HAMMOND

M-solo

REFERENCE GUIDE

Version 1.00

IMPORTANT - PLEASE READ

Your Hammond M-solo 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 to allow great flexibility in how you want to play. This Guide is designed to explain the operating features of your Hammond M-solo as simply and graphically as possible.

Because we want to make this Guide as easy to understand as possible, the explanations are grouped by <u>subject</u> <u>matter</u>. 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 <u>not</u> require you to have prior working knowledge of some other feature. The explanations are presented such that, if you follow the steps outlined, the message you see in the Information Center Display screen will be identical to that shown in the keyboard 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:

> 2. Read each step carefully.
> 2. Don't skip any of the steps.
> 2. 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 M-solo.

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M-solo

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INTRODUCTION

INTRODUCTION

◆ Front Panel
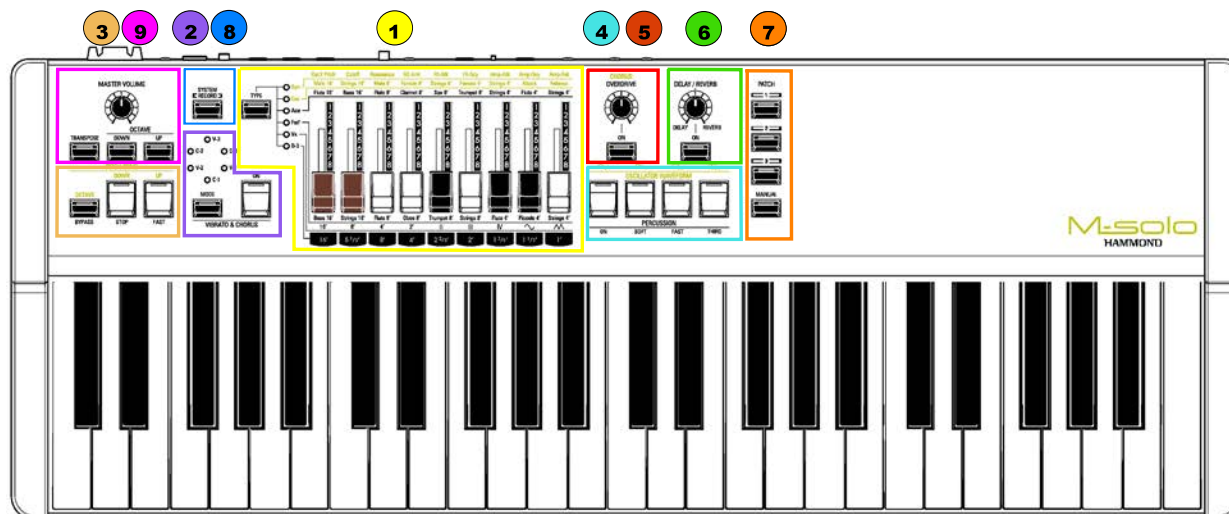
The main sections of the Control Panel are outlined above. The following is a brief description of each one.

① - ● DRAWBARS

This section is used to control all the sounds possible on the M-solo, which consist of classic Hammond Drawbar tones as well as Transistor Combo Organ tones, String and Vocal Ensemble sounds and a polyphonic Synthesizer. The TYPE button allows you easily to select among the different Instrument Types. This is explained more fully in the INSTRUMENT TYPES chapter of this Guide starting on page 11.

② - ● VIBRATO & CHORUS

Use these buttons to add Vibrato or Chorus to the sounds. The data chart below shows the available options.

VIBRATO & CHORUS Controls	
Instrument Type	**Function**
B-3	These controls add three degrees of Vibrato and three degrees of Chorus.
Vx, Farf, Ace, Ens	These controls add six degrees of Vibrato.
Synth	These controls add six degrees of Delay Vibrato.

This is explained more fully in the INSTRUMENT TYPES chapter of this Guide starting on page 29.

③ - ● LESLIE / PITCH BEND

The function of these controls is determined by the selected Instrument Type. The data chart below shows the available options.

LESLIE / PITCH BEND Controls	
Instrument Type	**Description**
B-3, Vx, Farf, Ace	These controls add a digital Leslie effect to the selected registration.
Ens, Synth	These controls allow you to bend the pitch up or down.

This is explained more fully in the INSTRUMENT TYPES chapter of this Guide.

4 - ● **PERCUSSION / SYNTH**

The function of these controls is determined by the selected Instrument Type. The data chart below shows the available options.

PERCUSSION / SYNTH Controls	
Instrument Type	**Description**
B-3	These controls allow you to add Percussion to the sounds.
Vx, Farf, Ace	These controls have no effect.
Syn	These controls allow you to select the waveform for the Synth.

This is explained more fully in the INSTRUMENT TYPES chapter of this Guide.

5 - ● **CHORUS / OVERDRIVE**

The function of these controls is determined by the selected Instrument Type. The data chart below shows the available options.

CHORUS / OVERDRIVE Controls	
Instrument Type	**Description**
B-3, Vx, Farf, Ace	These controls allow you to add Overdrive to the sound.
Ens, Syn	These controls allow you to add a Chorus effect to the sound.

ON/OFF button

When this button is "ON" (orange LED lit), the selected effect is added to the sound. The amount of each effect is regulated by the CHORUS / OVERDRIVE knob, explained below.

CHORUS / OVERDRIVE knob

This knob allows you to control the total or maximum amount of Chorus or Overdrive.

Turn this knob to the right to increase the amount of the effect.

Turn this knob to the left to decrease the amount of the effect.

This is explained more fully in the INSTRUMENT TYPES chapter of this Guide.

NOTE: The CHORUS / OVERDRIVE button must be "ON" (orange LED lit) in order to hear each effect.

6 - ● **DELAY / REVERB**

These controls allow you to add Delay or Reverb effects to the sounds.

ON/OFF button

When this button is "ON" (orange LED lit), the Delay or Reverb effect will be added to the sound. The amount of each effect is regulated by the DECAY / REVERB knob, explained below.

DELAY/REVERB knob

This knob allows you to control the total or maximum amount of Delay or Reverb.

Turn this knob to the right to increase the amount of Reverb.

Turn this knob to the left to increase the amount of Delay.

NOTE: The DELAY / REVERB button must be "ON" (orange LED lit) in order to hear each effect.

7 - ● **PATCH**

These buttons allow you to recall either factory-programmed combinations of sounds and Parameters or sound and Parameter combinations you have created and Recorded.

8 - ● **SYSTEM / RECORD**

This button allows you to access various special features, some of which affect specific portions of the M-solo and others of which affect the entire instrument.

9 - ● **OVERALL CONTROLS**

These controls allow to make live-performance changes which affect the entire instrument.

The <u>MASTER VOLUME</u> knob is located on the extreme left of the Control Panel. With this knob, you can control the total or maximum volume of the entire instrument.

Turn this knob to the <u>right</u> to <u>increase</u> the total volume.

Turn this knob to the <u>left</u> to <u>decrease</u> the total volume.

NOTE: If you have an Expression Pedal connected, it will express up to the amount determined by the setting of the MASTER VOLUME knob.

The <u>OCTAVE</u> / <u>TRANSPOSE</u> buttons allow you to change the Octave as well as shift the musical key of the entire instrument. This is explained in more detail in the <u>SPECIAL PERFORMANCE FEATURES</u> chapter of this Guide starting on page 44.

◆ **Accessory Panel**

All connections are found on the Accessory Panel on the back of the M-solo.
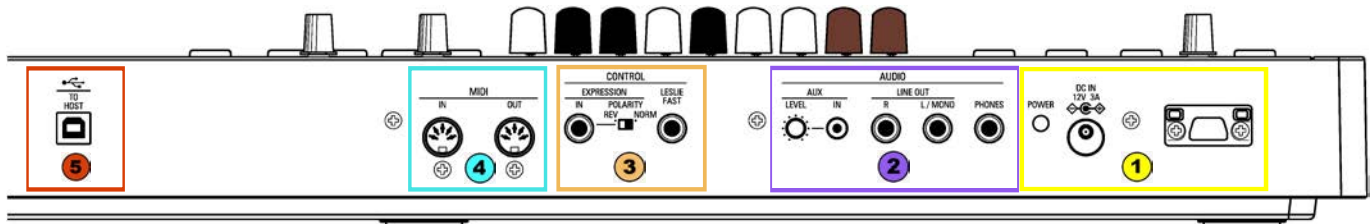
① - ● AC POWER

AC IN

Connect the AC Adapter (provided) to this receptacle.

Power Switch

This turns the power to the M-solo "ON" and "OFF." When this switch is in "ON," LED's (Light Emitting Diodes) on the front panel will light up showing that the instrument is "ON."

NOTE: The M-solo has a **POWER AUTO OFF** feature which automatically turns the power to the instrument "OFF" if no keys or controls are used within a 30-minute period. See page 10 for more information about this feature.

AC Cord Strain Relief

This prevents the AC connection from dislodging accidentally.

② - ● AUDIO CONNECTIONS

PHONES jack

Use this jack to connect a set of stereo headphones.

NOTE: Connecting headphones does **not** mute the LINE OUT or LESLIE Audio Outputs. If you wish the sound to go through the Headphones only, disconnect all other audio outputs.

LINE OUT 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.

AUX IN jack

Use the AUX IN 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.

AUX LEVEL knob

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

3 - ● **CONTROL JACKS**

LESLIE FAST jack

Use this jack to connect a Foot Switch to control Leslie speeds. The compatible Foot Switches are listed below;

```
HAMMOND . . .  FS-9H, VFP1
BOSS. . . . .  FS-5U
YAMAHA. . . .  FC4A, FC5
```

In addition, the FS-10TL Leslie Switch (not available in Europe) can be connected to the LESLIE FAST jack.

EXP PEDAL jack

Use this jack to connect an Expression Pedal to control volume while playing. The compatible Expression Pedals are listed below:

```
HAMMOND . . .  EXP-50J, EXP-20, V-20H, V-20R; NORM
KORG. . . . .  XVP-10, XVP-20; REV
ROLAND. . . .  EV-5; NORM
YAMAHA. . . .  FC7; REV
```

EXPRESSION POLARITY switch

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

4 - ● **MIDI Ports**

MIDI IN

Use this jack to receive MIDI data from a connected MIDI device.

MIDI OUT

Use this jack to transmit MIDI data to a connected MIDI device.

5 - ● **USB TO HOST**

Use this Port to:

1. Send and Receive Setup and System files.

2. Send and Receive MIDI data (UPPER, LOWER, PEDAL Internal Zones and System Exclusive messages).

NOTE: For more information about the USB Port, see the **USING MEMORY** chapter of this Guide

◆ Basic Hook-Up

The following section explains the basic setup procedure for your M-solo.
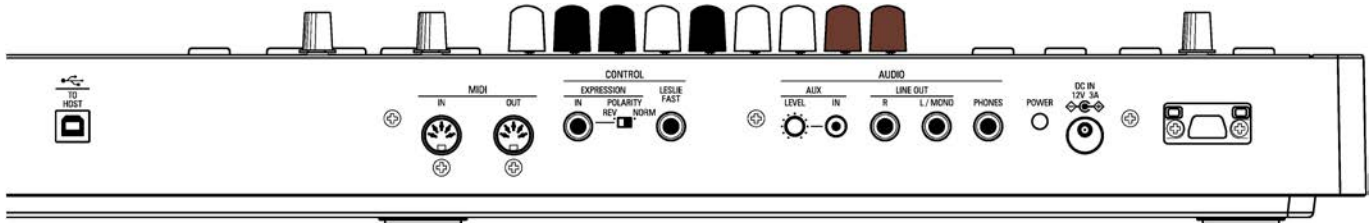
● AC Power

Your Hammond M-solo is shipped from the factory set for 120V. AC power. To connect the M-solo keyboard to A.C. power:

1.   Locate the AC Power Cord and A.C. Power Adapter that came with your M-solo.

2.   Plug the AC Power Cord into the Adapter.

3.   Plug the female end of the Adapter into the receptacle on the M-solo marked, "DC IN."

4.   Secure the AC Power Cord through the Strain Relief to prevent it from falling out accidentally.

5.   Plug the 3-pronged Power Cord into an AC power outlet.

● Audio Connections

Connecting an external sound source

1.   Use two audio cables with $\frac{1}{4}$" plugs on both ends of each cable.

2.   Connect one end of each of the audio cables to the audio output connectors (marked LINE OUT) on the Accessory Panel.

3.   Connect the other ends of each cable to the female $\frac{1}{4}$" audio input connectors of your sound source.
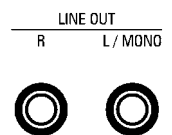
If your amplifier has only a single (1) female $\frac{1}{4}$" phono plug audio input, you can connect one end of one cable to the L/MONO audio output connector on the M-solo, and the other end to the female $\frac{1}{4}$" audio input connector of your amplifier.

● Connecting an Expression Pedal

If you wish to use an Expression Pedal, connect the plug from the Expression Pedal into the EXP.PEDAL jack. The Hammond EXP-50 / EXP-50J Expression Pedals are recommended.

● **Connecting a Foot Switch**

You can connect an optional foot switch such as the Hammond model FS-9H foot switch to your M-solo. Connect the foot switch plug to the jack marked <u>LESLIE</u> <u>FAST</u> on the back of the M-solo.

NOTE: In order to insure proper operation of the Foot Switch, be sure to connect it when the power to the M-solo is "OFF."

● **MIDI Connections**

Your M-solo can interface with a great number of MIDI-compatible devices. See the <u>MIDI</u> chapter of this Guide for more information about MIDI connections and your Hammond M-solo.

● **Connecting a Set of Headphones**

PHONES

A stereo headphone jack is provided on the Accessory Panel next to the LINE OUT jacks so that you can play or practice in privacy. Connect the plug from a set of stereo Headphones into the Headphone jack.

NOTE: Be sure that your headphone set has either a ¼" plug or an adapter for a ¼" plug.

● **Drawbars**

Drawbars are the heart and soul of the Hammond Sound.
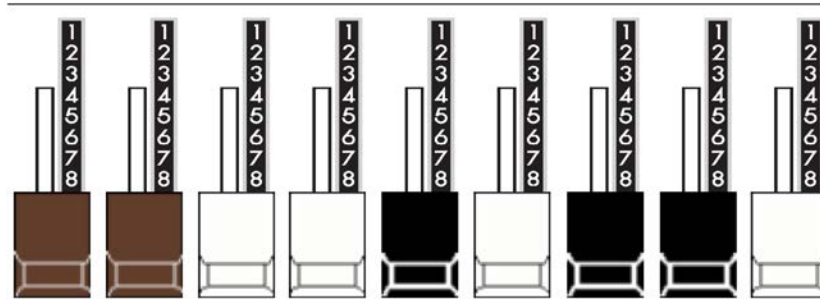
The M-solo has nine Drawbars, sometimes referred to as Tonebars.

Pulling a Drawbar out (toward you) will increase the volume in incremental steps from 0 (no sound) to 8 (maximum volume). Pushing the Drawbar back in (away from you) decreases the volume of that Drawbar.

Please refer to the DRAWBARS section of this Reference Guide for a complete explanation of Hammond Drawbars.

No Volume

Full Volume
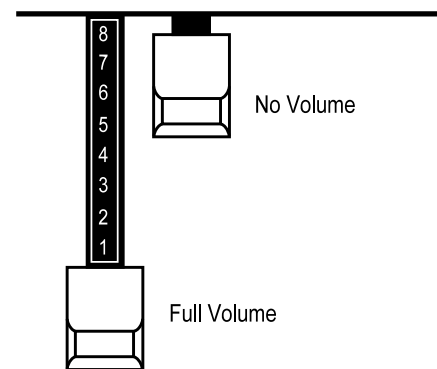
● **Buttons**

The button controls on the M-solo have LEDS or lights that will light up indicating "ON."

"OFF"   "ON"   "OFF"   "ON"

NOTE: More details can be found in later chapters of this Guide.

● **Playing the instrument**

The M-solo is a single-keyboard instrument, with all controls necessary for operation located on the front panel within easy reach of the player. There is/are no display or Menus; however, several features are provided for configuring the instrument to your tastes. These will be described in later sections of this Guide.

IMPORTANT - PLEASE READ

◆ POWER AUTO OFF

The M-solo has a special feature called <u>POWER</u> <u>AUTO</u> <u>OFF</u> which automatically turns the power to the instrument "OFF" if no keys or buttons are pressed for 30 minutes. This is done for safety reasons and under most normal conditions we do not recommend disabling this feature; however, you can select whether or not the instrument will automatically turn "OFF" by doing the following procedure:

1.   Turn the instrument "ON" by pressing the POWER button.

2.   Press the SYSTEM button. The LEDs on the instrument will start flashing.

3.   Press the VIBRATO & CHORUS ON button. The LED to the left of <u>V-3</u> will light and the LED of the VIBRATO & CHORUS button will stop flashing and light continuously.
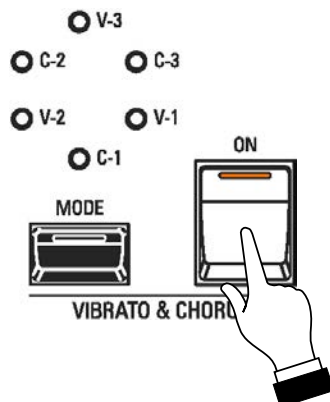
4.   Press and Release the low "C" on the keyboard.
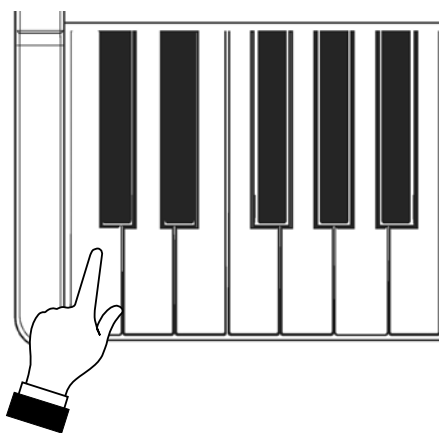
4.   Press the SYSTEM button to turn it "OFF" (LED not lit).

       This will disable the POWER AUTO OFF feature. The AC power to the instrument will remain "ON" until it is turned "OFF" using the POWER switch.

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INSTRUMENT TYPES

INSTRUMENT TYPES

The tones produced by the M-solo are controlled by a set of nine Drawbars.

Drawbars, sometimes called Tonebars, are the heart and basis of the renowned Hammond Sound and have been used since the first Hammond Organ Model A introduced in 1935. An explanation of how to use these Drawbars is given later in this chapter of the Guide.
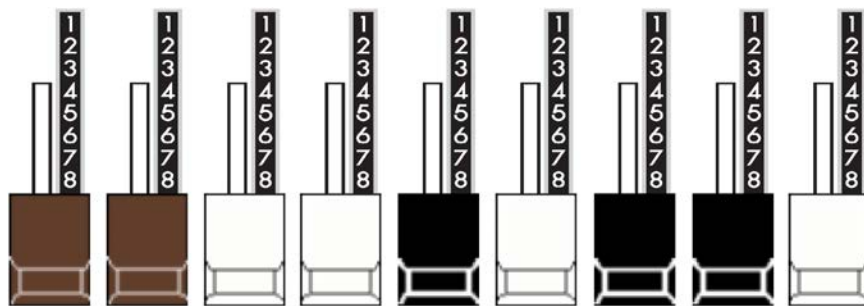
There are six (6) different types of tones available:

    1.   <u>B-3</u> - replicates the performance of a vintage Hammond Organ.

    2.   <u>Vx.</u> - replicates vintage British combo organ tones.

    3.   <u>Farf.</u> - replicates vintage Italian combo organ tones.

    4.   <u>Ace.</u> - replicates vintage Japanese combo organ tones.

    5.   <u>Ens</u> - replicates various Ensemble (String and Vocal) sounds.

    6.   <u>Syn</u> - replicates a simple polyphonic synthesizer.

In addition to traditional Hammond Drawbar tones, the Drawbars on the M-solo can control a number of models of Combo Organs as well as Vocal and String Ensembles and polyphonic Synthesizer. The following pages will explain the Instrument Types in more detail.

◆ B-3 - Vintage Tone-wheel Organ

This Instrument Type replicates the sound and performance characteristics of a vintage Hammond tone-wheel organ such as a B-3, C-3, A-100, etc.

To select the B-3 Instrument Type, do the following:

If the B-3 LED is not already lit, press the TYPE button repeatedly until it lights.
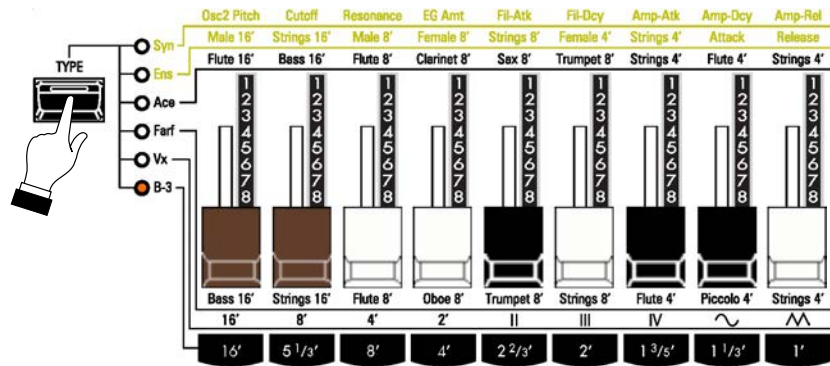
There are approximately 253,000,000 possible sound combinations that can be produced by these Drawbars. Each Drawbar consists of sine waves of different pitches.

The illustration below shows how each Drawbar relates to the keyboard when middle "C" is depressed.
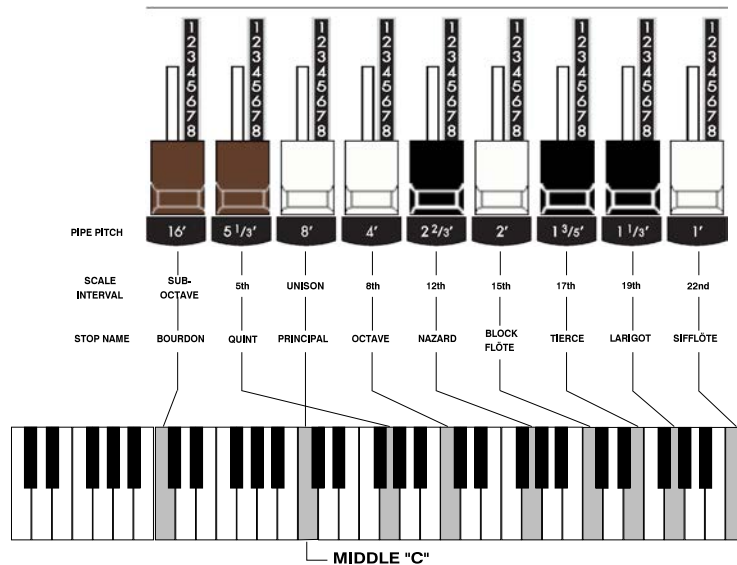
Notice there is a number followed by a footage mark in front of each Drawbar. For example, the first white Drawbar is shown as "8'." This is pipe organ terminology indicating that the pipe used to produce the lowest note on the keyboard on a pipe organ is actually eight feet long. The numbers from "1" to "8" on each Drawbar represent degrees of loudness - number 1 being the softest, and number 8 being the loudest.

The following pages explain characteristics of the Drawbars which are common to traditional uses of Drawbars in vintage Hammond Organs which have Drawbars.

TRY THIS:

1. After turning the M-solo "ON," the LEDs will flash for a few seconds, after which some LEDs will light continuously.

2. Make sure the B-3 Instrument Type is selected. See the previous page for instructions on how to do this.

3. If the MANUAL button is not "ON" (LED lit), press it to turn it "ON". This will allow you to use the front panel controls entirely to control the sound.

4. Create a Drawbar registration - for example, 88 8800 008.
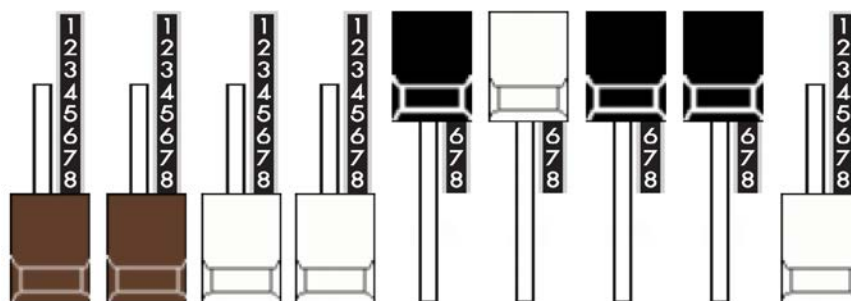
5. Play some notes on the keyboard. You will hear the notes play with the Drawbar registration you just set up.

Drawbars are divided into 3 groups of sound as well as 3 groups of color. We will first look at the 3 sound groups.

● Sound Groups

You can think of these sound groups in terms of the three levels - The Sub being the deep pitches, the Foundation being the mid range of pitches and the Brilliance being the high pitches.
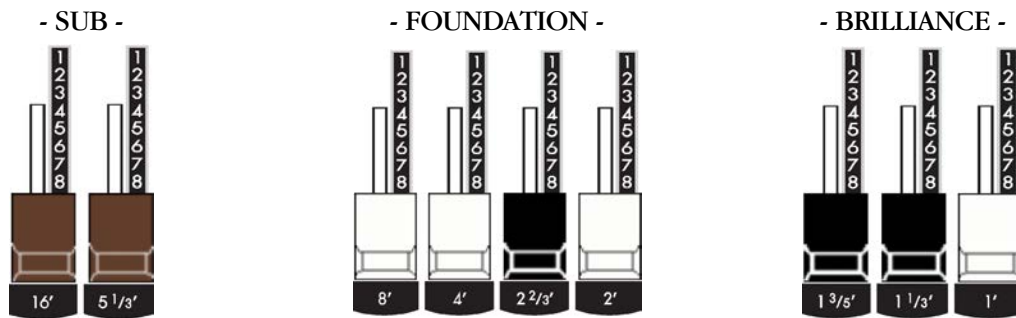
- SUB -   - FOUNDATION -   - BRILLIANCE -

TRY THIS:

1.   Make sure the MANUAL button is "ON" (LED lit).

2.   Make sure all Drawbars are "IN" (off).

3.   Make sure the B-3 Instrument Type is selected.

4.   Hold down a "C" chord, starting with "E" above the third "C" from the bottom ("E", "G" & "C" notes) with your right hand on the keyboard.

5.   Starting with the first white Drawbar, pull out and push in each of the Foundation Drawbars one group at a time until you have a sound that you like.

6.   While still holding the "C" chord down, pull each of the brown Sub Drawbars out until you like the sound.

7.   Now do the same with the Brilliance Drawbars.

It's that easy to create your own custom Drawbar settings.

● **Color Groups**

White Drawbars

The first white Drawbar represents the "fundamental" or "8' base" tone. All of the other white Drawbars are octave intervals or harmonics of the fundamental tone. The tonal brilliance is greatly increased by adding white Drawbars, but the harmonics added are always in "consonance" or harmony.

TRY THIS:

1. Make sure the MANUAL button is "ON" (LED lit).

2. Make sure all Drawbars are "IN" (off).

3. Make sure the B-3 Instrument Type is selected.

4. Press and Hold the third "C" note from the bottom on the keyboard.

5. Pull the first white Drawbar all the way out. You will hear the note "C."

6. While holding "C," pull the other white Drawbars for the keyboard out one by one in sequence.

As you add each Drawbar, you will hear the addition of the same note an octave higher in each case.

Black Drawbars

The Black Drawbars represent the dissonant (discordant) harmonics which are also necessary in building rich tone colors. The mellowness of a horn, the pungency of strings, and the brilliance of reed voices owe much of their character to the presence of these harmonics in different degrees.

TRY THIS:

1. Make sure the MANUAL button is "ON" (LED lit).

2. Make sure all Drawbars are "IN" (off).

3. Make sure the B-3 Instrument Type is selected.

4. Press and Hold the third "C" note from the bottom on the keyboard.

5. Pull the first white Drawbar all the way out. You will hear the note "C."

6. While holding "C," pull the 3 Black Drawbars all the way out.

The sound produced by the Drawbars is that of a clarinet.

Brown Drawbars

In addition to the white and black Drawbars, there are two brown Drawbars in the group. These two Drawbars produce "sub-octave" effects. The first brown Drawbar is the sub-octave of the fundamental Drawbar. It is "one octave" lower in sound.
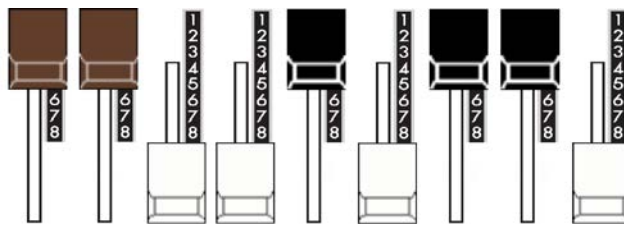
TRY THIS:

1.   Make sure the MANUAL button is "ON" (LED lit).

2.   Make sure all Drawbars are "IN" (off).

3.   Make sure the B-3 Instrument Type is selected.

4.   Press and Hold the third "C" note from the bottom on the keyboard.

5.   Pull the first white Drawbar all the way out. You will hear the note "C."

6.   While holding "C," pull the first brown Drawbar all the way out.

You will now hear the sound of "C" one octave lower being added.

The second brown Drawbar is the "sub-octave" of the third harmonic. Both of these Drawbars are used to add depth and richness to many combinations. They also increase the range of the manual by one octave since a solo registration of the "8 foot," or normal pitch, can be set up using the first brown Drawbar as the fundamental and played one octave higher.
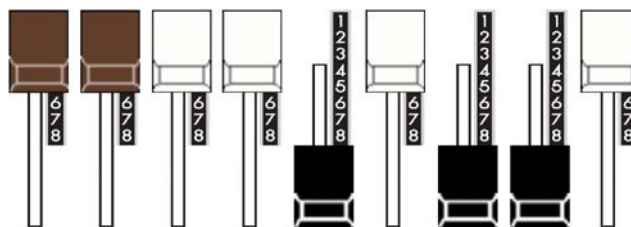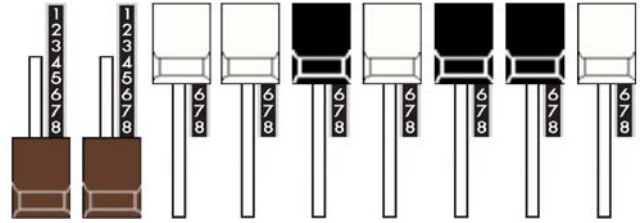
TRY THIS:

1.   Make sure the MANUAL button is "ON" (LED lit).

2.   Make sure all Drawbars are "IN" (off).

3.   Make sure the B-3 Instrument Type is selected.

4.   Press and Hold the third "C" note from the bottom on the keyboard.

5.   Pull the first white Drawbar all the way out. You will hear the note "C."

6.   While holding "C," pull the first brown Drawbar all the way out. You will now hear the sound of "C" one octave lower being added.

7.   Now pull the second brown Drawbar in the same group out, and you will hear it add a richness to the sound of the "C" note that you are holding down.

● Tone Families By Shape

Regardless of the size of a pipe organ or its number of stops, all of its voices are related to four basic families of tone. The four basic families - Flute, Reed, String and Diapason - can be quickly set up on the Drawbars by relating a pattern or shape to each family.

These are the generalities which apply to the tonal resources of the organ, and in themselves produce pleasant and usable effects. However, real beauty of tone is secured in two ways. The first way is to use registrations which have been devised by organists. The second way, and eventually the one that best expresses your own feeling for the music, is to create your own tonal effects, experimenting with and perfecting tones which you use to play your favorite selections.

The Hammond Organ Drawbars allow you not only to set up any tonal effect you want, but also to make many fine variations of the tone. Only with the Hammond Drawbars can you play exactly the shade of tone you want for every selection and, perhaps even more important, for every size and type of room in which you play.

With the Hammond Organ Drawbars, a touch of a finger is all that is needed to make the tone quality softer or more brilliant, richer in one harmonic or another.

Typical Drawbar Registration Patterns For The
Four Families Of Organ Sound

String family (bow pattern)
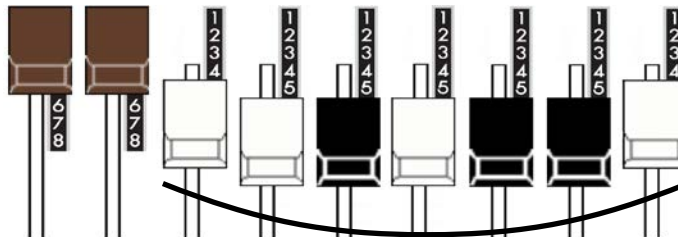
String Tones

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

Reed family (triangle pattern)
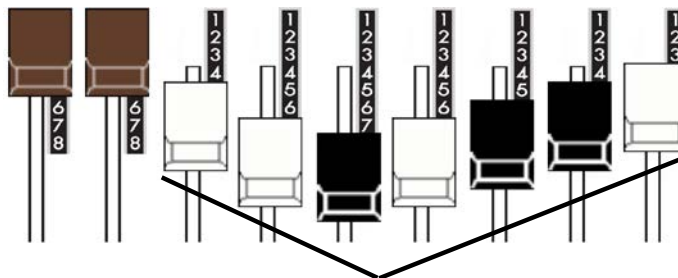
Reed Tones

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

Flute family (2 step pattern)
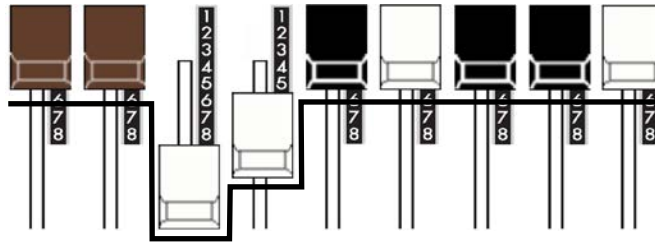
Flute Tones

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

Diapason family (check mark pattern)
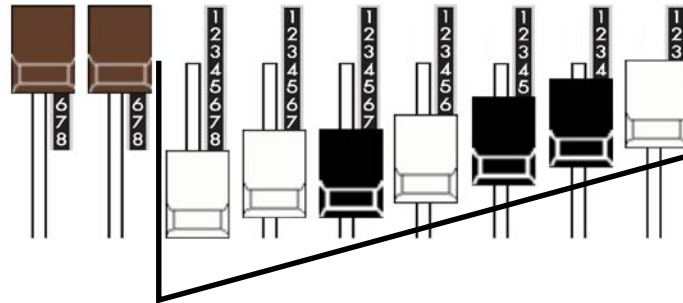
Diapason Tones

Accompaniment 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

Jazz and Pop Drawbar Registrations

With Hammond Drawbars, any harmonic may be emphasized individually or eliminated completely. Even the fundamental may be eliminated. Because of this fact, many unusual and striking effects can be developed.

A POP ORGAN TONE - 80 0000 008
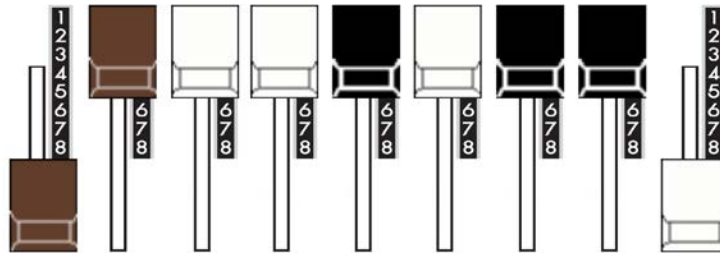
This is a very popular combination used by many pop organists. The effect of two harmonics five octaves apart gives a beautiful tone color for playing slower songs or ballads.

A JAZZ ORGAN TONE - 88 8000 008
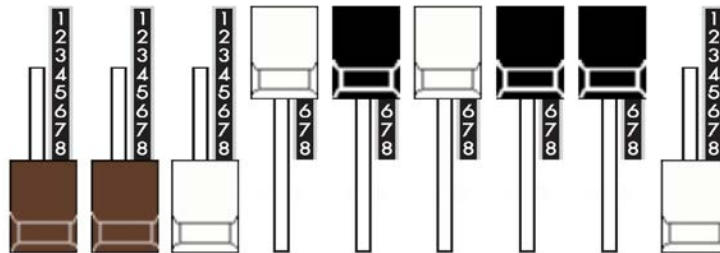
There are many Drawbar combination which are not imitative of any instrument, but which are immediately recognized as "Hammond Sounds." The basic Hammond Organ jazz sound is obtained with the first three Drawbars, such as 88 8000 000. When the last white Drawbar is used along with the first three Drawbars, a very pleasing effect is created. For playing slower songs, you can wish to try a little less of the last white Drawbar - for example, 88 8000 005. The 8th harmonic will still be heard, but will not be as prominent.

◆ <u>Vx</u> - British combo organ

This Instrument Type allows you to use the Drawbars to register the sound of a vintage British combo organ.

To select the <u>Vx</u> Instrument Type, do the following:

Press the TYPE button repeatedly until the <u>Vx</u> LED lights.
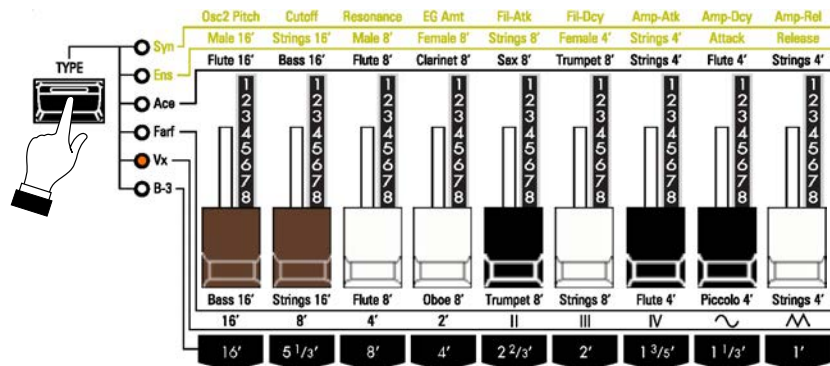
You can now use the Drawbars to control vintage British combo organ tones.

The figure below shows how the Drawbars are allocated for the <u>Vx</u> Organ Type.
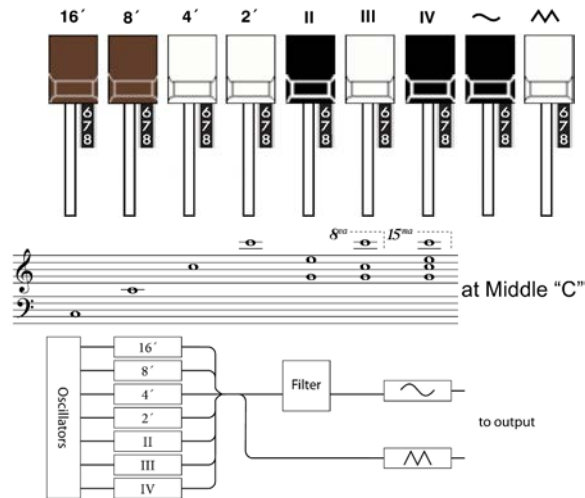
The type of combo organ replicated by <u>Vx</u> had drawbar-type controls, but they functioned differently from Hammond Harmonic Drawbars. The first four Drawbars control individual pitches, while the next three are "Mixture" Drawbars which cause multiple pitches to sound. "II," "III" and "IV" refer to the number of pitches represented by that Drawbar.

The last two Drawbars control the type of tone produced by the first seven Drawbars. The last black Drawbar causes pure tones to sound while the last white 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.

◆ <u>Farf</u> - Italian combo organ

This Instrument Type allows you to use the Drawbars to register the sound of a vintage Italian combo organ.

To select the <u>Farf</u> Instrument Type, do the following:

Press the TYPE button repeatedly until the <u>Farf</u> LED lights.
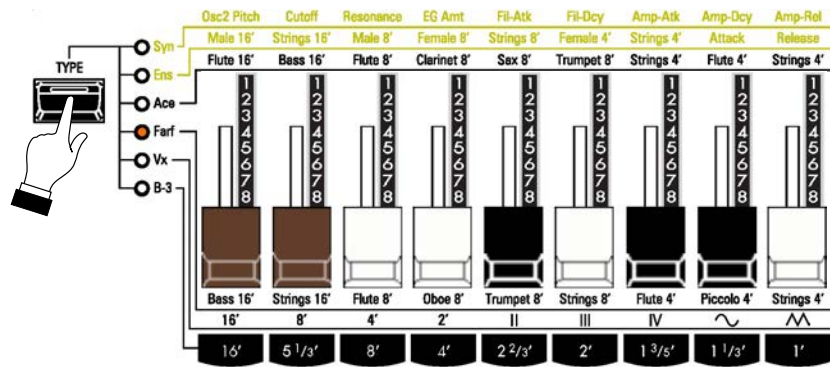
You can now use the Drawbars to control vintage Italian combo organ tones.

The figure below shows how the Drawbars are allocated for the <u>Farf</u> Organ Type.
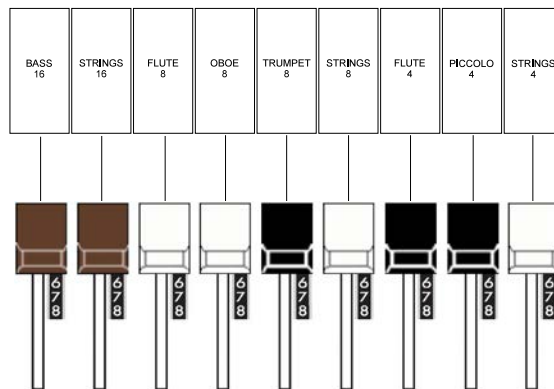
The above configuration follows the layout of the "Combo Compact" series of combo organ, which used rocker-type tilt tablets rather than Drawbars to turn voices "ON" and "OFF." On the M-solo, the Drawbars are used to control the same sounds. To replicate the effect of tablets, simply pull the Drawbar(s) representing the tone(s) you want "out" all the way. Or, you can create shadings of tones by using the Drawbars in the more traditional fashion.

◆ Ace - Japanese combo organ

This Instrument Type allows you to use the Drawbars to register the sound of a vintage Japanese combo organ.

To select the Ace Instrument Type, do the following:

Press the TYPE button repeatedly until the Ace LED lights.
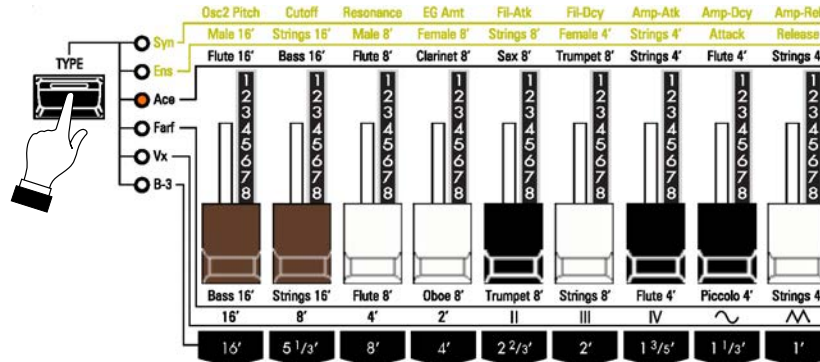
You can now use the Drawbars to control vintage Japanese combo organ tones.

The figure below shows how the Drawbars are allocated for the Ace Organ Type.
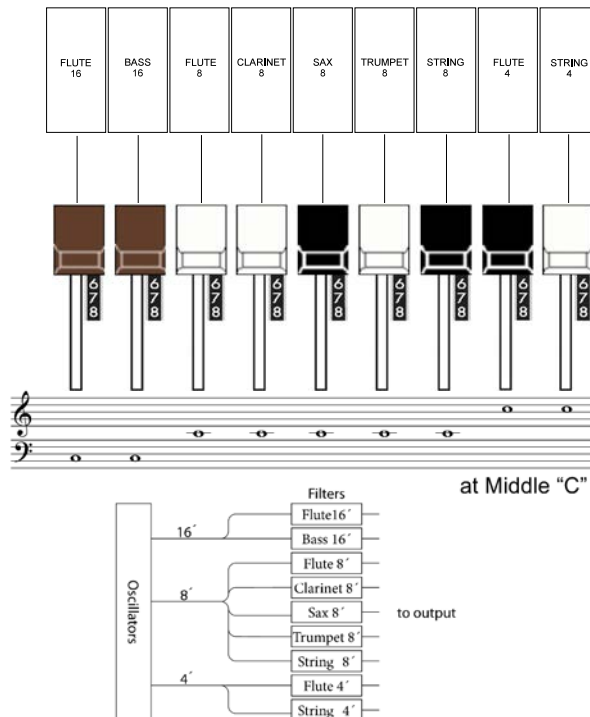
The above configuration follows the layout of the "TOP7" combo organ, which used rocker-type tilt tablets rather than Drawbars to turn voices "ON" and "OFF." On the M-solo, the Drawbars are used to control the same sounds. To replicate the effect of tablets, simply pull the Drawbar(s) representing the tone(s) you want "out" all the way. Or, you can create shadings of tones by using the Drawbars in the more traditional fashion.

◆ <u>Ens</u> - **String / Vocal Ensemble**

This Instrument Type allows you to use the Drawbars to control String and Vocal sounds.

To select the <u>Ens</u> Instrument Type, do the following:

Press the TYPE button repeatedly until the <u>Ens</u> LED lights.
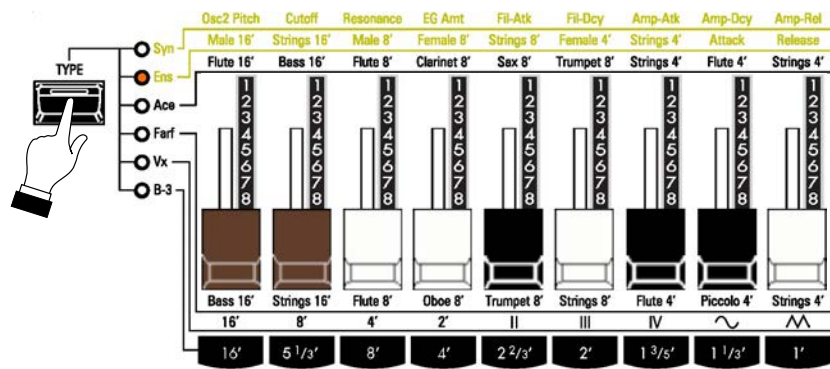
The figure below shows how the Drawbars are allocated for the <u>Ens</u> Instrument Type.

at Middle "C"
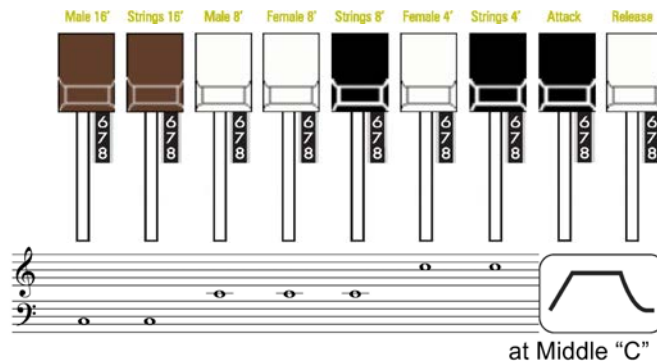
The first seven Drawbars control String and Vocal sounds of different pitches, while the last two Drawbars control the Attack and Release type of tone produced by the first seven Drawbars.

◆ **Syn - Polyphonic Synthesizer**

This Instrument Type allows you to use the Drawbars to control a simple polyphonic synthesizer.

To select the Syn Instrument Type, do the following:

Press the TYPE button repeatedly until the Syn LED lights.
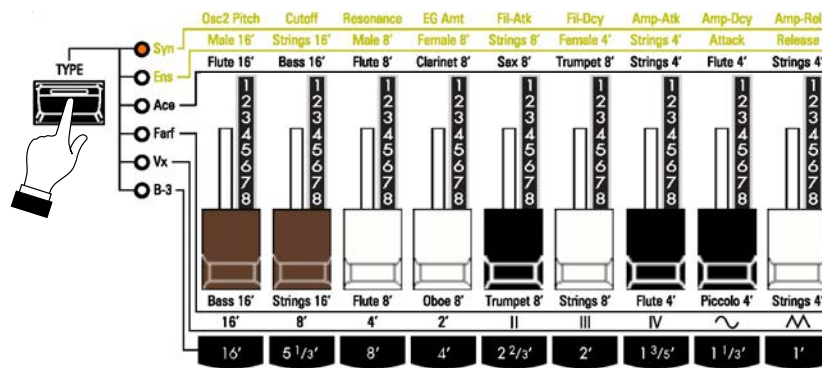
The figure below shows how the Drawbars are allocated for the Syn Instrument Type.
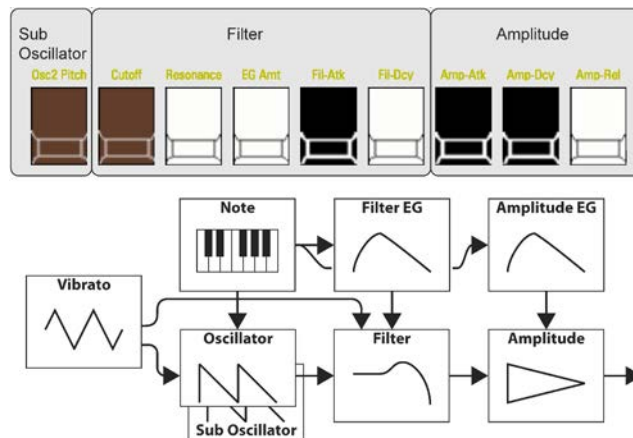
The following pages explain the Syn Instrument Type in detail.

● OSCILLATOR WAVEFORM controls
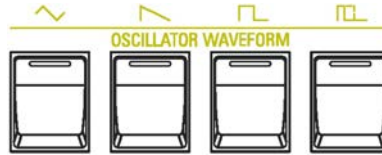
These buttons allow you to select the waveform for the <u>Syn</u> Instrument Type. There are four (4) choices:

1. <u>Triangle</u> - This waveform consists of a fundamental plus odd-numbered harmonics , with each harmonic a tenth as low in amplitude as the one preceding it. The sound is similar to a square wave but much mellower in tone.

2. <u>Sawtooth</u> - This waveform consists of a fundamental plus odd-and even-numbered harmonics, with each harmonic decreasing in amplitude by half. Therefore it is the richest harmonically of the available waveforms and is useful for brass and string-type tones.

3. <u>Square</u> or <u>Rectangular</u> - This waveform consists of a fundamental plus odd-numbered harmonics , with each harmonic a third as low in amplitude as the one preceding it. The sound is similar to a clarinet of very hollow timbre.

4. <u>Pulse</u> - This waveform "pulses" or modulates abruptly between its positive and negative values. The amount of time the waveform is at its positive value is referred to as the <u>pulse width</u> or <u>duty</u> <u>cycle</u>. For example, if the waveform is at its positive value 6% of the time it is referred to as having a pulse width of 6%. Changing the pulse width changes the shape of the waveform and therefore its sound, making a wide variety of different tones possible.

Triangle

When this button is "ON" (LED lit), a Triangle waveform will play from the keyboard.

Sawtooth

When this button is "ON" (LED lit), a Sawtooth waveform will play from the keyboard.

Square

When this button is "ON" (LED lit), a Square waveform will play from the keyboard.

Pulse

When this button is "ON" (LED lit), a Pulse waveform will play from the keyboard. Use the first brown Drawbar to adjust the Pulse Width.

NOTE: One of these buttons is always "ON" (LED lit) when the **Syn** Instrument Type is selected.
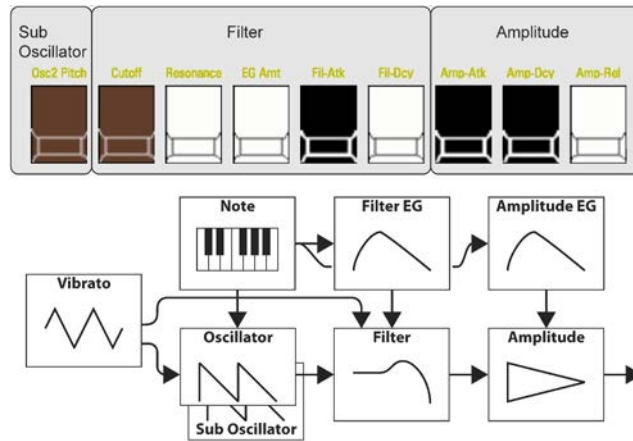
● **Using the Drawbars in the <u>Syn</u> Instrument Type**

When the <u>Syn</u> Instrument Type is selected, you can use the Drawbars to control and shape the sound. The following paragraphs explain this in detail.

Osc2 Pitch

The first brown Drawbar allows you to adjust different functions depending on the waveform selected. The data chart below shows the options you may select.

Osc2 Pitch	
Waveform	**Function**
Triangle, Sawtooth, Square	A "Sub-Oscillator is included in the **<u>Syn</u>** Instrument Type which allows two pitches to play with a single keypress. The first brown Drawbar allows you to adjust the pitch of the Sub-Oscillator. 0: no sound. 1 to 3: detuned gradually. 4 to 8: shifted to one octave by semitones.
Pulse	The first brown Drawbar allows you to adjust the Pulse Width. 0 (50%) to 4 (approx. 75%) to 8 (approx. 98%).

Filter Cutoff

The second brown Drawbar allows you to adjust the cutoff frequency of the filter. By controlling high-frequency component, the sound becomes brighter or mellower.

Resonance

The first white Drawbar allows you to adjust the emphasis of the sound around the cutoff frequency. By increasing the emphasis, the sound becomes more distinctive.

Filter Envelope

EG Amt

Use the second white Drawbar to adjust how much the filter EG (envelope generator) modulates the cutoff frequency.

Fil-Atk

Use the first black Drawbar to adjust the amount of time for the filter to open after a key is depressed.

Fil-Dcy

Use the third white Drawbar to adjust the amount of time for the filter to close from the EG Amt setting.

Amplitude Envelope

Amp-Atk

Use the second black Drawbar to adjust the amount of time for the Volume of a sound to increase to its peak after a key is depressed.

Amp-Dcy

Use the last black Drawbar to adjust the amount of time for a sound to fade away after the sound rises to its peak.

Amp-Rel

Use the last white Drawbar adjusts the amount of time for a sound to fade away after a key is released.

NOTE: When the **Syn** Instrument Type is selected, the Parameters controlled by the Drawbars are continuously variable instead of changing in eight steps only.

NOTE: The operating direction of the Drawbars can be reversed so that the amount of a Parameter is increased by pushing a Drawbar in, and decreased by pulling a Drawbar out. To do this, please consult the **SPECIAL PERFORMANCE FEATURES** chapter of the Guide starting on page 51.

◆ **Vibrato & Chorus**

The Hammond Vibrato & Chorus is a hallmark of the "Hammond Sound."

"Vibrato" is created by a periodic raising and lowering of pitch, comparable to the effect produced when a violinist moves his finger back and forth on a string while playing, varying the frequency while maintaining constant volume.

On a tone-wheel Hammond Organ equipped with Vibrato & Chorus, the vibrato circuitry consists of a series of plural coils or low-pass filter sections called a "delay line" or "line box" and a motor-driven "scanner" which, as the name implies, scans the delay line and progressively retards the phase, creating the Vibrato effect.

"Vibrato Chorus," an effect similar to the effect of two or three slightly out-of-tune frequencies mixed together, is obtained when the vibrato output signal is mixed with a portion of signal without vibrato.

The diagram below shows the vibrato equipment of a typical tone-wheel Hammond Organ such as a B-3.
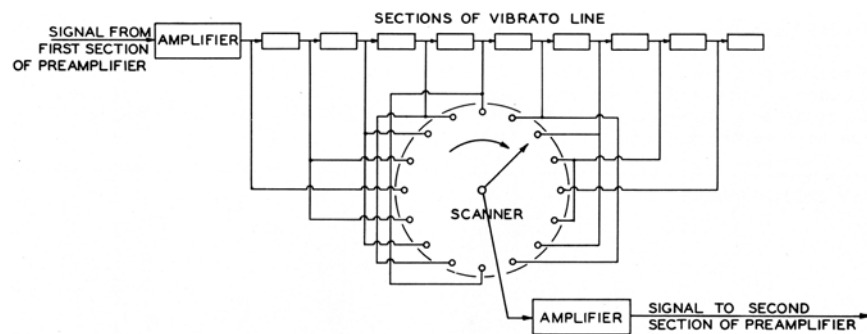
● **The Vibrato and Chorus Controls**
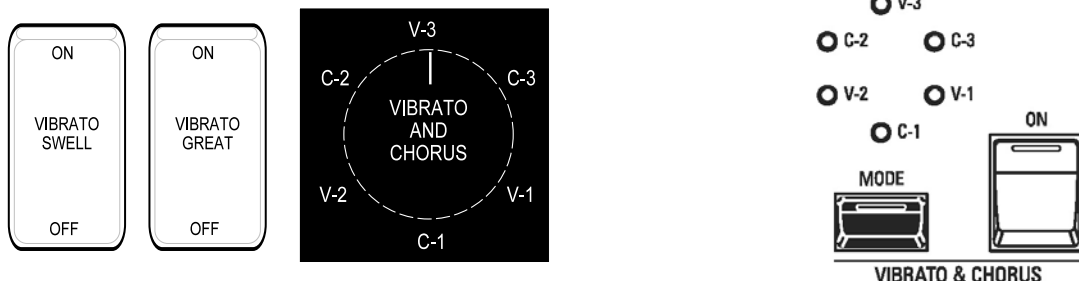
- Vintage B-3 / C-3 Vibrato and Chorus Controls -

-M-solo Vibrato and Chorus Controls -

The Vibrato and Chorus controls on vintage Hammond console organs with either a "2" or a "3" as part of their model designation (B-2, B-3, etc.) consist of two tilt tablets and a six-position rotary control to the left of the Drawbars. The M-solo uses a similar arrangement, except that it uses buttons instead of tilting tablets, and instead of a rotary control there is a MODE button which accesses the same six degrees of Vibrato and Chorus.
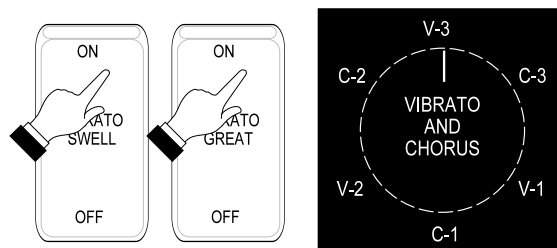
To turn the Vibrato or Chorus effect "ON" for the Swell Manual of a vintage B-3 / C-3, press the top of the VIBRATO SWELL tilt tab.
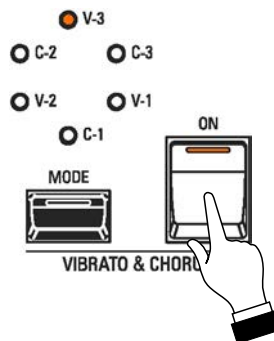
To turn the Vibrato or Chorus effect "ON" on the M-solo, press the ON button "ON" (LED lit).
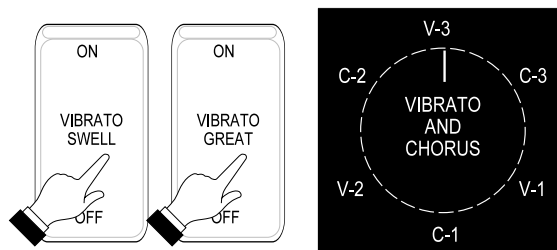
To turn the Vibrato or Chorus effect "OFF" for the Swell or Great Manuals of a vintage B-3 / C-3, press the tilt tabs at the bottom.
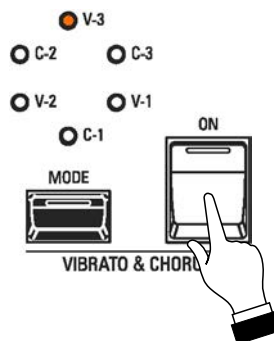
To turn the Vibrato or Chorus effect "OFF" for the M-solo, press the ON button "OFF" (LED not lit).

● **Amount of Vibrato and Chorus**

To select the amount of Vibrato or Chorus, press the MODE button repeatedly until the orange LED next to the desired effect and amount lights. Each successive button press will rotate the LED clockwise.
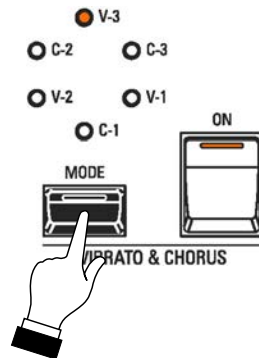
Vibrato

V-1 (Small Vibrato)

To select vibrato depth V-1, press the MODE button so that the orange LED next to the legend, "V-1" will light. This is the lightest depth and produces the vibrato equivalent of most orchestral solo instruments.
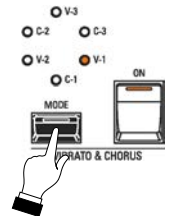
V-2 (Wide Vibrato)

To select vibrato depth V-2, press the MODE button so that the orange LED next to the legend, "V-2" will light. This is the standard depth vibrato used with the Drawbars to produce the effect of a theater organ.
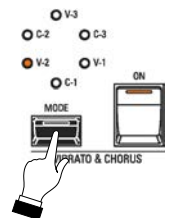
V-3 (Full Vibrato)

To select vibrato depth V-3, press the MODE button so that the orange LED next to the legend, "V-3" will light. This is the fullest amount and adds much warmth and enhances your music.
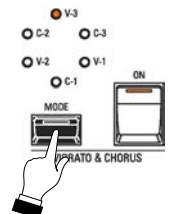
Remember, the ON button must be "ON" (orange LED lit) to allow you to hear the selected Vibrato effect.

Chorus

When the CHORUS effect is used, half of the tone is heard without Vibrato, and half of the tone is heard with Vibrato.

C-1 (Small Chorus)

To select Chorus depth C-1, press the MODE button so that the orange LED next to the legend, "C-1" will light. This is the lightest depth, and produces the light chorus effect.
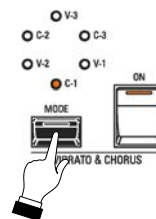
C-2 (Wide Chorus)

To select Chorus depth C-2, press the MODE button so that the orange LED next to the legend, "C-2" will light. This is the standard depth of the chorus effect.
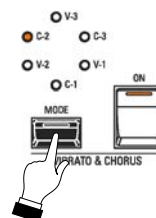
C-3 (Full Chorus)

To select Chorus depth C-3, press the MODE button so that the orange LED next to the legend, "C-3" will light. This is the fullest amount.
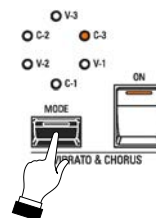
Remember, the ON button must be "ON" (orange LED lit) to allow you to hear the selected Vibrato or Chorus effect.

SPECIAL NOTE - Vx, Farf, Ace, Ens and Syn Instrument Types

Instead of three degrees of Vibrato and three degrees of Chorus, the VIBRATO & CHORUS Controls will provide 6 degrees of Vibrato for the Vx., Farf., Ace and Ens Instrument Types, and 6 degrees of Delay Vibrato for the Syn Instrument Type. V-1 provides the smallest amount while C-3 gives the largest amount of Vibrato or Delay Vibrato. The other modes provide various degrees between these two settings. The data chart below illustrates this.

VIBRATO Options	
Instrument Type	**Description**
B-3	Three degrees of Vibrato, three degrees of Chorus.
Vx	Six degrees of Vibrato.
Farf	Six degrees of Vibrato.
Ace	Six degrees of Vibrato.
Ens	Six degrees of Vibrato.
Syn	Six degrees of Delay Vibrato. The Vibrato is delayed for about ½ second after a key is pressed.

Turn the VALUE Rotary Control to make your selection.

◆ **LESLIE®**

Your Hammond M-solo has a built-in digital Leslie effect that replicates the sound of a twin-rotor Leslie Speaker cabinet.

● **What Is A "Leslie Speaker?"**

When the Hammond Organ was first introduced in the mid 30's, it was not "self-contained" - in other words, the sound-producing apparatus was not contained within the console. In order to hear the sounds produced by the organ's tone generators, a separate "tone cabinet" containing an amplifier and speaker system had to be connected to the organ console via a special cable. The Hammond Organ Company for many years manufactured many different models of tone cabinets specifically for use with Hammond Organs. The best known of these is probably the PR-40 model, which used a 40-watt tube amplifier to drive a set of speakers.

Hammond PR-20, PR-40 Tone Cabinet

A typical Leslie Speaker cabinet.

The Hammond engineers had very definite ideas about what a Hammond Organ should sound like and the Hammond speakers were designed to deliver that sound. In the late 30's, however, an independent engineer and organ enthusiast named Donald J. Leslie wanted a sound from a Hammond Organ more nearly approximating the sound of a theatre organ, particularly a realistic theatre organ tremulant. He found that rotating a baffle in front of a stationary speaker created the effect of a tremulant (the well-known "Doppler effect") and called the subsequent speaker the "Vibratone." (The "Vibratone" designation was eventually dropped and subsequent models would be known simply as Leslie Speakers.) Over a hundred models of Leslie Speakers have been made over the years; probably the best known being the models 122, 142, 145 and 147, all of which have 40-watt vacuum-tube amplifiers. The122 and 147 are both 41" tall (see above photo), while the 142 and 145 are 33" tall. The 122 and 142 have the same electronics, as do the 145 and 147.

Although the 122 and 147, as well as the 142 and 145, share identical cabinet designs, they are electrically dissimilar - the 122/142 is designed specifically for use with a Hammond Organ whose preamplifier has "GG" terminals (a "balanced" signal output), whereas the 147/145 has an "unbalanced" input more suitable for use with self-contained organs - other brands as well as Hammond. Additionally, the 122 and 147 have different high-frequency responses - the 122 rolls off the treble at 6K to reduce key click, while the 147 does so at 8K, resulting in a slightly brighter overall sound.

● What Are "Horn" and "Bass?"

The basic Leslie Speaker design, as represented by the 122 and 147 families of cabinets, divides the sound between "treble" (above 800Hz) and "bass" (below 800Hz). The treble frequencies are routed to a treble speaker or "driver," while the bass tones sound through a bass speaker (typically 15"). In the classic design, the speakers themselves do not move - a baffle is rotated in front of each speaker to produce animation. The shape of the baffle for the high frequencies is similar to the bell of a horn, hence the popular designation "horn." The figure below illustrates this.
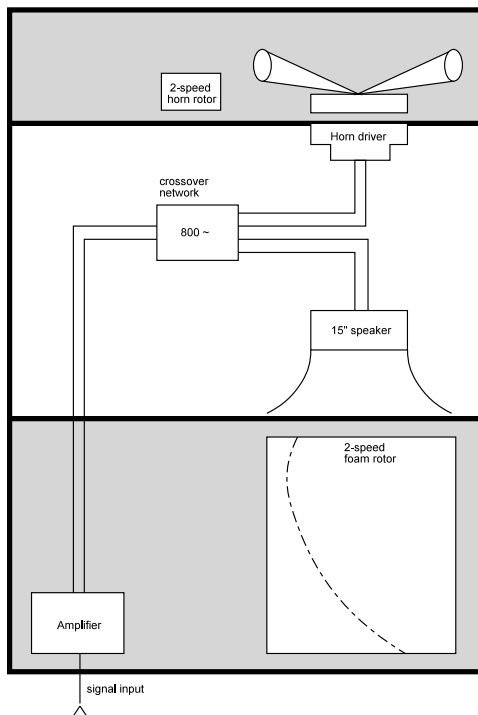
The Leslie cabinet type shown above connects to the organ console by means of a special connector kit which allows proper routing of both the audio signal and the electrical voltage necessary to operate the rotors.

The first Leslie speakers used two motors to rotate the baffles at a speed suitable for recreating theatre-organ-type tremulant which were controlled by a toggle switch on the side of the speaker cabinet. In the mid-60's an additional motor was added to both Horn and Bass which spun the rotors much more slowly to suggest the sound of a "celeste," or a compound organ stop with two or more ranks slightly detuned. Also added were switches which could be mounted to the front of an organ console to allow the organist to control the rotor speeds, and therefore the sound, while playing- "Chorale" described the effect produced by the Slow motors, while "Tremolo" was the designation used when the Fast motors were engaged. The picture below shows a typical Leslie switch of this kind.

In more recent years there have been two important additions to the classic Leslie design:

1.   The introduction of an 11-pin interface to allow a Leslie Speaker to handle more than one audio channel, as well as to isolate line voltage from the audio signal path.

2.   The replacement of separate Fast and Slow motors with variable speed motors for both Horn and Bass. The newer motor design reduces the total number of motors from four to two, and also allows for "Brake" mode, or the ability to shut the rotors completely off (previously a special "brake kit" had to be added to the cabinet to permit this feature).

New digital technology has now made it possible to recreate the Doppler effect without using moving parts. This technology has been incorporated into the M-solo. The following paragraphs explain how the internal digital Leslie of your Hammond M-solo works.

● LESLIE buttons
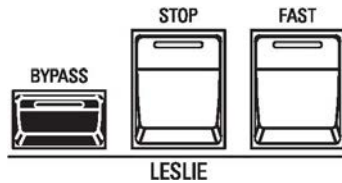
These three buttons allow you to control the internal digital Leslie.

NOTE: The digital Leslie affects the **B-3**, **Vx**, **Farf** and **Ace** Instrument Types.

BYPASS

When this button is "OFF" (LED not lit), the Drawbars will sound through the internal Leslie channel. Pressing the BYPASS button "ON" (LED lit) will change the sounds produced by the Drawbars from the Leslie channel to the stationary channel.   The effect is similar to the sound produced by a vintage Hammond Organ being played through a Hammond speaker cabinet such as a PR-40.

STOP

When this button is "OFF" (LED not lit), the Leslie effect is that of an acoustic Leslie Speaker cabinet with the rotors turning either slowly (Chorale) or Fast (Tremolo). Pressing the LESLIE STOP button "ON" (LED lit) will cause the Leslie rotors to stop turning.

FAST

The speed of the rotors of the internal digital Leslie depends upon the position of the LESLIE FAST button.

When this button is "OFF" (LED not lit) and the STOP button is "OFF" (LED not lit), the Leslie effect is that of an acoustic Leslie Speaker cabinet with the rotors turning slowly (Chorale). Pressing the LESLIE FAST button "ON" (LED lit) will cause the Leslie effect to speed up and rotate fast (Tremolo).

When this button is "OFF" (LED not lit) and the STOP button is "ON" (LED lit), the Leslie effect is that of an acoustic Leslie Speaker cabinet with the rotors not turning. Pressing the LESLIE FAST button "ON" (LED lit) will cause the Leslie effect to speed up and rotate fast (Tremolo).

HAMMOND

M-solo

PERCUSSION

PERCUSSION - Touch-Response Percussion

An important component of the Hammond Sound is <u>Touch-Response</u> <u>Percussion</u> <u>Control</u>. On a vintage Hammond console organ, this feature is controlled by four tilting tablets on the extreme right of the control panel which look like this:

ON	NORMAL	FAST	THIRD
PERCUSSION	PERCUSSION VOLUME	PERCUSSION DECAY	PERCUSSION HARMONIC SELECTOR
OFF	SOFT	SLOW	SECOND
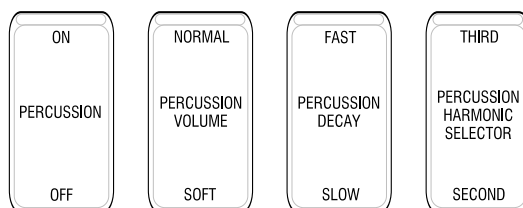
The PERCUSSION controls on the M-solo consist of four separate buttons, located on the right of the Control Panel, which control harmonic Percussion tones. They control all the same functions as the tilt tablets on a vintage Hammond.

PERCUSSION
ON   SOFT   FAST   THIRD
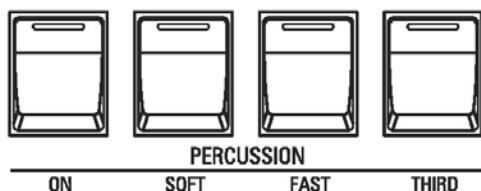
IMPORTANT NOTE: To hear the tones produced by the PERCUSSION Voice buttons, the keys normally must be played in a detached (non-Legato) manner. If you play a single note and then hold it down while playing other keys, the Percussion voice will not play again until you release all keys and again play detached notes.

◆ **ON**

This button turns Percussion "ON" and "OFF." When this button is "ON" and the other buttons in the PERCUSSION section are "OFF," the tone for this harmonic is the same as the sound derived from the 4' Drawbar. Combining this Percussion tone with the Drawbars will produce bright and clear sounds.

ON

◆ **SOFT**

This button regulates the volume of the Percussion tone. When it is in its normal state (LED not lit), the Percussion effect will be very prominent compared to the tones produced by the Drawbars. When this button is "ON" (LED lit) the Percussion effect is lower in volume or much less prominent.

SOFT

◆ **FAST**

When this button is "OFF" (LED not lit), the Percussion tone will decay (die away) slowly like a chime. When FAST is "ON" (LED lit), the Percussion effect will decay rapidly like a xylophone or glockenspiel.

FAST

◆ **THIRD**

When this button is "OFF" (LED not lit), the Percussion tone is the same as the sound produced from the second white (4' or second harmonic) Drawbar. Combining this 2nd harmonic to the Drawbars will produce bright and clear sounds.

THIRD

When this button is "ON" (LED lit), the Percussion tone is the same as the sound produced one produced by the first blank (2 2/3' or third harmonic) Drawbar. Combining this Percussion tone with the Drawbars will produce powerful and heavy sounds.

HAMMOND

M-solo

PATCHES

PATCHES

In the keyboard and synth world, a sound or group of sounds and effects is colloquially known as a Patch. This term derives from old-style synthesizers which used patch cords (originally telephone switchboard-type cords) to connect the various components to produce specific types of sounds. Although modern technology has rendered this technique unnecessary, the term "Patch" has remained (although more recently some manufacturers have adopted other names such as "Tone" or "Voice" to describe collections of sounds and parameters).

◆ Using Patches

TRY THIS:

1.   Turn the M-solo "ON."

2.   Press Patch button <u>1</u> if it is not already "ON" (LED lit).

3.   Play some notes. You will hear a classic jazz organ registration.

4.   Press Patch button <u>2</u>.

5.   Play some notes. You will now hear the sound of an analog string ensemble.

8.   Now Press Patch button 3.

9.   Play some notes. You will now hear a typical synthesizer setting.

◆ **Creating a New User Patch**

You can create and Record your own User Patches with your own settings.

TRY THIS:

1   Press the MANUAL button. This will disable Patches so that you can create an entirely new Patch.
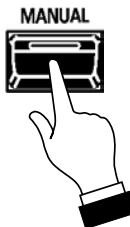
2.   Make whatever changes you wish.

3.   When you have completed your edits, Press and Hold the SYSTEM [RECORD] button.

4.   While holding the SYSTEM [RECORD] button, press one of the three PATCH buttons. You will see the LED of the PATCH button you selected flash "ON" and "OFF" for approximately 2 seconds.

After the LED stops flashing, your new Patch has been Recorded.

◆ Editing a Factory Patch

In addition to creating and Recording new Patches, you can also make changes to an existing Patch and Record your changes as a new User Patch. This is useful if a Patch already contains most of what you want and you need make only a few changes to it to achieve your desired result.

TRY THIS:

1.   Select one of the three Factory Patches.

2.   Make whatever changes to the Patch you wish.

3.   When you have completed your edits, Press and Hold the SYSTEM [RECORD] button.

4.   While holding the SYSTEM [RECORD] button, press one of the three PATCH buttons. You will see the LED of the PATCH button you selected flash "ON" and "OFF" for approximately 2 seconds.

   After the LED stops flashing, your new Patch has been Recorded.

NOTE: You can make changes using the front panel controls when any one of the three Patches is active (PATCH button LED lit). If you do so and you want to recall the Patch settings, press the active PATCH button again. The settings contained in that Patch will be recalled.

NOTE: You can also make changes while a Patch is active and press one of the other Patch buttons; however, your changes will **not** be remembered unless you Record them into one of the three Patch buttons.

◆ Restoring Patches

If you have made changes to a Patch or Patches and you want to restore the factory Patch settings, you can do so by doing the RESTORING FACTORY SETTINGS procedure. This procedure is described in the SPECIAL PERFORMANCE FEATURES chapter of this Guide on page 53.

HAMMOND

M-solo

SPECIAL
PERFORMANCE
FEATURES

SPECIAL PERFORMANCE FEATURES

◆ OCTAVE

This feature allows you to change the Octave.

The OCTAVE buttons (shown above) allow you to change the Octave setting. The data chart below shows the options you can select.

OCTAVE Options	
Parameter	**Description**
-1	The sound is one octave below the regular pitch.
0	The sound is at normal pitch.
+1	The sound is one octave above the regular pitch.

How to change the Octave is explained starting below.

TRY THIS:

1.   Make sure the instrument is un-transposed or playing in "concert" pitch (TRANSPOSE button LED not lit) and that one of the PATCH buttons is selected (LED lit).

2.   Press the UP button. The LED will light.
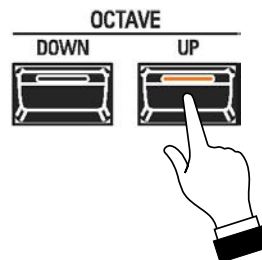
3.   Play some notes on the keyboard. You will hear the registration for the selected Patch play one octave higher.

4.   Press the DOWN button <u>once</u>. The LED of the UP button will turn "OFF" and the keyboard will now play in the normal octave.
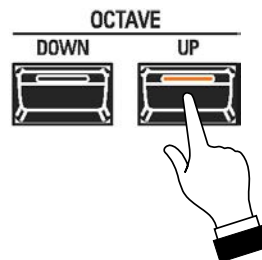
5.   Press the DOWN button once more. The LED should light.
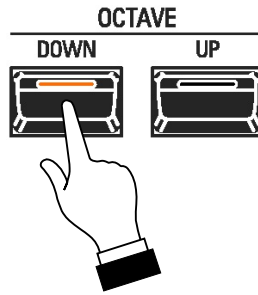
6.   Play some notes on the keyboard. You will hear the registration for the selected Patch play one octave lower.

7.   To return the instrument to normal pitch, press the UP button <u>once</u>. The LED of the DOWN button will turn "OFF" and the keyboard will now play in the normal octave.

◆ TRANSPOSE (Key Select)

This feature allows you to shift the musical key of the entire instrument. This is useful if you have a piece of music written in one key but which needs to sound in another key; for example, a song written and played in C Major, could sound in G Major. TRANSPOSE will step either up or down six (6) semitones or half-steps from the center position.

The TRANSPOSE feature consists of the TRANSPOSE button, plus the DOWN and UP buttons to the right of the TRANSPOSE button. The DOWN button allows you to transpose <u>lower</u> and the UP button allows you to transpose <u>higher</u>.

TRY THIS:

1.   Make sure the instrument is un-transposed or playing in "concert" pitch (TRANSPOSE button LED not lit) and that one of the PATCH buttons is selected (LED lit).

2.   Press and Hold the TRANSPOSE button.

3.   While continuing to hold the TRANSPOSE button, press the UP button <u>once</u>. You have now transposed the entire instrument <u>up</u> one half-step.

4.   Press a "C" note on the keyboard. You will hear the note "C#" above it.

5.   Now Press and Hold the TRANSPOSE button and press the DOWN button. The instrument is now back to concert pitch.

6.   While continuing to hold the TRANSPOSE button, press the DOWN button <u>once</u>. You have now transposed the entire instrument <u>down</u> one half-step.

7.   Press a "C" note on the keyboard. You will hear the note "B" below it.

6.   To return the instrument to concert pitch, Press and Hold the TRANSPOSE button and press the DOWN button until the LEDs of both TRANSPOSE buttons are "OFF" (not lit).

NOTE: If you Save a Backup File with the instrument transposed using TRANSPOSE, the transposition setting will be Recorded. If you Load the Backup File to the instrument, the transposition setting will load along with the rest of the information contained in the Setup. For more information about Backup Files, please consult the **USING MEMORY** chapter of this Guide starting on page 70.

● **MASTER TUNE**

This Parameter allows you to change the overall tuning pitch of the entire instrument. The reference pitch is <u>A-440</u>.

NOTE: The term "Hz" is an abbreviation for **<u>Hertz</u>**, and refers to the frequency of a pitch measured in cycles per second. The note reference commonly used is "A440," meaning that a note consisting of 440 Hertz will be the pitch "A." This is the international standard used to tune most musical instruments.

1.   With the power to the instrument "ON," press the SYSTEM button. The LEDs on the instrument will start flashing.
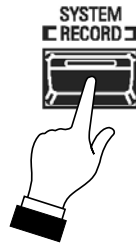
2.   Press the TRANSPOSE button. The LED of the TRANSPOSE button will stop flashing and light continuously. The other LEDs will continue to flash.

3.   Use the bottom octave of the keyboard to select the Master Tune. You can select from <u>0</u> (lower pitch) to <u>6</u> (higher pitch). Press the key which represents the value you want. The six LEDs of the VIBRATO & CHORUS Mode will light in accordance with the value you selected.
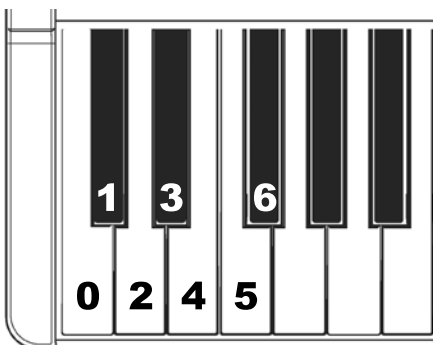
VIBRATO & CHORUS LEDs		
Key Number	**LED**	**Master Tune**
0	No LEDs lit	A=434
1	V-3 LED lit	A=436
2	V-3 & C-3 LEDs lit	A=448
3*	V-3, C-3 & V-1 LEDs lit	A=440
4	V-3, C-3, V-1 & C-1 LEDs lit	A=442
5	V-3, C-3, V-1, C-1 & V-2 LEDs lit	A=444
6	All six LEDs lit	A=446

*default setting

4.   After you have made your selection, press the SYSTEM button to turn it "OFF" (LED not lit). The Key Click will sound with the tuning you selected.

   NOTE: This Parameter setting can be Recorded as part of a Patch or in the **<u>MANUAL</u>** button.

◆ CONTACTS OF A TONE-WHEEL ORGAN & VIRTUAL MULTI-CONTACTS

The basis for the "Hammond Sound" is the tone- or phonic-wheel generator.

When a key is pressed on a tone-wheel Hammond Organ, it closes 9 small 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 press 9 busbars. When a flat spring presses a busbar, electrical contact is made and the harmonic is permitted to sound. Since the 9 busbars are physically separated, the harmonics do not all sound simultaneously, but in succession. This can be heard most clearly by selecting one of the four Manual Drawbar sets of a tone-wheel organ (for example, Upper Manual "B"), pulling all of the Drawbars in the selected set out to their maximum volume setting and slowly pressing a playing key. Each of the harmonics will add in a sequence from highest to lowest until all 9 frequencies will be heard when the key is at the bottom of its travel. The "Key-Click" on tone-wheel Hammond Organs is due in part to these physical characteristics.

The M-solo utilizes a new specially-designed "VMC™ (Virtual Multi-Contact) system which reproduces the effect of 9 contacts per note by means of special software.

● WHAT IS "KEY CLICK?"

On a tone-wheel Hammond Organ, each time a key is depressed with an active Drawbar registration, a Key Click (or Key Pop) is heard just before the note sounds. This is because, unlike other electrical or electronic musical instruments, the sound is always present at the key contacts. Therefore, pressing a playing key will likely intercept the sound wave at some point along its excursion, creating a "spike" or attack transient. This transient is heard as "Key Click." Since the generated sound is interrupted when a key is both pressed and released, there is a Release Key Click as well as an Attack Key Click.

● KEY CLICK LEVEL

This Parameter allows you to adjust the amount of Key Click - both the rate of Attack (when a key is depressed) and Release (when the key is released).

1. With the power to the instrument "ON," press the SYSTEM button. The LEDs on the instrument will start flashing.

2. Press the LESLIE BYPASS button. The LED of the LESLIE BYPASS button will stop flashing and light continuously. The other LEDs will continue to flash.

3. Use the bottom octave of the keyboard to select the amount of Key Click. You can select from 1 (soft) to 6 (loud) as well as 0 (no Key Click). Press the key which represents the value you want. The six LEDs of the VIBRATO & CHORUS Mode will light in accordance with the value you selected.
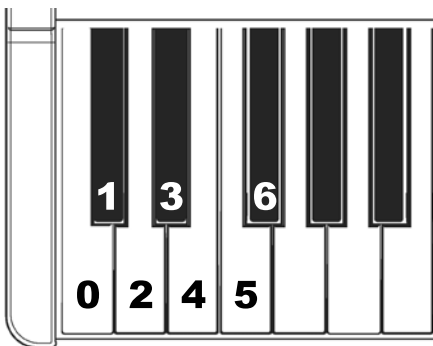
VIBRATO & CHORUS LEDs		
Key Number	LED	Key Click Level
0	No LEDs lit	No Key Click.
1	V-3 LED lit	Very soft Key Click.
2	V-3 & C-3 LEDs lit	Soft Key Click.
3*	V-3, C-3 & V-1 LEDs lit	Moderately soft Key Click.
4	V-3, C-3, V-1 & C-1 LEDs lit	Moderately loud Key Click.
5	V-3, C-3, V-1, C-1 & V-2 LEDs lit	Loud Key Click.
6	All six LEDs lit	Maximum Key Click.

*default setting

4. After you have made your selection, press the SYSTEM button to turn it "OFF" (LED not lit). The Key Click will sound at the level you selected.

NOTE: This Parameter is available for the **B-3**, **Vx**, **Farf** and **Ace** Instrument Types.

NOTE: This Parameter setting can be Recorded as part of a Patch or in the **MANUAL** button.

● **VMC depth**

As explained previously, when a key is pressed on a tone-wheel Hammond Organ, it closes 9 small switch contacts, one for each Drawbar. These contacts do not all sound simultaneously, but one after the other.

This Parameter allows you to control the amount of time the Virtual Multi-Contacts will take to make full contact after a key is depressed.

1. With the power to the instrument "ON," press the SYSTEM button. The LEDs on the instrument will start flashing.

2. Press the LESLIE FAST button. The LED of the LESLIE FAST button will stop flashing and light continuously. The other LEDs will continue to flash.
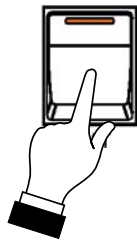
3. Use the bottom octave of the keyboard to select the amount of VMC Delay. The data chart below shows the options you may select.

    Press the key which represents the value you want. The six LEDs of the VIBRATO & CHORUS Mode will light in accordance with the value you selected.
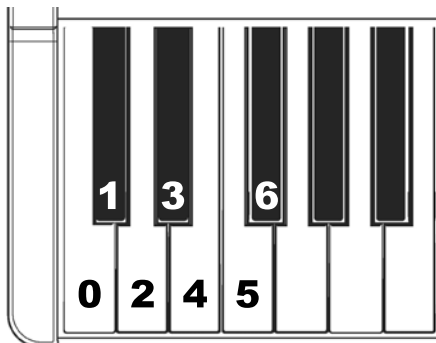
VIBRATO & CHORUS LEDs		
Key Number	LED	VMC Depth
0	No LEDs lit	All harmonic sound at once.
1	V-3 LED lit	Very short Contact delay.
2	V-3 & C-3 LEDs lit	Short Contact delay.
3*	V-3, C-3 & V-1 LEDs lit	Moderately short Contact delay.
4	V-3, C-3, V-1 & C-1 LEDs lit	Moderately long Contact delay.
5	V-3, C-3, V-1, C-1 & V-2 LEDs lit	Long Contact delay.
6	All six LEDs lit	Maximum Contact delay.

*default setting

4. After you have made your selection, press the SYSTEM button to turn it "OFF" (LED not lit). The VMC Depth will sound at the level you selected.

    NOTE: This Parameter is available for the **B-3** Instrument Type.

    NOTE: This Parameter setting can be Recorded as part of a Patch or in the **MANUAL** button.

● **LEAKAGE LVL**

WHAT IS "LEAKAGE?"

In a vintage Hammond Organ, each tone-wheel rotates next to a magnet. The wheels are mounted in separate bins to isolate them from each other and 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. A properly calibrated organ will have a minimum of this effect; however, an instrument which has been subjected to hard use over a period of time may exhibit more leakage noise.

This Parameter allows you to adjust the total volume of the Leakage tone.

1. With the power to the instrument "ON," press the SYSTEM button. The LEDs on the instrument will start flashing.

2. Press the LESLIE STOP button. The LESLIE STOP button will stop flashing and light continuously. The other LEDs will continue to flash.
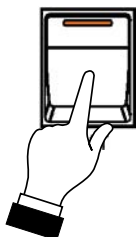
3. Use the bottom octave of the keyboard to select the amount of Leakage tone. You can select from <u>1</u> (softer Leakage tone) to <u>6</u> (louder Leakage tone) as well as <u>0</u> (no Leakage tone). Press the key which represents the value you want. The six LEDs of the VIBRATO & CHORUS Mode will light in accordance with the value you selected.
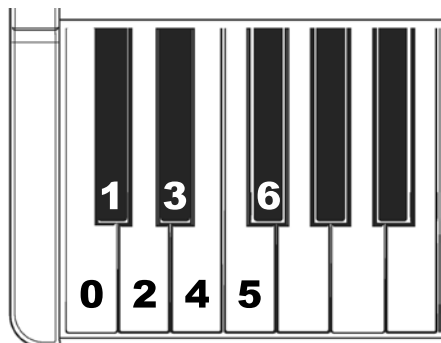
VIBRATO & CHORUS LEDs		
Key Number		**Leakage Amount**
0	No LEDs lit	No Leakage tone.
1	V-3 LED lit	Very soft Leakage tone.
2	V-3 & C-3 LEDs lit	Soft Leakage tone.
3*	V-3, C-3 & V-1 LEDs lit	Moderately soft Leakage tone.
4	V-3, C-3, V-1 & C-1 LEDs lit	Moderately loud Leakage tone.
5	V-3, C-3, V-1, C-1 & V-2 LEDs lit	Loud Leakage tone.
6	All six LEDs lit	Maximum Leakage tone.

*default setting

4. After you have made your selection, press the SYSTEM button to turn it "OFF" (LED not lit). The Leakage tone will sound at the level you selected.

> **NOTE:** This Parameter is available for the **B-3** Instrument Type.

> **NOTE:** This Parameter setting can be Recorded as part of a Patch or in the **MANUAL** button.

◆ DRAWBAR DIRECTION

Normally, pulling a Drawbar out will increase the volume level of a sound or the amount of a Parameter, while pushing a Drawbar in will decrease a volume or Parameter amount. However, when the <u>Ens</u> or <u>Syn</u> Instrument Types are selected, the direction of the Drawbars can be changed so that volumes or Parameter values can be increased by pushing a Drawbar in and pulling a Drawbar out will decrease volumes or values.

NOTE: This Parameter does **not** affect the **B-3**, **Vx**, **Farf** or **Ace** Instrument Types.

1. With the instrument "ON," press the SYSTEM/RECORD button. The LEDs on the instrument will start flashing.


3. Press the CHORUS/OVERDRIVE button. The LED of the CHORUS/OVERDRIVE button will stop flashing and light continuously. The other LEDs will continue to flash.
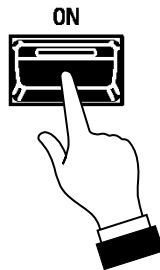
3. Use the bottom two notes of the keyboard to select the option you want. The data chart below shows the options you may select.

DRAWBAR DIRECTION	
Key	Function
0	Normal operation (Drawbars increase values when pulled out and decrease values when pushed in).
1*	Reverse operation (Drawbars increase values when pushed in and decrease values when pulled out). Also, the **V-3** LED of the VIBRATO & CHORUS Mode will light.
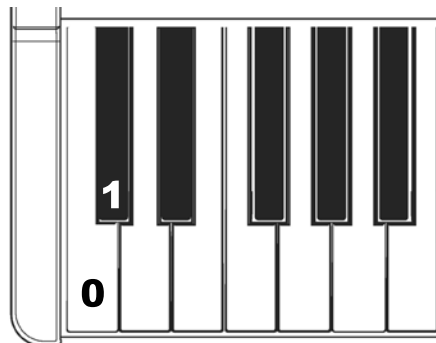
*default setting

4. After you have made your selection, press the SYSTEM button to turn it "OFF" (LED not lit). The Drawbars will now change sounds or Parameters according to your selection.

◆ **POWER AUTO OFF**

For safety reasons, the M-solo is equipped with a <u>POWER</u> <u>AUTO</u> <u>OFF</u> feature which turns the power to the instrument "OFF" if no keys are controls are touched within a 30-minute period.

1.   With the instrument "ON," press the SYSTEM button. The LEDs on the instrument will start flashing.

3.   Press the VIBRATO & CHORUS ON button. The LED of the VIBRATO & CHORUS button will stop flashing and light continuously.
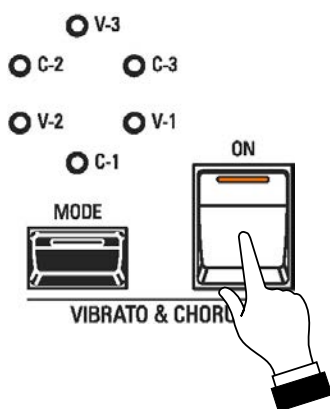
3.   Use the bottom two notes of the keyboard to select the option you want. The data chart below shows the options you may select.

POWER AUTO OFF Options	
Key	**Function**
0*	The AC power to the instrument will turn "OFF" after 30 minutes with no keys or buttons being pressed.
1	The instrument will turn "ON" or "OFF" with the AC Power Switch, but not turn "OFF" automatically. Also, the **V-3** LED of the VIBRATO & CHORUS Mode will light.

*default setting
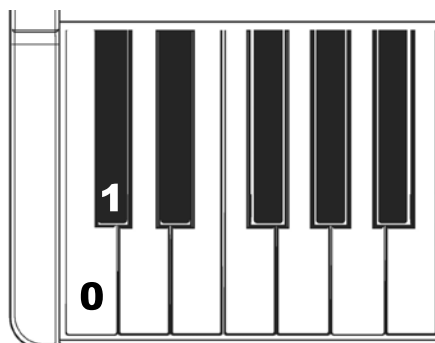
4.   After you have made your selection, press the SYSTEM button to turn it "OFF" (LED not lit). The POWER AUTO OFF feature will function with the option you selected.

◆ RESTORING FACTORY SETTINGS

WARNING: Doing the following will erase any changes you have made and reload the factory settings to the instrument. If you have made changes that you want to preserve, Save your changes as a Setup file to your computer before doing the following procedure. For information on how to back up a Setup file to your computer please consult the **USING MEMORY** chapter of this Guide starting on page 70.

If you have made changes to the instrument, such as creating and Recording your own User Patches, and you want to restore the M-solo to its factory settings, do the following:

1.   Turn the power to the instrument "OFF."

2.   2 Press and Hold the DELAY/REVERB ON button.
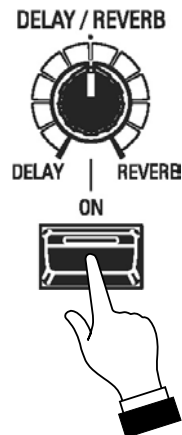
3.   While continuing to hold the DELAY/REVERB ON button, press the POWER button to turn the power to the M-solo "ON."

4.   Release the DELAY REVERB button when its LED starts blinking.

       When the LED stops blinking, the factory settings have been restored.

HAMMOND

M-solo

MIDI

MIDI

◆ A Word About What MIDI Can Do

The letters MIDI stand for <u>M</u>usical <u>I</u>nstrument <u>D</u>igital <u>I</u>nterface. MIDI is an international standard for allowing electronic musical instruments equipped with MIDI capability to exchange performance information. For example, a synthesizer can be used to communicate with a drum machine, an electronic piano can interface with a computer, and so forth. Additionally, since MIDI is an international standard recognized and implemented by all musical instrument manufacturers worldwide, instruments made by different manufacturers can communicate with each other via MIDI.

◆ MIDI Connections

● MIDI IN and MIDI OUT

In order to allow communication to take place, all MIDI-equipped instruments have at least two MIDI jacks - MIDI IN and MIDI OUT. MIDI IN is for receiving MIDI data from another instrument, while MIDI OUT is for sending MIDI data out to another instrument.
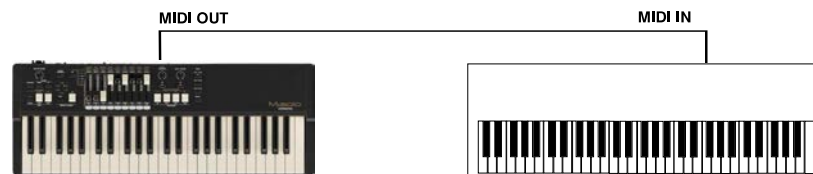
In the example above, the keyboard(s) of the sending or transmitting instrument (MIDI OUT) are being used to control the sound generators of the receiving instrument (MIDI IN). When a key is played on the sending instrument, the corresponding note will play on the receiving instrument as though the appropriate key had been pressed on the receiving instruments's keyboard. When the key is released on the sending instrument, the tone being played by the receiving instrument will stop. (This is called "Note On / Note Off" data.) The instrument receiving the MIDI data is called a MIDI slave and the sending instrument is called the MIDI master. This is the most basic MIDI hookup.
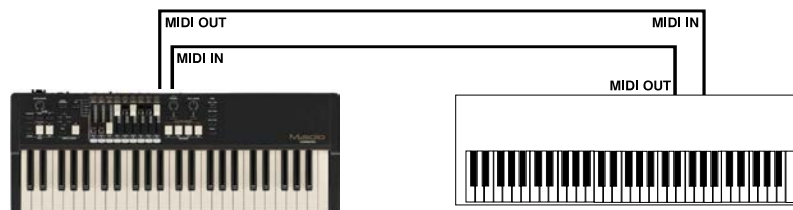
The above is an example of two-way communication between two MIDI-equipped devices. In this example, the keyboard(s) of either instrument can be used to control the sound generators of the other.

NOTE: In some MIDI tutorials, you can also see references to **Main** and **Secondary** or **Source** and **Destination**.

◆ **Audio and MIDI Connections**

● **Example: A synthesizer**

LINE OUT   MIDI OUT   LINE IN   LINE IN   LINE OUT   MIDI IN

Amplifier
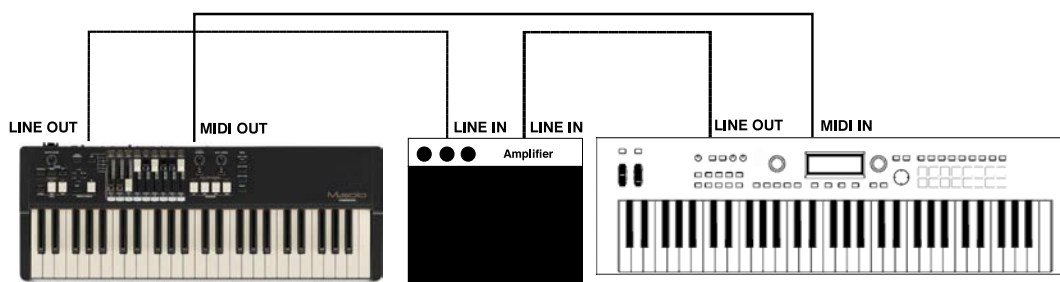
If you connect the MIDI OUT jack of the M-solo to the MIDI IN jack on the synthesizer and the synthesizer's LINE OUTPUT jack to the organ's LINE IN jack, you can play both instruments simultaneously from the M-solo keyboard.

● **Example: A sound module**

LINE OUT   MIDI OUT   LINE IN   LINE IN   LINE OUT   MIDI IN
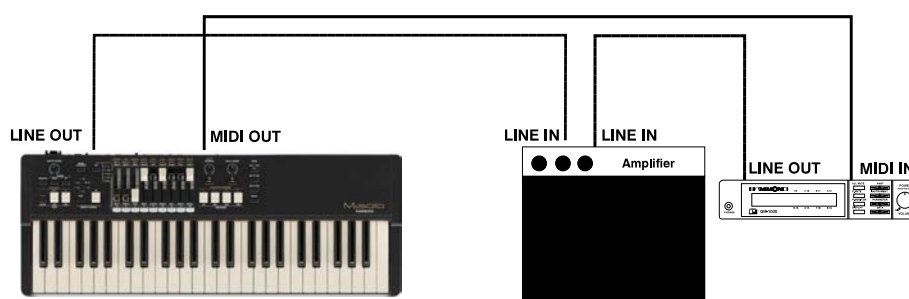
Amplifier

Note that the LINE OUT or AUDIO OUT signal connection is made to an external amplifier. The LINE OUT audio connection from the module, of course, could also be connected to the LINE IN of the SK-PRO.

◆ **USB MIDI**

In addition to the DIN MIDI ports, your M-solo also has one (1) USB (U̲niversal S̲erial B̲us) port, marked TO HOST. This port can be connected to a computer to use the M-solo as a Mass Storage Device or it can be used for MIDI transmission and reception

NOTE: The TO HOST feature is covered in more detail in the **USING MEMORY** chapter of this Guide.

In recent years, USB has become the standard interface for connecting computers and instruments to peripheral devices as well as to each other. In the late 1990's a standard was adopted to allow MIDI transmission over USB.

● **Some USB MIDI Basics**

Unlike 5-pin DIN MIDI connections, USB MIDI allows two-way communication between devices using a single cable - one cable carries both MIDI IN and MIDI OUT data. Also, the bandwidth of a USB MIDI connection is much higher than a DIN-MIDI connection. This means that a single USB cable can support 16 virtual MIDI ports with 16 channels each for a total of 256 MIDI channels, as opposed to a single physical MIDI port capable of only 16 channels.

USB MIDI is useful primarily if you want to interface your M-solo with a DAW (D̲igital A̲udio W̲orkstation). on a computer. Although it is possible to connect two MIDI instruments (such as two M-solo's) together, doing so requires the two instruments to be connected to each other via a special interface device or "router."

● **Connecting the M-solo to a computer via USB MIDI**

If you want to use your M-solo to control a DAW, you can do so by connecting the TO HOST port on the M-solo to an open USB port on your computer.

NOTE: The M-solo is compliant with **USB AUDIO Class 1.0**, the generic device driver which comes pre-installed on both PC and Mac computers. This means you can use the USB TO HOST Port to connect the M-solo to a computer and transmit and receive a MIDI data stream without an exclusive device driver.

◆ **USING MIDI ON THE M-SOLO**

The MIDI of your M-solo can be configured in a number ways depending upon the specific application. The following pages will describe the different MIDI features available,

● **MIDI Channels**

The M-solo can transmit and receive on MIDI Channels 1 through 6.

MIDI Transmitting Channel

To set the MIDI Transmitting Channel, do the following:

1. With the power to the instrument "ON," press the SYSTEM button. The LEDs on the instrument will start flashing.

2. Press the PERCUSSION SOFT button. The LED of the PERCUSSION SOFT button will stop flashing and light continuously. The other LEDs will continue to flash.
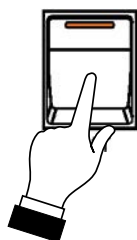
3. Use the bottom octave of the keyboard to select the MIDI Transmitting Channel. Press the key which represents the value you want. The six LEDs of the VIBRATO & CHORUS Mode will light in accordance with the value you selected.
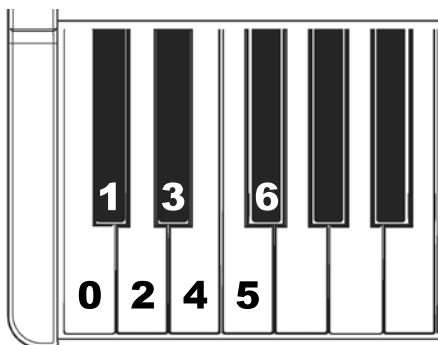
VIBRATO & CHORUS LEDs		
Key Number	LED	MIDI Transmitting Channel
0	No LEDs lit	No MIDI data is transmitted
1*	V-3 LED lit	MIDI Channel 1
2	V-3 & C-3 LEDs lit	MIDI Channel 2
3	V-3, C-3 & V-1 LEDs lit	MIDI Channel 3
4	V-3, C-3, V-1 & C-1 LEDs lit	MIDI Channel 4
5	V-3, C-3, V-1, C-1 & V-2 LEDs lit	MIDI Channel 5
6	All six LEDs lit	MIDI Channel 6

*default setting

4. After you have made your selection, press the SYSTEM button to turn it "OFF" (LED not lit). The M-solo will now transmit on the MIDI Channel you selected.

NOTE: This Parameter affects all Instrument Types.

MIDI Receiving Channel

To set the MIDI Receiving Channel, do the following:

1.   With the power to the instrument "ON," press the SYSTEM button. The LEDs on the instrument will start flashing.

2.   Press the PERCUSSION ON button. The LED to the left of <u>V-3</u> will light and the LED of the PERCUSSION ON button will stop flashing and light continuously. The other LEDs will continue to flash.
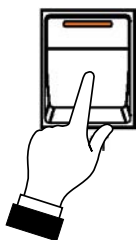
3.   Use the bottom octave of the keyboard to select the MIDI Receiving Channel. Press the key which represents the value you want. The six LEDs of the VIBRATO & CHORUS Mode will light in accordance with the value you selected.
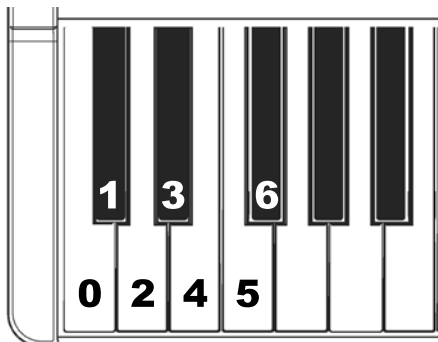
VIBRATO & CHORUS LEDs		
Key Number	LED	MIDI Receiving Channel
0	No LEDs lit	No MIDI data is received
1*	V-3 LED lit	MIDI Channel 1
2	V-3 & C-3 LEDs lit	MIDI Channel 2
3	V-3, C-3 & V-1 LEDs lit	MIDI Channel 3
4	V-3, C-3, V-1 & C-1 LEDs lit	MIDI Channel 4
5	V-3, C-3, V-1, C-1 & V-2 LEDs lit	MIDI Channel 5
6	All six LEDs lit	MIDI Channel 6

*default setting

4.   After you have made your selection, press the SYSTEM button to turn it "OFF" (LED not lit). The M-solo will now receive MIDI data on the Channel you selected.

NOTE: This Parameter affects all Instrument Types.

● **MIDI Local Control**

There may be occasions when you want to play the sounds from a connected MIDI device without also playing the M-solo's internal sounds. This Parameter allows you to select whether the M-solo's internal voices will play when keys are played. This is "Local Control."

To set the MIDI Local Control Parameter, do the following:

1. With the power to the instrument "ON," press the SYSTEM button. The LEDs on the instrument will start flashing.

2. Press the PERCUSSION FAST button. The LED of the PERCUSSION FAST button will stop flashing and light continuously. The other LEDs will continue to flash.
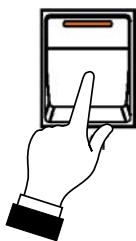
3. Use the bottom octave of the keyboard to turn Local Control "ON" or "OFF." The data chart below shows the options you may select.

MIDI LOCAL CONTROL Settings	
Parameter	**Description**
Off (0)*	The M-solo will play both its internal sounds and the sounds from a connected MIDI device.
On (1)	The M-solo will play only the sounds from a connected MIDI device and the M-solo's internal sounds are silenced. Also, the **V-3** LED of the VIBRATO & CHORUS Mode will light.

*default setting

Press the key which represents the value you want.
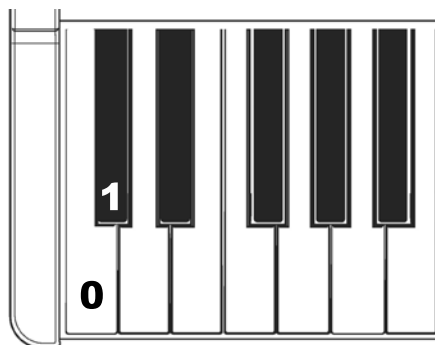
4. After you have made your selection, press the SYSTEM button to turn it "OFF" (LED not lit). The MIDI Local Control of the M-solo will now function according to the setting you selected.

    NOTE: If MIDI looping or sound duplication occurs with an external device with a MIDI Echo function, set this Parameter to **0** ("OFF"). The M-solo's internal sounds will then play in response to Note On/Note Off messages received via MIDI.

● MIDI Generic Control

In addition to transmitting basic MIDI information such as Note On/Note Off and Note Velocity, the M-solo also can transmit Program Changes, Control Changes, NRPN and System Exclusive (SyxEx) codes. This Parameter allows you to select whether to transmit these MIDI messages from the M-solo along with MIDI Note data.

To set this Parameter, do the following:

1.   With the power to the instrument "ON," press the SYSTEM button. The LEDs on the instrument will start flashing.

2.   Press the PERCUSSION THIRD button. The LED to the left of V-3 will light and the LED of the PERCUSSION THIRD button will stop flashing and light continuously.
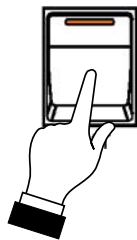
3.   Use the bottom octave of the keyboard to turn Generic Control "ON" or "OFF." The data chart below shows the options you may select.

MIDI Generic Control Settings	
Parameter	**Description**
Off (0)*	The M-solo will transmit all MIDI Messages.
On (1)	Only Note On/ Note Off, Note Velocity and Expression data is transmitted. All other MIDI Messages are disabled. Also, the **V-3** LED of the VIBRATO & CHORUS Mode will light. Select this when you want to play a typical MIDI instrument in combination with this unit.

*default setting

Press the key which represents the value you want.
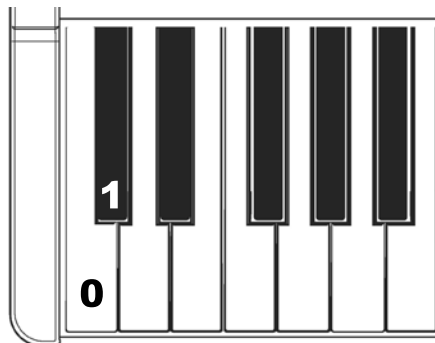
4.   After you have made your selection, press the SYSTEM button to turn it "OFF" (LED not lit). MIDI data transmission from the M-solo will now function according to the setting you selected.

◆ MIDI IMPLEMENTATION

CHANNEL VOICE MESSAGES

Note Off

Status	2nd Byte	3rd Byte
8nH	kkH	vvH, or
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=Delay, 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 (0 - 3)
                                   Off, Soft - Mid - Loud

VMC Depth (CC#87 57H)

Value (Data, MSB, LSB)............ 00H, 00H - 04H (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 - +8191)
                                   -12 - 0 - +12 semitones

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 values.
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 All Notes Off 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 MIDI 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 MIDI note message will be sent at the Deep sounding point. The sound is not affected by Key Velocity.
Ens, Syn - The sound appears and a MIDI note message will be sent at the Deep sounding point. The sound is not affected by Key Velocity.

◆ MIDI IMPLEMENTATION CHART

Drawbar Keyboard
Model: M-solo

Date: 01-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 - 95	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	
System Real Time	: Clock	X	X	
	: Commands	X	X	
Aux Messages	: All Sounds Off	X	O	(120)
	: Reset All Controllers	X	X	(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   O: Yes
Mode 3: OMNI OFF, POLY   Mode 4: OMNI OFF, MONO   X: No
O : Yes, X : No

◆ **DRAWBAR DATA LIST**

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

Type	Control Number								
	Male 16´	Str 16´	Male 8´	Female 8´	Str 8´	Female 4´	Str 4´	Attack	Release
Ens	15H(21)	16H(22)	17H(23)	18H(24)	19H(25)	1AH(26)	1BH(27)	1CH(28)	1DH(29)

Type	Control Number								
	Osc 2Pitch	Cutoff	Resonance	EG Amt	Fil-Atk	Fil-Dcy	Amp-Atk	Amp-Dcy	Amp-Rel
Syn	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
Value	00 - 0FH (0 - 15)	10 - 1FH (16 - 31)	20 - 2FH (32 - 47)	30 - 3FH (48 - 63)	40 - 4FH (64 - 79)	50 - 5FH (80 - 95)	60 - 6FH (96 - 111)	70 - 7EH (112-126)	7FH (127)

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

The upper Level Value chart is for Organ Types (B-3, Vx, Farf, Ace). If the Instrument Type is at "Ens" (for envelope only) or "Syn," the value received will be in steps from 0 to 127.

HAMMOND

M-solo

USING
MEMORY

USING MEMORY

◆ USB - TO HOST

Your Hammond M-solo contains Internal Memory which is accessible via the <u>TO HOST</u> port. This allows data transfer between the M-solo and a PC connected to the <u>TO HOST</u> port by turning the M-solo into a Mass Storage Device.

In order to make use of the MASS STORAGE Mode of the M-solo, do the following:

1.   Turn the power to the M-solo "OFF."

2.   Connect the computer you want to use as the Host to the TO HOST port (see the figure below).

3.   Press and Hold the TRANSPOSE, OCTAVE DOWN and OCTAVE UP buttons, and press the POWER button to turn the M-solo "ON."

4.   After approximately 5 seconds, Release the TRANSPOSE, OCTAVE DOWN and OCTAVE UP buttons. The LEDs of the SYSTEM [RECORD] and VIBRATO & CHORUS ON buttons will blink.

Your host computer will now recognize the M-solo's Internal Memory as a Mass Storage device and assign it a drive letter as if it were an USB Flash Drive, HDD/SSD disk, or SD card. The drive letter assigned will be an "open" drive letter not currently in use by your computer or other Storage Devices connected to your computer.

IMPORTANT NOTE: The M-solo's Internal Memory contains folders and sub-folders needed for performing various operations (shown below). DO NOT re-name or delete these folders or attempt to format the Internal Memory from your computer. Doing so may cause a serious malfunction.
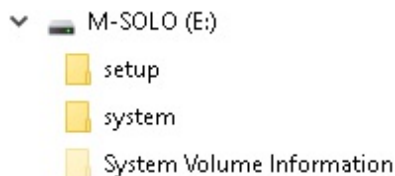
IMPORTANT NOTE: Do **not** disconnect the USB connection from the M-solo while it is in MASS STORAGE Mode. To return the M-solo to normal playing mode, turn the M-solo "OFF" then back "ON."

◆ CREATING A BACKUP FILE

The factory Parameters of your SK PRO are stored in the internal memory of the instrument in a special file named <u>m-solo.set</u>. As previously explained, the M-solo can be customized in a number of different ways - you can adjust the Key Click Amount, VMC Depth, Drawbar Direction, etc. to your liking.

If you make changes to the M-solo (Recording your own User Patches, changing the settings for Key Click Level, VMC Depth, etc.), the <u>m-solo.set</u> file will retain your changes. This file can be copied to another location such as your computer's hard drive or external data storage such as a USB Flash Drive. If you should need to reset the M-solo to factory settings, you can restore your settings by copying a previously backed-up <u>.set</u> file to the memory of your M-solo.

To create a Backup File, do the following:

1. Follow the instructions on page 69 to put the M-solo into MASS STORAGE Mode. As explained previously, your computer will assign the M-solo a drive letter as if it were an external storage device such as a USB Flash Drive.

2. On the computer you are using as a Host, go to <u>My</u> <u>Computer</u> and find the drive letter assigned to the Internal Memory of the M-solo and open it. You will see a folder labeled "setup." The "setup" folder is the one which contains the <u>m-solo.set</u> file.
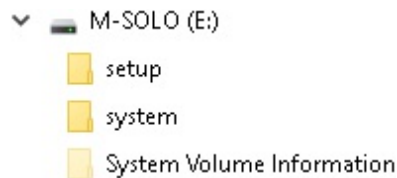
3. Open the "setup" file. You will see the file <u>m-solo.set</u>.

4. Highlight the <u>m-solo.set</u> file and select <u>Copy</u> <u>to</u>.

5. Open Windows Explorer using Win + E. Then select My Computer and go to the folder where you want to paste the copied file. Use Ctrl + V or right-click and choose paste.
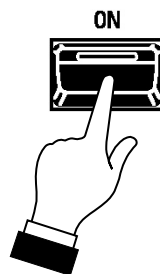
◆ RESTORING FACTORY SETTINGS

If you have made changes to the M-solo and want to restore the factory settings, follow the procedure below.

> **NOTE:** Restoring the factory settings will erase any changes you have made. Therefore it is recommended to make a backup copy of your changes before doing this procedure. Please consult page 70 for instructions on how to create a Backup File.

To restore the M-solo to factory settings, do the following:

1.   Make sure the power to the M-solo is "OFF."

2.   Press and Hold the DELAY/REVERB ON button.

3.   While holding the DELAY/REVERB ON button, press the POWER button to turn the M-solo "ON." The LED of the DELAY/REVERB ON button will blink.

4.   Release the DELAY/REVERB ON button.

After the instrument finishes booting, the factory settings will be restored.

● **INSTALLING A SOFTWARE UPGRADE TO THE M-SOLO:**

   1.   Make sure the power to the M-solo is "OFF."

   2.   Make sure the M-solo is connected to the computer you wish to use as the Host via the TO HOST port.

   3.   Turn the power to the M-solo "ON." Wait until the operating system finishes loading (approximately 5 seconds).

   4.   Make sure the USB MASS STORAGE Parameter from the <u>USB</u> FUNCTION Mode Page is set to "ON." This procedure is described on page 69.

   5.   Go to the Hammond website (<u>http://hammondorganco.com</u>) and select <u>Support</u>

   6.   When the <u>Support</u> page finishes loading, select <u>Downloads</u> from either of the two links on the page.

   7.   When the <u>Downloads</u> page finishes loading, select <u>System</u> <u>Downloads</u> from either of the two links on the page.

   8.   On the left side of the <u>System</u> <u>Downloads</u> page you will see information about the latest system software upgrade and a link to a file named "msoloReleaseX.zip." The number of the release will be the latest software available.

   9.   Click on the link and select "Save Link As..." A dialog box will appear asking to what location you want to save the .ZIP file. It is recommended that you save the .ZIP file to your hard drive.

What Is A "ZIP" File?

When working with computer operations which involve several files, such as software installations or updates, it is frequently necessary to combine the individual files into one file, called an <u>archive</u>, and to compress the files so that the resulting archive file is smaller in size. Originally this was done so that all the necessary data would fit onto a floppy disk or installation CD; in recent years it is done so that if it is necessary to download data from the Internet, the download will take less time.

There are several methods of compressing files; however, the most common is the .ZIP format, support for which is built into both PC and Mac operating systems. On a PC, the name "compressed folders" is given to .ZIP files, while Mac OS X 10.3 includes .ZIP file support under the name "Archive Utility."

   10.   After the .ZIP file has finished downloading, go to the directory on your hard drive which contains the .ZIP file and extract the contents of the file. It is recommended that you allow the extraction utility to determine the folder which will contain the extracted files.

   11.   After the .ZIP file is finished extracting, open the folder which contains the extracted files. You should see a number of files with the extension, ."SYS."

12.   On the computer you are using as a Host, find the drive letter assigned to the Internal Memory of the M-solo and open it. Open the "hammond" directory, then the "M-SOLO" sub-directory. You will see a folder labeled "system." The "system" folder is the one to which you will copy the system software files.

13.   From the folder on your hard drive containing the extracted files, select the files with a .SYS extension and copy them to the "system" folder on the Internal Memory (see the illustration below).
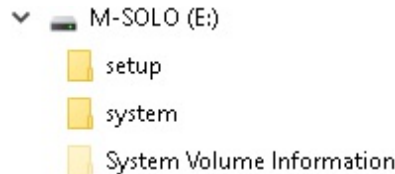

You have now prepared the Internal Memory with all the necessary information for upgrading your M-solo with the latest system software. The following pages will explain in detail how to upgrade the M-solo with the new software.

SPECIAL NOTE: Since the update process may take several minutes, be sure to set aside enough time to complete it.

> **SPECIAL NOTE:** It is recommended the **POWER** **AUTO** **OFF** feature be disabled to ensure the instrument will remain powered "ON" for the duration of the Update. Also, the Power Supply cord should be secured through the Strain Relief so that it will not accidentally be unplugged during an Update. **If an Update is interrupted, the instrument will not start properly.**
>
> Please consult page 10 for instructions on how to disable the **POWER** **AUTO** **OFF** feature.

14   After completing the above steps, press the SYSTEM [RECORD] button. This will start the Update procedure 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.
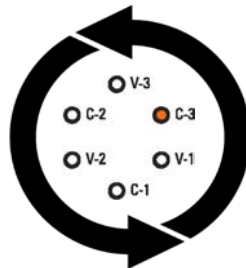
When the update is complete, the six LEDs in the VIBRATO/CHORUS section will all light.
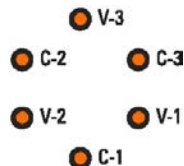
15.   Turn the power to the M-solo "OFF." The new software will Load when the instrument is next turned "ON."

● **UPDATE ERRORS**

If an update error occurs, the LEDs will blink or light. If this happens, turn the M-solo "OFF," try the solution listed below, then try the Update again. The data chart below describes the different error messages and what they mean.

UPDATE Error Messages			
LED state		**Cause**	**Solution**
SYSTEM LED 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 in the instrument. If a newer version is available, download it to your computer.
SYSTEM LED lights	V-1 LED lights	An error occurred during data verification.	Follow "Switching to MASS STORAGE Mode." from step 3. If the problem persists, consult with your retailer, a Hammond dealer in your area or an authorized Hammond distributor.
	V-3 LED lights	An error occurred during data verification.	
	C-1 LED lights	An error occurred during data verification.	

● **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.   Using a basic text editing program such as WordPad (supplied with PC-type computers), open "version.rtf" in the "M-SOLO" folder.

The current software version will display.

Shown below is a sample of how the "version.rtf" file will appear.

```
HAMMOND M-SOLO VERSION NUMBER

MAIN:V1.034
FACTORY PATCH:V1.011
KEYCLICK TABLE:V1.000
CUSTOM TONE WHEEL:V1.000
TW.ORGAN:V1.000
TR.ORGAN1:V1.010
TR.ORGAN2:V1.008

[SYSTEM PARAMETER]
Master Tune:440Hz
Keyclick Level:3
Leakage Level:3
VMC Depth:3
MIDI In Channel:1ch
MIDI Out Channel:1ch
Local Control:On
Auto Power Off:Disable
Drawber Direction:Normal
Generic Control:Off
```

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 Guide, total accuracy cannot be guaranteed. Should the player 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 and the U.K. contact:	All other countries contact:
HAMMOND SUZUKI USA, Inc.	HAMMOND SUZUKI EUROPE B.V	HAMMOND SUZUKI Ltd.
	Ir. D.S. Tuynmanweg 4A	25-12, Ryoke 2 Chome
219 W Wrightwood Ave	4131 PN Vianen	Hamamatsu 430-0852 (Shizuoka)
Elmhurst , IL, 60126-1112	THE NETHERLANDS	JAPAN
UNITED STATES		

Technical materials are available and can be obtained by mailing a request to the appropriate address listed above marked ATTENTION: SERVICE DEPARTMENT.