds or brass tones.
Brown (16′, 5 $^{1}/_{3}$′)	The 16′ Drawbar generates the tone one octave lower than 8′. The 5 $^{1}/_{3}$′ Drawbar generates the third harmonic of the 16′ fundamental. These harmonics adds depth and richness to the sound. Normally, the tones are built on the 8′ fundamental. If you want to add depth to the tone or to expand the keyboard range by one octave, build the tones on the 16′ fundamental.

Tips

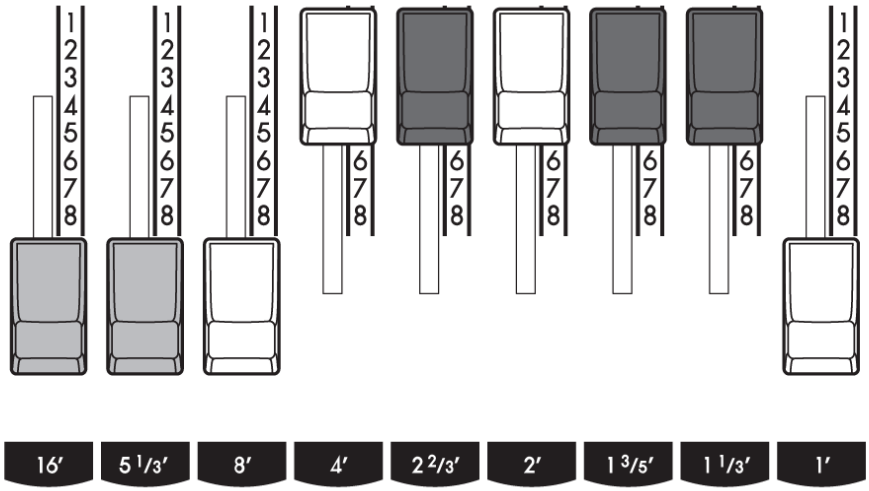
- Using the Drawbars to the right of the 8′ Drawbar will result in brighter tones, while using the Drawbars to the left of the 8′ Drawbar (brown Drawbars) results in lower-pitched, “darker” sounds.

Examples of Drawbar registration

Jazz



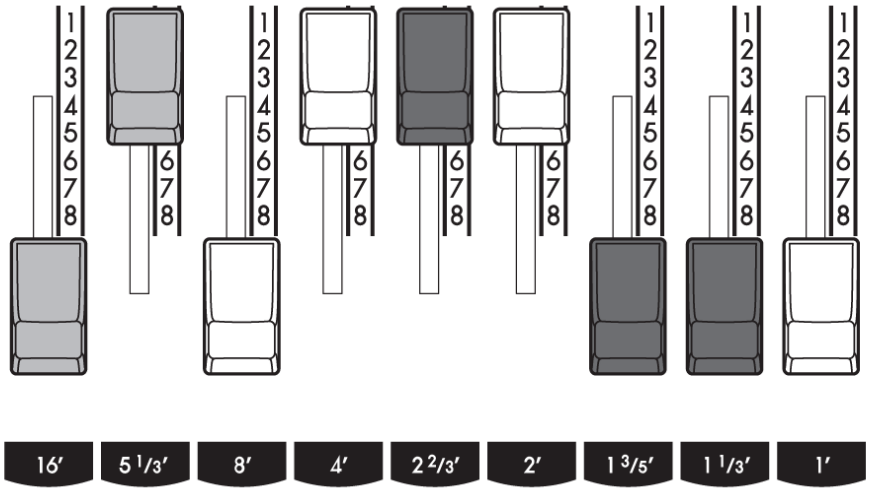
Blues



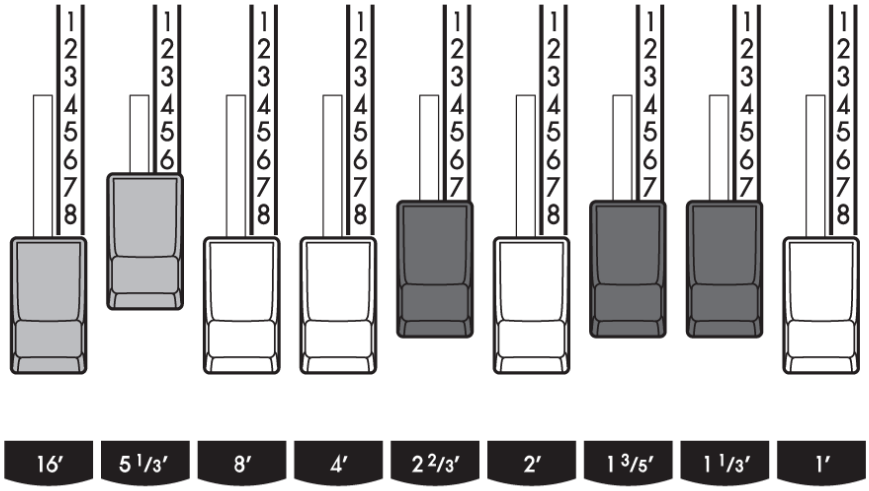
Tips

- On a vintage Hammond Organ, when Percussion is used, the sound of the 1′ Drawbar is canceled. Some jazz organists have taken advantage of this idiosyncrasy by keeping the 1′ Drawbar pulled out and turning Percussion “ON” and “OFF” while playing. The result is an instantaneous registration change with a single motion. The M-solo replicates this feature.

Groovy & Funky



Max Power



Adding Percussion

Using Percussion along with a Drawbar registration will add an extra attack to notes played.

PERCUSSION	Function	LED
[ON] button	Turns the Percussion tone “ON” or “OFF.”	ON: enable OFF: disable
[SOFT] button	Selects the volume of the Percussion tone.	ON: soft OFF: normal
[FAST] button	Selects the rate at which the Percussion tone dies away.	ON: fast OFF: normal
[THIRD] button	Selects the harmonic of the Percussion tone.	ON: third OFF: second

Applying effects

Leslie

This will add the Leslie effect (Chorale or Tremolo effect created by a rotating baffle) to the sound. The [FAST] button will blink according to the selected Leslie Mode.

LESLIE	Function	LED
[BYPASS] button	Bypasses (disables)/enables the Leslie effect.	ON: bypass (disable) OFF: enable
[STOP] button	Switches between STOP and SLOW Modes of the Leslie effect when FAST Mode is disabled.	ON: stop OFF: slow
[FAST] button	Turns Leslie FAST Mode “ON” and “OFF.”	Fast blink: enable Slow blink: disable

Tips

- You can also use a Foot Switch to change the Leslie Mode to FAST (⇒).

Vibrato & Chorus

This will add Vibrato (periodic fluctuation of pitch) or Chorus (periodic effect combining Vibrato and non-Vibrato tones) to the sound.

VIBRATO & CHORUS	Function	LED
[ON] button	Turns Vibrato/Chorus “ON” or “OFF.”	ON: enable OFF: disable
[MODE] button	Selects the effect and its level. A larger value results in a deeper effect.	V-1~V-3: Vibrato C-1~C-3: Chorus

NOTE:

- **Chorus** is not available for the **Vx**, **Farf**, **Ace** and **Ens** Instrument Types. Six (6) degrees of Vibrato are available in the order listed below.

  V-1→C-1→V-2→C-2→V-3→C-3

Overdrive

This will add Overdrive (sound produced by amplifying a signal until the sound is distorted) to the sound.

OVERDRIVE	Function	LED
[ON] button	Turns the Overdrive effect “ON” or “OFF.”	ON: enable OFF: disable
[OVERDRIVE] knob	Adjusts the level of the Overdrive effect.	

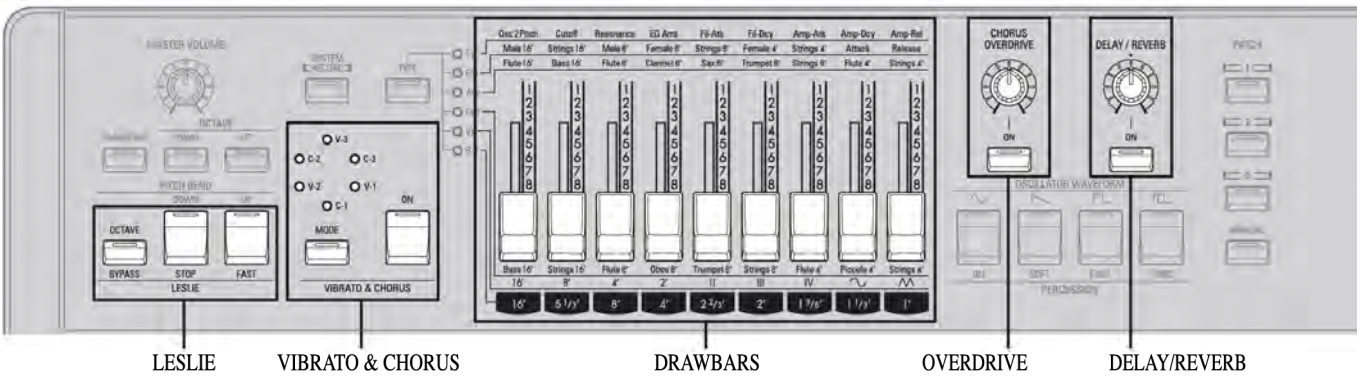
OVERDRIVE	Function	LED
	Turn the [OVERDRIVE] knob to the right to increase the Overdrive effect.	

Delay/Reverb

This will add Delay (echo effects similar to a tape delay unit) or Reverb (an audio effect simulating the ambience of a natural environment such as an auditorium) to the sound.

DELAY/REVERB	Function	LED
[ON] button	Turns Delay/Reverb “ON” or “OFF.”	ON: enable OFF: disable
[DELAY/REVERB] knob	Adjusts the level of Delay or Reverb. Turn the DELAY/REVERB knob to the left to increase the Delay effect and to the right to increase the Reverb effect.	

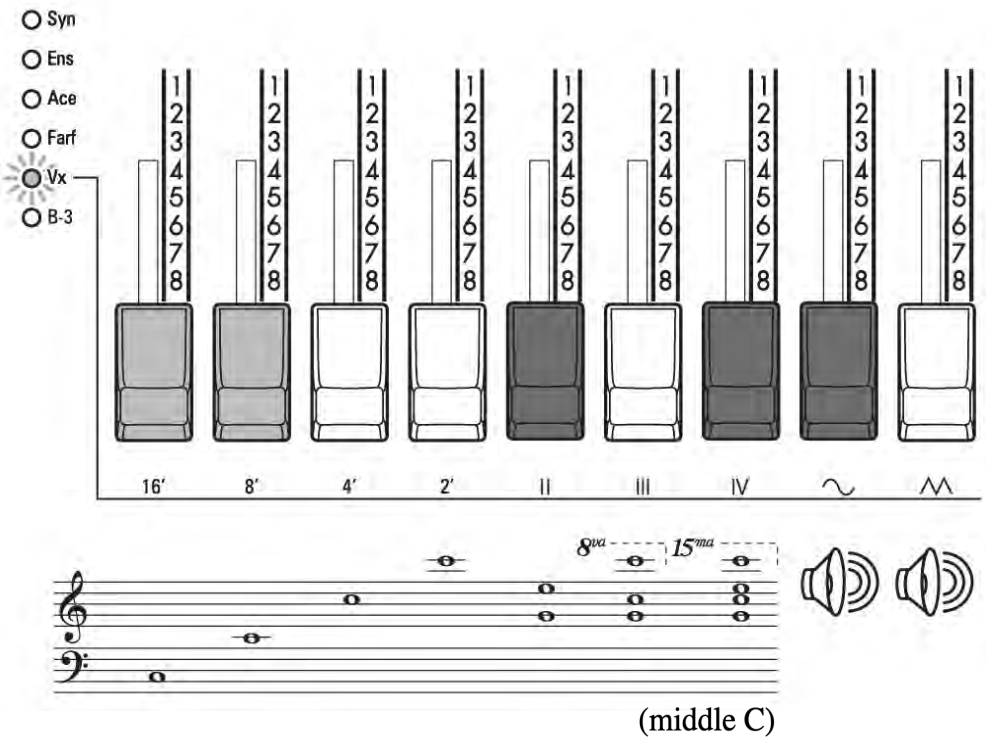
Vx (British combo organ)



This Instrument Type recreates the sounds of a classic British combo organ of the type used by groups such as the Beatles, the Doors, Iron Butterfly, The Animals, The Dave Clark Five, etc.

Creating a favorite tone (registration)

Adjust the Drawbars to create your registrations.
The illustration below shows the function of each Drawbar for the **Vx** Instrument Type.



Drawbar	Function
Four on the left (16′, 8′, 4′, 2′)	These Drawbars control individual pitches.

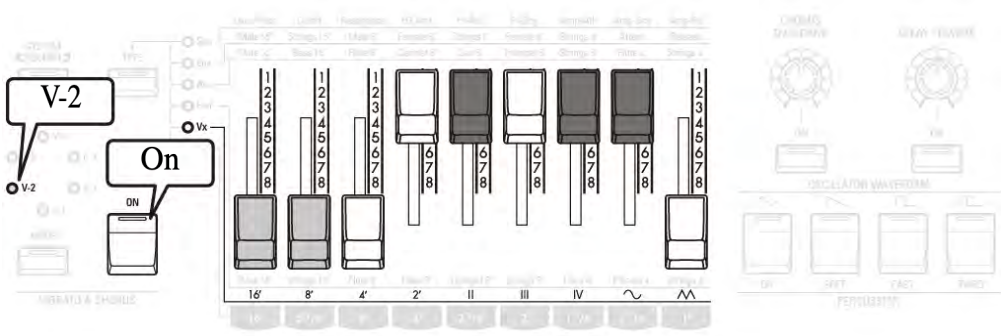
Drawbar	Function
	The 2nd brown Drawbar generates the fundamental or 8′ tone while the others add octaves going from left to right.
Three in the middle (II, III, IV)	These Drawbars add combinations of multiple pitches called **Mixtures**.
Two on the right (∿, ⩚)	These Drawbars control the type of tone produced by the first seven Drawbars. The "∿" Drawbar causes mellow tones to sound while the "⩚" Drawbar causes brighter and more harmonically complex tones to sound.

NOTE:

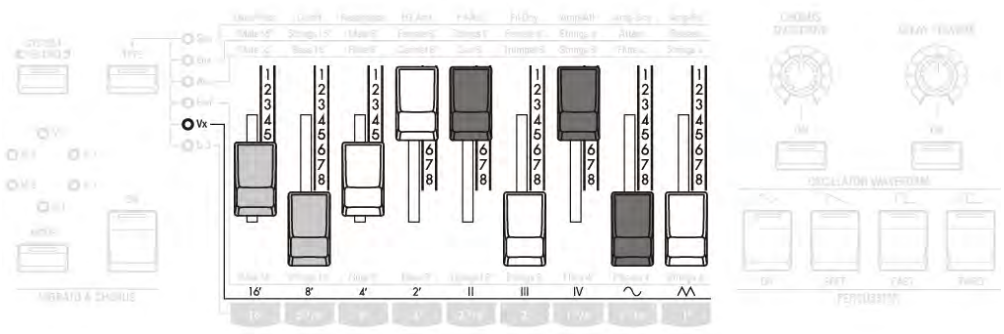
- The first seven Drawbars WILL NOT sound unless one or both of the last two Drawbars are also "out." These two Drawbars regulate the overall volume as well as timbre of the total Drawbar registration, and can be used separately or together.

Examples of Drawbar registration

"Let's Go Crazy"



"Light My Fire"

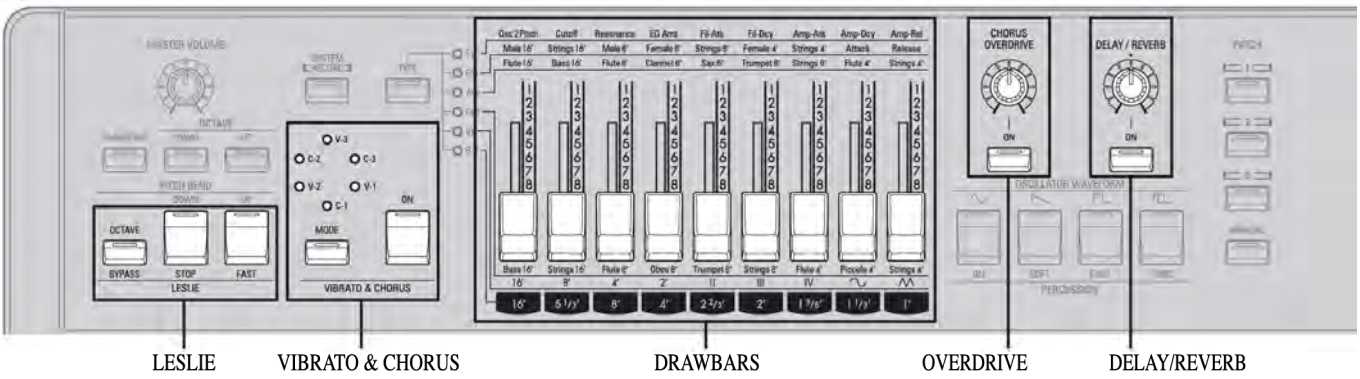


Applying effects

The following effects are available for the **Vx** Instrument Type.

Effect	Function	Refer to
Leslie	Adds the Leslie effect (Chorale or Tremolo effect created by a rotating baffle) to the sound.	⇒
Vibrato	Adds Vibrato (periodic fluctuation of pitch) to the sound.	⇒
Overdrive	Adds Overdrive (sound produced by amplifying a signal until the sound is distorted) to the sound.	⇒
Delay/Reverb	Adds Delay (echo effects similar to a tape delay unit) or Reverb (an audio effect simulating the ambience of a natural environment such as an auditorium) to the sound.	⇒

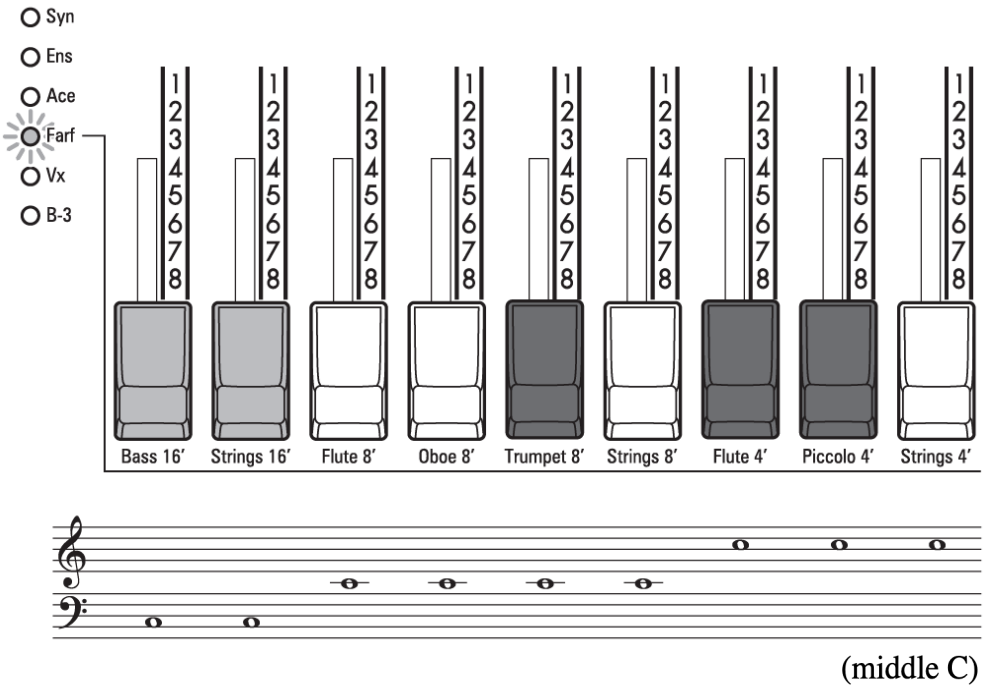
Farf (Italian combo organ)



This Instrument Type recreates the sounds of a classic Italian transistor organ. These sounds are heard in many eras (Percy Sledge, The Kingsmen, The B-52's, Led Zeppelin, Pink Floyd, Elvis Costello, Smash Mouth, etc.)

Creating a favorite sound (registration)

Moving a Drawbar forward (toward you) will increase the volume of that Drawbar. Pushing the Drawbar back in (away from you) decreases the volume of that Drawbar.
The illustration below shows the function of each Drawbar for the **Farf** Instrument Type.



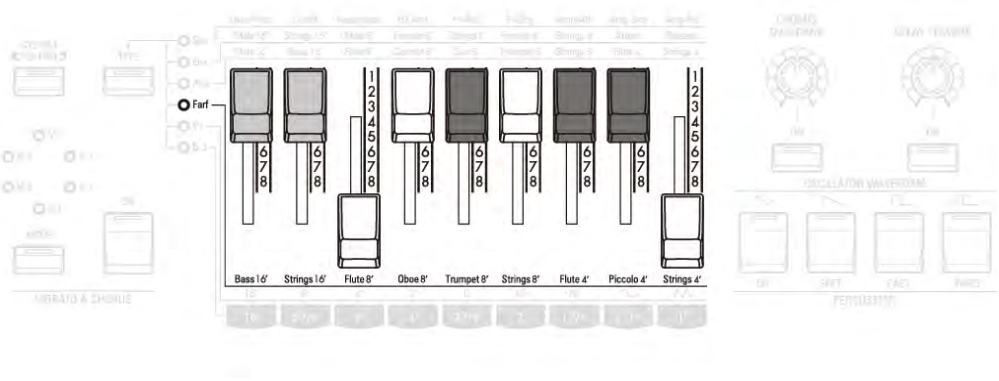
Drawbar	Function
Two on the left (Bass16′, Strings 16′)	These Drawbars generate the tones one octave lower than 8′. The sound becomes brighter from left to right.
Four in the middle (Flute 8′, Oboe 8′, Trumpet 8′, Strings 8′)	These Drawbars generate the fundamental tones. The sound becomes brighter from left to right.
Three on the right (Flute 4′, Piccolo 4′, Strings 4′)	These Drawbars generate the tones one octave higher than 8′. The sound becomes brighter from left to right.

Tips

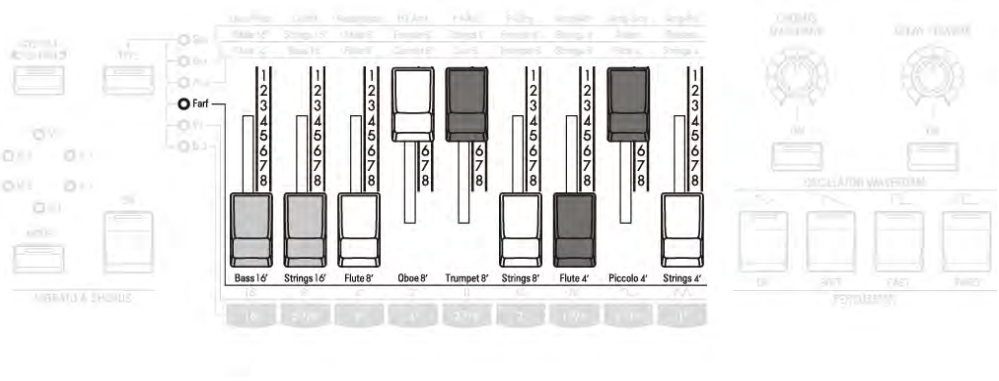
- The tone designations of the Drawbars (such as Flute, Clarinet, Trumpet, etc.) are the same as those found on the classic instrument.

Examples of Drawbar registration

Edgy Chord



Fat Strings

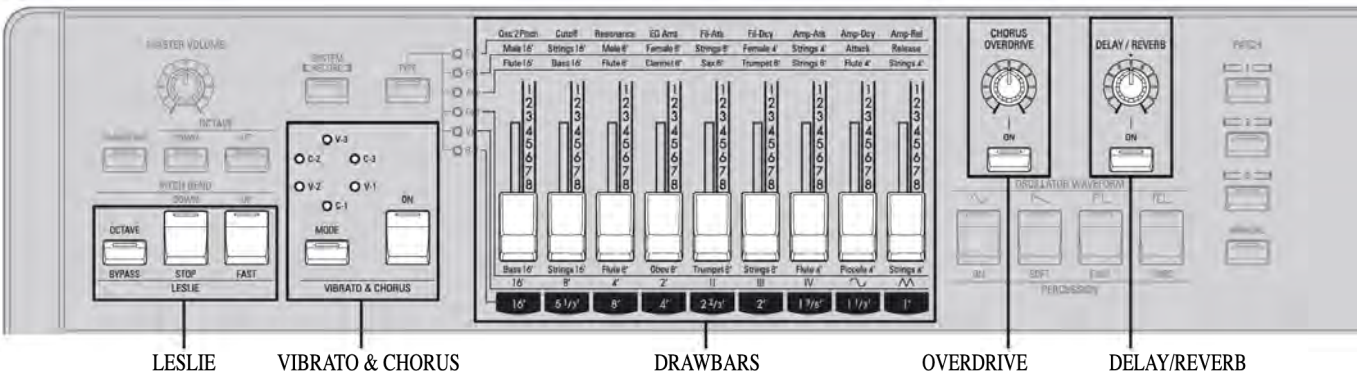


Applying effects

The following effects are available for the **Farf** Instrument Type.

Effect	Function	Refer to
Leslie	Adds the Leslie effect (Chorale or Tremolo effect created by a rotating baffle) to the sound.	⇒
Vibrato	Adds Vibrato (periodic fluctuation of pitch) to the sound.	⇒
Overdrive	Adds Overdrive (sound produced by amplifying a signal until the sound is distorted) to the sound.	⇒
Delay/Reverb	Adds Delay (echo effects similar to a tape delay unit) or Reverb (an audio effect simulating the ambience of a natural environment such as an auditorium) to the sound.	⇒

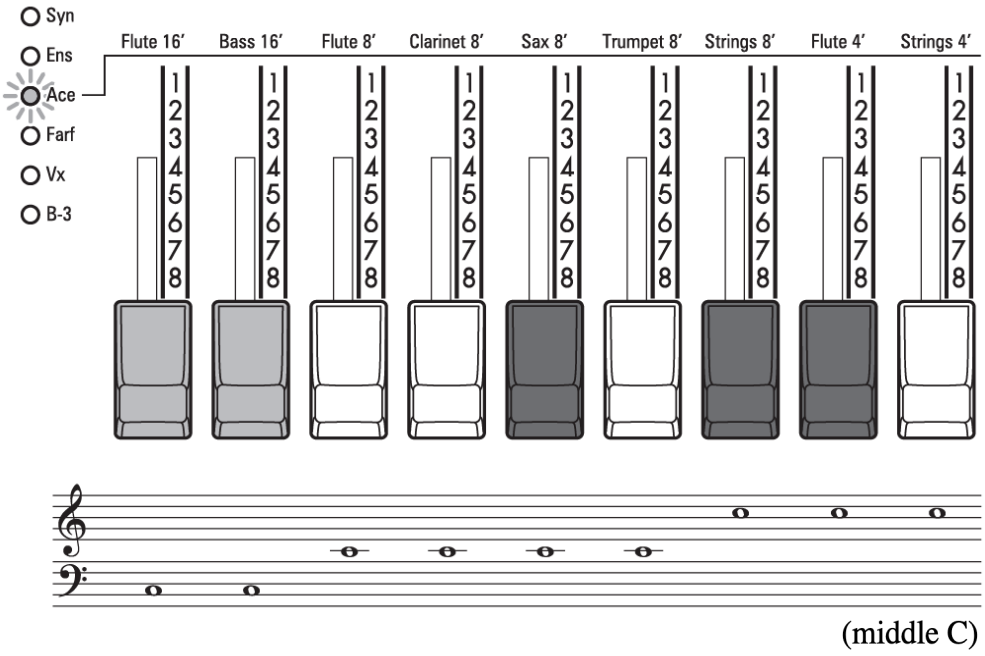
Ace (Japanese combo organ)



This Instrument Type recreates the sounds and feature of a classic Japanese combo organ. These sounds are frequently heard in Japanese “Group Sound” musical genres with added Vibrato and Reverb effects.

Creating a favorite sound (registration)

Moving a Drawbar forward (toward you) will increase the volume of that Drawbar. Pushing the Drawbar back in (away from you) decreases the volume of that Drawbar.
The illustration below shows the function of each Drawbar for the **Ace** Instrument Type.



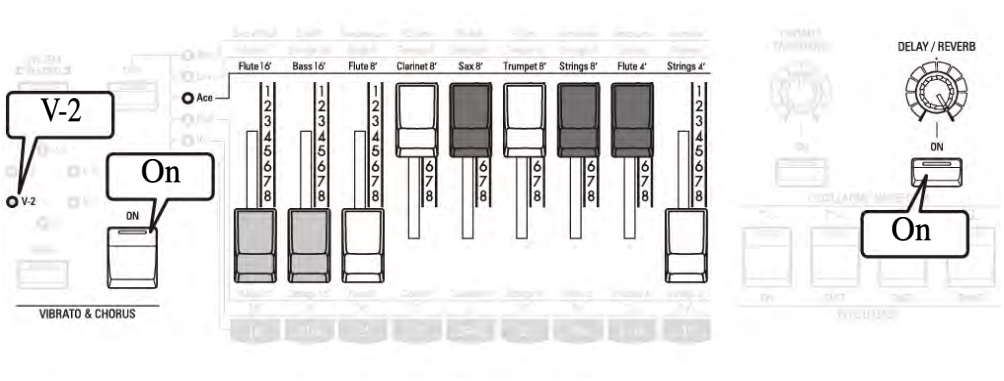
Drawbar	Function
Two on the left (Flute 16′, Bass16′)	These Drawbars generate the tones one octave lower than 8′. The sound becomes brighter from left to right.
Five in the middle (Flute 8′, Clarinet 8′, Sax 8′, Trumpet 8′, Strings 8′)	These Drawbars generate the fundamental tones. The sound becomes brighter from left to right.
Two on the right (Flute 4′, Strings 4′)	These Drawbars generate the tones one octave higher than 8′. The sound becomes brighter from left to right.

Tips

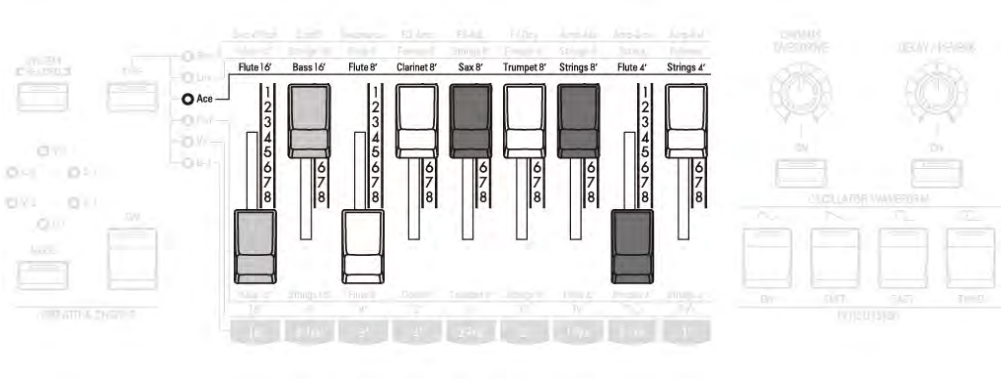
- The tone designations of the Drawbars (such as Flute, Clarinet, Trumpet, etc.) are the same as those found on the classic instrument.

Examples of Drawbar registration

Golden Organ



Flutes

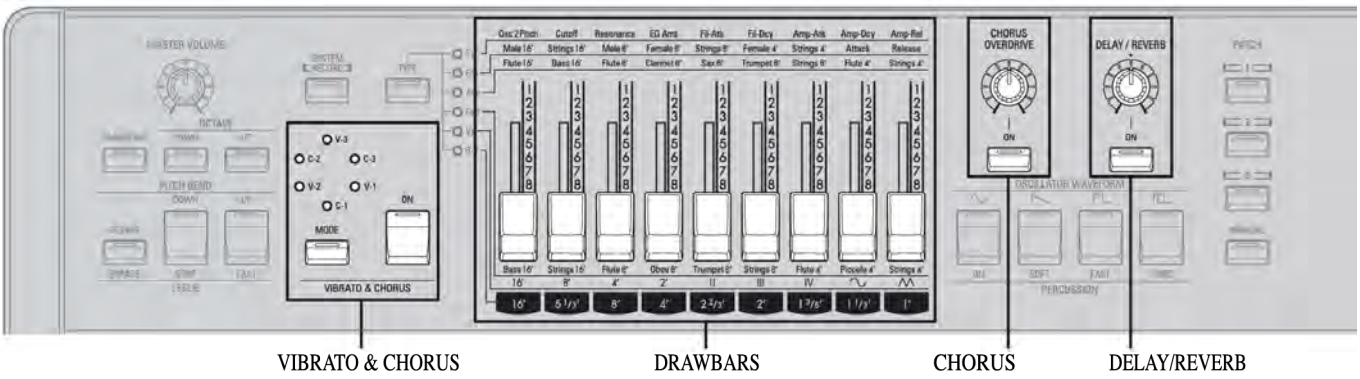


Applying effects

The following effects are available for the **Ace** Instrument Type.

Effect	Function	Refer to
Leslie	Adds the Leslie effect (Chorale or Tremolo effect created by a rotating baffle) to the sound.	⇒
Vibrato	Adds Vibrato (periodic fluctuation of pitch) to the sound.	⇒
Overdrive	Adds Overdrive (sound produced by amplifying a signal until the sound is distorted) to the sound.	⇒
Delay/Reverb	Adds Delay (echo effects similar to a tape delay unit) or Reverb (an audio effect simulating the ambience of a natural environment such as an auditorium) to the sound.	⇒

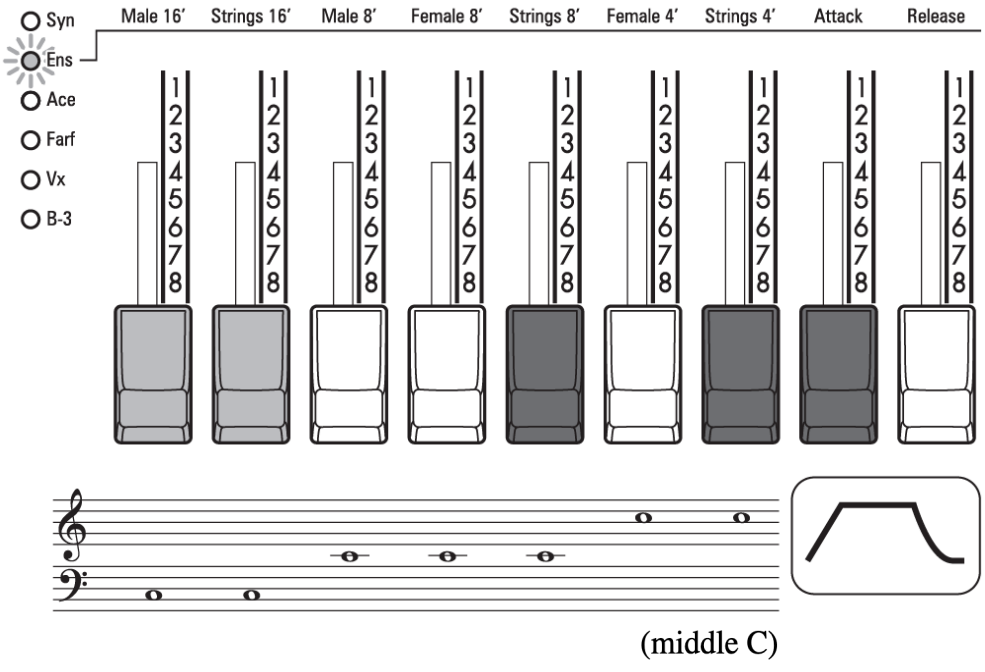
Ens (string/vocal ensemble)



This Instrument Type replicates the sounds of an analog string ensemble of a type popular in the 70s which was used in a wide range of music genres, most notably classic rock. These analog sounds continue to be used in contemporary music as well.
In addition, human voices are also included in this Instrument Type.

Creating a favorite sound (registration)

Moving a Drawbar forward (toward you) will increase the volume of that Drawbar. Pushing the Drawbar back in (away from you) decreases the volume of that Drawbar.
The illustration below shows the function of each Drawbar for the **Ens** Instrument Type.



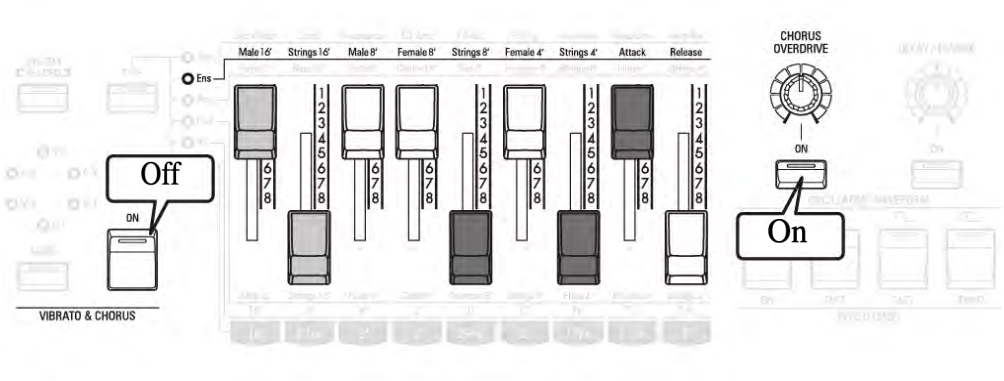
Drawbar	Function
Seven on the left (Male 16′, Strings 16′, Male 8′, Female 8′, Strings 8′, Female 4′, Strings 4′)	The first seven Drawbars control the individual sounds available on this Instrument Type.
Two on the right (Attack, Release)	These two Drawbars adjust the Attack and Release rates of the Amplitude (volume) Envelope.

Tips

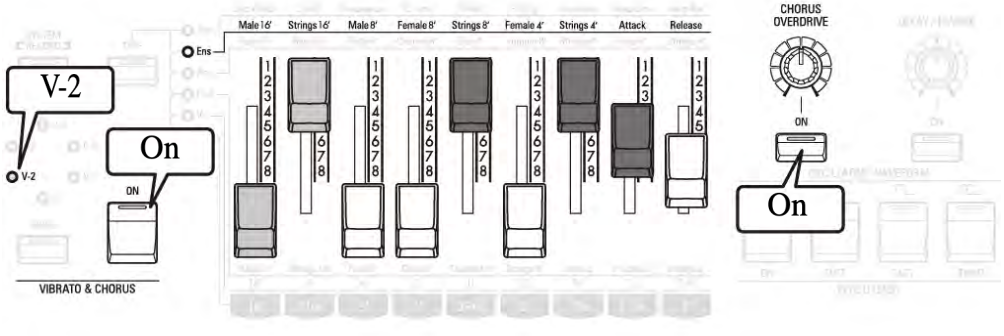
- The Attack and Release Rates do not change in degrees from 1 through 8 but are continuously variable.
- You can reverse the direction of the Drawbars so that moving a Drawbar forward will decrease the rate and moving a Drawbar back will increase it (⇒).

Examples of Drawbar registration

Octave Strings



Mixed Chorus

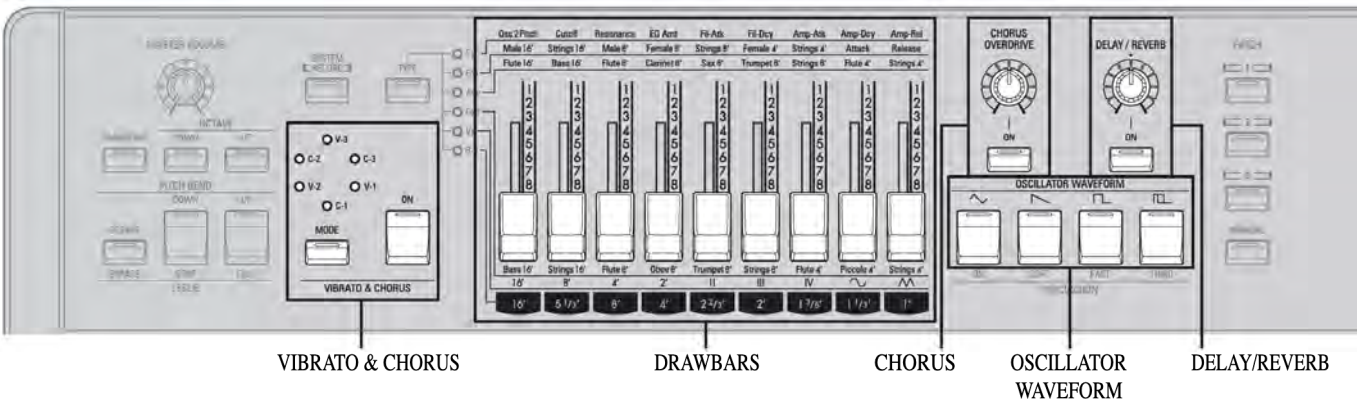


Applying effects

The following effects are available for the **Ens** Instrument Type.

Effect	Function	Refer to
Vibrato	Adds Vibrato (periodic fluctuation of pitch) to the sound.	⇒
Chorus	Adds Chorus (shimmering effect similar to many unison notes sounding together) to the sound.	⇒
Delay/Reverb	Adds Delay (echo effects similar to a tape delay unit) or Reverb (an audio effect simulating the ambience of a natural environment such as an auditorium) to the sound.	⇒

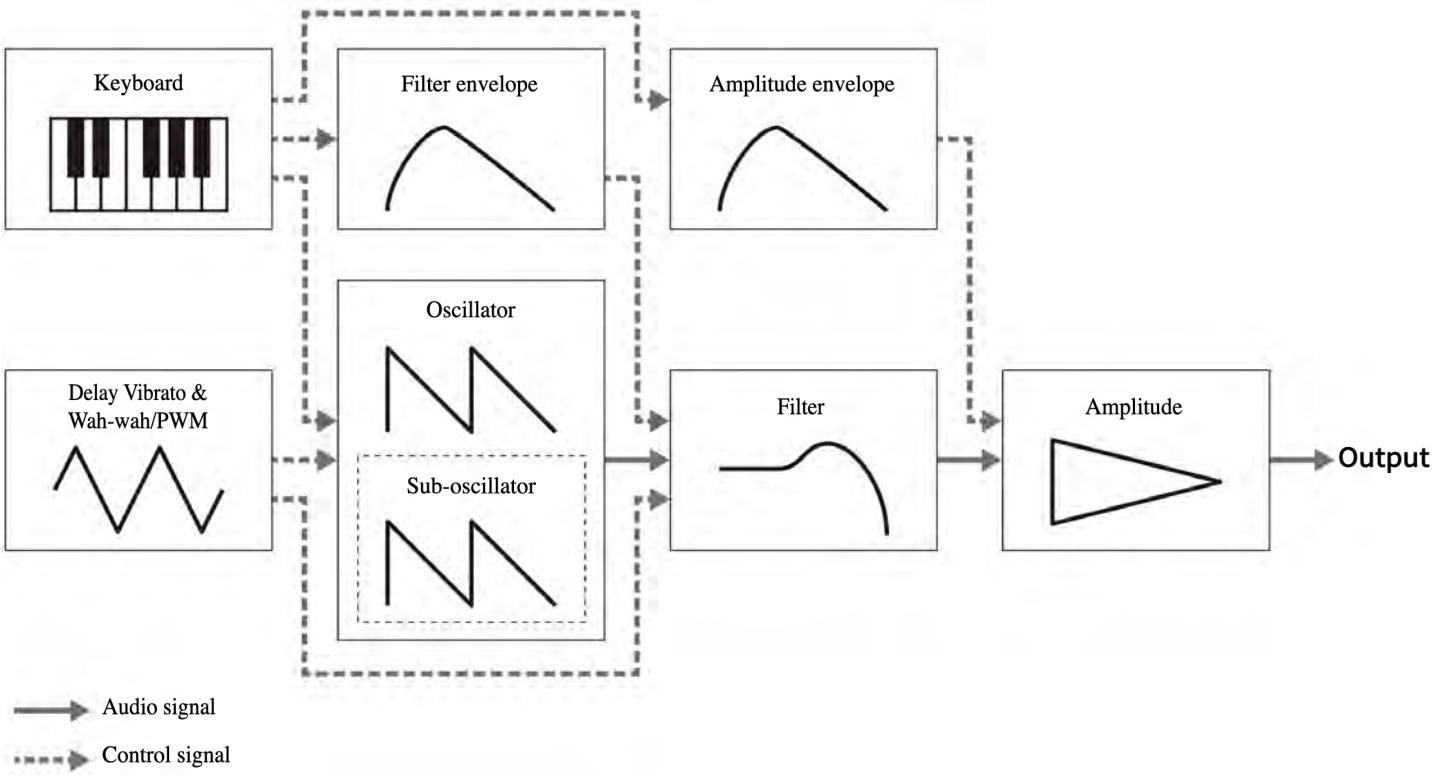
Syn (polyphonic synthesizer)



A “synthesizer” is a musical instrument which generates audio signals to produce sounds. Electric and electronic organs also do this; however, unlike an organ, a synthesizer allows the player to modify and shape individual sounds in a wide variety of ways.

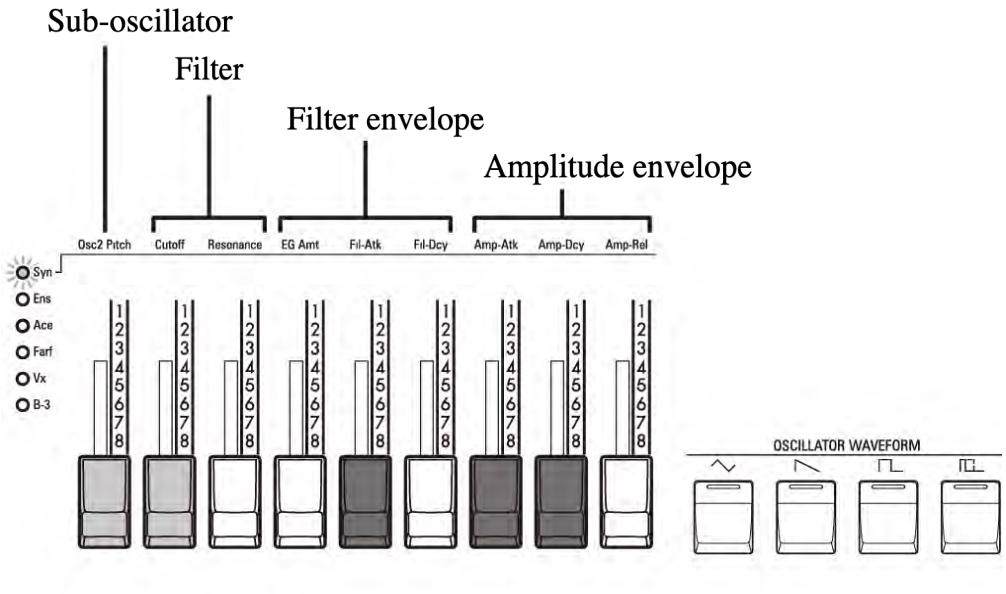
Many synthesizers are “monophonic,” meaning only one note at a time can sound. In the mid-1970s, “polyphonic” synthesizers which could sound multiple notes at once were introduced - one of the first being the Hammond 102200, introduced in 1975.

The **Syn** Instrument Type on the M-solo provides a Low-pas Filter with envelope and an Amplitude envelope. These are explained starting below.



Creating a favorite tone (registration)

Select an oscillator waveform using the {OSCILLATOR WAVEFORM} buttons and then pull the Drawbars to create a sound.



OSCILLATOR WAVEFORM	Waveform
	Triangular wave, smooth odd-harmonic
	Sawtooth wave, even- and odd-harmonic
	Square wave, heavy odd-harmonic
	Pulse wave, variable width pulse

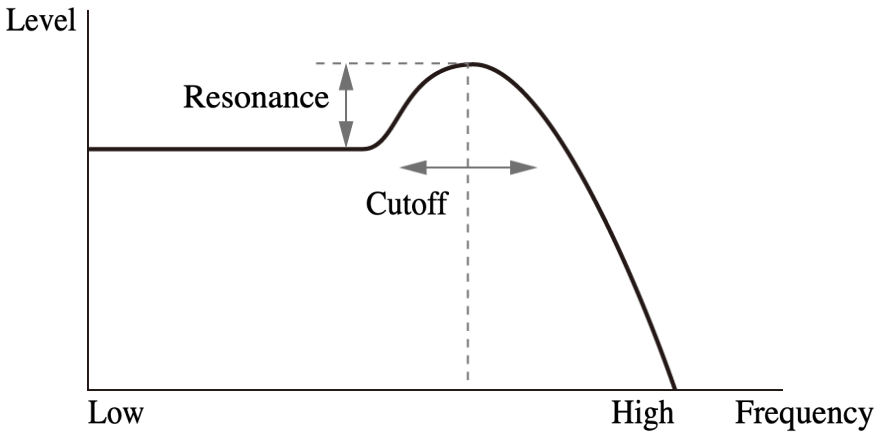
Category	Drawbar	Function
Sub-oscillator	Osc 2Pitch	(For triangular, sawtooth, or pulse wave) This Drawbar adjusts the pitch of the sub-oscillator. 0: no sound, 1 to 3: detuned gradually, 4 to 8: shifted within the range of semitone to one octave (For pulse wave) This Drawbar adjusts the pulse width. 0 (50%) to 4 (approx. 75%) to 8 (approx. 98%).
Filter	Cutoff	This Drawbar adjusts the cutoff frequency of the filter. By controlling the high-frequency component, the sound becomes brighter or mellower.
	Resonance	This Drawbar adjusts the emphasis of the sound around the cutoff frequency. By increasing the emphasis, the sound becomes more distinctive.
Filter envelope	EG Amt	This Drawbar adjusts how much the filter EG (envelope generator) modulates the cutoff frequency.

Category	Drawbar	Function
	Fil-Atk	This Drawbar adjusts the time taken to reach the EG Amt setting (filter to open) after a key is depressed.
	Fil-Dcy	This Drawbar adjusts the time for the filter to close from the EG Amt setting.
Amplitude envelope	Amp-Atk	This Drawbar adjusts the time taken for a sound to rise in volume to its peak after a key is depressed.
	Amp-Dcy	This Drawbar adjusts the time taken for a sound to fade away after the sound rises to its peak.
	Amp-Rel	This Drawbar adjusts the time taken for a sound to fade away after a key is released.

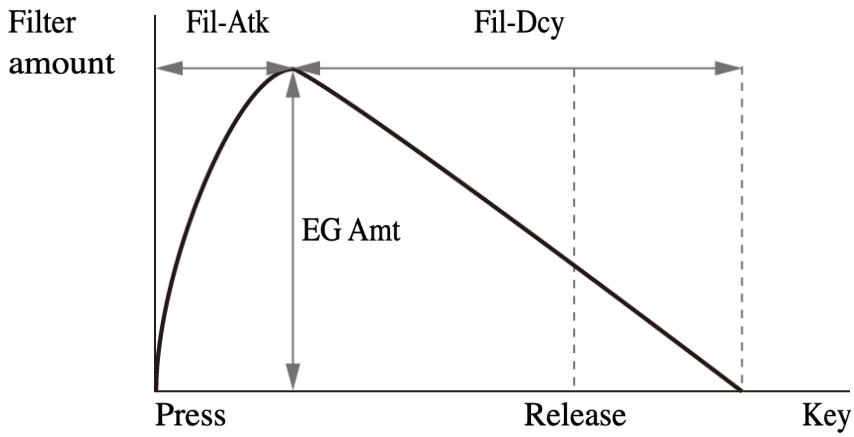
Tips

- The adjustments made by the Drawbars do not change in degrees from 1 through 8 but are continuously variable.
- You can reverse the direction of the Drawbars so that moving a Drawbar forward will decrease a value and moving a Drawbar back will increase it (⇒).

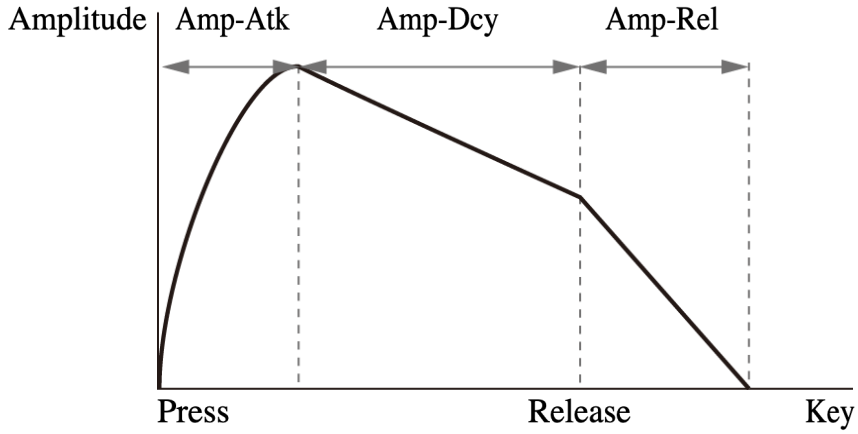
Filter



Filter envelope

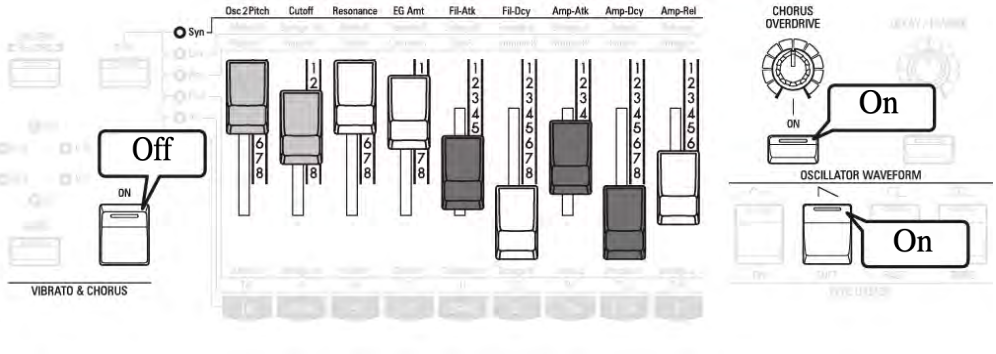


Amplitude envelope

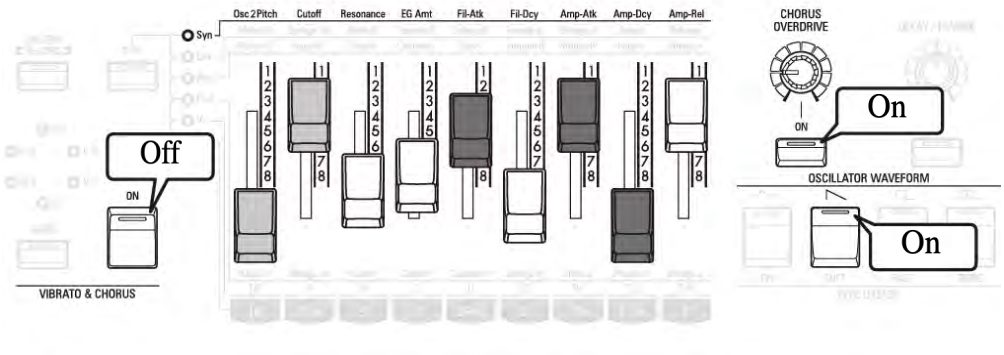


Examples of Drawbar registration

Mellow Pad



Resonance & Sweep



Applying effects

Delay Vibrato & Wah-Wah/PWM

This will add Delay Vibrato (periodic fluctuation of pitch with a momentary delay), or Wah-Wah (periodic modulation of the filter or oscillator) to the sound.

VIBRATO & CHORUS	Function	LED
[VIBRATO ON] button	Turns Delay Vibrato or Wah-Wah "ON" and "OFF."	ON: enable OFF: disable
[VIBRATO MODE] button	Selects the effect and its level. A larger value results in a deeper effect.	V-1~V-3: Delay Vibrato C-1~C-3: Wah-Wah/PWM

Tips

- Wah-Wah or PWM is applied according to the selected oscillator waveform.

  Triangle, Sawtooth or Square Waves: The Wah-Wah effect will modulate the cutoff frequency with a momentary delay.
  Pulse wave: The Pulse Width will modulate (PWM effect).

Chorus

This will add Chorus (shimmering effect similar to many unison notes sounding together) to the sound.

CHORUS	Function	LED
[ON] button	Turns the Chorus effect "ON" or "OFF."	ON: enable OFF: disable
[CHORUS] knob	Adjusts the level of the Chorus effect (pitch modulation). Rotate the knob clockwise to make the effect deeper.	

NOTE:

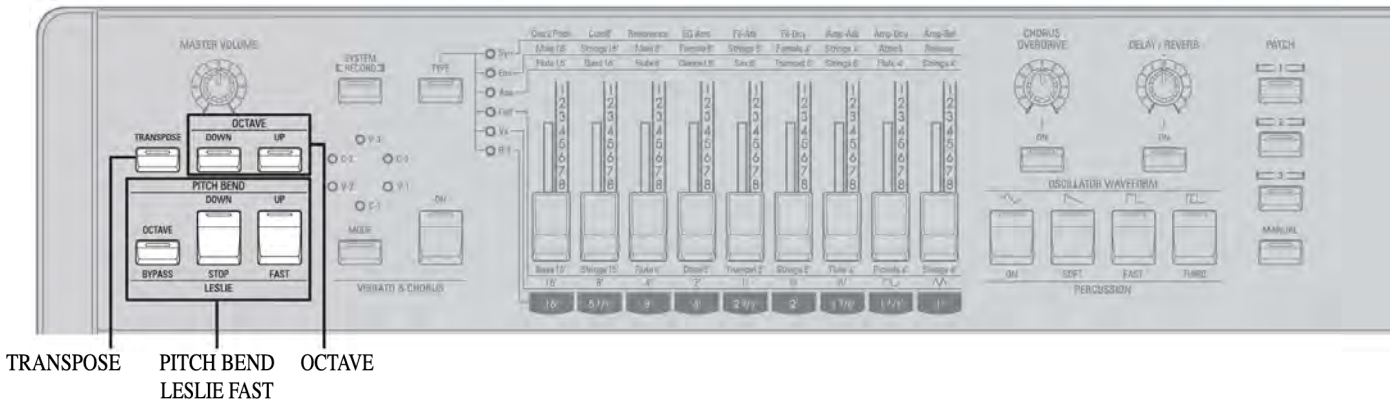
- Do not confuse this Chorus with the Hammond Vibrato/Chorus effect. This Chorus effect is non-periodic or "random" sounding. With the Hammond Vibrato/Chorus, a "cycle" is clearly audible. These Chorus parameters DO NOT affect the Hammond Vibrato/Chorus.

Delay/Reverb

This will add Delay (echo effects similar to a tape delay unit) or Reverb (an audio effect simulating the ambience of a natural environment such as an auditorium) to the sound.

DELAY/REVERB	Function	LED
[ON] button	Turns Delay/Reverb “ON” or “OFF.”	ON: enable OFF: disable
[DELAY/REVERB] knob	Adjusts the level of the Delay/Reverb effect. Rotate the knob counterclockwise from the center to make the Delay effect deeper and clockwise to make the Reverb effect deeper.	

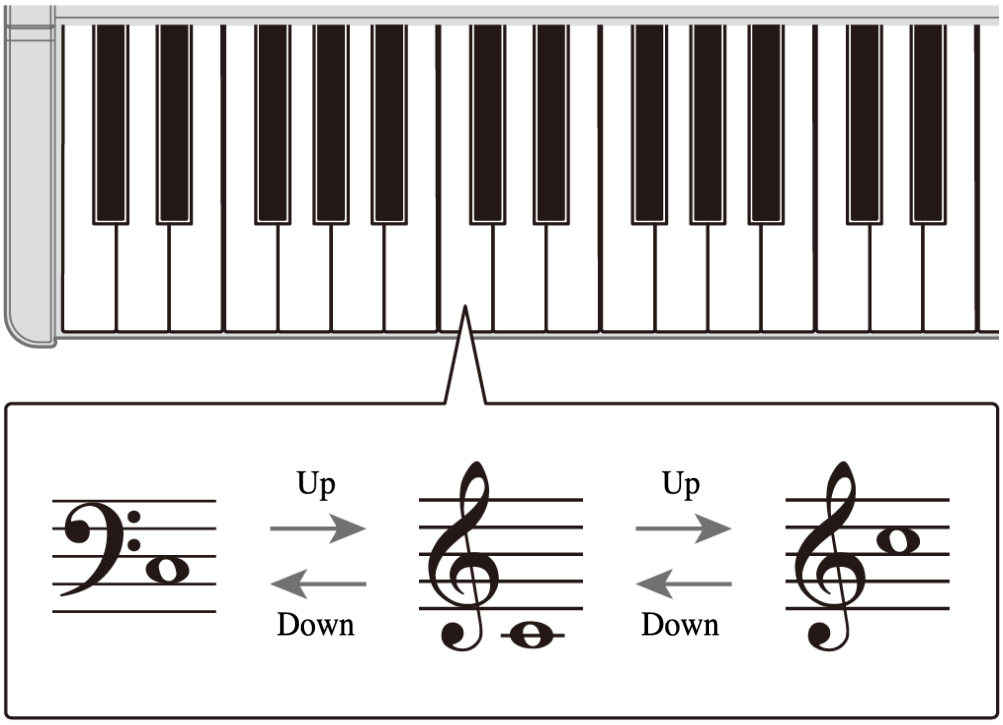
Other playing functions



Changing the pitch of the keyboard

Octave

Use this button to adjust the sounding octave of the keyboard. There are three (3) steps available (shown below).



1 **To shift the keyboard one octave up, press the [OCTAVE UP] button.**

To shift the keyboard one octave down, press the [OCTAVE DOWN] button.

The [UP/DOWN] buttons indicate the current octave setting.

Octave down	No transposition	Octave up
[OCTAVE DOWN] LED lights	Both LEDs "OFF"	[OCTAVE UP] LED lights

Transpose

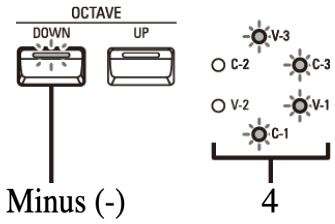
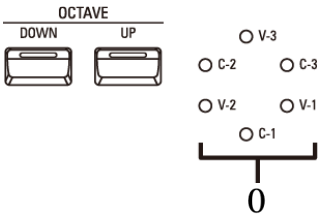
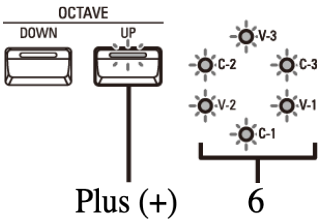
Use this button to transpose the pitch by half-steps (semitones). There are thirteen (13) steps available (-6 ~ 0 ~ +6).

1 **To transpose up by half-steps, Press and Hold the[TRANSPOSE] button and press the [OCTAVE UP] button.**

To transpose down by half-steps, Press and Hold the [TRANSPOSE] button and press the [OCTAVE DOWN] button.

The [UP/DOWN] buttons and V-1~V-3/C-1~C-3 LEDs indicate the current Transpose setting.

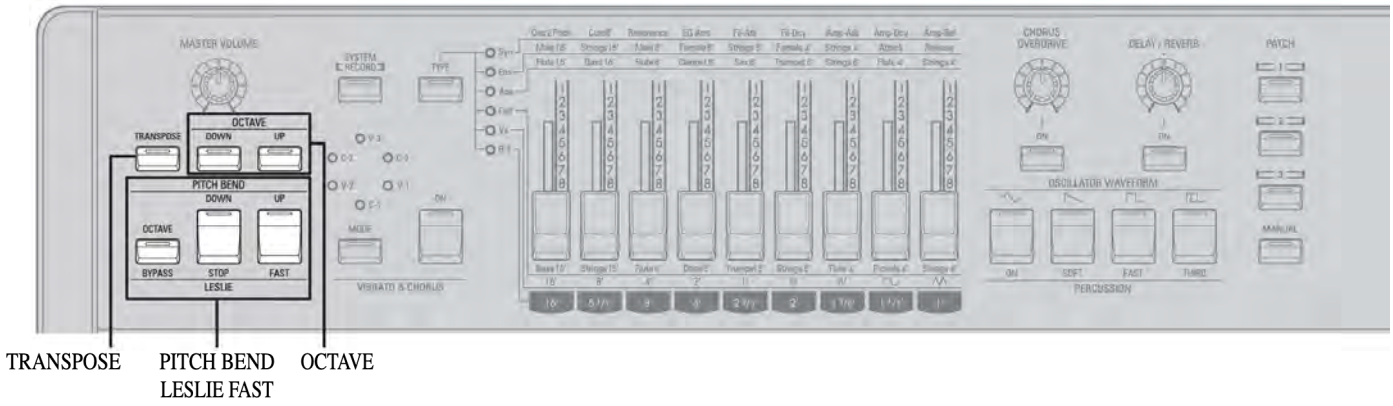
Examples

Transpose "-4"	Transpose "0"	Transpose "+6"
		

Tips

- The [TRANSPOSE] LED lights when the transpose is set to anything other than 0. To check the current transpose setting, press the [TRANSPOSE] button.

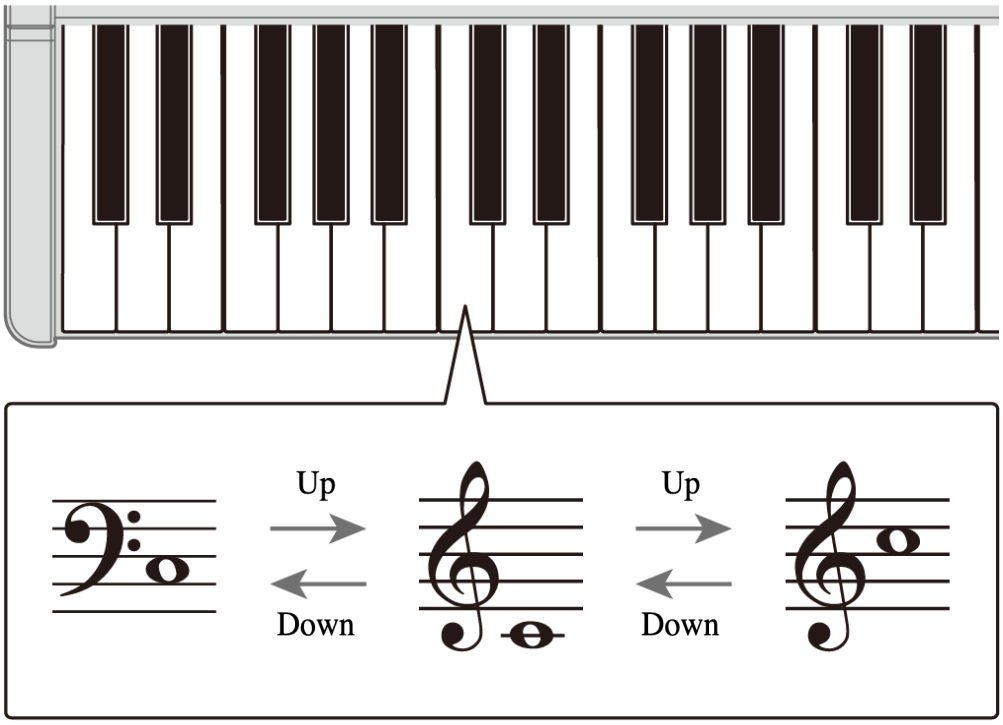
Other playing functions



Changing the pitch of the keyboard

Octave

Use this button to adjust the sounding octave of the keyboard. There are three (3) steps available (shown below).



1 **To shift the keyboard one octave up, press the [OCTAVE UP] button.**

To shift the keyboard one octave down, press the [OCTAVE DOWN] button.

The [UP/DOWN] buttons indicate the current octave setting.

Octave down	No transposition	Octave up
[OCTAVE DOWN] LED lights	Both LEDs "OFF"	[OCTAVE UP] LED lights

Transpose

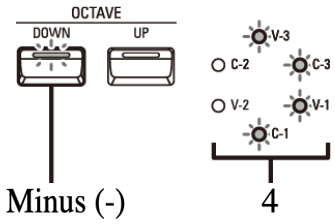
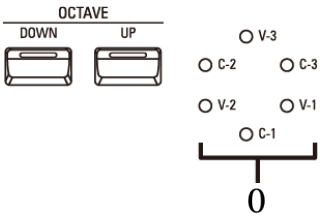
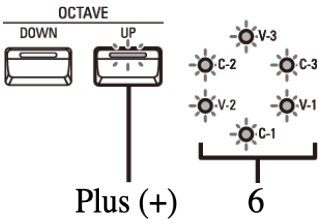
Use this button to transpose the pitch by half-steps (semitones). There are thirteen (13) steps available (-6 ~ 0 ~ +6).

1 **To transpose up by half-steps, Press and Hold the[TRANSPOSE] button and press the [OCTAVE UP] button.**

To transpose down by half-steps, Press and Hold the [TRANSPOSE] button and press the [OCTAVE DOWN] button.

The [UP/DOWN] buttons and V-1~V-3/C-1~C-3 LEDs indicate the current Transpose setting.

Examples

Transpose "-4"	Transpose "0"	Transpose "+6"
		

Tips

- The [TRANSPOSE] LED lights when the transpose is set to anything other than 0. To check the current transpose setting, press the [TRANSPOSE] button.

Using the controllers

Pitch bend

Use these buttons to bend the pitch up or down.

NOTE:

- This function is available for **Ens** or **Syn** Instrument Types.

1 To raise the pitch, Press and Hold the [PITCH BEND UP] button.

To lower the pitch, Press and Hold the [PITCH BEND DOWN] button.

Tips

- Pressing and Holding the [PITCH BEND UP/DOWN] buttons will raise or lower the pitch by two (2) half steps or one whole step.
- Pressing and Holding the [PITCH BEND OCTAVE] button while pressing the [PITCH BEND UP/DOWN] buttons will raise and lower pitch one octave (12 half-steps).

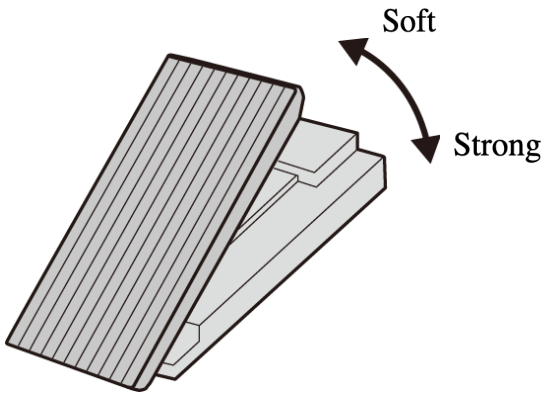
2 To return to normal pitch while Pressing and Holding a [PITCH BEND] button, press the other [PITCH BEND] button.

For example, if you press the [PITCH BEND DOWN] button while Pressing and Holding the [PITCH BEND UP] button, the pitch will stop rising and the instrument will return to normal pitch.

3 To return to the original pitch, release the [PITCH BEND] button.

Expression pedal

Use an Expression Pedal to control the volume of the instrument.
Press forward with the front of your foot to increase the volume and back with the heel of your foot to decrease the volume.
The Expression Pedal will express the volume up to the limit set by the MASTER VOLUME knob.



Expression pedal

Tips

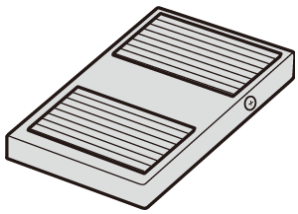
- For information on compatible models, refer to "Connecting controllers".

Foot Switch

Use a connected Foot Switch to switch the Leslie rotor speed.
The Foot Switch will alternate between FAST and SLOW or STOP Modes each time it is pressed.

NOTE:

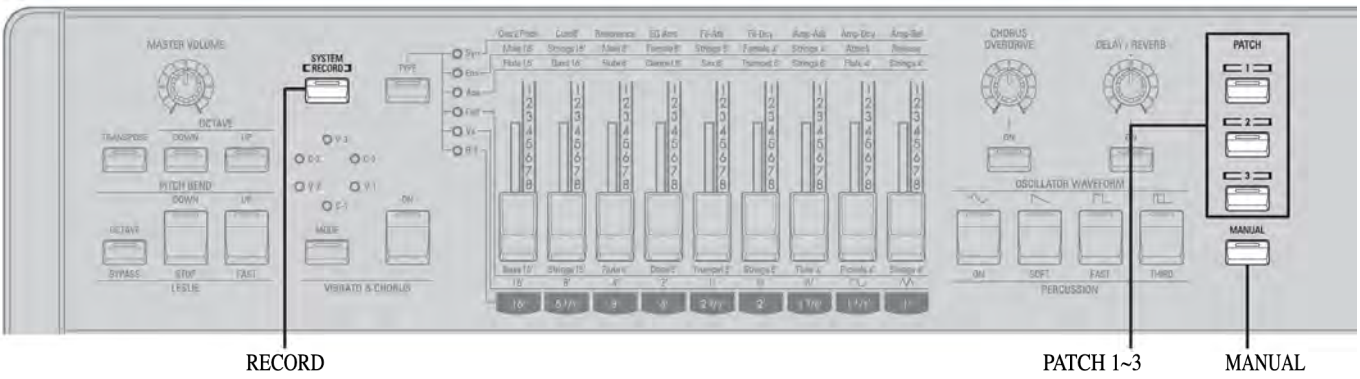
- This function is available for **B-3**, **Vx**, **Farf** or **Ace** Instrument Types.


Footswitch

Tips

- You can also enable/disable the FAST Mode of the Leslie effect using the [LESLIE FAST] button on the top panel (⇒).
- For information on compatible models, refer to "Connecting controllers".

Using the [PATCH] buttons



You can create your own registrations and Save them to the [PATCH] buttons.

NOTE:

- MASTER VOLUME (⇒) and TRANSPOSE (⇒) settings are not Saved.

Saving a tone (Patch)

To create and Save your own Patches, do the following:

1 Press and Hold the [RECORD] button and press a [PATCH] button where you want your setting to be Saved.

The [PATCH] button LED will blink several times then light. Your setting is now Saved to the [PATCH] button you selected.

Recalling a Patch

To Recall a Patch which has been Saved, do the following:

1 Press any one of the three [PATCH] buttons.

The Patch Saved to the [PATCH] button pressed will be recalled.

2 Play the keyboard.

You can make changes to the recalled Patch by using any of the top panel controls (Drawbars, buttons, etc.) If you have made changes and you want to recall the Saved Patch, press the [PATCH] button again.

3 To play using the top panel controls (Drawbars, buttons and knobs), press the [MANUAL] button.

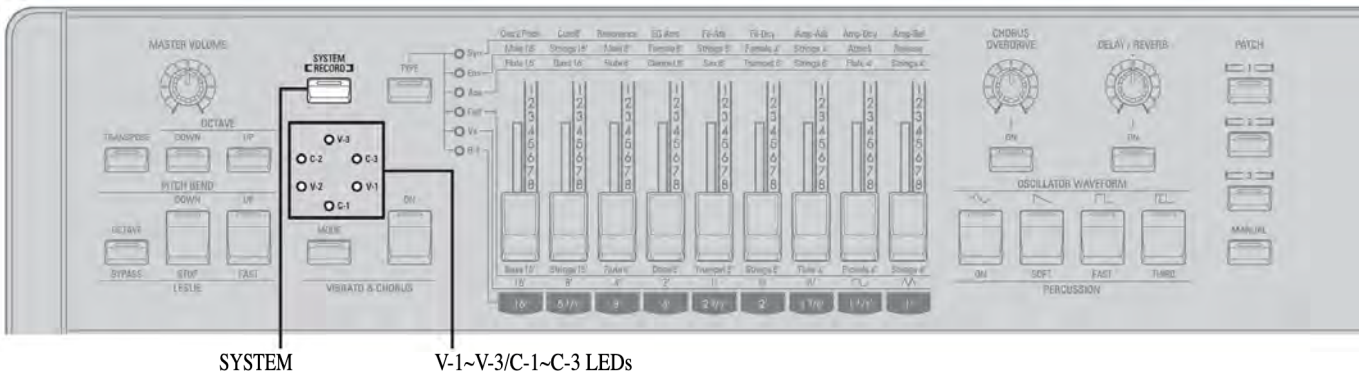
Tips

- Listed below are the factory settings for the three [PATCH] buttons:

  [PATCH 1] button: Classic B-3 Jazz (⇒)
  [PATCH 2] button: Octave Strings (⇒)
  [PATCH 3] button: Synthesizer Resonance & Sweep (⇒)

Configurations

Configuring the M-solo



1 Press the [SYSTEM] button.

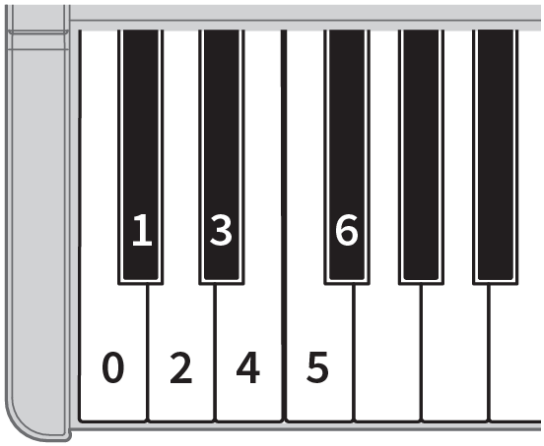
The LED of the [SYSTEM] button will light and the buttons controlling Setup parameters will blink.

2 Press the button which corresponds to the Setup parameter you want to edit.

For details about each Setup parameter, refer to "Setup parameters".

3 Press a corresponding key to select a parameter.

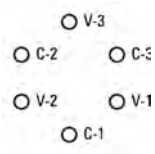
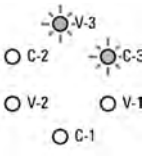
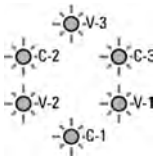
The seven keys on the left correspond to the parameters (0 to 6).



The V-1~V-3/C-1~C-3 LEDs show the parameter currently selected.

Examples

Parameter "0"	Parameter "2"	Parameter "6"

4 To configure another Setup parameter, repeat steps 2 and 3.

5 To save the settings, press the [SYSTEM] button.

The buttons stop blinking and the M-solo returns to normal mode.

Setup parameters

Tips

- The Setup parameters available for each Instrument Type are listed along with each Instrument Type.
- You can Save Key Click Level and VMC Depth as part of one of the three Patches or to the [MANUAL] button.

Master tune

Adjusts the master tuning frequency.

Instrument Type	All
Corresponding button	[TRANSPOSE]
Parameter	0 (434), 1 (436), 2 (438), 3 (440), 4 (442), 5 (444), 6 (446)
Factory setting	3 (440)

Key click level

Adjusts the Key Click level of the Virtual Multi-Contacts (VMC). A smaller number results in a softer and shorter Key Click. A larger number results in a louder and longer Key Click.

Instrument Type	B-3, Vx, Farf, Ace
Corresponding button	[LESLIE BYPASS]
Parameter	0 (off), 1 (soft) to 6 (loud)
Factory setting	3

Leakage level

Adjusts the level of Leakage tones.

Instrument Type	B-3
Corresponding button	[LESLIE STOP]

Parameter	0 (off), 1 (soft) to 6 (loud)
Factory setting	3

VMC depth

Adjusts the contact time of all the Virtual Multi-Contacts (VMC). If this parameter is set to **0** (off), the Virtual Multi-Contacts are disabled all harmonics will sound when a key is depressed.

Instrument Type	B-3
Corresponding button	[LESLIE FAST]
Parameter	0 (off), 1 (short) to 6 (long)
Factory setting	3

MIDI receiving channel

Selects a channel to receive MIDI messages.

Corresponding button	[PERCUSSION ON]
Parameter	0 (do not receive), 1 (1ch) to 6 (6ch)
Factory setting	1 (1ch)

MIDI transmitting channel

Selects a channel to transmit MIDI messages.

Corresponding button	[PERCUSSION SOFT]
Parameter	0 (do not transmit), 1 (1ch) to 6 (6ch)
Factory setting	1 (1ch)

Local control

Selects whether to allow the keyboard to play the internal sounds of the M-solo.

Corresponding button	[PERCUSSION FAST]
Parameter	0 (off), 1 (on)
Factory setting	1 (on)

NOTE:

- Normally this parameter should be set to **1** (on). If MIDI looping or sound duplication occurs when an external device with a MIDI Echo function (such as a sequencer or a DAW) is connected to the M-solo, set this parameter to **0** (off). The keyboard will then only transmit note messages out MIDI and the internal sounds will play according to note messages received via MIDI.

Generic control

Selects whether to transmit MIDI Control Changes from the M-solo.
If this parameter is set to **0** (off), the M-solo will transmit all Control Change messages.
If it is set to **1** (on), all Control Changes except Expression will be disabled. Select **1** (on) if you are playing a typical MIDI instrument in combination with the M-solo.

Corresponding button	[PERCUSSION THIRD]
Parameter	0 (off), 1 (on)
Factory setting	0 (off)

AUTO POWER OFF

Enables/disables the AUTO POWER OFF function. If this parameter is set to **1** (enable), the M-solo will automatically turn “OFF” after 30 minutes if no keys, buttons or knobs are used.

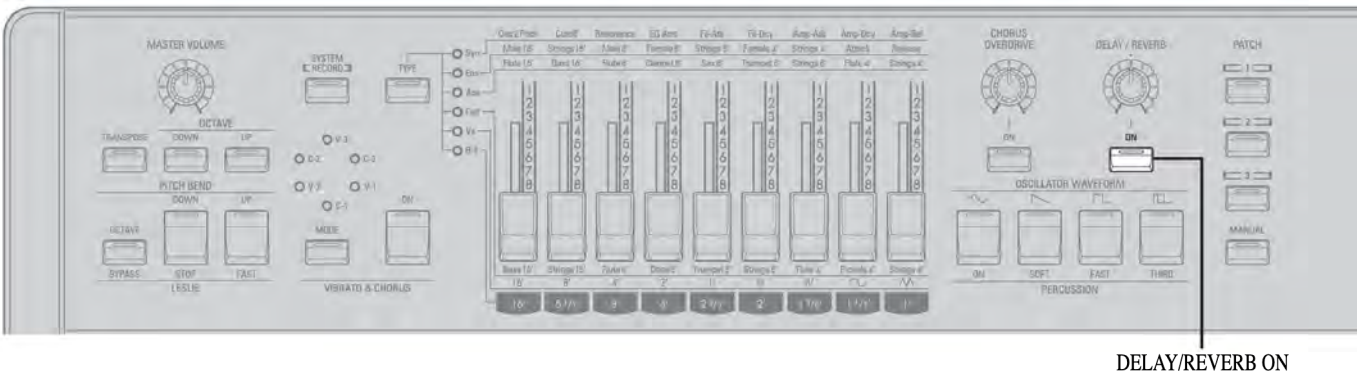
Corresponding button	[VIBRATO & CHORUS ON]
Parameter	0 (disable), 1 (enable)
Factory setting	1 (enable)

Drawbar direction

Selects the operating direction of the Drawbars. If this parameter is set to **1** (reverse), moving a Drawbar forward will decrease a value and moving a Drawbar back will increase it.

Instrument Type	Ens, Syn
Corresponding button	[CHORUS/OVERDRIVE ON]
Parameter	0 (normal), 1 (reverse)
Factory setting	0 (normal)

Restoring the factory settings



Follow the steps below to restore the M-solo to the factory settings.

Tips

- Doing the following procedure will erase any changes you have made to settings or Patches. If you have made changes you want to preserve, Save them to your PC before doing this procedure (⇒).

1 Turn the M-solo "OFF" (⇒).

2 Press and Hold the [DELAY/REVERB ON] button and press the [POWER] button on the rear panel.

3 When the [DELAY/REVERB ON] LED blinks, Release the [DELAY/REVERB ON] button.

The factory settings have now been restored.

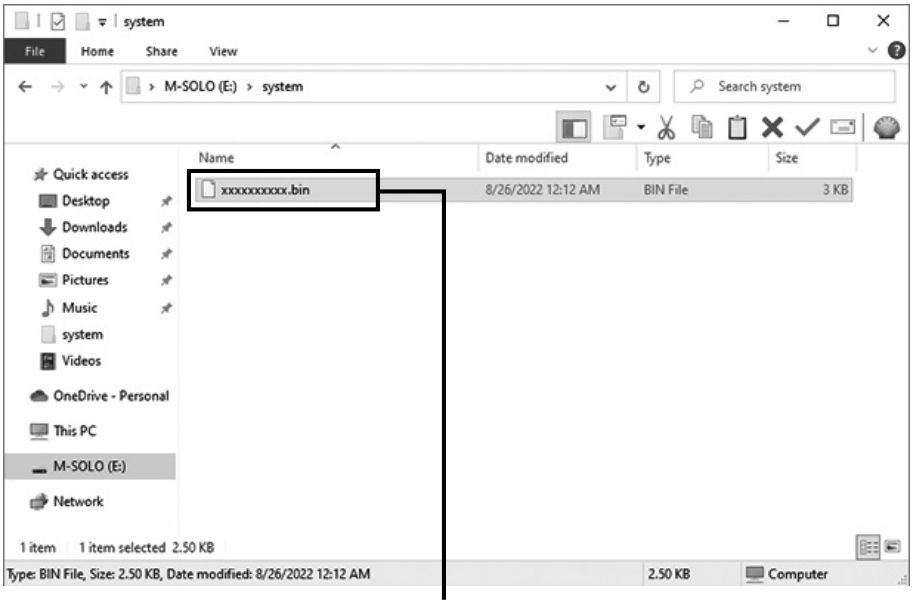
Updating the system software

Follow the steps below to update the M-solo software using the downloaded update files.

IMPORTANT NOTE

- The update process may take several minutes depending on the extent of the update. Therefore, if you are updating the system software, be sure you set aside enough time in an environment with a continuous AC power supply.

1 Copy the update files (bin files) to the “system” folder.

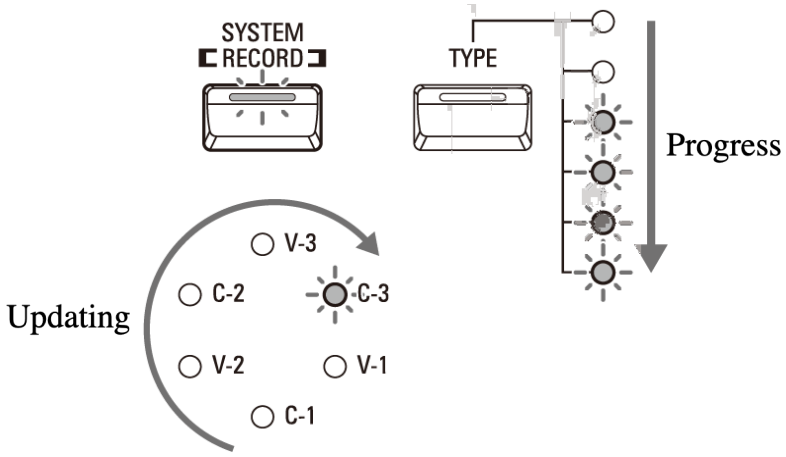


Update file (bin file)

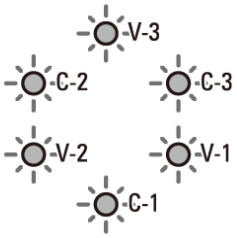
2 Press the [SYSTEM] button.

The update will start.

While the software is updating, the six VIBRATO & CHORUS LEDs will cycle clockwise and the TYPE LEDs will light “ON” and progressively turn “OFF” as the software modules update.



When the update is complete, the six LEDs in the VIBRATO/CHORUS section will all light.



3 Turn the M-solo "OFF."

The new software will Load when the instrument is next turned "ON."

Update Error

If an update error occurs, the LEDs will light or blink as shown below.
If this happens, turn the M-solo "OFF," try the solution listed below, then try the Update again.

State of LEDs		Cause	Solution
SYSTEM blinks	V-2 LED lights	"system" folder is empty.	Copy the update files (bin files) to the "system" folder.
	C-3 LED lights	No newer software version contained in the "system" folder.	Check the version of the software installed on this unit (⇒). If a newer version is available, download it on your PC.
SYSTEM lights	V-1 LED lights	An error occurs during data verification.	Follow "Switching to MASS STORAGE Mode" from step 3. If the problem still persists, consult with your retailer, a Hammond dealer in your area or an authorized Hammond distributor.
	V-3 LED lights	An error occurs during data reading.	
	C-1 LED lights	An error occurs during data writing.	

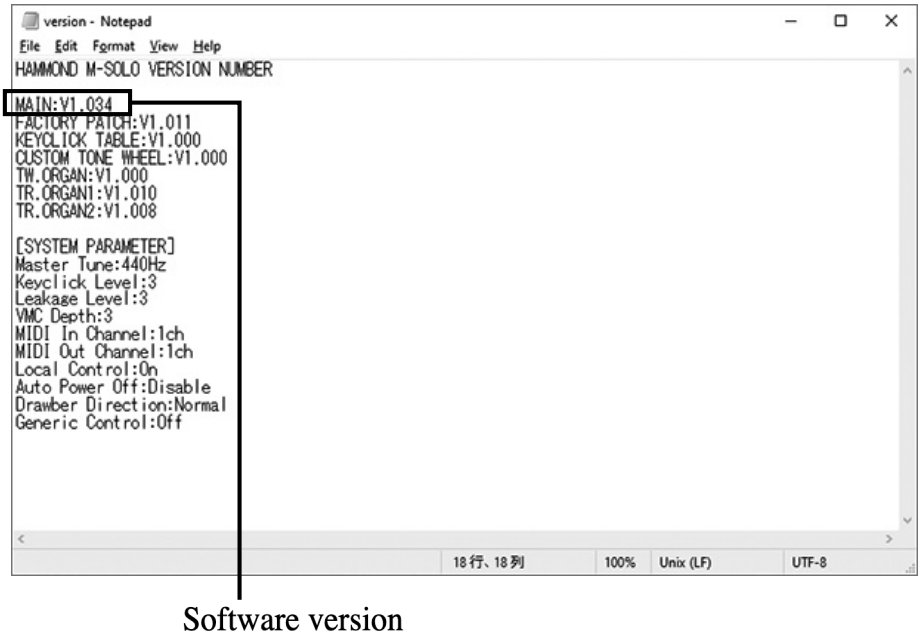
Checking the software version

To check the current software version, do the following:

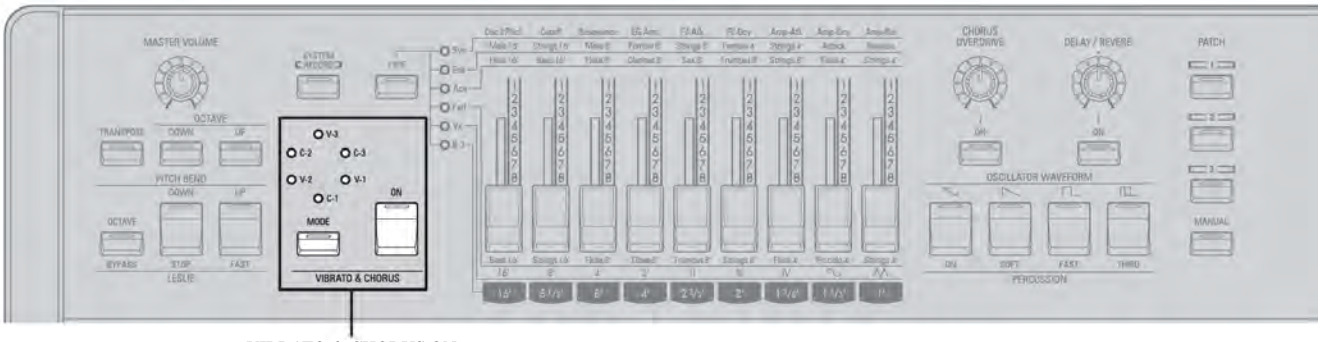
1 Set the USB TO HOST port to MASS STORAGE Mode (⇒).

2 Open “version.txt” in the “M-SOLO” folder.

The current software version is displayed.



Creating a Backup

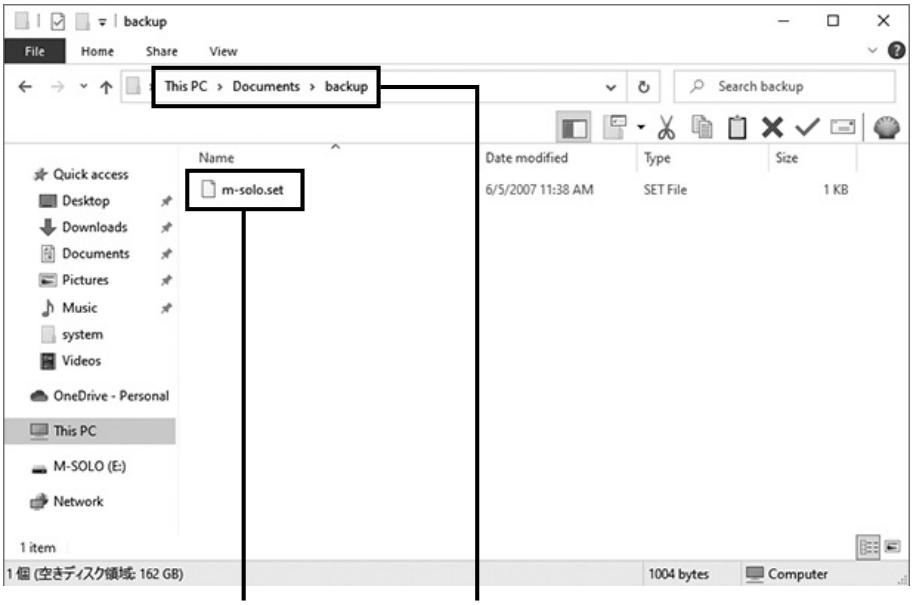


Set the USB TO HOST port to MASS STORAGE Mode.

Creating a backup

1 **Configure the USB TO HOST port for MASS STORAGE Mode (⇒).**

2 **From the “setup” folder in the “M-SOLO” folder, copy the “m-solo.set” file to another location.**

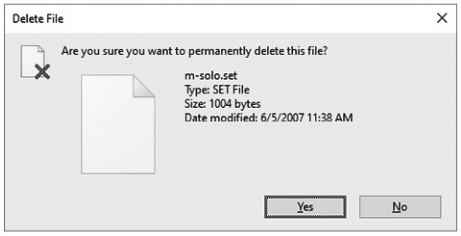


3 **Turn the M-solo “OFF.”**

Restoring from a backup

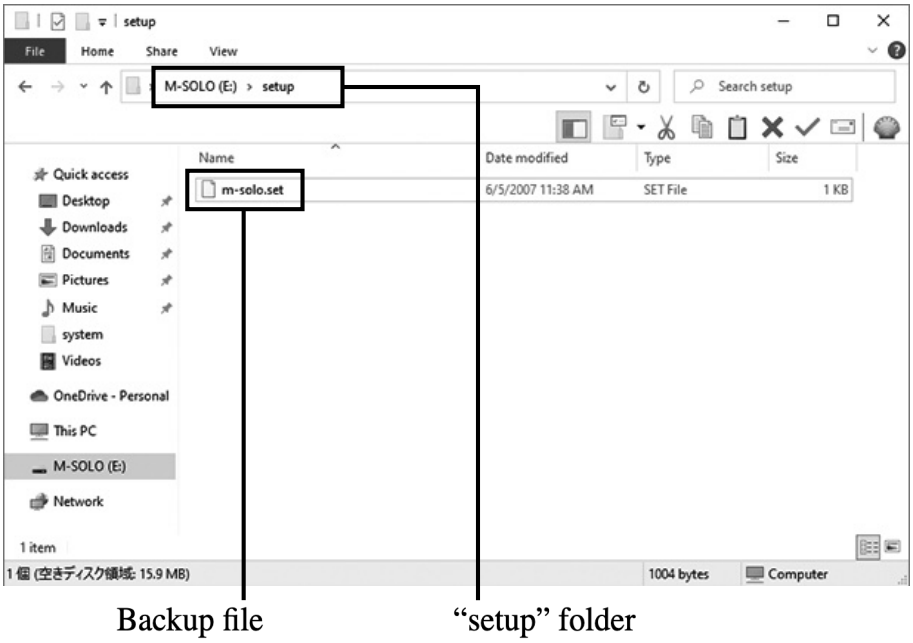
1 Set the M-solo to MASS STORAGE Mode (⇒).

2 In the “setup” folder in the “M-SOLO” folder, delete the “m-solo.set” file.



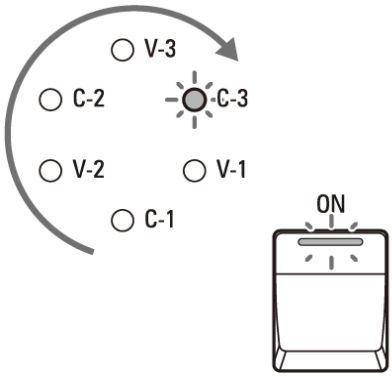
3 Copy the backup file to the “setup” folder.

Use the file you have copied to another location in “Creating a backup”.

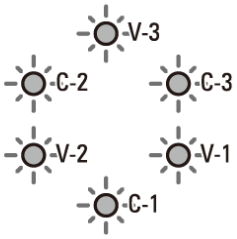


4 Press the [VIBRATO & CHORUS ON] button.

The restoration procedure will start. Also, you will see the LEDs in the VIBRATO & CHORUS section rotate in sequence.



When the restoration is complete, the six LEDs in the VIBRATO/CHORUS section will all light.



5 Turn the M-solo “OFF.”

The restored settings will Load when the instrument is next turned “ON.”

Restoration error

If a restoration error occurs the LEDs in the VIBRATO & CHORUS section will light. If one of these errors occurs, turn the M-solo “OFF,”

State of LEDs		Cause	Remedy
ON blinks	V-2 lights up	No backup file contained in the “system” folder.	Copy the backup file to the “setup” folder.
ON lights up	V-1 lights up	An error occurs during data verification.	Carry out restoration again. If the problem still persists, consult with your retailer, a Hammond dealer in your area or an authorized Hammond distributor.
	V-3 lights up	An error occurs during data reading.	
	C-1 lights up	An error occurs during data writing.	

APPENDIX

Glossary of terms

PWM

Abbreviation for Pulse Width Modulation. By varying the pulse width of a pulse or rectangular waveform, different timbres of sounds can be created.

Envelope

A series of parameters included as part of a sound over a certain period of time.. The four most common parameters are Attack, Decay, Sustain and Release, or ADSR.
The **Syn** Instrument Type on the M-solo implements Attack, Decay and Release. An effect similar to Sustain can be obtained by setting Decay to its maximum amount.

Oscillator (Syn)

A circuit which produces a continuous waveform. An oscillator is necessary for an electronic musical instrument to produce sound. The M-solo offers four waveforms (Triangle Sawtooth, Square and Pulse), each of which produces a distinctive tone quality.

Virtual Multi-Contact (VMC)

When a key is depressed on a tone-wheel Hammond Organ, it closes 9 electrical switch contacts. These 9 contacts represent the 9 pitches provided by the Drawbars - the fundamental tone plus eight harmonics. The contacts are closed and opened by means of 9 horizontal flat springs which touch 9 busbars.
Since the 9 busbars are physically separated, the harmonics do not all sound simultaneously, but in succession. The “Key-Click” on tone-wheel Hammond Organs is due to these physical characteristics.
The M-solo employs Virtual Multi-Contacts to replicate these characteristics of a tone-wheel organ. You can adjust the sounding time of the contacts and the Key click level.
In addition, you can play a rhythmic phrase by flicking keys to engage only some of the Virtual Multi Contacts and fully depressing keys to engage all of the contacts (see the illustration below). This is a style unique to the Hammond Organ, and is not characteristic of a piano or synthesizer playing style.

Tablet

A switch used to control sounds and effects on an analog organ or synthesizer.

Tone-wheel organ

An electric musical instrument which generates sound using a “tone-wheel generator.” A series of metallic disks rotate next to magnetic pickups. The standard configuration is 91 separate disks, each disk having a different number of teeth or high spots to generate approximately 7 $^{1}/_{2}$ octaves.

Transistor organ

An organ employing transistors or solid-state circuitry instead of vacuum tubes. This circuitry was used widely in lightweight combo organ popular in the 1960’s through to contemporary music. The M-solo includes three (3) combo organs among its Instrument Types - Vx, Farf and Ace.

Drawbar registration

Setting of Drawbars to produce different tones.

Foldback

On a B-3, the lowest note produced by the 16' Drawbar is the 2nd “C” (“2C”) from the left end of the keyboard, while the highest note that can be played by the 1′ is the 4th “F#” from the left end of the manual. The lower and higher keys on the manual “Fold Back,” in that they repeat the pitches played by other notes.

Footage

A pitch designation derived from the pipe organ. For example, if a sound or stop is designated “8′” the pipe used to play the lowest note on a keyboard would be eight feet (8′) long, a 4′ stop would use a pipe four feet long for the lowest keyboard note, etc.

Leakage tone

As explained previously, each tone-wheel rotates next to a magnet. The tone-wheels are mounted in separate bins in order to prevent the magnets from intercepting frequencies from neighboring wheels; however, a small amount of current may still “leak” through, producing a phenomenon called **Leakage**. Leakage is usually heard as a “hash” type sound consisting of many frequencies sounding at once. The amount of leakage tone from the M-solo can be adjusted to your preference (⇒).

Troubleshooting

Refer to the following information when the M-solo does not function properly.
In some cases, the M-solo will function properly if reset to the factory settings (⇒).
If the problem still persists, consult with your retailer, a Hammond dealer in your area or an authorized Hammond distributor.

Problem	Cause	Remedy
No sound.	The MASTER VOLUME knob is set at minimum.	Rotate the [MASTER VOLUME] knob to adjust the volume (⇒).
No sound. (Vx)	The last two Drawbars on the right are all the way in ("OFF").	Use the two Drawbars on the right (and) to increase the mixer values (⇒).
No sound. (Ens)	The **Attack** Drawbar is set at maximum.	Use the **Attack** Drawbar to decrease the attack rate (⇒).
No sound. (Syn)	The **Cutoff** Drawbar is set at minimum.	Use the **Cutoff** Drawbar to increase the cutoff frequency (⇒).
	The **Amp/Atk** Drawbar is set at maximum.	Use the **Amp-Atk** Drawbar to decrease the attack rate (⇒).
	The **Amp/Dcy** Drawbar is set at minimum.	Use the **Amp-Dcy** Drawbar to increase the sustain level (⇒).
Notes are repeated at higher octaves.	This replicates the "Foldback" characteristic of a vintage organ.	This is normal operation.
Notes are repeated at higher octaves. (Ens)	Notes beyond the normal sounding range are reproduced an octave lower.	This is normal operation.
The Overdrive effect is not sounding as expected.	The amount of Overdrive is dependent on Drawbar registration and/or Expression value.	This is normal operation.
The Delay/Reverb effect is reversed.	If a Patch containing Leslie settings is selected after a Patch with no Leslie settings has been previously selected, the Delay/Reverb effect will be reversed.	This is normal operation.
Buttons and knob do not function.	There may be a software malfunction.	Turn the power "OFF," then back "ON."
Expression Pedal does not control volume.	The polarity setting is incorrect.	Use the [EXPRESSION POLARITY] switch to select the correct polarity (⇒).
Foot Switch functions are reversed.	The polarity setting is incorrect.	The M-solo automatically detects the correct polarity of a connected Foot Switch when it is first turned "ON." Turn the M-solo "OFF" then back

Problem	Cause	Remedy
		ON." Do not engage the Foot Switch during this procedure.
Drawbars work in reverse. (Ens, Syn)	The Drawbar Direction is set to 1 (reverse).	Set the Drawbar direction to 0 (normal) (⇒).
Top panel is warm to the touch.	The instrument generates a slight amount of heat during normal operation.	This is normal operation.

LEDs blinking

LED	Condition
The V-1~V-3/C-1~C-3 LEDs are blinking in succession.	The M-solo system is loading. Please wait about 5 seconds.
Multiple LEDs blinking.	If the [SYSTEM] button has been pressed, the buttons used for selecting the Setup parameters will blink (⇒). Press the [SYSTEM] button again. The LEDs will stop blinking and the instrument will return to normal playing mode.
The [SYSTEM] and [VIBRATO & CHORUS ON] buttons are blinking.	The USB TO HOST port is set for MASS STORAGE Mode. To exit this Mode, turn the M-solo “OFF” then back “ON.”
The [LESLIE FAST] button is blinking.	The [FAST] button LED will blink according to the selected Speed.

Specifications

Sound engine

- Tone-wheel organ (B-3)
  MTWII (Modeled Tone Wheel II) sound engine, Polyphony: 61
- Transistor organs (Vx, Farf, Ace)
  Sampling sound engine, Polyphony: 96
- String/vocal ensemble (Ens)
  Sampling sound engine, Polyphony: 96
- Polyphonic synthesizer (Syn)
  Analog modeling sound engine, Polyphony: 8

Keyboard

49-note lightweight keyboard (with velocity)

Organs

- Drawbars: 9 pitches
- Organ types: 4 (B-3, Vx, Farf, Ace)
- Percussion: buttons (ON. SOFT, FAST, THIRD)

String/vocal ensemble

- Voices: 7 (Male 16', Strings 16', Male 8', Female 8', Strings 8', Female 4', Strings 4')
- Envelope: Attack, Release

Polyphonic synthesizer

- Oscillator: Waveform (triangle, sawtooth, square, pulse), Sub-oscillator
- Filter: LPF 24dB/oct
- Modulator: LFO 1 (Delay Vibrato & Wah-Wah/PWM), EG 2 (filer, amplitude)

Effects

- Tone wheel organ (B-3): Leslie, Vibrato & Chorus, Overdrive
- Transistor organs (Vx, Farf, Ace): Leslie, Vibrato, Overdrive
- Strings ensemble (Ens): Vibrato, Chorus
- Polyphonic synthesizer (Syn): Delay Vibrato & Wah-wah/PWM, Chorus
- Master: Delay/Reverb

Key map

- Octave, Transpose

Controllers

- Leslie: Bypass, Stop, Fast
- Pitch bend: Octave, Down, Up

Connection jacks

- MIDI: MIDI IN, MIDI OUT
- USB: TO HOST
- AUDIO: LINE OUT(L/R), PHONES, AUX IN (with input level control)
- CONTROL: EXPRESSION IN (with polarity switch), LESLIE FAST

Dimensions (width/depth/height)

731 x 274 x 85 mm (28-25/32 x 10-25/32 x 3-11/32 in)

Weight

3.6 kg (7 lb 15 oz)

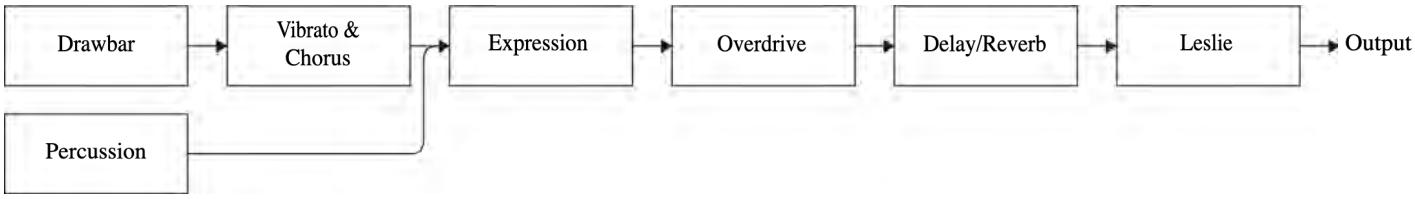
Accessories

AC adaptor (AD3-1230-2P) x 1, Power cable x 1

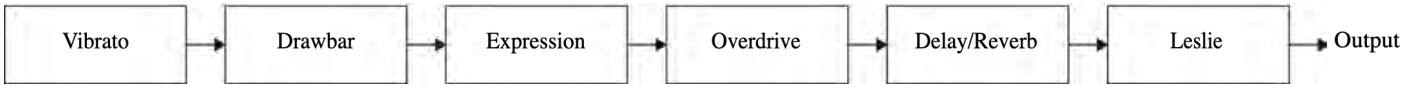
Signal flow

The signal flow differs depending on the Instrument Type.

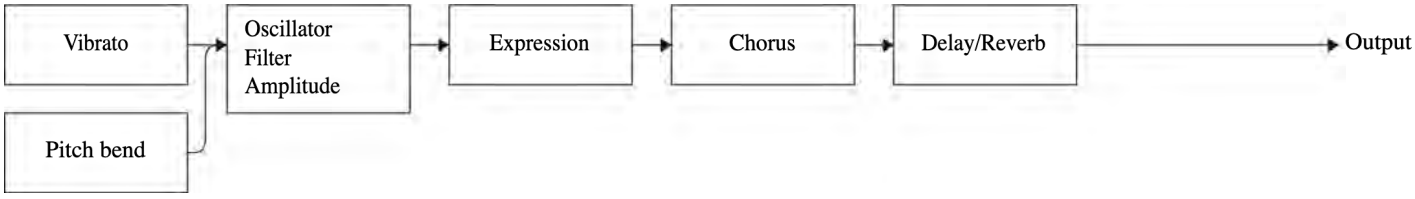
B-3



Vx, Farf, Ace



Ens, Syn



Tips

- On a vintage tone-wheel organ such as a B-3, Vibrato & Chorus modulates audio signals generated by the tone-wheels. On an electronic transistor organ (Vx, Farf and Ace) Vibrato modulates the frequency of the transistor oscillator. Therefore, the Vibrato will sound slightly differently on a tone-wheel organ versus an electronic transistor organ.
- Expression is located ahead of the Overdrive; therefore, the Expression Pedal will affect both volume and the Overdrive effect.
- The Delay/Reverb is located ahead of the Leslie; therefore,, the Leslie effect also affects the Delay/Reverb effect. This replicates the performance of a traditional organ.

MIDI

Channel voice messages

Note Off

Status	2nd Byte	3rd Byte
8nH	kkH	vvH
9nH	kkH	00H

n=MIDI Channel Number ..... 0H - 5H (Ch. 1 - 6)
kk=Note Number ..... 00H - 7FH (0 - 127)
vv=Velocity (disregard) ..... 00H - 7FH (0 - 127)

Note On

Status	2nd Byte	3rd Byte
9nH	kkH	vvH

n=MIDI Channel Number ..... 0H - 5H (Ch. 1 - 6)
kk=Note Number ..... 00H - 7FH (0 - 127)
vv=Velocity ..... 00H - 7FH (0 - 127)

Control Change

Expression (CC#11)

Status	2nd Byte	3rd Byte
BnH	0BH	vvH

n=MIDI Channel Number ..... 0H - 5H (Ch. 1 - 6)
vv=Expression ..... 00H - 7FH (0 - 127)

Leslie Fast (CC#92)

Status	2nd Byte	3rd Byte
BnH	5CH	vvH

n=MIDI Channel Number ..... 0H - 5H (Ch. 1 - 6)
vv=Control Value ..... 00H - 7FH (0 - 127)
0 - 63=Off, 64 - 127=On

Oscillator Waveform (CC#68 44H)

Value 01, 02, 04, 08H (1, 2, 4, 8)
01: Triangle, 02: Sawtooth, 04: Square, 08: Pulse

Octave (CC#70 46H)

Value ..... 3FH - 41H (-1 - +1)

Transpose (CC#71 47H)

Value ..... 3AH - 46H (-6 - +6)

Instrument Type (CC#72 48H)

Value ..... 00H - 05H (0 - 5)
00: B-3, 01: Vx, 02: Farf, 03: Ace, 04: Ens, 05: Syn

Percussion ON/OFF (CC#73 49H)

Value ..... 00H - 7FH (0 - 127)
0 - 63=Off, 64 - 127=On

Percussion Volume (CC#74 4AH)

Value ..... 00H - 7FH (0 - 127)
0 - 63=Normal, 64 - 127=Soft

Percussion Decay (CC#75 4BH)

Value ..... 00H - 7FH (0 - 127)
0 - 63=Slow, 64 - 127=Fast

Percussion Harmonic (CC#76 4CH)

Value ..... 00H - 7FH (0 - 127)
0 - 63=Second, 64 - 127=Third

Vibrato & Chorus Switch (CC#77 4DH)

Value ..... 00H - 7FH (0 - 127)
0 - 63=Off, 64 - 127=On

Vibrato & Chorus Mode (CC#78 4EH)

Value ..... 00H - 05H (0 - 5)
00: V-1, 01: C-1, 02: V-2, 03: C-2, 04: V-3, 05: C-3

Leslie Bypass (CC#79 4FH)

Value ..... 00H - 7FH (0 - 127)
0 - 63=Effect, 64 - 127=Bypass

Leslie Stop (CC#80 50H)

Value ..... 00H - 7FH (0 - 127)
0 - 63=Slow, 64 - 127=Stop

MFX Switch (CC#81 51H)

Value ..... 00H - 7FH (0 - 127)
0 - 63=Off, 64 - 127=On

MFX Amount (CC#82 52H)

Value ..... 00H - 7FH (0 - 127)

Reverb Switch (CC#83 53H)

Value ..... 00H - 7FH (0 - 127)
0 - 63=Off, 64 - 127=On

Reverb Amount (CC#84 54H)

Value ..... 00H - 7FH (0 - 127)
0 - 63=Decay, 64 - 127=Reverb

Key Click Level (CC#85 55H)

Value ..... 00H - 06H (0 - 6)
Off, Soft - Loud

Leakage Level (CC#86 56H)

Value (Data, MSB, LSB) ..... 00H, 00H - 04H, 00H (0 - 3)
Off, Soft, Mid, Loud

VMC Depth (CC#87 57H)

Value (Data, MSB, LSB) ..... 00H, 00H - 04H, 00H (0 - 3)
Off, Short, Mid, Long

Program Change

Status	2nd Byte
CnH	ppH

n=MIDI Channel Number ..... 0H - FH (Ch. 1 - 16)
pp=Program Number 00 -02, 7FH (Patch 1-3, Manual)

Pitch Bend Change

Status	2nd Byte	3rd Byte
EnH	mmH	llH

n=MIDI Channel Number ..... 0H - FH (Ch. 1 - 16)
mm, ll=Value .....
00H, 00H - 40H, 00H, -7FH, 7FH (-8192 - 0 - +8192)

Channel mode messages

All Sounds Off (CC#120)

Status	2nd Byte	3rd Byte
BnH	78H	00H

n=MIDI Channel Number ..... 0H - 5H (Ch. 1 - 6)
When this message is received, all sound outputs for a corresponding channel are disabled.

Reset All Controllers (CC#121)

Status	2nd Byte	3rd Byte
BnH	79H	00H

n=MIDI Channel Number ..... 0H - 5H (Ch. 1 - 6)
When this message is received, the following controller is set to its reset value.
Expression: 127

All Notes Off (CC#123)

Status	2nd Byte	3rd Byte
BnH	7BH	00H

n=MIDI Channel Number ..... 0H - 5H (Ch. 1 - 6)
When this message is received, all notes for a corresponding channel are turned off.

Message transmission timing

The M-solo incorporates the Virtual Multi-Contact (VMC) system; therefore the relation between playing the keyboard and transmitting a MIDI note message works as described below.

B-3	The sound will gradually appear at the Shallow sounding point, fully appear at the Deep sounding point, then a note message will be sent. The keyboard velocity controls the contact time of all the Virtual Multi-Contacts (VMC).
Vx, Farf, Ace	The sound will appear at the Shallow sounding point and a note message will be sent at the Deep point. The sound is not affected by key velocity.
Ens, Syn	The sound appears and a note message is sent at the Deep sounding point. The sound is not affected by key velocity.

Drawbar data list

Control Number

Organ

16′	5 1/3′	8′	4′	2 2/3′	2′	1 3/5′	1 1/3′	1′
0CH (12)	0DH (13)	0EH (14)	0FH (15)	10H (16)	11H (17)	12H (18)	13H (19)	14H (20)

Strings ensemble

Male 16′	Strings 16′	Male 8′	Female 8′	Strings 8′	Female 4′	Strings 4′	Attack	Release
15H (21)	16H (22)	17H (23)	18H (24)	19H (25)	1AH (26)	1BH (27)	1CH (28)	1DH (29)

Polyphonic synthesizer

Osc 2Pitch	Cutoff	Resonance	EG Amt	Fil-Atk	Fil-Dcy	Amp-Atk	Amp-Dcy	Amp-Rel
58H (88)	59H (89)	5AH (90)	5BH (91)	5DH (93)	5EH (94)	5FH (95)	1EH (30)	1FH (31)

Level

0	1	2	3	4	5	6	7	8
00 - 0FH (0 - 15)	10 - 1FH (16 - 31)	20 - 2FH (32 - 47)	30 - 3FH (48 - 63)	40 - 4FH (64 - 79)	50 - 5FH (80 - 95)	60 - 6FH (96 - 111)	70 - 7EH (112 - 126)	7FH (127)

(Example) Set 8' at level 7 via MIDI: Bx 0E 70 (x=MIDI Channel)

The level value (as above) is for Organ Types (B-3, Vx, Farf & Ace). For Ens (envelope only) or Syn, the value will be received in steps (0 to 127).

MIDI implementation chart

Model: M-solo (Drawbar Keyboard)

Date: 1-Jul-2023 (Version: 1.0)

Function		Transmitted	Recognized	Remarks
Basic Channel	Default	1	1	
	Changed	1 - 6	1 - 6	
Mode	Default	3	3	
	Messages	X	X	
	Altered	*****	*****	
Note Numbers		36 - 108*1	0 - 127	*1 by Octave Shift
	: True Voice	*****	0 - 127	
Velocity	Note ON	O	O	**B-3** Instrument Type only
	Note OFF	O	O	
After Touch	Key's	X	X	
	Ch's	X	X	
Pitch Bend		O	O	
Control Change	11	O	O	Expression
	12 - 20	O	O	Drawbar Reg. Organ
	21 - 29	O	O	Drawbar Reg. Ens
	68	O	O	Oscillator Waveform
	70	O	O	Octave
	71	O	O	Transpose
	72	O	O	Instrument Type
	73 - 87	O	O	Parameters
	88 - 91, 93 - 97	O	O	Drawbar Reg. Syn
	92	O	O	Leslie Fast
Program Change		O	O	0-2(Patch), 127(Manual)
	: True #	*****	*****	
System Exclusive		X	X	
System Common	: Song Position	X	X	
	: Song Select	X	X	
	: Tune	X	X	

Function		Transmitted	Recognized	Remarks
System Real Time	: Clock	X	X	
	: Commands	X	X	
Aux Messages	: All Sounds Off	X	O	(120)
	: Reset All Controllers	X	O	(121)
	: Local On/Off	X	X	
	: All Notes Off	X	O	(123)
	: Active Sense	O	O	
	: Reset	X	X	

Mode 1: OMNI ON, POLY / Mode 2: OMNI ON, MONO / Mode 3: OMNI OFF, POLY / Mode 4: OMNI OFF, MONO
O : Yes, X : No

SAFETY INSTRUCTIONS

Before using this unit, please make sure you read the following “SAFETY INSTRUCTIONS.”
Always follow the instructions listed below to maintain in safety.
In this manual, the degrees of dangers are classified as follows:

WARNING	**This sign shows there is a risk of death or severe injury if the corresponding instruction is not properly followed.**
CAUTION	**This sign shows there is a risk of injury or material damages (damage to the room, furniture or animals) if the corresponding instruction is not properly followed.**

WARNING

Power

Use only the correct voltage specified for this unit. The required voltage is printed on the supplied AC adaptor.
If you need to use this unit in a foreign country, consult with your retailer, a near Hammond dealer or an authorized Hammond distributor.

Always use the supplied AC adaptor and power cable.
The supplied AC adaptor and power cable are for this unit use only. Never use for other products.

Do not forcibly twist the power cable or put a heavy object on it.
Doing so can damage the power cable, resulting in electric shocks or a fire.

Do not connect this unit to an AC wall outlet using a multi-plug outlet extender.
Exceeding the power rating (watts/amperes) can cause overheating, resulting in electric shocks or a fire.

Installation

Do not install or store this unit such as following locations.

- Locations where the temperature or humidity becomes extremely high (e.g. location under direct sunlight or near heating devices)
- Near wet places (e.g. bathroom, sink, wet floor)
- Location exposed to rain, water droplets or steam
- Location where is dusty or subject to vibration
- Unstable place with a risk of falling

Do not put water containers (e.g. flower vase), insect sprays, perfumes, alcohols, nail polish or spray cans near this unit.

In case any liquid adheres to the surface of this unit, immediately wipe clean with a soft dry cloth.

Handling

Do not disassemble or modify this unit or the AC adaptor.

Do not repair or replace parts of this unit by yourself.

Never do anything not mentioned on this manual. In case this unit needs to be repaired, consult with your retailer, a near Hammond dealer or an authorized Hammond distributor.

Do not drop or apply strong impact to this unit.

Do not insert liquids (e.g. water, juice) or foreign objects (e.g. flammable materials, coins, wires) into this unit.

Be careful of handling by small children.

Handling by children must be done under the monitoring and supervision of an adult.

Do not use this unit for a long period of time at a high volume.

Depending on a combination of this unit and external devices (e.g. amplifier, speaker, headphones), loud sounds may output, resulting in hearing loss. In case you experience any hearing loss or ringing, consult a physician.

If any of the following problems occurs, immediately turn off this unit and then remove the AC adaptor from the AC wall outlet.

- The AC adaptor or power cable is damaged.
- Smoke or unusual smell comes from this unit.
- Liquid or a foreign object falls into the inside of this unit.

• This unit is wet by rain or moisture.
• Any failure occurs in this unit.

If you continue to use without solving the problem, it may result in electric shocks, a fire or malfunction. Consult with your retailer, a near Hammond dealer or an authorized Hammond distributor.

⚠ CAUTION

Power

When connecting or disconnecting the AC adopter or power cable, hold the plug part.

Pulling the cable part can damage the jack or cord.

If not using this unit for a long period of time, remove the AC adaptor from the AC wall outlet.

When there is a risk of lightning, remove the AC adaptor from the AC wall outlet.

Clean the AC adaptor and plug parts regularly.

The plug covered in dust can cause poor insulation, resulting in a fire.

Do not handle the AC adopter or power cable with wet hands.

Installation

Install this unit and the AC adaptor in a well-ventilated location.

Do not rest your weight or place heavy objects on this unit.

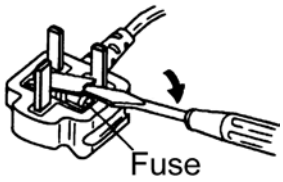
Prevent complicated wiring of cords and cables. Also be sure to keep them out of the reach of small children.

Before moving this unit, turn off the power and then remove all cables (e.g. AC adaptor, external devices).

Handling

Before cleaning this unit, turn off the power and remove the AC adaptor from the AC wall outlet.

FOR UNITED KINGDOM:
FOR YOUR SAFETY, PLEASE READ THE FOLLOWING TEXT CAREFULLY
This appliance is supplied with a molded 3-pin mains plug for your safety and convenience.
The plug contains a 13 amp fuse.
Should the fuse need to be replaced, please ensure that the replacement fuse has a rating of 13 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 fuse cover is lost, the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be obtained from your local Hammond Dealer.
If the fitted molded plug is unsuitable for the socket outlet in your home, then the fuse should be removed and the plug cut off and disposed of safely.
There is a danger of severe electrical shock if the cut-off plug is inserted into any 13 amp socket.
To replace the fuse, open the fuse compartment with a screwdriver and replace the fuse and fuse cover.



Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.
However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
• Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

In the unlikely event that you need to dispose of this unit, be sure to contact your dealer or your nearest town or municipal office for its proper disposal.

PRECAUTIONS FOR USE

Power

- Turn off the power of all devices before connecting the external devices to prevent damages to the devices or malfunction.
- Do not connect any equipment that generates noises (e.g. refrigerator, washing machine, microwave, air conditioner) on the same power line as this unit to prevent noise generation or malfunction of this unit. If a different power line is not available, use a noise filter for the power line.

Installation

- This unit may interfere with a TV, a radio, a wireless device (e.g. cellular phone), or a device with a large transformer (e.g. power amplifier). If interference occurs, change the position or orientation of the corresponding device, or turn it off if not in use.
- Do not leave this unit in a location where the temperature becomes extremely high (e.g. location under direct sunlight or near heating devices), nor expose this unit to strong light (e.g. spotlight, piano lamp) for a long period of time. Doing so can cause deformation or discoloration.
- Condensation may occur inside this unit due to a big change in temperature or humidity. In this case, keep this unit unused for several hours to remove the condensation. If you continue to use without solving the problem, it may result in malfunction.
- Do not place rubber or vinyl materials on this unit for a long period of time. Doing so can cause deformation or discoloration.
- Do not apply adhesive tapes (e.g. sticker) to this unit. It may damage the exterior of this unit when peeled off.

Handling

- Disassembling, modifying or repairing this unit by yourself voids the warranty. Also, we may not accept repairs for the product in such cases.
- When connecting or disconnecting any cable, hold the plug part. Pulling the cable part can damage the jack or cord.
- Do not apply excessive force to the buttons, knobs and jacks to prevent malfunction.
- Keep the volume at reasonable levels to prevent disturbing neighbors.
- When cleaning the unit, use a soft dry cloth or a wet cloth wrung out tightly. To remove stubborn dirt on the plastic parts, wipe clean using a cloth with neutral detergent and then a soft dry cloth. Using benzine, paint thinners or alcohol can cause deformation or discoloration.
- When you need to transport this unit, pack it appropriately with the supplied packing box and buffers.

- When disposing of the supplied packing box and buffers, follow the local rules of your area.

Data backup

- Back up the necessary data to a MIDI device or a PC. Data stored in the memory of this unit may be erased unintentionally due to a wrong operation or malfunction.
- It may be impossible to restore the data it has been erased. Also, we will not take liability for any lost data or data stored in an external device.

Trademark

- All trademarks and brand names mentioned in this manual are the property of their respective owners and not in any way affiliated or associated with us. The trademarks are only mentioned for explanation purposes.

SERVICE

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: