

HAMMOND



XK-4



REFERENCE GUIDE

IMPORTANT - PLEASE READ

Your Hammond XK-4 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 XK-4 as simply and graphically as possible.

Because we want to make this Guide as easy to understand as possible, the explanations are grouped by subject matter, and not necessarily in the order in which they appear in the Information Center Display (the screen on the front panel). For example, all functions pertaining to Drawbars are grouped together, all Percussion features are treated as a group, and so on.

Also, each feature is treated as an explanation unto itself, and does not require you to 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 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 XK-4.

HAMMOND



XK-4

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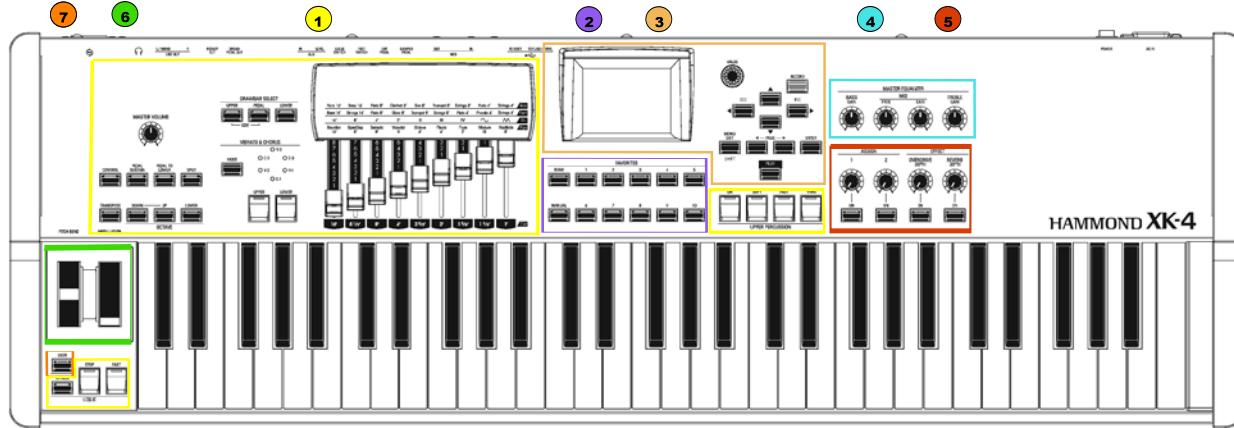


XK-4

INTRODUCTION

INTRODUCTION

◆ Control Panel



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

1 - ◆ ORGAN Section

This section is used to control the ORGAN sounds which consist of classic Hammond Drawbar tones as well as Transistor Combo Organ and authentic Pipe Organ tones. The ORGAN Section includes the Drawbars, Touch-Response Percussion and Vibrato and Leslie animation as well as editable Parameters for customizing the sounds of the instrument to your preference. This is explained more fully in subsequent chapters of this Guide.

2 - ◆ FAVORITES Section

Your XK-4 contains a large number of different types of organ sounds and a large number of ways to customize and tailor those sounds. The sounds and Parameters together constitute a Patch. The FAVORITES Section allows you to access Patches quickly during performance. This is explained more fully in the PATCHES & FAVORITES chapter of this Guide starting on page 59.

3 - ◆ INFORMATION CENTER DISPLAY

As mentioned above, you can customize your XK-4 in a large number of different ways. The INFORMATION CENTER DISPLAY allows you to see and edit the Parameters associated with each portion of the instrument. The group of buttons to the right of the display allow you to navigate through the various Parameters as well as adjust the values of each Parameter. The different Menus shown in the Information Center Display are explained in detail in the INFORMATION CENTER DISPLAY chapter of this Guide starting on page 20.

4**- ♦ MASTER EQUALIZER**

The MASTER EQUALIZER allows you to customize the tone quality of the entire instrument. This is explained more fully in the SPECIAL UTILITY FEATURES chapter of this Guide starting on page 428.

5**- ♦ ASSIGN & EFFECTS**

Your XK-4 contains a number of different Effects which can be applied to the Organ tones. These Effects are controlled by buttons which turn the selected effect “ON” or “OFF” and knobs which allows you to control the intensity or amount of the selected effect. Reverb and Overdrive are dedicated effects while other effects can be assigned to the ASSIGN 1 and ASSIGN 2 buttons and knobs. This is explained more fully in the EFFECT / EQ chapter of this Guide starting on page 322.

6**- ♦ PITCH BEND & MODULATION Wheels**

The Pitch Bend Wheel allows you to adjust the pitch range plus 12 half steps or minus 24 half-steps.

The Modulation Wheel allows you to add Modulation to connected MIDI instruments. It can also be used to control the internal ORGAN voices in several ways.

7**- ♦ USER button**

You can assign a number of different functions to the USER button for quicker access during performance. A complete list of the functions that can be assigned to the USER button can be found in the SPECIAL PERFORMANCE FEATURES chapter of this Guide on page 343.

◆ Accessory Panel

All connections are found on the Accessory Panel on the back of the XK-4.



1 - ◆ AC POWER

AC IN

Connect an AC Power Cord (provided) to this receptacle.

Power Switch

This turns the power to the XK-4 “ON” and “OFF.”

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.

LESLIE 11-PIN socket

Use this socket to connect a Leslie Speaker Cabinet having an 11-pin interface.

NOTE: When a Leslie Speaker Cabinet is detected at via the 11-pin socket, the inbuilt digital Leslie is disabled at the PHONES and LINE OUT jacks.

ROTARY OUT jack

Use this jack to bypass the inbuilt digital Leslie if you are not using the Leslie 11-pin socket and want a “dry” audio output from the ORGAN Section.

NOTE: Set the “ROTARY OUT” switch in the AUDIO FUNCTION Mode to Used if you use this jack. AUDIO FUNCTION Mode is explained starting on page 422.

ORGAN PEDAL OUT jack

Use this jack to connect a powered sub-woofer to increase the bass, or to bypass the Leslie to the PEDAL voices.

AUX IN jack

Use this jack to connect an external audio source. When connected, the sound will be mixed with the internal keyboard sounds and sent out to the LINE OUT jacks and the Stationary channel of a multi-channel Leslie Speaker via the 11-pin socket. Use the AUX LEVEL knob to adjust the volume of the sound coming in from the AUX IN jack.

- ♦ CONTROLLER JACKS

FOOT SWITCH jack

3

Use this jack to connect a Foot Switch to control functions such as Leslie speed or change Patches. The recommended 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 FOOT SWITCH 1 jack.

LESLIE jack

Use this jack to connect the CU-1 Leslie Mode switch.

EXP PEDAL jack

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

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

DAMPER PEDAL jack

Use this jack to connect a Damper Pedal (Sustain Pedal) for holding notes when keys are pressed and released. The recommended Damper Pedals are listed below:

HAMMOND . . . FS-9H, VFP1
ROLAND . . . DP-10
YAMAHA . . . FC3A, FC4A, FC5

- ♦ MIDI PORTS

MIDI IN

4

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

MIDI OUT

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

- ♦ USB PORTS

TO FLASH DRIVE

5

Use this to connect a USB Flash Drive, which will allow you to:

1. Save and Load Patches,
2. Save and Load Custom Sets,
3. Save and Load Setups, and
4. Install software upgrades into the operating system.

TO HOST

Use this to connect to a computer, which will allow you to Send and Receive MIDI data (UPPER, LOWER, PEDAL Internal Zones and System Exclusive messages).

NOTE: For more information about the USB ports, see the USING A USB FLASH DRIVE chapter of this Guide starting on page 452.

◆ Basic Hook-Up

Pictured below is the Accessory Panel of your XK-4, which is used to connect AC Power and external devices.

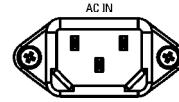


The following paragraphs explains the basic setup procedure for your XK-4.

◆ AC Power

Your Hammond XK-4 is shipped from the factory set for 120V.AC power. To connect the XK-4 to AC power:

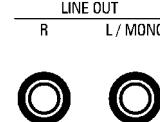
1. Locate the AC Power Cord that came with your XK-4.
2. Connect the female end of the AC Power Cord to the receptacle on the XK-4 marked, "AC IN."
3. Connect the 3-pronged plug into a grounded AC power outlet.



◆ Audio Connections

Connecting an external sound source

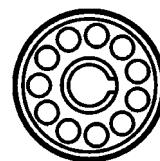
1. Use two audio cables with $\frac{1}{4}$ " plugs on both ends of each cable.
2. Connect one end of each of the audio cables to the audio output connectors (marked LINE OUT) on the Accessory Panel.
3. Connect the other ends of each cable to the female $\frac{1}{4}$ " audio input connectors of your sound source.



If your amplifier has only a single (1) female $\frac{1}{4}$ " phono plug audio input, connect one end of one cable to the L/MONO audio output connector on the XK-4 and the other end to the female $\frac{1}{4}$ " audio input connector of your amplifier.

Connecting a Leslie Speaker

The 11-pin Leslie socket on your XK-4 allows you to connect directly to any Leslie speaker having an 11-pin interface. If you wish to use a Leslie Speaker with your XK-4, the Leslie Speaker should be connected before turning the power "ON."



Connecting a single-channel Leslie Speaker

1. Locate an 11-pin Leslie Connector Cable.
2. Connect one end of the Leslie Cable into the 11-pin receptacle on the Leslie Speaker.
3. Connect the other end of the Leslie Cable into the 11-pin Leslie socket found on the Accessory Panel of the XK-4.
4. Turn the power to the XK-4 "ON" and set the EXT. LESLIE CHANNEL Parameter to 1.

NOTE: The EXT. LESLIE CHANNEL Parameter is explained on page 425 of this Guide.

Connecting a multi-channel Leslie Speaker

1. Locate an 11-pin Leslie Connector Cable.
2. Connect one end of the Leslie Cable into the 11-pin receptacle on the Leslie Speaker.
3. Connect the other end of the Leslie Cable into the 11-pin Leslie socket found on the Accessory Panel of the XK-4.
4. Turn the power to the XK-4 "ON" and set the EXT. LESLIE CHANNEL Parameter to 3.

NOTE: The EXT. LESLIE CHANNEL Parameter is explained on page 425 of this Guide.

5. Make sure a Tone Wheel) Organ Type (A-100, B-3, C-3 or Mellow) is selected.

NOTE: Organ Types are explained starting on page 111 of this Guide.

6. Press the BYPASS button "OFF" while playing, and set the volume of the Rotary Channel at the same audible level as the Stationary Channel(s).

NOTE: Both the Leslie connections are "keyed," that is, each connection contains a notch which insures that the pins properly match up.

Connecting additional audio equipment

The 11-pin Leslie socket on your XK-4 allows you to plug directly into any Leslie speaker having an 11-pin interface. Compatible models include the 2101, 3300, 3500, 122XB, 981, 991 and the Heritage Series (122H, 142H). However, when plugging the XK-4 into a single-channel Leslie cabinet such as a 122H, only the TW, Vx, Farf and Ace Organ Types will sound through the Leslie cabinet. In order to hear the sounds from the Pipe Organ Type, additional audio equipment must be connected. To hear the full sound output from your XK-4 when using a single-channel Leslie Speaker, do the following:

1. Locate an 11-pin Leslie Connector Cable.
2. Connect one end of the Leslie Cable into the 11-pin receptacle on the Leslie Speaker.
3. Connect the other end of the Leslie Cable into the 11-pin Leslie socket found on the Accessory Panel of the XK-4.
4. Connect the XK-4 to a keyboard amp or powered speakers via $\frac{1}{4}$ " audio cables from the LINE OUT jacks of the XK-4.
5. Turn the power to the XK-4 "ON" and set the EXT. LESLIE CH Parameter at 3.

NOTE: The EXT. LESLIE CHANNEL Parameter is explained on page 425 of this Guide.

6. Make sure a Tone Wheel Organ Type (A-100, B-3, C-3 or Mellow) is selected.

NOTE: Organ Types are explained starting on page 111 of this Guide.

7. Press the [BYPASS] button "ON" and set the audio equipment at a desired level.
8. Press the [BYPASS] button "OFF" and set the Volume of the connected Leslie Speaker at the same audible level as when the [BYPASS] button is "OFF."

NOTE: To connect the XK-4 to a Leslie Speaker having a different pin configuration such as an older 6-pin 122 or 147, or a 9-pin cabinet such as the 760, 770 or 900 series cabinets, you will need an adapter kit and/or Connector Cable. Contact your Hammond Dealer for more information regarding which adapter kit and/or cable you may need.

◆ Connecting a Foot Switch

You can connect an optional foot switch such as the Hammond model FS-9H foot switch to your XK-4. Connect the foot switch plug to one of the jacks marked FOOT SW on the back of the XK-4.



NOTE: In order to insure proper operation of the Foot Switch, be sure to connect it when the power to the XK-4 is "OFF."

NOTE: The FOOT SW jacks on your XK-4 are "TRS-compatible," meaning that by using a Stereo "Y" connector or "splitter," more than one Foot Switch can be plugged into the same jack. You can also use a TRS cable to connect a dual-momentary switch to one of the FOOT SW jacks. For a complete explanation of this, please consult the SPECIAL PERFORMANCE FEATURES chapter of this Guide starting on page 331.

◆ Connecting a Damper Pedal

To connect a Damper (piano sustain) Pedal, connect the plug from the pedal into the jack marked "DAMPER" on the back of the XK-4.



◆ Connecting a Leslie Switch

To connect a Leslie CU-1 Speed Switch, connect the plug from the pedal into the jack marked "LESLIE SWITCH" on the back of the XK-4.



◆ 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 MIDI pedal clavier

If you wish to use a Hammond MIDI pedal clavier, use a MIDI cable to connect the MIDI OUT port from the pedal clavier to the MIDI IN port of the XK-4.



NOTE: If you are using a Hammond pedal clavier, the MIDI Channel should be set to 3. The XK-4 is automatically configured to transmit Pedal MIDI data on MIDI Channel 3. If you need further information, please consult the Owner's Manual for your Hammond pedal clavier.

◆ Other MIDI Connections

Your XK-4 can interface with a great number of MIDI-compatible devices. See the MIDI chapter of this Guide for more information about MIDI connections and your Hammond XK-4.

◆ Connecting a Set of Headphones

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.



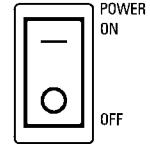
NOTE: Be sure that your headphone set has either a 1/4" plug or an adapter for a 1/4" plug.

◆ Basic Controls

The panel controls on the XK-4 include Drawbars, knobs and buttons. These controls allow you to make adjustments and changes on the instrument.

◆ ON / OFF Power Switch

The ON / OFF Power Switch is located at the rear of the instrument on the right side of the Accessory Panel facing the keyboard. When this switch is in the "ON" (pushed in at the top) position, the Information Center Display as well as some LED's (Light Emitting Diodes) will light up showing that the instrument is "ON."



NOTE: The XK-4 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 15 for more information about this feature.

◆ MASTER VOLUME knob

The MASTER VOLUME 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.



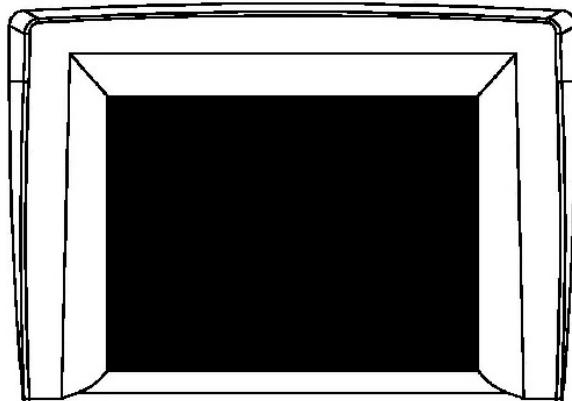
Turn this knob to the right to increase the total volume.

Turn this knob to the left to decrease 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 as well as the Volume settings for each of the Patches. For more information, please consult the PATCHES & FAVORITES chapter of this Guide starting on page 42.

◆ Information Center Display

The Information Center Display is located in the center of the Control Panel.

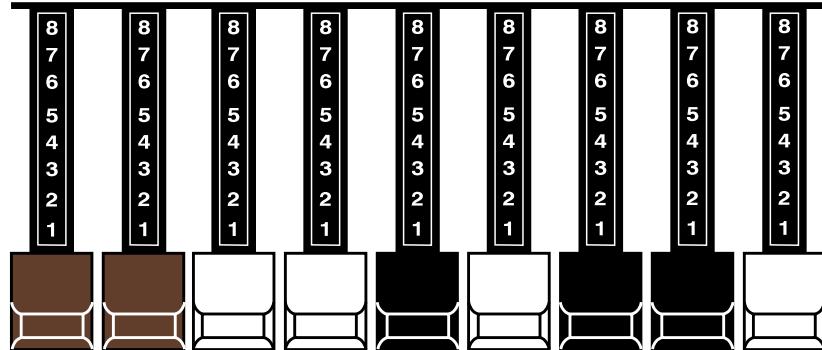


The Information Center Display has three modes: (1) PLAY Mode, (2) MENU Mode and (3) FUNCTION Mode. The PLAY Mode allows you to graphically see Drawbar settings, Extra Voice settings, Patch Numbers and Patch Names. The MENU Mode allows you to access the various change and edit the XK-4's software parameters such as Drawbar Voicing, MIDI parameters and other advanced functions.

NOTE: The PLAY and MENU Modes are covered in the INFORMATION CENTER DISPLAY chapter of this Guide.

◆ Drawbars

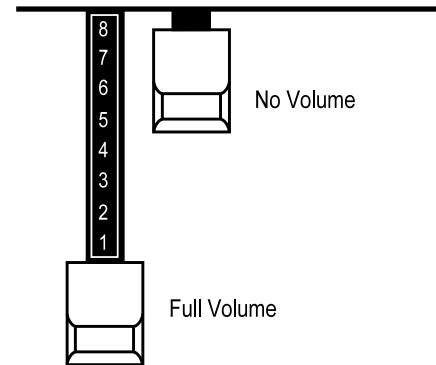
Drawbars are the heart and soul of the Hammond Sound.



The XK-4 has nine Drawbars, sometimes referred to as Tonebars. When the keyboard SPLIT feature is active, these same nine Drawbars are used to control the sound registrations for both UPPER keyboard, (right of the SPLIT Point) and LOWER keyboard (left of the Split Point) as well as PEDAL tones.

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 & PERCUSSION section of this Reference Guide for a complete explanation of Hammond Drawbars.



◆ Buttons

The button controls on the XK-4 have LEDS or lights that will light up indicating "ON."

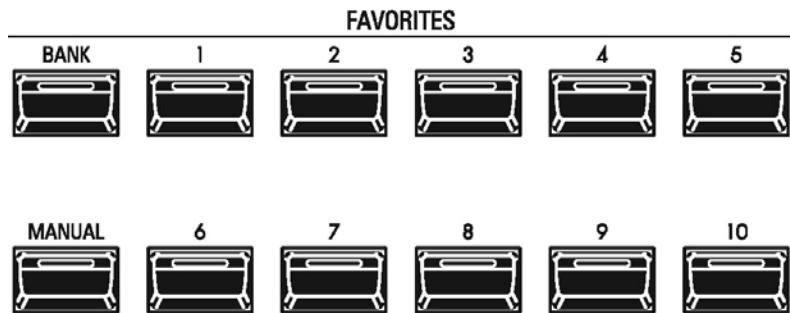


NOTE: The large white buttons may light different colors when pressed "ON" depending on their particular function. This is explained more fully in later chapters of this Guide.

NOTE: More detail about each of these sections can be found in later chapters of this Guide.

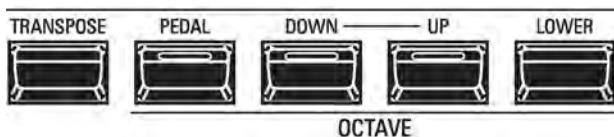
◆ Additional Controls

◆ FAVORITE buttons



These buttons allow you to access Patches quickly during performance. This is explained in the [PATCHES & FAVORITES](#) chapter of this Guide starting on page 59.

◆ OCTAVE / TRANSPOSE buttons



These buttons allow you to change the Octave of the selected Part as well as shift the musical key of the entire instrument. This is explained in more detail in the [SPECIAL PERFORMANCE FEATURES](#) chapter of this Guide starting on page 316.

◆ Additional Button Controls

CONTROL

This button allows you to access the [CONTROL FUNCTION](#) Mode instantly.



NOTE: More information about the [CONTROL FUNCTION](#) Mode can be found in the [SPECIAL PERFORMANCE FEATURES](#) chapter of this Guide starting on page 329.

PEDAL SUSTAIN

When this button is "ON" (LED lit), a lingering effect similar to a string bass is added to the Pedal Drawbar tones when Pedals are pressed and released.



NOTE: More information about the PEDAL SUSTAIN feature can be found on page 110.

PEDAL TO LOWER

When this button is "ON" (LED lit), the tones produced by the Pedals will sound from the LOWER Part.



NOTE: More information about the PEDAL TO LOWER feature can be found on page 385.

SPLIT

When this button is "ON" (LED lit), the keyboard is divided into UPPER and LOWER Parts.



NOTE: More information about the SPLIT function can be found on page 13.

USER

This button allows you to access a particular function instantly.



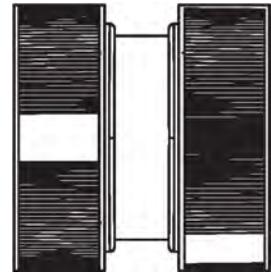
NOTE: A complete list of the functions that can be assigned to the USER button can be found in the [SPECIAL PERFORMANCE FEATURES](#) chapter of this Guide on page 343.

◆ Pitch Bend & Modulation Wheels

The Pitch Bend Wheel is located to the extreme left of the keyboard. With it, you can adjust the pitch range plus 12 half steps or minus 24 half-steps.

The Modulation Wheel is located just to the right of the Pitch Bend Wheel. It has several functions that can be selected:

1. Send MIDI modulation data to a connected MIDI device.
2. Control the Overdrive Level.
3. Control Leslie rotor speeds.

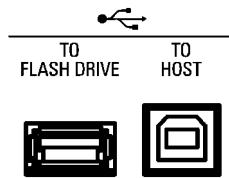


NOTE: For more information about the Pitch Bend and Modulation Wheel features, see the **SPECIAL PERFORMANCE FEATURES** chapter of this Guide.

Moving either control forward (away from you) will increase the intensity of the corresponding control.

Moving either control downward (toward you) will decrease the corresponding control's level.

◆ USB Ports



The USB Ports are located in the middle of the Accessory Panel.

◆ TO FLASH DRIVE

This Port is designed to accept a USB Flash Drive, which allows you to:

1. Save and Load Patches,
2. Save and Load Custom Sets,
3. Save and Load Setups, and
4. Install software upgrades into the operating system.

For more information about the USB port, see USING THE USB PORTS.

◆ TO HOST

This Port will do the following:

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

NOTE: The XK-4 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 XK-4 to a computer and transmit and receive a MIDI data stream without an exclusive device driver.

◆ Playing the instrument



Although the XK-4 is a single-keyboard instrument, it can be made to function in a manner similar to an instrument with two keyboards and a pedal keyboard, such as an organ. This is the reason for the references to **UPPER**, **LOWER** and **PEDAL** on the instrument.

On an organ, the **UPPER** keyboard is usually used for the melody, and is played with the right hand. The **LOWER** keyboard is usually used to provide accompaniment, or harmonic support for the melody and is played by the left hand. The **PEDAL** keyboard, or clavier, is used to play the bass notes and is most commonly played by the left foot.

NOTE: You can connect a MIDI pedal clavier to the XK-4 in order to play the instrument as a complete two-manual-and-pedal organ. Although we recommend one of the Hammond pedal claviers, any MIDI-compatible pedal clavier may be used; however, some initial setup may be required. Please consult the **MIDI** chapter of this Guide for more information.

On the XK-4, this playing style is replicated by partitioning or “splitting” the single 61-note keyboard into two parts. The part played by the right hand is referred to as the **UPPER** keyboard or Part, while the part played by the left hand is referred to as the **LOWER** keyboard or Part.

The **SPLIT** button, located on the left of the Control Panel, is used to divide the keyboard into **UPPER** and **LOWER** Parts. Normally, **2B** (the second “B” key counting from the left on the keyboard) marks the dividing point between the **UPPER** and **LOWER** Keyboards.



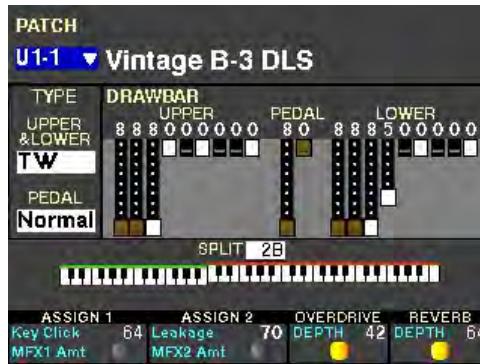
IMPORTANT NOTE: **2B** is the default **SPLIT** Point; however, you can relocate the **SPLIT** Point elsewhere on the Keyboard. The **SPLIT** feature and how to use it is covered in a later chapter of this Guide.

More information about the **SPLIT** feature can be found starting on the next page.

Using SPLIT

TRY THIS:

1. Make sure the XK-4 is in PLAY Mode. If in doubt, press the PLAY button. Also make sure the second line from the top reads U1-1 Vintage B-3 DLS. The Information Center Display should look like this:



Notice the SPLIT button is “ON.” Notice also the bottom portion of the display shows that the keyboard is SPLIT. The keyboard is now divided into UPPER and LOWER with UPPER to the right of the SPLIT Point and LOWER to the left of the SPLIT Point. The SPLIT Point will also be shown - in this case, 2B.

2. Now press the SPLIT button “OFF.” The LED will unlight.



The Information Center Display should now look similar to this:



Notice the bottom portion of the display shows a single keyboard and no SPLIT Point is shown. This means that the selected UPPER registration will play throughout the entire keyboard.

Notice also a small letter E at the top is now displaying, indicating the Patch has been changed from its factory setting.

NOTE: C3 is the default SPLIT Point; however, you can relocate the SPLIT Point elsewhere on the keyboard.

IMPORTANT - PLEASE READ

◆ POWER AUTO OFF

The XK-4 has a special feature called POWER AUTO OFF 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 may select whether or not the instrument will automatically turn “OFF” by doing the following procedure:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:

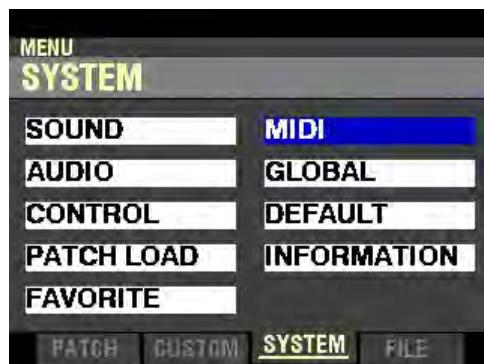


The “ORGAN” box should be highlighted.

2. Press the PAGE “▶” button two times to highlight the “SOUND” box.



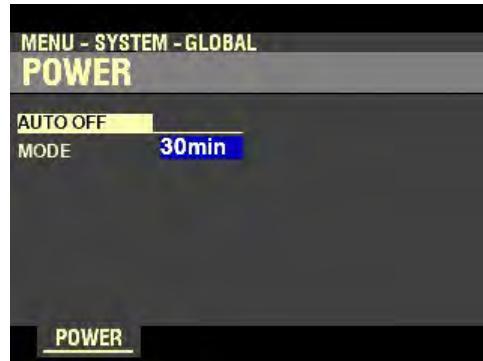
3. Press the DIRECTION “▶” button once. The Information Center Display should now look like this:



4. Press the DIRECTION “▼” button once. The Information Center Display should now look like this:



5. Press the ENTER button. The Information Center Display should now look like this:



The data chart below shows the options you may select.

POWER AUTO OFF Options	
Setting	Description
30min	The AC power to the instrument will turn “OFF” after 30 minutes have elapsed with no keys or buttons being pressed.
Disable	The instrument will turn “ON” or “OFF” with the AC Power Switch, but not turn “OFF” automatically.

Turn the VALUE knob to select 30min or Disable. To disable this feature, select Disable.

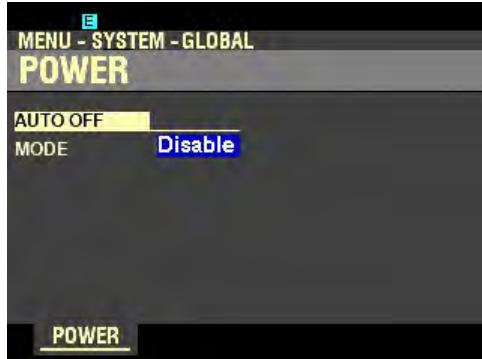
◆ Recording a System Setup

The previous pages explain how to disable the POWER AUTO OFF feature of your XK-4. This feature will be disabled as long as the power to the instrument is “ON.” However, if you turn the instrument “OFF.” then “ON” again, your setting will not be remembered.

You can Record a Custom Setup in which this feature is set to Disable and will remain so even if the power is turned “OFF.” In this way, you will not have continually to edit this feature each time the instrument is turned “ON.”

To Record a Custom Setup with AUTO POWER ON set to Disable, do the following:

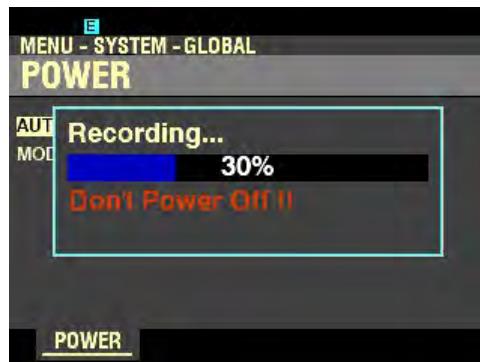
1. Follow the steps on the previous two pages to set the POWER AUTO OFF feature to Disable.



2. From the above screen, press the red RECORD button. The Information Center Display should now look like this:



3. Press the ENTER button to complete the Recording procedure. You will see the following messages flash in the display for approximately 1 second each:



NOTE: Do not turn the power "OFF" while the "Recording..." message is displaying.

After the "Completed" message disappears, the POWER FUNCTION Mode Page will display.

4. Press the PLAY button to return to the PLAY Mode.

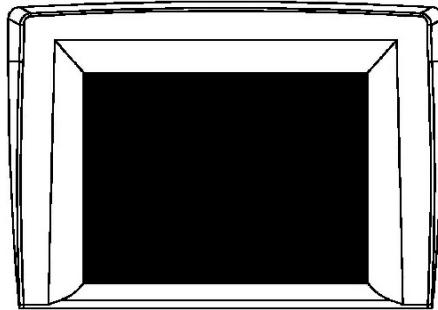


XK-4

**INFORMATION
CENTER
DISPLAY**

INFORMATION CENTER DISPLAY

The Drawbars, buttons, knobs, etc., are used to control the operations necessary for Registrations and Parameter settings as well as MIDI information. The Information Center Display allows you to see and regulate these changes.



◆ MENU / EXIT, PLAY and ENTER buttons

These 3 buttons allow you to choose from among the various options for using the Information Center Display. The following is a very brief explanation of each of these buttons.

◆ MENU / EXIT

This button allows you to place the Information Center Display into MENU Mode, allowing you to access the FUNCTION Modes.



◆ PLAY

This button allows you to place the Information Center Display into PLAY Mode.



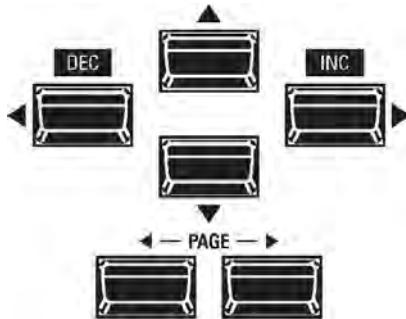
◆ ENTER

This button allows you to confirm that you want to Record or overwrite a setting you have edited.



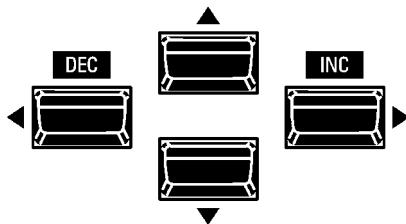
NOTE: More information about editing Parameters and Recording edits will be covered extensively in later chapters of this Guide.

◆ DIRECTION and PAGE buttons



These buttons allow you to navigate the Information Center Display to find the Pages or Parameters you want to edit.

◆ DIRECTION (Cursor) buttons



The four top buttons UP (“▲”), DOWN (“▼”), LEFT (“◀”) and RIGHT (“▶”) are the DIRECTION buttons. They allow you to:

1. Select Parameters within the PLAY Mode Pages,
2. Select FUNCTION Modes within the MENU Mode, and
3. Select Parameters within each FUNCTION Mode Page.

◆ PAGE buttons



The two PAGE buttons LEFT (“◀”) and RIGHT (“▶”) allow you to:

1. Select PLAY Mode Pages, and
2. Select Pages within each FUNCTION Mode.

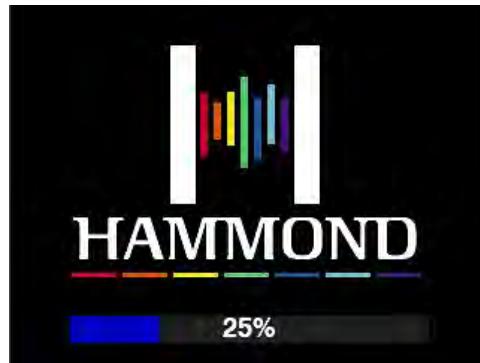
NOTE: More information regarding how to use the DIRECTION and PAGE buttons will be covered later in this section of the Guide.

◆ DISPLAY MODES

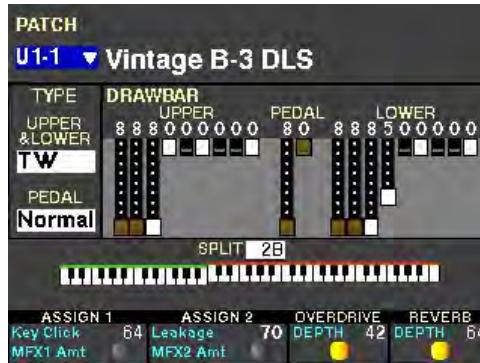
As stated in the INTRODUCTION, there are three Display Modes - PLAY Mode, MENU Mode and FUNCTION Mode.

Within the PLAY Mode are two Pages - ORGAN PATCH and INTERNAL / EXTERNAL ZONE. These will be explained starting below.

After the power to the XK-4 has first been turned “ON” the Information Center Display should show a screen similar to this:



While the above screen is displaying, you will see a status bar which will scroll from left to right as the system software loads. After approximately 15 seconds, the Information Center Display will show a screen similar to this:



The following pages will explain the different Mode displays for the Information Center Display.

IMPORTANT: It is assumed that you have just turned the XK-4 "ON" and have not pressed either the PLAY or MENU / EXIT button. If you have, press the PLAY button until a screen similar to the one shown on the previous page displays. Also the Drawbars should be "OFF" (pushed "in").

◆ PLAY Modes

There are two (2) PLAY Mode Pages:

1. ORGAN PATCH, and
2. INTERNAL / EXTERNAL ZONES.

The following paragraphs will explain each of the individual PLAY Mode Pages.

◆ PLAY Mode - PATCH Page

After the XK-4 is first turned "ON" and the system software finishes loading, the Information Center Display will look similar to this:



This Page will show:

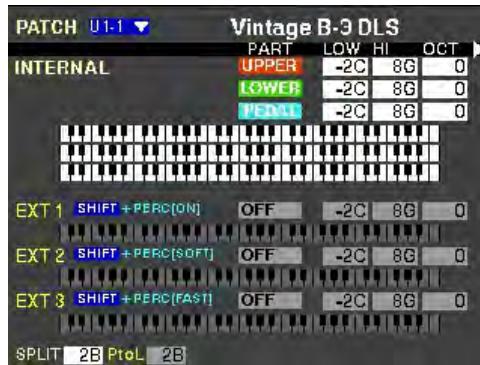
1. The Favorite Number and Favorite Bank Number (if applicable),
2. The Patch Number and Name,
3. The Drawbar registration for the ORGAN Section,
4. The Number and Name of the selected ORGAN Patch,
5. The TYPE settings for the ORGAN Patch,
6. The Part, Octave and Volume settings for the ORGAN patch.
7. The SPLIT Setting and Range on the keyboard (if SPLIT is active).

Some of the Parameters can be adjusted using the VALUE knob in conjunction with the DIRECTION buttons. For more information please turn to page 37.

◆ PLAY Mode - INTERNAL / EXTERNAL ZONES Page

TRY THIS:

From the screen shown on the previous page, press the PLAY button until the Information Center Display looks similar to this:



This Page will show:

1. The Favorite Number and Favorite Bank Number (if applicable),
2. The Patch Number and Name,
3. The Part, Note Range and Octave settings for the ORGAN Patch,
4. The Part, Note Range and Octave settings for the External Zones,
5. The setting of the SPLIT point,
6. The status of the PEDAL TO LOWER, the Octave settings for UPPER, LOWER and PEDAL and the Transposition setting.

This Page contains a number of Parameters which can be adjusted using the VALUE knob in conjunction with the DIRECTION buttons. For more information please consult the MIDI chapter of this Guide starting on page 375.

These are the PLAY Mode Pages. An explanation of the MENU Mode follows starting on the next page.

◆ MENU Mode

The MENU Mode has 4 Pages.

◆ MENU Mode - PATCH EDIT

If you press the MENU / EXIT button once From either of the PLAY Mode Pages, the Information Center Display should look like this:



Eight (8) FUNCTION Modes should now appear in the display window.

Use the DIRECTION buttons to select the FUNCTION Mode you want to edit.

ORGAN - Allows you to edit ORGAN Patches.

PERCUSSION - Allows you to edit the PERCUSSION tones.

ANIMATION - Allows you to edit VIBRATO & CHORUS and LESLIE.

EFFECT/EQ - Allows you to edit various EFFECTS and the EQUALIZER.

CONTROLLER - Allows you to edit the CONTROLLERS, such as Foot Switch, Expression Pedal, etc.

ASSIGN - Allows you to edit the ASSIGN controls.

INT ZONE - Allows you to edit the Internal Zones.

EXT ZONE - Allows you to edit the External Zones.

◆ MENU Mode - CUSTOM EDIT

From the PATCH EDIT Menu, press the PAGE “▶” button once. The Information Center Display should now look like this:



Four (4) FUNCTION Modes should now appear in the display window.

Use the DIRECTION UP (“▲”) and DOWN (“▼”) buttons to select the FUNCTION Mode you want to edit.

TONE WHEEL - Allows you to select from among a library of different Custom Tone Wheels as well as create and Record your own Custom Tone Wheels.

LESLIE - Allows you to select from among a library of different Custom Leslie Cabinets as well as create and Record your own Custom Leslie Cabinets.

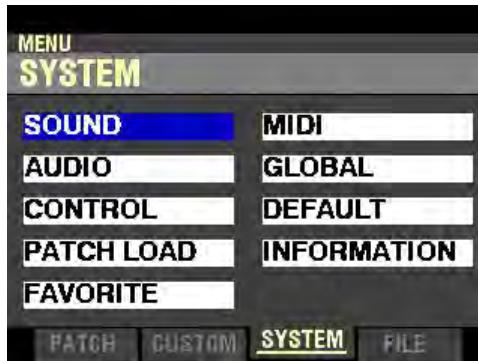
PEDAL REG. - Allows you to select from among a library of different Custom Pedal Registrations as well as create and Record your own Custom Pedal Registrations.

PIPE - Allows you to select from among a library of different Custom Pipes as well as create and Record your own Custom Pipes.

NOTE: The Custom Sets are explained fully in the CUSTOM SETS chapter of this Guide starting on page 168.

◆ MENU Mode - SYSTEM

From the CUSTOM EDIT Menu, press the PAGE “▶” button once. The Information Center Display should now look like this:



Nine (9) FUNCTION Modes should now appear in the display window.

Use the DIRECTION buttons to select the FUNCTION Mode you want to edit.

SOUND - Allows you to adjust Master Tune, Transpose, and Master Equalizer.

AUDIO - Allows you to adjust the audio configuration between the ORGAN Section and output jacks.

CONTROL - Allows you to adjust the Parameters for the various controllers such as Foot Switch, Expression Pedal, Display and keyboard.

PATCH LOAD - Allows you to select which contents are loaded when a Patch is selected.

FAVORITE - Allows you select and edit Favorites.

MIDI - Allows you to adjust MIDI Channels, and various messages for the MIDI port and the USB MIDI.

GLOBAL - Allows you to adjust the Auto Power Off time.

DEFAULT - Allows you to return all or a portion of the instrument to factory settings.

INFORMATION - Allows you to see which jacks or portions of the instrument are active and to see and update the software.

◆ MENU Mode - USB FLASH DRIVE

From the SYSTEM Menu, press the PAGE “▶” button once. The Information Center Display should now look like this:



Four (4) FUNCTION Modes should now appear in the display window.

Use the DIRECTION UP (“▲”) and DOWN (“▼”) buttons to select the FUNCTION Mode you want to edit.

LOAD - Allows you to Load data from a USB Flash Drive.

SAVE - Allows you to Save data to a USB Flash Drive.

DELETE - Allows you to Delete data from a USB Flash Drive.

FORMAT - Allows you to format a USB Flash Drive for use with your XK-4.

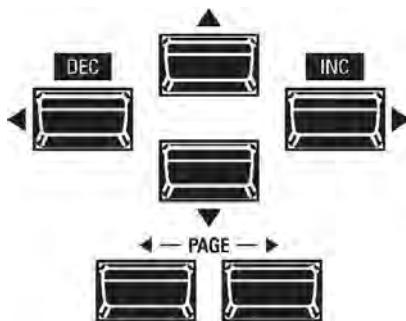
These are the MENU and FUNCTION Modes. Their operation is discussed in greater detail under separate chapters of this Guide.

Press the PLAY button to return to the PLAY Mode.

◆ FUNCTION Modes

The FUNCTION Modes are the screens within each MENU Mode which allow you to adjust specific Parameters within each Menu. The following pages will explain how to access the FUNCTION Modes to make the changes you wish.

◆ Using the DIRECTION and PAGE buttons



As stated earlier, the buttons marked with arrows - UP ("▲"), DOWN ("▼"), LEFT ("◀") RIGHT ("▶"), PAGE LEFT ("◀◀") and PAGE RIGHT ("▶▶") allow you to find the FUNCTION Mode Pages and Parameters within each Page quickly.

The four top buttons UP ("▲"), DOWN ("▼"), LEFT ("◀") and RIGHT ("▶") are the DIRECTION buttons. They allow you to navigate among the main MENU Pages as well as the Parameters within each FUNCTION Mode Page.

The two PAGE buttons LEFT ("◀◀") and RIGHT ("▶▶") allow you to select Pages within each FUNCTION Mode.

The following example is designed to help you get used to using the DIRECTION and PAGE buttons to find your way to the FUNCTION Mode Page you want to edit.

Selecting FUNCTION Mode Pages

IMPORTANT NOTE: If you followed the instructions on pages 25 through 26, you will have seen all four of the MENU Modes as well as descriptions of the FUNCTION Modes within each. You will also have noticed that one of the Menu choices will be "highlighted" - shown with a blue background with white lettering. This is to let you know which Menu choice will be selected when you press the ENTER button. The following pages explain this more fully.

TRY THIS:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



This is the PATCH EDIT Menu, which will be the first one displayed. The "ORGAN" box should be highlighted.

Use the DIRECTION "▲" and "▼" buttons to select FUNCTION Modes within the PATCH EDIT Menu.

2. Now press the PAGE “▶” button once. The Information Center Display should now look like this:



The CUSTOM EDIT Menu will now display. The “TONE WHEEL” box should be highlighted.

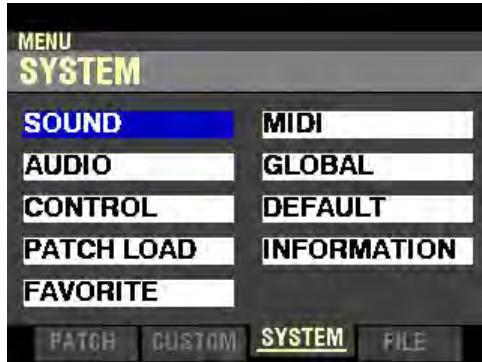
3. Press the DIRECTION “▼” button once. The Information Center Display should now look like this:



The “LESLIE” box will now be highlighted.

Use the DIRECTION “▲” and “▼” buttons to select FUNCTION Modes within the CUSTOM EDIT Menu.

4. Now press the PAGE “▶” button once. The Information Center Display should now look like this:



The SYSTEM Menu will now display. The “SOUND” box should be highlighted.

5. Press the DIRECTION “▼” button two times. The Information Center Display should now look like this:



The “CONTROL” box will now be highlighted.

6. Now press the DIRECTION “▶” button once. The Information Center Display should now look like this:



The “DEFAULT” box will now be highlighted.

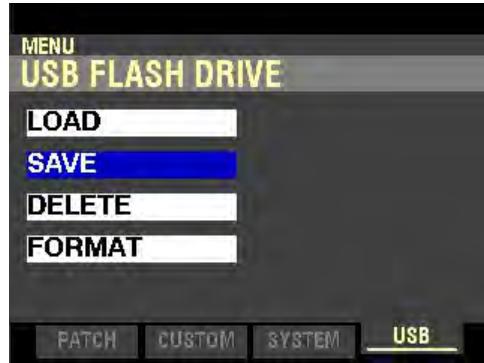
Use the DIRECTION buttons to select FUNCTION Modes within the SYSTEM Menu.

7. Now press the PAGE “▶” button once. The Information Center Display should now look like this:



The FILE Menu will now display. The “LOAD” box should be highlighted.

8. Press the DIRECTION “▼” button once. The Information Center Display should now look like this:



The “SAVE” box will now be highlighted.

Use the DIRECTION “▲” and “▼” buttons to select FUNCTION Modes within the FILE Menu.

Selecting Pages within each FUNCTION Mode

Once you have selected the Menu you want, use the PAGE “◀” and “▶” buttons to select the specific FUNCTION Mode you want to edit. This is explained starting below.

TRY THIS:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



This is the PATCH EDIT Menu, which will be the first one displayed. The “ORGAN” box should be highlighted.

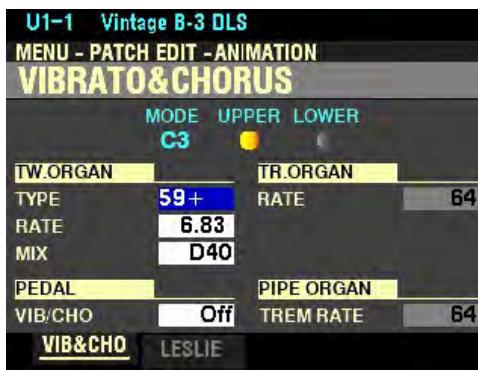
Now, let us assume you want to edit ANIMATION.

2. Press the DIRECTION “▼” button two times. The Information Center Display should now look like this:



The “ANIMATION” box will now be highlighted.

3. With “ANIMATION” now highlighted, press the ENTER button. The Information Center Display should now look like this:



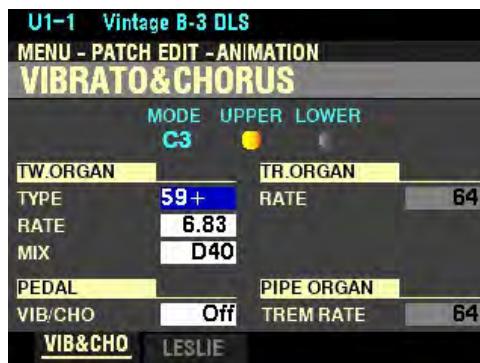
You have now selected the PATCH EDIT -ANIMATION FUNCTION Mode.

4. From the above screen, press the PAGE “►” button once.



You have now selected Page 2 of the PATCH EDIT -ANIMATION FUNCTION Mode.

5. From the above screen, press the PAGE “◀” button once. The Information Center Display should now look like this:



In the previous examples, you can see how to display the various Pages within a FUNCTION Mode by using the PAGE “◀” and “►” buttons.

When you have found the Page you want, use the four DIRECTION (“▲” “▼” “◀” “►”) buttons to select the specific Parameter you want to edit.

Press the PLAY button to return to the PLAY Mode.

◆ Using the VALUE knob to adjust Parameters

TRY THIS:

1. From any of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



This is the PATCH EDIT Menu, which will be the first one displayed. The “ORGAN” box should be highlighted.

Now, let us assume you want to edit a Parameter in the ORGAN FUNCTION Mode.

2. With “ORGAN” highlighted, press the ENTER button. The Information Center Display should now look like this:



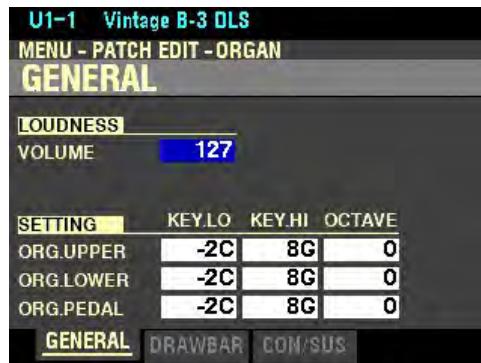
You have now selected the PATCH EDIT -ORGAN FUNCTION Mode. The box to the right of “VOLUME” should be highlighted.

3. Turn the **VALUE** knob to the left so the Information Center Display looks like this:.



The LOUDNESS-VOLUME of the selected ORGAN Patch is now set at 80.

4. From the above screen, turn the **VALUE** knob to the right so the Information Center Display looks like this:



You have now set this Parameter to its upper limit - in this case, 127.

Changing Values in Larger Increments

In the example on the previous pages, you have used the VALUE knob to change the value of a Parameter by single degrees. However, there may be occasions when you want to make changes more rapidly. To do this:

1. With the screen at the bottom of the previous page displaying, Press and Hold the SHIFT button.



2. While holding the SHIFT button down, turn the VALUE knob.



Notice the value is now changing by larger degrees (in this case, "10"). This will enable you to adjust the values of Parameters having a large number of choices more quickly.

◆ “Shortcuts”

Sometimes it may be desirable to access a FUNCTION Mode Page more quickly than can be done by using the buttons on the Information Center Display. Because of this, your Hammond XK-4 has what are called “Shortcuts” to many FUNCTION Mode Pages. You can “shortcut” to a FUNCTION Mode Page associated with a particular function by Pressing and Holding a button controlling that function.

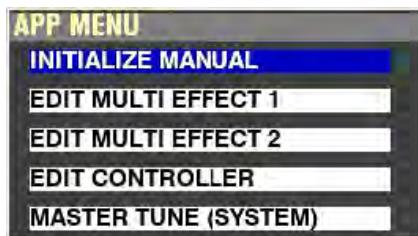
Many, but not all, FUNCTION Mode Pages can be accessed via Shortcuts. The different methods you can use to access a particular FUNCTION Mode Page will be explained in each section before explaining the FUNCTION Mode Page itself.

◆ APP (APPLICATION) MENUS

The APP (APPLICATION) MENUS allow you to perform various editing procedures more quickly and easily.

There are different APP MENUS for different portions of the instrument. The following pages will list each one of the APP MENUS and the portions of the instrument to which they apply. More detailed descriptions of each APP MENU will be found in later chapters of this Guide.

◆ MANUAL and EFFECTS APP MENU

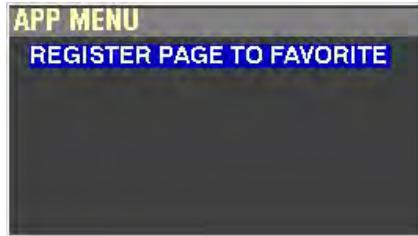


This APP MENU allows you to initialize the MANUAL feature and to access the MENU Mode of the Multi Effects, Controllers and Master Tune.

NOTE: More information about the MANUAL feature can be found starting on page 83.

NOTE: More information about Multi Effects, Controllers and Master Tune can be found in later chapters of this Guide.

◆ CUSTOM EDIT APP MENU

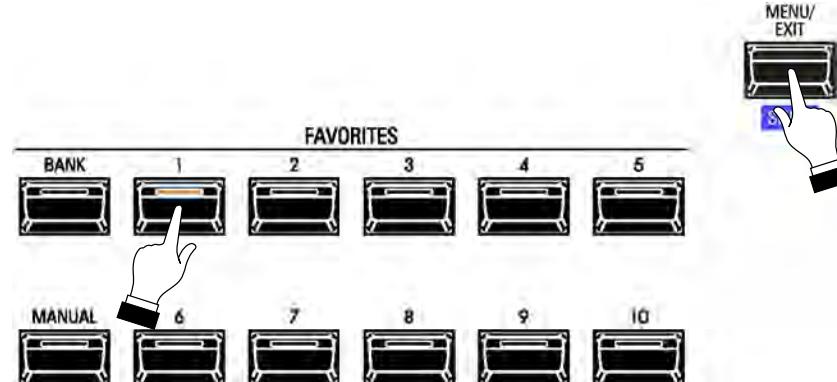


This APP MENU allows you to register the current CUSTOM SET FUNCTION Mode Page to one of the FAVORITE buttons for quick access.

Accessing a Page Registered to a FAVORITE:

As shown on the previous pages, many of the APP MENUS allow you to register a FUNCTION Mode Page or screen to one of the 10 FAVORITE buttons so it can be accessed quickly.

To access a Page or screen saved to a FAVORITE button, Press and Hold the SHIFT button and press the numbered FAVORITE button where the Page is registered.



NOTE: More information about how to register Pages to FAVORITES can be found in later chapters of this Guide.

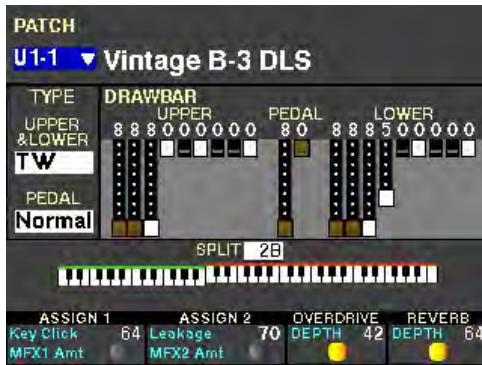
NOTE: More information about the CUSTOM SET FUNCTION Modes can be found in the CUSTOM SETS chapter of this Guide starting on page 168.

◆ PLAY Mode Parameters

As mentioned on page 23, the PLAY Mode Pages display Parameters which you may select using the DIRECTION buttons and adjust using the VALUE knob. The following paragraphs explain this in more detail.

◆ PATCH - Selecting Patches

The PLAY Mode Patch Page shown below will display when the XK-4 is first turned “ON” and the operating system finishes loading.



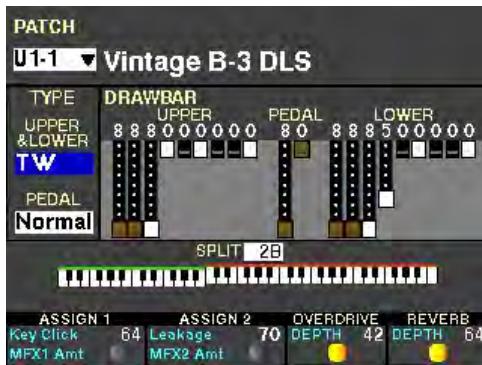
Notice the box underneath “PATCH” is highlighted. When this box is highlighted, you can use the VALUE knob to scroll through the Patches.

NOTE: Patches are covered in more detail in the PATCHES & FAVORITES chapter of this Guide starting on page 42.

◆ TYPE - Organ Type

UPPER & LOWER

From the screen shown on the previous page, press the DIRECTION “▼” button once. The box underneath “UPPER & LOWER” should be highlighted.



This Parameter allows you to change the sound of the Drawbars for the UPPER and LOWER Parts.

PEDAL

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box underneath “PEDAL” should be highlighted.

This Parameter allows you to select the Organ Type for the PEDAL Part.

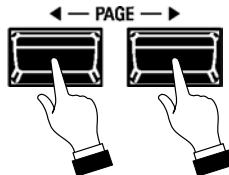
NOTE: You can also adjust these Parameters from the **DRAWBARS** FUNCTION Mode Page. For more information about Organ Types please consult the **DRAWBARS** chapter of this Guide starting on page 98.

◆ Locking / Unlocking the Display

You can Lock the display in order to prevent accidental changes during live performance, or when more than one musician will be using the same instrument.

To Lock the display, do the following:

1. Make sure the power to the XK-4 is “OFF.”
2. With the XK-4 power “OFF,” Press and Hold the two PAGE buttons.



3. While holding the PAGE buttons, turn the power to the XK-4 “ON.” Continue to hold the PAGE buttons until the Information Center Display looks like this:



When the above message appears, Release the PAGE buttons and wait for the system to finish Loading.

When the display is Locked:

1. The MENU / EXIT button is disabled.
2. The RECORD button is disabled.
3. The “Shortcut” feature is disabled.
4. Patches can still be recalled.

To Unlock the display, follow Steps 1 through 3 above. The Information Center Display will look like this:



NOTE: If the display is Locked when the instrument is first turned “ON,” you will see “Loading...Display Locked.” in the Information Center Display.

NOTE: If the display is Locked, holding the red RECORD button and applying power will not Unlock it. Follow the procedure described above to Unlock the display.

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HAMMOND



XK-4

PATCHES

&

FAVORITES

PATCHES & FAVORITES

Your XK-4 contains a large number of different types of Organ sounds and a large number of ways to customize and tailor those sounds. In addition, many of the different types of sounds can be blended or mixed with each other to produce many unique tone colors. In the organ world, this mixing, blending and tailoring of sounds is called Registration.

◆ 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. Some modern synthesizers still utilize patch cords or cables, others do not. However, 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).

On the XK-4, a Patch is defined as a collection of Organ registrations and Parameter settings.

◆ Selecting a Patch

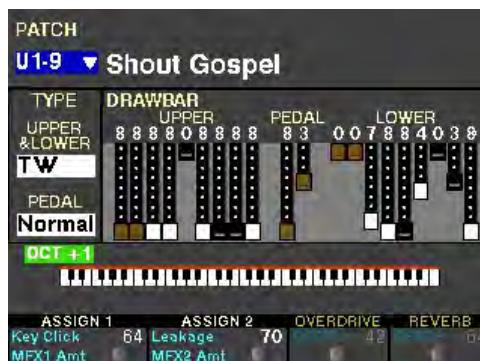
TRY THIS:

1. After the power to the XK-4 has been turned "ON" and the operating system finishes loading, Patch U1-1 should display (see below).



Notice the box underneath "PATCH" is highlighted.

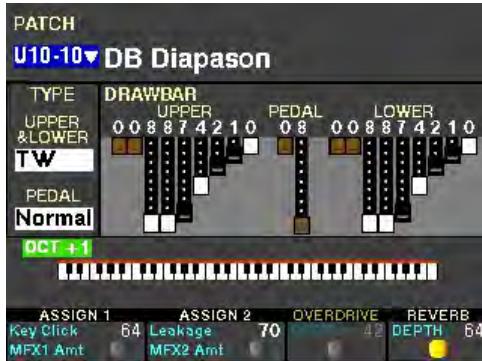
2. Turn the VALUE knob to the right to scroll through the available Patches. For example, turn the VALUE knob until the Information Center Display shows the following:



- Keep turning the VALUE knob to the right. You will see the Patch Bank Numbers and Patch Numbers change. You will also see the LEDs of the FAVORITE buttons scroll from the left to right in succession.

You will also see LEDs on the Control Panel turn “ON” and “OFF” depending on which features or sounds are included in each Patch.

The last User Patch is U10-10.



- If you turn the VALUE knob to the right past U10-10, the Factory (“F”) Patches will display (see below):



The “F” Patches contain the same settings as their “U” counterparts - Patch U1-1 is identical to Patch F1-1, Patch U4-7 is the same as Patch F4-7, etc. The difference between “U” and “F” Patches is, “F” Patches cannot be reprogrammed while “U” Patches can be modified or completely changed to your own settings.

Turn the VALUE knob to the right to scroll forward through the Patches.

Turn the VALUE knob to the left to scroll backward through the Patches.

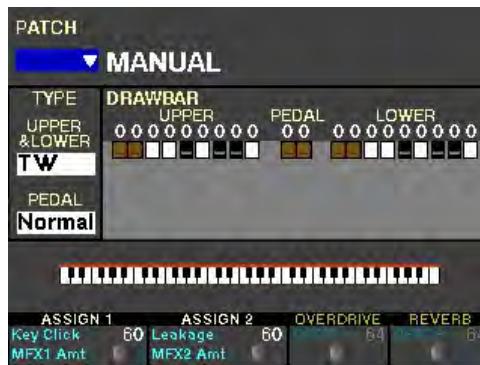
NOTE: For a complete list of Factory Patches please consult page 474.

◆ Creating a New User Patch

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

TRY THIS:

1. From either of the PLAY Mode Pages, press the MANUAL button. This will disable all Patches so that you can create an entirely new Patch. The Information Center Display should display "MANUAL" at the top of the screen.



2. Create a Drawbar registration by using the DRAWBAR SELECT buttons to select the Part you want to register - UPPER, LOWER or PEDAL.
3. Use the PATCH EDIT -ORGAN FUNCTION Mode to make other changes if you wish. For a complete explanation of the PATCH EDIT -ORGAN FUNCTION Mode and the Parameters you can adjust, consult the DRAWBARS chapter of this Guide starting on page 93.
4. When you have completed your edits, press the red RECORD button. The Information Center Display will look similar to this:



Notice the box underneath CONTENT is highlighted. You can now select which settings you want to Record. The data chart below shows the options you may select.

RECORD CONTENT Options	
Setting	Description
Manual	Record front panel settings.
Patch	Record Patch Parameters to a Patch.
System	Record SYSTEM Parameters such as POWER AUTO OFF, etc.

If Patch is not displayed underneath CONTENT, use the VALUE knob to select Patch. If Patch is displayed, go to the next step.

5. When you have selected the Patch Bank and Number, press the DIRECTION “▼” button to move the cursor to the box underneath “TO.”



You can now use the VALUE knob to select the User Bank and User Number which will contain your User Patch.

6. When you have made your selection, press the DIRECTION “▼” button to move the cursor to the RECORD box.



7. Press the ENTER button. The Information Center Display will look similar to this:



This is the screen you will use to Name your User Patch. You can use the FAVORITE buttons and the BANK and MANUAL buttons (the two rows of six buttons just below the Information Center Display) to select and enter characters. The data chart below explains the function of each of the buttons.

NAMING Options		
Character	Button	Description
Aa1	BANK	Changes the character type (Capital and lower-case letters, numbers, special characters).
Delete	MANUAL	Deletes the character at the cursor.
space	FAVORITE 1	Replaces the character at the cursor with a space.
Insert	FAVORITE 6	Inserts a space at the cursor.
ABC, etc.	FAVORITES 2 ~ 5, 7 ~ 10.	Use these to cycle through and select the characters for the highlighted location. Each successive touch will cause the next character to display - for example, touching the Number 2 button will display A , touching it again will display B and touching it a third time will display C .

You can also turn the VALUE knob to select characters. If you wish to do this, use the DIRECTION “◀” and “▶” buttons to move back and forth through the characters.

- When you have finished the Naming procedure, press the ENTER button to complete the Recording procedure. You will see the following messages flash in the display for approximately 1 second each:



NOTE: Do not turn the power "OFF" while the "Don't Power Off !!" message is displaying.

After the "Completed" message disappears, you will see the Number of the Patch you are working with change to Un-n. This indicates that a User Patch is now active. If you Rename a Patch, the new Name will display to the right of the Patch Bank and Patch Number.

NOTE: If you DO NOT wish to Record, press the MENU / EXIT or PLAY button instead of the ENTER button.

- Press the PLAY button to return to the PLAY Mode.

◆ Editing and Recording a Factory Patch

The following pages explain how to modify a Factory Patch and Record it as a User Patch.

TRY THIS:

1. From the opening PLAY screen (shown below), select the Factory Patch you want to change.



If the Patch you want to edit is not shown in the display, turn the VALUE knob to select the specific Patch you want to modify.

NOTE: Factory Patches will be preceded by an "F" - followed by the Bank Number and the Patch Number - for example, "F1-1" indicates Factory Patch, Bank 1, Patch 1. On the XK-4 the User Patches are listed first.

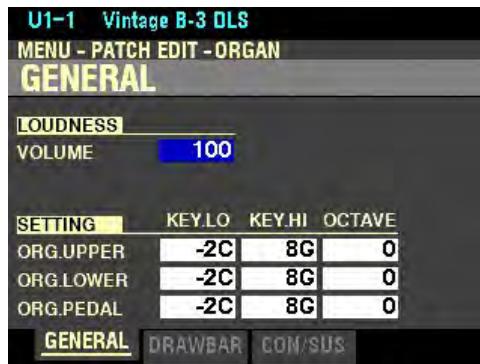
2. When you have selected the Patch to be edited, enter the PATCH EDIT -ORGAN FUNCTION Mode by doing the following:

- a. From either of the PLAY Mode Pages, press the MENU / EXIT button to see the PATCH EDIT Menu.



The “ORGAN” box should be highlighted.

- b. Press the ENTER button. The Information Center Display should now look like this:



NOTE: More information about the **PATCH EDIT -ORGAN** FUNCTION Mode can be found in the **DRAWBARS** chapter of this Guide starting on page 93.

3. Make whatever changes to the Patch you wish. For a complete list of the Parameters that can be modified for the Patches, please consult the APPENDIX chapter of this Guide starting on page 475.

You can find a detailed description of the Patch Parameters in the DRAWBARS chapter of this Guide starting on page 86.

4. When you have completed your edits, press the red RECORD button. The Information Center Display will look similar to this:



Notice the box underneath CONTENT is highlighted. You can now select which settings you want to Record - Manual, Patch or System

If Patch is not displayed underneath CONTENT, use the VALUE knob to select Patch. If Patch is displayed, go to the next step.

Notice also the small letter E to the right of the box underneath CONTENT. This indicates the Patch has been changed from its default setting.

5. When you have selected the Patch, press the DIRECTION “▼” button to move the cursor to the box underneath “TO.”



You can now use the VALUE knob to select the User Bank and User Number which will contain your User Patch.

6. When you have selected the Patch Bank and Number, use the DIRECTION “▼” button to move the cursor to the RECORD box.



7. Press the ENTER button. The Information Center Display will look similar to this:



This is the screen you will use to Name your User Patch. You can use the FAVORITE buttons and the BANK and MANUAL buttons (the two rows of six buttons just below the Information Center Display) to select and enter characters. The data chart below explains the function of each of the buttons.

NAMING Options		
Character	Button	Description
Aa1	BANK	Changes the character type (Capital and lower-case letters, numbers, special characters).
Delete	MANUAL	Deletes the character at the cursor.
space	FAVORITE 1	Replaces the character at the cursor with a space.
Insert	FAVORITE 6	Inserts a space at the cursor.
ABC, etc.	FAVORITES 2 ~ 5, 7 ~ 10.	Use these to cycle through and select the characters for the highlighted location. Each successive touch will cause the next character to display - for example, touching the Number 2 button will display A , touching it again will display B and touching it a third time will display C .

You can also turn the VALUE knob to select characters. If you wish to do this, use the DIRECTION “◀” and “▶” buttons to move through the characters.

- When you have finished the Naming procedure, press the ENTER button to complete the Recording procedure. You will see the following messages flash in the display for approximately 1 second each:



NOTE: Do not turn the power "OFF" while the "Recording..." message is displaying.

After the "Completed" message disappears, you will see the Number of the Patch you are working with change to Un-n. This indicates that a User Patch is now active. If you Rename a Patch, the new Name will display to the right of the Patch Bank and Patch Number.

NOTE: If you DO NOT wish to Record, press the MENU / EXIT or PLAY button instead of the ENTER button.

- Press the PLAY button to return to the PLAY Mode.

◆ PATCH LOAD FUNCTION Mode

This FUNCTION Mode allows you to select which parts of a Patch will load.

NOTE: The Parameters in this Mode are System Parameters and cannot be Recorded to a Patch; however, they can be Saved as part of a Setup.

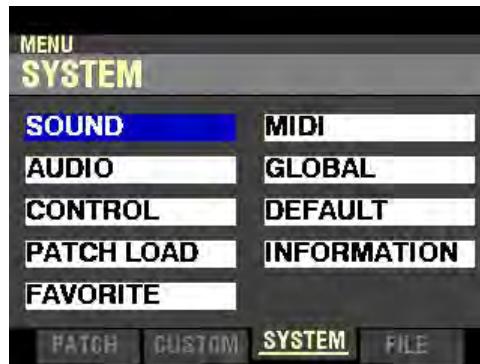
To access the PATCH LOAD FUNCTION Mode, do the following:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

2. Press the PAGE “▶” button two times to highlight the “SOUND” box.

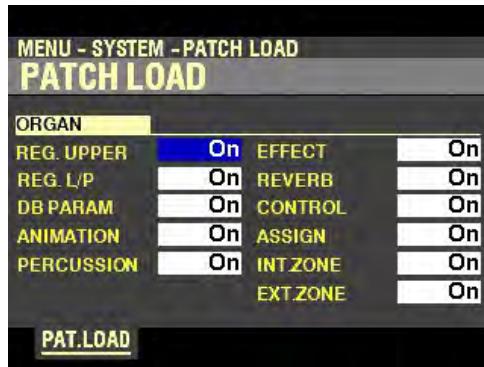


You are now in the SYSTEM Menu.

3. Press the DIRECTION “▼” button three times. The Information Center Display should now look like this:



4. Press the ENTER button. The Information Center Display should now look like this:



The box to the right of “REG.UPPER” should be highlighted.

PATCH LOAD

You can now select which portions of the instrument will be Loaded when a Patch is selected. These Parameters are explained starting below.

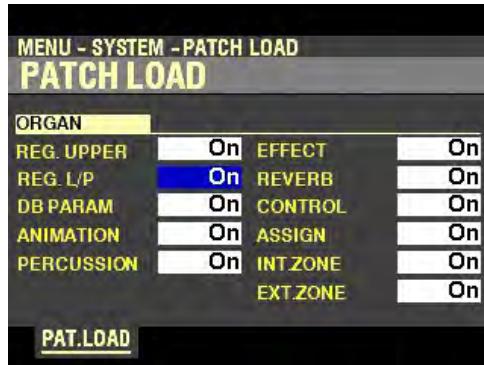
NOTE: If you turn all PATCH LOAD Parameters “OFF” except **REG.UPPER**, the Patches will function like the Preset Keys of a vintage Hammond Organ, which would change only the Drawbar Registrations.

REG.UPPER

This Parameter allows you to select whether you want the Drawbar registration for the UPPER Part to change when you select a Patch.

Turn the VALUE knob to turn this Parameter On or Off.

From the above screen, press the DIRECTION “▼” button once.



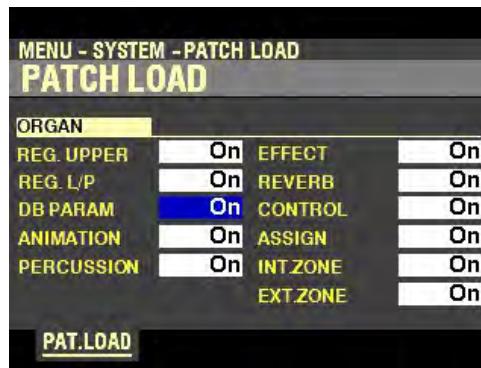
The box to the right of “REG.L/P” should be highlighted.

REG.L/P

This Parameter allows you to select whether you want the Drawbar registration for the LOWER and PEDAL Parts to change when you select a Patch.

Turn the VALUE knob to turn this Parameter On or Off.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



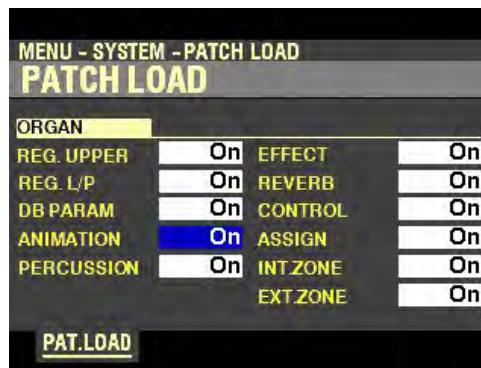
The box to the right of “DB PARAM” should be highlighted.

DB PARAM

This Parameter allows you to select whether you want the general ORGAN Section Parameters (such as Contact Parameters and Sustain Parameters) to change when you select a Patch.

Turn the VALUE knob to turn this Parameter On or Off.

From the above screen, press the DIRECTION “▼” button once.



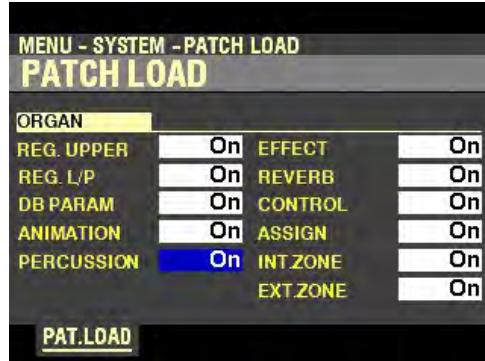
The box to the right of “ANIMATION” should be highlighted.

ANIMATION

This Parameter allows you to select whether you want the Animation for the ORGAN Section (Vibrato and Chorus, Leslie, etc.) to change when you select a Patch.

Turn the VALUE knob to turn this Parameter On or Off.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



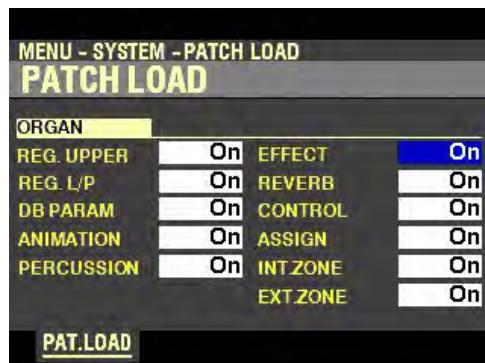
The box to the right of “PERCUSSION” should be highlighted.

PERCUSSION

This Parameter allows you to select whether you want the PERCUSSION Parameters to change when you select a Patch.

Turn the VALUE knob to turn this Parameter On or Off.

From the above screen, use the DIRECTION buttons to highlight the box to the right of “EFFECT.”

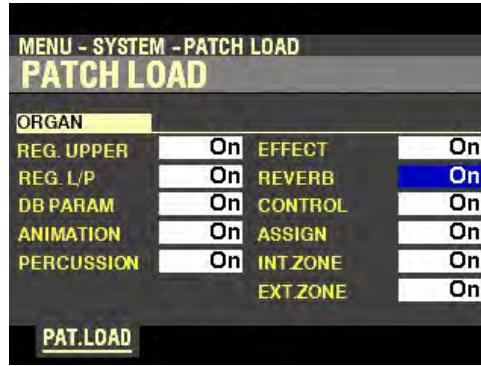


EFFECT

This Parameter allows you to select whether you want EFFECTS (Matching Transformer, Multi Effects 1&2, Overdrive, Reverb, and Equalizer) to change when you select a Patch.

Turn the VALUE knob to turn this Parameter On or Off.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



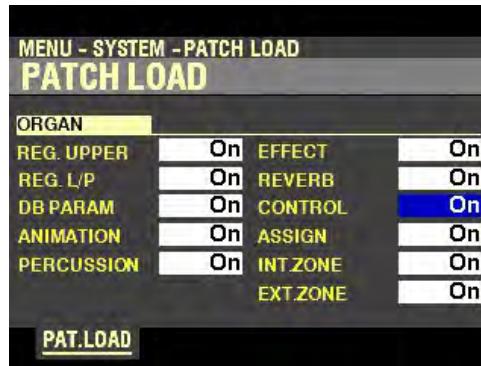
The box to the right of “REVERB” should be highlighted.

REVERB

This Parameter allows you to select whether you want the REVERB Parameters to change when you select a Patch.

Turn the VALUE knob to turn this Parameter On or Off.

From the above screen, press the DIRECTION “▼” button once.



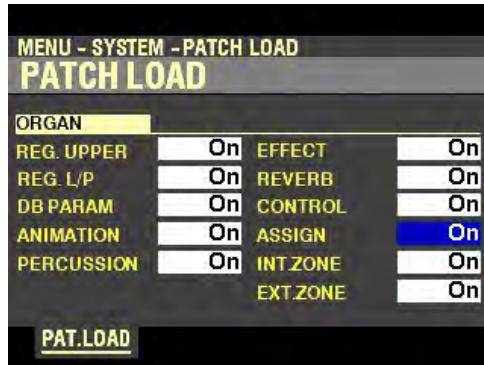
The box to the right of “CONTROL” should be highlighted.

CONTROL

This Parameter allows you to select whether you want the CONTROL Parameters to change when you select a Patch.

Turn the VALUE knob to turn this Parameter On or Off.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



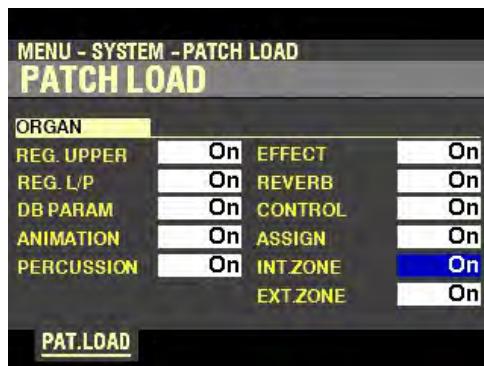
The box to the right of “INT ZONE” should be highlighted.

ASSIGN

This Parameter allows you to select whether you want the Parameters controlled by the ASSIGN controls to change when you select a Patch.

Turn the VALUE knob to turn this Parameter On or Off.

From the above screen, press the DIRECTION “▼” button once.



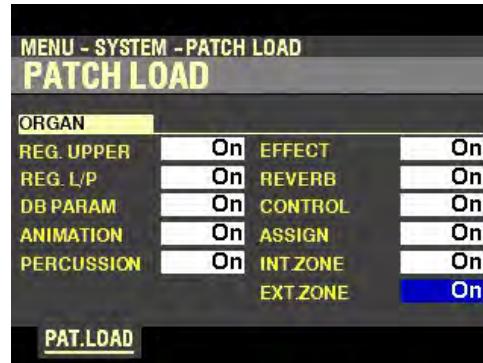
The box to the right of “INT ZONE” should be highlighted.

INT ZONE

This Parameter allows you to select whether Internal Zone settings will change when a Patch is selected.

Turn the VALUE knob to turn this Parameter On or Off.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



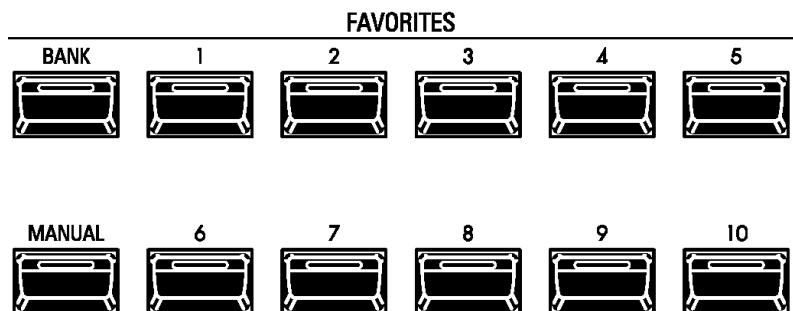
The box to the right of “EXT ZONE” should be highlighted.

EXT ZONE

This Parameter allows you to select whether External Zone settings will change when a Patch is selected.

Turn the VALUE knob to turn this Parameter On or Off.

◆ FAVORITES



In order to make Patches - both Factory and User - easier to use in real-time performance, the XK-4 gives you the ability to use the FAVORITES buttons to access the Patches you use most frequently quickly. The principle is similar to the buttons on the radio in an automobile which allow you to find your most frequently listened-to stations.

The FAVORITES buttons are used one at a time - pressing a FAVORITES button while another is active cancels the previous Favorite and selects the new one.

When the Information Center Display is in the PLAY Mode and a Favorite is activated, the Drawbar settings will change together with the names and volume settings of the Voices shown in the Information Center Display.

NOTE: When a Favorite is selected, you can change any of the Parameters at any time; however, if you press another FAVORITES button, the settings you have changed will not be remembered.

NOTE: For a complete listing of Patch Parameters, please consult the APPENDIX chapter of this Guide starting on page 475.

◆ FAVORITE BANKS

Your XK-4 contains 10 Banks of Patches with 10 Favorites per Bank. This gives you a total of 100 Patches you can access using the FAVORITE buttons.

You can load the FAVORITE buttons with up to ten (10) Banks of Favorites, so that you can have up to 100 Patches available through the FAVORITE buttons.

BANK button



Use this button in conjunction with the numbered FAVORITE buttons to select Favorite Banks.

TRY THIS:

1. From one of the PLAY Modes, Press and Hold the BANK button.



The Information Center Display should look similar to this:



A box will appear in the screen showing the currently selected Favorite Bank and the Patches currently assigned to that Bank. Also a FAVORITE button will light showing which Favorite Bank is currently active.

The FAVORITE FUNCTION Mode allows you to select different methods of accessing Patches using the FAVORITES buttons and assigning Patches to the FAVORITES buttons. This is explained in detail starting on the next page.

◆ FAVORITE FUNCTION Mode

This FUNCTION Mode allows you to adjust different Parameters relating to Favorites.

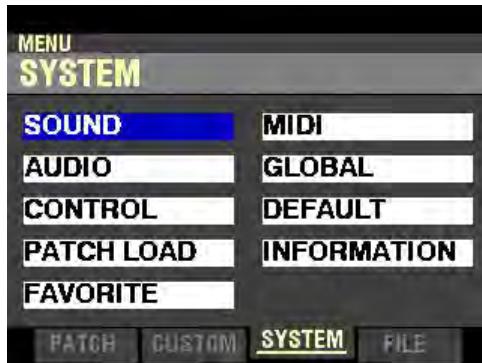
To access the FAVORITE FUNCTION Mode, do the following:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

2. Press the PAGE “▶” button two times to highlight the “SOUND” box.



You are now in the SYSTEM Menu.

3. Press the DIRECTION “▼” button four times. The Information Center Display should now look like this:



4. Press the ENTER button. The Information Center Display should now look like this:



The box to the right of “ACCESS MODE” should be highlighted.

You are now in the **FAVORITE** FUNCTION Mode. You can now use the DIRECTION buttons in conjunction with the VALUE knob to make various changes to the Favorites. These changes are explained starting below.

ACCESS MODE

This Parameter allows you to determine the method by which Patches are accessed via the FAVORITE buttons.

The following paragraphs explain each of the settings.

(Bank)/Patch

You can access each Patch within the active Bank by touching one of the numbered FAVORITE buttons. However; if you want quickly to access a Patch in another Bank you can do so by Pressing and Holding the BANK button, pressing the numbered button representing the Bank you want, then pressing the numbered button for the specific Patch you want.

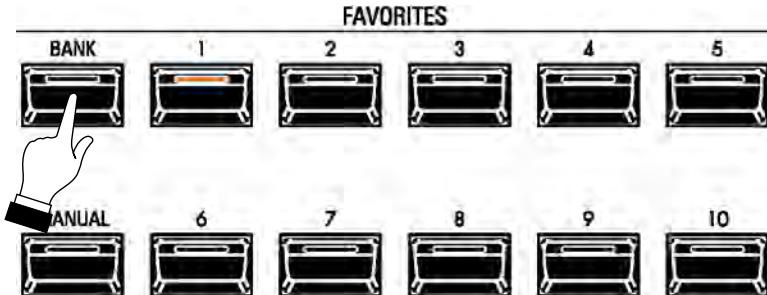
TRY THIS:

If you followed the previous instructions, the Information Center Display should look like this:



The box to the right of “ACCESS MODE” should be highlighted. If “(Bank)/Patch” is not displaying in the highlighted box, turn the VALUE knob to select it.

1. Press and Hold the BANK button



You will see the current Bank number and the contents of the Bank shown in the display.



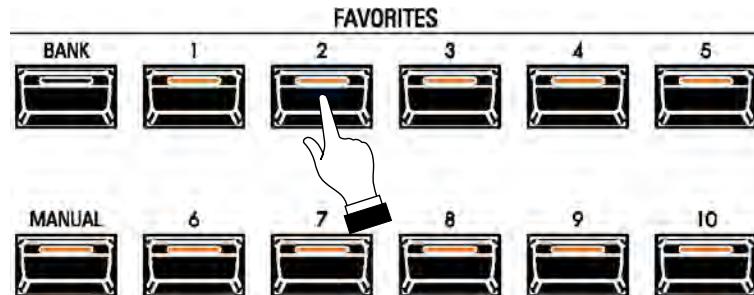
2. While holding the BANK button, press one of the numbered FAVORITE buttons. You will see the BANK number change to the number represented by the numbered FAVORITE button you pressed. For this example, press button #2. The Information Center Display should now look like this:



You will also see the LEDs of the 10 numbered FAVORITE buttons flash.



- To stop the LEDs flashing and select a Favorite in the Bank selected in Step 7, press any one of the 10 FAVORITE buttons. The LEDs will stop flashing and the LED of the FAVORITE button you selected will stay “ON.” Also, the yellow “FAV” box will show the Favorite Bank number you selected in Step 2 as well as the number of the Favorite you just selected.



After doing the above, all the LEDs will turn “OFF” except for the FAVORITE button you just selected. The FAVORITE buttons are now loaded with the Patches from the Favorite Bank you selected.

2-button input

This setting allows you to recall Patch Banks and Patches using the numbered buttons as a numeric keypad.

NOTE: This setting cannot associate a Patch to a numbered FAVORITE button.

TRY THIS:

- After the power to the XK-4 has been turned “ON” and the operating system finishes loading, Patch U1-1 should display (see below).



- From the above screen, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

3. Press the PAGE “▶” button two times to highlight the “SOUND” box.



You are now in the SYSTEM Menu.

4. Press the DIRECTION “▼” button four times. The Information Center Display should now look like this:



5. Press the ENTER button. The Information Center Display should now look like this:



The box to the right of “MODE” should be highlighted.

6. If “2-button input” is not displaying, turn the VALUE knob. The Information Center Display should now look like this:

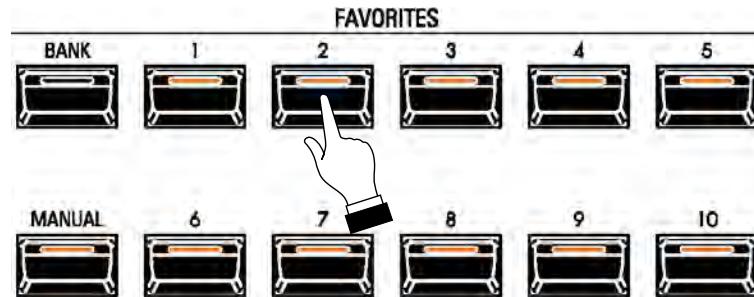


When 2 button input is selected, the first numbered FAVORITE button you press will select the Patch Bank and the second numbered button you press will select the Patch Number within the Bank.

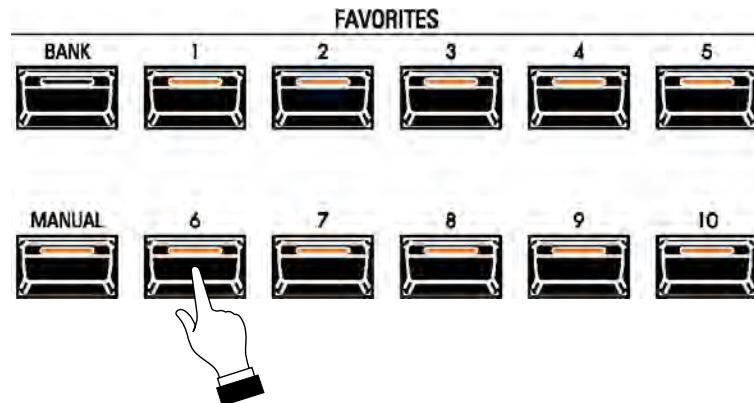
For example, suppose you want to select Patch U2 from Bank 6.

To do this:

1. With 2 button input selected, press the Number 2 FAVORITE button. This selects the Patch Bank. You will also see the LEDs of the 10 numbered FAVORITE buttons flash.



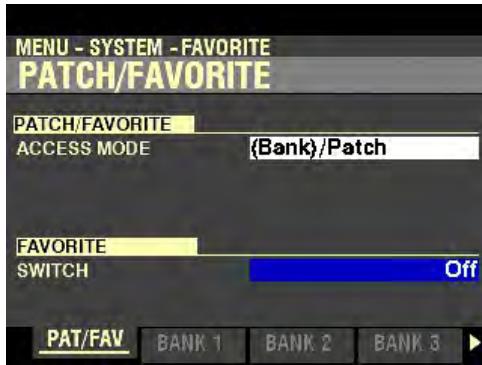
2. Now press the Number 6 FAVORITE button. This selects the Patch. The LEDs will stop flashing and the Number 6 FAVORITE button will remain lit.



You have now selected Patch 6 in Patch Bank 2.

Using this method, you can quickly recall Patch Banks and Patches by simply entering two numbers.

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “SWITCH” should now be highlighted.

SWITCH

This Parameter allows you to turn the FAVORITE feature On or Off.

Turn the VALUE knob to make your selection.

WHAT IS THE “FAVORITE” FEATURE?

Normally (when the FAVORITE SWITCH is Off), the numbered buttons access the Patches contained within each numbered Bank. For example, Bank 1 contains Patches with a “1” designation (U1-1 through U1-10), Bank 2 contains Patches U2-1 through U2-10, and so on. The User Patches can be re-programmed and Recorded but they cannot be re-assigned to other Banks - you cannot assign Patch U1-1 into Bank 2, for example. Also, if you have a Bank selected such as, for example, Bank 1, and you Record a Patch from another Bank into one of the FAVORITE buttons, all of the FAVORITE buttons will contain the Patches from the Bank Number you Recorded.

FAVORITE SWITCH Off:

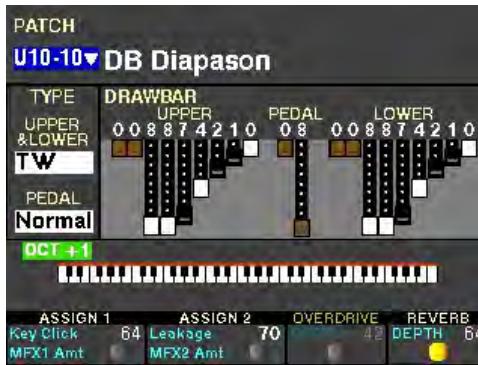
TRY THIS:

1. After the power to the XK-4 has been turned “ON” and the operating system finishes loading, Patch U1-1 should display (see below).



2. Make sure the FAVORITE SWITCH is set to Off. To do this, follow the instructions on the preceding pages.

3. From the screen shown on the previous page, turn the VALUE knob until the Information Center Display shows the following:



Notice the box underneath PATCH is now showing Bank 10 and Patch 10.

4. Press and Hold the RECORD button.
5. While holding the RECORD button, press one of the numbered FAVORITE buttons - for example, button #8. The Information Center Display should look similar to this:



You now have an opportunity to Rename the Patch. You can use the FAVORITE buttons and the BANK and MANUAL buttons (the two rows of six buttons just below the Information Center Display) to select and enter characters. The data chart below explains the function of each of the buttons.

NAMING Options		
Character	Button	Description
Aa1	BANK	Changes the character type (Capital and lower-case letters, numbers, special characters).
Delete	MANUAL	Deletes the character at the cursor.
space	FAVORITE 1	Replaces the character at the cursor with a space.
Insert	FAVORITE 6	Inserts a space at the cursor.
ABC, etc.	FAVORITES 2 ~ 5, 7 ~ 10.	Use these to cycle through and select the characters for the highlighted location. Each successive touch will cause the next character to display - for example, touching the Number 2 button will display A , touching it again will display B and touching it a third time will display C .

You can also turn the VALUE knob to select characters. If you wish to do this, use the DIRECTION “◀” and “▶” buttons to move through the characters.

NOTE: If you do not wish to Rename the Patch, you can skip this step and go to Step 8.

- When you have finished the Naming procedure, or if you do not wish to Rename the Patch, press the ENTER button to complete the Recording procedure. You will see the following messages flash in the display for approximately 1 second each:



NOTE: Do not turn the power "OFF" while the "Don't Power Off !!" message is displaying.

After the "Recording..." message disappears, you will see the Patch Bank Number and Patch Number change. If you Rename a Patch, the new Name will display to the right of the Patch Number.

NOTE: If you DO NOT wish to Record, press the MENU / EXIT or PLAY button instead of the ENTER button.

- Press the PLAY button to return to the PLAY Mode.

After you complete the above procedure, all of the FAVORITE buttons will contain the Patches from the Bank Number you Recorded. To verify this, press the FAVORITE buttons. You will see the Patch Bank Number of the Patch you Recorded shown at the top of the display along with the other Patches from that Bank.

This setting of the FAVORITE SWITCH is useful if you want to redistribute the Patches within a selected Bank or if you want to edit and/or Rename Patches within a single Bank.

However, there may be occasions when you will want to redistribute Patches among different Banks to create custom "set lists" or for other reasons. Setting the FAVORITE SWITCH to On allows you to do this. This is explained in more detail starting on the next page.

FAVORITE SWITCH On:**TRY THIS:**

1. After the power to the XK-4 has been turned “ON” and the operating system finishes loading, Patch U1-1 should display (see below).

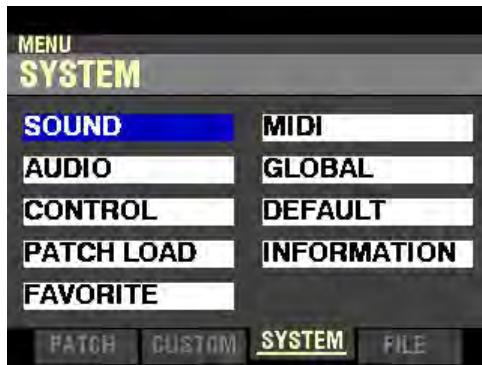


2. From the above screen, press the MENU / EXIT button. The Information Center Display should now look like this:



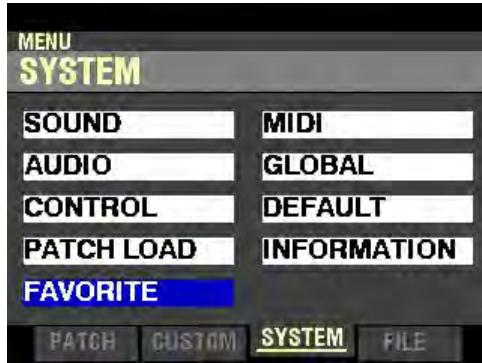
The “ORGAN” box should be highlighted.

3. Press the PAGE “▶” button two times to highlight the “SOUND” box.

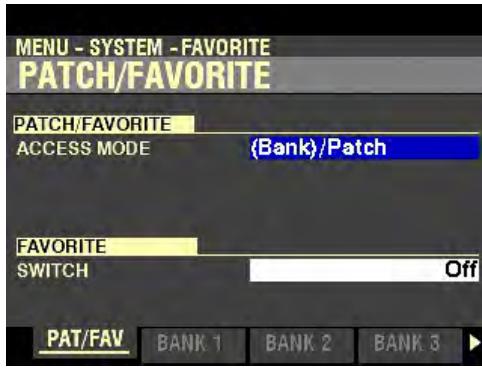


You are now in the SYSTEM Menu.

4. Press the DIRECTION “▼” button four times. The Information Center Display should now look like this:

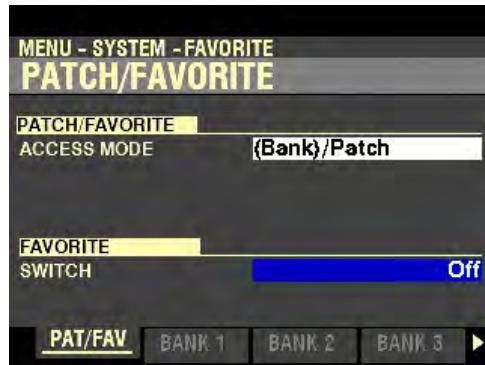


5. Press the ENTER button. The Information Center Display should now look like this:



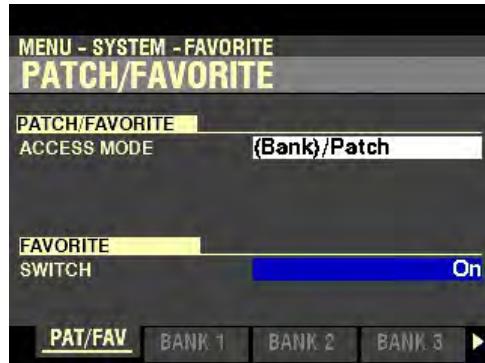
The box to the right of “MODE” should be highlighted.

6. Press the DIRECTION “▼” button once.

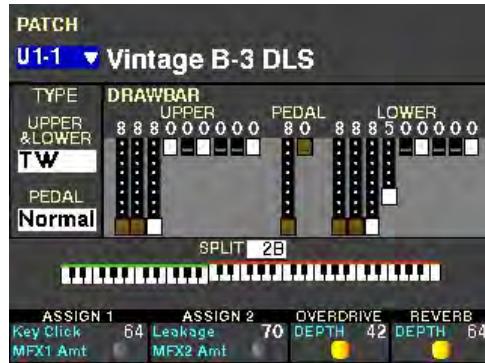


The box to the right of “SWITCH” should now be highlighted.

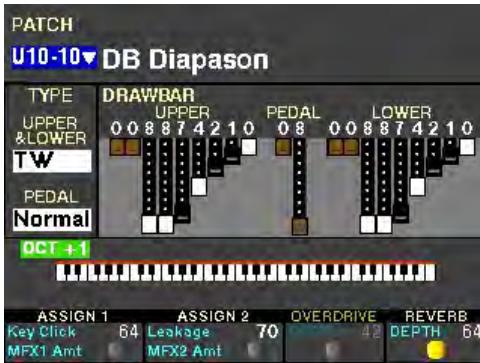
7. Turn the VALUE knob to turn the FAVORITE SWITCH On.



8. Press the PLAY button to return to the PLAY Mode.



9. From the screen shown on the previous page, turn the VALUE knob until the Information Center Display shows the following:



Notice the box underneath PATCH is now showing Bank 10 and Patch 10.

10. Press and Hold the RECORD button.
11. While holding the RECORD button, press one of the numbered FAVORITE buttons - for example, button #8. You will see the following messages flash in the display for approximately 1 second each:



NOTE: Do not turn the power "OFF" while the "Recording..." message is displaying.

After the "Recording..." message disappears, you will see the Patch Bank Number and Patch Number change.

12. Press the PLAY button to return to the PLAY Mode.

After you complete the above procedure, only the FAVORITE button you Recorded will show a different Bank Number. The rest of the FAVORITE buttons will access the Bank you started with. This allows you to distribute the Patches among the Patch Banks any way you wish.

From the screen shown in the middle of Page 72, press the PAGE “►” button once.



The box underneath “NUMBER” should now be highlighted.

BANK & PATCH NUMBER & PATCH NAME

These Pages allow you to see the current Bank Number as well as the Patch Numbers and Names for each Bank.

Use the DIRECTION “▲” and “▼” buttons to display each Patch Number and Name.

Use the PAGE “◀” and “►” buttons to move among Banks 1 through 10.

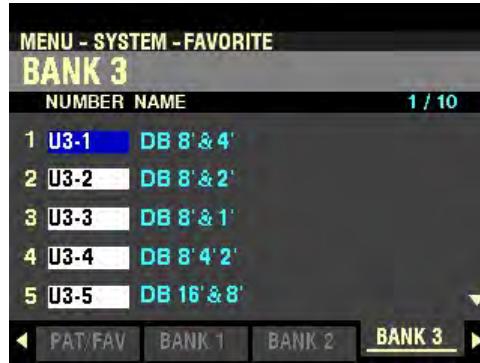
The following examples will show how to navigate among the Favorite Banks.

TRY THIS:

1. Make sure the MENU-SYSTEM-FAVORITE -BANK 1 FUNCTION Mode Page is displaying (see below):



2. Press the PAGE “►” button two times. The Information Center Display should now look like this:



You should now see Favorite Bank 3.

3. From the screen shown at the bottom of the previous page, press the PAGE “▶” button three times.



You should now see Favorite Bank 6.

4. Use the DIRECTION “▲” and “▼” buttons to highlight and select the Favorite you want. For this example, select Favorite #5.



Notice FAVORITE button #5 is now lit.

Each time you select a Favorite using the DIRECTION “▲” and “▼” buttons, the corresponding FAVORITE button will light.

5. Now press the PAGE “◀” button five times to go back to Bank 1.

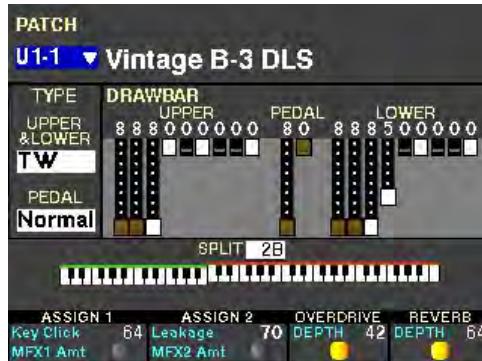


In this FUNCTION Mode, you can use the PAGE “◀” and “▶” buttons to select Favorite Banks and the DIRECTION “▲” and “▼” buttons to select Favorites.

Using the FAVORITE SWITCH to assign Patches to Favorites

TRY THIS:

1. After the power to the XK-4 has been turned “ON” and the operating system finishes loading, Patch U1-1 should display (see below).

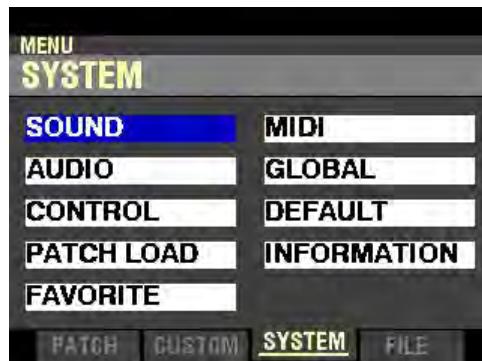


2. From the above screen, press the MENU / EXIT button. The Information Center Display should now look like this:



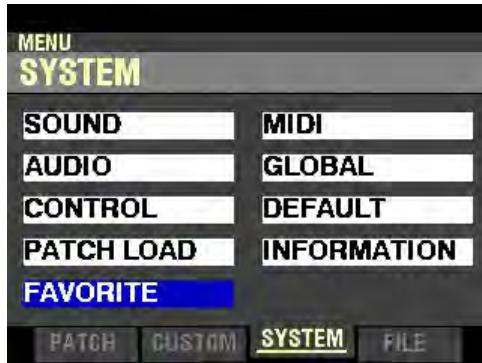
The “ORGAN” box should be highlighted.

3. Press the PAGE “▶” button two times to highlight the “SOUND” box.



You are now in the SYSTEM Menu.

4. Press the DIRECTION “▼” button four times. The Information Center Display should now look like this:



5. Press the ENTER button. The Information Center Display should now look like this:



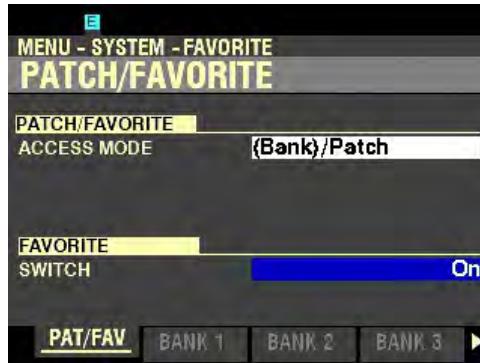
The box to the right of “ACCESS MODE” should be highlighted.

6. Press the DIRECTION “▼” button once. The Information Center Display should now look like this:

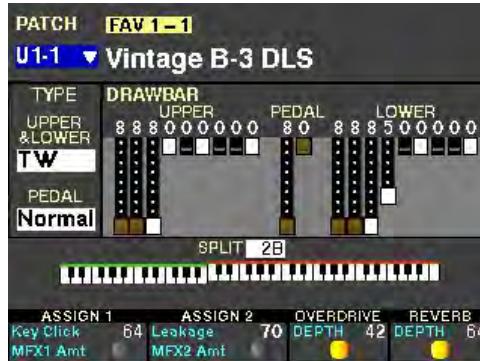


The box to the right of “SWITCH” should be highlighted.

7. If the box to the right of “SWITCH” displays Off, turn the VALUE knob to select On.



8. Press the PLAY button to return to PLAY Mode.

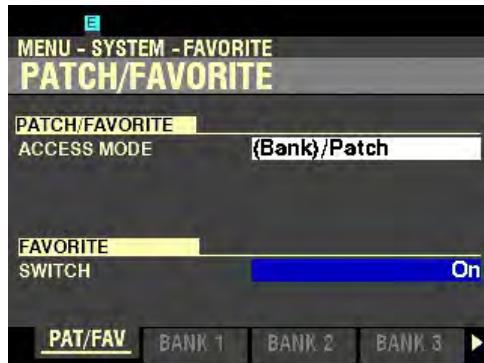


Notice the yellow box at the top of the screen. This displays the contents of the currently selected Favorite (Bank number and Favorite number). It also indicates the FAVORITE SWITCH is “ON” (FAV).

You can now assign any Patch into any Bank to be called up by the FAVORITES buttons. The following pages give examples of how to do this.

TRY THIS:

1. Make sure the FAVORITE SWITCH is set to On.



2. Press the PAGE "►" button once. The Information Center Display should now look like this:



Now, suppose you want to assign Patch 5 from Bank 7 to Favorite 3 (currently U1-3) of Bank 1. To do this:

3. Press the DIRECTION "▼" button four times. The Information Center Display should now look like this:



4. Turn the VALUE knob until "U7-5" Patch 5 from Bank 7 shows in the display.



You have now loaded Patch 5 from Bank 7 into Bank 1.

To verify your new setting:

5. Press and Hold the BANK button. The Information Center Display should now look like this:



Notice that FAVORITE 5 now reads U7-5. You have now assigned Patch 5 from Bank 7 into Bank 1.

Using this method, you can distribute the Patches among the Banks in any way you desire.

NOTE: The FAVORITE SWITCH must be On in order to do this. If it is set to Off, you can still see the Patches assigned to each FAVORITE button; however, turning the VALUE knob will have no effect.

NOTE: After doing the above, if you wish to restore Favorite 5 to its factory setting, simply highlight Favorite 5 and turn the VALUE knob to select the factory-assigned Patch - in this case, U1-5.

From the screen shown at the bottom of the previous page, press the PAGE “▶” button repeatedly until the Information Center Display shows the following:



The box underneath “MENU” should be highlighted.

From the above screen, press the PAGE “▶” button once.



The box underneath “PAGE” should be highlighted.

DISPLAY

MENU & PAGE

These Parameters allow you to associate and confirm the assignment of Patches and Display Pages to numbered FAVORITE buttons.

The MENU / EXIT button serves as a SHIFT button when it is pressed and held. Pressing and holding the SHIFT button and pressing a FAVORITE button will display a FUNCTION Mode and a specific Page within the selected FUNCTION Mode.

NOTE: You must specify both a MENU and a PAGE in order to make full use of this feature. Select a MENU first, then select a PAGE within the selected MENU.

The date chart on the next page lists the Menu Pages you can assign to FAVORITES.

DISPLAY - MENU & PAGE DATA CHART

The data chart below shows the options you can assign to the FAVORITES buttons.

FAVORITE DISPLAY - MENU & PAGE	
Menu	Page
ORGAN	GENERAL, DRAWBAR, CON/SUS
PERCUSSION	PERCUSS
ANIMATION	VIB&CHR, LESLIE,
EFFECT/EQ	M.TRANS, MFX 1, O.DRIVE, MFX 2, EQUALIZ,
CONTROLLER	CONTROL
ASSIGN	ASSIGN
INT ZONE	INT.ZONE
EXT ZONE	EXT.ZONE
TONE WHEEL	SET, GENERAL, EACH WH., W&F, ECC, LEAK WH., M.LEVEL
LESLIE	CABINET, SPEAKER, ROTOR, MIKING
PEDAL REG.	SET, EACH DB
PIPE	SET, UPPER DB, LOWER DB, PEDAL DB
SOUND	M.TUNE, M.EQ
AUDIO	AUDIO, LESLIE
CONTROL	FOOT SW1, FOOT SW2, EXP.PED, DAMPER, USER, P.BEND, TW BRAKE, DISPLAY, PANEL, KEY
PATCH LOAD	COMBI, ORGAN
FAVORITE	ACCESS, BANKS 1 ~ 10, DISPLAY
MIDI	TEMPLATE, GENERAL, SYS EX, CHANNEL
GLOBAL	POWER

Use the PAGE “◀” and “▶” buttons to move back and forth between MENU and PAGE.

Use the DIRECTION “▲” and “▼” buttons to move up and down through the FAVORITE Numbers.

When you have made your selection:

Turn the VALUE knob to select the option you want.

NOTE: These settings are Saved as part of a Setup.

NOTE: You can also associate a FAVORITES button and a DISPLAY PAGE by Pressing and Holding the SHIFT and RECORD buttons together then pressing a FAVORITE button.

◆ MANUAL button



Normally, one of the FAVORITE buttons is “ON” (LED lit), indicating that a Patch is selected. However, if you want to de-select Patches and use the front panel controls entirely to control the sound, turn the MANUAL button “ON.” The FAVORITE buttons will all turn “OFF” and all sounds and features of the XK-4 will be controlled by the front panel controls as well as by the settings from the Menus.

The “MANUAL” feature cancels all Patches and works much the same way as the “Adjust Presets” on Hammond Organs with Preset Keys or the “Cancel” piston on many classic organs or on electronic home organs such as the Hammond XT/XH-series. The Hammond 935 Church Organ has a feature called “Panel Memory” which performs much the same function.

◆ INITIALIZE MANUAL

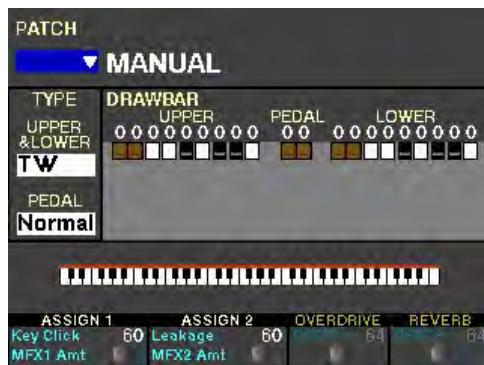
Some Menu Parameters may not be set the way you wish even if the MANUAL button is selected. If you encounter this, you can initialize all the MANUAL Parameters using the following procedure.

TRY THIS:

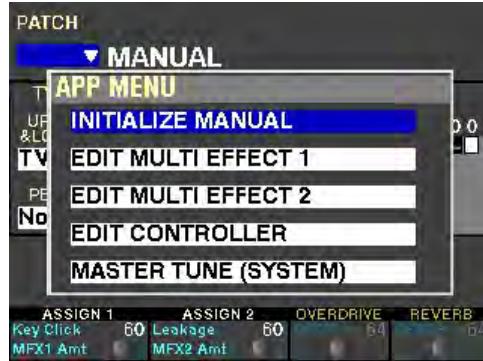
1. Make sure the Information Center Display is in PLAY Mode, as shown below.



2. Press the MANUAL button “ON” (LED lit).



3. Press and Release the [=] button to open the APP Menu. The “INITIALIZE MANUAL” box should be highlighted.



4. Press the ENTER button. The screen shown below will display.



5. Press the ENTER button. You will see the message “Initializing...” flash in the display for approximately 1 second.

NOTE: If you DO NOT wish to Initialize, press the MENU / EXIT or PLAY button instead of the ENTER button.



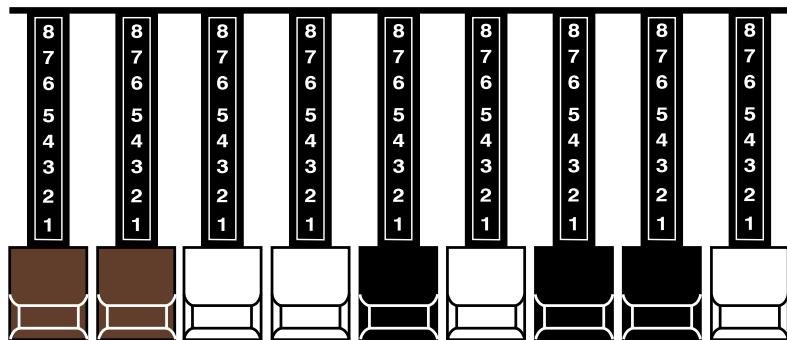
XK-4

DRAWBARS

DRAWBARS

The tones produced by the XK-4 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.



The Drawbars can control three different types of tones (Organ Types):

1. Tone Wheel Organ replicates the performance of a vintage Hammond Organ.
2. Transistor Organ replicates the sounds of various combo organs using solid-state technology.
3. Pipe Organ produces authentic pipe organ tones.

The different Organ Types will be explained later in this chapter of the Guide.

◆ MASTER VOLUME knob

The MASTER VOLUME knob is located to the left of the Drawbars.

Use this control to raise or lower the volume of the UPPER, LOWER and PEDAL Drawbar tones.

MASTER VOLUME

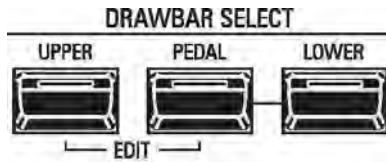


Turn this knob to the right to increase the total volume

Turn this knob to the left to decrease 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 as well as the Volume settings for each of the Patches. For more information, please consult the PATCHES & FAVORITES chapter of this Guide starting on page 42.

◆ DRAWBAR SELECT buttons



These buttons allow you to use the Drawbars to control sounds for UPPER, LOWER and PEDAL Parts. If an LED above a button is lit, the Drawbars will control the tones represented by that button.

NOTE: One of the DRAWBAR SELECT buttons must be "ON" in order for the Drawbars to control the ORGAN tones.

◆ Using the DRAWBAR SELECT buttons

The following examples are designed to acquaint you with the DRAWBAR SELECT buttons.

TRY THIS:

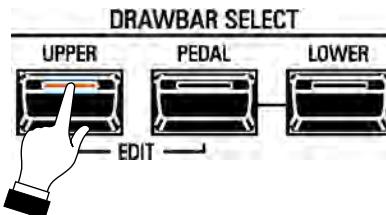
1. After turning the XK-4 "ON," Patch U1-1 should display. (see below).



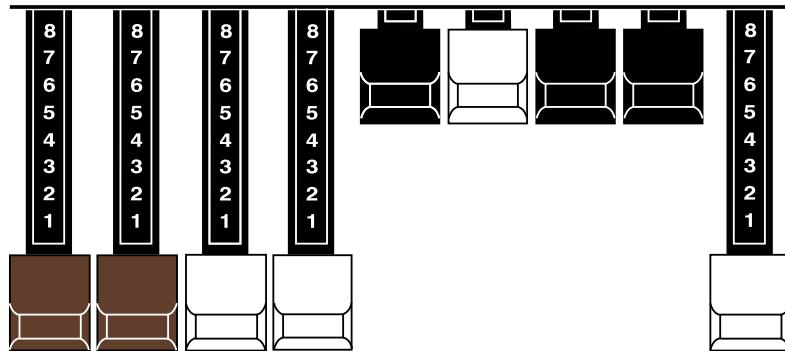
2. Press the MANUAL button. This will allow you to de-select Patches and use the front panel controls entirely to control the sound, as explained on page 83.



3. If the UPPER button in the DRAWBAR SELECT button section is not "ON," press it to turn it "ON" (orange LED lit).



4. Create a Drawbar registration - for example, 88 8800 008. You can confirm the registration by consulting the Information Center Display.



5. Play some notes on the keyboard. You will hear the notes play with the Drawbar registration you just set up.

Now, we will add a Drawbar registration to the LOWER Part.

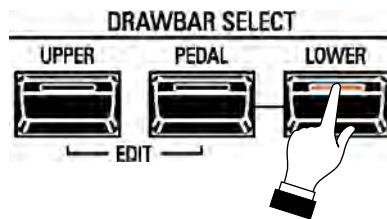
TRY THIS:

1. Turn the SPLIT button “ON.”

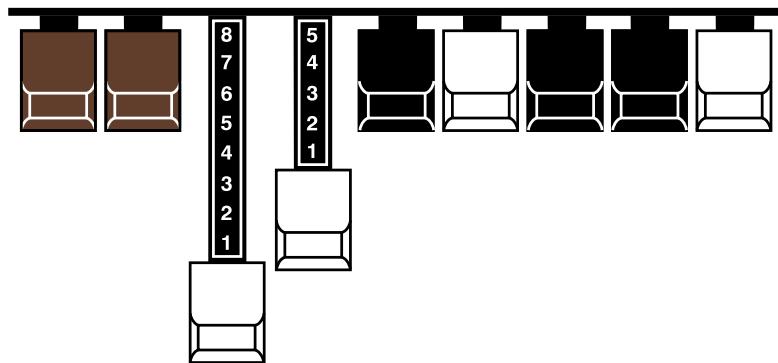


An orange LED will light and the SPLIT button will turn “ON.” This is necessary in order to hear the LOWER Registration.

2. Press the LOWER button in the DRAWBAR SELECT button section to turn it “ON” (LED lit).



3. Create a Drawbar registration - for example, 00 8400 000. You can confirm the registration by consulting the Information Center Display.

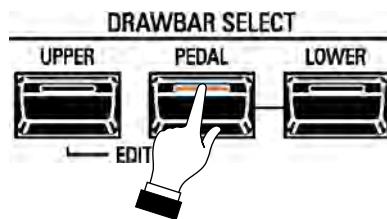


4. Play some notes on the lower portion of the keyboard. You will hear the notes play with the Drawbar registration you just set up.

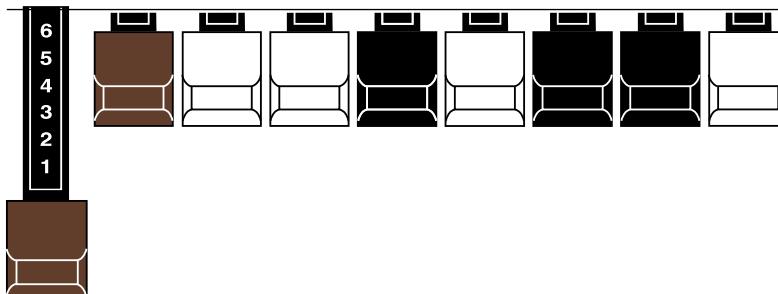
Finally, here is how to add a Pedal or Bass registration.

TRY THIS:

1. Press the PEDAL button in the DRAWBAR SELECT button section to turn it "ON" (red LED lit).



2. Create a Pedal Drawbar registration - for example, 60 0000 000. You can confirm the registration by consulting the Information Center Display.



NOTE: The Pedal tones are created by using ONLY the first **brown** Drawbar and the first **white** Drawbar. This is explained in more detail on page 118.

3. Press the PEDAL TO LOWER button "ON" (orange LED lit) to transfer the Pedal tones to the keyboard and play some notes on the left end of the keyboard. You will now hear the notes play with Pedal tones added.



◆ Please Read

On the XK-4, Drawbar Parameter changes for the PEDAL Part (“P”) will not be heard unless the SPLIT and PEDAL TO LOWER buttons are “ON” or a MIDI pedal clavier is connected.

Notice that only two (2) Drawbar settings are shown for the Pedals in the Information Center Display. On most Hammond Organs with two manuals and pedals, there are two Drawbars for controlling the Pedal tones - one at “16” pitch and the other at “8” pitch. The XK-4 recreates this by using the Sub-Fundamental Drawbar (marked “16”) and the Fundamental Drawbar (marked “8”) to control the Pedal sounds. For more information, please consult page 118.

◆ PLAY Mode Parameters

◆ PATCH

After the power to the XK-4 has been turned “ON” and the operating system finishes loading, Patch U1-1 should display (see below).



The following pages will explain each of the Parameters you may edit from the PLAY Mode screen.

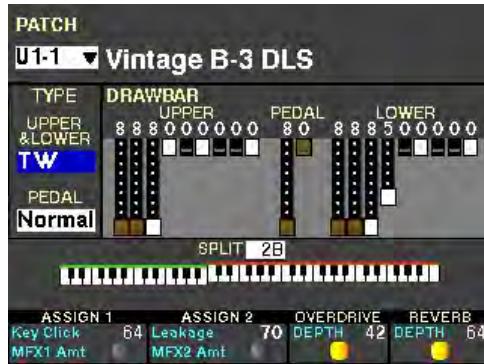
You can now use the VALUE knob to select the available Patches.

Turn the VALUE knob to the right to scroll up numerically through the Patches.

Turn the VALUE knob to the left to scroll down numerically through the Patches.

◆ TYPE

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box underneath “UPPER & LOWER” should be highlighted.

UPPER & LOWER

This Parameter allows you to change the sound of the Drawbars for the UPPER and LOWER Parts. The data chart below shows the options you may select.

UPPER & LOWER ORGAN TYPE Options	
Setting	Description
TW	Reproduces the sounds of various Tone-Wheel™ generators from vintage Hammond Organs as well as very pure sine-wave tones similar to all-electronic Hammond Organs such as the Concorde, Grandee, Monarch, etc.
Vx	Reproduces a vintage British combo organ.
Farf	Reproduces a vintage Italian combo organ.
Ace	Reproduces a vintage Japanese combo organ.
Pipe	Produces authentic Classic and Theatre pipe organ tones.

Turn the VALUE knob to the right to scroll forward through the choices.

Turn the VALUE knob to the left to scroll backward through the choices.

NOTE: The function of this Parameter is duplicated by the UPPER & LOWER TYPE Parameter in the DRAWBAR Page of the PATCH EDIT -ORGAN FUNCTION Mode. For more information consult page 99.

NOTE: For a full explanation of each Organ Type, consult the ORGAN TYPES section of this chapter starting on page 111.

From the screen show on the previous page, press the DIRECTION “▼” button once.



The box underneath “PEDAL” should be highlighted.

PEDAL

This Parameter allows you to select the Organ Type for the PEDAL Part. The data chart below shows the options you may select.

PEDAL ORGAN TYPE Options	
Setting	Description
Normal	Produces the traditional tone-wheel registration of the B-3 / C-3 / A-100.
Muted	Produces very mellow analog-type pedal tones.

Turn the VALUE knob to select Normal or Muted.

NOTE: The function of this Parameter is duplicated by the PEDAL TYPE Parameter in the DRAWBAR Page of the PATCH EDIT -ORGAN FUNCTION Mode. For more information consult page 102.

NOTE: When one of the Transistor Organs (Vx. , Farf. or Ace.) is selected for the UPPER & LOWER keyboard, **Muted** is automatically selected for the PEDAL Part.

NOTE: When the Pipe Organ Type is selected, the Pedal tones automatically become Pipe Organ tones and this Parameter is disabled.

◆ PATCH EDIT -ORGAN FUNCTION Mode

This FUNCTION Mode allows you to make various changes to the characteristics of the ORGAN sounds.

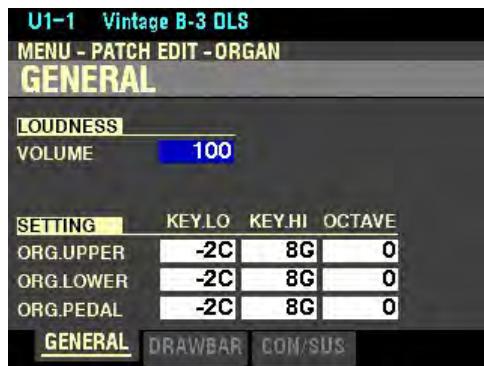
◆ Accessing the PATCH EDIT -ORGAN FUNCTION Mode using the MENU / EXIT button:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



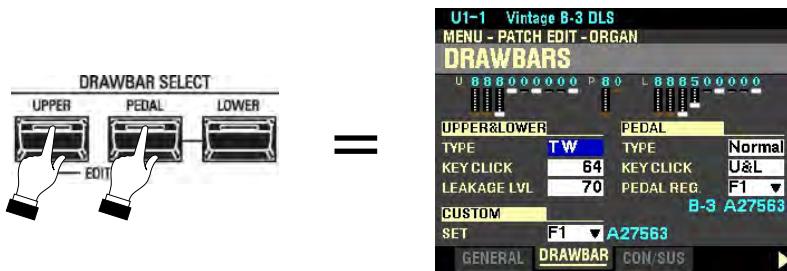
The “ORGAN” box should be highlighted.

2. Press the ENTER button. The Information Center Display should now look like this:



◆ Accessing the PATCH EDIT -ORGAN FUNCTION Mode using the Shortcut:

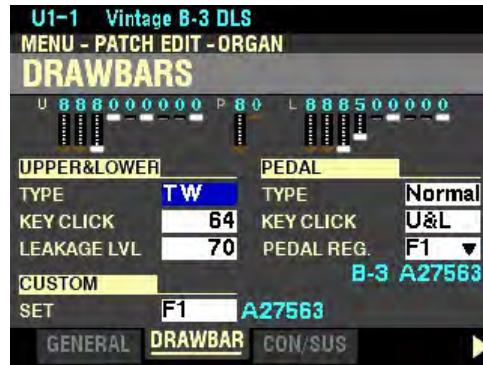
Press the UPPER and PEDAL DRAWBAR buttons together.



NOTE: The above screen is actually the second Screen of the PATCH EDIT -ORGAN FUNCTION Mode Page. To see the opening screen (GENERAL) after using the Shortcut, press the PAGE “◀” button once.

◆ **Accessing the PATCH EDIT -ORGAN FUNCTION Mode using the SHIFT button:**

1. From either of the PLAY Mode Pages, Press and Hold the SHIFT (MENU / EXIT) button.
2. While holding the SHIFT button, move any of the 9 Drawbars. The Information Center Display will look similar to this:

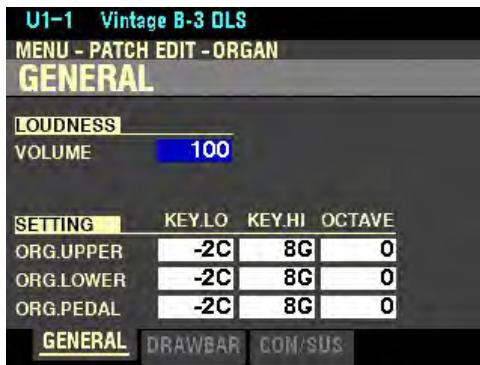


3. Release the SHIFT button.

NOTE: The above screen is actually the second Screen of the PATCH EDIT -ORGAN FUNCTION Mode Page. To see the opening screen (GENERAL) after using the SHIFT button, press the PAGE “◀” button once.

You can now use the DIRECTION and PAGE buttons in conjunction with the VALUE knob to make various changes to the selected ORGAN Patch. These changes are explained starting on the next page.

◆ GENERAL Parameters



LOUDNESS

VOLUME

This Parameter allows you to adjust the maximum level of the selected ORGAN Patch. You may select from 0 (no Volume) to 127 (maximum Volume).

Turn the VALUE knob to the right to increase the Loudness of the Patch.

Turn the VALUE knob to the left to decrease the Loudness of the Patch.

NOTE: The Loudness Parameter serves to set the maximum volume of the selected ORGAN Patch and works independently of the MASTER VOLUME knob. The MASTER VOLUME knob and/or a connected Expression Pedal will control the volume of the entire instrument.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “ORG.UPPER” and below “KEY LO” should be highlighted.

SETTING

KEY LO

This Parameter allows you to set the lower limit of the ORGAN tones. You may select from -2C to 8G.

Use the DIRECTION “▲” and “▼” buttons to move among ORG.UPPER, ORG.LOWER and ORG.PEDAL.

When you have made your selection:

Turn the VALUE knob to the right to raise the KEY LO limit.

Turn the VALUE knob to the left to lower the KEY LO limit.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “KEY.HI” should be highlighted.

KEY HI

This Parameter allows you to set the lower limit of the ORGAN tones. You may select from -2C to 8G.

Use the DIRECTION “▲” and “▼” buttons to move among ORG.UPPER, ORG.LOWER and ORG.PEDAL.

When you have made your selection:

Turn the VALUE knob to the right to raise the KEY LO limit.

Turn the VALUE knob to the left to lower the KEY LO limit.

From the screen shown above, press the DIRECTION “►” button once.



The box underneath “OCTAVE” should be highlighted.

OCTAVE

This Parameter allows you to select the Octave or pitch at which the selected Part will sound. The data chart below shows the options you may select.

OCTAVE Options	
Setting	Description
-2	The sound is two octaves below the regular pitch.
-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.
+2	The sound is two octaves above the regular pitch.

Use the DIRECTION “▲” and “▼” buttons to move among ORG.UPPER, ORG.LOWER and ORG.PEDAL.

When you have made your selection:

Turn the VALUE knob to the right to raise the Octave.

Turn the VALUE knob to the left to lower the Octave.

NOTE: The actual sounding octave will be the sum of this Parameter plus the Octave setting controlled by the OCTAVE buttons on the Control Panel. For more information, please consult the SPECIAL PERFORMANCE FEATURES chapter of this Guide starting on page 316.

◆ DRAWBARS Parameters

From the screen shown on the previous page, press the PAGE “►” button once. The Information Center Display should now look like this:

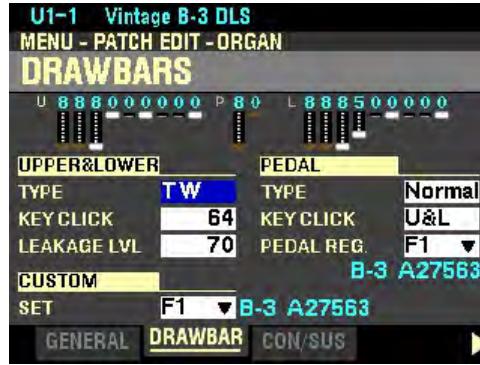


This FUNCTION Mode Page allows you to:

1. See the current Drawbar registration for the currently selected ORGAN Patch.
2. Select the Organ Type for the UPPER and LOWER Parts.
3. Select the Organ Type for the PEDAL Part.
4. Select the amount of Key Click for the UPPER and LOWER Parts.
5. Select the amount of Key Click for the PEDAL Part.
6. Select the amount of Leakage for the UPPER and LOWER Parts.
7. Select the Custom Set for the Pedal Drawbars.
8. Select the Custom Set for the ORGAN Section.

DRAWBAR REGISTRATION

You will see the Drawbar registration for the currently selected ORGAN Patch at the top of the display.



NOTE: The Drawbar registration shown will be the one programmed in the currently selected ORGAN Patch. Therefore, it may not correspond with the physical Drawbar positions. However, if you move any of the Drawbars, the display will show the position or positions of the Drawbar or Drawbars you moved.

UPPER & LOWER

TYPE



This Parameter allows you to change the sound of the Drawbars for the UPPER and LOWER Parts. The data chart below shows the options you may select.

UPPER & LOWER ORGAN TYPE Options	
Setting	Description
TW	Reproduces the sounds of various Tone-Wheel™ generators from vintage Hammond Organs as well as very pure sine-wave tones similar to all-electronic Hammond Organs such as the Concorde, Grandee, Monarch, etc.
Vx	Reproduces a vintage British combo organ.
Farf	Reproduces a vintage Italian combo organ.
Ace	Reproduces a vintage Japanese combo organ.
Pipe	Produces authentic Classic and Theatre pipe organ tones.

Turn the VALUE knob to the right to scroll forward through the choices.

Turn the VALUE knob to the left to scroll backward through the choices.

NOTE: The function of this Parameter is duplicated by the UPPER & LOWER Parameter in the ORGAN Play Mode Page. For more information consult page 91.

NOTE: The **TW** Organ Type consists of traditional settings modeled from vintage Hammond Organs. You can customize each one of these settings to your liking. This is explained in the **CUSTOM SETS** chapter of this Guide starting on page 169.

NOTE: The **Vx**, **Farf**, and **Ace** Organ Types change the operation of the Drawbars from the traditional Hammond Harmonic Drawbar functions. This is explained starting on page 119.

NOTE: The **Pipe** Organ Type changes the operation of the Drawbars to function similar to drawstops or stop tablets on a pipe organ. This is explained in the **CUSTOM SETS** chapter of this Guide starting on page 231.

NOTE: The Drawbar graphics in the Information Center Display will show traditional Hammond Drawbars for the **TW** Organ Types. If the **Vx**, **Farf**, **Ace**, or **Pipe** Organ Types are selected, the Drawbar graphics will change to show the voices for those Organ Types. For a full explanation of how the Drawbars are configured for each Organ Type, consult the **ORGAN TYPES** section of this chapter starting on page 111.

KEY CLICK

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “KEY CLICK” should be highlighted.

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.

The KEY CLICK Parameter on your XK-4 allow you to replicate this characteristic of vintage tone-wheel organs. You can adjust the rate of Attack (when a key is depressed) and Release (when the key is released). The data chart below shows the options you may select.

ATTACK & RELEASE ENVELOPE Options	
Setting	Description
Con	This is the envelope of the key-click(s) generated with the Virtual Multi-Contacts.
1 ~ 15	This is the rate of Attack without the Virtual Multi-Contacts. The greater the value, the slower the Attack (the speed at which the Drawbar registration sounds when a key is depressed).
R1 ~ R15	This changes the Release rate. The Attack rate is that provided by the Virtual Multi-Contacts. This means that the onset of the tone will be instantaneous while the Release rate is regulated by the numerical setting.
AR1 ~ AR15	This Parameter disables the Virtual Multi-Contacts and allows you to change both the Attack and Release rate. At higher numerical settings the Attack and Release will be slow, similar to that of a pipe organ.

Turn the VALUE knob to the right to scroll forward through the choices.

Turn the VALUE knob to the left to scroll backward through the choices.

NOTE: This Parameter is not available for the Pipe Organ Type.

LEAKAGE LVL

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “LEAKAGE LVL” should be highlighted.

WHAT IS “LEAKAGE?”

In a vintage Hammond Organ, each tone-wheel rotates next to a magnet. These 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. You may select from 0 (no Leakage) to 127 (maximum amount of Leakage).

Turn the VALUE knob to the right to increase the amount of Leakage.

Turn the VALUE knob to the left to decrease the amount of Leakage.

NOTE: This Parameter is not available for the Transistor (Vx, Farf and Ace) or Pipe Organ Types.

CUSTOM ORGAN SET

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “SET” should be highlighted.

This Parameter allows you to select a customized set for each Tone Wheel Organ and Pipe Organ. There are three Factory (“F”) Custom Sets for each of the Tone Wheel Organs and four Custom Sets for the Pipe Organ. You may select any of these, or if you have created and saved your own Custom Organ Set(s), you may select them as well. These will be identified by a number preceded by a “U” for “User.” You can save up to three (3) Custom Tone Wheel Sets and four (4) Custom Pipe Sets.

Turn the VALUE knob to select the Custom Set you want.

NOTE: This Parameter is not available for the Transistor (Vx, Farf and Ace) Organ Types.

NOTE: See the CUSTOM SETS chapter of this Guide for information about how to create and Record your own Custom Organ Sets.

PEDAL

TYPE

From the screen at the bottom of the previous page, use the DIRECTION buttons to highlight the box to the right of “TYPE” underneath “PEDAL.”



This Parameter allows you to select the Organ Type for the PEDAL Part. The data chart below shows the options you may select.

PEDAL ORGAN TYPE Options	
Setting	Description
Normal	Produces the traditional tone-wheel registration of the B-3 / C-3 / A-100.
Muted	Produces very mellow analog-type pedal tones.

Turn the VALUE knob to select Normal or Muted.

NOTE: The function of this Parameter is duplicated by the PEDAL Parameter in the ORGAN Play Mode Page. For more information consult page 92.

NOTE: When one of the Transistor Organs (Vx., Farf. or Ace.) is selected for the UPPER & LOWER keyboards, **Muted** is automatically selected for the PEDAL Part.

NOTE: When the Pipe Organ Type is selected, the Pedal tones automatically become Pipe Organ tones and this Parameter is disabled.

KEY CLICK

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “KEY CLICK” should be highlighted.

This Parameter allows you to adjust the rate of Attack (when a pedal is depressed) and Release (when the pedal is released). The data chart below shows the options you may select.

PEDAL ATTACK & RELEASE ENVELOPE Options	
Setting	Description
Con	This is the envelope of the key-click(s) generated with the Virtual Multi-Contacts.
1 ~ 15	This is the rate of Attack without the Virtual Multi-Contacts. A higher value will result in a slower Attack (the speed at which the Drawbar registration sounds when a pedal is depressed).
R1 ~ R15	This Parameter changes the Release rate. The Attack rate is that provided by the Virtual Multi-Contacts. This means that the onset of the tone will be instantaneous while the Release rate is regulated by the numerical setting.
AR1 ~ AR15	This Parameter disables the Virtual Multi-Contacts and allows you to change both the Attack and Release rate. At higher numerical settings the Attack and Release will be slow, similar to that of a pipe organ.

Turn the VALUE knob to the right to scroll forward through the choices.

Turn the VALUE knob to the left to scroll backward through the choices.

NOTE: This Parameter is not available for the Transistor (Vx, Farf and Ace) or Pipe Organ Types.

NOTE: In addition to the above Parameters, the PEDAL Part can also receive Pedal Sustain, a popular effect for organ bass which adds a smooth decay reminiscent of a string bass. This feature is described in the PATCHES & FAVORITES chapter of this Guide.

PEDAL REG

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “PEDAL REG.” should be highlighted.

This Parameter allows you to select the Custom Pedal Registration that you prefer. There are four Factory (“F”) registrations - F1, F2 and F3. You may select any of these, or if you have created and saved your own Custom Pedal Registration(s), you may select them as well. These will be identified by a number preceded by a “U” for “User.” You can save up to three (3) Custom Pedal Registrations.

Turn the VALUE knob to select the Custom Pedal Registration you want.

NOTE: For more information about how to create and Record your own Custom Pedal Registrations, please consult the **CUSTOM SETS** chapter of the Guide starting on page 220.

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

As explained in the CUSTOM SETS chapter of this Guide, 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 XK-4 utilizes a new specially-designed “VMC™ (Virtual Multi-Contact) system which reproduces the effect of 9 contacts per note by means of special software.

◆ CONTACT/SUSTAIN Parameters

From the screen shown on the previous page, press the PAGE “►” button once.



The box to the right of “MODE” should be highlighted.

This FUNCTION Mode Page allows you to adjust the Parameters affecting the Virtual Multi-Contacts and the Sustain effect for the UPPER and LOWER Parts. This is explained in detail starting on the next page.

If you followed the instructions on the previous pages, the Information Center Display should look like this:



The box to the right of "MODE" should be highlighted.

V.MULTI CON

MODE

This Parameter allows you to select how the VMC's (Virtual Multi Contacts) will sound when keys are depressed. The data chart below shows the options you may select.

VMC MODE Options	
Setting	Description
Rdm	Random - When a key is depressed, each contact of the VMC's will connect in a random order at the shallow point, and all the contacts are fully made when the key reaches the bottom of its travel.
Vel	Velocity - When a key is depressed to the bottom of its travel, each contact of the VMC's is made by a time difference depending on the velocity. The contacts are made sequentially from high to low as on a tone-wheel organ.

Turn the VALUE knob to select Rdm or Vel.

From the above screen, press the DIRECTION "▼" button once.



The box to the right of "DEPTH" should be highlighted.

DEPTH

This Parameter allows you to adjust the amount of time for each VMC to sound when a key is depressed. You may select from 0 to 127. At 0 all the VMC's sound simultaneously. A higher value will result in a longer time interval between contacts.

Turn the VALUE knob to the right to increase the Depth.

Turn the VALUE knob to the left to decrease the Depth.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “AMOUNT” should be highlighted.

IMPEDANCE

AMOUNT

This Parameter allows you to adjust the output impedance of the Tone Wheel Organ Types.

WHAT IS “IMPEDANCE?”

Impedance here refers to the AC load on a tone-wheel generator. When a note is played, it is “loaded down” by the circuits related to the contacts under the key being depressed. When more keys calling for the same tone wheels are pressed and held, the tone-wheel is loaded down further, causing a slight volume drop on those related notes. This Parameter allows you to replicate this idiosyncrasy.

The data chart below shows the options you may select.

IMPEDANCE AMOUNT Options	
Setting	Description
Off	No change in volume when keys are depressed and held and other keys are depressed.
On	When keys are depressed and held and other notes are played, the volume of the notes being held will be reduced.

Turn the VALUE knob to turn this Parameter On or Off.

From the screen shown on the previous page, use the DIRECTION buttons to highlight the box to the right of “SUS.UPPER.”



SUS.UPPER

SWITCH

This Parameter allows you to turn Sustain “ON” or “OFF” on the UPPER Part.

Turn the VALUE knob to turn UPPER Sustain On or Off.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “LENGTH” should be highlighted.

LENGTH

This Parameter allows you to adjust the length of the Sustain effect for the UPPER Part. You may select from 1 (shortest amount) to 5 (longest amount) as well as 0. At 0 there is no Sustain.

Turn the VALUE knob to the right to increase the UPPER Sustain Length.

Turn the VALUE knob to the left to decrease the UPPER Sustain Length.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “SUS LOWER” should be highlighted.

SUS.LOWER

SWITCH

This Parameter allows you to turn Sustain “ON” or “OFF” on the LOWER Part.

Turn the VALUE knob to turn LOWER Sustain On or Off.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “LENGTH” should be highlighted.

LENGTH

This Parameter allows you to adjust the length of the Sustain effect for the LOWER Part. You may select from 1 (shortest amount) to 5 (longest amount) as well as 0. At 0 there is no Sustain.

Turn the VALUE knob to the right to increase the LOWER Sustain Length.

Turn the VALUE knob to the left to decrease the LOWER Sustain Length.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “SUS LOWER” should be highlighted.

SUS.PEDAL

SWITCH

This Parameter allows you to turn Sustain “ON” or “OFF” on the PEDAL Part.

Turn the VALUE knob or press the PEDAL SUSTAIN button to turn Pedal Sustain On or Off.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “LENGTH” should be highlighted.

LENGTH

This Parameter allows you to adjust the length of the Sustain effect for the PEDAL Part. You may select from 1 (shortest amount) to 5 (longest amount) as well as 0. At 0 there is no Sustain.

Turn the VALUE knob to the right to increase the PEDAL Sustain Length.

Turn the VALUE knob to the left to decrease the PEDAL Sustain Length.

NOTE: The PEDAL SUSTAIN button must be “ON” (LED LIT) in order to hear the effect of this Parameter.

◆ ORGAN TYPES

In addition to traditional Hammond Drawbar tones, the Drawbars on the XK-4 can control a number of models of Combo Organs as well as different types of Pipe Organs. This Parameter allows you to select which type of organ sounds you want the Drawbars to control.

TRY THIS:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

2. Press the ENTER button. The Information Center Display should now look like this:



3. Press the PAGE "►" button once. The Information Center Display should now look like this:



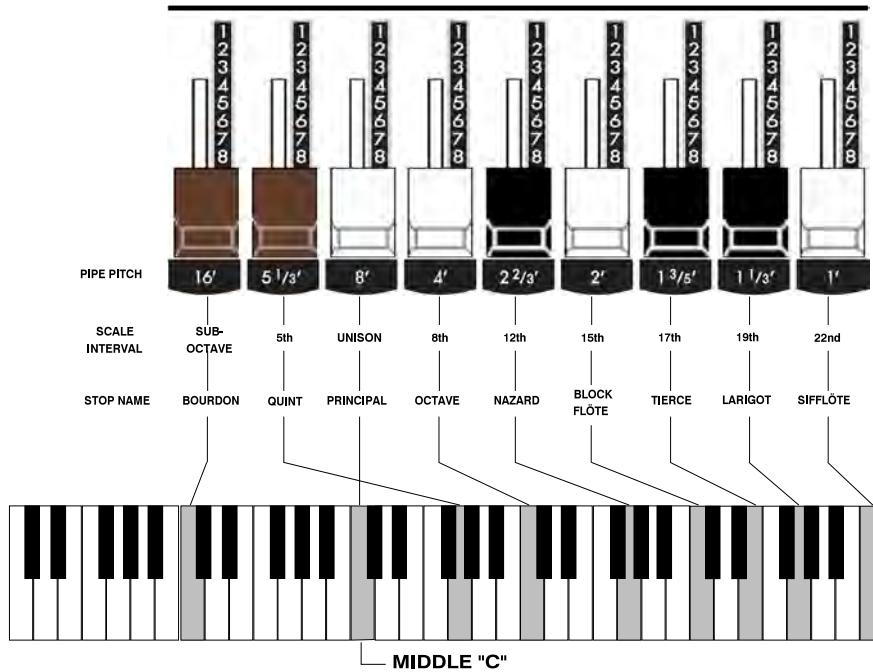
The box to the right of "TYPE" should be highlighted.

You can now use the VALUE knob to select what type of organ sound will be associated with the Drawbars. The TW Organ Type is a traditional vintage Hammond setting. However, the last four Organ Types allow you to use the Drawbars to register other types of organ sounds. The Organ Types are explained starting below.

◆ Organ Type - TW

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.



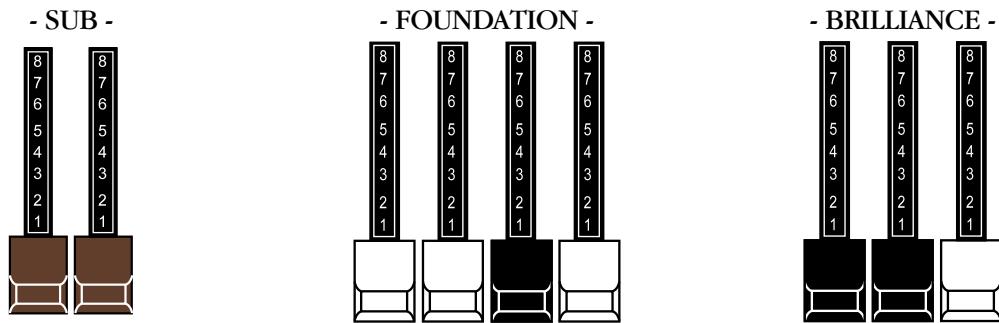
Notice there is a number followed by a footage mark in front of each Drawbar. For example, the first white Drawbar is shown as "8'." This is pipe organ terminology indicating that the pipe used to produce the lowest note on the keyboard on a pipe organ is actually eight feet long. The numbers from "1" 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.

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.



TRY THIS:

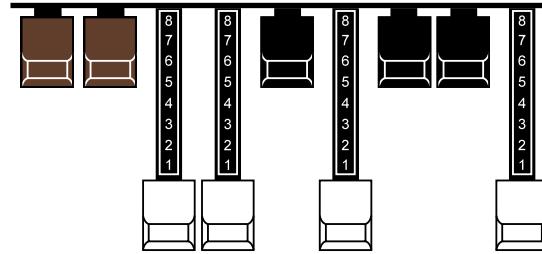
1. Make sure all Drawbars are “IN” (off).
2. Make sure the UPPER button in the DRAWBAR SELECT button section is “ON” (orange LED lit).
3. Hold down a “C” chord, starting with “E” above middle “C” (“E”, “G” & “C” notes) with your right hand on the keyboard.
4. Starting with the first white Drawbar, pull out and push in each of the Foundation Drawbars one group at a time until you have a sound that you like.
5. While still holding the “C” chord down, pull each of the brown Sub Drawbars out until you like the sound.
6. 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.



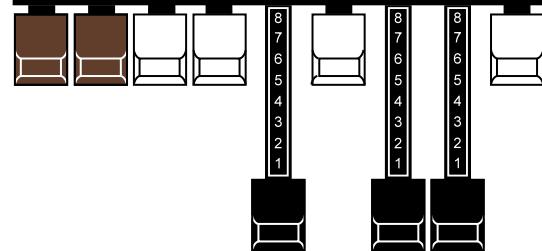
TRY THIS:

1. Make sure all Drawbars are “IN” (off).
2. Make sure the UPPER button in the DRAWBAR SELECT button section is “ON” (orange LED lit).
3. Hold down middle “C” on the keyboard.
4. Pull the first white Drawbar all the way out. You will hear middle “C.”
5. While holding middle “C,” pull the other white Drawbars for the UPPER 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 on the Hammond Organ 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:

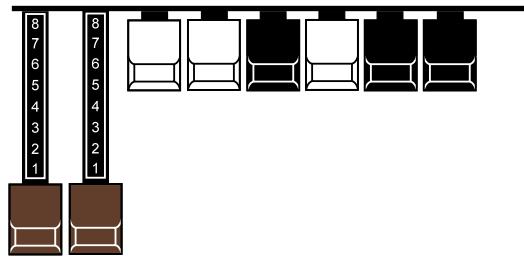
1. Make sure all Drawbars are “IN” (off).
2. Make sure the UPPER button in the DRAWBAR SELECT button section is “ON” (orange LED lit).
3. Hold down middle “C” on the keyboard.
4. Pull the first white Drawbar, marked 8', all the way out. You will hear middle “C.”
5. While holding middle “C,” pull the 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 all Drawbars are "IN" (off).
2. Make sure the UPPER button in the DRAWBAR SELECT button section is "ON" (orange LED lit).
3. Hold down middle "C" on the keyboard.
4. Pull the first white Drawbar all the way out. You will hear middle "C."
5. While holding middle "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 all Drawbars are "IN" (off).
2. Make sure the UPPER button in the DRAWBAR SELECT button section is "ON" (orange LED lit).
3. Hold down middle "C" on the keyboard.
4. Pull the first white Drawbar all the way out. You will hear middle "C."
5. While holding middle "C," pull the first brown Drawbar all the way out. You will now hear the sound of "C" one octave lower being added.
6. 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.

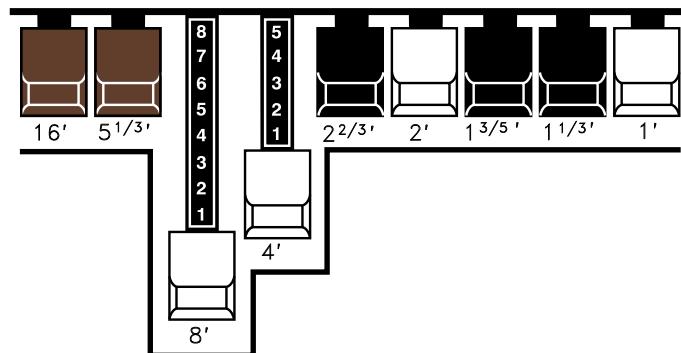
These are the generalities which apply to the tonal resources of the organ, and in themselves produce pleasant and usable effects. However, real beauty of tone is secured in two ways. The first way is to use registrations which have been devised by organists. The second way, and eventually the one that 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

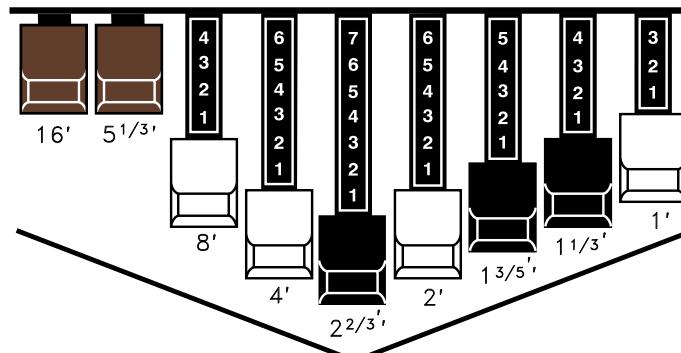
Flute family (2 step pattern)



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

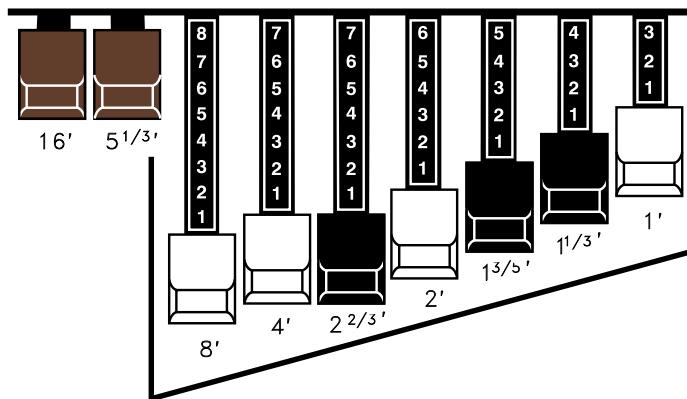
Reed family (triangle pattern)



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

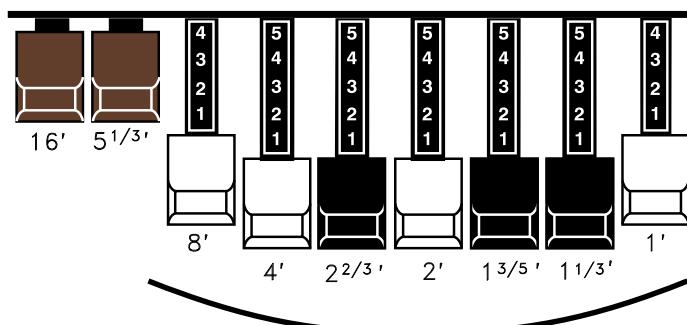
Diapason family (check mark pattern)



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

String family (bow pattern)



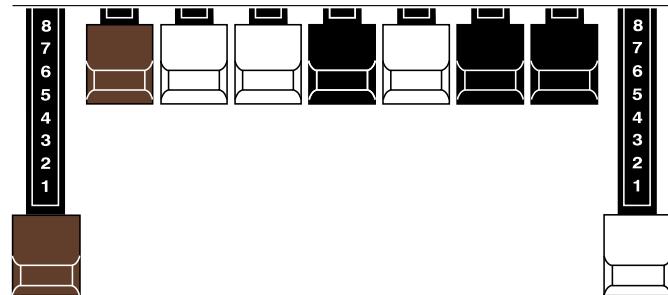
String Tones

Cello 8'	00 3564 534
Dulciana 8'	00 7770 000
Gamba 8' 1	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

Jazz and Pop Drawbar Registrations

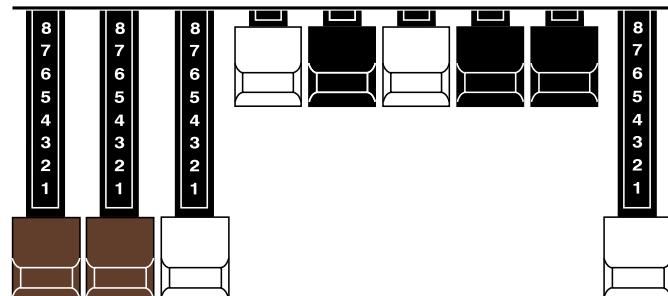
With Hammond Drawbars, any harmonic may be emphasized individually or eliminated completely. Even the fundamental may be eliminated. Because of this fact, many unusual and striking effects can be developed.

A POP ORGAN TONE - 80 0000 008



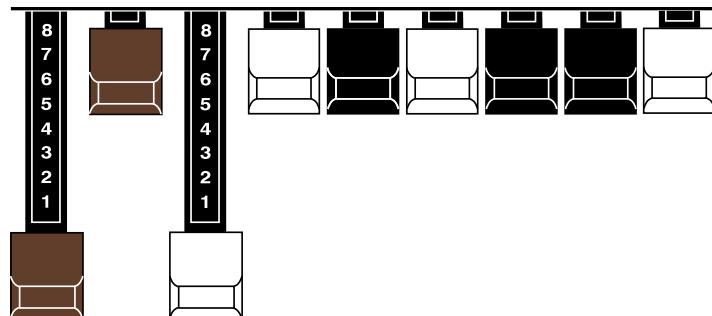
The above is an example of what can be done using the Drawbars to create new sounds. This is a very popular combination used by many pop organists. The effect of two harmonics five octaves apart gives a beautiful tone color for playing slower songs or ballads.

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.

Pedal Drawbars



The first brown Drawbar and the first white Drawbar control the sounds produced by the PEDAL Part. The first brown Drawbar produces a tone at 16' pitch for a deep foundation bass, while the first white Drawbar produces a tone at 8' pitch, or one octave higher.

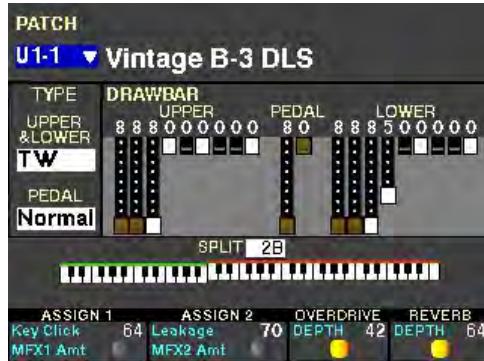
NOTE: The PEDAL DRAWBAR SELECT button must be "ON" in order to adjust the Pedal Drawbar tones. For more information, please consult page 89.

◆ Organ Type - Vx

The Vx Drawbar Organ Type allows you to use the Drawbars to register the sound of a vintage British combo organ.

Accessing the Vx Organ Type from a PLAY Screen:

- 1 After the power to the XK-4 has been turned “ON” and the operating system finishes loading, Patch U1-1 should display (see below).



NOTE: Press the PLAY button to display the above screen if it is not already displaying.

- 2 Press the DIRECTION “▼” button once. The Information Center Display should now look like this:



- 3 Turn the VALUE knob to select Vx.



Accessing the Vx Organ Type using the MENU / EXIT and DIRECTION buttons:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button to see the PATCH EDIT FUNCTION Mode.



The “ORGAN” box will be highlighted.

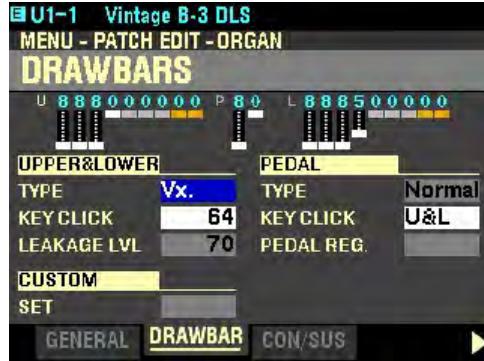
2. Press the ENTER button. The Information Center Display should now look like this:



3. Press the DIRECTION “▶” button once. The Information Center Display should now look like this:

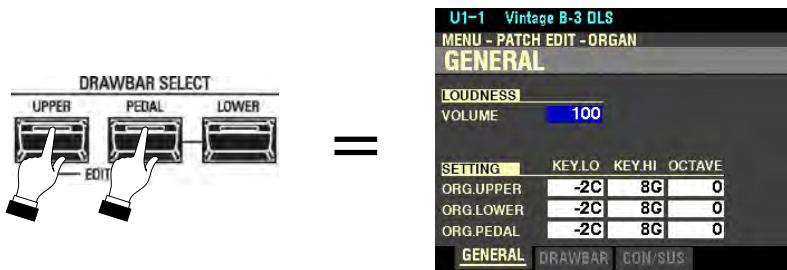


4. Turn the VALUE knob so the Information Center Display shows the following:



Accessing the Vx Organ Type using the Shortcut:

1. Press the UPPER and PEDAL DRAWBAR buttons together.

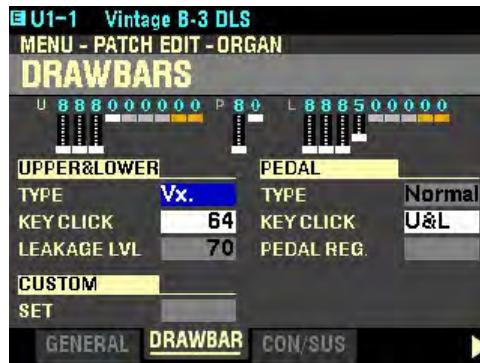


2. Press the PAGE “►” button once. The Information Center Display should now look like this:



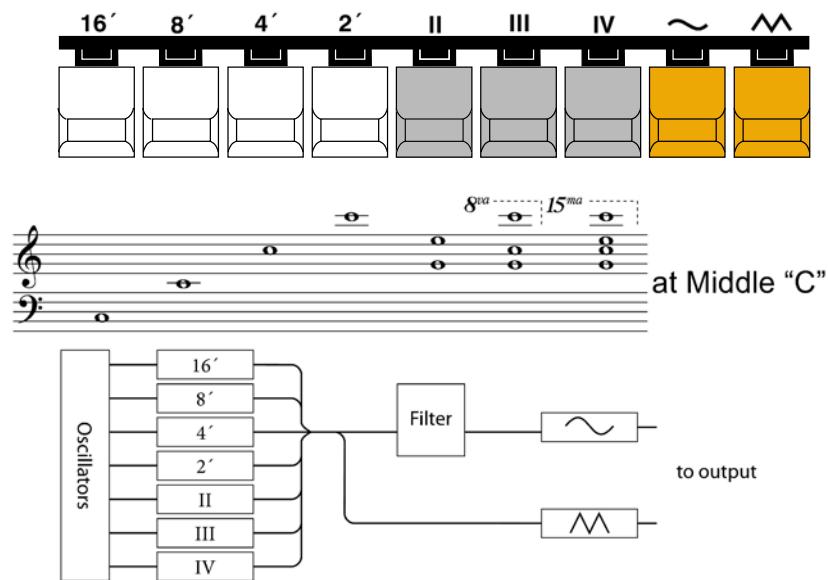
The box to the right of “TYPE” should be highlighted.

3. Turn the VALUE knob so the Information Center Display shows the following:



You can now use the Drawbars to control vintage British combo organ tones.

The figure below shows how the Drawbars are allocated for the Vx Organ Type.



The type of combo organ replicated by Vx 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 eighth Drawbar causes pure tones to sound while the last 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.

NOTE: The colors shown in the above figure are the ones shown in the Information Center Display when the Vx Organ Type is selected.

NOTE: The Drawbar allocations shown above are identical for the UPPER and LOWER Parts.

NOTE: The PEDAL tones will automatically play the Muted voicing for the TONE WHEEL Organ Type.

◆ Organ Type - Farf

The Farf Drawbar Organ Type allows you to use the Drawbars to register the sound of a vintage Italian combo organ.

Accessing the Farf Organ Type from a PLAY Screen:

1. After the power to the XK-4 has been turned “ON” and the operating system finishes loading, Patch U1-1 should display (see below).

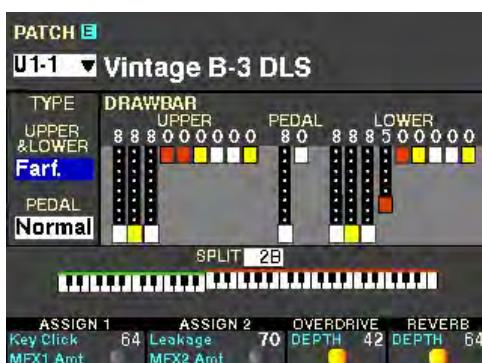


NOTE: Press the PLAY button to display the above screen if it is not already displaying.

2. Press the DIRECTION “▼” button once. The Information Center Display should now look like this:



3. Turn the VALUE knob to select Farf.



Accessing the Farf Organ Type using the MENU / EXIT and DIRECTION buttons:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button to see the PATCH EDIT FUNCTION Mode.



The "ORGAN" box will be highlighted.

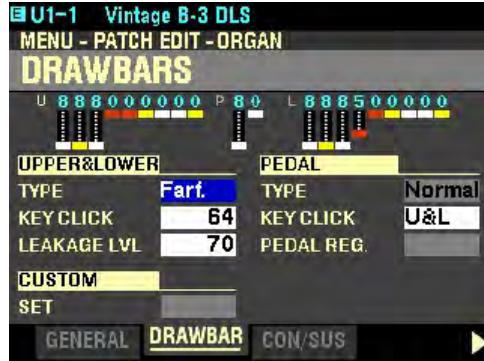
2. Press the ENTER button. The Information Center Display should now look like this:



3. Press the DIRECTION "►" button once. The Information Center Display should now look like this:

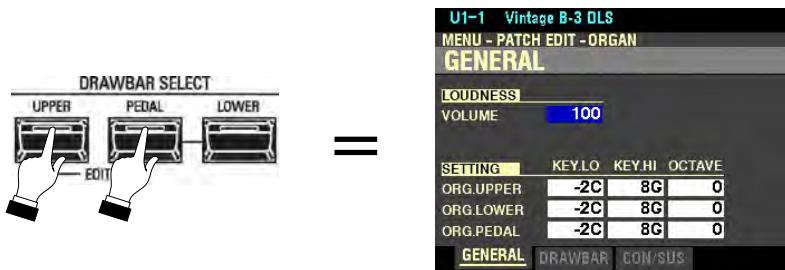


4. Turn the VALUE knob so the Information Center Display shows the following:

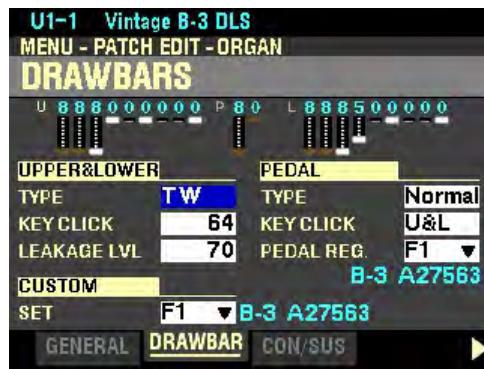


Accessing the Farf Organ Type using the Shortcut:

1. Press the UPPER and PEDAL DRAWBAR buttons together.

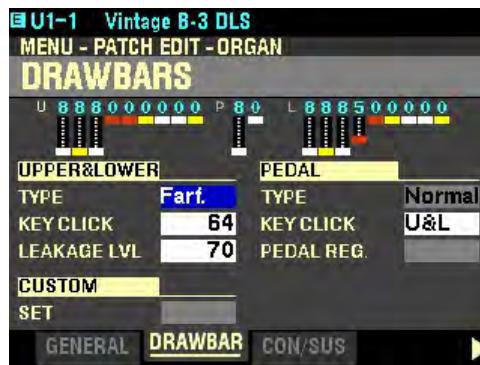


2. Press the PAGE "►" button once. The Information Center Display should now look like this:



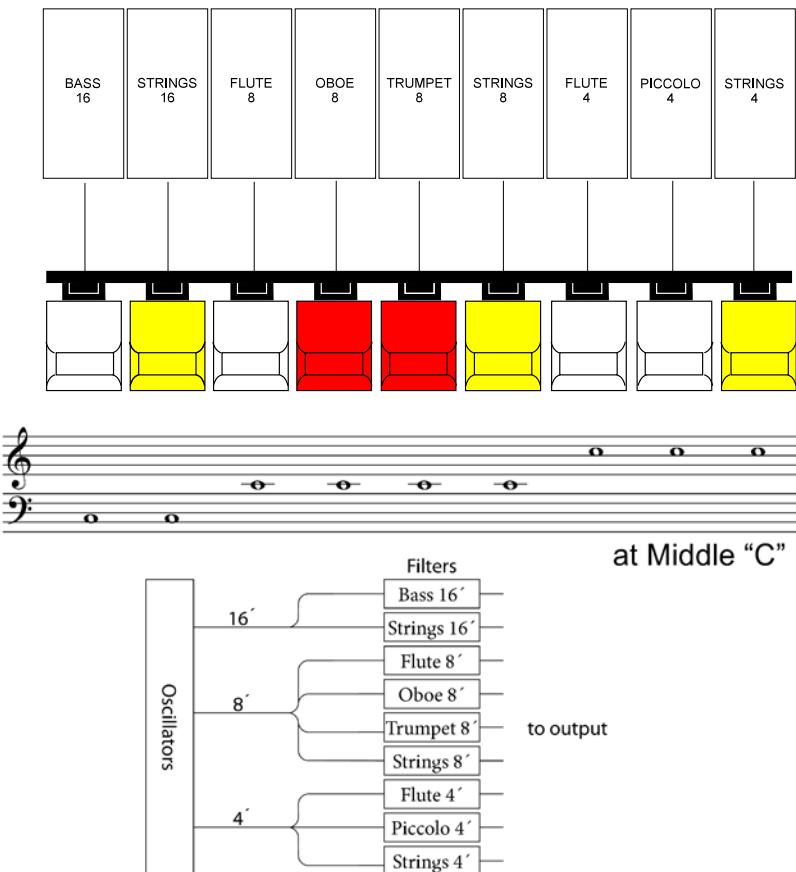
The box to the right of "TYPE" should be highlighted.

3. Turn the VALUE knob so the Information Center Display shows the following:



You can now use the Drawbars to control vintage Italian combo organ tones.

The figure below shows how the Drawbars are allocated for the Farf 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 XK-4, 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.

NOTE: The colors shown in the above figure are the ones shown in the Information Center Display when the Farf Organ Type is selected.

NOTE: The Drawbar allocations shown above are identical for the UPPER and LOWER Parts.

NOTE: The PEDAL tones will automatically play the Muted voicing for the TONE WHEEL Organ Type.

◆ Organ Type - Ace

The Ace Drawbar Organ Type allows you to use the Drawbars to register the sound of a vintage Japanese combo organ.

Accessing the Ace Organ Type from a PLAY Screen:

1. After the power to the XK-4 has been turned “ON” and the operating system finishes loading, Patch U1-1 should display (see below).

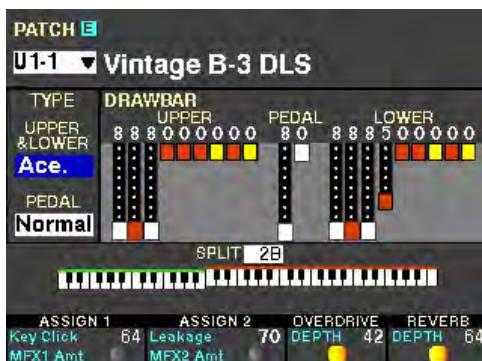


NOTE: Press the PLAY button to display the above screen if it is not already displaying.

2. Press the DIRECTION “▼” button once. The Information Center Display should now look like this:



3. Turn the VALUE knob to select Ace.



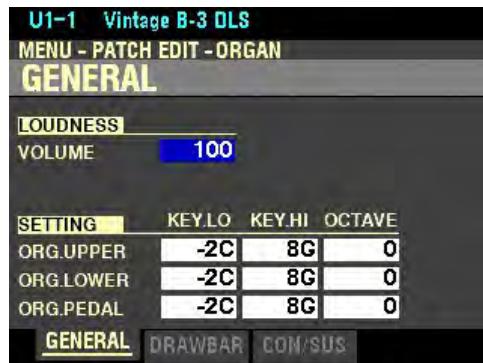
Accessing the Ace Organ Type using the MENU / EXIT and DIRECTION buttons:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button to see the PATCH EDIT FUNCTION Mode.

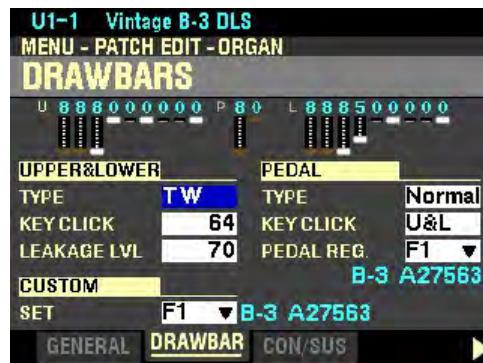


The "ORGAN" box will be highlighted.

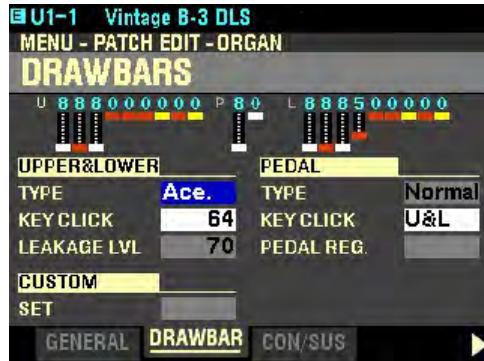
2. Press the ENTER button. The Information Center Display should now look like this:



3. Press the DIRECTION "►" button once. The Information Center Display should now look like this:

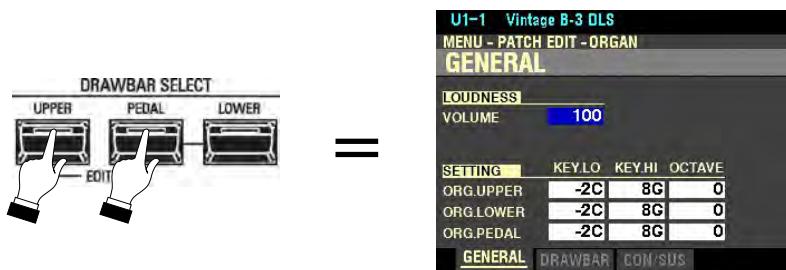


4. Turn the VALUE knob so the Information Center Display shows the following:



Accessing the Ace Organ Type using the Shortcut:

1. Press the UPPER and PEDAL DRAWBAR buttons together.



2. Press the PAGE "►" button once. The Information Center Display should now look like this:



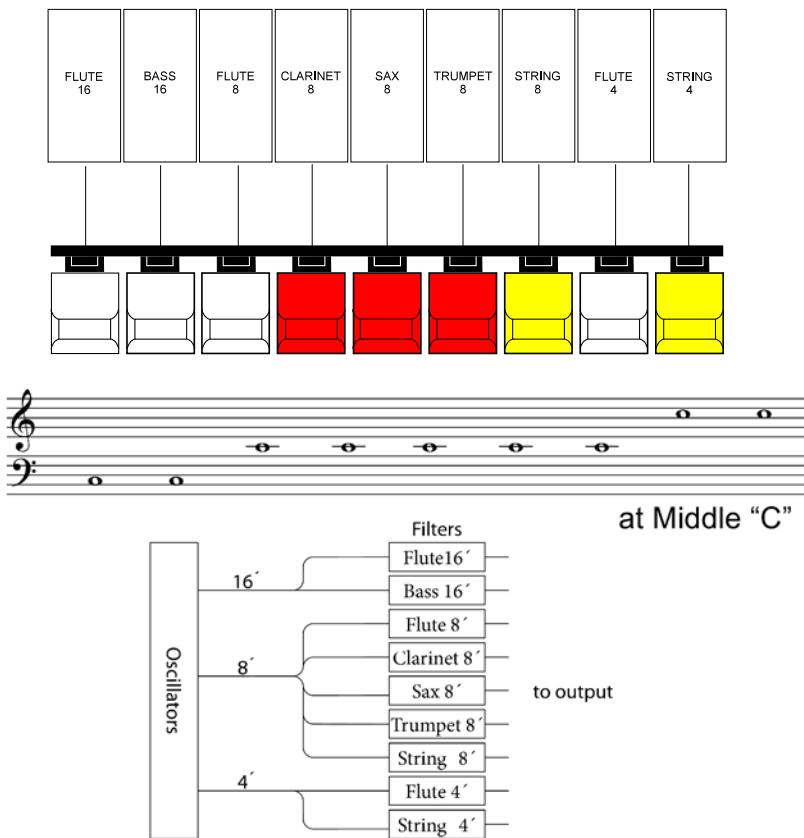
The box to the right of "TYPE" should be highlighted.

3. Turn the VALUE knob so the Information Center Display shows the following:



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.



◆ Organ Type - Pipe

The Pipe Organ Type contains four (4) Custom Sets - Classic1, Classic 2, Theatre 1 and Theatre 2. The following pages show how the Pipe Voices are allocated to the Drawbars for each Custom Set.

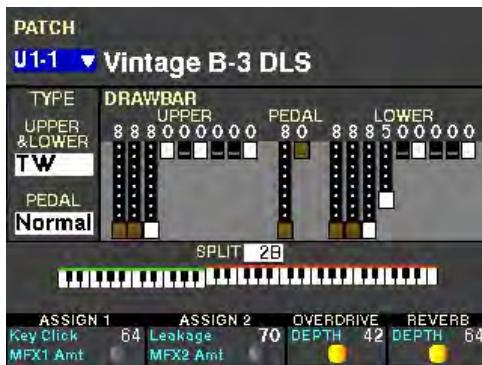
NOTE: Classic and Theatre denote different kinds of Pipe Organs. Classic organs are designed to play classical and liturgical music, while Theatre organs are better suited to semi-classical and popular music as well as orchestral transcriptions.

Organ Type - Pipe (Classical)

This Organ Type allows you to use the Drawbars to register authentic classical pipe organ tones.

Accessing the Pipe Organ Type from a PLAY Screen:

1. After the power to the XK-4 has been turned “ON” and the operating system finishes loading, Patch U1-1 should display (see below).



NOTE: Press the PLAY button to display the above screen if it is not already displaying.

2. Press the DIRECTION “▼” button once. The Information Center Display should now look like this:



3. Turn the VALUE knob to select Pipe.



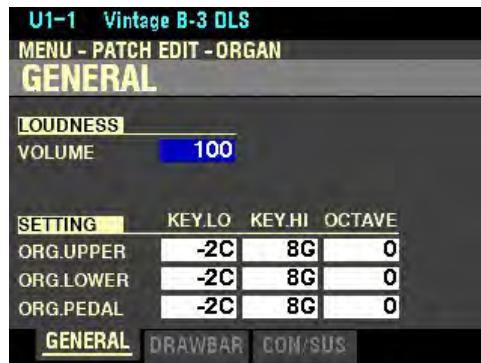
Accessing the Pipe Organ Type using the MENU / EXIT and DIRECTION buttons:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button to see the PATCH EDIT FUNCTION Mode.

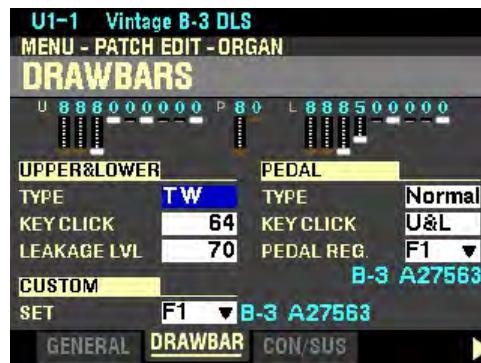


The "ORGAN" box will be highlighted.

2. Press the ENTER button. The Information Center Display should now look like this:



3. Press the DIRECTION "►" button once. The Information Center Display should now look like this:

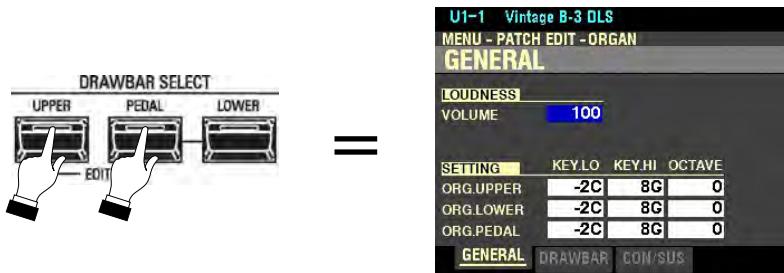


4. Turn the VALUE knob so the Information Center Display shows the following:



Accessing the Pipe Organ Type using the Shortcut:

1. Press the UPPER and PEDAL DRAWBAR buttons together.

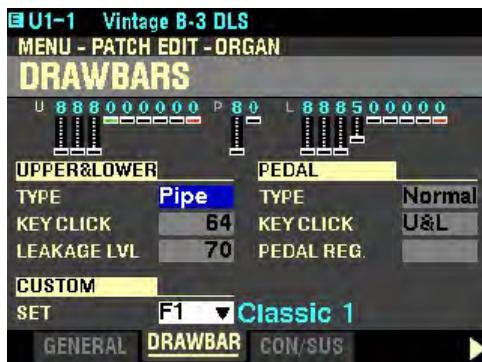


2. Press the PAGE “▶” button once. The Information Center Display should now look like this:



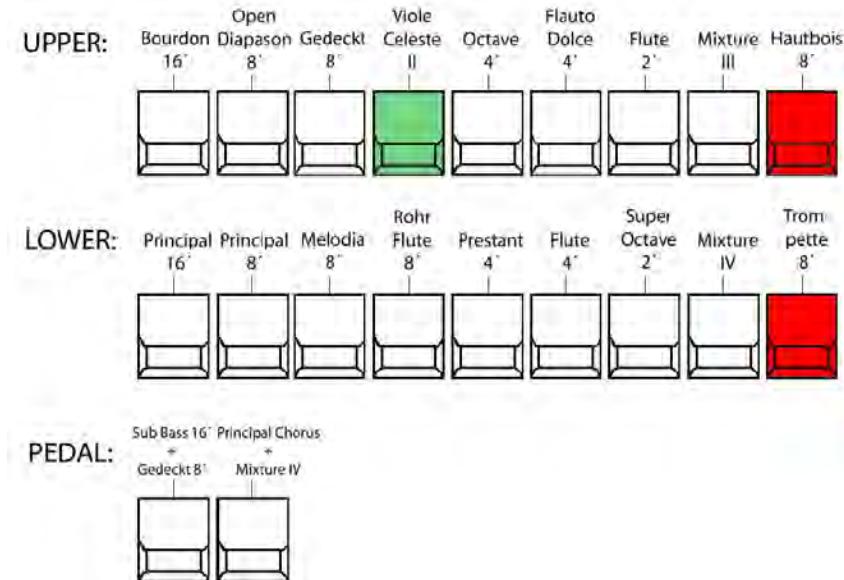
The box to the right of “TYPE” should be highlighted.

3. Turn the VALUE knob so the Information Center Display shows the following:

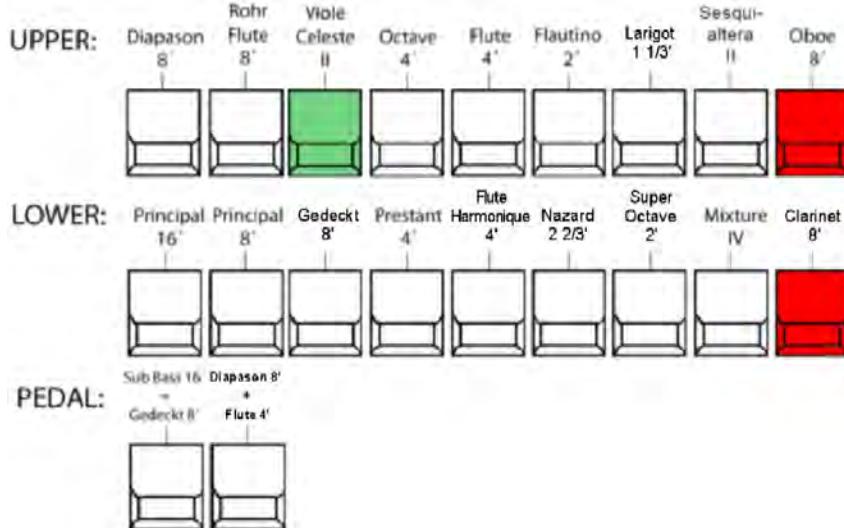


You can now use the Drawbars to control the voices of a classical pipe organ. The figures below show how the Drawbars are allocated in this mode.

F1 - Classic 1:



F2 - Classic 2:



NOTE: The colors shown in the above figures are the ones shown in the Information Center Display when the Pipe - Classical Organ Type is selected.

IMPORTANT NOTE: When "Pipe" mode is activated, the Drawbars will function similar to drawstops on a traditional pipe organ - pulling a Drawbar "out" will turn the associated Pipe Voice "ON" while pushing the Drawbar "in" will turn the Pipe Voice "OFF." The Pipe Voices do not have gradations of volume - they are either "ON" or "OFF."

◆ Organ Type - Pipe (Theatre)

This Organ Type allows you to use the Drawbars to register authentic theatre pipe organ tones.

Accessing the Theatre Pipe Organ Type using the MENU / EXIT and DIRECTION buttons:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button to see the PATCH EDIT FUNCTION Mode.



The “ORGAN” box will be highlighted.

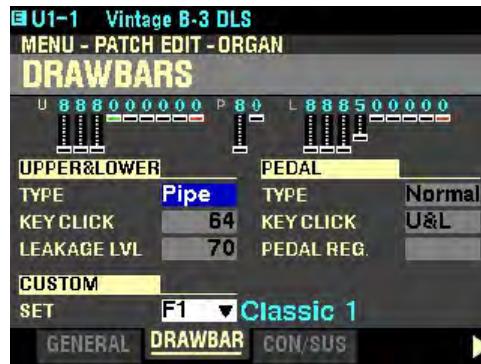
2. Press the ENTER button. The Information Center Display should now look like this:



3. Press the DIRECTION “►” button once. The Information Center Display should now look like this:



4. Turn the VALUE knob so the Information Center Display shows the following:



5. Press the DIRECTION "▼" button three times. The box to the right of "SET" should be highlighted.

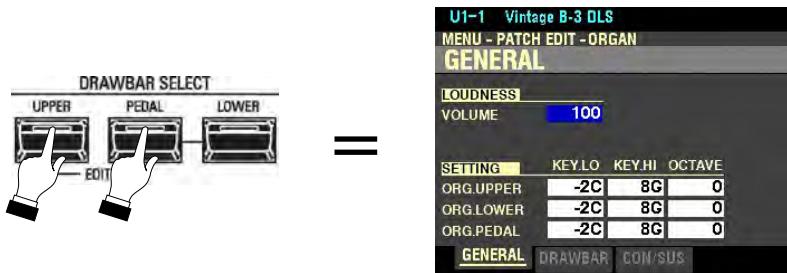


6. Turn the VALUE knob so that "F3" displays in the box to the right of "SET."



Accessing the Theatre Pipe Organ Type using the Shortcut:

1. Press the UPPER and PEDAL DRAWBAR buttons together.



2. Press the PAGE "►" button once. The Information Center Display should now look like this:



The box to the right of "TYPE" should be highlighted.

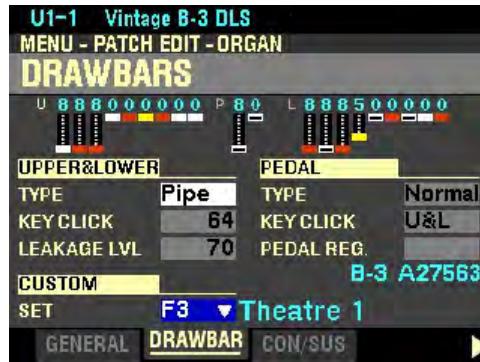
3. Turn the VALUE knob so the Information Center Display shows the following:



4. Press the DIRECTION “▼” button three times. The box to the right of “SET” should be highlighted.



5. Turn the VALUE knob so that “F3” displays in the box to the right of “SET.”

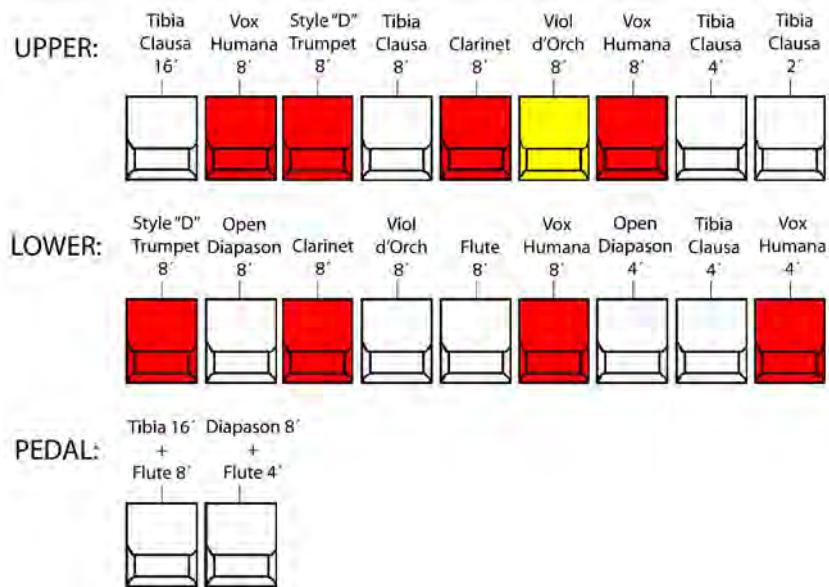
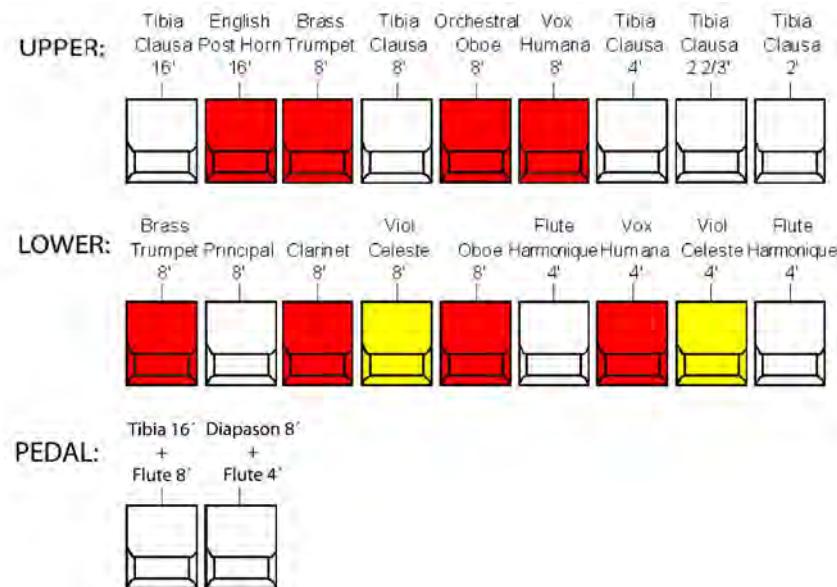


You can now use the Drawbars to control the voices of a theatre or “cinema” pipe organ.

Use the VALUE knob to select F3 Theatre 1 or F4 Theatre 2.

Theatre 1 is a stop complement similar to a Wurlitzer “Style 210” while Theatre 2 is derived from the stops from a Wurlitzer “Style 260 Special” including English Post Horn.

The figures on the next page show how the Drawbars are allocated in this mode.

F3 - Theatre 1:**F4 - Theatre 2:**

NOTE: The colors shown in the above figures are the ones shown in the Information Center Display when the Pipe - Theatre Organ Types are selected.

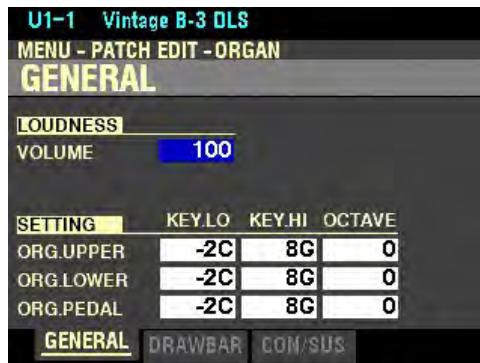
IMPORTANT NOTE: When "Pipe" mode is activated, the Drawbars will function similar to the stop tablets on a theatre pipe organ - pulling a Drawbar "out" will turn the associated Pipe Voice "ON" while pushing the Drawbar "in" will turn the Pipe Voice "OFF." The Pipe Voices do not have gradations of volume - they are either "ON" or "OFF."

◆ ORGAN APP MENU

When you are editing Parameters for the ORGAN Section, you can access the APP MENU to make some editing operations quicker and easier. The following paragraphs will explain this in more detail.

TRY THIS:

1. Access the PATCH EDIT -ORGAN FUNCTION Mode using any of the methods described starting on page 93. The Information Center Display should look like this:



2. Press and Release the MANUAL ‘≡’ button. The Information Center Display should now look like this:



This is the APP MENU for the PATCH EDIT -ORGAN FUNCTION Mode Page. You can now use the DIRECTION “▲” and “▼” buttons to make changes to the selected ORGAN Patch. These changes are explained starting below.

◆ **INITIALIZE PATCH**

This allows you to clear all the Patch Parameters in the currently selected Patch, including Drawbar registrations.

Press the ENTER button to initialize all the Patch Parameters.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



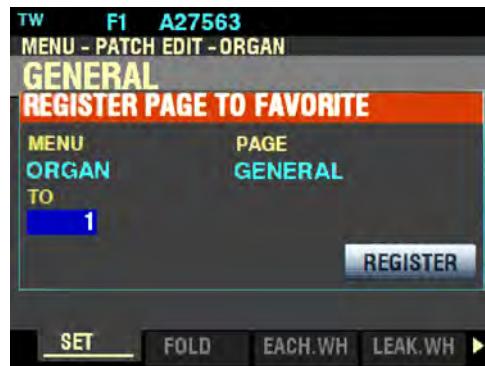
The “REGISTER PAGE TO FAVORITE” box should be highlighted.

◆ REGISTER PAGE TO FAVORITE

This allows you to register the current Page to one of the FAVORITE buttons for quick access.

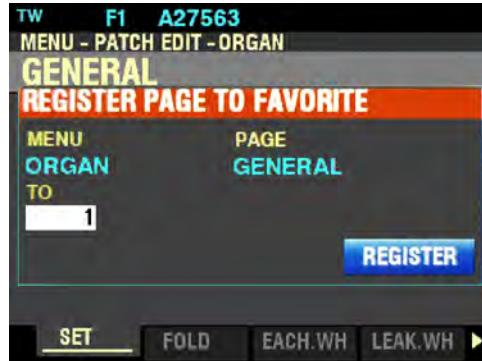
To register the current Page to a FAVORITE, do the following:

1. From the above screen, press the ENTER button. The Information Center Display should look like this:



2. Use the VALUE knob to select which FAVORITE button you want to recall the selected Page. You may select from 1 to 10.

3. After you have made your selection, press the DIRECTION “▼” button to highlight the “REGISTER” box.

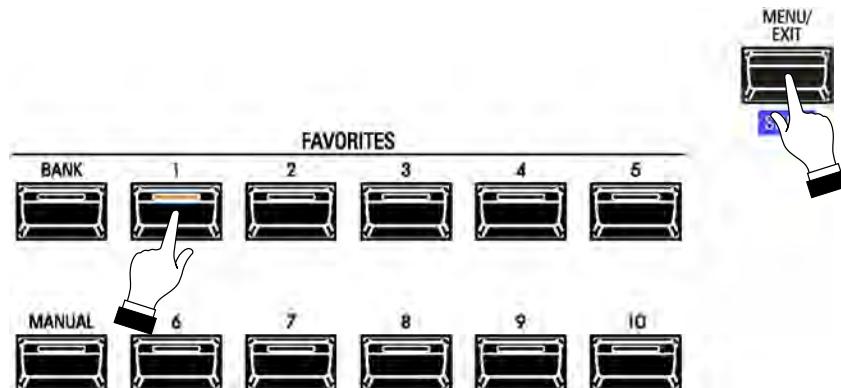


4. Press the ENTER button. You will see the messages “Recording...” and “Completed.” flash in the display for approximately 1 second each.

NOTE: If you DO NOT wish to register the selected Page, press the MENU / EXIT or PLAY button instead of the ENTER button.

You have now registered a FUNCTION Mode Page to a FAVORITE button. In this way, you can access Menu Pages you use frequently with a single button-press. If you wish, you can register up to 100 Pages to the FAVORITE buttons by utilizing the 10 available Favorite Banks.

To access a Page or screen saved to a FAVORITE button, Press and Hold the SHIFT button and press the numbered FAVORITE button where the Page is registered.



NOTE: More information regarding FAVORITES and Favorite Banks can be found in the **PATCHES / FAVORITES** chapter of this Guide starting on page 59.

HAMMOND

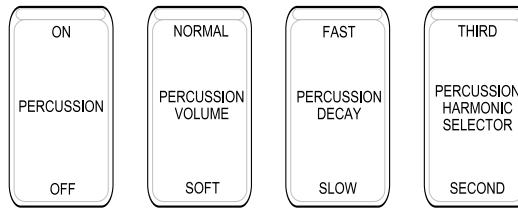


XK-4

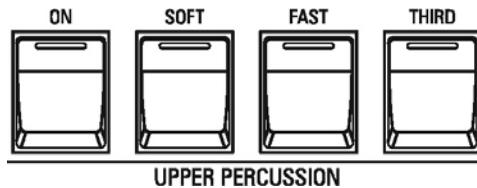
UPPER
PERCUSSION

UPPER PERCUSSION - Touch-Response Percussion

An important component of the Hammond Sound is Touch-Response Percussion Control. 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:



The PERCUSSION controls on the XK-4 consist of four separate buttons, located on the right of the Control Panel, which control harmonic Percussion tones playable from the UPPER Part. They control all the same functions as the tilt tablets on a vintage Hammond.



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" (LED lit) and the other buttons in the PERCUSSION section are "OFF" (LEDs not lit), the Percussion tone is the same as the sound produced from the second white (second harmonic) Drawbar. Combining this Percussion tone with the Drawbars will produce bright and clear sounds.



◆ SOFT

This button regulates the volume of the Percussion tone. When it is "OFF" (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.



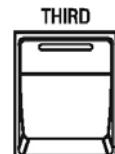
◆ FAST

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.



◆ THIRD

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



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

◆ **PERCUSSION FUNCTION** Mode Page

This FUNCTION Mode Page allows you to make various changes to the characteristics of the Percussion.

◆ Accessing the **PERCUSSION FUNCTION** Mode Page using the MENU / EXIT and DIRECTION buttons:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

2. Press the DIRECTION “▼” button. The Information Center Display should now look like this:



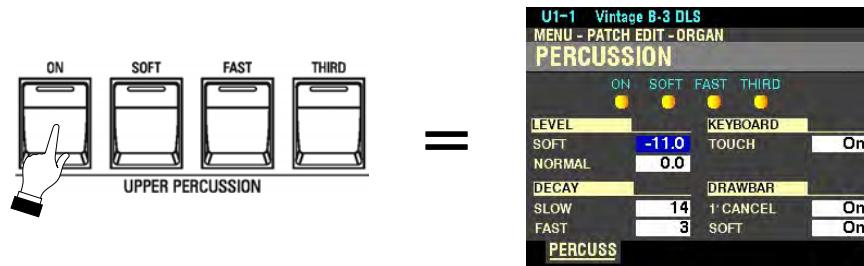
The “PERCUSSION” box should be highlighted.

4. Press the ENTER button. The Information Center Display should now look like this:



◆ Accessing the **PERCUSSION FUNCTION** Mode Page using the Shortcut:

Press and Hold any of the four PERCUSSION buttons.



You can now use the DIRECTION and PAGE buttons in conjunction with the VALUE knob to make various changes to the Percussion. These changes are explained starting below.

◆ **PERCUSSION ON/OFF, VOLUME, DECAY and HARMONIC SELECTOR**

Notice the four small icons at the top of the display for ON, SOFT, FAST and THIRD. These correspond to the four PERCUSSION buttons on the Control Panel. When any of these buttons are “ON” (LED lit), the corresponding icon will also light.

In this screen, the box to the right of “SOFT” should be highlighted.



◆ **LEVEL**

SOFT

NORMAL

This Parameter allows you to set the overall volume level of the Percussion tones. This will allow you to balance the amount of NORMAL and SOFT Percussion sound (the choices provided by the button) with the sound produced by the Drawbars. You can set the levels separately for the SOFT and NORMAL Percussion Volume settings.

Use the DIRECTION “▲” and “▼” buttons to select either SOFT or NORMAL.

When you have made your selection:

Turn the VALUE knob to the right to increase the Level for the selected Volume setting.

Turn the VALUE knob to the left to decrease the Level for the selected Volume setting.

◆ DECAY

SLOW

FAST

From the screen shown on the previous page, press the DIRECTION “▼” button repeatedly until the box to the right of “SLOW” is highlighted.



This Parameter allows you to set the overall decay (the rate at which the Percussion tone dies away while a key is held) of the Percussion tones. The SLOW Parameter sets the amount of Slow Decay (FAST button “OFF”) while the FAST Parameter sets the amount of Fast Decay (FAST button “ON”). You can set the levels separately for the SLOW and FAST Percussion Decay settings.

Use the DIRECTION “▲” and “▼” buttons to select either SLOW or FAST.

When you have made your selection:

Turn the VALUE knob to the right to lengthen the Decay for the selected Decay setting.

Turn the VALUE knob to the left to shorten the Decay for the selected Decay setting.

◆ KEYBOARD

TOUCH

From the above screen, use the DIRECTION “▲” and “▼” buttons to highlight the box to the right of “TOUCH.”



This Parameter allows you to turn the Percussion Touch-Response “ON” or “OFF.” The data chart below shows the options you may select.

KEYBOARD TOUCH Options	
Setting	Description
On	Percussion tones will sound only if you play the keys in a detached manner (non-legato). Any degree of detachment is sufficient. This replicates the Touch-Response Percussion function on the original models B-3, C-3, RT-3, A-100, D-100 and M-3.
Off	Each key will sound when played regardless of whether other keys are being held. This replicates the Percussion function on the X-66, Concorde and later model Hammond Organs.

Turn the VALUE knob to turn this Parameter On or Off.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “1' CANCEL” should be highlighted.

◆ DRAWBAR

1'CANCEL

The data chart below explains this Parameter.

PERCUSSION DRAWBAR CANCEL Options	
Setting	Description
On	The 8th harmonic Drawbar will be canceled when Percussion is "ON." This replicates the original Hammond Organs with Touch-Response Percussion Control, such as the B-3, C-3, RT-3, A-100, D-100 and M-3.
Off	The 8th harmonic Drawbar (1') will continue to sound while Percussion is "ON." This replicates later Hammond Organs with Percussion such as the L-100, M-100, etc.

Turn the VALUE knob to turn this Parameter On or Off.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “SOFT” should be highlighted.

SOFT

This Parameter allows you to set the Drawbar Level when Percussion is “ON” at Normal volume (SOFT button “OFF”). The data chart below shows the options you may select.

PERCUSSION DRAWBAR LEVEL Options	
Setting	Description
On	The volume of the UPPER Drawbars will be reduced by -3db (-3 decibels) in loudness when Percussion is "ON" at Normal volume. This replicates vintage Hammond Organs with Touch-Response Percussion Control (B-3, C-3, RT-3, A-100, D-100, M-3)
Off	The volume of the UPPER Drawbars will stay at the same level, or "0db," when Percussion is "ON" at Normal volume. This replicates vintage Hammond Organs such as the L-100, M-100, etc.

Turn the VALUE knob to turn Percussion Drawbar Level On or Off.

NOTE: A "decibel" is a unit of measurement for the loudness of a sound wave.



XK-4

ANIMATION

ANIMATION

The Drawbars on the XK-4 can receive two kinds of Animation:

1. Vibrato and Chorus
2. Leslie®

These will be explained fully in this chapter of the Guide.

◆ Vibrato and Chorus

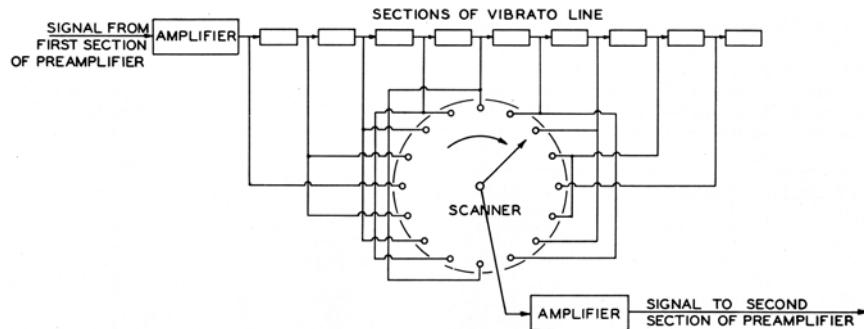
The Hammond Vibrato & Chorus is a hallmark of the “Hammond Sound.”

“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.

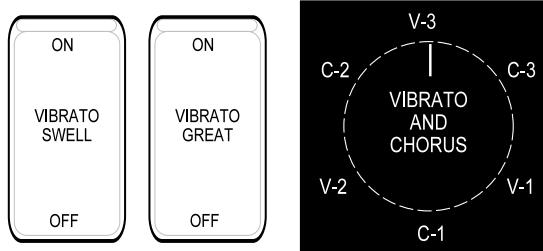
On a tone-wheel Hammond Organ equipped with Vibrato & Chorus, the vibrato circuitry consists of a series of plural coils or low-pass filter sections called a “delay line” or “line box” and a motor-driven “scanner” which, as the name implies, scans the delay line and progressively retards the phase, creating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

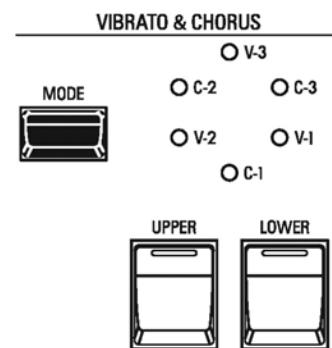
The diagram below shows the vibrato equipment of a typical tone-wheel Hammond Organ such as a B-3.



◆ The Vibrato and Chorus Controls

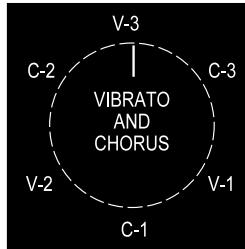
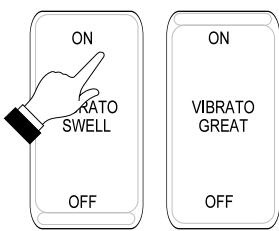


- Vintage B-3 / C-3 Vibrato and Chorus Controls -

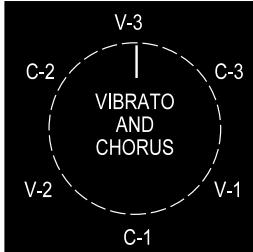
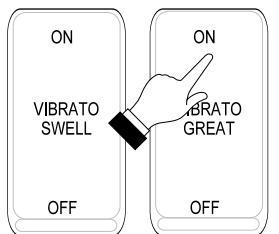


- XK-4 Vibrato and Chorus Controls

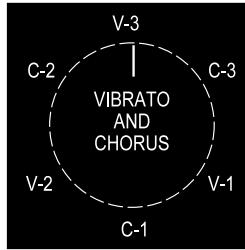
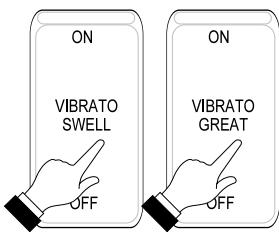
The Vibrato and Chorus controls on vintage Hammond console organs with either a “2” or a “3” as part of their model designation (B-2, B-3, etc.) consist of two tilt tablets and a six-position rotary control to the left of the Drawbars. The XK-4 uses a similar arrangement, except that it uses buttons 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.



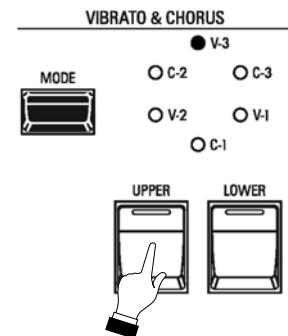
To turn the Vibrato or Chorus effect "ON" for the Swell Manual of a vintage B-3 / C-3, press the top of the VIBRATO SWELL tilt tab.



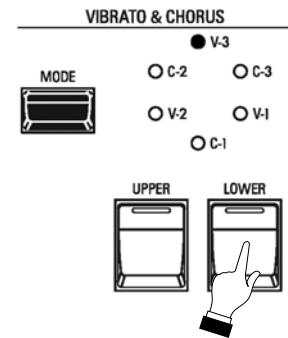
To turn the Vibrato or Chorus effect "ON" for the Great Manual of a vintage B-3 / C-3, press the top of the VIBRATO GREAT tilt tab.



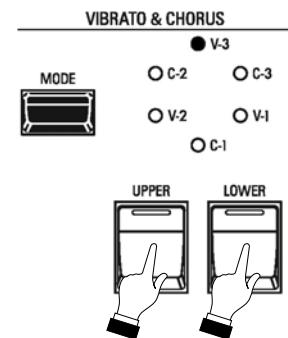
To turn the Vibrato or Chorus effect "OFF" for the Swell or Great Manuals of a vintage B-3 / C-3, press the tilt tabs at the bottom.



To turn the Vibrato or Chorus effect "ON" on the UPPER Part of the XK-4, press the UPPER button "ON" (LED lit).



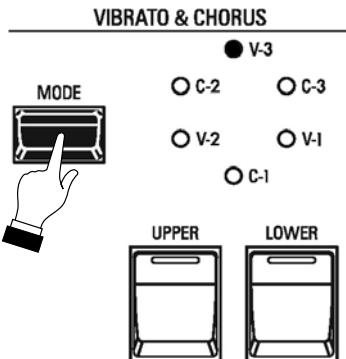
To turn the Vibrato or Chorus effect "ON" for the LOWER Part of the XK-4, press the LOWER button "ON" (LED lit).



To turn the Vibrato or Chorus effect "OFF" for the UPPER or LOWER Parts of the XK-4, press the buttons "OFF" (LED's not lit).

◆ Amount of Vibrato and Chorus

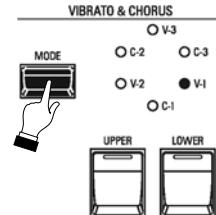
To select the amount of Vibrato or Chorus, press the MODE button repeatedly until the orange LED next to the desired effect and amount lights. Each successive button press will rotate the LED clockwise.



Vibrato

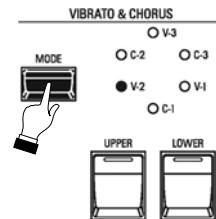
V-1 (Small Vibrato)

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.



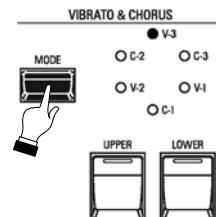
V-2 (Wide Vibrato)

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.



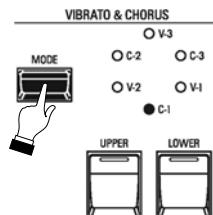
Remember, either one or both of the UPPER or LOWER buttons must be "ON" (orange LED lit) to allow you to hear the selected Vibrato effect for each keyboard.

Chorus

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

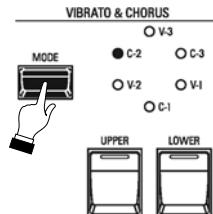
C-1 (Small Chorus)

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.



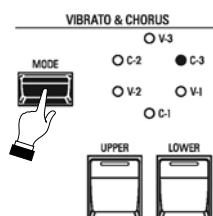
C-2 (Wide Chorus)

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, either one or both of the UPPER or LOWER buttons must be "ON" (orange LED lit) to allow you to hear the selected Vibrato effect for each keyboard.

♦ SPECIAL NOTE - Vx., Farf., Ace and Pipe Organ 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. and Ace Organ Types and 6 degrees of Tremulant for the Pipe Organ Types. V-1 provides the smallest amount while C-3 gives the largest amount of Vibrato or Tremulant. The other modes provide various degrees between these two settings.

◆ **VIBRATO & CHORUS FUNCTION** Mode Page

You can adjust the Vibrato & Chorus of the Tone Wheel Organs, Vibrato for the Transistor Organs, and Tremulant for the Pipe Organ from the **VIBRATO & CHORUS FUNCTION** Mode Page.

Accessing the VIBRATO & CHORUS FUNCTION Mode Page using the MENU / EXIT and DIRECTION buttons:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

2. Press the DIRECTION “▼” button two times. The Information Center Display should now look like this:



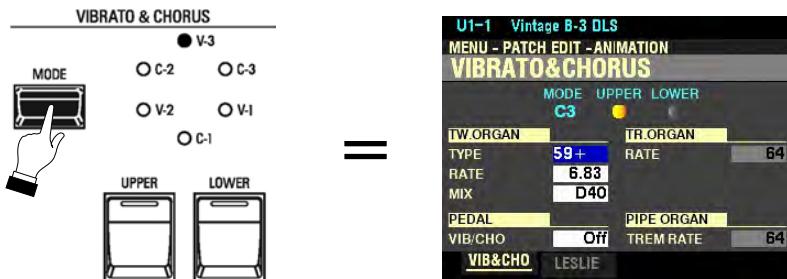
The **MENU - PATCH EDIT - ANIMATION** FUNCTION Mode should now display.

3. Press the ENTER button. The Information Center Display should now look like this:



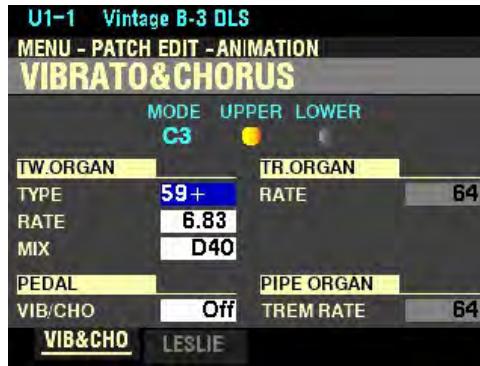
Accessing the VIBRATO & CHORUS FUNCTION Mode Page using the Shortcut:

Press and Hold any of the three VIBRATO & CHORUS buttons (UPPER, LOWER or MODE).



You are now in the VIBRATO & CHORUS FUNCTION Mode Page. You can now use the DIRECTION buttons in conjunction with the VALUE knob to make various changes to the Vibrato and Chorus. These changes are explained starting on the next page.

If you followed the instructions on the previous pages, the Information Center Display should look like this:



The box to the right of “TYPE” should be highlighted.

VIBRATO & CHORUS MODE, UPPER / LOWER ON / OFF

Notice the two small icons at the top of the display for UPPER and LOWER as well as the MODE setting. These correspond to the VIBRATO & CHORUS controls on the Control Panel. When either the UPPER or LOWER buttons are “ON” (LED lit), the corresponding icon will light. Also, the MODE shown will correspond to the Mode setting on the Control Panel.

In this screen, the box to the right of “TYPE” should be highlighted.



TW.ORGAN

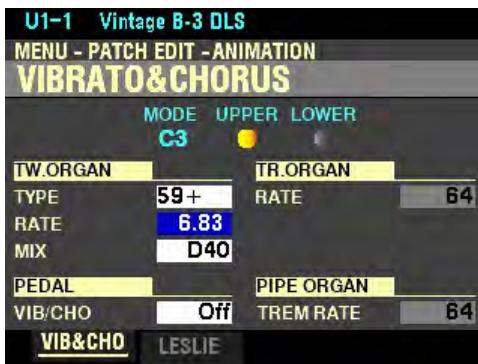
TYPE

Hammond tone-wheel organs with Vibrato & Chorus were manufactured from 1949 through 1975. During that time, several different types of vibrato circuits were employed, particularly line boxes of different construction. This Parameter creates the effect of different types of Vibrato delay lines. The data chart below shows the options you may select.

VIBRATO TYPE Options	
Setting	Description
55-57	Metal Box 1955 - 1957
57-59	Large Silver Box 1957 - 1959
59+	Small Silver Box 1959 and later

Turn the VALUE knob to select the option you want.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “RATE” should be highlighted.

RATE

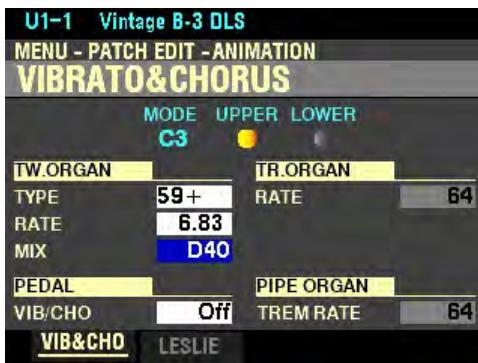
This Parameter allows you to select the Vibrato/Chorus Rate that you prefer. You may select from 5.78Hz to 7.90Hz. The default setting is 6.83Hz.

Turn the VALUE knob to the right to increase the Vibrato Rate.

Turn the VALUE knob to the left to decrease the Vibrato Rate.

NOTE: “Hz” is an abbreviation for “Hertz,” which refers to the number of cycles per second.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “MIX” should be highlighted.

MIX

The Chorus effect is produced by mixing two audio signals together - one containing Vibrato and a “dry” signal with no Vibrato. The amount of Vibrato versus non-Vibrato signal can vary when comparing vintage organs. This Parameter allows you to control the amount of Vibrato signal versus the amount of “dry” or non-Vibrato signal. You may select from D64 (only the dry signal with no Vibrato) through 63V (only the Vibrato signal, with no dry signal). The middle or EVEN setting will mix the Vibrato and non-Vibrato signals together in equal amounts.

Turn the VALUE knob to the right to increase the amount of Vibrato signal.

Turn the VALUE knob to the left to decrease the amount of Vibrato signal.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “VIB CHO” should be highlighted.

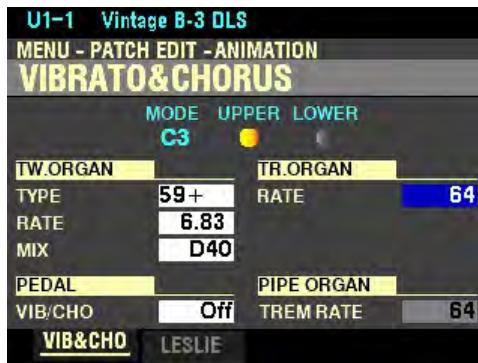
PEDAL

VIB CHO

This Parameter allows you to select whether you want Vibrato to also affect the Pedal Drawbar tones when the VIBRATO LOWER Button is “ON.” This replicates the Vibrato function on a vintage Hammond Organ.

Turn the VALUE knob to turn Vibrato On or Off for the Pedal Drawbar tones.

From the above screen, use the DIRECTION buttons to highlight the box to the right of “RATE” underneath “TR.ORGAN.”



TR.ORGAN

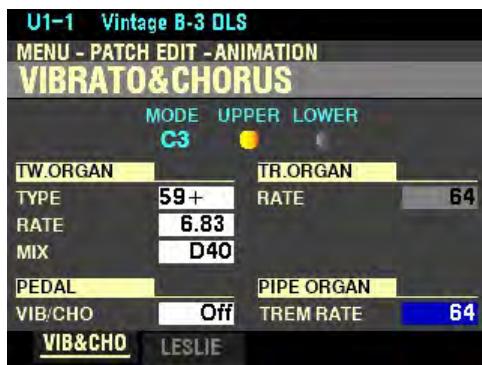
RATE

This Parameter allows you to adjust the Vibrato Rate for the Transistor Organs (Farf, Vx and Ace). You may select from 0 (no Vibrato) to 127 (fastest Vibrato Rate).

Turn the VALUE knob to the right to increase the Vibrato Rate.

Turn the VALUE knob to the left to decrease the Vibrato Rate.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “TREM RATE” should be highlighted.

PIPE ORGAN

TREM RATE

This Parameter allows you to adjust the Tremulant Rate for the Pipe Organ. You may select from 0 (no Tremulant) to 127 (fastest Tremulant).

Turn the VALUE knob to the right to increase the Tremulant Rate.

Turn the VALUE knob to the left to decrease the Tremulant Rate.

NOTE: More information about Pipe Voices can be found starting on page 131.

◆ LESLIE®

Your Hammond XK-4 has a built-in digital Leslie effect that replicates the sound of a twin-rotor Leslie Speaker cabinet. In addition, the XK-4 can also be used with a variety of different Leslie Speaker cabinets.

◆ 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



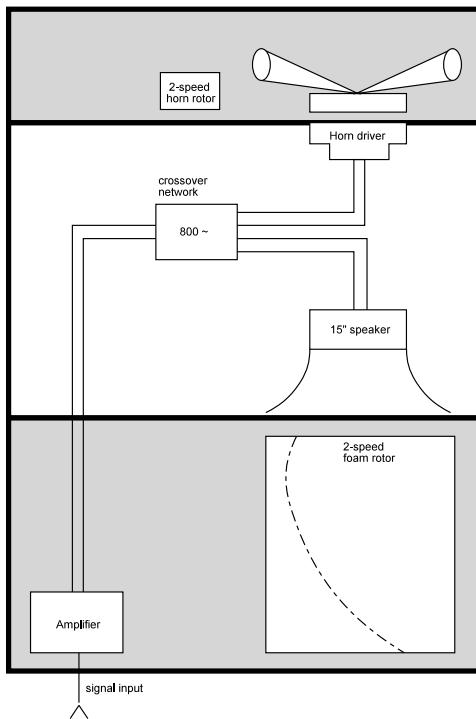
A typical Leslie Speaker cabinet.

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. The 122 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 baffle for the lower frequencies is referred to as a “drum.” 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.

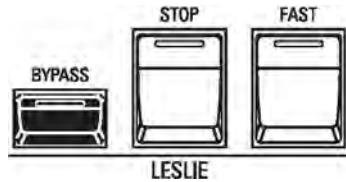


In more recent years there have been two important additions to the classic Leslie design:

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 XK-4. The following pages explain how the internal digital Leslie of your Hammond XK-4 works.

◆ LESLIE buttons



These three buttons allow you to control either the internal digital Leslie or the rotors of a connected Leslie Speaker cabinet.

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.

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 either the internal digital Leslie or a connected Leslie Speaker depends upon the position of the LESLIE FAST button.

When this 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) to produce a rich, full sound.

◆ **LESLIE FUNCTION** Mode Page

You may select the LESLIE Parameters for the ORGAN Section from the **LESLIE FUNCTION** Mode Page.

Accessing the LESLIE FUNCTION Mode Page using the MENU / EXIT, DIRECTION and PAGE buttons:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



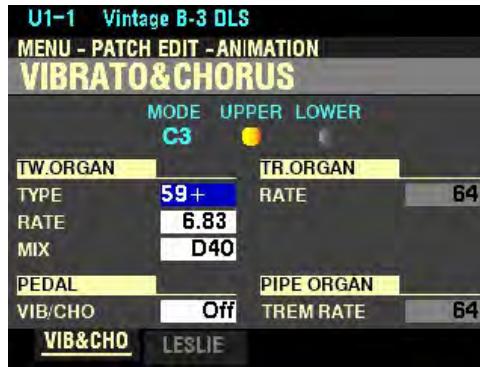
The "ORGAN" box should be highlighted.

2. Press the DIRECTION "▼" button two times. The Information Center Display should now look like this:



The **MENU - PATCH EDIT - ANIMATION** FUNCTION Mode should now display.

3. Press the ENTER button. The Information Center Display should now look like this:



4. Press the PAGE “►” button once. The Information Center Display should now look like this:



Accessing the LESLIE FUNCTION Mode Page using the Shortcut:

Press and Hold any of the three LESLIE buttons (BYPASS, STOP or FAST).



You are now in the LESLIE FUNCTION Mode Page. You can now use the DIRECTION buttons in conjunction with the VALUE knob to make various changes to the digital Leslie. These changes are explained starting below.

If you followed the instructions on the previous pages, the Information Center Display should look like this:



Notice the four small icons at the top of the display for BYPASS, SLOW, STOP and FAST.

BYPASS / ROTOR

The four small icons at the top of the display correspond to the LESLIE buttons to the left of the keyboard. When any of the LESLIE buttons is “ON” (LED lit), the corresponding icon will light. If none of the LESLIE buttons is “ON,” the SLOW icon will light.

In this screen, the box to the right of “LESLIE ON REV” should be highlighted.



REVERB

LESLIE ON REV

When an audio signal containing Reverb is sent to a Leslie Cabinet, the Reverb is modulated along with the main signal. This characteristic can be replicated using this Parameter.

The data chart below shows the options you may select.

LESLIE ON REVERB Options	
Setting	Description
Off	The effect is that of a Leslie Cabinet speaking into an auditorium or a large live room, or a Leslie Cabinet having a separate Reverb amplifier and speakers such as a vintage 122RV - the Organ tones are affected by the Leslie rotors but not the Reverb.
On	The effect is that of an audio signal containing both Organ tones and Reverb being fed into a single-channel Leslie - the rotors will modulate the Reverb as well as the basic Organ tones.

Turn the VALUE knob to turn this Parameter On or Off.

NOTE: This Parameter does not affect a connected Leslie Speaker Cabinet.

From the screen shown in the middle of the previous page, press the DIRECTION “▼” button once.



The box to the right of “CABINET” should be highlighted.

CUSTOM CABINET

This Parameter allows you to select a Custom Leslie Cabinet.

Turn the VALUE knob to make your selection.

NOTE: Please consult the CUSTOM SETS chapter of this Guide starting on page 203 for complete information about Custom Leslie Cabinets.

SPECIAL NOTE: All of the ORGAN Parameters affect the Tone Wheel Organs; however, some of the ORGAN Parameters do not affect the Transistor or Pipe Organs - for example, Leakage Level, Pedal Type and Custom Tone Wheels. If a particular Parameter does not affect the selected Organ Type, it will be “greyed out” or darkened in the display. However, the value of a disabled Parameter can still be adjusted using the VALUE knob.

NOTE: All of the Organ Types except Pipe can be played either with the built-in digital Leslie or through a connected Leslie Speaker Cabinet.

HAMMOND



XK-4

CUSTOM SETS

CUSTOM SETS

Your XK-4 allows you to Record certain Parameters into macro-settings called Custom Sets.

There are four groups of Custom Sets:

1. Custom Tone Wheels
2. Custom Leslie Cabinets
3. Custom Pedal Registrations
4. Custom Pipes.

In this way you can include multiple Parameter settings as part of a Patch, and include the same settings in multiple Patches.

◆ CUSTOM TONE WHEEL

This allows you to select or create Custom Tone Wheels. A Custom Tone Wheel includes profiles of specific organs, Drawbar Foldback points, levels of each individual Tone Wheel, etc.

◆ CUSTOM LESLIE

This allows you to select or create Custom Leslie Cabinets.

◆ CUSTOM PEDAL REGISTRATION

This allows you to select or create Custom Pedal Registrations (registrations for the Pedal Drawbars).

◆ CUSTOM PIPE

This allows you to select or create Custom Pipes. A Custom Pipe includes assignment of Pipe Voices to the Drawbars as well as Volume settings, Chiff settings, etc.

These four Custom Sets will be explained in this chapter of the Guide.

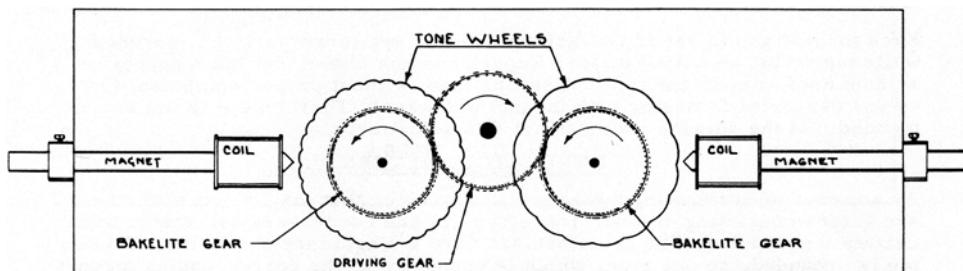
NOTE: If you edit any of the Custom Parameter settings, none of your changes will be remembered unless they are Recorded in one of the Custom Sets.

◆ CUSTOM EDIT -TONE WHEEL FUNCTION Mode

This FUNCTION Mode allows you to select from among a library of different Tone Wheel settings so that each of the Tone Wheel Organ Types will have the sound you want, as well as create and Record your own Custom Tone Wheels.

◆ What Are "Tone Wheels?"

Tone Wheels (or "phonic wheels") are the method by which vintage Hammond Organs generate tone. Each individual frequency is generated by a steel disk 1 7/8" in diameter and containing a number of high and low points called teeth on its outer edge. (See the illustration below.) These disks are the Tone Wheels. The most common tone-wheel generator has a total of 96 tone wheels. In order to generate all the different frequencies, the tone wheels have different numbers of teeth - some wheels have 2 teeth, others have 4 teeth, others have 8, 16, 32, 64, 128, up to 192 teeth. On a B-3-type organ, only 91 of the 96 wheels generate musical notes - five of the wheels are blanks, or wheels having no teeth, to maintain balance. On later Hammond models such as the H-100 and X-77-series, the last 5 tone wheels are cut with 256 teeth, allowing them to play frequencies 92 through 96.



Notice in the drawing above that the tone wheels are placed so that they rotate next to magnetized rods. Each rod has a small coil of wire wrapped around one end. The tip of the magnet at the coil end is ground to a sharp edge and mounted near the edge of the tone wheel. Each tone wheel producing a note has a magnet associated with it.

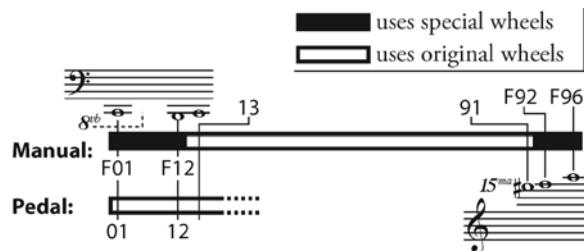
Notice also that the tone wheels are geared together. A constant-speed motor drives the gears which in turn cause the tone wheels to rotate. As the wheels rotate they do not touch the magnets, but pass very close to them. Each time a high spot passes the magnet, it generates a very small electrical current in the coil.

The number of high spots or teeth passing the magnet each second determines the musical note produced. If, for example, 440 teeth pass the magnet each second, 440 electrical impulses will be generated which, when converted into sound with a speaker, will sound the note, "A-440."

After going through a number of other processes, the electrical impulses finally reach the amplifier, which strengthens them enough to drive a speaker system, which in turn converts the electrical signal into audible tone. It is this audible tone which is heard as the "Hammond Sound."

◆ What Are “F Wheels?”

On the B-3/C-3/A-100, there are 91 sounding tone wheels. Wheels #1 through #12 are special wheels called Complex Wheels used exclusively for the Pedal tones. Later Hammond models had 96 sounding tone wheels, with the Sub-Fundamental Drawbar (the first brown Drawbar) continuing to play all the way down to the lowest “C” (“1C”) and 5 additional pitches at the top. On the XK-4, the extended pitches are designated as “F” (Fold Back) pitches (see the illustration below).



◆ What is “Leakage?”

As explained above, each tone wheel rotates next to a magnet, making a total of 91 or 96 magnets, one for each tone wheel. The tone wheels are mounted in separate bins in order 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. The phenomenon can be thought of as similar to white noise but with somewhat more definition, with individual pitches more discernable. A properly calibrated B-3 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.

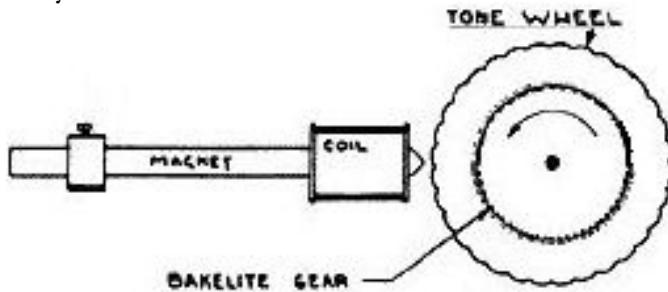
◆ What Is “Motor Noise?”

The tone-wheel generator is secured to the console by means of four bolts. These bolts have reversible sleeves which can be positioned so that the entire tone-wheel generator can be suspended inside the console to keep vibration to a minimum and to prevent the console from amplifying the noise made by the synchronous motor. However, when moving the organ, these bolts can be reversed to secure the generator directly to the console shelf to prevent damage. The organ can be operated with the generator either suspended or bolted down; however, when the generator is bolted down, more motor noise will be heard.

NOTE: The Mellow Organ Type is included in this FUNCTION Mode because the sounds it produces are controlled by Hammond Drawbars in the same way as on a tone-wheel organ; however, it is intended to replicate Drawbar sounds from a non-tone-wheel Hammond Organ such as a Concorde or an X-5 combo organ.

◆ What Is “Generator Calibration?”

Because each frequency on a Hammond Organ is generated independently and the circuitry and hardware necessary to generate each tone is quite complex, there is the potential for a great deal of variation in sound from one frequency to another.



The above diagram shows how a single frequency is generated. As explained on page 169, there is one tone wheel for each frequency. The number of tone wheels which generate actual frequencies varies with the model. Most organs based on the original Hammond design - the model A and its derivatives (B-3, C-3, etc.) had 91 tone wheels that sound, while later models such as the “H” series and the X-77 had 96 (the extra five tone wheels being used to generate higher frequencies). The XK-5 has 108 virtual tone-wheels - 96 manual tone-wheels plus the 12 tone-wheels for the bass frequencies which play only from the Pedals on a vintage Hammond Organ.

As explained previously, each tone has a magnetized rod associated with it. When the tone wheels rotate, a very small electrical current is generated in the coil each time a high spot passes the magnet. The strength of the current determines the loudness of the resulting musical note.

At the Hammond tone-wheel factory, the distance of each magnet to each tone wheel - as well as the number of windings for each coil - was very carefully controlled to insure that each frequency would play at the correct volume. In other words, the generator on each tone-wheel organ was very carefully calibrated. However, a number of third-party technicians would re-calibrate generators to change the sound in various ways - make the sound brighter, etc. The CUSTOM TONE WHEEL Parameter Menu allows you to “re-calibrate” the digital tone wheels of your instrument to create exactly the tone quality you desire.

NOTE: In order to use this Parameter, you should already have some idea of the type of sound you want. Also, you should be prepared that getting the results you want may require some “trial-and-error” before you are satisfied with the results.

◆ WHAT ARE “CUSTOM TONE WHEELS?”

As stated earlier, the first three Drawbar Voice Modes - “A-100,” “B-3” and “C-3” - are designed to reproduce the sound of traditional Hammond Organs. Within each of these three Voice Modes are three different settings designed to reproduce specific characteristics of vintage Hammond Organs.

During the time the vintage Hammonds - B-models, C-models, A-100, etc. - were being manufactured, each individual organ was subjected to a very rigorous series of checks and tests to insure the quality of each unit, and to insure that all the units representing a particular model series, such as the B-3, all sounded alike. However, since the very newest B-3-type organ is at least 46 years old - production of tone-wheel organs having ceased in 1975 - and since the vintage instruments long antedate digital technology, they are dependent for their sound on analog components. Several factors such as the rate at which different components age, the fact that similar components used different materials throughout the lifespan of the model series, etc. may affect the sound of a particular unit. Thus, a B-3 manufactured in 1959 may well have a slightly different tone than one made in 1969, not necessarily because of the year but because of slight differences in component values among other factors.

Over the years, a great deal of arcane folklore - a great deal of it falling into a category best described as “old wives’ fables” - has sprung up regarding such topics as the superiority or inferiority of this or that period of time during which vintage Hammonds were manufactured, the superiority or inferiority of types of materials for certain components, etc. Some of these differences do exist, but as noted above, they are more likely to be the result of factors not necessarily having anything to do with the age of the instrument. Many characteristics of the Hammond Organ, especially as heard in much jazz and rock music, have to do with the overall condition of the instrument - whether it has been in a home for the bulk of its life and played only rarely, whether it has been used by a touring musical ensemble and been moved frequently, perhaps even dropped occasionally, or even whether it has sat in a recording studio with sporadic or no maintenance, etc.

Because of these many factors - again, some real, some contrived - and because different people therefore mean different things when they say “Hammond Sound” or “B-3 Sound” - the Custom Tone Wheel feature is included to allow you to find the nearest approximation of what you want your “Hammond Sound” to be. The following pages will explain the feature in more depth.

SPECIAL NOTE: The characteristics of the TW Drawbar Voice Type apply equally to all Hammond Organs based on the B-3 design, which includes models B-3, C-3, A-100 series, RT-3 and D-100 series. Contrary to popular myth, there is NO inherent difference between a B-3 and a C-3 - they were manufactured to the identical specification except for the cabinetry. The A-100 and D-100 had slightly different circuitry due to the need to drive self-contained speakers; however, they were calibrated the same as the B-3 and C-3 so that they sounded identical when connected to either an external Hammond speaker or an external Leslie Speaker. For the sake of brevity, “B-3” will be used to refer to all models based on the same platform.

◆ CUSTOM EDIT -TONE WHEEL FUNCTION Mode

This FUNCTION Mode allows you to select or edit the Custom Tone Wheels.

To access the CUSTOM EDIT -TONE WHEEL FUNCTION Mode, do the following:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

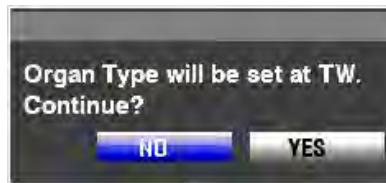
2. Press the PAGE “▶” button once. You are now in the CUSTOM EDIT FUNCTION Mode.



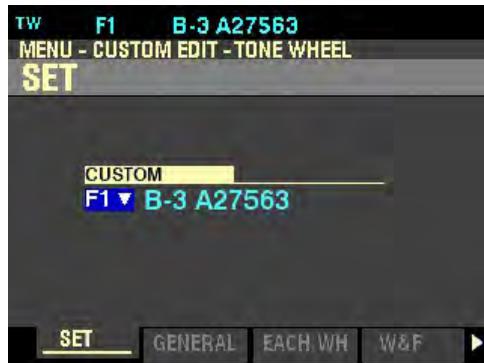
The “TONE WHEEL” box should be highlighted.

3. Press the ENTER button.

If the Organ Type is not set at TW, the Information Center Display will show the following:

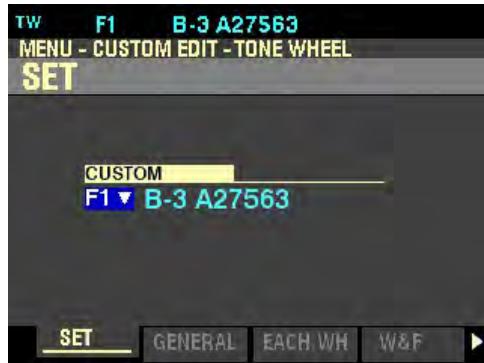


If the above message displays, press the PAGE “▶” button to highlight the “YES” icon and press the ENTER button. The Information Center Display should now look like this:



You are now in the CUSTOM EDIT - TONE WHEEL FUNCTION Mode. You can now use the DIRECTION and PAGE buttons in conjunction with the VALUE knob to make various changes. These changes are explained starting on the next page.

If you followed the instructions on the previous pages, the Information Center Display should look like this:



The box underneath "CUSTOM" should be highlighted.

◆ SET

ORGAN TYPE

This Parameter allows you to select the Organ Type to edit.

There are three choices available for each TONE WHEEL Organ Type. The data chart on the next page shows the options you may select.

TONE WHEEL CUSTOM SETS		
Number	Name	Description
F1	B-3 A27563	A-102, serial number #A27563.
F2	B-3 #364839	B-3, serial number #364839.
F3	A-102 #35564	A-102, serial number #35564.
F4	Mellow	Pure sine waves, all frequencies sounding at the same volume.

Turn the VALUE knob to select the Custom Set you want.

From the screen shown on the previous page, press the PAGE “►” button once. Page 2 of the **CUSTOM EDIT - TONE WHEEL FUNCTION** Mode should now display. The Information Center Display should look like this:

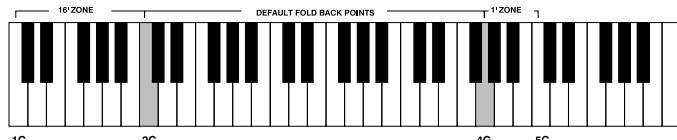


The box to the right of “LOW” should be highlighted.

◆ FOLD BACK

On the earliest model Hammond Organs, the Sub-Fundamental Drawbar (first brown Drawbar - “16”) would continue to play all the way down to the lowest “C” (“1C”). Newer models such as the Hammond Models X-66, X-77 and Concorde do the same, however, the 8th harmonic Drawbar (fourth white Drawbar - “1”) continues to play up the manual to the next to highest “C” (“5C”) on the manual.

On a B-3, the lowest note produced by the Sub-Fundamental Drawbar is the 2nd “C” (“2C”) from the left end of the manual, while the highest note that can be played by the 8th harmonic Drawbar is the 4th “F♯” from the left end of the manual. The lower and higher keys on the manual “Fold Back,” in that they repeat the pitches played by other notes.



This Parameter allows you to set the Upper and Lower frequency limits of the Drawbars.

Use the DIRECTION “◀” and “►” buttons to select either LOW or HIGH. LOW refers to the lower limit of the Sub-Fundamental Drawbar while HIGH refers to the upper limit of the pitches called up by the high-pitched Drawbars (the last four Drawbars). The selected parameter will be highlighted.

When you have made your selection:

Turn the VALUE knob to the right to move the Fold Back point higher.

Turn the VALUE knob to the left to move the Fold Back point lower.

NOTE: The Fold Back will be heard starting with the first black (third harmonic) Drawbar and all the other Drawbars which introduces high harmonics.

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “LPF” should be highlighted.

◆ COMPLEX TW for PEDAL only

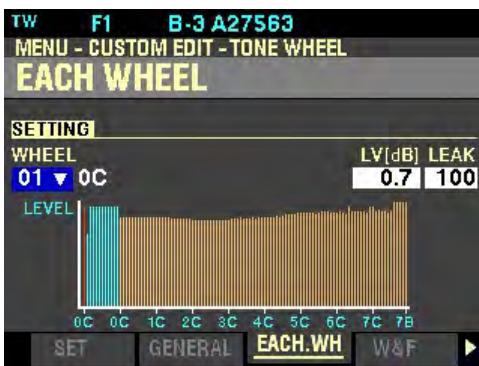
As described previously, on the earliest model Hammond Organs (models A, B, C, D, etc.), the Sub-Fundamental Drawbar (first brown Drawbar - “16”) would continue to play all the way down to the lowest “C” (“1C”). Starting with models BV, CV and RT, the bottom 12 frequencies were produced by “complex” tone wheels which were irregularly shaped and which added extra harmonics to the fundamental tone for a deeper pedal bass.

This Parameter allows you to adjust the brightness of the Complex Tone Wheels used for PEDAL pitches #01 to #12. You may select from 0 to 127. A higher value produces a brighter tone.

Turn the VALUE Knob to the right to increase the brightness.

Turn the VALUE knob to the left to decrease the brightness.

From the screen shown on the previous page, press the PAGE "►" button once.



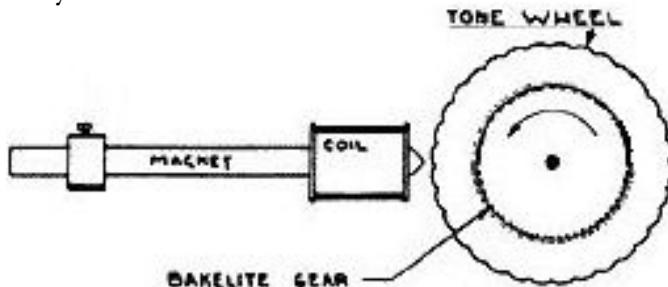
The box to the right of "WHEEL" should be highlighted.

◆ EACH WHEEL

This Page allows you to change the characteristics of all 96 tone wheels individually.

What Is "Generator Calibration"?

Because each frequency on a Hammond Organ is generated independently and the circuitry and hardware necessary to generate each tone is quite complex, there is the potential for a great deal of variation in sound from one frequency to another.



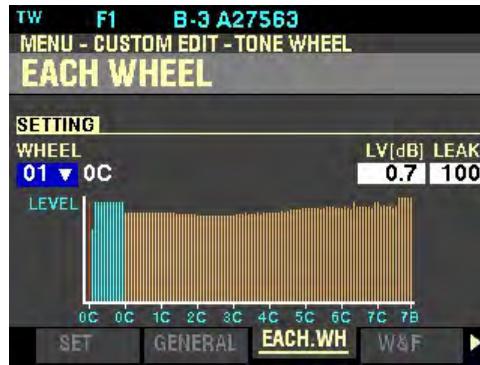
The above diagram shows how a single frequency is generated. As explained on page 169, there is one tone wheel for each frequency. The number of tone wheels which generate actual frequencies varies with the model. Most organs based on the original Hammond design - the model A and its derivatives (B-3, C-3, etc.) had 91 tone wheels that sound, while later models such as the "H" series and the X-77 had 96 (the extra five tone wheels being used to generate higher frequencies). The XK-4 has 108 virtual tone-wheels - 96 manual tone-wheels plus the 12 tone-wheels for the bass frequencies which play only from the Pedals on a vintage Hammond Organ.

As explained previously, each tone has a magnetized rod associated with it. When the tone wheels rotate, a very small electrical current is generated in the coil each time a high spot passes the magnet. The strength of the current determines the loudness of the resulting musical note.

At the Hammond tone-wheel factory, the distance of each magnet to each tone wheel - as well as the number of windings for each coil - was very carefully controlled to insure that each frequency would play at the correct volume. In other words, the generator on each tone-wheel organ was very carefully calibrated. However, a number of third-party technicians would re-calibrate generators to change the sound in various ways - make the sound brighter, etc. The CUSTOM TONE WHEEL Parameter Menu allows you to "re-calibrate" the digital tone wheels of your instrument to create exactly the tone quality you desire.

NOTE: In order to use this Parameter, you should already have some idea of the type of sound you want. Also, you should be prepared that getting the results you want may require some "trial-and-error" before you are satisfied with the results.

If you followed the instructions on the previous pages, the Information Center Display should look like this:



The box to the right of "WHEEL" should be highlighted.

Notice that the number on the left below "WHEEL" is highlighted. This number represents the currently selected Tone Wheel.

WHEEL

This Parameter allows you to select the Tone Wheel you want to edit.

Selecting a Tone Wheel to Edit

Using the VALUE knob:

Turning the VALUE knob will allow you to scroll through the Tone Wheels. You may select from F01 ("0C") through F96 ("8B"). Turn the VALUE Control until you find the number you want.

Using the Drawbars and keyboard:

If you want to find a certain Tone Wheel quickly, you can use the Drawbars and the playing keys to select it. The following sentences explain how to do this.

TRY THIS:

1. With the screen shown at the top of this page displaying, Press and Hold a key on the keyboard.
2. While holding down a key, move a Drawbar - for example, the first white (8') Drawbar.

The number shown in the Information Center Display will be the number of the Tone Wheel associated with that key and that Drawbar.

Notice the bar graph in the display will change with each Fundamental Wheel you select. This will show you the level for each Leakage Wheel. The bar designating the selected Wheel will show red.

Each individual Drawbar will play a different portion of the Tone Wheels. The data chart on the next page shows how the Tone Wheels are allocated to each Drawbar.

EACH WHEEL Options	
Drawbar	Tone Wheels
16'	+Wheels F01 ~ 61
5 1/3'	Wheels 20 ~ 80
8'	Wheels 13 ~ 73
4'	Wheels 25 ~ 85
2 2/3'	*Wheels 32 ~ 92
2'	*Wheels 37 ~ F96
1 3/5'	*Wheels 41 ~ F96
1 1/3'	*Wheels 44 ~ F96
1'	*Wheels 49 ~ F96

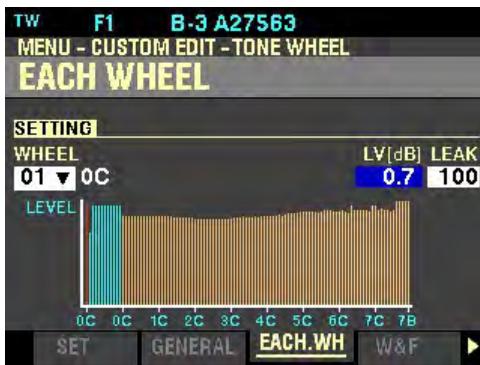
+ - The Lower note limit of this Drawbar is determined by the Drawbar FOLD BACK setting.

* - The Upper note limit of this Drawbar is determined by the Drawbar FOLD BACK setting.

NOTE: Wheels 92 through 96 are designated **F** as a reminder they are additional wheels added on later Hammond models. Wheels F01 through F12 are also included. For a more complete explanation of this, please consult page 170.

After you have selected a Tone Wheel to edit, you can change the characteristics of that Tone Wheel. This is explained starting below.

From the screen shown on the previous page, press the DIRECTION “►” button once.



The box underneath “LV(dB)” should be highlighted.

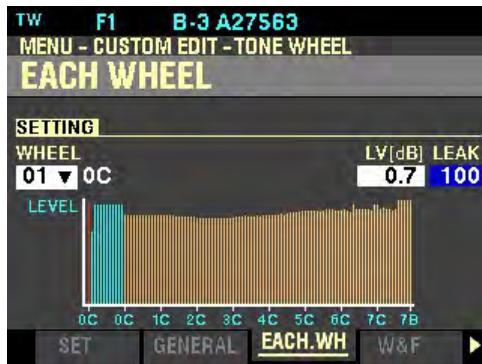
LV(dB) - Tone Wheel Level

This Parameter allows you to adjust the volume or level of the selected Tone Wheel. You may select from -20 (lowest level) to +2 (loudest level). The numbers represent decibels, or units of volume.

Turn the VALUE knob to the right to increase the level of the selected Tone Wheel.

Turn the VALUE knob to the left to increase the level of the selected Tone Wheel.

From the screen shown on the previous page, press the DIRECTION “►” button once.



The box underneath “LEAK” should be highlighted.

LEAK - Leakage Amount

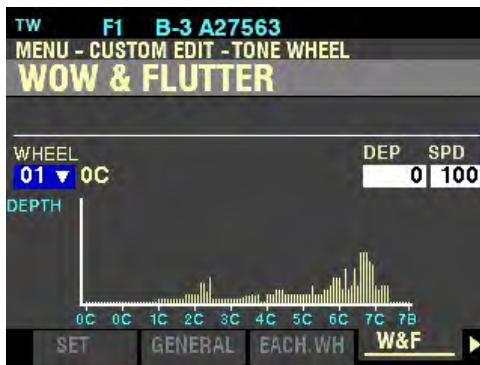
This allows you to adjust the amount of Leakage sound added to the Fundamental sound. You may select from 0 to 127. A higher value will result in more Leakage.

Turn the VALUE knob to the right to increase the amount of Leakage.

Turn the VALUE knob to the left to decrease the amount of Leakage.

IMPORTANT NOTE: If you change any of the Custom Tone Wheel settings, you must save them in order for them to be remembered. If the changes are not saved, they will be lost when power to the instrument is switched “OFF.”

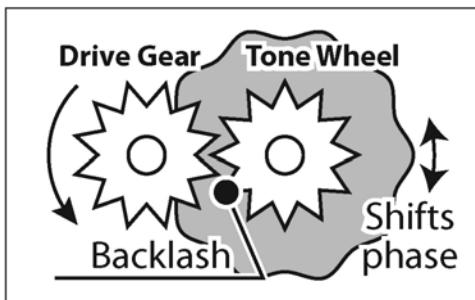
From the screen shown on the previous page, press the PAGE "►" button once.



The box underneath "WHEEL" should be highlighted.

WOW & FLUTTER

WHAT IS "WOW & FLUTTER"?



The Tone Wheels are driven by an arrangement of gears connected to a constant speed motor. Because gears need a certain amount of "play" to keep them from jamming when they mesh, a Tone Wheel may rotate backwards very slightly while turning, resulting in what is known as "backlash" (see the illustration above). This will cause the pitch and/or phase to change slightly at a rapid rate. A rapid slight fluctuation of pitch is called "flutter" while "wow" is a slower "once-per-revolution" change of pitch or phase.

The terms "Wow" and "Flutter" have been given very specific definitions by the International Electrotechnical Commission or IEC, the body that establishes standards for electrical and electronic technologies. "Wow" is a cyclical pitch change of under 10Hz while "Flutter" is a more irregular pitch variation over 10Hz. "Wow and flutter" is the generic term for both.

WHEEL

This Parameter allows you to select the Tone Wheel you want to edit.

Selecting a Tone Wheel to Edit

Using the VALUE knob:

Turning the VALUE knob will allow you to scroll through the Tone Wheels. You may select from F01 ("0C") through F96 ("8B"). Turn the VALUE Control until you find the number you want.

Using the Drawbars and keyboard:

If you want to find a certain Tone Wheel quickly, you can use the Drawbars and the playing keys to select it. The next page explains how to do this.

TRY THIS:

1. With the screen shown at the top of this page displaying, Press and Hold a key on the keyboard.
2. While holding down a key, move a Drawbar - for example, the first white (8') Drawbar.

The number shown in the Information Center Display will be the number of the Tone Wheel associated with that key and that Drawbar.

Notice the bar graph in the display will change with each Fundamental Wheel you select. This will show you the level for each Leakage Wheel. The bar designating the selected Wheel will show red.

Each individual Drawbar will play a different portion of the Tone Wheels. The data chart below shows how the Tone Wheels are allocated to each Drawbar.

WOW & FLUTTER WHEEL Options	
Drawbar	Tone Wheels
16'	+Wheels F01 ~ 61
5 1/3'	Wheels 20 ~ 80
8'	Wheels 13 ~ 73
4'	Wheels 25 ~ 85
2 2/3	*Wheels 32 ~ 92
2'	*Wheels 37 ~ F96
1 3/5	*Wheels 41 ~ F96
1 1/3	*Wheels 44 ~ F96
1'	*Wheels 49 ~ F96

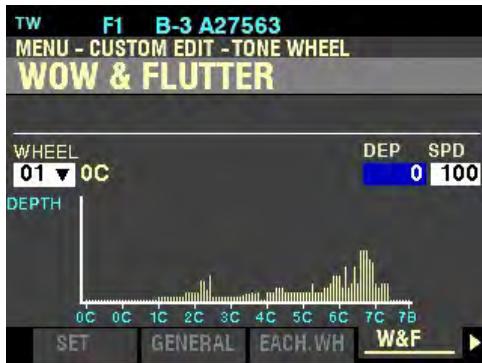
+ - The Lower note limit of this Drawbar is determined by the Drawbar FOLD BACK setting.

* - The Upper note limit of this Drawbar is determined by the Drawbar FOLD BACK setting.

NOTE: Wheels 92 through 96 are designated F as a reminder they are additional wheels added on later Hammond models. Wheels F01 through F12 are also included. For a more complete explanation of this, please consult page 170.

After you have selected a Tone Wheel to edit, you can change the characteristics of that Tone Wheel. This is explained starting on the next page.

From the screen shown on page 181, press the DIRECTION “►” button once.



The box underneath “DEP” should be highlighted.

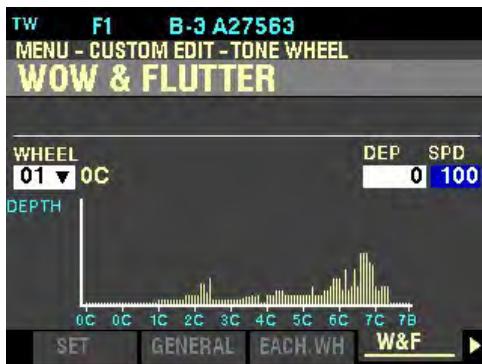
DEPTH

This Parameter allows you to adjust the Depth of the Wow & Flutter. You may select from 0 (no Wow & Flutter) to 127 (maximum Wow & Flutter).

Turn the VALUE knob to the right to increase the Depth.

Turn the VALUE knob to the left to decrease the Depth.

From the above screen, press the DIRECTION “►” button once.



The box underneath “SPEED” should be highlighted.

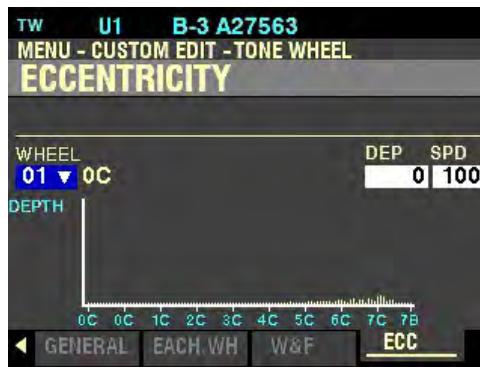
SPEED

This Parameter allows you to adjust the Speed or rate of the Wow & Flutter. You may select from 0 (slowest) to 127 (fastest).

Turn the VALUE knob to the right to increase the Speed.

Turn the VALUE knob to the left to decrease the Speed.

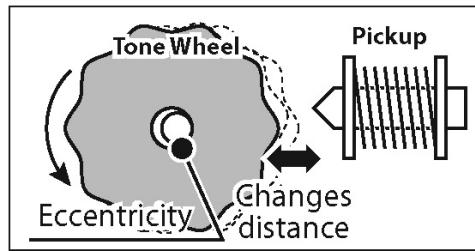
From the screen shown at the bottom of the previous page, press the PAGE “▶” button once.



The box underneath “WHEEL” should be highlighted.

ECCENTRICITY

WHAT IS “WHEEL ECCENTRICITY”?



On a vintage Hammond Organ, if a Tone Wheel has been stamped slightly off-center, the high spots on the wheel will move slightly closer or slightly further away with each revolution, resulting in the sound becoming slightly louder and softer (see the illustration above). These Parameters recreate this phenomenon.

WHEEL

This Parameter allows you to select the Tone Wheel you want to edit.

Selecting a Tone Wheel to Edit

Using the VALUE knob:

Turning the VALUE knob will allow you to scroll through the Tone Wheels. You may select from F01 (“0C”) through F96 (“8B”). Turn the VALUE Control until you find the number you want.

Using the Drawbars and keyboard:

If you want to find a certain Tone Wheel quickly, you can use the Drawbars and the playing keys to select it. The next page explains how to do this.

TRY THIS:

1. With the screen shown at the top of this page displaying, Press and Hold a key on the keyboard.
2. While holding down a key, move a Drawbar - for example, the first white (8') Drawbar.

The number shown in the Information Center Display will be the number of the Tone Wheel associated with that key and that Drawbar.

Notice the bar graph in the display will change with each Fundamental Wheel you select. This will show you the level for each Leakage Wheel. The bar designating the selected Wheel will show red.

Each individual Drawbar will play a different portion of the Tone Wheels. The data chart below shows how the Tone Wheels are allocated to each Drawbar.

ECCENTRICITY WHEEL Options	
Drawbar	Tone Wheels
16'	+Wheels F01 ~ 61
5 1/3'	Wheels 20 ~ 80
8'	Wheels 13 ~ 73
4'	Wheels 25 ~ 85
2 2/3	*Wheels 32 ~ 92
2'	*Wheels 37 ~ F96
1 3/5	*Wheels 41 ~ F96
1 1/3	*Wheels 44 ~ F96
1'	*Wheels 49 ~ F96

+ - The Lower note limit of this Drawbar is determined by the Drawbar FOLD BACK setting.

* - The Upper note limit of this Drawbar is determined by the Drawbar FOLD BACK setting.

NOTE: Wheels 92 through 96 are designated F as a reminder they are additional wheels added on later Hammond models. Wheels F01 through F12 are also included. For a more complete explanation of this, please consult page 170.

After you have selected a Tone Wheel to edit, you can change the characteristics of that Tone Wheel. This is explained starting on the next page.

From the screen shown on page 184, press the DIRECTION “►” button once.



The box underneath “DEP” should be highlighted.

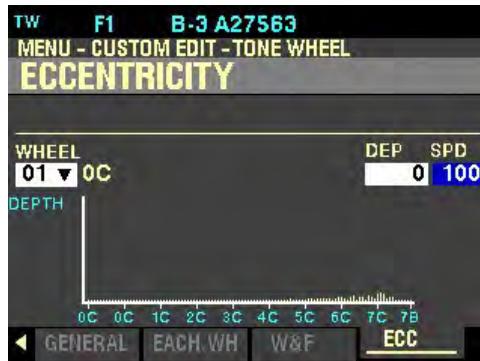
DEP - Depth

This Parameter allows you to adjust the Depth of the Wheel Eccentricity. You may select from 0 (no effect) to 127 (maximum effect).

Turn the VALUE knob to the right to increase the Depth.

Turn the VALUE knob to the left to decrease the Depth.

From the above screen, press the DIRECTION “►” button once.



The box underneath “SPD” should be highlighted.

SPD - Speed

This Parameter allows you to adjust the Speed or rate of the Wheel Eccentricity. You may select from 0 (slowest) to 127 (fastest).

Turn the VALUE knob to the right to increase the Speed.

Turn the VALUE knob to the left to decrease the Speed.

From the screen shown at the bottom of the previous page, press the PAGE “►” button once.



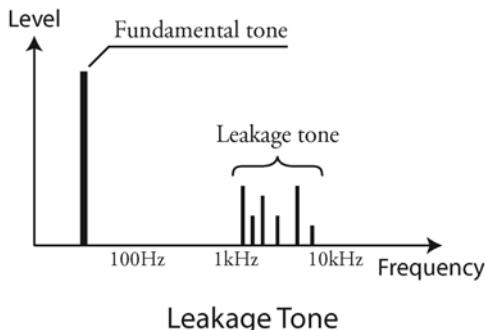
The box underneath “WHEEL” should be highlighted.

◆ LEAKAGE WHEEL

As explained on page 170, Leakage is a characteristic of vintage Hammond Organs consisting of a “hash” type sound caused by many frequencies sounding at once. These Leakage frequencies are intercepted from neighboring wheels inside the generator. On the XK-4, this phenomenon is produced in the same manner as on a vintage Hammond Organ - by other wheels producing a small amount of sound in addition to the basic tone. The tone wheel producing the basic tone is referred to as the Fundamental Wheel while the wheels contributing the Leakage are Leakage Wheels. Leakage Wheels are wheels 61 through 91.

These Parameters allow you to adjust the Leakage Tone to add to any of the Fundamental Wheels by using the Leakage Wheels. The Leakage Wheels will sound along with the Fundamental Wheel.

The figure below illustrates this in more detail.



The data chart below shows how the Leakage Wheels are allocated to each Drawbar frequency.

LEAKAGE WHEEL Options	
Fundamental Wheel	Leakage Wheels
01 ~ 12	
F01 ~ F12	Leakage Wheels 61~91
13 ~ 72	

If you followed the instructions on the previous pages, the Information Center Display should look like this:



The box to the right of "PART" should be highlighted.

PART

This Parameter allows you to select the Part . You may select Upper, Lower, Percussion or Pedal.

Turn the VALUE knob to select the option you want.

From the above screen, press the DIRECTION "▼" button once.



The box underneath "WHEEL" should be highlighted. The number below "WHEEL" represents the currently selected Fundamental Wheel.

WHEEL

This Parameter allows you to select the Fundamental Wheel containing the Leakage Wheels you want to edit. You may select from 01 ("0C") through F96 ("8B").

Selecting a Fundamental Wheel to Edit

Using the VALUE knob:

Turn the VALUE knob to the right to scroll forward through the Wheels.

Turn the VALUE knob to the left to scroll backward through the Wheels.

You will see the red bar in the display move to designate the selected Wheel.

Using the Drawbars and keyboard:

If you want to find a certain Wheel quickly, you can use the Drawbars and playing keys to select it.



TRY THIS:

1. With the above screen displaying, Press and Hold a key on the keyboard.
2. While holding down a key, move a Drawbar - for example, the first white (8') Drawbar.

The number shown in the Information Center Display will be the number of the Leakage Wheel associated with that key and that Drawbar.

Notice the bar graphs will change with each Leakage Wheel you select. This will show you the level for each Leakage Wheel. The bar designating the selected Wheel will show red.

The data chart below shows the options you may select for Leakage Wheels.

LEAKAGE WHEEL Options		
Wheel Number	Leakage Wheels	Level
01 ~ 12, F01 ~ F12, 13 ~ F96	61 ~ 91	Inf, -92db ~ +4.0db

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “LEAK WH” should be highlighted.

LEAK.WH - Leakage Wheel

This allows you to select the Leakage Wheel to edit. You may select from 61 to 91.

Turn the VALUE knob to the right to scroll forward through the Wheels.

Turn the VALUE knob to the left to scroll backward through the Wheels.

You will see the red bar in the display move to designate the selected Leakage Wheel.

From the above screen, press the DIRECTION “►” button once.



The box underneath “LV[dB]” should be highlighted.

LV(dB) - Leakage Wheel Level

This Parameter allows you to adjust the volume or level of the selected Leakage Wheel. You may select Inf (zero level) or from -92dB (lowest level) to +40dB (loudest level). The numbers represent decibels, or units of volume.

Turn the VALUE knob to the right to increase the level of the selected Leakage Wheel.

Turn the VALUE knob to the left to increase the level of the selected Leakage Wheel.

From the screen shown at the bottom of the previous page, press the PAGE “►” button once.



The box underneath “FOOTAGE” should be highlighted.

◆ MATRIX LEVEL

What Is A “Matrix”?

As explained on previous pages, each individual Tone Wheel on the XK-4 includes both a Fundamental Wheel (the basic pure tone) plus Leakage Wheels which provide the “generator leakage” sound characteristic of vintage Hammond tone-wheel organs. Each individual Drawbar contains a group of settings for the Fundamental Wheels and Leakage Wheels for each note. This group of settings is called a Matrix. There are eleven Matrixes, one for each of the nine Upper and Lower Drawbars as well as one for each of the two Percussion selections.

The Parameters on this Page allow you to adjust the characteristics of each Matrix. The data chart below shows the options you may select.

MATRIX LEVEL Options			
Drawbars	Footage	Notes	Levels
Upper / Lower Drawbars / Percussion	16', 5 1/3', 8', 4', 2 2/3', 2', 1 3/5', 1 1/3', 1' Perc 2 nd harm., Perc. 3 rd harm.	1C ~ 6C	Inf, -92db ~ +4.0db

If you followed the instructions on the previous pages, the Information Center Display should look like this:



The box underneath "FOOTAGE" should be highlighted.

Notice that one of the level bars is highlighted red. This red bar represents the currently selected Tone Wheel.

FOOTAGE

This Parameter allows you to select the Drawbar which produces the Matrix you want to edit. You may select 16, 5-1/3, 8, 4, 2-2/3, 2, 1-3/5, 1, Perc 2nd through Perc 3rd.

Selecting a Matrix to Edit

Using the VALUE knob:

Turn the VALUE knob to the right to move the red bar to the right.

Turn the VALUE knob to the left to move the red bar to the left.

You will see the red bar in the display move to designate the selected Matrix.

Using the Drawbars and keyboard:

If you want to find a certain Matrix quickly, use the Drawbars and the playing keys to select it.



TRY THIS:

1. With the MATRIX LEVEL screen (shown above) displaying, Press and Hold a key on the keyboard.
2. While holding down a key, move a Drawbar - for example, the first white (8') Drawbar.

The number shown in the Information Center Display will be the number of the Matrix associated with that key and that Drawbar.

Notice the bar graph in the display will change with each Footage you select. This will show you the level for each Matrix. The bar designating the selected Tone Wheel in the selected Matrix will show red.

The data chart below shows the options you may select for Leakage Wheels.

MATRIX LEVEL Options		
Wheel Number	Leakage Wheels	Level
01 ~ 12, F01 ~ F12, 13 ~ F96	61 ~ 91	
Pedal Drawbar 16'	16', 5 1/3', 8', 4', 2 2/3', 2', 1 3/5', 1 1/3'	Inf, -92db ~ +4.0db
Pedal Drawbar 8'	6', 5 1/3', 8', 4', 2 2/3', 2', 1 3/5', 1 1/3'	

◆ Footages and Notes

TRY THIS:

1. Make sure all the Drawbars are “OFF” (pushed in).
2. Press the MANUAL button. This will allow you to start from a “zero” position - no Patches will be active.
3. Make sure the Information Center Display shows Page 5 of the CUSTOM EDIT - TONE WHEEL FUNCTION Mode. The Information Center Display should look similar to this:



Notice that the number on the left below “FOOTAGE” is highlighted. This number represents the currently selected Matrix.

4. Press and Hold a key on the keyboard.
5. While holding down a key, move a Drawbar - for example, the first white (8') Drawbar.
6. While holding the key down, move another Drawbar - for example, the second white (4') Drawbar. Notice the “LV(dB) box on the right. You will see the level change even though the note shown in the “NOTE” box remains the same.
7. Try moving other Drawbars while still holding down the key. Notice the value shown in the “LV(dB)” box will change each time a different Drawbar is moved. This means the same note will sound at a different level for different Drawbars. The paragraphs below explain this in more detail.

Due to an anomaly of the human ear whereby “high” and “low” frequencies appear to be at different sound pressure levels, vintage Hammond Organs used different methods to compensate for this idiosyncrasy by adjusting or “tapering” frequencies so that they all will be perceived by the ear as sounding at the same level, particularly if more harmonics are added to the registration.

Early models accomplished this by carefully adjusting the distance between the tone wheels and the magnets so that “low” and “high” frequencies sounded at different levels. Later instruments such as B-3/C-3/A-100 use varying lengths of resistance wire connected from the keyboard terminals to the terminals on the generator in order to “taper” the frequencies.

The XK-4 recreates this characteristic by means of the MATRIX LEVEL Parameters, which are explained in more detail starting on the next page.

From the screen shown on the previous page, press the DIRECTION “►” button once.



The box underneath “NOTE” should be highlighted.

NOTE

This allows you to select the Note to edit. These Notes correspond to the playing keys on the keyboards. You may select from 1C to 6C.

Selecting a Note to Edit

Using the VALUE knob:

Turn the VALUE knob to the right to scroll forward through the Notes.

Turn the VALUE knob to the left to scroll backward through the Notes.

You will see the red bar in the display move to designate the selected Note.

Using the Drawbars and keyboards:

If you want to find an individual Note quickly, use the Drawbars and the playing keys to select it.

TRY THIS:

1. With the MATRIX LEVEL screen displaying and the box to the right of “NOTE” highlighted (shown above), Press and Hold a key on the keyboard.
2. While holding down a key, move a Drawbar - for example, the first white (8') Drawbar.

The number shown in the box underneath “FOOTAGE” will be the number of the Matrix associated with that Drawbar. The box underneath “NOTE” will be the Note associated with the Tone Wheel belonging to the selected Matrix.

Notice the bar graph in the display will change with each Footage you select. This will show you the level for each Tone Wheel within the selected Matrix. The bar designating the selected Tone Wheel in the selected Matrix will show red.

From the screen shown on the previous page, press the DIRECTION “►” button once.



The box underneath “LV[dB]” should be highlighted.

LV(dB) - Matrix Level

This Parameter allows you to adjust the volume or level of the selected Matrix. You may select from Inf (zero level) to -92dB (lowest level) to +40dB (loudest level). The numbers represent decibels, or units of volume.

After you have selected a Matrix and a Note using the methods described on the previous pages:

Turn the VALUE knob to the right to increase the level of the selected Matrix.

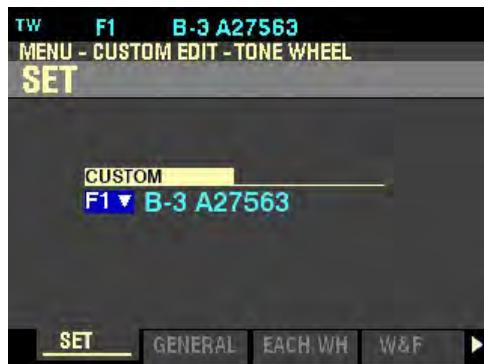
Turn the VALUE knob to the left to increase the level of the selected Matrix.

◆ Recording a Custom Tone Wheel

IMPORTANT NOTE: If you change any of the Custom Tone Wheel settings, you must save them in order for them to be remembered. If the changes are not saved, they will be lost when the power to the instrument is switched “OFF.”

TRY THIS:

1. Access the CUSTOM EDIT - TONE WHEEL FUNCTION Mode Page using the procedure described on page 172. You should now see Screen 1 of the CUSTOM EDIT - TONE WHEEL FUNCTION Mode Page. The box underneath “CUSTOM” should be highlighted



2. Turn the VALUE knob to select the Custom Set you want to modify.
3. Make whatever changes you want to the editable Parameters. The Custom Tone Wheel Parameters are covered on pages 172 through 196.

NOTE: For a complete list of the Parameters that can be modified for a Custom Tone Wheel set, please consult page 480 of the APPENDIX chapter of this Guide.

NOTE: If you have already made changes to a Custom Tone Wheel and you want to Record your changes, you can skip Steps 1 through 3 and go directly to Step 4.

4. When you have completed your edits, press the red RECORD button. The Information Center Display will look similar to this. The box underneath “TO” should be highlighted.



5. Use the VALUE knob to select the target Custom Tone Wheel (the Custom Tone Wheel you want to Record to). You may select from U1 to U3.

6. After you have made your selection, use the DIRECTION “▼” button to move the cursor to the “RECORD” box.



7. Press the ENTER button. The Information Center Display will look similar to this:

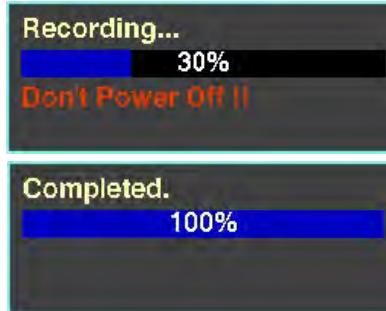


This is the screen you will use to Name your Custom Tone Wheel. You can use the FAVORITE buttons and the BANK and MANUAL buttons (the two rows of six buttons just below the Information Center Display) to select and enter characters. The data chart below explains the function of each of the buttons.

NAMING Options		
Character	Button	Description
Aa1	BANK	Changes the character type (Capital and lower-case letters, numbers, special characters).
Delete	MANUAL	Deletes the character at the cursor.
space	FAVORITE 1	Replaces the character at the cursor with a space.
Insert	FAVORITE 6	Inserts a space at the cursor.
ABC, etc.	FAVORITES 2 ~ 5, 7 ~ 10.	Use these to cycle through and select the characters for the highlighted location. Each successive touch will cause the next character to display - for example, touching the Number 2 button will display <u>A</u> , touching it again will display <u>B</u> and touching it a third time will display <u>C</u> .

You can also turn the VALUE knob to select characters. If you wish to do this, use the DIRECTION “◀” and “▶” buttons to move back and forth through the characters.

8. When you have finished the Naming procedure, press the ENTER button to complete the Recording procedure. You will see the following messages flash in the display:



NOTE: Do not turn the power “OFF” while the “Don’t Power Off !!” message is displaying.

After the “Completed” message disappears, your Custom Tone Wheel has been Recorded.

◆ CUSTOM TONE WHEEL APP MENU

You can use the APP MENU to register a Custom Tone Wheel to a FAVORITE button for quicker access. The following paragraphs will explain this in more detail.

TRY THIS:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



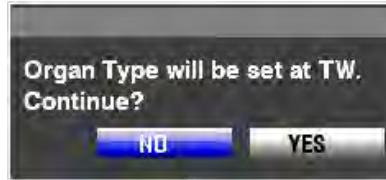
The “ORGAN” box should be highlighted.

2. Press the PAGE “▶” button once. You are now in the CUSTOM EDIT FUNCTION Mode.



3. Press the ENTER button.

If the Organ Type is not set at TW, the Information Center Display will show the following:



If the above message displays, press the PAGE "►" button to highlight the "YES" icon and press the ENTER button. The Information Center Display should now look like this:



4. Turn the VALUE knob to select the Custom Set you want to register.
5. Press and Release the MANUAL "≡" button. The Information Center Display should now look like this:



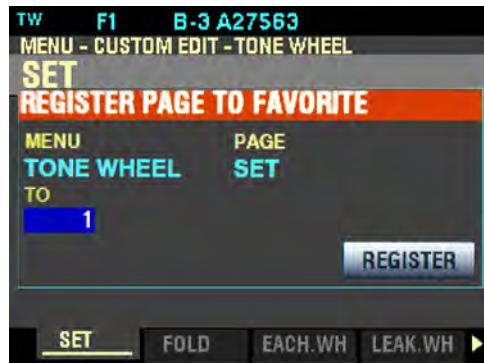
This is the APP MENU for the CUSTOM EDIT -TONE WHEEL FUNCTION Mode Page.

◆ REGISTER PAGE TO FAVORITE

This allows you to register the current Page to one of the FAVORITE buttons for quick access.

To register the current Page to a FAVORITE, do the following:

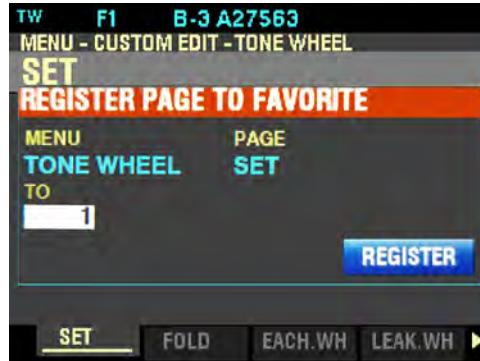
1. From the screen at the bottom of the previous page, press the ENTER button. The Information Center Display should look like this:



The box underneath "TO" should be highlighted.

2. Use the VALUE knob to select the target FAVORITE (the FAVORITE button you want to use to recall the selected Page). You may select from 1 to 10.

3. After you have made your selection, press the DIRECTION "▼" button to highlight the "REGISTER" box.

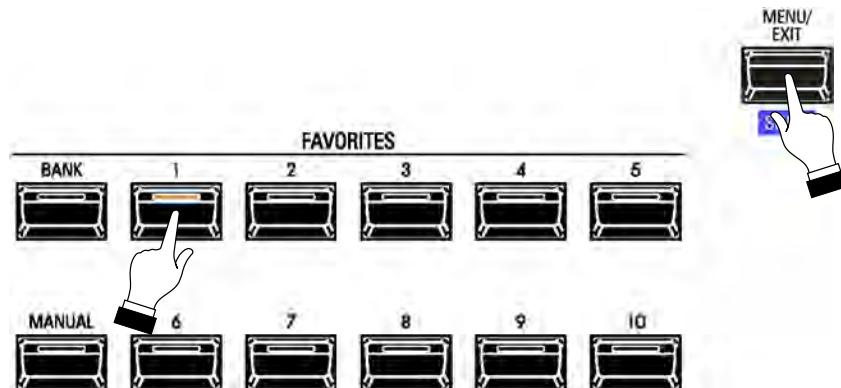


4. Press the ENTER button. You will see the messages "Recording..." and "Completed." flash in the display for approximately 1 second each.

NOTE: If you DO NOT wish to register the selected Page, press the MENU / EXIT or PLAY button instead of the ENTER button.

You have now registered a FUNCTION Mode Page to a FAVORITE button. In this way, you can access Menu Pages you use frequently with a single button-press. If you wish, you can register up to 100 Pages to the FAVORITE buttons by utilizing the 10 available Favorite Banks.

To access a Page or screen saved to a FAVORITE button, Press and Hold the SHIFT button and press the numbered FAVORITE button where the Page is registered.



NOTE: More information regarding FAVORITES and Favorite Banks can be found in the **PATCHES / FAVORITES** chapter of this Guide starting on page 59.

◆ CUSTOM EDIT -LESLIE FUNCTION Mode

This FUNCTION Mode allows you to select or edit the Custom Leslie Cabinets.

◆ **WHAT ARE “CUSTOM LESLIE CABINETS?”**

All of the Parameters described on this page and on the following pages comprise a Custom Leslie Cabinet. These Parameters cannot be Recorded as individual Patch Parameters; however, a Custom Cabinet can be Recorded as part of a Patch.

The XK-4 has 8 different Custom Leslie Cabinets. These are Factory Cabinets (indicated by an “F”) which are permanently written in memory. However, you can create and Record up to 8 User Cabinets (which will be indicated by a “U.” To create and Record a Leslie Cabinet, use CUSTOM LESLIE to modify the sonic characteristics of one of the “F” Cabinets. After you have made all of your changes, you can Record them as a “U” Leslie Cabinet.

NOTE: For a list of the Factory Leslie Cabinets consult the APPENDIX on page 479. For a complete list of Custom Leslie Parameters consult the APPENDIX on page 481.

To access the CUSTOM EDIT -LESLIE FUNCTION Mode, do the following:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

2. Press the PAGE “▶” button once. You will now see the CUSTOM EDIT FUNCTION Mode.

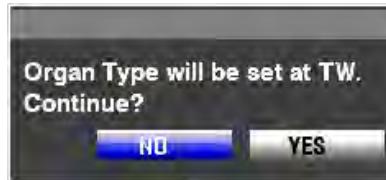


3. Press the DIRECTION “▼” button once. The Information Center Display should now look like this:



4. Press the ENTER button.

If the Organ Type is not set at TW, the Information Center Display will show the following:



If the above message displays, press the PAGE “►” button to highlight the “YES” icon and press the ENTER button. The Information Center Display should now look similar to this:



You are now in the CUSTOM EDIT -LESLIE FUNCTION Mode. You can now use the DIRECTION and PAGE buttons in conjunction with the VALUE knob to make various changes. These changes are explained starting on the next page.

If you followed the instructions on the previous two pages, the Information Center Display should look like this:



The box underneath "CUSTOM" should be highlighted.

◆ CABINET

This Parameter allows you to select a Cabinet Number. The data chart below shows the options you may select.

Number	CUSTOM LESLIE CABINET Options		Description
	Cabinet Name		
U1, F1	122 Gentle	Replicates 122 cabinet (Large body, peaking horn driver) heard from a distance, rear.	
U2, F2	122 Wild	Replicates 122 cabinet heard from a closer distance, front.	
U3, F3	31H-Type	Replicates 31H cabinet heard from a distance, rear.	
U4, F4	147 Gentle	Replicates 147 cabinet (Large body, wide range) heard from a distance.	
U5, F5	147 Wild	Replicates 147 cabinet heard from a closer distance, front.	
U6, F6	145 Gentle	Replicates 145 cabinet (Middle body, slightly narrow range) heard from a distance, rear.	
U7, F7	145 Wild	Replicates 145 cabinet heard from a closer distance, front.	
U8, F18	PR-40	Replicates a Hammond tone cabinet.	

There are two categories of Custom Leslie Cabinets - Factory and User. The Factory Cabinets are factory-programmed and cannot be changed. User Cabinets are those which you create and Record. In the Information Center Display, Factory Cabinets are designated by the letter "F" and User Cabinets are designated by the letter "U." There are 8 Factory Cabinets and, you can create and Record up to 8 User Cabinets, making a total of 16.

Turn the VALUE knob to select the Custom Cabinet you want.

SPECIAL NOTE: User Cabinets are not shown in the Information Center Display unless you create and Record them. Creating and Recording Custom Cabinets will be covered later in this chapter.

NOTE: As explained on page 160, the design of Hammond tone cabinets represented the sound quality desired by the Hammond Organ Company and do not contain rotating tremulants as do Leslie Speaker cabinets.

From the screen shown on the previous page, press the PAGE “▶” button once.



The “SPEAKER” Parameter should be highlighted.

◆ SPEAKER

This Parameter allows you to select a Speaker Type. The data chart below shows the options you may select.

CUSTOM LESLIE SPEAKER Options	
Speaker Type	Description
L145 Front	Leslie 145 Cabinet positioned so that the front of the cabinet is facing front.
L145 Rear	Leslie 145 Cabinet positioned so that the rear of the cabinet faces out.
L147 Front	Leslie 147 Cabinet positioned so that the front of the cabinet is facing front.
L147 Rear	Leslie 147 Cabinet positioned so that the rear of the cabinet faces out.
L122 Front	Leslie 122 Cabinet positioned so that the front of the cabinet is facing front.
L122 Rear	Leslie 145 Cabinet positioned so that the rear of the cabinet faces out.
Cone Type	Solid-state “combo” Leslie Cabinet such as model 760, etc.
PR-40 Type	Hammond PR-40 tone cabinet.

Turn the VALUE knob to select the option you want.

From the screen shown on the previous page, press the PAGE “►” button once.



The box to the right of “FAST SPEED[rpm]” should be highlighted.

◆ ROTOR

FAST SPEED - HORN / DRUM

This Parameter allows you to set the rotor speed for the TREMOLO or FAST Mode. You may select 0 (no rotation) or a value between 200 and 500 rpm.

Use the DIRECTION “◀” and “►” buttons to select either HORN or DRUM.

When you have made your selection:

Turn the VALUE knob to the right to increase the Speed for the HORN or DRUM.

Turn the VALUE knob to the left to decrease the Speed for the HORN or DRUM.

NOTE: rpm is an abbreviation for revolutions per minute.

NOTE: 372 rpm is the factory setting for the FAST Speed of a Leslie Cabinet.

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “SLOW SPEED[rpm]” should be highlighted.

SLOW SPEED - HORN / DRUM

This Parameter allows you to set the rotor speed for the CHORALE or SLOW Mode. You may select 0 (no rotation) or a value between 20 and 120 rpm.

Use the DIRECTION “◀” and “▶” buttons to select HORN or DRUM.

When you have made your selection:

Turn the VALUE knob to the right to increase the Speed for the HORN or DRUM.

Turn the VALUE knob to the left to decrease the Speed for the HORN or DRUM.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “RISE TIME[sec]” should be highlighted.

RISE TIME - HORN / DRUM

This Parameter allows you to adjust the time for the rotors to “ramp up” to FAST Mode when switching from SLOW or STOP to FAST Mode. You may select from 0.8 to 12.5 seconds for the HORN rotor and from 1.0 to 12.5 seconds for the DRUM rotor.

Use the DIRECTION “◀” and “▶” buttons to select either HORN or DRUM.

When you have made your selection:

Turn the VALUE knob to the right to increase the Rise Time for the HORN or DRUM.

Turn the VALUE knob to the left to decrease the Rise Time for the HORN or DRUM.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “FALL TIME[sec]” should be highlighted.

FALL TIME - HORN / DRUM

This Parameter allows you to adjust the time for the rotors to reach the SLOW rotor speed when switching from FAST to SLOW Mode. You may select from 0.8 to 12.5 seconds for the HORN rotor and from 1.0 to 12.5 seconds for the DRUM rotor.

Use the DIRECTION “◀” and “▶” buttons to select HORN or DRUM.

When you have made your selection:

Turn the VALUE knob to the right to increase the Fall Time for the HORN or DRUM.

Turn the VALUE knob to the left to decrease the Fall Time for the HORN or DRUM.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “BRAKE TIME[sec]” should be highlighted.

BRAKE TIME - HORN / DRUM

This Parameter allows you to adjust the time for the rotors to Stop when switching from FAST to SLOW Mode. You may select from 0.8 to 12.5 seconds for the HORN rotor and from 1.0 to 12.5 seconds for the DRUM rotor.

Use the DIRECTION “◀” and “▶” buttons to select either HORN or DRUM.

When you have made your selection:

Turn the VALUE knob to the right to increase the Brake Time for the HORN or DRUM.

Turn the VALUE knob to the left to decrease the Brake Time for the HORN or DRUM.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “DELAY TIME[sec]” should be highlighted.

DELAY TIME - HORN / DRUM

These allow you to adjust the time to start changing the speed, when the Mode is switched. You may select from 0 (no delay) to 1.0 second.

Use the DIRECTION “◀” and “▶” buttons to select HORN or DRUM.

When you have made your selection:

Turn the VALUE knob to the right to increase the Delay Time for the HORN or DRUM.

Turn the VALUE knob to the left to decrease the Delay Time for the HORN or DRUM.

From the above screen, press the PAGE “▶” button once.



The box to the right of “VOLUME[db]” should be highlighted.

MIKING - Virtual Microphone Settings

These Parameters allow you to replicate various Microphone placements of a Leslie Cabinet.

VOLUME - HORN / DRUM / SUB BASS

These allow you to adjust the volume levels of the Horn Rotor, Drum Rotor and Sub Bass. You may select -Inf and from -76 to 0 decibels (db). -Inf is silent.

Use the DIRECTION “◀” and “▶” buttons to select HORN, DRUM or SUB.

When you have made your selection:

Turn the VALUE knob to the right to increase the Volume for the selected speaker.

Turn the VALUE knob to the left to decrease the Volume for the selected speaker.

NOTE: The Sub Bass sound is “dry” - not modulated.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “MIC WIDTH[cm]” should be highlighted.

WIDTH - HORN / DRUM

This Parameter allows you to adjust the distance between Left and Right Microphones. You may select from 0 to 40 centimeters (cm). A higher value will increase the stereo separation. 0 there is no separation.

Use the DIRECTION “◀” and “▶” buttons to select HORN or DRUM.

When you have made your selection:

Turn the VALUE knob to the right to increase the Width for the HORN or DRUM.

Turn the VALUE knob to the left to decrease the Width for the HORN or DRUM.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “MIC CENTER[cm]” should be highlighted.

CENTER - HORN / DRUM

This Parameter allows you to adjust the offset between the center of two microphones and the pivot of the rotor. You may select from -50 to +50 centimeters (cm).

Use the DIRECTION “◀” and “▶” buttons to select HORN or DRUM.

When you have made your selection:

Turn the VALUE Rotary Control to the right to increase the Offset for the HORN or DRUM.

Turn the VALUE Rotary Control to the left to decrease the Offset for the HORN or DRUM.

NOTE: On a Leslie Speaker Cabinet the Horn Rotor rotates counter-clockwise and the Drum Rotor rotates clockwise. The digital Leslie replicates this feature. To emphasize the ‘upcoming’, set a ‘+’ value for the Horn rotor, and a ‘-’ value for the Drum rotor.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “MIC DISTANCE[cm]” should be highlighted.

DISTANCE - HORN / DRUM

This Parameter allows you to replicate distance settings between a Leslie Speaker and the microphones. You may select from 30 to 200 centimeters (cm). A lower value results in a deeper effect.

Use the DIRECTION “◀” and “▶” buttons to select HORN or DRUM.

When you have made your selection:

Turn the VALUE Rotary Control to the right to increase the Distance for the HORN or DRUM.

Turn the VALUE Rotary Control to the left to decrease the Distance for the HORN or DRUM.

◆ Recording a Custom Leslie Cabinet

IMPORTANT NOTE: If you change any of the Custom Leslie Parameters, you must save them in order for them to be remembered. If the changes are not saved, they will be lost when the power to the instrument is switched “OFF.”

TRY THIS:

1. Access the CUSTOM EDIT - LESLIE FUNCTION Mode Page using the procedure described on page 203. You should now see Screen 1 of the CUSTOM EDIT - LESLIE FUNCTION Mode Page. The box underneath “CUSTOM” should be highlighted



2. Turn the VALUE knob to select the Custom Leslie Cabinet you want to edit.
3. Make whatever changes you want to the editable Parameters. The Custom Leslie Parameters are covered on pages 205 through 212.

NOTE: For a complete list of the Parameters that can be modified for a Custom Leslie Cabinet, consult page 481 of the APPENDIX chapter of this Guide.

NOTE: If you have already made changes to a Custom Leslie Cabinet and you want to Record your changes, you can skip Steps 1 through 3 and go directly to Step 4.

4. When you have completed your edits, press the red RECORD button. The Information Center Display will look similar to this. The box underneath "TO" should be highlighted.



5. Use the VALUE knob to select the target Custom Leslie Cabinet (the Custom Leslie Cabinet you want to Record to). You may select from U1 to U8.
6. After you have made your selection, use the DIRECTION "▼" button to move the cursor to the "RECORD" box.



7. Press the ENTER button. The Information Center Display will look similar to this:



This is the screen you will use to Name your Custom Leslie Cabinet. You can use the FAVORITE buttons and the BANK and MANUAL buttons (the two rows of six buttons just below the Information Center Display) to select and enter characters. The data chart below explains the function of each of the buttons.

NAMING Options		
Setting	Button	Description
Aa1	BANK	Changes the character type (Capital and lower-case letters, numbers, special characters).
Delete	MANUAL	Deletes the character at the cursor.
space	FAVORITE 1	Replaces the character at the cursor with a space.
Insert	FAVORITE 6	Inserts a space at the cursor.
ABC, etc.	FAVORITES 2 ~ 5, 7 ~ 10.	Use these to cycle through and select the characters for the highlighted location. Each successive touch will cause the next character to display - for example, touching the Number <u>2</u> button will display <u>A</u> , touching it again will display <u>B</u> and touching it a third time will display <u>C</u> .

You can also turn the VALUE knob to select characters. If you wish to do this, use the DIRECTION “◀” and “▶” buttons to move back and forth through the characters.

8. When you have finished the Naming procedure, press the ENTER button to complete the Recording procedure. You will see the following messages flash in the display:



NOTE: Do not turn the power “OFF” while the “Don’t Power Off !!” message is displaying.

After the “Completed” message disappears, your Custom Leslie Cabinet has been Recorded.

◆ CUSTOM LESLIE APP MENU

You can use the APP MENU to register a Custom Leslie Cabinet to a FAVORITE button for quicker access. The following paragraphs will explain this in more detail.

TRY THIS:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

2. Press the PAGE “▶” button once. You are now in the CUSTOM EDIT FUNCTION Mode.

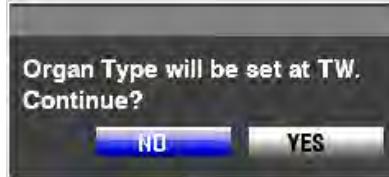


3. Press the DIRECTION “▼” button once. The Information Center Display should now look like this:



4. Press the ENTER button.

If the Organ Type is not set at TW, the Information Center Display will show the following:



If the above message displays, press the PAGE "►" button to highlight the "YES" icon and press the ENTER button. The Information Center Display should now look like this:



5. Press and Release the MANUAL "≡" button. The Information Center Display should now look like this:



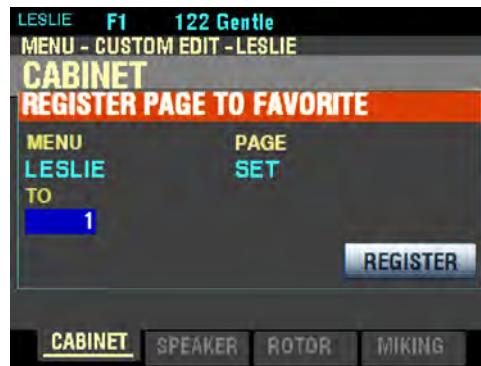
This is the APP MENU for the CUSTOM EDIT - LESLIE FUNCTION Mode Page.

◆ REGISTER PAGE TO FAVORITE

This allows you to register the current Page to one of the FAVORITE buttons for quick access.

To register the current Page to a FAVORITE, do the following:

1. From the screen shown at the bottom of the previous page, press the ENTER button. The Information Center Display should look like this:



2. Use the VALUE knob to select which FAVORITE button you want to recall the selected Page. You may select from 1 to 10.
3. After you have made your selection, press the DIRECTION “▼” button to highlight the “REGISTER” box.

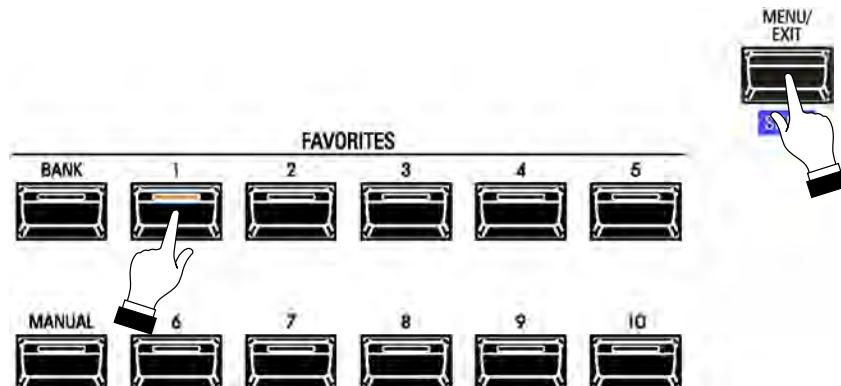


4. Press the ENTER button. You will see the messages “Recording...” and “Completed.” flash in the display for approximately 1 second each.

NOTE: If you DO NOT wish to register the selected Page, press the MENU / EXIT or PLAY button instead of the ENTER button.

You have now registered a FUNCTION Mode Page to a FAVORITE button. In this way, you can access Menu Pages you use frequently with a single button-press. If you wish, you can register up to 100 Pages to the FAVORITE buttons by utilizing the 10 available Favorite Banks.

To access a Page or screen saved to a FAVORITE button, Press and Hold the SHIFT button and press the numbered FAVORITE button where the Page is registered.



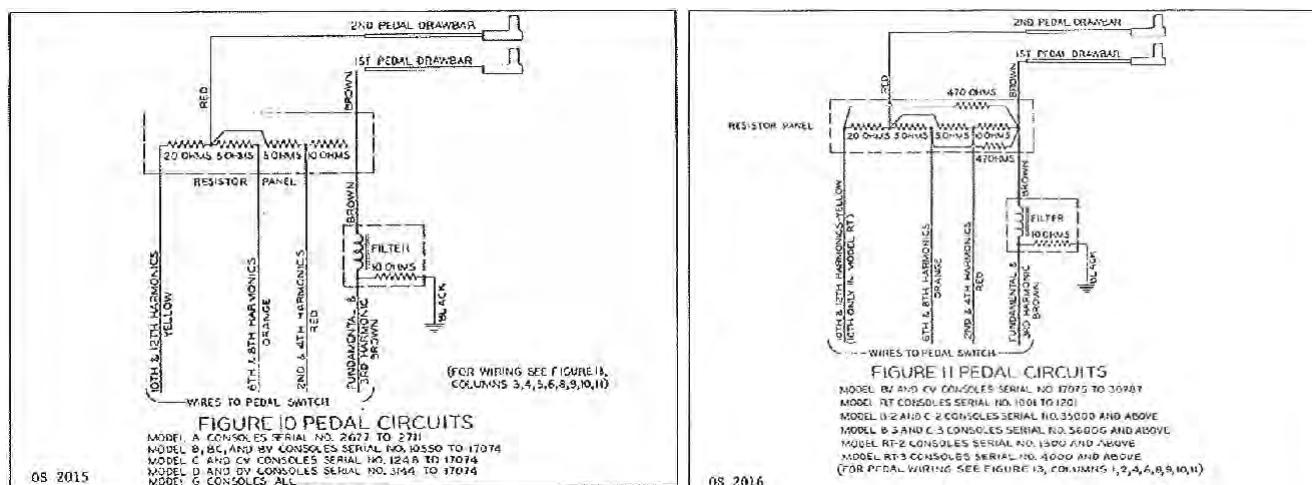
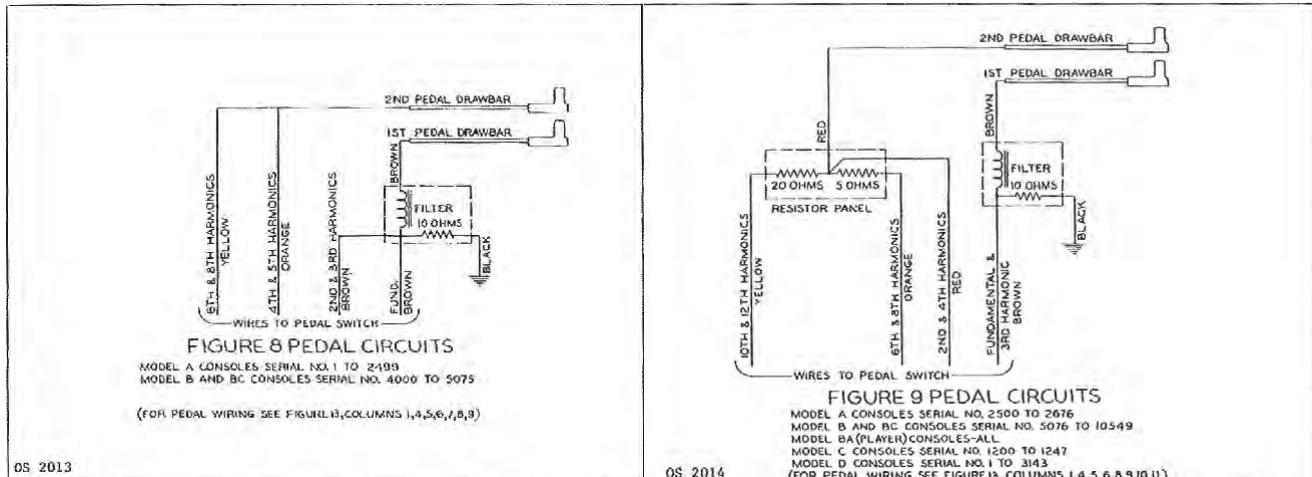
NOTE: More information regarding FAVORITES and Favorite Banks can be found in the PATCHES / FAVORITES chapter of this Guide starting on page 59.

◆ CUSTOM EDIT -PEDAL REG. FUNCTION Mode

This FUNCTION Mode allows you to select or edit the registrations for the Pedal or Sub-Drawbars.

◆ WHAT ARE “SUB-DRAWBARS?”

On a tone-wheel Hammond Organ, the harmonic resources for Pedal tones are combined into two Drawbars each of which draws a combination of harmonics instead of individual harmonics as with the other Drawbars. Over the years, several different schemes were used to voice the Pedal Drawbars. These are shown below.



The Custom Pedal Registrations cannot be Recorded as individual Patch Parameters; however, a Custom Pedal Registration can be Recorded as part of an ORGAN Patch.

The XK-4 has 3 different Factory Custom Pedal Registrations, indicated by an F which are permanently written in memory. You can create and Record up to 3 User Custom Pipes which will be indicated by a U.

To create and Record a Custom Pedal Registration, use the CUSTOM PEDAL REG. FUNCTION Mode Page to edit the Parameters of one of the F Custom Pedal Registrations. After you have made all of your changes, you can Save them as a U Custom Pedal Registration.

NOTE: For a list of the Factory Custom Pedal Registrations, please consult page 479 of the APPENDIX chapter of this Guide.

NOTE: For a complete list of the Parameters that can be modified for a Custom Pedal Registration, please consult page 480 of the APPENDIX chapter of this Guide.

To access the CUSTOM EDIT -PEDAL REG. FUNCTION Mode, do the following:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

2. Press the PAGE “▶” button once. You will now see the CUSTOM EDIT FUNCTION Mode

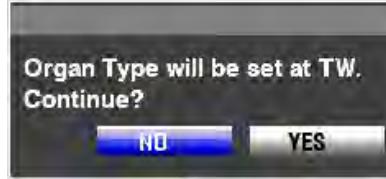


3. Press the DIRECTION “▼” button two times. The Information Center Display should now look like this:



4. Press the ENTER button.

If the Organ Type is not set at TW, the Information Center Display will show the following:



If the above message displays, press the PAGE “▶” button to highlight the “YES” icon and press the ENTER button. The Information Center Display should now look like this:



You are now in the CUSTOM EDIT - PEDAL REG. FUNCTION Mode. You can now use the DIRECTION and PAGE buttons in conjunction with the VALUE knob to make various changes. These changes are explained starting below.

If you followed the previous instructions, the Information Center Display should look like this:



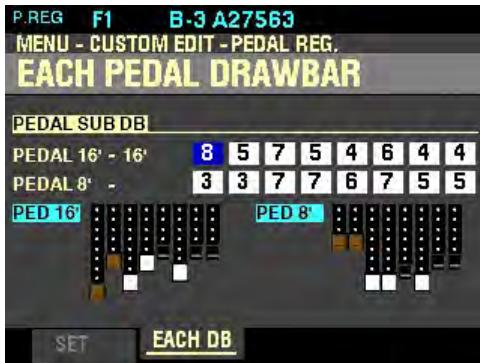
The box underneath “CUSTOM” should be highlighted.

◆ SET

This Parameter allows you to select the Custom Pedal Registration to edit.

Turn the VALUE knob to select B-3 A27563, B-3 #364839 or A-100 #33339.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The first box to the right of “PEDAL 16' - 16'” should be highlighted.

◆ EACH PEDAL DRAWBAR

This Page allows you to create a Custom Pedal Registration by changing the characteristics of each tone-wheel used for the Pedal Registration individually.

Each Pedal Drawbar has eight (8) Drawbars representing the tones available for Pedals on a vintage Hammond Organ. You may select from 0 (no volume or Off) to 8 (maximum volume).

Use the DIRECTION “▲” and “▼” buttons to move the cursor to the Pedal Drawbar you wish to edit.

Use the DIRECTION “◀” and “▶” buttons to move the cursor to each frequency within the selected Pedal Drawbar.

When you have made your selection:

Turn the VALUE knob to the right to increase the volume of the selected Drawbar.

Turn the VALUE knob to the left to decrease the volume of the selected Drawbar.

You will see the selected Drawbar graphic in the screen move in response to your changes using the VALUE knob.

NOTE: The Drawbars on the Control Panel cannot be used to adjust the PEDAL DRAWBAR settings.

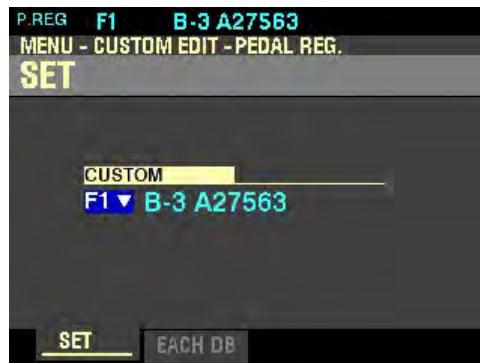
After you have edited the Pedal Drawbars to your preference, you can Record the results as a Custom Pedal Registration. This is explained starting on the next page.

◆ Recording a Custom Pedal Registration

IMPORTANT NOTE: If you change any of the Custom Pedal Registration Parameters, you must save them in order for them to be remembered. If the changes are not saved, they will be lost when the power to the instrument is switched "OFF."

TRY THIS:

1. Access the CUSTOM EDIT - PEDAL REG. FUNCTION Mode using the procedure described on page 221. You should now see Page 1 of the CUSTOM EDIT - PEDAL REG. FUNCTION Mode. The box underneath "CUSTOM" should be highlighted.



2. Turn the VALUE knob to select the Custom Pedal Registration you want to edit.
3. Make whatever changes you want to the editable Parameters. The Custom Pedal Registration Parameters are covered on pages 222 through 223.

NOTE: For a complete list of the Parameters that can be modified for a Custom Pedal Registration, please consult page 480 of the APPENDIX chapter of this Guide.

NOTE: If you have already made changes to a Custom Pedal Registration and you want to Record your changes, you can skip Steps 1 through 3 and go directly to Step 4.

- When you have completed your edits, press the red RECORD button. The Information Center Display will look similar to this. The box underneath "TO" should be highlighted.



- Use the VALUE knob to select the target Custom Pedal Registration (the Custom Pedal Registration you want to Record to). You may select from U1 to U3.

NOTE: For a complete list of the Parameters that can be modified for a Custom Pedal Registration, consult page 480 of the APPENDIX chapter of this Guide.

NOTE: If you have already made changes to a Custom Pedal Registration and you want to Record your changes, you can skip Steps 1 through 3 and go directly to Step 4.

- After you have made your selection, use the DIRECTION "▼" button to move the cursor to the "RECORD" box.



7. Press the ENTER button. The Information Center Display will look similar to this:



This is the screen you will use to Name your Custom Pedal Registration. You can use the FAVORITE buttons and the BANK and MANUAL buttons (the two rows of six buttons just below the Information Center Display) to select and enter characters. The data chart below explains the function of each of the buttons.

NAMING Options		
Setting	Button	Description
Aa1	BANK	Changes the character type (Capital and lower-case letters, numbers, special characters).
Delete	MANUAL	Deletes the character at the cursor.
space	FAVORITE 1	Replaces the character at the cursor with a space.
Insert	FAVORITE 6	Inserts a space at the cursor.
ABC, etc.	FAVORITES 2 ~ 5, 7 ~ 10.	Use these to cycle through and select the characters for the highlighted location. Each successive touch will cause the next character to display - for example, touching the Number 2 button will display A , touching it again will display B and touching it a third time will display C .

You can also turn the VALUE knob to select characters. If you wish to do this, use the DIRECTION “◀” and “▶” buttons to move back and forth through the characters.

8. When you have finished the Naming procedure, press the ENTER button to complete the Recording procedure. You will see the following messages flash in the display:



NOTE: Do not turn the power “OFF” while the “Don’t Power Off !!” message is displaying.

After the “Completed” message disappears, your Custom Pedal Registration has been Recorded.

◆ CUSTOM PEDAL REG. APP MENU

You can use the APP MENU to register a Custom Pedal Registration to a FAVORITE button for quicker access. The following paragraphs will explain this in more detail.

TRY THIS:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

2. Press the PAGE “▶” button once. You are now in the CUSTOM EDIT FUNCTION Mode.

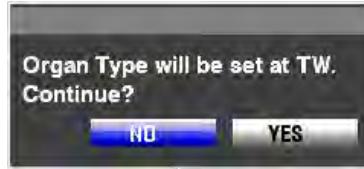


3. Press the DIRECTION “▼” button two times. The Information Center Display should now look like this:

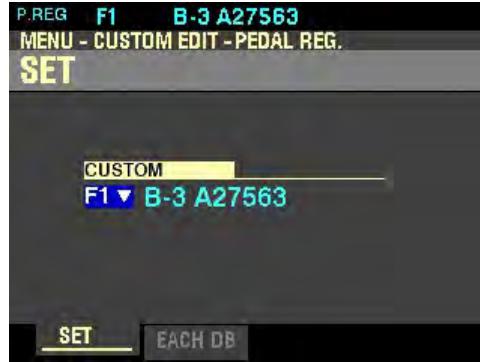


4. Press the ENTER button.

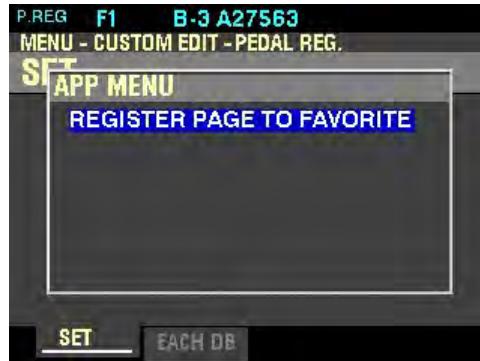
If the Organ Type is not set at TW, the Information Center Display will show the following:



If the above message displays, press the PAGE “▶” button to highlight the “YES” icon and press the ENTER button. The Information Center Display should now look like this:



5. Press and Release the MANUAL “≡” button. The Information Center Display should now look like this:



This is the APP MENU for the CUSTOM EDIT -PEDAL REG. FUNCTION Mode Page.

◆ REGISTER PAGE TO FAVORITE

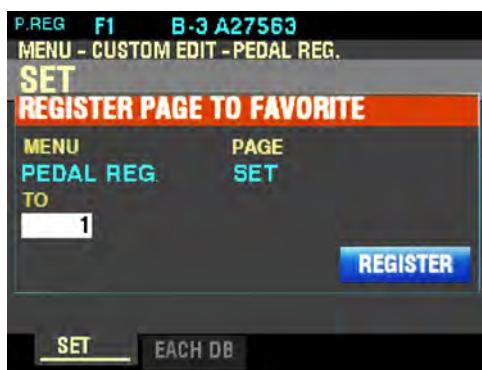
This allows you to register the current Page to one of the FAVORITE buttons for quick access.

To register the current Page to a FAVORITE, do the following:

1. From the screen shown at the bottom of the previous page, press the ENTER button. The Information Center Display should look like this:



2. Use the VALUE knob to select which FAVORITE button you want to recall the selected Page. You may select from 1 to 10.
3. After you have made your selection, press the DIRECTION “▼” button to highlight the “REGISTER” box.

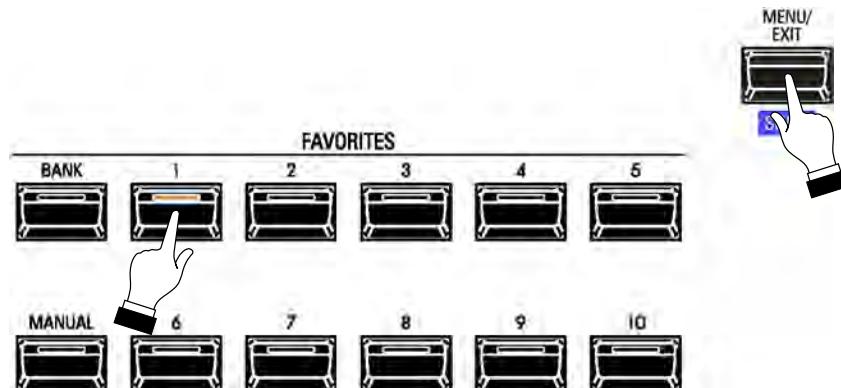


4. Press the ENTER button. You will see the messages "Recording..." and "Completed." flash in the display for approximately 1 second each.

NOTE: If you DO NOT wish to register the selected Page, press the MENU / EXIT or PLAY button instead of the ENTER button.

You have now registered a FUNCTION Mode Page to a FAVORITE button. In this way, you can access Menu Pages you use frequently with a single button-press. If you wish, you can register up to 100 Pages to the FAVORITE buttons by utilizing the 10 available Favorite Banks.

To access a Page or screen saved to a FAVORITE button, Press and Hold the SHIFT button and press the numbered FAVORITE button where the Page is registered.



NOTE: More information regarding FAVORITES and Favorite Banks can be found in the PATCHES / FAVORITES chapter of this Guide starting on page 59.

◆ CUSTOM PIPE FUNCTION Mode

This FUNCTION Mode allows you to select or edit the characteristics of the Pipe Voices.

◆ **WHAT ARE “CUSTOM PIPES?”**

The Parameters described on these pages are grouped in macro-settings called **Custom Pipes**. These Parameters cannot be Recorded as individual Patch Parameters; however, a Custom Pipe can be Recorded as part of an ORGAN Patch.

The XK-4 has 3 different Factory Custom Pipes, indicated by an F which are permanently written in memory. You can create and Record up to 3 User Custom Pipes which will be indicated by a U.

To create and Record a Custom Pipe, use the CUSTOM PIPE FUNCTION Mode to edit the Parameters of one of the “F” Custom Pipes. After you have made all of your changes, you can Save them as a “U” Custom Pipe.

NOTE: For a list of the Factory Custom Pipes, please consult page 479 of the APPENDIX chapter of this Guide.

NOTE: For a complete list of the Parameters that can be modified for a Custom Pipe, please consult page 480 of the APPENDIX chapter of this Guide.

To access the CUSTOM EDIT -PIPE FUNCTION Mode, do the following:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

2. Press the PAGE “▶” button once. You will now see the CUSTOM EDIT FUNCTION Mode

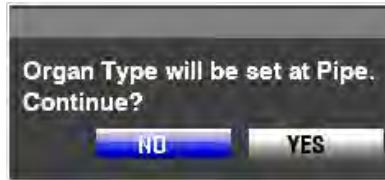


3. Press the DIRECTION “▼” button three times. The Information Center Display should now look like this:



4. Press the ENTER button.

If the Organ Type is not set at Pipe, the Information Center Display will show the following:

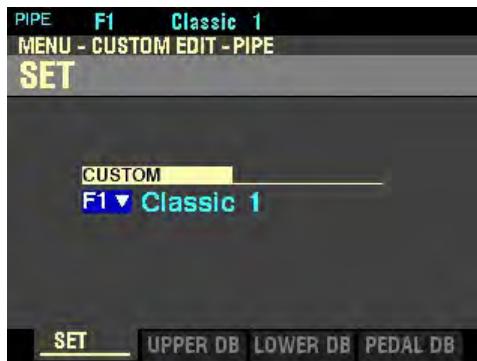


If the above message displays, press the PAGE “▶” button to highlight the “YES” icon and press the ENTER button. The Information Center Display should now look like this:



You are now in the CUSTOM EDIT - PIPE FUNCTION Mode. You can now use the DIRECTION and PAGE buttons in conjunction with the VALUE knob to make various changes. These changes are explained starting below.

If you followed the previous instructions, the Information Center Display should look like this:

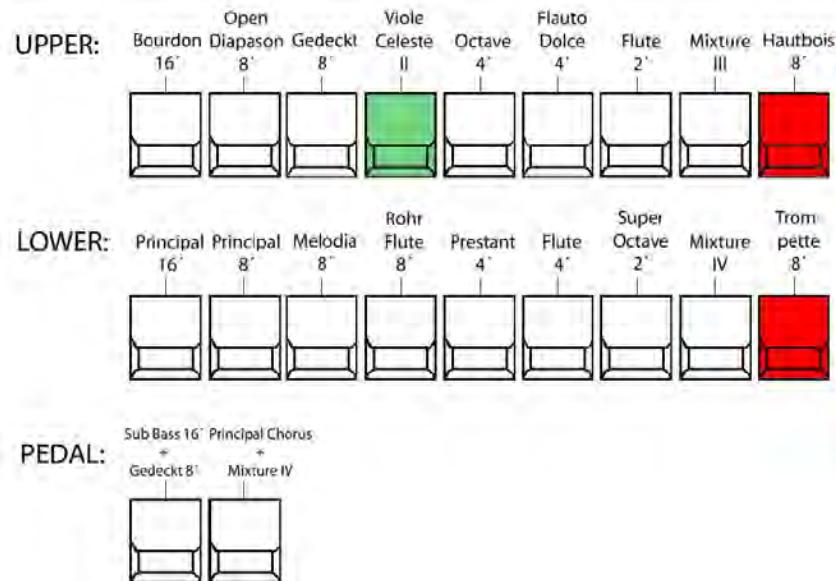
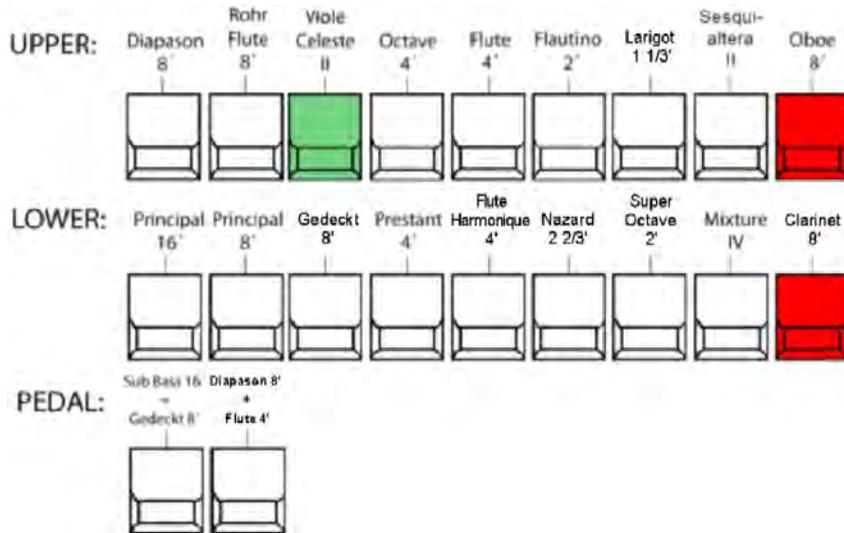


The box underneath “CUSTOM” should be highlighted.

◆ SET

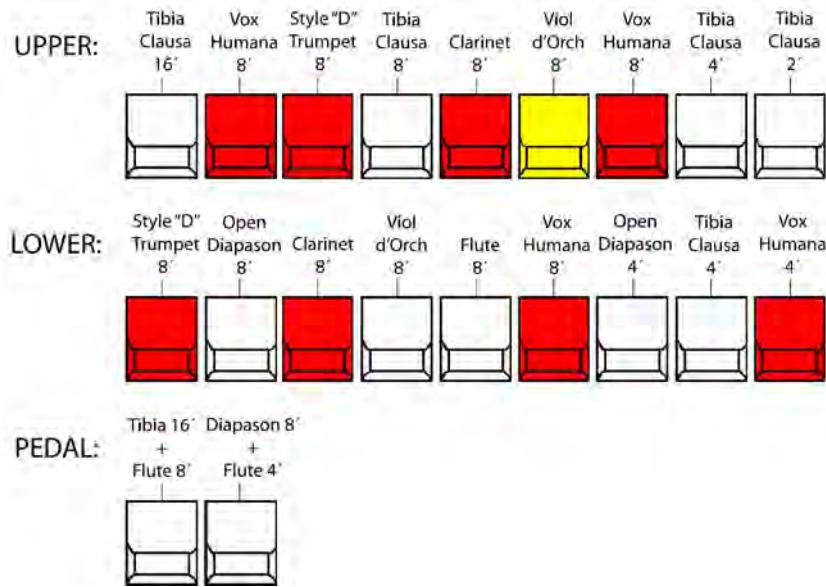
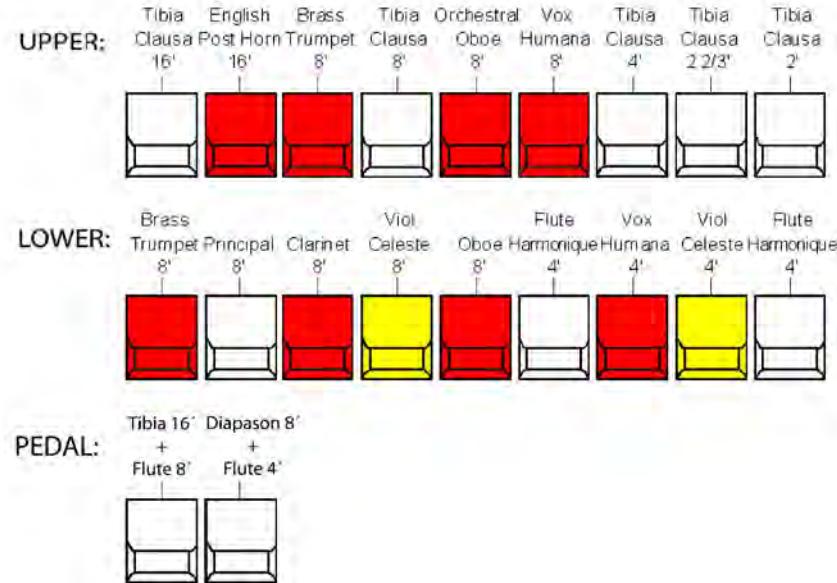
This Parameter allows you to select the Organ Type to edit.

Turn the VALUE knob to select Classic 1, Classic 2, Theatre 1, or Theatre 2. The following pages show how the Pipe Voices are allocated to the Drawbars for each Custom Set.

F1 - Classic 1:**F2 - Classic 2:**

NOTE: The colors shown in the above figures are the ones shown in the Information Center Display when the Pipe - Classical Organ Type is selected.

IMPORTANT NOTE: When "Pipe" mode is activated, the Drawbars will function similar to drawstops on a traditional pipe organ - pulling a Drawbar "out" will turn the associated Pipe Voice "ON" while pushing the Drawbar "in" will turn the Pipe Voice "OFF." The Pipe Voices **do not** have gradations of volume - they are either "ON" or "OFF."

F3 - Theatre 1:**F4 - Theatre 2:**

NOTE: The colors shown in the above figures are the ones shown in the Information Center Display when the Pipe - Theatre Organ Types are selected.

IMPORTANT NOTE: When "Pipe" mode is activated, the Drawbars will function similar to the stop tablets on a theatre pipe organ - pulling a Drawbar "out" will turn the associated Pipe Voice "ON" while pushing the Drawbar "in" will turn the Pipe Voice "OFF." The Pipe Voices do not have gradations of volume - they are either "ON" or "OFF."

◆ STOP SET

From the screen shown at the bottom of page 232, press the PAGE “►” button once.



The box underneath “STOP” should be highlighted.

STOP

This Parameter allows you to select the Pipe Voice or Stop to be assigned to each Drawbar.

The designations to the left represent the Drawbars - for example, UPPER 1, refers to the first brown Drawbar, UPPER 2 refers to the second brown Drawbar, and so on until UPPER 9 which is the last white Drawbar.

NOTE: UPPER STOP SET is shown; however, you can use the DIRECTION “◀” or “▶” buttons to select UPPER, LOWER or PEDAL Stop Sets.

Use the DIRECTION “▲” and “▼” buttons to move up and down through the Drawbar assignments. You may select from UPPER 1 through UPPER 9.

The data chart on the next page shows the available Pipe Voices.

PIPE VOICES (STOPS)	
Voice Number	Voice Name
S01	Open Diapason
S02	Principal
S03	Diapason
S04	Bourdon 1
S05	Bourdon 2
S06	Gedeckt
S07	Rohr Flute
S08	Flute Harmonic
S09	Flautino
S10	Voix Cele II
S11	Clarinet
S12	Hautbois
S13	Oboe
S14	Vox Humana
S15	Trompette
S16	Cornet V
S17	Mixture III
S18	Mixture IV
S19	Reserved
S20	Reserved
S21	Reserved
S22	Tibia Clausa
S23	Brass Saxophone
S24	Brass Trumpet
S25	Clarinet
S26	Brs E.PostHorn
S27	Orchestral Oboe
S28	Style D Trumpet
S29	Viol d'Orchestre
S30	Vox Humana
S31	Viol Celeste
S32	Reserved
S33	Reserved
S34	CotVln 32' & Brdn 16'
S35	CtlBmb 32' & Prn 16'
S36	CntBrdn 32' & Flte 16'
S37	Trompette 16'
S38	Fagott 16'
S39	SubBs 16' & Gedeckt 8'
S40	Diapason 8' & Flute 4'
S41	PrnChors 8' & Mixt IV
S42	Tibia 16' & Flute 8'
S43	Diap 16' & PostHorns
S44	Cornocean
S45	Reserved
S46	Reserved

Use the DIRECTION “◀” and “▶” buttons to select UPPER, LOWER or PEDAL Stop Sets.

When you have made your selection:

Turn the VALUE knob to select the Pipe Voice to assign to the selected Drawbar.

After you have selected which Pipe Voice you want to edit, you can make the following changes:

PIPE VOICE EDIT Options	
Description	Function
VOLUME	Allows you to set the Volume for the selected Pipe Voice.
FOOTAGE	Allows you to select the pitch range for the selected Pipe Voice.
DETUNE	Allows you to detune the selected Pipe Voice.
TREMULANT	Allows you to turn Tremulant "ON" or "OFF" for the selected Pipe Voice.
CHIFF	Allows you to set the amount of Chiff or attack for the selected Pipe Voice.
CUTOFF	Allows you to set the brightness of the selected Pipe Voice by setting its Filter Cutoff point.
PAN L-R	Allows you to set the directionality of the selected Pipe Voice.
IMAGING	Allows you to simulate pipe chest configurations for the selected Pipe Voice.

The following pages give a more detailed explanation of how these Parameters work.

From the screen shown on page 235, press the DIRECTION "►" button once.



The box underneath "VOL(db)" should be highlighted.

VOL(db) - Pipe Voice Volume

This Parameter allows you to adjust the Volume of the selected Pipe Voice. You may select a Volume setting from 0 (softest) to 127 (loudest).

Use the DIRECTION "◀" and "►" buttons to select UPPER, LOWER or PEDAL Stop Sets.

When you have made your selection:

Turn the VALUE knob to the right to increase the volume of the selected Pipe Voice.

Turn the VALUE knob to the left to decrease the volume of the selected Pipe Voice.

From the screen shown on the previous page, press the DIRECTION “►” button once.



The box underneath “FTG” should be highlighted.

FTG - Pipe Voice Footage

This Parameter allows you to select the Footage or pitch at which the selected Pipe Voice will sound. You may select 32', 16', 5½', 8', 4', 2½', 2', 1 ½', 1 ¼' or 1'.

Use the DIRECTION “◀” and “►” buttons to select UPPER, LOWER or PEDAL Stop Sets.

When you have made your selection:

Turn the VALUE knob to the right to select a higher pitch for the selected Pipe Voice.

Turn the VALUE knob to the left to select a lower pitch for the selected Pipe Voice.

From the above screen, press the DIRECTION “►” button once.



The box underneath “TUNE” should be highlighted.

TUNE - Pipe Voice Detune

This Parameter allows you to detune each individual Pipe Voice. You may select from -50 to +50 cents or one quarter-step sharp or flat.

Use the DIRECTION “◀” and “►” buttons to select UPPER, LOWER or PEDAL Stop Sets.

When you have made your selection:

Turn the VALUE knob to the right to make the pitch of the selected Pipe Voice flat.

Turn the VALUE knob to the left to make the pitch of the selected Pipe Voice sharp.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “TREM” should be highlighted.

TREM - Pipe Organ Tremulant

This Parameter allows you to turn Tremulant “ON” or “OFF” for the selected Pipe Voice.

What is a “Tremulant?”

A Tremulant is a device on a pipe organ which varies the air pressure to the pipes periodically, producing a vibrato or tremolo effect. Many large organs have as many as 9 or 10 tremulants, each one affecting a different sound on the organ, while smaller organs may have only one or two.

Use the DIRECTION “◀” and “►” buttons to select UPPER, LOWER or PEDAL Stop Sets.

When you have made your selection:

Turn the VALUE knob to turn Tremulant On or Off for the selected Pipe Voice

NOTE: As explained on page 153, the VIBRATO & CHORUS Controls will provide 6 degrees of Tremulant for the Pipe ORGAN Voices. This Parameter must be set to “ON” in order to add Tremulant to the selected Voice using the VIBRATO & CHORUS Controls.

From the screen shown on the previous page, press the DIRECTION “►” button once.



The box underneath “CHIFF” should be highlighted.

CHIFF

This Parameter allows you to set the amount of Chiff or attack for each individual Pipe Voice.

What Is “CHIFF”?

There are two classifications of organ pipes based on the method used to produce sound. “Flue” or “labial” pipes produce sound by means of sending a stream of air through the body of the pipe, while “reed” or “lingual” pipes utilize a reed vibrating against a metal rod (called a shallot) in a manner similar to a reed instrument such as a clarinet.

A flue pipe can be voiced in such a way so that when a key is depressed and the air first enters the pipe, there is a small, short burst of upper harmonics before the tone develops fully. The term Chiff was coined by pipe organ makers to describe this sound. The amount of Chiff can vary depending on the maker and the effect desired - some organ builders voice the flue pipes with little or no Chiff while others, perhaps influenced by the “neo-baroque” school of organ building, deliberately strive to include the Chiff effect.

Use the DIRECTION “◀” and “►” buttons to select UPPER, LOWER or PEDAL Stop Sets.

When you have made your selection:

Turn the VALUE knob to the right to add more Chiff to the selected Pipe Voice.

Turn the VALUE knob to the left to add less Chiff to the selected Pipe Voice.

From the screen shown on the previous page, press the DIRECTION "►" button once.



The box underneath "C.OFF" should be highlighted.

C.OFF - Pipe Voice Cutoff

This Parameter allows you to set the brightness of each individual Pipe Voice by setting its Filter Cutoff point.

Use the DIRECTION "◀" and "►" buttons to select UPPER, LOWER or PEDAL Stop Sets.

When you have made your selection:

Turn the VALUE knob to the right to make the selected Pipe Voice mellower.

Turn the VALUE knob to the left to make the pitch selected Pipe Voice brighter.

From the above screen, press the DIRECTION "►" button once.



The box underneath "PAN" should be highlighted.

PAN - Pipe Voice Pan

This Parameter allows you to simulate different placements of pipe ranks.

Use the DIRECTION "◀" and "►" buttons to select UPPER, LOWER or PEDAL Stop Sets.

When you have made your selection:

Turn the VALUE knob to the right to move the sound of the selected Pipe Voice left.

Turn the VALUE knob to the left to move the sound of the selected Pipe Voice right.

NOTE: Setting this parameter to "-C-" will locate the sound in the center.

From the screen shown on the previous page, press the DIRECTION “►” button once.



The box underneath “IMAGE” should be highlighted.

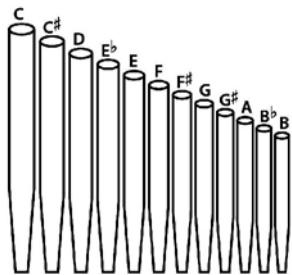
IMAGE - Pipe Voice Imaging

This Parameter allows you to simulate different arrangements of pipes.

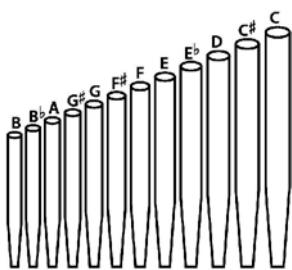
What Is “Pipe Imaging?”

The pipes of a pipe organ are arranged into sets called ranks. Each rank consists of pipes representing a specific sound on the organ - Open Diapason, Trompette, etc. (In keeping with the different philosophies of organ sound, many organ stop names are of European origin; hence the use of French, German, Dutch, etc., names.)

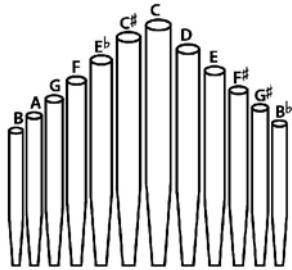
The pipes of each rank are supported by an assembly called a chest. The pipes can be arranged in many different ways on the chest. The pipe arrangement chosen by the maker depends on several things - aesthetics, musical, etc. - but the four most common ones are shown on the next page.



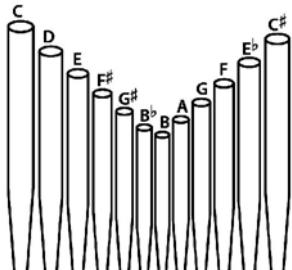
Left to Right - The pipes producing lower pitches are on the left. Playing notes chromatically going up on the keyboard will cause the pipes on the left to sound first.



Right to Left - The pipes producing higher pitches are on the right. Playing notes chromatically going up on the keyboard will cause the pipes on the left to sound first.



Pyramid - when notes are played chromatically going up on the keyboard, the notes start in the center and alternate between left and right.



Inverted Pyramid - when notes are played chromatically going up on the keyboard, the notes start at one end and alternate between left and right until they meet in the center.

NOTE: The Pyramid and Inverted Pyramid pipe placement schemes are sometimes referred to as "C-C#" placement due to chromatic notes being separated.

The XK-4 gives you five different Pipe Imaging choices. The data chart below explains them.

PIPE IMAGE Options	
Setting	Description
L-R	Chromatic arrangement Left to Right (see drawing).
R-L	Chromatic arrangement Right to Left (see drawing).
PYR	"C - C#" Pyramid arrangement (see drawing).
IVR	"C - C#" Inverted pyramid arrangement (see drawing).
- FIX -	No imaging.

Use the DIRECTION "◀" and "▶" buttons to select UPPER, LOWER or PEDAL Stop Sets.

When you have made your selection:

Turn the VALUE knob to select the option you want.

◆ Recording a Custom Pipe

IMPORTANT NOTE: If you change any of the Custom Pipe Parameters, you must save them in order for them to be remembered. If the changes are not saved, they will be lost when the power to the instrument is switched “OFF.”

TRY THIS:

1. Access the CUSTOM EDIT -PIPE FUNCTION Mode using the procedure described on page 231. You should now see Page 1 of the CUSTOM EDIT -PIPE FUNCTION Mode. The box underneath “CUSTOM” should be highlighted



2. Turn the VALUE knob to select the Custom Pipe Set you want to edit.
3. Make whatever changes you want to the editable Parameters. The Custom Pipe Parameters are covered on pages 232 through 243.

NOTE: For a complete list of the Parameters that can be modified for a Custom Pipe, consult page 480 of the APPENDIX chapter of this Guide.

NOTE: If you have already made changes to a Custom Pipe and you want to Record your changes, you can skip Steps 1 through 3 and go directly to Step 4.

4. When you have completed your edits, press the red RECORD button. The Information Center Display will look similar to this. The box underneath “TO” should be highlighted.



5. Use the VALUE knob to select the target Custom Pipe (the Custom Pipe you want to Record to). You may select from U1 to U8.
6. After you have made your selection, use the DIRECTION “▼” button to move the cursor to the “RECORD” box.



7. Press the ENTER button. The Information Center Display should look similar to this:

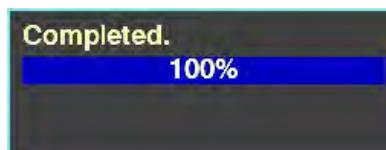
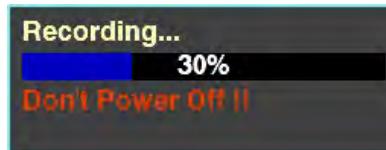


This is the screen you will use to Name your Custom Pipe. You can use the FAVORITE buttons and the BANK and MANUAL buttons (the two rows of six buttons just below the Information Center Display) to select and enter characters. The data chart below explains the function of each of the buttons.

NAMING Options		
Character	Button	Description
Aa1	BANK	Changes the character type (Capital and lower-case letters, numbers, special characters).
Delete	MANUAL	Deletes the character at the cursor.
space	FAVORITE 1	Replaces the character at the cursor with a space.
Insert	FAVORITE 6	Inserts a space at the cursor.
ABC, etc.	FAVORITES 2 ~ 5, 7 ~ 10.	Use these to cycle through and select the characters for the highlighted location. Each successive touch will cause the next character to display - for example, touching the Number 2 button will display A , touching it again will display B and touching it a third time will display C .

You can also turn the VALUE knob to select characters. If you wish to do this, use the DIRECTION “◀” and “▶” buttons to move back and forth through the characters.

8. When you have finished the Naming procedure, press the ENTER button to complete the Recording procedure. You will see the following messages flash in the display:



NOTE: Do not turn the power “OFF” while the “Don’t Power Off !!” message is displaying.

After the “Completed” message disappears, your Custom Pipe has been Recorded.

◆ CUSTOM PIPE APP MENU

You can use the APP MENU to register a Custom Pipe to a FAVORITE button for quicker access. The following paragraphs will explain this in more detail.

TRY THIS:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

2. Press the PAGE “▶” button once. You are now in the CUSTOM EDIT FUNCTION Mode.

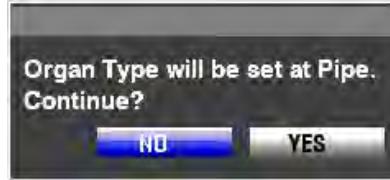


3. Press the DIRECTION “▼” button three times. The Information Center Display should now look like this:



4. Press the ENTER button.

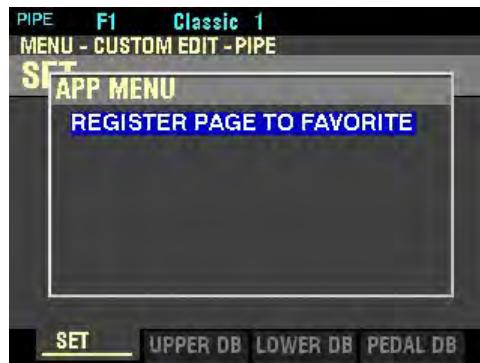
If the Organ Type is not set at Pipe, the Information Center Display will show the following:



If the above message displays, press the PAGE "►" to highlight the "YES" icon and press the ENTER button. The Information Center Display should now look like this:



5. Press and Release the MANUAL "≡" button. The Information Center Display should now look like this:



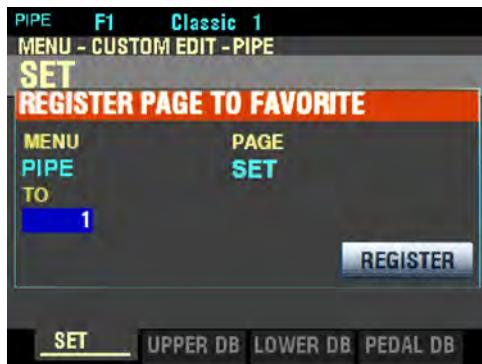
This is the APP MENU for the CUSTOM EDIT - PIPE FUNCTION Mode Page.

◆ REGISTER PAGE TO FAVORITE

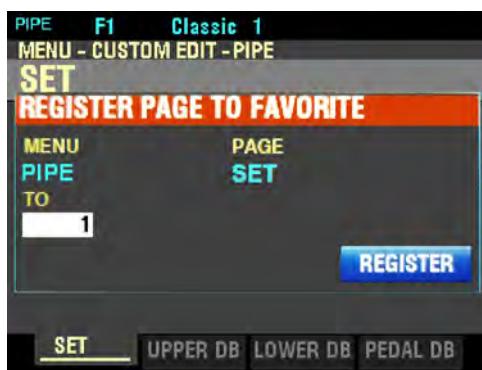
This allows you to register the current Page to one of the FAVORITE buttons for quick access.

To register the current Page to a FAVORITE, do the following:

1. From the screen shown at the bottom of the previous page, press the ENTER button. The Information Center Display should look like this:



2. Use the VALUE knob to select which FAVORITE button you want to recall the selected Page. You may select from 1 to 10.
3. After you have made your selection, press the DIRECTION “▼” button to highlight the “REGISTER” box.

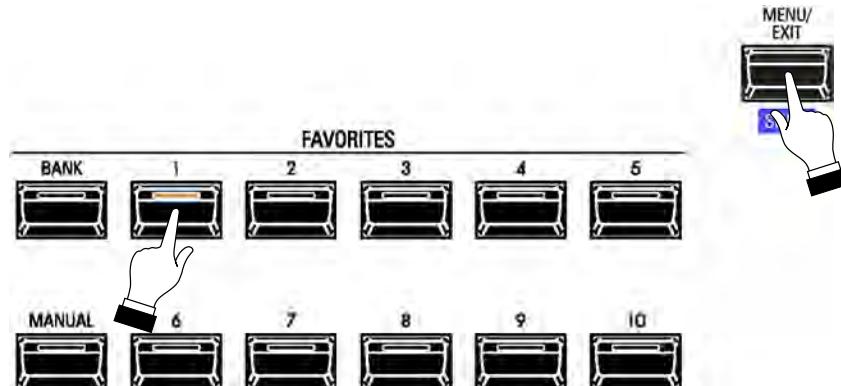


4. Press the ENTER button. You will see the messages "Recording..." and "Completed." flash in the display for approximately 1 second each.

NOTE: If you DO NOT wish to register the selected Page, press the MENU / EXIT or PLAY button instead of the ENTER button.

You have now registered a FUNCTION Mode Page to a FAVORITE button. In this way, you can access Menu Pages you use frequently with a single button-press. If you wish, you can register up to 100 Pages to the FAVORITE buttons by utilizing the 10 available Favorite Banks.

To access a Page or screen saved to a FAVORITE button, Press and Hold the SHIFT button and press the numbered FAVORITE button where the Page is registered.



NOTE: More information regarding FAVORITES and Favorite Banks can be found in the PATCHES / FAVORITES chapter of this Guide starting on page 59.

HAMMOND



XK-4

EFFECT /
EQUALIZER

EFFECT / EQ

The XK-4 contains 6 different EFFECTS categories plus an EQ (MASTER EQUALIZER) which add different effects to the selected sounds. These will be explained starting below.

◆ EFFECT / EQ FUNCTION Mode

This FUNCTION Mode allows you to adjust the Parameters for the Effects and Equalizer for individual Patches.

To access the EFFECT / EQ FUNCTION Mode, do the following:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

2. Press the DIRECTION “▼” button three times to highlight the “EFFECT/EQ” box.



3. Press the ENTER button. The Information Center Display should now look like this:



You are now in the PATCH EDIT -EFFECT/EQ FUNCTION Mode. You can now use the DIRECTION buttons in conjunction with the VALUE knob to make various changes. These changes are explained starting below.

◆ MATCHING TRANSFORMER FUNCTION Mode Page



◆ WHAT IS A “MATCHING TRANSFORMER?”

The primary purpose of the Matching Transformer in a Hammond tone-wheel organ is to “match” the low Impedance of the generator and key circuits to the high impedance amplifier input. However, in the B-3/C-3/A-100 family of Hammond Organs it performs the additional function of combining the individual tones from each Drawbar into one complex musical tone. It serves also, through taps on its primary winding, to establish a series of intensity levels for the Drawbars. Doing this imparts some unique characteristics to the sound which are part of the tonal characteristics of a Hammond tone-wheel organ such as the B-3. This feature reproduces these characteristics digitally.

If you followed the instructions on the previous pages, the Information Center Display should look like this:



The box to the right of "M.TRANS" should be highlighted.

M.TRANS

SWITCH

This Parameter allows you to select whether you want the Matching Transformer effect to be part of the ORGAN Drawbar tones. The data chart below shows the options you may select.

MATCHING TRANSFORMER Options	
Setting	Description
On	The Matching Transformer effect is added to the ORGAN Drawbar tones.
Off	The ORGAN Drawbar tones are "clean" - no Matching Transformer effect is added.

Turn the VALUE knob to turn this Parameter On or Off.

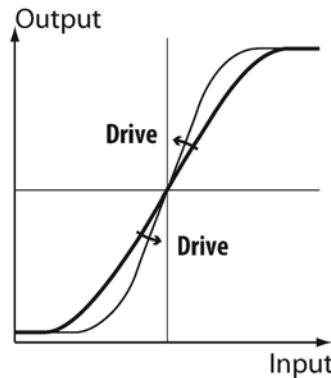
From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “DRIVE LEVEL” should be highlighted.

DRIVE LEVEL

This Parameter allows you to set the saturation level of the Matching Transformer. You may select from 0 to 127. A higher value will result in more saturation at low volume levels (see the illustration below).



Turn the VALUE knob to the right to increase the amount of Saturation.

Turn the VALUE knob to the left to decrease the amount of Saturation.

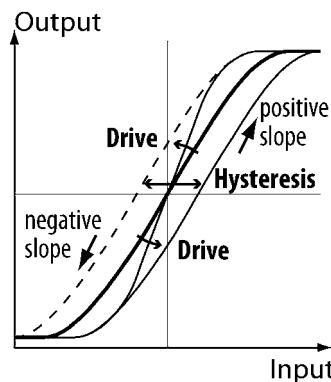
From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “HYSTERESIS” should be highlighted.

HYSTERESIS

Hysteresis refers to the fact that all of the values of a given event can change at different rates (see the illustration below).



In the case of a Hammond Organ, as discussed previously, each Drawbar has 8 degrees of volume. When a Drawbar is moved, not only the volume but the sound quality changes because of the artifacts introduced by the Matching Transformer. This Parameter allows you to replicate this characteristic of a tone-wheel Hammond Organ by setting the strength of the Hysteresis characteristic. You may select from 0 to 127. The higher the value, the more “asymmetrical” the sound.

Turn the VALUE knob to the right to increase the strength.

Turn the VALUE knob to the left to decrease the strength.

From the screen shown on the previous page, use the DIRECTION buttons to highlight the box to the right of “UPPER” underneath “DEPTH.”



DEPTH

ORGAN.UPPER

This Parameter allows you to set the amount of the Matching Transformer modeling for the UPPER ORGAN Part. You may select from 0 to 127. A higher value creates a deeper effect.

Turn the VALUE knob to the right to increase the Depth.

Turn the VALUE knob to the left to decrease the Depth.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “PERCUSSION” should be highlighted.

PERCUSSION

This Parameter allows you to set the amount of the Matching Transformer modeling for the PERCUSSION. You may select from 0 to 127. A higher value creates a deeper effect.

Turn the VALUE knob to the right to increase the Depth.

Turn the VALUE knob to the left to decrease the Depth.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “LOWER” should be highlighted.

ORGAN.LOWER

This Parameter allows you to set the amount of the Matching Transformer modeling for the UPPER ORGAN Part. You may select from 0 to 127. A higher value creates a deeper effect.

Turn the VALUE knob to the right to increase the Depth.

Turn the VALUE knob to the left to decrease the Depth.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “PEDAL” should be highlighted.

ORGAN.PEDAL

This Parameter allows you to set the amount of the Matching Transformer modeling for the PEDAL tones. You may select from 0 to 127. A higher value creates a deeper effect.

Turn the VALUE knob to the right to increase the Depth.

Turn the VALUE knob to the left to decrease the Depth.

◆ NOTE - MULTI EFFECTS 1 & 2

The Multi Effects on the XK-4 are divided into two (2) groups. Multi Effect 1 consists of effects added before Overdrive or Expression are added to the audio signal. Multi Effect 2 comprises effects added after the audio has received Overdrive and/or Expression.

◆ MULTI EFFECT 1

There are four Multi Effects that are inserted at pre-Overdrive or Expression.

1. Tremolo
2. Wah-Wah
3. Ring Modulator
4. Compression

This FUNCTION Mode Page allows you to select and adjust these Effects.

◆ Accessing the MULTI EFFECT 1 FUNCTION Mode Page using the MENU / EXIT, DIRECTION and PAGE buttons:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

2. Press the DIRECTION “▼” button three times to highlight the “EFFECT/EQ” box.

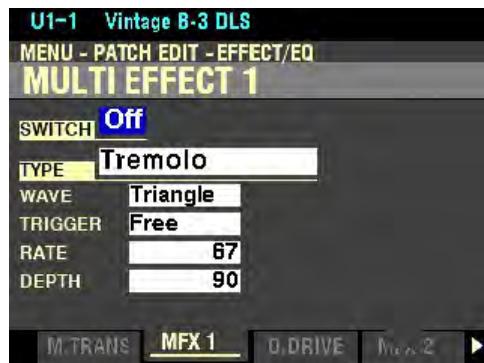


3. Press the ENTER button. The Information Center Display should now look like this:



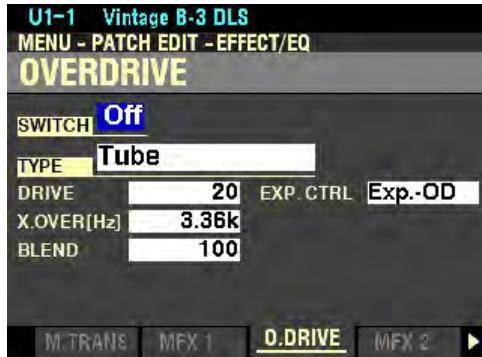
Page 1 of the PATCH EDIT -EFFECT/EQ FUNCTION Mode should now display.

4. Press the PAGE “▶” button once. The Information Center Display should now look like this:



♦ Accessing the **MULTI EFFECT 1 FUNCTION** Mode Page using the Shortcut:

1. Press either the OVERDRIVE or the REVERB button. The Information Center Display should now display one of the two following screens:



2. Press the PAGE “◀” button repeatedly if necessary until the Information Center Display looks like this:



◆ SWITCH

This Parameter allows you to turn MULTI EFFECT 1 On or Off.

NOTE: This is a “MASTER ON / OFF” for MULTI EFFECT 1.

Turn the VALUE knob to select On or Off.

For the following explanations, turn the MULTI EFFECT 1 SWITCH On. This is so you may select and hear the changes to the characteristics for the selected MULTI EFFECT 1 as you make them.



From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “TYPE” should be highlighted.

◆ TYPE

This Parameter allows you to select the Type of Multi Effect that will be added when the MULTI EFFECT 1 SWITCH is On.

The data chart shown below describes the different effects in the MULTI EFFECT 1 FUNCTION Mode in the order in which they appear in the Information Center Display.

MULTI EFFECT 1 TYPE Options	
Multi Effect	Description
Tremolo	Raises and lowers the amplitude or volume at a determined rate.
Wah-Wah	Periodic emphasis and de-emphasis of upper frequencies by means of a frequency filter to impart a speech-like quality to the sound.
Ring Modulation	Signal-processing effect whereby two different frequencies are mixed together in such a way as to reduce or eliminate the individual frequencies themselves, leaving only the sum and the difference of the two frequencies.
Compressor	Detects the volume of the source, and reduces or emphasizes the amount of volume change.

Turn the VALUE knob to select the option you want.

NOTE: These Multi Effects are available on all Organ Types except “Pipe.”

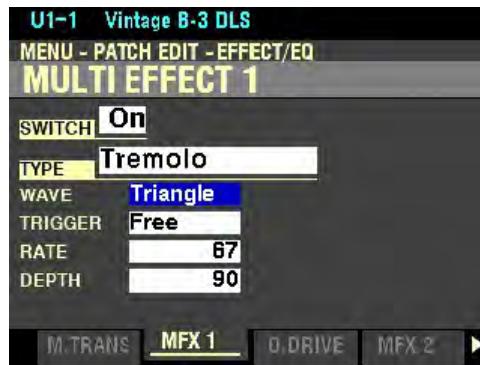
The next pages will describe the MULTI EFFECT 1 Parameters.

Tremolo

Tremolo is a periodic raising and lowering of the amplitude or volume at a determined rate.

NOTE: This Multi Effect is different from the Leslie Tremolo, which is meant to simulate the tremulant of a pipe organ.

With “TREMOLO” selected, press the DIRECTION “▼” button once.



The box to the right of “WAVE” should be highlighted.

WAVE

This Parameter allows you to select which waveform will be used to modulate the Tremolo. The data chart below shows the options you may select.

TREMOLO LFO WAVE Options	
Waveform	Description
Triangle	Triangle wave, which will change the volume smoothly from loud to soft to loud.
Square	Square wave, which will cause the volume to rise and fall suddenly.
SawDown	Descending Sawtooth wave, which will cause the volume to rise suddenly and fall gradually.
S&H	Sample & Hold, which will cause the volume to rise and fall randomly.
DullSqu	Dull Square wave - similar to SQR, but with a smoother rising and falling of the volume.

Turn the VALUE knob to the right to scroll forward through the choices.

Turn the VALUE knob to the left to scroll backward through the choices.

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “TRIGGER” should be highlighted.

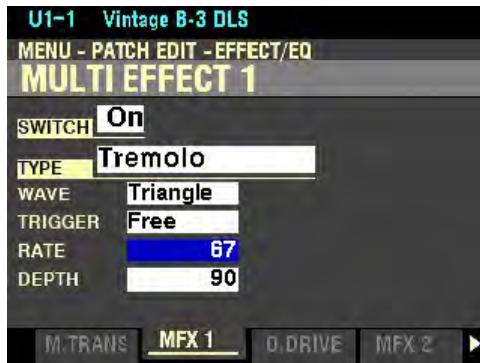
TRIGGER

This Parameter allows you to adjust whether the phase of the modulating waveform will reset each time a key is depressed.

Tremolo TRIGGER Options	
Parameter	Description
Free	Pressing a key will intercept the LFO at whatever point it happens to be in its cycle.
Single	The LFO of each note oscillates individually. Each LFO will start its cycle when a key is depressed.

Turn the VALUE knob to select Free or Single.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “RATE” should be highlighted.

RATE

This Parameter allows you to adjust the speed of the Tremolo cycle. You may select from 0 (slowest rate) to 127 (fastest rate)

Turn the VALUE knob to the right to increase the Rate.

Turn the VALUE knob to the left to decrease the Rate.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “DEPTH” should be highlighted.

DEPTH

This Parameter allows you to adjust the intensity or depth of the Tremolo. You may select from 0 (no modulation) to 127 (maximum modulation).

Turn the VALUE knob to the right to increase the Tremolo Depth.

Turn the VALUE knob to the left to decrease the Tremolo Depth.

Wah-Wah

Wah-Wah is a periodic emphasis and de-emphasis of upper frequencies by means of a frequency filter to impart a speech-like quality to the sound. The term itself is descriptive of the sound produced (what grammarians call an “onomatopoeia.”).

Guitarists frequently use this effect, which is also somewhat similar to the sound produced by a trumpeter using a Wah-Wah or Harmon mute.

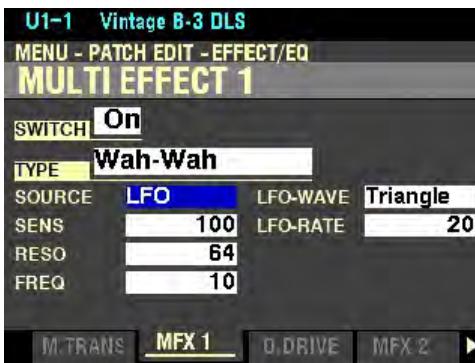
From the screen shown on the previous page, use the DIRECTION buttons to move the cursor to the box to the right of “TYPE and turn the VALUE knob so that the highlighted box displays “Wah-Wah.”



Make sure the box to the right of “SWITCH” displays On, otherwise you will not hear the selected MULTI EFFECT or the changes you make to it.

You can now select and hear the changes to the characteristics for the Wah-Wah MULTI EFFECT as you make them.

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “SOURCE” should be highlighted

SOURCE

This Parameter allows you to select how the Wah-Wah effect is controlled. The data chart below shows the options you may select.

WAH-WAH SOURCE Options	
Setting	Description
MOD	The effect is controlled by the Modulation Wheel.
EXP	The effect is controlled by the Expression Pedal.
LFO	The effect is controlled by the inbuilt LFO (Low Frequency Oscillator).
Input	The effect is controlled by the input audio envelope of the sound engine.

Turn the VALUE knob to select the option you want.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “SENS” should be highlighted.

SENS - Wah-Wah Sensitivity

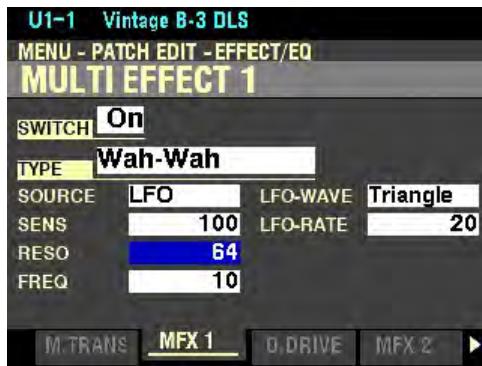
This Parameter allows you to sets the Sensitivity or High and Low ranges of the Wah-Wah effect. You may select from 0 (minimum range) to 127 (maximum range).

Turn the VALUE knob to the right to increase the range.

Turn the VALUE knob to the left to decrease the range.

NOTE: The effect of this Parameter depends on the SRC (Source) setting. When LFO is selected, the VALUE knob can be used to control the excursion of the Wah-Wah effect. When EXP is selected, the Expression Pedal can be used to control the Wah-Wah sensitivity.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “RESO” should be highlighted.

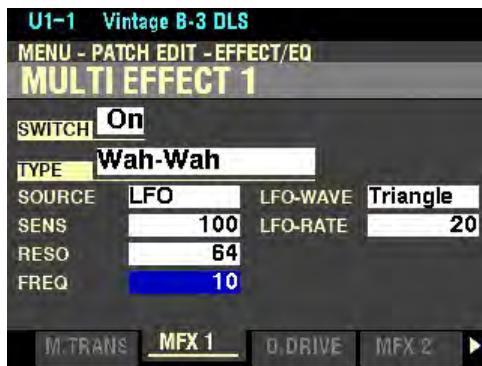
RESO - Wah-Wah Resonance

This Parameter allows you to set the resonance frequency of the Low-Pass Filter used to control the Wah-Wah effect. You may select from 0 (minimum resonance) to 127 (maximum resonance). At higher number settings, the Wah-Wah effect becomes more pronounced and articulated.

Turn the VALUE knob to the right to increase the amount of Resonance.

Turn the VALUE knob to the left to decrease the amount of Resonance.

From the above screen press the DIRECTION “▼” button once.



The box to the right of “FREQ” should be highlighted.

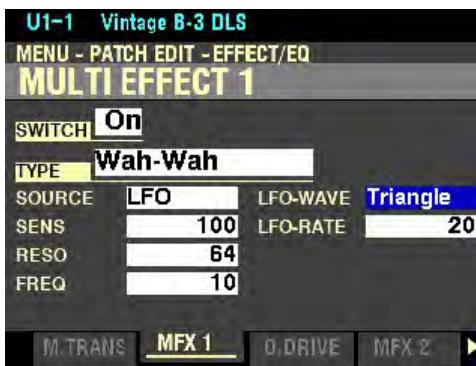
FREQ - Wah-Wah Frequency

This Parameter allows you to adjust the central frequency of the Wah-Wah effect. You may select from 0 (lowest frequency) to 127 (highest frequency).

Turn the VALUE knob to the right to increase the Frequency.

Turn the VALUE knob to the left to decrease the Frequency.

From the screen shown at the bottom of the previous page, use the DIRECTION “▶” and “▲” buttons to highlight the box to the right of “LFO WAVE.”



LFO WAVE - Wah-Wah Waveform

This Parameter allows you to select which waveform will be used to modulate the Wah-Wah effect. The data chart below shows the options you may select.

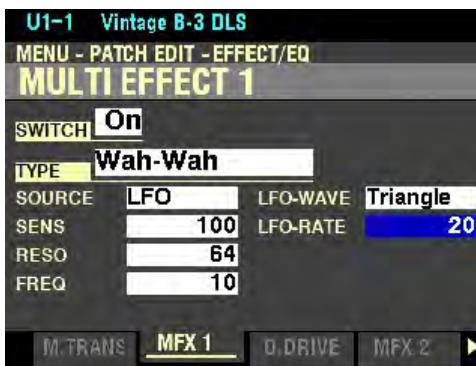
WAH-WAH LFO WAVE Options	
Setting	Description
TRI	Triangle wave, which will change the sound smoothly from high to low to high.
SQR	Square wave, which will cause the filter to rise and fall suddenly.
SAW	Ascending Sawtooth wave, which will cause the filter to rise suddenly and fall gradually.
S&H	Sample & Hold, which will cause the filter to rise and fall randomly.

NOTE: The SOURCE must be set to “LFO” in order for this Parameter to function.

Turn the VALUE knob to the right to scroll forward through the choices.

Turn the VALUE knob to the left to scroll backward through the choices.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “LFO RATE” should be highlighted.

LFO RATE - Wah-Wah Rate

This Parameter allows you to adjust the rate of the Wah-Wah effect. You may select from 0 (slowest rate) to 127 (fastest rate).

NOTE: The SOURCE must be set to LFO in order for this Parameter to function.

Turn the VALUE knob to the right to make the rate faster.

Turn the VALUE knob to the left to make the rate slower.

Ring Mod. (Ring Modulation)

Ring modulation is a signal-processing effect whereby two different frequencies are mixed together in such a way as to eliminate, as much as possible, the individual frequencies themselves, leaving only the sum and the difference of the two frequencies. In analog circuits, this is accomplished by arranging diodes in a circle or ring, giving rise to the term, “ring modulator.” The result is a sound rich in overtones and typically having somewhat of a bell-like or metallic quality. Because of this, the sound is sometimes called a “Klang tone.”

From the screen shown on the previous page, use the DIRECTION buttons to move the cursor to the box to the right of “TYPE and turn the VALUE knob so that the highlighted box displays “Ring Mod.”



Make sure the box to the right of “SWITCH” displays On, otherwise you will not hear the selected MULTI EFFECT or the changes you make to it.

You can now select and hear the changes to the characteristics for the Ring Modulator MULTI EFFECT as you make them.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “SOURCE” should be highlighted.

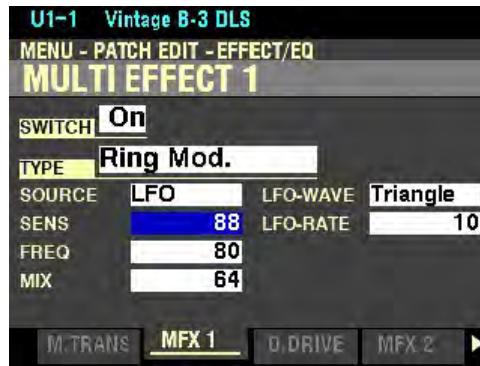
SOURCE

Because a Ring Modulator requires two frequencies, there needs to be some way to control the “ring” frequency, or the frequency the sound produced by the playing keys will interface with. This Parameter allows you to select how the ring frequency will be controlled. The data chart below shows the options you may select.

RING MODULATOR SOURCE Options	
Setting	Description
MOD	The effect is controlled by the Modulation Wheel.
EXP	The effect is controlled by the Expression Pedal.
LFO	The effect is controlled by the inbuilt LFO (Low Frequency Oscillator).
Note	The effect is controlled by the notes played on the keyboard.

Turn the VALUE knob to select the option you want.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “SENS” should be highlighted.

SENS - Ring Modulator Sensitivity

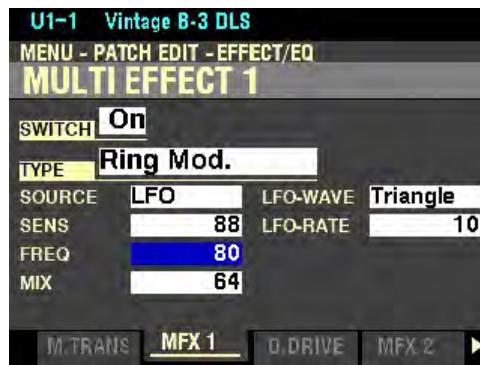
This Parameter allows you to sets the High and Low ranges of the Ring Modulator effect. You may select from 0 (minimum range) to 127 (maximum range).

Turn the VALUE knob to the right to increase the range.

Turn the VALUE knob to the left to decrease the range.

NOTE: The effect of this Parameter depends on the SRC (Source) setting. When LFO is selected, the VALUE knob can be used to control the excursion of the Ring Modulator effect. When EXP is selected, the Expression Pedal can be used to control the Ring Modulator sensitivity. When Note is selected, this Parameter is disabled.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “FREQ” should be highlighted.

FREQ - Ring Modulator Frequency

This Parameter allows you to adjust the central frequency of the Ring Modulator effect. You may select from 0 (lowest frequency) to 127 (highest frequency).

Turn the VALUE knob to the right to increase the frequency.

Turn the VALUE knob to the left to decrease the frequency.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “MIX” should be highlighted.

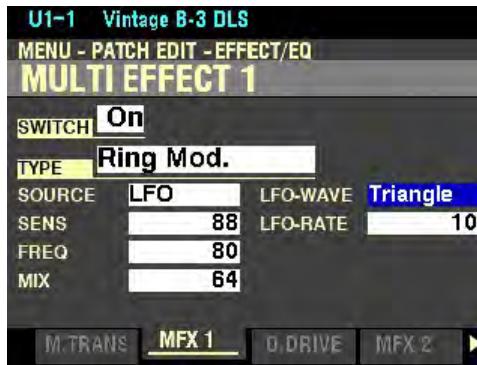
FREQ - Ring Modulator Mix

This Parameter allows you to adjust the volume balance between the “dry” and the effect sounds. You may select from 0 to 127. At 0 only the “dry” sound is heard. The effect level becomes greater as the value increases. At 64 the ratio between the “dry” and the effect sounds becomes 1:1. At 127 only the effect sound is heard.

Turn the VALUE knob to the right to emphasize the Effect sound.

Turn the VALUE knob to the left to emphasize the Dry sound.

From the screen shown at the bottom of the previous page, use the DIRECTION “▶” and “▲” buttons to highlight the box to the right of “LFO WAVE.”



LFO WAVE - Ring Modulator Waveform

This Parameter allows you to select which waveform will be used to modulate the Ring Modulator effect. The data chart below shows the options you may select.

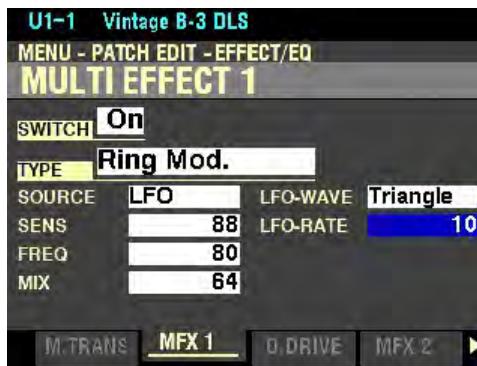
RING MODULATOR LFO WAVE Options	
Setting	Description
Triangle	Triangle wave, which will change the sound smoothly from high to low to high.
SQR	Square wave, which will cause the filter to rise and fall suddenly.
SAW	Ascending Sawtooth wave, which will cause the filter to rise suddenly and fall gradually.
S&H	Sample & Hold, which will cause the filter to rise and fall randomly.

NOTE: The SOURCE must be set to LFO in order for this Parameter to function.

Turn the VALUE knob to the right to scroll forward through the choices.

Turn the VALUE knob to the left to scroll backward through the choices.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “LFO RATE” should be highlighted.

LFO RATE - Ring Modulator Rate

This Parameter allows you to adjust the rate of the Ring Modulator effect. You may select from 0 (slowest rate) to 127 (fastest rate).

NOTE: The SOURCE must be set to LFO in order for this Parameter to function.

Turn the VALUE knob to the right to make the rate faster.

Turn the VALUE knob to the left to make the rate slower.

Compressor

This MULTI EFFECT detects the volume of the source, and reduces or emphasizes the amount of volume change.

From the screen shown at the bottom of the previous page, use the DIRECTION buttons to move the cursor to the box to the right of "TYPE and turn the VALUE knob so that the highlighted box displays "Compressor."



Make sure the box to the right of "SWITCH" displays On, otherwise you will not hear the selected MULTI EFFECT or the changes you make to it.

You can now select and hear the changes to the characteristics for the Compressor MULTI EFFECT as you make them.

From the above screen, press the DIRECTION "▼" button once.



The box to the right of "RATIO" should be highlighted.

RATIO RATE

This Parameter allows you to adjust the ratio at which the volume changes between input and output. You may select from 0 to 127. A higher value results in a lesser change of volume.

Turn the VALUE knob to the right to increase the Ratio Rate.

Turn the VALUE knob to the left to decrease the Ratio Rate.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “THR LEVEL” should be highlighted.

THRESHOLD LEVEL

This Parameter allows you to adjust the value of the input level at which reduction begins. You may select from 0 to 127 (0 to +24db). A lower value results in compression beginning at a lower input level.

Turn the VALUE knob to the right to increase the Threshold Level.

Turn the VALUE knob to the left to decrease the Threshold Level.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “GAIN” should be highlighted.

OUTPUT GAIN

This Parameter allows you to increase the volume to a level to be reduced by the compression process. You may select from 0 to 127 (0 to +24db). A higher value results in a higher volume.

From the screen shown at the bottom of the previous page, use the DIRECTION “▶” and “▲” buttons to highlight the box to the right of “ATK RATE.”



ATTACK RATE

This Parameter allows you to adjust the rate at which the volume is reduced when the input sound exceeds the threshold level. You may select from 0 to 127. A higher value results in a slower reduction rate and the Attack of the sound is emphasized.

Turn the VALUE knob to the right to increase the Attack Rate.

Turn the VALUE knob to the left to decrease the Attack Rate.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “REL RATE” should be highlighted

RELEASE RATE

This Parameter allows you to adjust the rate at which the volume is reduced when the input sound is lower than the threshold level. You may select from 0 to 127. A higher value results in a slower release time and the Return gain is delayed.

Turn the VALUE knob to the right to increase the Release Rate.

Turn the VALUE knob to the left to decrease the Release Rate.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “DELAY TIME” should be highlighted.

DELAY TIME

This Parameter allows you to adjust the amount of time before compression takes effect after a key is depressed. You may select from 0 to 127. A higher value results in a longer delay.

Turn the VALUE knob to the right to increase the Delay Time.

Turn the VALUE knob to the left to decrease the Delay Time.

◆ OVERDRIVE

Overdrive adds a sound similar to the effect created by the vacuum tubes of a tube-style Leslie Speaker when its volume is pushed past its sound limit. In small amounts, Overdrive will add a “warmth” to the sound. In larger amounts it will add a raspy, “fuzzy” quality to the sound.

NOTE: The Overdrive is not available for the Pipe Organ Type.

◆ OVERDRIVE button



Pressing this button will turn the Overdrive effect “ON” or “OFF.”

NOTE: The OVERDRIVE button must be “ON” in order to hear the Overdrive effect. Both the type and amount of Overdrive are controlled by Parameters.

◆ Accessing the OVERDRIVE FUNCTION Mode Page using the MENU / EXIT, DIRECTION and PAGE buttons:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

2. Press the DIRECTION “▼” button three times to highlight the “EFFECT/EQ” box.



3. Press the ENTER button. The Information Center Display should now look like this:



Page 1 of the PATCH EDIT -EFFECT/EQ FUNCTION Mode should now display.

4. Press the PAGE “►” button two times. The Information Center Display should now look like this:



♦ Accessing the OVERDRIVE FUNCTION Mode Page using the Shortcut:

Press and Release the OVERDRIVE button. The Information Center Display should now look like this:



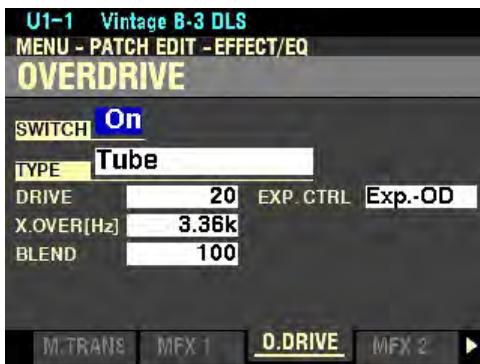
SWITCH

This Parameter allows you to turn OVERDRIVE On or Off.

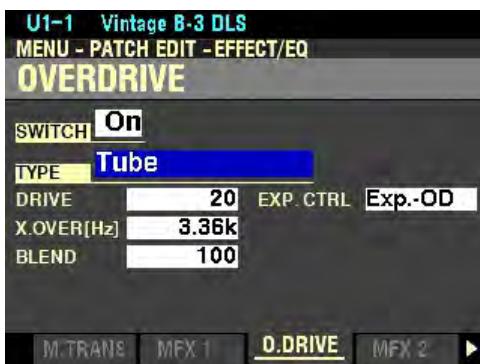
NOTE: This is a “MASTER ON / OFF” for OVERDRIVE.

Turn the VALUE knob to make your selection.

For the following explanations, turn the OVERDRIVE SWITCH On. This is so you may select and hear the changes to the characteristics for the OVERDRIVE as you make them.



From the above screen, press the DIRECTION “▼” button once.



The box to the right of “TYPE” should be highlighted.

TYPE

This Parameter allows you to adjust the character of the Overdrive.

The data chart below shows the options you may select.

OVERDRIVE TYPE Options	
Setting	Description
Tube	Soft clipped sound similar to a vacuum tube (valve) amplifier.
Solid	Hard clipped sound similar to a solid state amplifier.
Clip	Precision hard-clipped sound.
EP Amp	Soft clipped sound similar to the amplifier of an Electric Piano.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “DRIVE” should be highlighted.

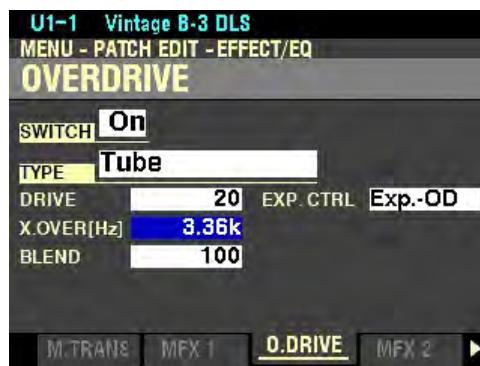
DRIVE

This Parameter allows you to adjust the amount of Overdrive. You may select from 0 to 127. A higher value results in more distortion.

Turn the VALUE knob to the right to increase the amount of Overdrive.

Turn the VALUE knob to the left to decrease the amount of Overdrive.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “X.OVER[Hz]” should be highlighted.

CROSSOVER FREQUENCY

This Parameter allows you to adjust the upper limit of the frequency range receiving Overdrive. You may select from 400 to 14.7 kHz.

NOTE: The Overdrive effect introduces several artifacts to the sound, one of which is, harmonics (overtones). Some of these harmonics may be undesirable and create harmonic interference between “dry” and “overdriven” sounds. By using the Crossover Frequency Parameter to limit the amount of upper frequencies receiving Overdrive, you can minimize or eliminate harmonic interference and create a more pleasing sound.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “BLEND” should be highlighted.

BLEND

This Parameter allows you to adjust the balance between dry and Overdriven sounds. You may select from 0 to 127. At 0 the sound is “dry” At 127 only the Overdriven sound is heard. The numbers in between allow mixing of dry and Overdriven sounds.

Turn the VALUE Knob to the right to increase the Overdriven sound.

Turn the VALUE knob to the left to decrease the Overdriven sound.

NOTE: The blending rate may not always be “1:1” if the value is set at 64 due to different envelopes between dry and Overdriven sounds.

From the above screen, press the DIRECTION “▶” button once. This will move the cursor to the right side of the screen and the box to the right of “EXP CTRL” will be highlighted.



EXPRESSION CONTROL

This Parameter allows you to select whether you want to use a connected Expression Pedal to control overall Volume, amount of Overdrive, or both. The data chart below shows the options you may select.

OVERDRIVE EXPRESSION CONTROL Options	
Setting	Description
EX-OD	The Expression Pedal will control both Volume and Overdrive.
OD-EX	The Expression Pedal will control only the Volume.
OD ONLY	The Expression Pedal will control only the amount of Overdrive.
INPUT	the Expression Pedal will control both Volume and Overdrive, but by a lesser amount than EX-OD.

Turn the VALUE knob to select the option you want.

◆ MULTI EFFECT 2

There are five Multi Effects that are inserted post-Overdrive and Expression.

1. AutoPan
2. Phaser
3. Flanger
4. Chorus
5. Delay

This FUNCTION Mode Page allows you to select and adjust these Effects.

◆ Accessing the MULTI EFFECT 2 FUNCTION Mode Page using the MENU / EXIT, DIRECTION and PAGE buttons:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

2. Press the DIRECTION “▼” button three times to highlight the “EFFECT/EQ” box.



3. Press the ENTER button. The Information Center Display should now look like this:



Page 1 of the PATCH EDIT -EFFECT/EQ FUNCTION Mode should now display.

4. Press the PAGE “▶” button three times. The Information Center Display should now look like this:



♦ Accessing the **MULTI EFFECT 2** FUNCTION Mode Page using the Shortcut:

1. Press either the OVERDRIVE or the REVERB button. The Information Center Display should now display one of the two following screens:



2. Press the PAGE “◀” button repeatedly if necessary until the Information Center Display looks like this:



◆ SWITCH

This Parameter allows you to turn MULTI EFFECT 2 On or Off.

NOTE: This is a “MASTER ON / OFF” for MULTI EFFECT 2.

Turn the VALUE knob to make your selection.

For the following explanations, turn the MULTI EFFECT SWITCH On. This is so you may select and hear the changes to the characteristics for the selected MULTI EFFECT 2 as you make them.



AutoPan

This MULTI EFFECT will smoothly shift or “pan” the sound back and forth between Left and Right channels.

NOTE: This Parameter requires that both Left and Right channels be connected via the LINE OUT jacks on the Accessory Panel.

NOTE: This Parameter does not affect the digital Leslie.

From the screen shown above, if necessary use the DIRECTION buttons to move the cursor to the box to the right of “TYPE and turn the VALUE knob so that the highlighted box displays “AutoPan.”



Make sure the box to the right of “SWITCH” displays On, otherwise you will not hear the selected MULTI EFFECT or the changes you make to it.

You can now select and hear the changes to the characteristics for the AutoPan MULTI EFFECT as you make them.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “WAVE” should be highlighted.

WAVE

This Parameter allows you to select which waveform will be used to modulate the panning effect. The data chart below shows the options you may select.

AUTOPAN LFO WAVE Options	
Waveform	Description
Triangle	Triangle wave, which will move the sound smoothly back and forth from Left to Right.
Square	Square wave, which will cause the sound to move suddenly from Left to Right.
L to R	The sound will move smoothly from left to right.
S&H	Sample & Hold, which will cause the sound to move from Left to Right randomly.
DullSqr	Dull Square wave - similar to Square wave, but with a smoother transition from Left to Right.

Turn the VALUE knob to the right to scroll forward through the choices.

Turn the VALUE knob to the left to scroll backward through the choices.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “RATE” should be highlighted.

RATE

This Parameter allows you to adjust the rate at which the sound moves from channel to channel. You may select from 0 (slowest rate) to 127 (fastest rate).

Turn the VALUE knob to the right to increase the Rate.

Turn the VALUE knob to the left to decrease the Rate

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “DEPTH” should be highlighted.

DEPTH

This Parameter allows you to adjust the intensity or depth of the panning effect. You may select from 0 (no modulation) to 127 (maximum modulation).

Turn the VALUE knob to the right to increase the Depth.

Turn the VALUE knob to the left to decrease the Depth.

Phaser

Phaser will create the effect of splitting an audio signal into two paths and varying their phase relationship to each other, resulting in an alternately hollow and full-bodied sound. It can be described as a “swooshing” or “twisting” effect.

From the screen shown on the previous page, use the DIRECTION buttons to move the cursor to the box to the right of “TYPE and turn the VALUE knob so that the highlighted box displays “Phaser.”



Make sure the box to the right of “SWITCH” displays On, otherwise you will not hear the selected MULTI EFFECT or the changes you make to it.

You can now select and hear the changes to the characteristics for the Phaser MULTI EFFECT as you make them.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “RATE” should be highlighted.

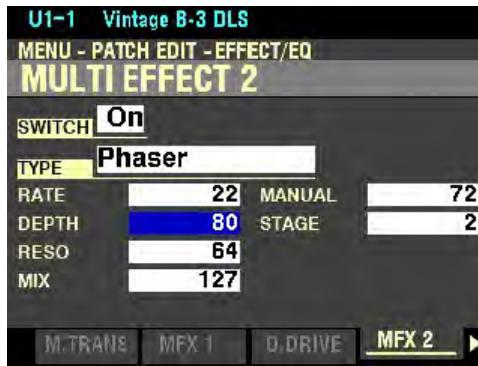
RATE

This Parameter allows you to adjust the rate at which the sound moves in and out of phase. You may select from 0 (slowest rate) to 127 (fastest rate).

Turn the VALUE knob to the right to increase the Rate.

Turn the VALUE knob to the left to decrease the Rate.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “DEPTH” should be highlighted.

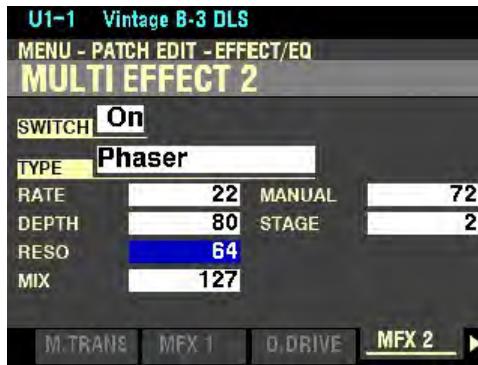
DEPTH

This Parameter allows you to adjust the intensity or depth of the phasing effect. You may select from 0 (no phasing) to 127 (maximum phasing).

Turn the VALUE knob to the right to increase the amount of Phasing.

Turn the VALUE knob to the left to decrease the amount of Phasing.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “RESO” should be highlighted.

RESO

This Parameter allows you to adjust the amount of feedback or “resonance” of the Phaser effect. You may select from 0 (minimum resonance) to 127 (maximum resonance).

NOTE: At the maximum setting, the feedback will be so pronounced that individual notes will no longer be recognizable as musical pitches.

Turn the VALUE knob to the right to increase the amount of Resonance.

Turn the VALUE knob to the left to decrease the amount of Resonance.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “MIX” should be highlighted.

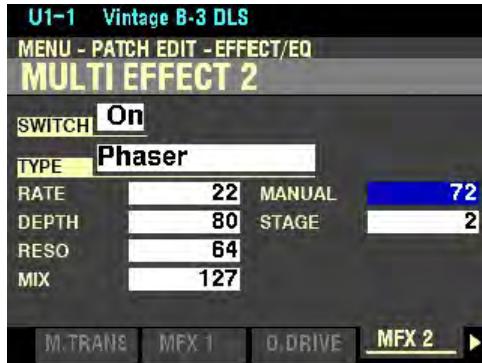
MIX

This Parameter allows you to adjust the balance between the phased sound and “dry” (no Phaser effect) sound. You may select from 0 (only the “dry” or unmodulated sound with no Phaser effect at all) to 127 (the Phaser effect and the dry signal are at equal volumes)

Turn the VALUE knob to the right to increase the amount of Phaser effect.

Turn the VALUE knob to the left to decrease the amount of Phaser effect.

From the above screen, use the DIRECTION “►” and “▲” buttons to highlight the box to the right of “MANUAL.”



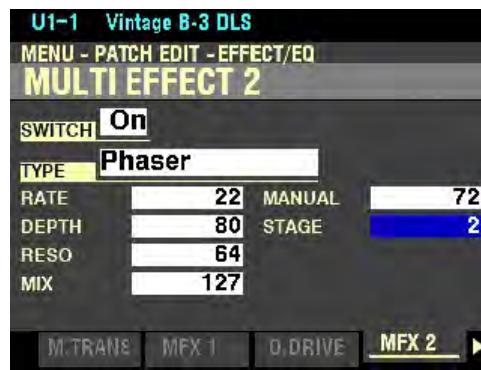
MANUAL

This Parameter allows you to adjust the central frequency of the Phaser effect. You may select from 0 (lowest frequency) to 127 (highest frequency).

Turn the VALUE knob to the right to increase the Frequency.

Turn the VALUE knob to the left to decrease the Frequency.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “STAGE” should be highlighted.

STAGE

This Parameter allows you to adjust the complexity or “stage” of the phasing. You may select, 2, 4, 6, 8 or 10. A higher value creates more complex effects.

Turn the VALUE knob to the right to increase the amount of Staging.

Turn the VALUE knob to the left to decrease the amount of Staging.

Flanger

“Flanging” occurs when two identical signals are mixed together, and one of the signals is time-delayed by a very small amount. The small time delay produces peaks and valleys in the harmonic structure of the sound, resulting in a sweeping effect sometimes referred to colloquially as a “Jet Airplane” sound.

The term, “Flanger” derives from the means originally used to produce this effect. Two tape machines running at exactly the same speed would play the same material into a third machine, and an engineer would drag his finger along the “flange” or outer edge of the tape reel on one of the machines, thereby causing the small time delay and creating the sweeping effect.

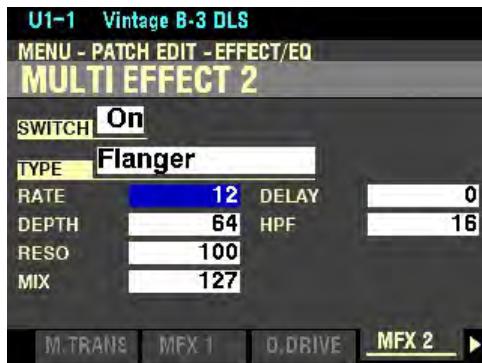
From the screen shown on the previous page, use the DIRECTION buttons to move the cursor to the box to the right of “TYPE and turn the VALUE knob so that the highlighted box displays “Flanger.”



Make sure the box to the right of “SWITCH” displays On. otherwise you will not hear the selected MULTI EFFECT or the changes you make to it.

You can now select and hear the changes to the characteristics for the Flanger MULTI EFFECT as you make them.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “RATE” should be highlighted.

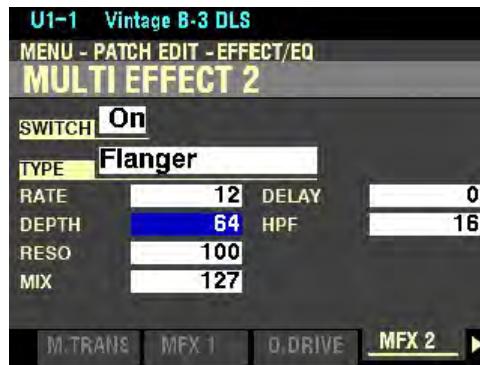
RATE

This Parameter allows you to set the rate of the Flange effect. You may select from 0 (slowest rate) to 127 (fastest rate).

Turn the VALUE knob to the right to make the rate faster.

Turn the VALUE knob to the left to make the rate slower.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “DEPTH” should be highlighted.

DEPTH

This Parameter allows you to set the depth of the Flange effect. You may select from 0 (minimum depth) to 127 (maximum depth).

Turn the VALUE knob to the right to increase the Depth.

Turn the VALUE knob to the left to decrease the Depth.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “RESO” should be highlighted.

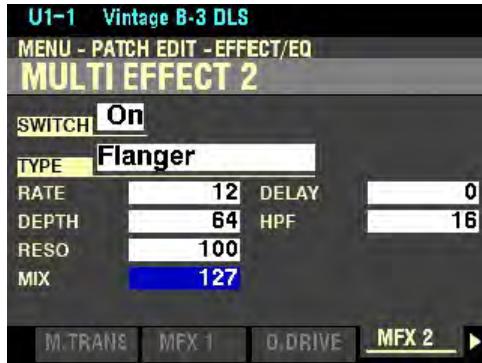
RESO

This Parameter allows you to adjust the amount of resonance or “feed-back.” of the Flange effect. You may select from 0 (minimum resonance) to 127 (maximum resonance). At higher values, the sound becomes increasingly distorted.

Turn the VALUE knob to the right to increase the amount of Resonance.

Turn the VALUE knob to the left to decrease the amount of Resonance.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “MIX” should be highlighted.

MIX

This Parameter allows you to adjust the balance between the “dry” sound and the Flange effect. You may select from 0 (“dry” sound only - no Flange effect) to 127 (the dry sound and the Flanged sound are at equal levels).

Turn the VALUE knob to the right to increase the amount of Flanged signal.

Turn the VALUE knob to the left to decrease the amount of Flanged signal.

From the above screen, use the DIRECTION “►” and “▲” buttons to highlight the box to the right of “DELAY.”



DELAY

This Parameter allows you to set the delay of the Flange effect. You may select from 0 (minimum delay) to 127 (maximum delay).

Turn the VALUE knob to the right to lengthen the Delay.

Turn the VALUE knob to the left to shorten the Delay.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “HPF” should be highlighted.

HPF

This Parameter allows you to adjust the frequency limit beyond which the Flange effect is applied. You may select from 0 (the effect is added to all frequencies) to 127 (the effect is added to the upper frequencies only).

Turn the VALUE knob to the right to make the frequency limit higher.

Turn the VALUE knob to the left to make the frequency limit lower.

Chorus

“Chorus” refers to a shimmering, non-periodic enhancement of the sound. It is intended to be similar to several instruments sounding in unison, and is helpful when a thicker tonal texture is desired.

NOTE: Do not confuse this Chorus with the Hammond Vibrato/Chorus effect. The **CHORUS MULTI EFFECT**, as mentioned, is non-periodic or “random” sounding. With the Hammond Vibrato/Chorus, a “cycle” is clearly audible. The parameters described below DO NOT affect the Hammond Vibrato/Chorus.

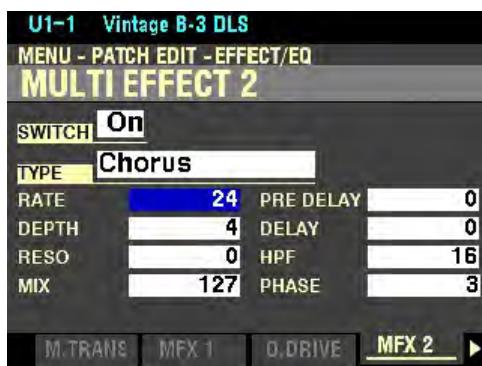
From the screen shown on the previous page, use the DIRECTION buttons to move the cursor to the box to the right of “TYPE and turn the VALUE knob so that the highlighted box displays “Chorus.”



Make sure the box to the right of “SWITCH” displays On, otherwise you will not hear the selected MULTI EFFECT or the changes you make to it.

You can now select and hear the changes to the characteristics for the Chorus MULTI EFFECT as you make them.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “RATE” should be highlighted.

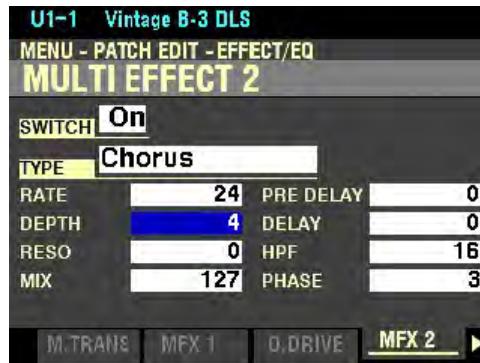
RATE

This Parameter allows you to adjust the rate of the Chorus effect. You may select from 0 (slowest rate) to 127 (fastest rate).

Turn the VALUE knob to the right to increase the Chorus Rate.

Turn the VALUE knob to the left to decrease the Chorus Rate.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “DEPTH” should be highlighted.

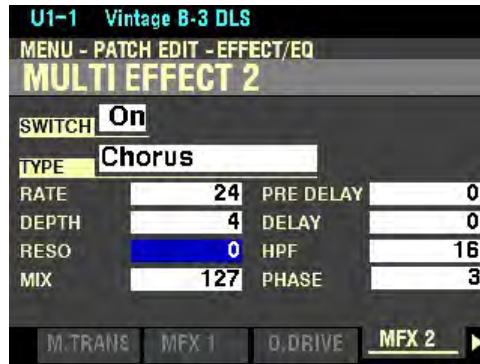
DEPTH

This Parameter allows you to adjust the intensity or depth of the Chorus effect. You may select from 0 (minimum Chorus) to 127 (maximum Chorus).

Turn the VALUE knob to the right to increase the amount of Chorus.

Turn the VALUE knob to the left to decrease the amount of Chorus.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “RESO” should be highlighted.

RESO

This Parameter allows you to adjust the amount of resonance or “feed-back.” You may select from 0 (minimum resonance) to 127 (maximum resonance). At higher number settings the sound is modulated to an extreme amount.

Turn the VALUE knob to the right to increase the amount of Resonance.

Turn the VALUE knob to the left to decrease the amount of Resonance.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “MIX” should be highlighted.

MIX

This Parameter allows you to adjust the volume balance between the “dry” and the effect sound. You may select from 0 to 127. At 0, only the “dry” is heard. The effect level becomes greater as the value increases. At 127 the ratio between the “dry” and the effect sounds becomes 1:1.

Turn the VALUE knob to the right to increase the amount of Phasing.

Turn the VALUE knob to the left to decrease the amount of Phasing.

From the above screen, use the DIRECTION “►” and “▲” buttons to highlight the box to the right of “PRE DELAY”



PRE DELAY

This Parameter allows you to delay the signal for a channel even if the source is Monoaural. You may select from 0 to 127. A higher value creates a time difference between Left and Right to the effect sound.

Turn the VALUE knob to the right to increase the Pre-Delay.

Turn the VALUE knob to the left to decrease the Pre-Delay.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “DELAY” should be highlighted.

DELAY

This Parameter allows you to control the delay of the effect sound. You may select from 0 to 127. The delay becomes greater as the value increases.

Turn the VALUE knob to the right to increase the amount of Delay.

Turn the VALUE knob to the left to decrease the amount of Delay.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “HPF” should be highlighted.

HPF

Controls the frequency range of the effect. You may select from 0 (the effect is added to all frequencies) to 127 (the effect is the effect is added only to the high frequencies). As the value is increased, the effect is added to the higher frequencies.

Turn the VALUE knob to the right to narrow the frequency range to the high frequencies only.

Turn the VALUE knob to the left to broaden the frequency range to include lower frequencies.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “PHASE” should be highlighted.

PHASE

This Parameter allows you to select the algorithm of the Chorus effect. You may select 2 (two-phase) or 3 (three phase).

Turn the VALUE knob to select 2 or 3.

Delay

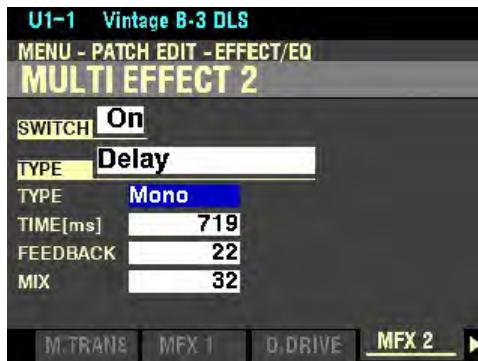
“Delay” allows you to add echo effects.

From the screen shown on the previous page, use the DIRECTION buttons to move the cursor to the box to the right of “TYPE and turn the VALUE knob so that the highlighted box displays “Delay.”



You can now select the characteristics for the Delay.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “TYPE” should be highlighted.

TYPE

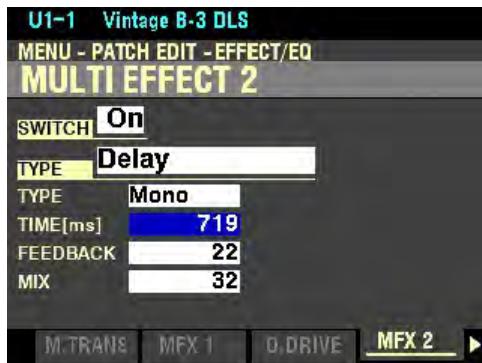
This Parameter allows you to select the directionality or Type of the Delay. The data chart below shows the options you may select.

DELAY TYPE Options	
Setting	Description
Mono	A simple, non-directional echo.
*RtoL	The echo repeats gradually pan from Right to Left.
*LtoR	The echo repeats gradually pan from Left to Right.

Turn the VALUE knob to select the option you want.

NOTE: The RtoL and LtoR effects require that both LINE OUT jacks be connected.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “TIME[ms]” should be highlighted.

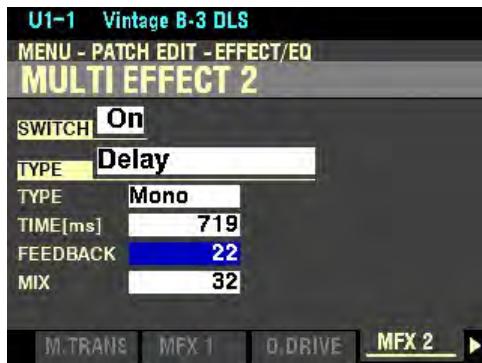
TIME

This Parameter allows you to adjust the amount of time between the original sound and the first echo repeat, as well as the amount of time between each successive repetition. You may select from 10 to 1000 milliseconds.

Turn the VALUE knob to the right to increase the Delay Time.

Turn the VALUE knob to the left to decrease the Delay Time.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “FEEDBACK” should be highlighted.

FEEDBACK

This Parameter allows you to control the number of repetitions added to the original sound. You may select from 0 (minimum number of echo repeats) to 127 (maximum number of echo repeats).

Turn the VALUE knob to the right to increase the number of echo repetitions.

Turn the VALUE knob to the left to decrease the number of echo repetitions.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “MIX” should be highlighted.

MIX

This Parameter allows you to adjust the balance between the echo repeats and the “dry” (no Delay) sound. You may select from 0 (only the “dry” sound with no Delay effect at all) to 127 (only the echo repeats are heard with no dry sound).

NOTE: At a setting of 64 the “dry” or original sound and the echo repetitions are equally balanced.

Turn the VALUE knob to the right to emphasize the Delay repeats.

Turn the VALUE knob to the left to emphasize the “dry” sound.

REVERB FUNCTION Mode Page

This FUNCTION Mode Page allows you to control the Reverb (reverberation) for the instrument. All of these Parameters can be Recorded to a Patch.

Accessing the REVERB FUNCTION Mode Page using the MENU / EXIT, DIRECTION and PAGE buttons:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

2. Press the DIRECTION “▼” button three times. The Information Center Display should now look like this:



3. Press the ENTER button. The Information Center Display should now look like this:



Page 1 of the PATCH EDIT -EFFECT/EQ FUNCTION Mode should now display.

4. Press the PAGE “▶” button four times. The Information Center Display should now look like this:



Accessing the REVERB FUNCTION Mode Page using the Shortcut:

Press and Hold the ON button located underneath the REVERB DEPTH knob.



You are now in the REVERB FUNCTION Mode Page. You can now use the DIRECTION buttons in conjunction with the VALUE knob to make various changes to the Reverb. These changes are explained starting on the next page.

If you followed the instructions on the previous pages, the Information Center Display should look like this:



The box to the right of “SWITCH” should be highlighted.

SWITCH

This Parameter allows you to turn REVERB “ON” or “OFF.”

Turn the VALUE knob or press the ON button on the Control Panel to turn Reverb “ON” or “OFF.”

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “TYPE” should be highlighted.

TYPE

This Parameter allows you to select different Reverb Types. The data chart below shows the options you may select.

REVERB TYPE Options	
Reverb Type	Description
Room 1	Large room.
Room 2	Small room.
Live	Ambient room.
Hall 1	Dark hall, similar to a theatre.
Hall 2	Bright hall, similar to an auditorium.
Church	Large enclosure with a high ceiling.
Plate	Reverb produced by a steel plate.
Spring	Hammond spring-type Reverb.

Turn the VALUE knob to the right to scroll forward through the choices.

Turn the VALUE knob to the left to scroll backward through the choices.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “DEPTH” should be highlighted.

DEPTH

This Parameter allows you to set the overall depth of the entire Reverb effect. You may select from 0 no Reverb) to 127 (maximum Reverb).

Turn either the VALUE knob or the REVERB DEPTH knob on the Control Panel to the right to increase the amount of Reverb.

Turn either the VALUE knob or the REVERB DEPTH knob on the Control Panel to the left to decrease the amount of Reverb.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “TIME” should be highlighted.

TIME

This Parameter allows you to select the Reverb Decay Rate. You may select from 0 to 127. A higher value results in a longer decay.

Turn the VALUE knob to the right to increase the Reverb Decay Time.

Turn the VALUE knob to the left to decrease the Reverb Decay Time.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “MODE” should be highlighted.

PRE-LPF (Low Pass Filter)

This Parameter allows you to adjust the tone quality of the sound before it arrives at the Reverb. This allows you to simulate different acoustic environments or mechanical Reverb devices. You may select from 0 to 127. A higher value simulates a harder floor/wall/ceiling material.

Turn the VALUE knob to the right to make the Reverb brighter.

Turn the VALUE knob to the left to make the Reverb darker.

◆ EQUALIZER FUNCTION Mode Page

This FUNCTION Mode Page allows you to adjust the Equalization of the sound for each individual Patch.

NOTE: The Parameters controlled by the MASTER EQUALIZER knobs cannot be Recorded into Patches; however the Parameters in the EQUALIZER FUNCTION Mode Page can be Recorded as part of a Patch. This is explained more fully starting below.

◆ Accessing the EQUALIZER FUNCTION Mode Page using the MENU / EXIT, DIRECTION and PAGE buttons:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

2. Press the DIRECTION “▼” button three times to highlight the “EFFECT/EQ” box.



3. Press the ENTER button. The Information Center Display should now look like this:



4. Press the PAGE “▶” button five times. The Information Center Display should now look like this:



NOTE: The violet-colored shapes on the right side of the screen are visual representations of the shapes of the selected Parameters. You will see their shapes change in response to the edits you make.

◆ **Accessing the EQUALIZER FUNCTION Mode Page using the SHIFT button:**

1. Press and Hold the SHIFT (MENU / EXIT) button.
2. While holding the SHIFT button, turn any one of the four EQUALIZER knobs. The Information Center Display will look similar to this:

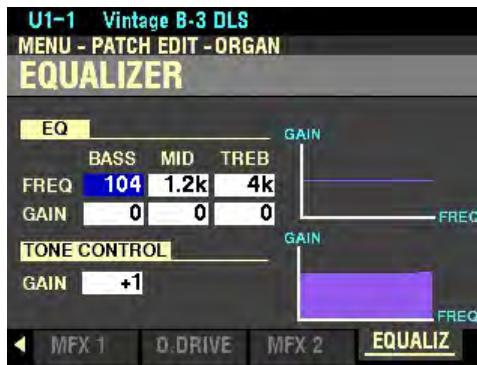


NOTE: The box corresponding to the MASTER EQUALIZER knob you turned will be highlighted. For example, if you Press and Hold the SHIFT button and move the MID knob, the box underneath “MID” will be highlighted.

3. Release the SHIFT button.

You are now in the EQUALIZER FUNCTION Mode Page. You can now use the DIRECTION buttons in conjunction with the VALUE knob to make changes to the Master Equalizer. These changes are explained starting on the next page.

If you followed the instructions on the previous pages, the Information Center Display should look like this:



The box to the right of “FREQ” underneath “BASS” should be highlighted.

BASS - Bass Central Frequency Adjust and Gain

These Parameters allow you to adjust the central frequency and amount of the Bass frequency band. You may select from 20Hz to 200Hz.

Use the DIRECTION “◀” and “▶” buttons to select either FREQ or GAIN for the Bass frequencies.

When you have made your selection:

Turn the VALUE knob to the right to increase the setting.

Turn the VALUE knob to the left to decrease the setting.

From the above screen, press the DIRECTION “▶” button once.



The box underneath “MID” should be highlighted.

MID - Midrange Central Frequency Adjust, Gain and Resonance

These Parameters allow you to adjust the central frequency, amount and resonance of the Midrange frequency band. You may select from 250Hz to 3.1kHz.

Use the DIRECTION “◀” and “▶” buttons to select either FREQ or GAIN for the Midrange frequencies.

When you have made your selection:

Turn the VALUE knob to the right to increase the setting.

Turn the VALUE knob to the left to decrease the setting.

From the above screen, press the DIRECTION “►” button once.



The box underneath “TREB” should be highlighted.

TREB - Treble Central Frequency Adjust and Gain

These Parameters allow you to adjust the central frequency and amount of the Treble frequency band. You may select from 4.0kHz ~ 8.0kHz.

Use the DIRECTION “▲” and “▼” buttons to select either FREQ or GAIN for the Treble frequencies.

When you have made your selection:

Turn the VALUE knob to the right to increase the setting.

Turn the VALUE knob to the left to decrease the setting.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “TONE CONTROL” should be highlighted.

TONE CONTROL

This Parameter duplicates the performance of the tone control on the AO-28 preamp of a B-3 or C-3 or the AO-29 preamp on an A-100. Its purpose is, to cut the overall treble above 200Hz gently. You may select from -9 to +9. At 0, the effect becomes neutral, -5 is a moderate amount of treble cut and -9 is the maximum amount.

NOTE: A setting of -1 corresponds to the maximum setting of the B-3/C-3/A-100 tone control.

NOTE: The tone control found on the B-3/C-3, was only available at minus settings, but this Parameter allows you to select plus settings as well.

NOTE: The sound may distort if gains are raised too high. Adjust accordingly.

Turn the VALUE knob to the right to increase the setting.

Turn the VALUE knob to the left to decrease the setting.

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XK-4

**SPECIAL
PERFORMANCE
FEATURES**

SPECIAL PERFORMANCE FEATURES

Your Hammond XK-4 has a number of Special Performance Features which enable you to change various characteristics of the sound or change how an Expression Pedal or Foot Switch will work. This chapter explains each of these in detail.

◆ OCTAVE



This feature allows you to change the Octave of the selected Part.

The OCTAVE buttons (shown above) allow you to select which Part will receive an Octave setting.

The data chart below shows the options you may select.

OCTAVE Options	
Setting	Description
-2	The sound is two octaves below the regular pitch.
-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.
+2	The sound is two octaves above the regular pitch.

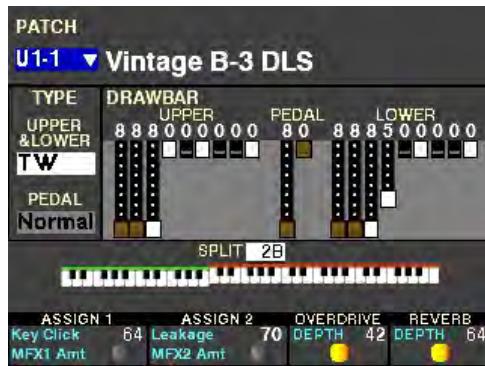
NOTE: The Octave settings controlled by the OCTAVE buttons are independent of the OCTAVE Parameters in the **COMBINATION** FUNCTION Mode. If you want to change the Octave setting of individual Voice Sections, you can do so either from the OCTAVE Parameters in the PLAY screen or from the SETTING Page of the **COMBINATION** FUNCTION Mode.

The following pages will explain how to change the Octave of the UPPER, LOWER and PEDAL Parts.

◆ **Changing the Octave for the UPPER Part:**

TRY THIS:

1. Make sure the instrument is un-transposed or playing in “concert” pitch (TRANSPOSE button LED not lit) and Patch U1-1 is selected. The Information Center Display should look like this:



2. Press the UP button once. The Information Center Display should show the following:



Notice there is now a red box to the right of the keyboard icon at the bottom of the screen: OCT +1, The UPPER Part (section of the keyboard to the right of the SPLIT point) will now sound one octave higher. The UP button LED will also light.

3. Press the DOWN button. The red box OCT +1 will disappear and the UPPER Part will now play at the normal octave. The UP button LED will also turn “OFF.”
4. Press the DOWN button once more. The Information Center Display should show the following:



Notice there is now a red box to the right of the keyboard icon at the bottom screen: OCT -1. The UPPER keyboard will now sound one octave lower. The DOWN button LED will also light.

5. Press the UP button once. The red box OCT -1 will disappear and the UPPER keyboard will now play at the normal octave. The UP button LED will also turn “OFF.”

◆ Changing the Octave for the LOWER Part:

NOTE: The SPLIT button must be “ON” (orange LED lit) in order to hear these changes.

1. Make sure the instrument is un-transposed or playing in “concert” pitch (TRANSPOSE button LED not lit) and Patch U1-1 is selected. The Information Center Display should look like this:

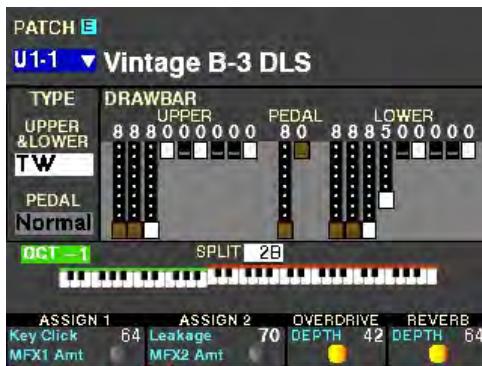


2. Press and Hold the LOWER button and press the UP button. The Information Center Display should show the following:



Notice there is now a green box on the left side of the display OCT +1. The LOWER keyboard (section of the keyboard to the left of the SPLIT point) will now sound one octave higher. The LOWER button LED will also light.

3. Press and Hold the LOWER button and press the DOWN button two times. The Information Center Display should show the following:



Notice the green box on the left side of the display now shows OCT -1. The LOWER Part will now sound one octave lower. The LOWER button LED will also light.

7. Press and Hold the LOWER button and press the UP button once. The green box OCT -1 will disappear and the LOWER Part will now play at normal pitch. The LOWER button LED will also turn "OFF."

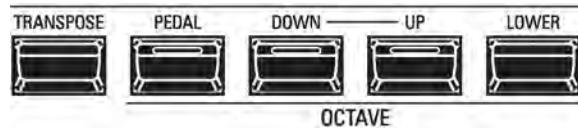
◆ Changing the Octave for the PEDAL Part:

You can change the Octave for the PEDAL Part either from the INTERNAL / EXTERNAL ZONE PLAY Mode Page or from the INT ZONE FUNCTION Mode Page in the PATCH EDIT MENU mode Page.

See page 378 for information on changing the PEDAL Octave from the INT ZONE PLAY Mode Page.

See page for information on changing the PEDAL Octave from the PATCH EDIT MENU Mode Page.

◆ TRANSPOSE (Key Select)

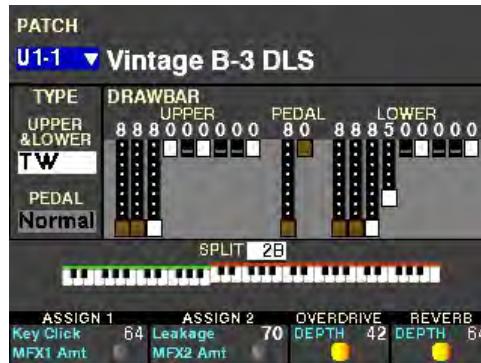


This feature allows you to shift the musical key of the entire instrument. This is useful if you have a piece of music written in one key but which needs to sound in another key; for example, a song written and played in C Major, could sound in G Major. TRANSPOSE will step either up or down six (6) semitones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

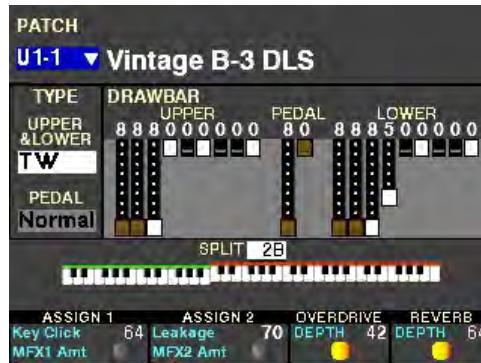
The TRANSPOSE feature consists of the TRANSPOSE button, plus the DOWN and UP buttons to the right of the TRANSPOSE button. The DOWN button allows you to transpose lower and the UP button allows you to transpose higher.

TRY THIS:

1. Make sure the instrument is un-transposed or playing in "concert" pitch (TRANSPOSE button LED not lit) and Patch U1-1 is selected. The Information Center Display should look like this:



2. Press and Hold the TRANSPOSE button and look at the Information Center Display. The upper right portion of the screen should be blank.



3. While continuing to hold the TRANSPOSE button, press the UP button once. The Information Center Display should show the following:



Notice the message at the upper right of the display +1. You have now transposed the entire instrument up one half-step - when you press a "C" note you will hear the note "C#" above it.

4. Now Press and Hold the TRANSPOSE button and press the DOWN button once. The message at the upper right of the display will disappear and the instrument is now back to concert pitch. The TRANSPOSE button LED will also turn "OFF."
5. Press and Hold the TRANSPOSE button and press the DOWN button once. The Information Center Display should show the following:



Notice the message at the upper right of the display -1. You have now transposed the entire instrument down one half-step - when you depress a "C" note you will hear the note "B" below it.

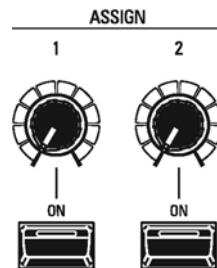
6. To return the instrument to concert pitch, Press and Hold the TRANSPOSE button and press the UP button once. The message at the upper right of the display will disappear and the instrument is now back to concert pitch. The TRANSPOSE button LED will also turn "OFF."

NOTE: You can also transpose the entire instrument by using the MASTER TRANSPOSE feature in the SOUND FUNCTION Mode. This is explained in the SPECIAL UTILITY FEATURES chapter of this Guide starting on page 427.

NOTE: If you Save a Setup with the instrument transposed using the MASTER TRANSPOSE, the transposition setting will be Recorded. If you Load the Setup to the instrument, the transposition setting will load along with the rest of the information contained in the Setup. For more information about Setups, please consult the USING MEMORY chapter of this Guide starting on page 462.

◆ ASSIGN controls

The ASSIGN 1 and ASSIGN 2 controls are located on the right side of the Control Panel.



These controls can be used to control various functions and effects. The ASSIGN buttons allow you to control assignable functions that can be turned "ON" and "OFF" while the ASSIGN knobs are used to control functions which are continuously variable such as Key Click Level, Vibrato Rate, etc.

◆ ASSIGN FUNCTION Mode

This FUNCTION Mode allows you to select the functions for the ASSIGN controls.

To access the ASSIGN FUNCTION Mode, do the following:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The "ORGAN" box should be highlighted.

2. Press the DIRECTION "►" button once. The Information Center Display should now look like this:



The "ASSIGN" box should be highlighted.

3. Press the ENTER button. The Information Center Display should now look like this:



You can now use the DIRECTION buttons in conjunction with the VALUE knob to make changes to the characteristics of the various Controls. These changes are explained starting below.

◆ ASSIGN 1 & 2

SWITCH MODE

This Parameter allows you to assign different functions to the ASSIGN buttons. The Parameters are identical for both the ASSIGN 1 and ASSIGN 2 buttons.

The data chart below shows the options you may select.

ASSIGN 1 / 2 SWITCH MODE Options	
Setting	Description
Off	No function assigned.
Sustain Upper	Allows you to turn Upper Sustain "ON" or "OFF."
Sustain Lower	Allows you to turn Lower Sustain "ON" or "OFF."
TW Brake	Allows you to bend the pitch, with the amount being determined by a Parameter setting.
Spring Shock	Allows you to produce the effect of a Spring Reverb unit being jostled.
MFX2 Delay Time	Allows you to set the time for the <u>Delay</u> MULTI EFFECT 2 by touching the button repeatedly. Pressing and Holding the button will silence the Delay effect.
Multi Effects 1	Allows you to turn the selected MULTI EFFECT 1 "ON" or "OFF."
Multi Effects 2	Allows you to turn the selected MULTI EFFECT 2 "ON" or "OFF."
Ext. Zone 1	Allows you to enable or disable MIDI transmission for External Zone 1.
Ext. Zone 2	Allows you to enable or disable MIDI transmission for External Zone 2.
Ext. Zone 3	Allows you to enable or disable MIDI transmission for External Zone 3.

Use the DIRECTION “▲” and “▼” buttons to move among the options for ASSIGN 1 and ASSIGN 2.

When you have made your selection:

Turn the VALUE knob to the right to scroll forward through the choices.

Turn the VALUE knob to the left to scroll backward through the choices.

KNOB MODE

This Parameter allows you to assign different functions to the ASSIGN knobs. The Parameters are identical for both the ASSIGN 1 and ASSIGN 2 knobs.

The data chart below shows the options you may select.

ASSIGN 1 / 2 KNOB MODE Options	
Setting	Description
Off	No function assigned.
MFX1 Amount	Allows you to adjust the amount of the selected MULTI EFFECT 1.
MFX2 Amount	Allows you to adjust the amount of the selected MULTI EFFECT 2.
Leakage Level	Allows you to adjust the Leakage Level for the Tone Wheel (TW) Organ Type.
Key Click Level	Allows you to adjust the Key Click Level for the Tone Wheel (TW) Organ Type.
V. Multi Con.Depth	Allows you to adjust the keying depth of the Virtual Multi-Contacts for the Tone Wheel (TW) Organ Type.
TW Vibrato Rate	Allows you to adjust the Vibrato Rate for the Tone Wheel (TW) and Transistor (Vx, Farf, Ace) Organ Types.
Tremulant Rate	Allows you to adjust the Tremulant Rate for the Pipe Organ Type.
Tone Control	Tone Control Value for Tone Wheel and Transistor Organs.
Ext. Zone 1 Vol	Allows you to adjust the Volume for External Zone 1.
Ext. Zone 1 Pan	Allows you to adjust the Pan (directionality) for External Zone 1.
Ext. Zone 2 Vol	Allows you to adjust the Volume for External Zone 2.
Ext. Zone 2 Pan	Allows you to adjust the Pan (directionality) for External Zone 2.
Ext. Zone 3 Vol	Allows you to adjust the Volume for External Zone 3.
Ext. Zone 3 Pan	Allows you to adjust the Pan (directionality) for External Zone 3.
Upper Sustain Length	Allows you to adjust the Sustain Length for the UPPER Part.
Lower Sustain Length	Allows you to adjust the Sustain Length for the LOWER Part.

Use the DIRECTION “▲” and “▼” buttons to move among the options for ASSIGN 1 and ASSIGN 2.

When you have made your selection:

Turn the VALUE knob to the right to scroll forward through the choices.

Turn the VALUE knob to the left to scroll backward through the choices.

◆ CONTROLLER FUNCTION Mode

This FUNCTION Mode allows you to select the Parameters for the Pitch Bend and Modulation Wheels as well as a connected Damper Pedal.

To access the CONTROLLER FUNCTION Mode, do the following:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The "ORGAN" box should be highlighted.

2. Press the DIRECTION "▼" button four times. The Information Center Display should now look like this:



The "CONTROLLER" box should be highlighted.

3. Press the ENTER button. The Information Center Display should now look like this:



You can now use the DIRECTION buttons in conjunction with the VALUE knob to make changes to the characteristics of the various Controls. These changes are explained starting on the next page.

If you followed the instructions on the previous pages, the Information Center Display should look like this:



The box to the right of "RANGE UP" should be highlighted.

PITCH BEND

RANGE UP

This Parameter allows you to set the amount by which the pitch will bend up using the Pitch Bend Wheel. The lowest setting is 0 (no change), while the highest setting is 12 (twelve half-steps, or one full octave up). The default setting is 2.

Turn the VALUE knob to the right to increase the UP Range.

Turn the VALUE knob to the left to decrease the UP Range.

From the above screen, press the DIRECTION "▼" button once.



The box to the right of "RANGE DOWN" should be highlighted.

RANGE DOWN

This Parameter allows you to set the amount by which the pitch will bend down using the Pitch Bend Wheel. The lowest setting is 0 (no change), while the highest setting is 12 (twelve half-steps, or one full octave down). The default setting is 2.

Turn the VALUE knob to the right to increase the DOWN Range.

Turn the VALUE knob to the left to decrease the DOWN Range.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “MODE” should be highlighted.

MODULATION

This Parameter allows you to select the function for the Modulation Wheel for each Section. The data chart below shows the options you may select.

MODULATION WHEEL Options	
Setting	Description
Off	The MODULATION Wheel has no function.
Mod.	Adds Modulation to the selected Section.
Les	Controls the speed of the Leslie.
OD	Controls the amount of Overdrive.
MFX 1	Controls the amount of the selected MULTI EFFECTS 1 setting.
MFX 2	Controls the amount of the selected MULTI EFFECTS 2 setting.

Turn the VALUE knob to the right to scroll forward through the choices.

Turn the VALUE knob to the left to scroll backward through the choices.

From the screen shown on the previous page, use the DIRECTION buttons to highlight the box to the right of “UPPER”



DAMPER

This Parameter allows you to adjust whether or not a Part will receive Damper information. The data chart below shows the options you may select.

DAMPER Options	
Setting	Description
Off	A connected Damper Pedal will not affect the selected Part.
On	A connected Damper Pedal will sustain or “damp” the selected Part.

Use the DIRECTION “▲” and “▼” buttons to select UPPER, LOWER or PEDAL.

When you have made your selection:

Turn the VALUE knob to turn this Parameter On or Off.

◆ **CONTROL FUNCTION** Mode

This FUNCTION Mode allows you to select the parameters for the various Controls that you prefer.

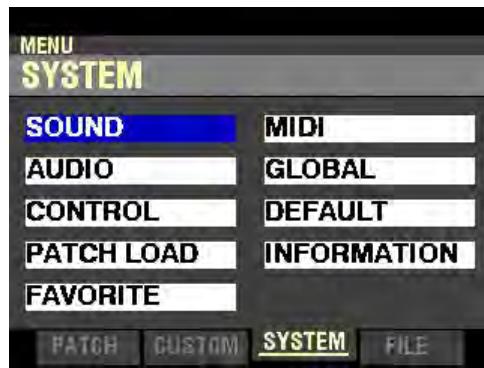
To access the CONTROL FUNCTION Mode, do the following:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



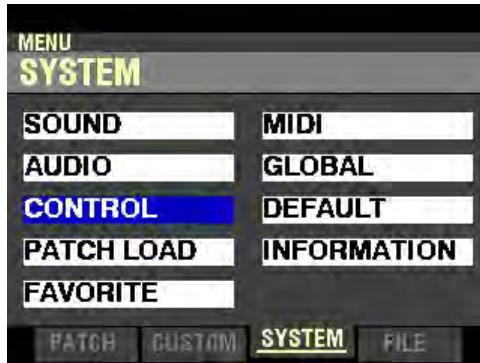
The “ORGAN” box should be highlighted.

2. Press the PAGE “▶” button two times. The Information Center Display should now look like this:



This is the SYSTEM Menu. The “SOUND” box should be highlighted.

3. Press the DIRECTION “▼” button two times. The Information Center Display should now look like this:



4. Now press the ENTER button. The Information Center Display should now look like this:



The box to the right of “TIP MODE” should be highlighted.

You can now use the PAGE NAVIGATION buttons in conjunction with the VALUE knob to make changes to the characteristics of the various Controls. These changes are explained starting on the next page.

♦ FOOT SW

This Parameter allows you to select functions for a connected Foot Switch.

TIP MODE / RING MODE

What Is “TRS”?

A typical momentary Foot Switch will connect to an instrument such as the XK-4 by means of a plug similar to the one shown below.



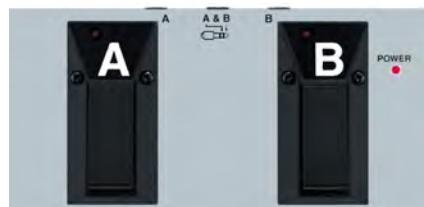
TRS is an acronym for Tip-Ring-Sleeve, and refers to the fact that a connecting plug can have more than one connector. This means that more than one Foot Switch can be connected to the SK instrument, thereby allowing you to control more than one function using the same Foot Switch jack. If you wish to do this, you will need a Stereo Adapter which has a Stereo plug and two (2) Mono jacks.

NOTE: This type of adapter is also called a “splitter.”



Insert the Stereo plug into the FOOT SW jack on the SK instrument and connect a Foot Switch to each of the Mono input jacks. In most cases, the Left (L) input jack will access the Tip function while the Right (R) will access the Ring function.

You can also use a TRS cable to connect a dual-switch (example shown below) to one of the FOOT SW jacks.



If you do this, one of the switches will be assigned to Tip mode and the other to Ring mode. However, if you use a dual-switch which allows you to select either Latching or Momentary operation, be sure to select Momentary to use the switch with the XK-4.

NOTE: The plug-in receptacles on some commercially available adaptors may be marked “TIP” or “A” and “RING” or “B” for easier identification. Follow these markings when setting up your Foot Switches.

FOOT SW

In both the FOOT SWITCH 1 and FOOT SWITCH 2 screens, you will see two small indicators "TIP" and "RING."



The XK-4 is compatible with two Foot Switches connected to a stereo "splitter" or dual foot switch assembly. Therefore, the FOOT SW jack monitors TIP and RING respectively. These will light in accordance with the type of Foot Switch connected to the FOOT SW jack.

On a monaural "TS" (Tip-Sleeve" foot switch (such as the Hammond FS-9H), "RING" is not recognized and is part of "SLEEVE." Therefore, when the FS-9H is connected to the foot switch jack, "RING" is recognized as connected and the "RING" indicator will light.

NOTE: If you connect a Foot Switch while the power to the instrument is "OFF," the polarity of the connected Foot Switch(es) is/are automatically detected when the power to the instrument is turned "ON." However, if you have connected Foot Switches or a Damper Pedal while the instrument is "ON" and it is not working correctly, you can calibrate them by following the procedures described on pages 334 and 342.

If you followed the instructions on the previous pages, the Information Center Display should look like this:



The box to the right of "TIP MODE" should be highlighted.

There are 13 settings for the Foot Switches. The data chart below explains each one.

FOOT SWITCH Options	
Setting	Description
Off	Pressing the Foot Switch will have no effect.
Leslie S/F ALT	Allows you to use the Foot Switch to switch back and forth between Leslie Slow and Fast Rotor Speeds. Each time the Foot Switch is pressed and released, the Leslie Rotors will change speeds.
Leslie S/F MOM	Allows you to use the Foot Switch to switch Leslie Rotor Speeds. When the Foot Switch is pressed and held, the Leslie Rotors will go at Fast speed. When the Foot Switch is not engaged, the Leslie Rotors go at Slow speed.
Leslie S/F TRI	Allows you to use the Foot Switch to switch back and forth between Leslie Slow and Fast Rotor Speeds similar to the ALT mode. Additionally, if the Foot Switch is pressed and held for longer than 1 second, the Leslie Rotors will go to the Off or Stop position.
Tone Wheel Brake	Allows you to bend the pitch, with the amount being determined by a Parameter setting.
*Favorite Fwd	Allows you to use the Foot Switch to move forward through the Favorites.
*Favorite Rev	Allows you to use the Foot Switch to move backward through the Favorites.
+Spring Shock	Allows you to use the Foot Switch to add the sound of a Spring Reverb unit being jostled.
Delay	Allows you to adjust the Delay Time of the Effects, at the interval of pressing the Foot Switch. The delay is heard while the Foot Switch is held down
Organ U&L Sustain	Allows you to add Sustain to the UPPER/LOWER keyboard(s) of the ORGAN Section.
Pedal To Lower	Allows you to use the Foot Switch to turn PEDAL TO LOWER "ON."
++Bass 1C ~ Bass 3C	Allows you to use the Foot Switch to play a specific Pedal note.
ProChord	Allows you to add ProChord harmony.

* - By selecting "Favorite Fwd, Rev," Favorites can be selected sequentially by using the Foot Switch to advance either forward or backward. Also, if either "1" or "10" are selected, the sequence will "roll over" to the next numbered Bank

+ - "Spring Shock" occurs when the springs in a spring reverb unit move around and strike the reverb tank, resulting in a loud "bang" Some modern and progressive music uses this as a musical effect.

++ - Many jazz and blues organists provide a bass line with the left hand on the Lower Manual and strike one Pedal note at the onset of each bass note to give the effect of a plucked string bass (called a "thump").

NOTE: All of the above functions can be set for either **TIP** or **RING** MODE. However, RING MODE will have no effect if only one Foot Switch is connected to the FOOT SW jack. You can then use **TIP** MODE to select the function you want.

Use the DIRECTION "▲" and "▼" buttons to select either **TIP MODE** or **RING MODE**.

When you have made your selection:

Turn the VALUE knob to the right to scroll forward through the choices.

Turn the VALUE knob to the left to scroll backward through the choices.

CALIBRATE (POLARITY)

Some Foot Switches, such as the Hammond FS-9H, are “normally-open” (make contact when pressed) while others are “normally-closed” (break contact when pressed). The CALIBRATE Parameter allows you to calibrate the polarity of a Foot Switch so that it will function correctly with the XK-4.

To calibrate a Foot Switch for the XK-4, do the following:

NOTE: Do not press the Foot Switch while performing this operation.

1. From the FOOT SWITCH screen, press the DIRECTION “▼” button repeatedly until the box, “CALIBRATE” is highlighted:

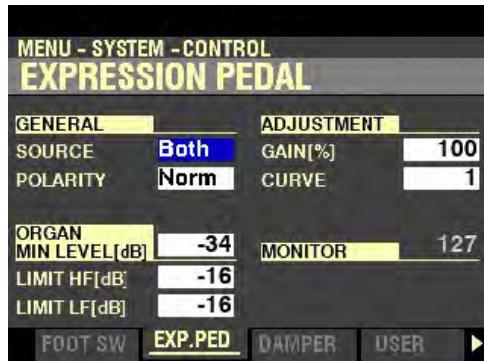


2. Press the ENTER button. You will see the following message in the display for approximately 1/2 second:

Calibrated.

After the above message disappears, the connected Foot Switch is set to work properly with the XK-4.

From the screen shown on the previous page, press the PAGE “▶” button once.



The box to the right of “SOURCE” should be highlighted.

◆ EXPRESSION PEDAL

This FUNCTION Mode Page allows you to control how a connected Expression Pedal will function.

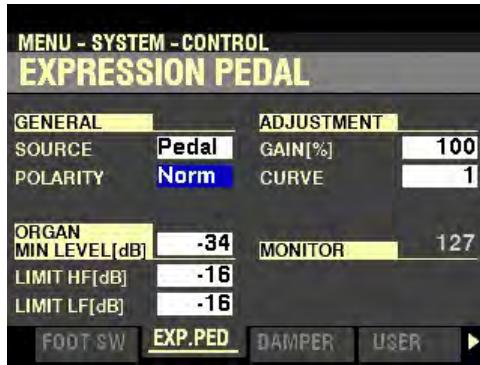
SOURCE

This Parameter allows you to select the source of Expression control. The data chart below shows the options you may select.

EXPRESSION SOURCE Options	
Setting	Description
Exp. Pedal	Instrument volume is controlled by a connected Expression Pedal.
MIDI	MIDI Expression Data (CC#11) will be received at the UPPER Internal Channel
Both	A connected Expression Pedal will control both instrument volume and MIDI Expression data.

Turn the VALUE knob to select the option you want.

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “POLARITY” should be highlighted.

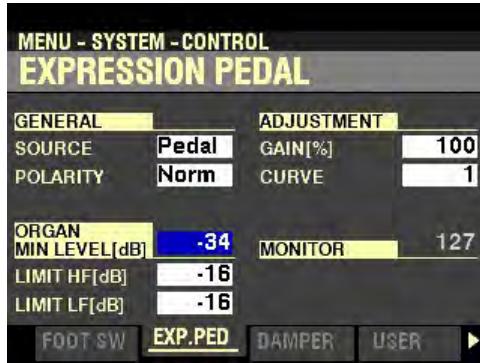
POLARITY

This Parameter allows you to set the polarity type of a connected Expression Pedal. The data chart below shows the options you may select.

EXPRESSION PEDAL POLARITY Options	
Setting	Description
Normal	An Expression Pedal such as Hammond EXP-50, EXP-50J, etc.
Reverse	An Expression Pedal with reverse polarity

Turn the VALUE knob to select Normal or Reverse.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “ORGAN MIN LEVEL” should be highlighted.

ORGAN MINIMUM LEVEL

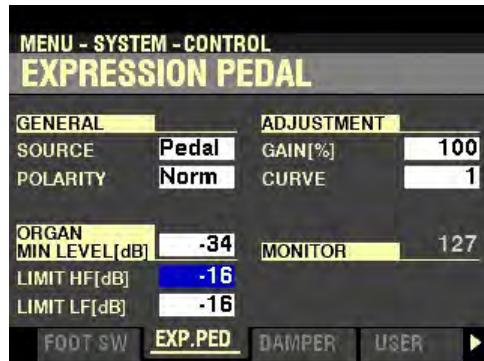
This Parameter allows you to set the amount of volume for the ORGAN Section when the Expression Pedal is “closed” or set at its minimum position. You may select from -40 to 0 db as well as Off.

Turn the VALUE knob to the right to increase the Minimum Level.

Turn the VALUE knob to the left to decrease the Minimum Level.

NOTE: At a setting of 0 or Off there will still be a small amount of Volume when the Expression Pedal is closed. This is the normal setting for an organ such as a vintage Hammond Organ.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “LIMIT HF” should be highlighted.

EXPRESSION LIMIT

On many home audio components, there is a control called Loudness. This is intended to correct an anomaly of the human ear whereby high and low frequencies appear to be lacking at low volume levels. The XK-4 incorporates a Loudness algorithm similar to the one found on home audio. At lower volume levels, both high and low frequencies are boosted so that a flatter frequency response will be perceived by the ear.

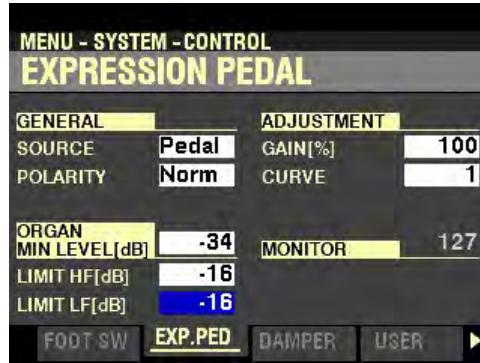
LIMIT HF

This FUNCTION Mode Page allows you to adjust the amount of High Frequencies (above 800Hz) that will be heard when the Expression Pedal is set at minimum. You may select Off (no sound), or from 0db to -40db (minus 40 decibels).

Turn the VALUE knob to the right to increase the High Frequencies.

Turn the VALUE knob to the left to decrease the High Frequencies.

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “LIMIT LF” should be highlighted.

LIMIT LF

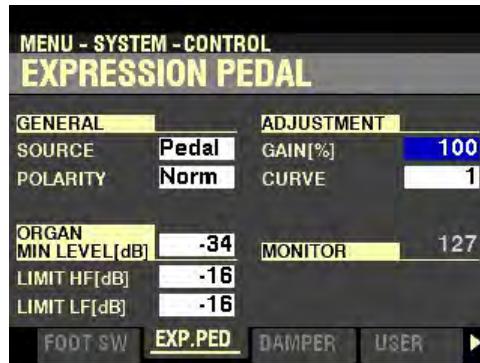
This Parameter allows you to adjust the amount of Low Frequencies (below 800Hz) that will be heard when the Expression Pedal is set at minimum. You may select Off (no sound), or from 0db to -40db (minus 40 decibels).

Turn the VALUE knob to the right to increase the Low Frequencies.

Turn the VALUE knob to the left to decrease the Low Frequencies.

NOTE: The default settings for the ORGAN MIN LEVEL and LIMIT Parameters are designed to replicate the performance of the Expression Pedal on a vintage Hammond Organ such as B-3, C-3, etc. Therefore, as noted on the previous page, there will still be a small amount of Volume when the Expression Pedal is closed. If you want no sound to be heard at the minimum setting of the Expression Pedal, set both of the LIMIT Parameters to 0.

From the above screen, use the DIRECTION buttons to highlight the box to the right of “GAIN.”



GAIN

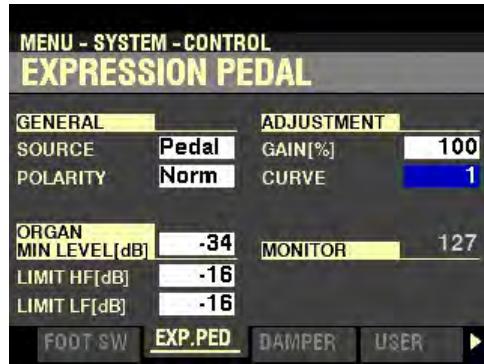
This Parameter allows you to adjust the range of a connected Expression Pedal. You may select from 70% to 130%.

Turn the VALUE knob to the right to increase the amount of Gain.

Turn the VALUE knob to the left to decrease the amount of Gain.

NOTE: The amount of audible change may differ depending on the specific Expression Pedal used. Use this Parameter to obtain the desired response from your particular pedal.

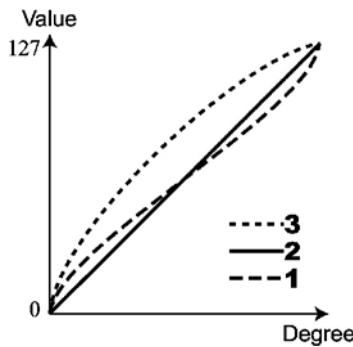
From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “CURVE” should be highlighted.

CURVE

This Parameter allows you to set the “curve” or change of expression value corresponding to the angle of the Expression Pedal when depressed. You may select 3 different Expression Curves. (see the illustration below).



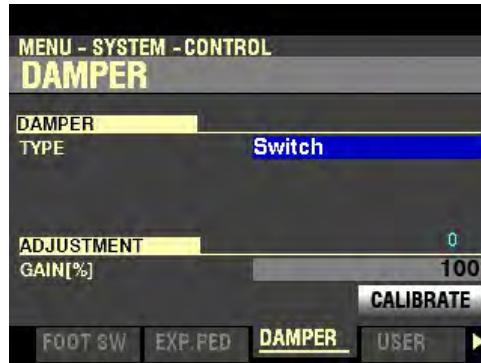
Turn the VALUE knob to select the Expression Curve you want.

NOTE: The default CURVE Parameter setting is designed to replicate the performance of the Expression Pedal on a vintage Hammond Organ such as B-3, C-3, etc.

MONITOR - Expression Monitor

This is merely a way to display the current Expression Value, with 0 being minimum Expression and 127 being maximum Expression. The Expression Monitor can be useful as a troubleshooting aid if you either don't hear any sound or can't change the volume using a connected Expression Pedal.

From the screen shown on the previous page, press the PAGE “▶” button once.



The box to the right of “MODE” should be highlighted.

◆ DAMPER Functions

You can connect a foot switch to use as a Damper or piano-type Sustain pedal. This FUNCTION Mode Page allows you to select Parameters for the Damper Pedal.

MODE

This Parameter allows you to adjust the type of Damper Pedal to connect. The data chart below shows the options you may select.

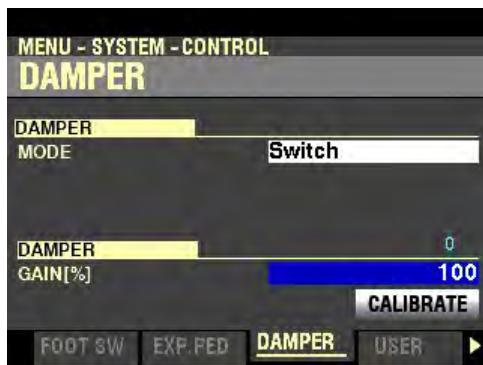
DAMPER PEDAL TYPE Options	
Setting	Description
Switch	Use a “switch” type pedal such as VFP1
Half-Y	Use a Type-Y “potentiometer” switch
Half-R	Use a Type-R “potentiometer” switch
Half-K	Use a Type-K “potentiometer” switch

Turn the VALUE knob to the right to scroll forward through the choices.

Turn the VALUE knob to the left to scroll backward through the choices.

NOTE: The XK-4 implements “half-damping;” however, damper pedals from different manufacturers have their own unique specifications for implementing half-damping. Therefore, three different Parameter settings are provided for the three most common damper pedals.

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “GAIN[%]” should be highlighted.

GAIN

This Parameter allows you to adjust the range of a connected Damper Pedal. You may select from 70% to 130%; however, the amount of audible change may differ depending on the specific Damper Pedal used. Use this Parameter to obtain the desired response from your particular pedal.

Turn the VALUE knob to the right to increase the Gain.

Turn the VALUE knob to the left to decrease the Gain.

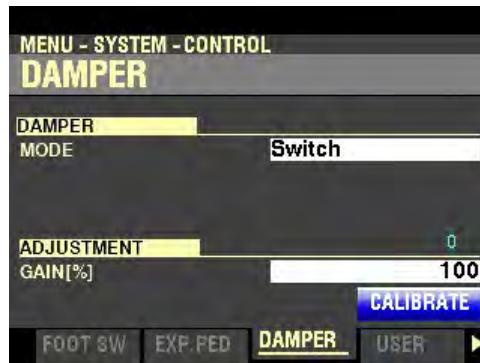
CALIBRATE (POLARITY)

This Parameter allows you to configure the polarity of a Damper Pedal to work properly with the XK-4.

To calibrate a Damper Pedal for the XK-4, do the following:

NOTE: Do not press the Damper Pedal while performing this operation.

1. With the DAMPER FUNCTION Mode Page displaying, press the DIRECTION “▼” button repeatedly until the box, “CALIBRATE” is highlighted:

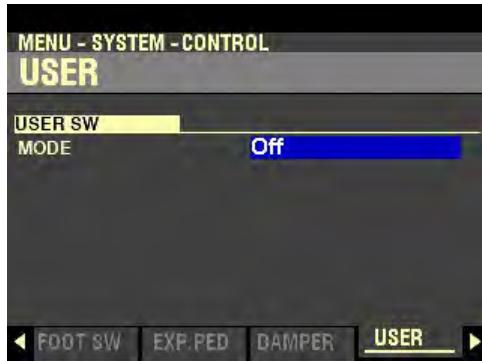


2. Press the ENTER button. You will see the following message in the display for approximately 1/2 second:

Calibrated.

After the above message disappears, the connected Damper Pedal is set to work properly with the XK-4.

From the screen shown on the previous page, press the PAGE “►” button once.



The box to the right of “MODE” should be highlighted.

◆ USER

This FUNCTION Mode Page allows you to select different functions for the USER button. The data chart below shows the options you may select.

USER BUTTON Options	
Setting	Description
Off	The USER button will have no function
Pedal Sustain	Allows you to turn Pedal Sustain “ON” or “OFF.”
Organ Upper Sustain	Allows you to turn Organ Upper Sustain “ON” or “OFF”
Organ Lower Sustain	Allows you to turn Organ Lower Sustain “ON” or “OFF”
Tone Wheel Brake	Allows you to bend the pitch, with the amount being determined by a Parameter setting.
Spring Shock	Allows you to produce the effect of a Spring Reverb unit being jostled.
MFX 2 Delay Time	Allows you to select the amount of Delay of the MULTI EFFECT 2 Delay Parameter. When this mode is selected, pressing the USER button twice will set the Delay Time at the interval between the first and second button presses. You can cancel the Delay by Pressing and Holding the [USER] button.
MFX 1	Allows you to turn the selected MULTI EFFECT 1 “ON” or “OFF.”
MFX 2	Allows you to turn the selected MULTI EFFECT 2 “ON” or “OFF”

Turn the VALUE knob to the right to scroll forward through the choices.

Turn the VALUE knob to the left to scroll backward through the choices.

From the screen shown on the previous page, press the PAGE “▶” button once.



The box to the right of “DEPTH” should be highlighted.

◆ PITCH BEND

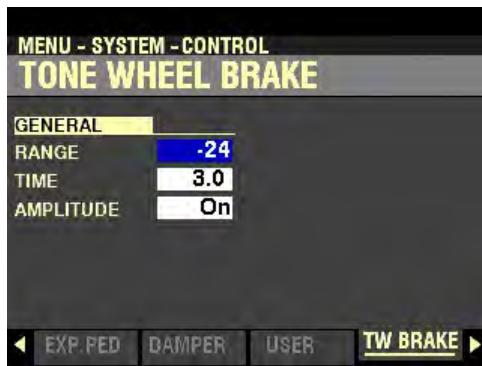
DEPTH

This Parameter allows you to adjust the range of the Pitch Bend Wheel. The data chart below shows the options you may select.

PITCH BEND WHEEL DEPTH Options	
Setting	Description
Patch	The Pitch Bend Wheel will bend the pitch according to the value specified for the Patch
0 ~ 12	The Pitch Bend Wheel will bend the pitch by semitones. This setting takes priority over the Patch settings.

Turn the VALUE knob to select the option you want.

From the screen shown on the previous page, press the PAGE “►” button once.



The box to the right of “RANGE” should be highlighted.

◆ TONE WHEEL BRAKE

On a vintage B-3/C-3/A-100, the synchronous motor running the tone generator turns at a constant speed; therefore “pitch bending” is not possible. However, some jazz players discovered that by turning the RUN switch “OFF” then quickly back “ON” again, a pseudo-“pitch-bend” effect could be created. These Parameters allows you to recreate this effect.

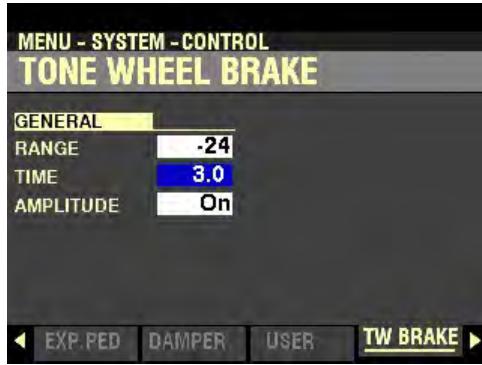
RANGE

This Parameter allows you to adjust the range of the pitch change. You may select from -24 to +12 semitones.

Turn the VALUE knob to the right to raise the Range.

Turn the VALUE knob to the left to lower the Range.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “TIME” should be highlighted.

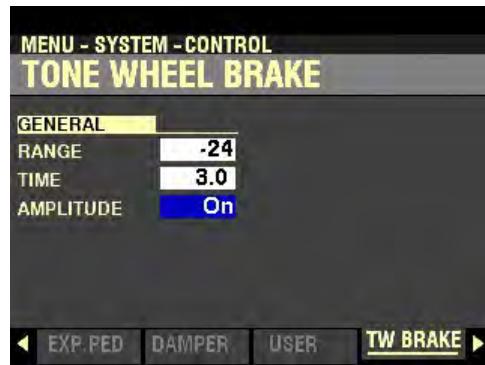
TIME

This Parameter allows you to adjust the rate at which the pitch changes. You may select from 0.1 to 5 seconds.

Turn the VALUE knob to the right to increase the rate.

Turn the VALUE knob to the left to decrease the rate.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “AMPLITUDE” should be highlighted.

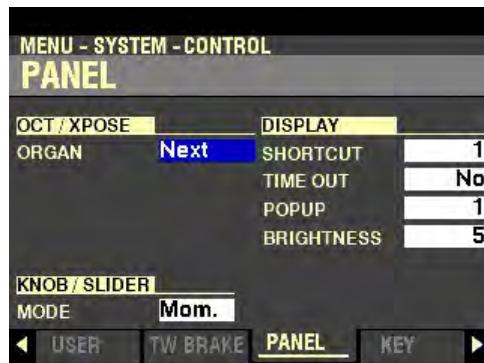
AMPLITUDE

This Parameter allows you to adjust whether the Volume changes or not along with the pitch. The data chart below shows the options you may select.

AMPLITUDE Options	
Setting	Description
On	The Pitch and Volume will change together.
Off	The Pitch will change but not the Volume.

Turn the VALUE knob to turn this Parameter On or Off.

From the screen shown on the previous page, press the PAGE “►” button once.



The box to the right of “ORGAN” should be highlighted

◆ PANEL

This FUNCTION Mode Page allows you to adjust the performance of the various controls on the Control Panel.

OCT. XPOSE

This Parameter allows you to adjust how the OCTAVE DOWN / UP buttons control Octave selection or Transposition. The data chart below shows the options you may select.

OCTAVE / TRANSPOSE Options	
Setting	Description
Every	The Octave or Transposition will change while keys are pressed and held.
Next	If a key or keys are pressed and held and the Octave or Transposition is changed, the key(s) must be released and pressed again before the Octave or Transposition takes effect.

Turn the VALUE knob to select Every or Note.

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “MODE” should be highlighted.

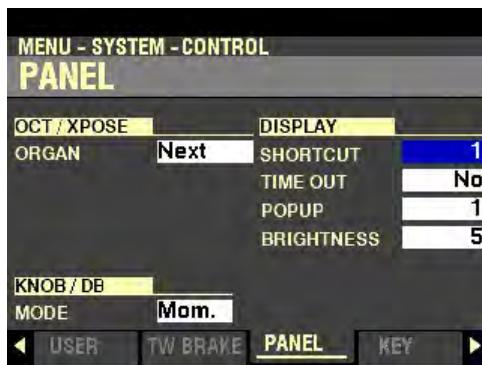
KNOB / DB MODE

This Parameter allows you to adjust how a value is affected when a knob or Drawbar is moved. The data chart below shows the options you may select.

KNOB / DB MODE Options	
Setting	Description
Mom.	When a knob or Drawbar is moved, the value will change immediately.
Across	When a knob or Drawbar is moved the value will not change until the current value is arrived at by the movement of the knob or Drawbar, at which point the value will change.

Turn the VALUE knob to select Mom. or Across.

From the screen shown on the previous page, use the DIRECTION buttons to highlight the box to the right of "SHORTCUT."



DISPLAY

This FUNCTION Mode Page allows you to select how the Information Center Display will function.

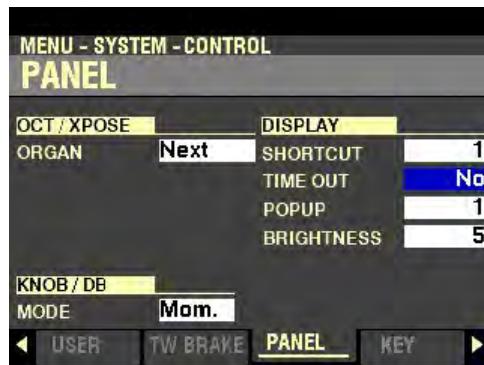
SHORTCUT

As explained in the INFORMATION CENTER DISPLAY of this Guide, several of the FUNCTION Mode Pages can be accessed by Pressing and Holding a button associated with that Page. This Parameter allows you to select how long a button must be held before the FUNCTION Mode Page controlled by that button appears. The data chart below shows the options you may select.

SHORTCUT AMOUNT Options	
Setting	Description
0, 1, 2	The Shortcut will appear when the button is held for the selected time (0, 1 or 2 seconds).
No	The Shortcut feature is disabled.

Turn the VALUE knob to select the option you want.

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “TIME OUT” should be highlighted.

TIME OUT

This Parameter allows you to select how long the Information Center Display will continue to display a FUNCTION Mode Page before reverting to PLAY or MIXER Modes. The data chart below shows the options you may select.

TIME OUT Options	
Setting	Description
4, 8, 16	The FUNCTION Mode Page will display for the selected duration (in seconds).
NEVER	The FUNCTION Mode Page will continue to display until another Page is selected.

Turn the VALUE knob to select the option you want.

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “POPUP” should be highlighted.

POPUP

Moving one of the four MASTER EQUALIZER knobs will cause a small status screen showing the value represented by the knob to appear momentarily (see the illustration below). This small screen is referred to as a POPUP.

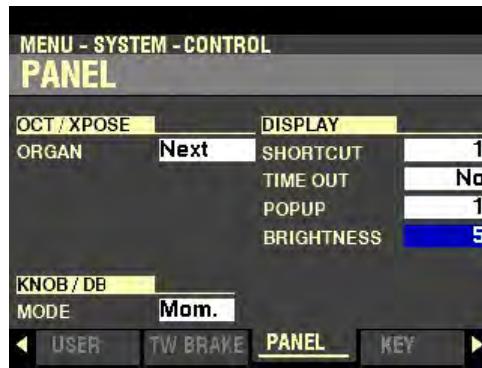


This Parameter allows you to select the interval at which a POPUP is displayed when you move one of the MASTER EQUALIZER knobs. You may select from No (no POPUP will be displayed if a control is moved) or from 0.5 to 2.0 seconds.

Turn the VALUE knob to the right to increase the time.

Turn the VALUE knob to the left to decrease the time.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “BRIGHTNESS” should be highlighted.

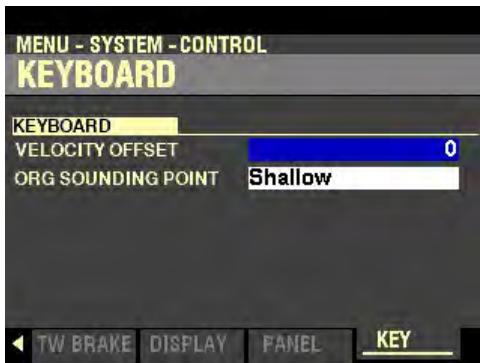
BRIGHTNESS

This Parameter allows you to adjust the Brightness of the backlight of the display. You may select from 0 (dull display) to 10 (very bright display). The default setting is 5.

Turn the VALUE knob to the right to increase the Brightness.

Turn the VALUE knob to the left to decrease the Brightness.

From the screen shown at the bottom of the previous page, press the PAGE “►” button once.



The box to the right of “VELOCITY OFFSET” should be highlighted.

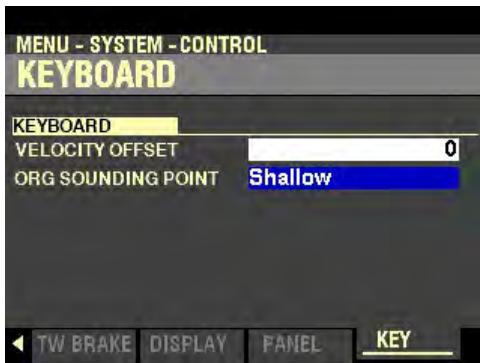
VELOCITY OFFSET

This Parameter allows you to adjust the keyboard velocity to your personal taste or playing style. You may select from -32 to +32 with 0 being the normal setting. Use the “minus” numbers for a heavy Press and the “plus” numbers for a lighter Press.

Turn the VALUE knob to the right to select a lighter Press.

Turn the VALUE knob to the left to select a heavier Press.

From the above screen, press the DIRECTION “▼” button once.



The box to the right of “ORG SOUNDING POINT” should be highlighted.

ORGAN SOUNDING POINT

This Parameter allows you to set the point along the key travel at which sound is produced by the ORGAN Section. The data chart below shows the options you may select.

ORGAN SOUNDING POINT Options	
Setting	Description
Shallow	The ORGAN Section sounds at a shallower key depth.
Deep	The ORGAN Section sounds at a deep key depth..

Turn the VALUE knob to select Shallow or Deep.

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HAMMOND



XK-4

MIDI

(incl. INT. /EXT. ZONES)

MIDI

◆ A Word About What MIDI Can Do

The letters MIDI stand for Musical Instrument Digital Interface. 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.

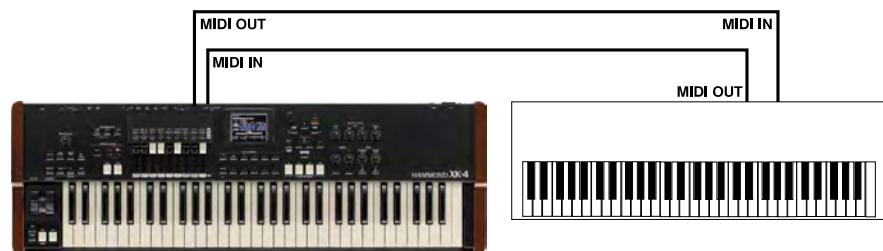
◆ MIDI Connections

◆ 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 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 instrument'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.

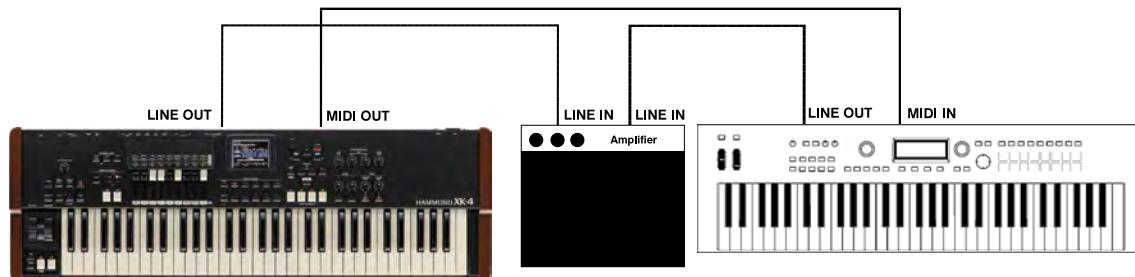


The above is an example of two-way communication between two MIDI-equipped devices. In this example, the keyboard(s) of either instrument can be used to control the sound generators of the other.

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

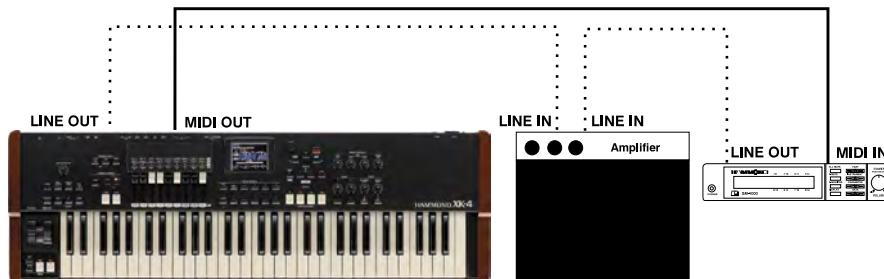
◆ Audio and MIDI Connections

◆ Example: A synthesizer



If you connect the MIDI OUT jack of the XK-4 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 XK-4 keyboard.

◆ Example: A sound module



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.

◆ MIDI FUNCTION Mode

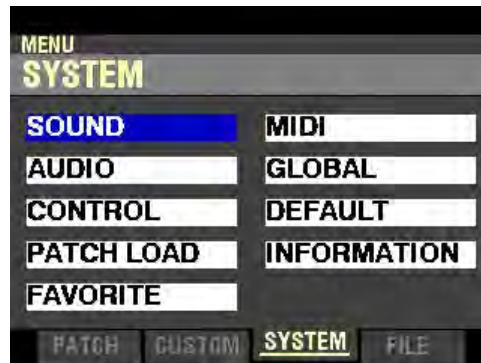
This FUNCTION Mode allows you to set the overall MIDI parameters for the instrument.

TRY THIS:

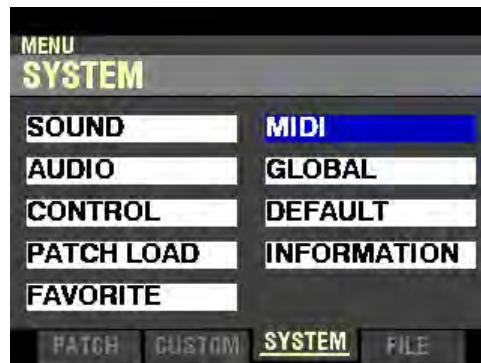
1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



2. Press the PAGE “▶” button two times. The word “SOUND” should be highlighted.



3. Press the DIRECTION “▶” button once. The Information Center Display should now look like this:



4. Press the ENTER button. The Information Center Display should now look like this:



You can now use the DIRECTION and PAGE buttons in conjunction with the VALUE knob to change the MIDI performance of your XK-4. This is explained starting below.

◆ How MIDI Works on the XK-4:

The XK-4 can function in a large variety of MIDI environments. In addition to transmitting basic MIDI information such as Note On/Note Off and Note Velocity, the XK-4 also can transmit Program Changes, Control Changes, NRPN and System Exclusive (Sysex) codes.

It is also possible to use the XK-4 as a MIDI Master or Controller keyboard for layering or multi-timbral (playing more than one sound at the same time) applications. The following paragraphs explain this in more detail.

◆ INTERNAL ZONES

The internal sounds of the instrument will play on what are called the Internal Zones. The Internal Zones transmit Note On/Note Off and Velocity data from the UPPER, LOWER and PEDAL Parts. These channels will both send (MIDI OUT) and receive (MIDI IN) data, and are therefore used when recording and playing back sequences.

NOTE: The UPPER Channel, in addition to Note On/Note Off and Velocity, also is used for transmitting Controller data.

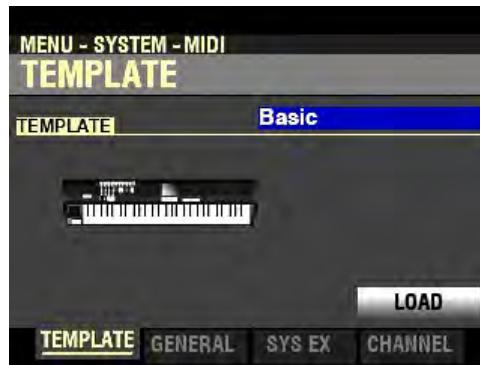
◆ EXTERNAL ZONES

The External Zone Channels allow you to use the XK-4 as a MIDI Master or Controller keyboard. These allow you to play additional sounds from another MIDI instrument such as a sound module. The External Zones transmit but do not receive MIDI data - in other words, they are MIDI OUT only.

There are three (3) External Zone Channels which can be assigned to the UPPER, LOWER or PEDAL Parts. In addition, different configurations can be saved to different Patches - for example, one Patch can have all three External Zones assigned to UPPER, another Patch can have one External Zone each for UPPER, LOWER and PEDAL, etc.

The Internal and External Channels of the instrument are referred to as Zones. The features available for the Zones are found in the ZONE Edit Menu. This is explained fully both in this chapter and in the PATCHES / FAVORITES chapter of this Guide.

If you followed the instructions on the previous pages, you should now see the screen shown below.



The box to the right of “TEMPLATE” should be highlighted.

◆ TEMPLATE

What Is a “MIDI Template?”

Because MIDI can be used with such a wide variety of devices - such as synthesizers, sound modules, sequencers, etc. - there are a number of features associated with MIDI, such as Program Change, Controller Change, etc., that allow each MIDI setup to be optimized for the best results in each application. However, making all of these settings manually can be quite time-consuming and error-prone.

Therefore, your XK-4 contains a number of pre-formatted settings for the various MIDI parameters which represent the most ideal settings for each MIDI environment. A group of these settings is called a MIDI Template.

This Parameter Menu Page allows you to select the MIDI Template you want to use.

To select a MIDI Template, do the following:

1. Use the VALUE knob to see the various Template settings.
2. When you have made your selection, press the DIRECTION “▼” button to highlight the “LOAD” box:



3. Press the ENTER button. The MIDI parameters will be set according to the Template you selected.

IMPORTANT NOTE: For a complete listing of the MIDI Templates for the XK-4, consult the next two pages. In addition to the specific Parameter settings, the chart also contains explanations for the performing environment each Template is designed for. Therefore please read the descriptions carefully to determine the best setting for your particular setup.

MIDI Templates - XK-4

Template		Basic	2 Man Lower	2 Man Upper
Messages	MIDI IN	Sequence	Lower	Upper
	Local Control	On	On	On
	NRPN	On	On	On
	Program Change	On	On	On
	Drawbar Registration	On	On	On
	External Zone	Off	Off	Off
Transmit Channel	Tx. Upper	1	1	1
	Tx. Lower	2	2	2
	Tx. Pedal	3	3	3
	Rx. Upper	1	1 (disregarded, off)	1 (disregarded, off)
	Rx. Lower	2	2 (disregarded, off)	2 (disregarded, off)
	Rx. Pedal	3	3 (disregarded, omni)	3 (disregarded, omni)
Comments		Record and Playback between the SK PRO (stand alone) and external sequencer.	Play with expanded LOWER Keyboard into the MIDI IN Port. (*1) Your performance will be transmitted from the MIDI OUT Port and recorded by an external sequencer.	Play with expanded UPPER Keyboard into the MIDI IN Port. Same as (*1).
Template		Pedal KBD	3 KBD Lower	3 KBD Upper
Messages	MIDI IN	Pedal	Low + Ped	Up + Ped
	Local Control	On	On	On
	NRPN	On	On	On
	Program Change	On	On	On
	Drawbar Registration	On	On	On
	External Zone	Off	Off	Off
Transmit Channel	Tx. Upper	1	1	1
	Tx. Lower	2	2	2
	Tx. Pedal	3	3	3
	Rx. Upper	1 (disregarded, off)	1	1
	Rx. Lower	2 (disregarded, off)	2	2
	Rx. Pedal	3 (disregarded, omni)	3	3
Comments		Play with expanded Pedalboard into the MIDI IN Port. Same as (*1).	Play with both expanded LOWER Keyboard (Ch. 2) and Pedalboard (Ch. 3) into the MIDI IN Port. Same as (*1).	Play with both expanded UPPER Keyboard (Ch. 1) and Pedalboard (Ch. 3) into the MIDI IN Port. Same as (*1).
Template		Organ Upper	Piano	Ensemble
Messages	MIDI IN	Organ Upper	Piano	Ensemble
	Local Control	On	On	On
	NRPN	On	On	On
	Program Change	On	On	On
	Drawbar Registration	On	On	On
	External Zone	Off	Off	Off
Transmit Channel	Tx. Upper	1	1	1
	Tx. Lower	2	2	2
	Tx. Pedal	3	3	3
	Rx. Upper	1 (disregarded, off)	1 (disregarded, off)	1 (disregarded, off)
	Rx. Lower	2 (disregarded, off)	2 (disregarded, off)	2 (disregarded, off)
	Rx. Pedal	3 (disregarded, off)	3 (disregarded, off)	3 (disregarded, off)
Comments		Play the ORGAN Section Upper directly by expanded MIDI keyboard into the MIDI IN Port.	Play the PIANO Section directly by expanded MIDI keyboard into the MIDI IN Port.	Play the ENSEMBLE Section directly by expanded MIDI keyboard into the MIDI IN Port.

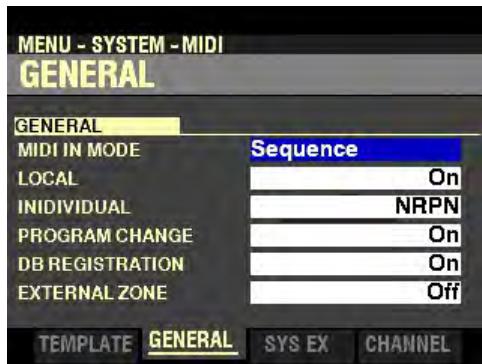
MIDI Templates - XK-4

Template	Synth	EXZ	EXZ 2 Man Lower
Messages	MIDI IN	Synth	Sequence
	Local Control	On	On
	NRPN	On	On
	Program Change	On	On
	Drawbar Registration	On	On
	External Zone	Off	On
Transmit Channel	Tx. Upper	1	Off
	Tx. Lower	2	Off
	Tx. Pedal	3	Off
	Rx. Upper	1 (disregarded, off)	Off
	Rx. Lower	2 (disregarded, off)	Off
	Rx. Pedal	3 (disregarded, off)	Off
Comments		Play the MONO SYNTH Section directly by expanded MIDI keyboard into the MIDI IN Port.	(*2) Control the MIDI equipment by using External Zones and MIDI OUT Port. Play with expanded LOWER Keyboard into the MIDI IN Port. Same as (*2).

Template	ExZ 2 Man Upper	EXZ Pedal KBD	EXZ 3 KBD Lower
Messages	MIDI IN	Upper	Pedal
	Local Control	On	On
	NRPN	On	On
	Program Change	On	On
	Drawbar Registration	On	On
	External Zone	On	On
Transmit Channel	Tx. Upper	Off	Off
	Tx. Lower	Off	Off
	Tx. Pedal	Off	Off
	Rx. Upper	Off	1 (disregarded, off)
	Rx. Lower	Off	2 (disregarded, off)
	Rx. Pedal	Off	3 (disregarded, omni)
Comments		Play with expanded UPPER Keyboard into the MIDI IN Port. Same as (*2).	Play with expanded Pedalboard into the MIDI IN Port. Same as (*2). Play with both expanded LOWER Keyboard (Ch. 2) and Pedalboard (Ch. 3) into the MIDI IN Port. Same as (*2).

Template	EXZ 3 KBD Upper
Messages	MIDI IN
	Up + Ped
	Local Control
	On
	NRPN
	On
Transmit Channel	Program Change
	On
	Drawbar Registration
	On
	External Zone
	On
Comments	
Play with both expanded UPPER Keyboard (Ch. 1) and Pedalboard (Ch. 3) into the MIDI IN Port. Same as (*2).	

From the screen shown at the bottom of page 360, press the PAGE “▶” button once.



◆ GENERAL

This Page allows you to set the MIDI Parameters which affect how the entire instrument will function in a MIDI environment. It consists of several screens.

NOTE: This is separate from General MIDI, which is explained in the Appendix starting on page 491.

Use the DIRECTION “▲” and “▼” buttons to move up and down among the various screens.

MIDI IN MODE

This Parameter allows you to set how incoming MIDI data (external MIDI device connected via the MIDI IN port) is handled. The data chart below shows the options you may select.

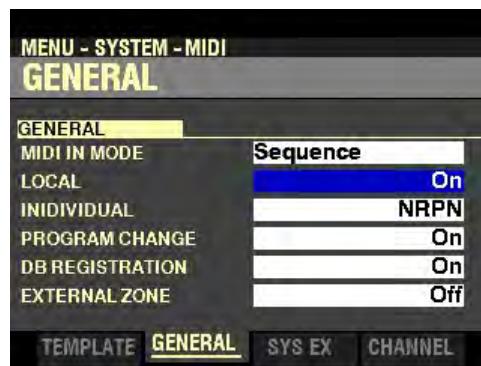
MIDI IN JACK Options	
Setting	Description
Upper / Lower / Pedal	Incoming MIDI data will sound the Sections allocated to the (UPPER / LOWER / PEDAL) keyboard ignoring the MIDI Channel, and is re-transmitted to both MIDI OUT and USB-MIDI.
Upper + Pedal / Lower + Pedal	Incoming MIDI data will sound the Sections allocated to (UPPER + PEDAL / LOWER + PEDAL) keyboards on the assigned MIDI Channels, and is re-transmitted to both MIDI OUT and USB MIDI.
Sequence	Incoming MIDI data plays UPPER, LOWER and PEDAL Parts, but is not retransmitted.

Turn the VALUE knob to the right to scroll forward through the choices.

Turn the VALUE knob to the left to scroll backward through the choices

NOTE: The SPLIT does not function when the MIDI IN mode is set at “Upper / Lower,” “Lower + Pedal” or “Upper + Pedal”.

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “LOCAL” should be highlighted.

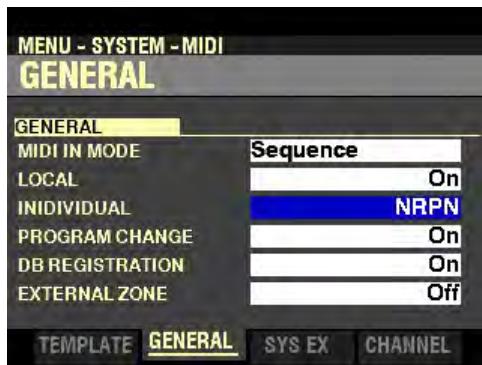
LOCAL - MIDI Local Control

This Parameter allows you to turn Local Control "ON" or "OFF." When Local Control is "ON," the XK-4 will play both its internal sounds and the sounds from a connected MIDI device. When Local Control is "OFF," the XK-4 will play only the sounds from a connected MIDI device (synthesizer, sound module, Digital Audio Workstation or hardware sequencer) and the XK-4's internal sounds are silenced.

NOTE: Even if LOCAL is "ON," MIDI messages sent from an external MIDI device to the XK-4 will play.

Turn the VALUE knob to turn LOCAL On or Off.

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “INDIVIDUAL” should be highlighted.

INDIVIDUAL

This Parameter allows you to select how Individual Parameters are transmitted. Individual Parameters are used to control Section Volume, Leslie Fast, etc. The data chart below shows the options you may select.

INDIVIDUAL PARAMETERS Options	
Setting	Description
Off	Individual Parameters are not transmitted.
NRPN	Individual Parameters are transmitted via NRPN.
Sys Ex	Individual Parameters are transmitted via System Exclusive.

Turn the VALUE knob to select the option you want.

NOTE: The XK-4 always receives Individual Parameters via System Exclusive Messages regardless of the setting of this Parameter.

WHAT IS “NPRN?”

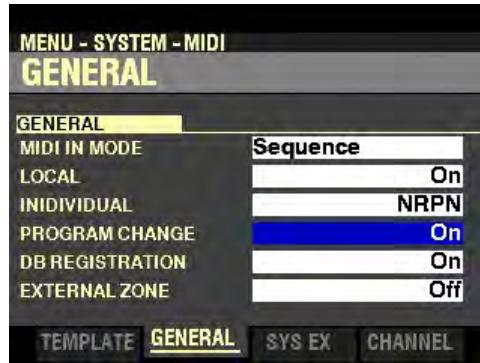
“NRPN,” or Non-Registered Parameter Number, is an expanded control change message, each function of which is implemented differently by different manufacturers. The Hammond XK-4 uses NRPN to control parameters such as Percussion 2nd and 3rd Harmonic ON/OFF, Vibrato or Chorus ON/OFF, etc. Most of the buttons on the XK-4 have NRPN Controller numbers assigned to them. When NRPN is “ON,” NRPN codes are transmitted and received along with other MIDI data. When NRPN is “OFF,” NRPN codes will not be transmitted or received but other MIDI data such as Note On/Note Off, Note Velocity, etc. will continue to be transmitted and received.

NOTE: To see a complete list of all NRPN codes transmitted and recognized by the XK-4, consult the APPENDIX.

WHAT IS “SYSTEM EXCLUSIVE?”

Most MIDI messages are ones that are universally recognized by all instruments which implement MIDI. Examples are Note On/Note Off/Note Velocity data, Program Changes, Controller Changes, etc. However, there is a provision within the MIDI standard called System Exclusive (often abbreviated SysEx or Sysx) which allows for individual manufacturers to create MIDI messages to be sent and received which are unique to that manufacturer. These messages are determined by each manufacturer; therefore they will be different for each make, and sometimes they will differ from model to model from a particular manufacturer.

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “PROGRAM CHANGE” should be highlighted.

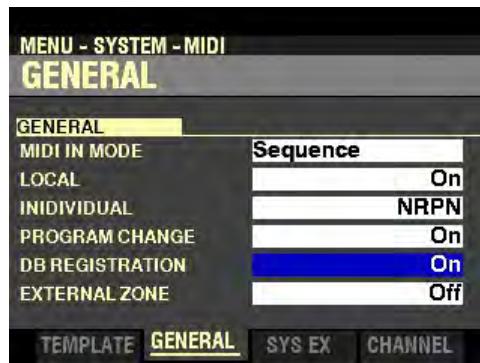
PROGRAM CHANGE

Program is the MIDI term for a particular sound or effect, such as Piano, Trumpet, Thunder, etc. Each MIDI program is assigned a number from 1 through 127, and these numbers are transmitted to a connected MIDI device such as a sound module. In this way, changes in sound, or what organists refer to as registration, can be made.

This Parameter allows you to turn Program Change "ON" or "OFF." When Program Change is "ON," the XK-4 will send and receive Program Changes out to or from a connected MIDI device. When Program Change is "OFF," Program Changes are not transmitted or received.

Turn the VALUE knob to turn PROGRAM CHANGE On or Off.

From the above screen, press the DIRECTION “▼” button once.



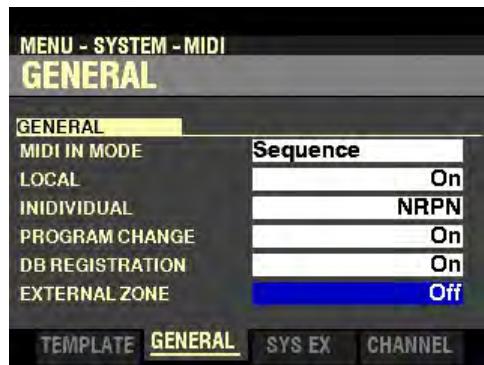
The box to the right of “DB REGISTRATION” should be highlighted.

DB REGISTRATION

This Parameter allows you to decide whether you want to transmit the current Drawbar registration to a connected MIDI device such as a sequencer, another Hammond Organ, etc. When this switch is "ON," the XK-4 will send Drawbar Data out to a connected MIDI device. When this switch is "OFF," Drawbar Data will not be transmitted.

Turn the VALUE knob to turn DB REGISTRATION On Off.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



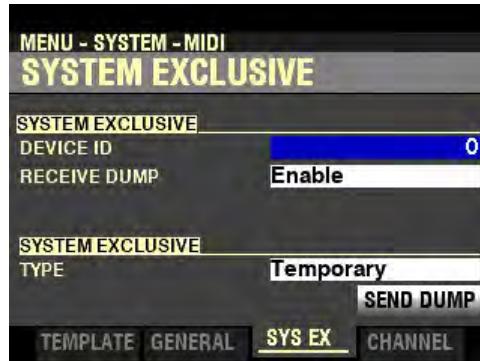
The box to the right of “EXTERNAL ZONE” should be highlighted.

EXTERNAL ZONE

This is a Master Parameter which allows you to decide whether you want to transmit External Zone data to a connected MIDI device. When this switch is “ON,” the XK-4 will send External Zone data out to a connected MIDI device. When this switch is “OFF,” External Zone data will not be transmitted.

Turn the VALUE knob to turn EXTERNAL ZONE On or Off.

From the screen shown on the previous page, press the PAGE “▶” button once.



The box to the right of “DEVICE ID” should be highlighted.

The SYSTEM EXCLUSIVE FUNCTION Mode Page contains several different functions. Use the DIRECTION “▲” and “▼” buttons to move up and down among the various functions.

MIDI Instrument ID

This Parameter allows you to set the Device ID when transmitting System Exclusive messages.

What Is a “Device ID?”

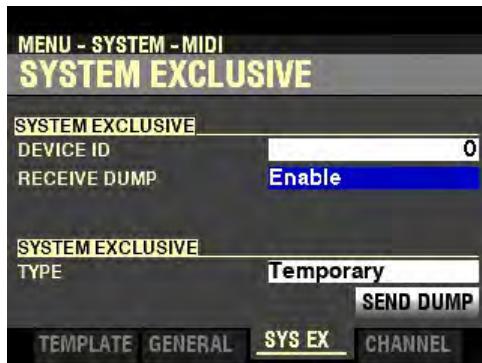
In order to facilitate communication between MIDI devices from different manufacturers, the MIDI Manufacturer’s Association (MMA) assigns each maker of MIDI devices a unique ID number. This ID number is treated as part of the System Exclusive information and is embedded in the firmware of each device from a particular manufacturer. This allows different MIDI instruments to identify each other and to transmit and receive MIDI information which may be unique to a particular maker.

Turn the VALUE knob to select the Device ID.

NOTE: Hammond’s Device ID number is “17.”

NOTE: If you perform a MIDI Dump to a non-Hammond instrument, you can be required to know the Device ID of the device to which you are Dumping. As explained above, each manufacturer of MIDI devices is assigned a unique ID number by the MMA.

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “RECEIVE DUMP” should be highlighted.

MIDI RECEIVE DUMP ENABLE / DISABLE

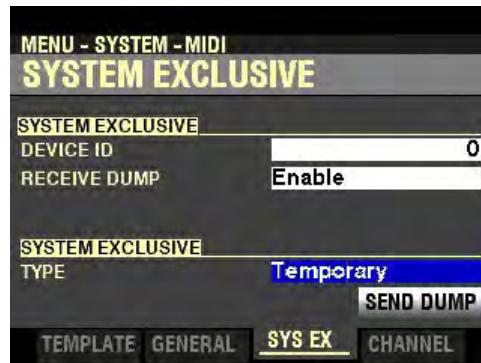
The MIDI Dump Parameters are for use when you want to record and save a musical performance to a connected MIDI Data recorder.

On the XK-4, the total onboard memory can be transmitted and received as a series of System Exclusive (SysEx) messages called a Memory Dump. This Parameter allows you to select whether or not you want System Exclusive messages received as part of a Sequence. When this Parameter reads Enable Sysx data will be received. When it reads Disable, SysEx data will not be received.

Turn the VALUE knob to select Enable or Disable.

IMPORTANT NOTE: If you attempt to receive a Data Dump to the XK-4 when Disable is displayed, the Information Center Display will flash, "Data Protect !" This ensures that you do not overwrite data accidentally.

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “TYPE” should be highlighted.

Temporary Dump Send

This Parameter allows you to transmit the current registration to a connected MIDI data recorder.

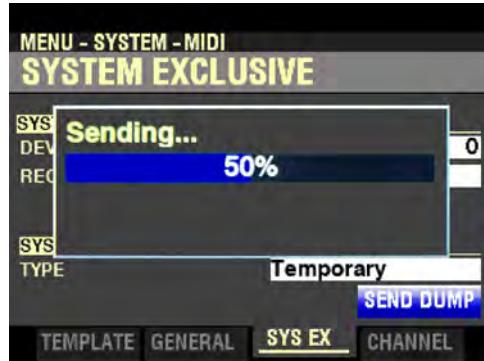
NOTE: A “MIDI data recorder” can be an external hardware device, or a Digital Audio Workstation or DAW, which is a software program installed on a computer.

NOTE: It is recommended that you perform this operation prior to recording a sequence to ensure that your sequence will play back with the correct settings.

1. Make sure that the MIDI recorder is ready to receive data (RECORD).
2. Press the DIRECTION “▼” button to highlight the “SEND DUMP” box.



3. Press the ENTER button to start the data dump to the MIDI Data recorder. The Information Center Display will show:



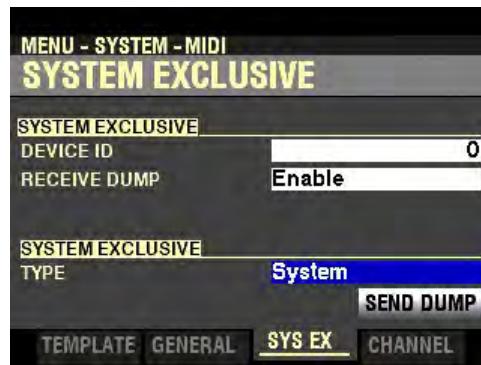
When all information has been sent, the Information Center Display will display:



4. Press the MENU / EXIT button. The "Completed." message will disappear.
5. Press the PLAY button to return to PLAY Mode.

System Dump Send

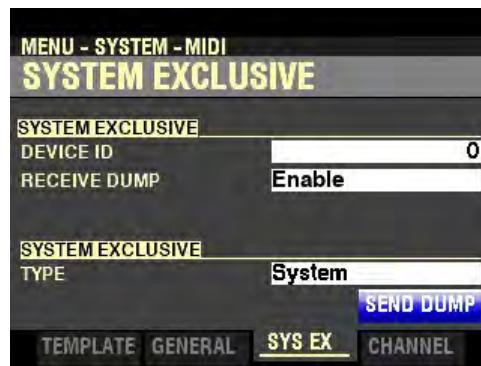
From the previous screen, turn the VALUE knob so that the box to the right of “TYPE” displays “System.”



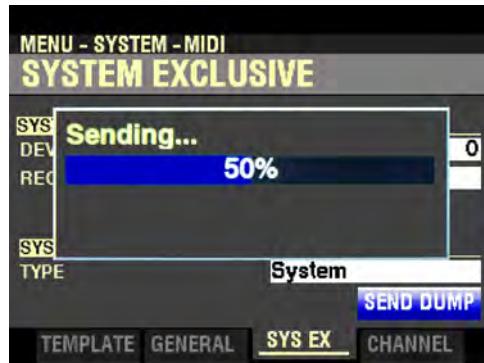
This Parameter allows you to transmit all of the settings to a connected MIDI recorder.

To transmit your settings, do the following

1. Make sure that the MIDI recorder is ready to receive data (RECORD).
2. Press the DIRECTION “▼” button to highlight the “SEND DUMP” box.



3. Press the ENTER button to start the data dump to the MIDI Data recorder. The Information Center Display will show:

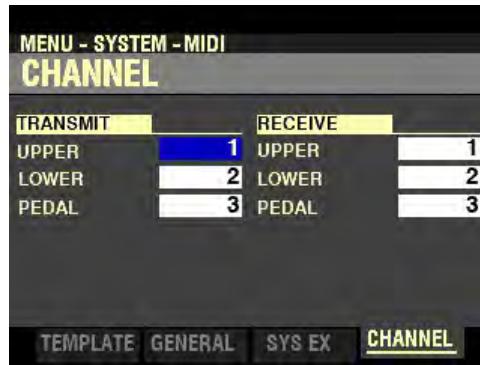


When all information has been sent, the Information Center Display will display:



4. Press the MENU / EXIT button. The “Completed.” message will disappear.
5. Press the PLAY button to return to PLAY Mode.

From the screen shown at the bottom of page 372, press the PAGE “►” button once.



MIDI TRANSMIT - INTERNAL ZONES

This Menu Page allows you to select on which MIDI Channel each Part will transmit. You may select from 1 through 16 as well as Off.

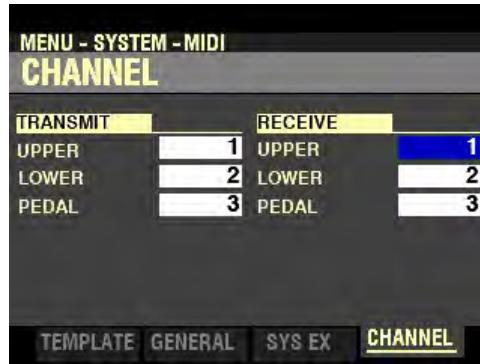
Use the DIRECTION “▲” and “▼” buttons to move back and forth among UPPER, LOWER and PEDAL.

When you have made your selection:

Turn the VALUE knob to the right to scroll forward through the Channels.

Turn the VALUE knob to the left to scroll backward through the Channels.

From the above screen, press the PAGE “►” button once.



MIDI RECEIVE - INTERNAL ZONES

This Menu Page allows you to select on which MIDI Channel each Part will receive. You may select from 1 through 16 as well as Off.

Use the DIRECTION “▲” and “▼” buttons to move back and forth among UPPER, LOWER and PEDAL.

When you have made your selection:

Turn the VALUE knob to the right to scroll forward through the Channels.

Turn the VALUE knob to the left to scroll backward through the Channels.

NOTE: As explained previously, Hammond's standard protocol is to transmit and receive UPPER, LOWER and PEDAL MIDI data on MIDI Channels 1, 2 and 3 respectively.

◆ INTERNAL and EXTERNAL ZONES

As explained on page 359, the Internal and External Channels of the instrument are referred to as Zones. The features available for the Zones can be accessed in two ways:

1. From the PLAY Mode - INTERNAL / EXTERNAL ZONES Page,
2. From the INT ZONE and EXT ZONE FUNCTION Mode Pages.

This is explained in detail starting below.

◆ INTERNAL ZONES

PLAY Mode - INTERNAL / EXTERNAL ZONES Page

TRY THIS:

1. After the power to the XK-4 has been turned “ON” and the operating system finishes loading, the Information Center Display will look similar to this:

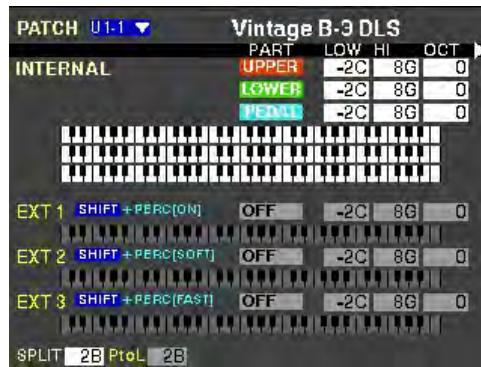


2. From the above screen, press the PLAY button or either of the PAGE buttons once. The Information Center Display should now look similar to this:



You can now use the DIRECTION and PAGE buttons in conjunction with the VALUE knob to make changes to the Internal Zones of your XK-4. These changes are explained starting on the next page.

If you followed the instructions on the previous pages, the Information Center Display should look like this:



The box to the right of “PATCH” should be highlighted.

Notice the three keyboard graphics. The top keyboard represents the UPPER Part, the middle one represents the LOWER Part and the bottom keyboard represents the PEDAL Part.

PATCH

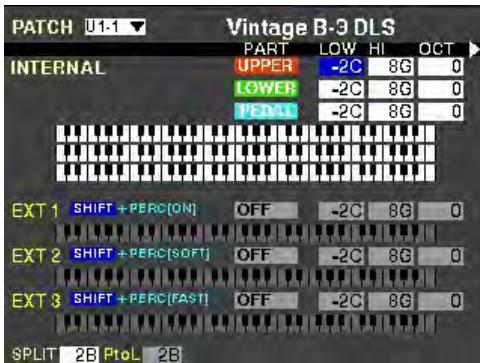
This Parameter allows you to use the VALUE knob to scroll through the Patches.

Turn the VALUE knob to the right to scroll forward through the Patches.

Turn the VALUE knob to the left to scroll backward through the Patches.

NOTE: Patches are covered in more detail in the **PATCHES & FAVORITES** chapter of this Guide starting on page 42.

From the screen shown on the previous page, press the DIRECTION “►” button once.



The box underneath “LOW” should be highlighted.

LOW - Internal Zone Lower Note Limit

This Parameter allows you to set the lower note limit for each Internal Zone. You may select from -2C to 8G.

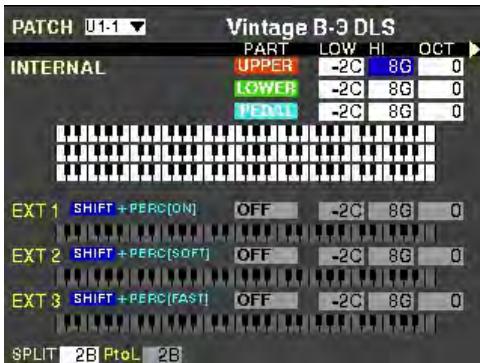
Use the DIRECTION “▲” and “▼” buttons to move up and down among UPPER, LOWER and PEDAL.

When you have made your selection:

Turn the VALUE knob to the right to locate the note limit higher.

Turn the VALUE knob to the left to locate the note limit lower.

From the above screen, press the DIRECTION “►” button once.



The box underneath “HI” should be highlighted.

HIGH - Internal Zone Upper Note Limit

This Parameter allows you to set the upper note limit for each Internal Zone. You may select from -2C to 8G.

Use the DIRECTION “▲” and “▼” buttons to move up and down among UPPER, LOWER and PEDAL.

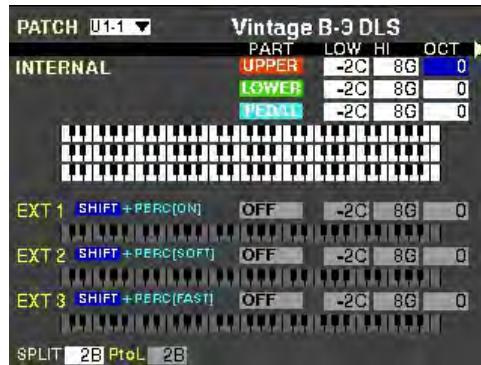
When you have made your selection:

Turn the VALUE knob to the right to locate the note limit higher.

Turn the VALUE knob to the left to locate the note limit lower.

NOTE: The Upper Limit number cannot be lower than the Lower Limit number.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “OCT” should be highlighted.

OCT - Internal Zone Octave

This Parameter allows you to determine the Octave or pitch at which each Internal Zone will sound. Use this Parameter if an external sound plays in a pitch range other than the one you find desirable.

The data chart below shows the options you may select.

OCTAVE Options	
Setting	Description
-2	The sound is two octaves below the regular pitch.
-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.
+2	The sound is two octaves above the regular pitch.

Use the DIRECTION “▲” and “▼” buttons to move up and down among UPPER, LOWER and PEDAL.

When you have made your selection:

Turn the VALUE knob to the right to raise the Octave.

Turn the VALUE knob to the left to lower the Octave.

From the screen shown on the previous page, use the DIRECTION buttons to highlight the box underneath “OCT.”



VOL - Internal Zone Volume

This Parameter allows you to control the volume (Controller #7) of the sound controlled by the selected Internal Zone. You may select from 0 (no volume) through 127 (maximum volume).

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to increase the Volume.

Turn the VALUE knob to the left to decrease the Volume.

NOTE: In order for this Parameter to work, the Expression Control Number must be set to 7 (Volume). If the Expression Control Number is set to 11 (Expression), changing this parameter will have no effect. Expression Control Number is explained on pages 404 and 419.

From the above screen, press the DIRECTION “▶” button once.



The box underneath “DAMP” should be highlighted.

DAMP - Internal Zone Damper

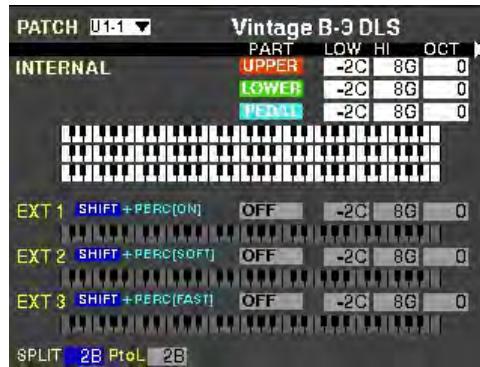
This Parameter allows you to select whether you want to send Damper (Controller #64) information as part of the selected Internal Zone.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to turn Damper On or Off for the selected External Zone.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box to the right of “SPLIT” should be highlighted.

SPLIT - keyboard Split Point

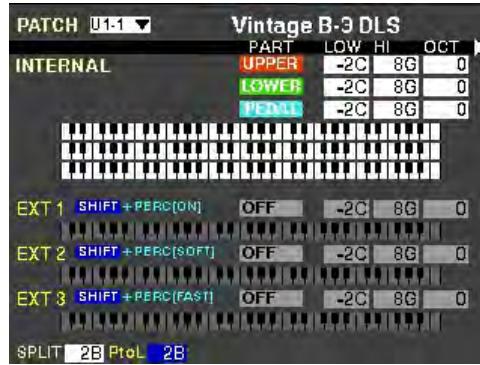
NOTE: If the SPLIT button is not “ON” (orange LED lit), this Parameter will be “greyed out.” However, you can still change the SPLIT Point by following the procedure described below.

This Parameter allows you to change the SPLIT Point. You may select from 1C (the lowest note on the keyboard) to 6C (the highest note on the keyboard).

Turn the VALUE knob to the right to locate the SPLIT Point higher on the keyboard.

Turn the VALUE knob to the left to locate the SPLIT Point lower on the keyboard.

From the above screen, press the DIRECTION “►” button once.



The box to the right of “PtOL” should be highlighted.

NOTE: The PEDAL TO LOWER button must be “ON” (orange LED lit) in order to hear the effect of this Parameter setting.

PtOL - PEDAL TO LOWER Limit

This Parameter allows you to set the range of the Pedal tones when PEDAL TO LOWER is “ON” (orange LED lit). You may select from 1C (the lowest note on the keyboard) to 3C (the third “C” on the keyboard).

Turn the VALUE knob to the right to locate the PEDAL TO LOWER Limit higher on the keyboard.

Turn the VALUE knob to the left to locate the PEDAL TO LOWER Limit lower on the keyboard.

PATCH EDIT -INT ZONE FUNCTION Mode Page

This Page allows you to change the characteristics of the Internal or keyboard Zones of your XK-4. All of these Parameters can be Recorded to a Patch.

TRY THIS:

1. From any of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

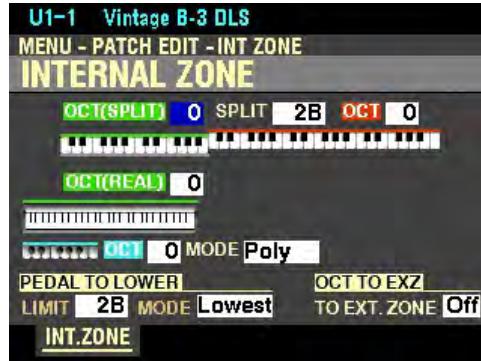
2. Press the DIRECTION “▶” button once. The Information Center Display should now look like this:



3. Press the DIRECTION “▼” button once. The Information Center Display should now look like this:



4. Press the three times. The Information Center Display should now look like this:



The box to the right of “OCT(SPLIT)” should be highlighted.

You can now use the DIRECTION and PAGE buttons in conjunction with the VALUE knob to make changes to the Internal Zones of your XK-4. These changes are explained starting below.

Notice the three keyboard graphics. The top keyboard represents the XK-4, the middle one represents a connected MIDI keyboard used as part of an expanded MIDI system and the small one on the left represents a connected MIDI pedal clavier such as the Hammond XPK-130G.

NOTE: If the SPLIT button is “ON,” the top keyboard will show the UPPER Part and the LOWER Part as well as the SPLIT Point.

OCT(SPLIT) - Lower Octave Setting for SPLIT

This Parameter allows you to set the octave for the LOWER Part when the SPLIT button is “ON.” The data chart below shows the options you may select.

LOWER Octave Options - SPLIT	
Setting	Description
-2	The sound is two octaves below the regular pitch.
-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.
+2	The sound is two octaves above the regular pitch.

Turn the VALUE knob to the right to raise the Octave.

Turn the VALUE knob to the left to lower the Octave.

From the screen shown on the previous page, press the DIRECTION “▼” button once.



OCT(REAL) - Lower Octave Setting for Expanded keyboard

The term OCTAVE(REAL) refers to a connected MIDI keyboard being used to play the LOWER Part. This Parameter allows you to set the octave for the LOWER Part when a connected MIDI keyboard is used for the LOWER Part. The data chart below shows the options you may select.

LOWER Octave Options - REAL	
Setting	Description
-2	The sound is two octaves below the regular pitch.
-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.
+2	The sound is two octaves above the regular pitch.

Turn the VALUE knob to the right to raise the Octave.

Turn the VALUE knob to the left to lower the Octave.

From the screen shown on the previous page, press the DIRECTION “▼” button once.



The box to the right of “OCT” should be highlighted.

OCT - Pedal Octave Setting

This Parameter allows you to set the octave for the PEDAL Part. The data chart below shows the options you may select.

PEDAL Octave Options	
Setting	Description
-2	The sound is two octaves below the regular pitch.
-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.
+2	The sound is two octaves above the regular pitch.

Turn the VALUE knob to the right to raise the Octave.

Turn the VALUE knob to the left to lower the Octave.

From the above screen, press the DIRECTION “▶” button once.



The box to the right of “MODE” should be highlighted.

MODE - PEDAL Mode

This Parameter allows you to select the playing mode of the Pedals. The data chart below shows the options you may select.

PEDAL MODE Options	
Setting	Description
Poly	Polyphonic - more than one pedal note can sound at a time, as on a vintage organ.
Mono	Monophonic low-note select - if more than one pedal is played only the lowest note will sound.

Turn the VALUE knob to select Poly or Mono.

From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button once.



The box to the right of “LIMIT” should be highlighted.

NOTE: The PEDAL TO LOWER button must be “ON” (orange LED lit) in order to hear the effect of this Parameter setting.

LIMIT - PEDAL TO LOWER Limit

This Parameter allows you to set the range of the Pedal tones when PEDAL TO LOWER is “ON” (orange LED lit). You may select from 1C (the lowest note on the keyboard) to 3C (the third “C” on the keyboard).

Turn the VALUE knob to the right to locate the PEDAL TO LOWER Limit higher on the keyboard.

Turn the VALUE knob to the left to locate the PEDAL TO LOWER Limit lower on the keyboard.

From the above screen, press the DIRECTION “▶” button once.



MODE - PEDAL TO LOWER Mode

This Parameter allows you to select how the PEDAL TO LOWER feature works. The data chart below shows the options you may select.

PEDAL TO LOWER MODE	
Setting	Description
Lowest	The bass note will sound the lowest note played if multiple notes are depressed.
Chord	The keyboard is scanned for Chord Root and Chord Type and plays an appropriate bass note. For example, if the notes “G,” “C” and “E” are played, it will be interpreted as a C major chord and the bass note will sound the note “C.”
Poly	The bass tone will sound on all notes depressed.

Playing keys on the LOWER Part with PEDAL TO LOWER “ON” will allow you to hear the effects of the PEDAL TO LOWER MODE setting.

Turn the VALUE knob to select Lowest, Chord or Poly.

From the screen shown on the previous page, press the DIRECTION “►” button once.



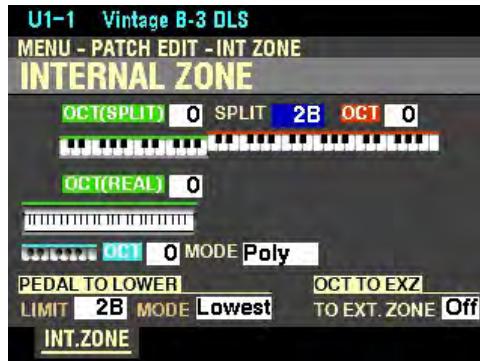
OCT TO EXZ

This Parameter allows you to select whether OCTAVE Parameters will be applied to the External Zones. The data chart below shows the options you may select.

OCTAVE TO EXTERNAL ZONE Options	
Setting	Description
Off	The OCTAVE buttons on the Control Panel can be used to change the Octaves of the Internal Zones but not the External Zones.
On	The OCTAVE buttons on the Control Panel can be used to change to Octaves of both the Internal and External Zones.

Turn the VALUE knob to turn this Parameter On or Off.

From the above screen, press the DIRECTION “▲” button once.



The box to the right of “SPLIT” should be highlighted.

SPLIT - keyboard Split Point

NOTE: If the SPLIT button is not “ON” (orange LED lit), this Parameter will be “greyed out.” However, you can still change the SPLIT Point by following the procedure described below.

This Parameter allows you to change the SPLIT Point. You may select from 1C (the lowest note on the keyboard) to 6C (the highest note on the keyboard).

Turn the VALUE knob to the right to locate the SPLIT Point higher on the keyboard.

Turn the VALUE knob to the left to locate the SPLIT Point lower on the keyboard.

From the screen shown at the bottom of the previous page, press the DIRECTION “▶” button once.



The box to the right of “OCT” should be highlighted.

OCT - Upper Octave Setting

This Parameter allows you to select the Octave range in which the UPPER Part will play. The data chart below shows the options you may select.

UPPER OCTAVE Options	
Setting	Description
-2	The sound is two octaves below the regular pitch.
-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.
+2	The sound is two octaves above the regular pitch.

Turn the VALUE knob to the right or press the OCTAVE UP button on the Control Panel to raise the Octave.

Turn the VALUE knob to the left or press the OCTAVE DOWN button on the Control Panel to lower the Octave.

◆ EXTERNAL ZONES

This FUNCTION Mode Page allows you to change the characteristics of the External Zones of your XK-4. All of these Parameters can be Recorded to a Patch.

The External Zones present the most flexible method for using the XK-4 to control an external MIDI instrument (synthesizer, sound module, digital workstation or a MIDI-equipped Hammond Organ or keyboard).

Please consult the Owner's Manual or Reference Guide for your particular instrument or software for information regarding the Program Numbers and Bank Numbers for specific sounds, plus Controller Numbers for specific functions.

EXTERNAL ZONE MASTER ON / OFF

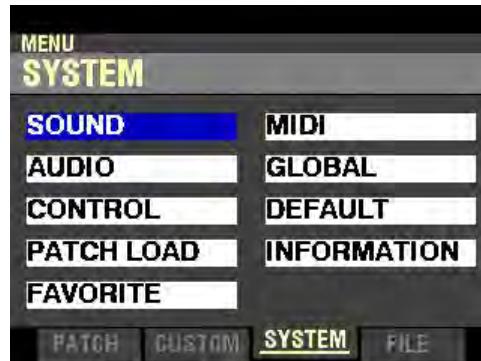
As will be explained, External Zones can be turned "ON" or "OFF" individually for UPPER, LOWER and PEDAL. However, in order for MIDI data to be transmitted from External Zones, the MASTER ON / OFF Parameter must be set to On. If it is set to Off, no External Zone data will be transmitted even if individual External Zones are On.

To enable transmission of External Zone MIDI data, do the following:

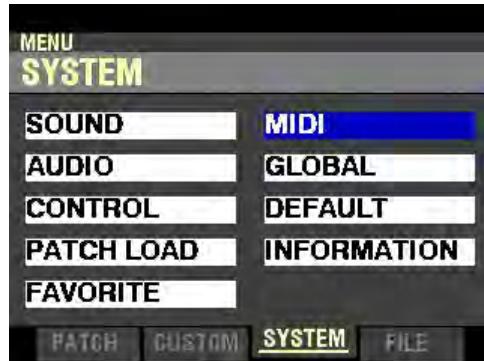
1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



2. Press the DIRECTION "►" button two times. The word "SOUND" should be highlighted.



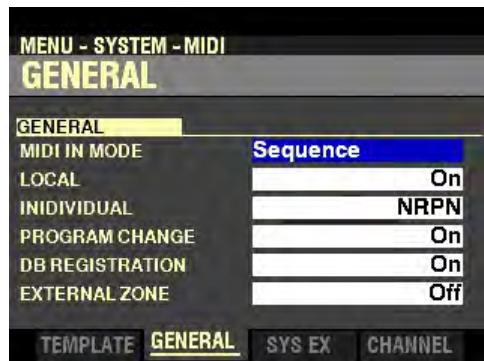
3. Press the DIRECTION “▶” button once. The Information Center Display should now look like this:



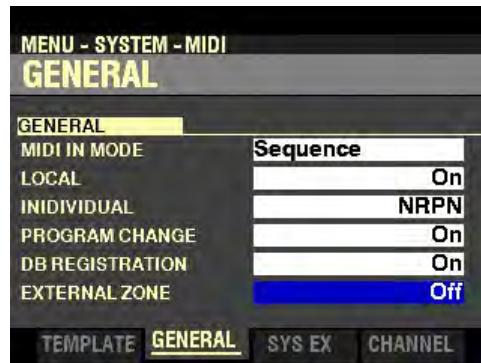
4. Press the ENTER button. The Information Center Display should now look like this:



5. Press the PAGE “▶” button once. The Information Center Display should now look like this:



6. Press the DIRECTION “▼” button five times. The Information Center Display should now look like this:



This is the Master Parameter which allows you to select whether to transmit External Zone data. The data chart below shows the options you may select.

MIDI EXTERNAL ZONE Options	
Setting	Description
Off	No External Zone data is transmitted.
On	External Zone data will be transmitted to a connected MIDI device.

Turn the VALUE knob to select the option you want. To allow MIDI data transmission from the External Zones, turn this Parameter On.

As mentioned previously, the features available for the Zones can be accessed in two ways:

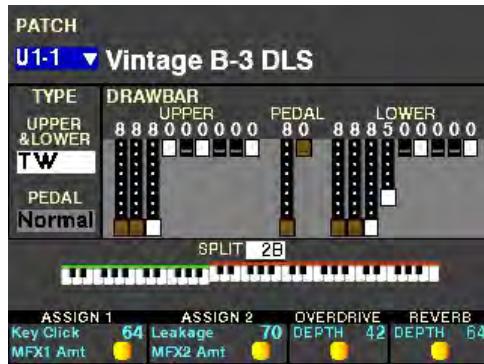
1. From the PLAY Mode - INTERNAL / EXTERNAL ZONES Page,
2. From the INT ZONE and EXT ZONE FUNCTION Mode Pages.

The External Zones are explained in detail starting on the next page.

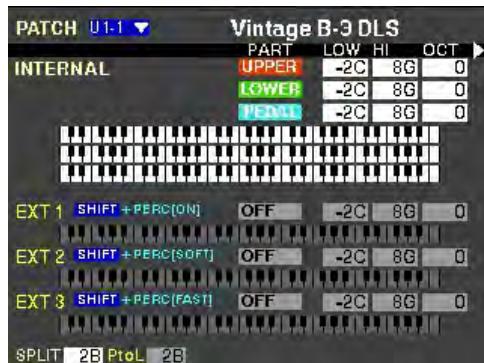
PLAY Mode - INTERNAL / EXTERNAL ZONES Page

TRY THIS:

1. After the power to the XK-4 has been turned “ON” and the operating system finishes loading, the Information Center Display will look similar to this:

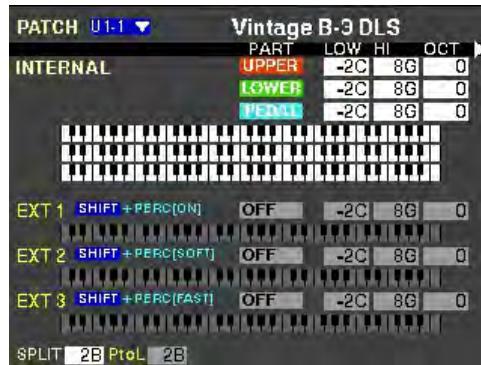


2. From the above screen, press the PLAY button or either of the PAGE buttons once. The Information Center Display should now look similar to this:



You can now use the DIRECTION and PAGE buttons in conjunction with the VALUE knob to make changes to the External Zones of your XK-4. These changes are explained starting on the next page.

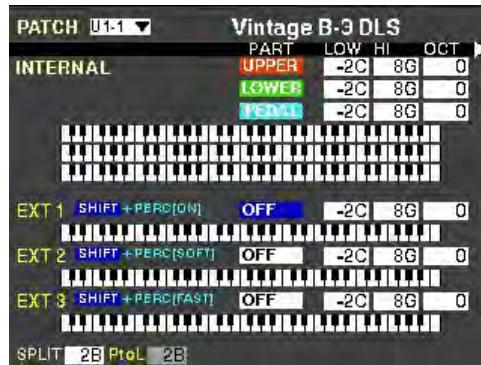
If you followed the instructions on the previous pages, the Information Center Display should look like this:



The box to the right of "PATCH" should be highlighted.

Notice the three keyboard graphics. The top keyboard represents the UPPER Part, the middle one represents the LOWER Part and the bottom keyboard represents the PEDAL Part.

From the above screen, use the DIRECTION buttons to highlight the first box to the right of "EXT 1."



External Zone Allocation

This Parameter allows you to select the keyboard from which the selected External Zone will play. The data chart below shows the options you may select.

EXTERNAL ZONE ALLOCATION Settings	
Setting	Description
OFF	The selected External Zone will not transmit even if the Switch is set to <u>On</u> .
UPPER	The selected External Zone will play from the UPPER Part.
LOWER	The selected External Zone will play from the LOWER Part.
PEDAL	The selected External Zone will play from the PEDAL Part.

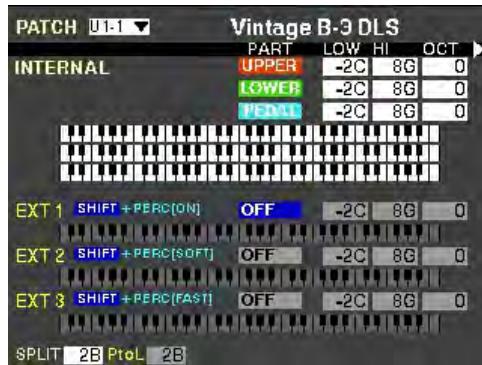
Use the DIRECTION "▲" and "▼" buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to select the keyboard for the selected External Zone.

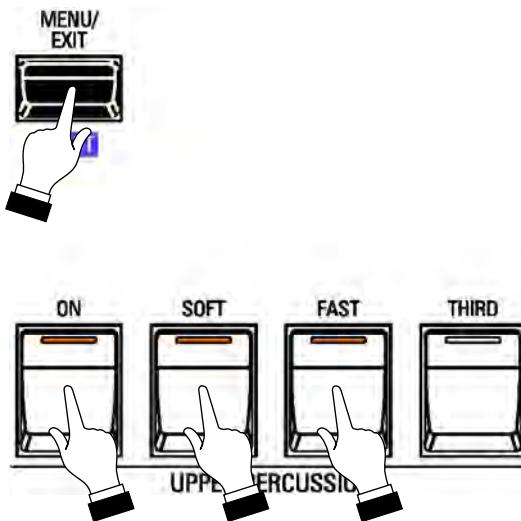
SPECIAL NOTE:

If the EXTERNAL ZONES Parameter in the SYSTEM - MIDI - GENERAL FUNCTION Mode Page (described on pages 388 to 390) is set to Off, the Information Center Display will look similar to this:



Notice that all the boxes are “greyed out.” This indicates that no External Zone MIDI data will be transmitted even if the Allocate Parameters are set to UPPER, LOWER or PEDAL.

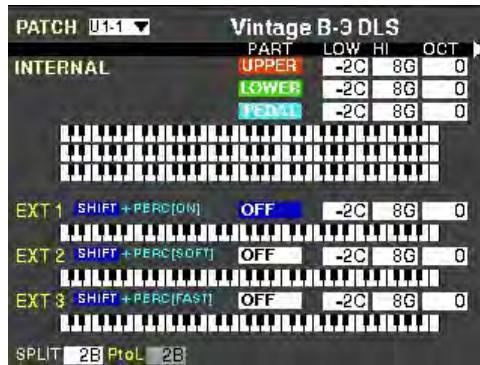
To enable the External Zones to transmit MIDI data, Press and Hold the SHIFT button and press one of the PERCUSSION buttons shown in the illustration below to turn the selected Zone On or Off.



The data chart below shows how the External Zones are controlled by the PERCUSSION buttons.

EXTERNAL ZONE SWITCH Settings	
PERCUSSION button	Function
ON	Use this button to turn EXTERNAL ZONE 1 <u>On</u> or <u>Off</u> .
SOFT	Use this button to turn EXTERNAL ZONE 2 <u>On</u> or <u>Off</u> .
FAST	Use this button to turn EXTERNAL ZONE 3 <u>On</u> or <u>Off</u> .

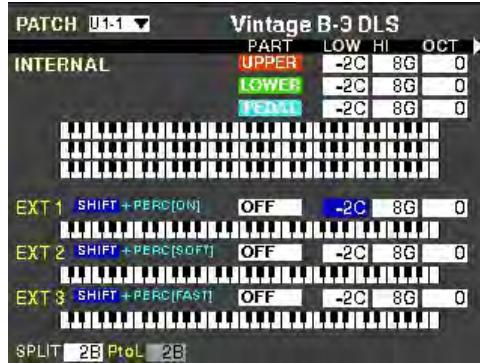
After doing the procedure described on the previous page to enable the External Zones, the Information Center Display will look like this:



Notice the External Zone boxes are now showing white. This lets you know that External Zone data will be transmitted to a connected MIDI Device.

NOTE: You can enable each of the External Zones separately; however, for purposes of explanation all three of the External Zones will be shown as On, meaning the boxes will be shown white.

From the above screen, press the DIRECTION “►” button once.



The box underneath “LOW” should be highlighted.

LOW - External Zone Lower Note Limit

This Parameter allows you to set the lower note limit for the External Zone. You may select from -2C to 8G.

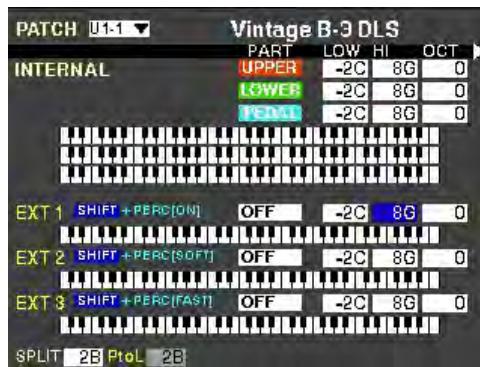
Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to locate the note limit for the selected External Zone higher.

Turn the VALUE knob to the left to locate the note limit for the selected External Zone lower.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “HI” should be highlighted.

HI - External Zone Upper Note Limit

This Parameter allows you to set the upper note limit for the External Zone. You may select from -2C to 8G.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

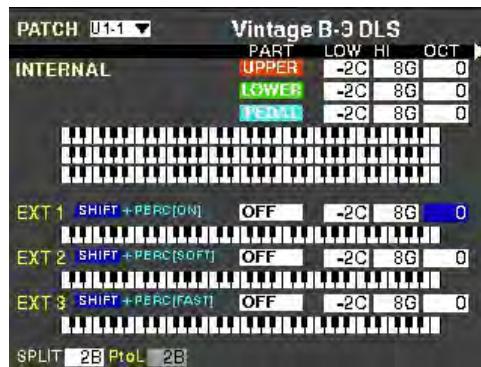
When you have made your selection:

Turn the VALUE knob to the right to locate the note limit for the selected External Zone higher.

Turn the VALUE knob to the left to locate the note limit for the selected External Zone lower.

NOTE: The Upper Limit number cannot be lower than the Lower Limit number.

From the screen shown on the previous page, press the DIRECTION “►” button once.



The box underneath “OCT” should be highlighted.

OCT - External Zone Octave

This Parameter allows you to determine the Octave or pitch at which the External Zone will sound. Use this Parameter if an external sound plays in a pitch range other than the one you find desirable.

The data chart below shows the options you may select.

OCTAVE Options	
Setting	Description
-2	The sound is two octaves below the regular pitch.
-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.
+2	The sound is two octaves above the regular pitch.

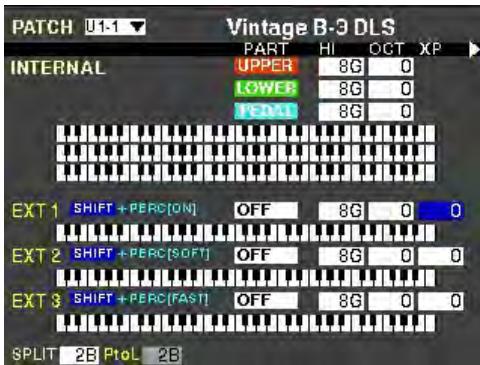
Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to raise the Octave of the selected External Zone.

Turn the VALUE knob to the left to lower the Octave of the selected External Zone.

From the screen shown on the previous page, press the DIRECTION “►” button once.



The box underneath “XP” should be highlighted.

XP - External Zone Transpose

This Parameter allows you to adjust the sounding pitch of the selected External Zone by half-steps. You may select from -63 (down five octaves and a third) to 63 (up five octaves and a third). At 0 there is no transposition.

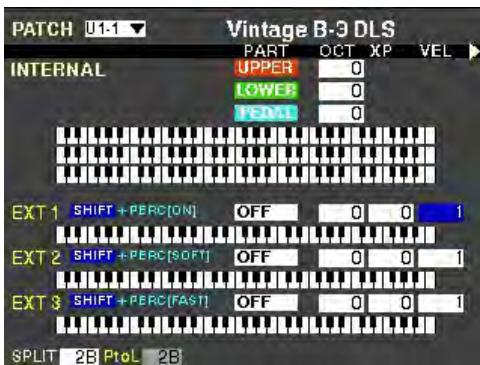
Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to transpose the selected External Zone higher.

Turn the VALUE knob to the right to transpose the selected External Zone lower.

From the above screen, press the DIRECTION “►” button once.



The box underneath “VEL” should be highlighted.

VEL - External Zone Velocity

This Parameter allows you to sets the character of the Velocity to send to this Zone. The setting range is OFF and 1 to 4. At OFF, the velocity is fixed at 100. The “press” (velocity response) of the keyboard progresses from 1 (heavier) through 4 (lighter).

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to make the velocity response for the selected External Zone lighter.

Turn the VALUE knob to the left to make the velocity response for the selected External Zone heavier.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “VOL” should be highlighted.

VOL - External Zone Volume

This Parameter allows you to control the volume (Controller #7) of the sound controlled by the selected External Zone. You may select from 0 (no volume) through 127 (maximum volume).

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to increase the volume for the selected External Zone.

Turn the VALUE knob to the left to decrease the volume for the selected External Zone.

NOTE: In order for this Parameter to work, the Expression Control Number must be set to 7 (Volume). If the Expression Control Number is set to 11 (Expression), changing this parameter will have no effect. Expression Control Number is explained on pages 404 and 419.

From the above screen, press the DIRECTION “►” button once.



The box underneath “PAN” should be highlighted.

PAN - External Zone Pan

This Parameter allows you to set the directionality or Pan setting (Controller #10). You may select from L63 (the sound plays entirely through the Left channel), through to 0 (the sound is heard equally through both channels) and on through R63 (the sound plays entirely through the Right channel).

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to emphasize the Right channel for the selected External Zone.

Turn the VALUE knob to the left to emphasize the Left channel for the selected External Zone

NOTE: In order to hear the effect of this Parameter, the sound controlled from the External Zone must be connected via Stereo (both Left and Right channel) outputs.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “CH” should be highlighted.

CH - External Zone Channel

This Parameter allows you to select the MIDI Channel on which MIDI data from the selected External Zone will be transmitted. You may select from 1 through 16.

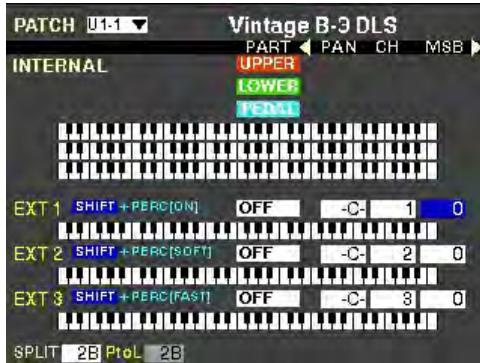
Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to scroll forward through the Channels.

Turn the VALUE knob to the left to scroll backward through the Channels.

From the above screen, press the DIRECTION “►” button once.



The box underneath “MSB” should be highlighted.

The next two Parameters allow you to perform a Bank Select to give you access to more sounds. For a fuller explanation of Bank Select, please consult page 493 of the APPENDIX chapter of this Guide.

BNK-M - External Zone Bank Select MSB

This Parameter allows you to set the value for Controller #0 - Most Significant Byte.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to scroll forward through the numbers.

Turn the VALUE knob to the left to scroll backward through the numbers.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “LSB” should be highlighted.

BNK-L - External Zone Bank Select (LSB)

This Parameter allows you to set the value for Controller #32 - Least Significant Byte.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to scroll forward through the numbers.

Turn the VALUE knob to the left to scroll backward through the numbers.

From the above screen, press the DIRECTION “►” button once.



The box underneath “PRG” should be highlighted.

PROG - External Zone Program Number

This Parameter allows you to select from the Program Number, and therefore the Voice, for the selected External Zone.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to scroll forward through the numbers.

Turn the VALUE knob to the left to scroll backward through the numbers.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “DMP” should be highlighted.

DMP - External Zone Damper

This Parameter allows you to select whether you want to send Damper (Controller #64) information as part of the selected External Zone.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to turn Damper information On or Off.

From the above screen, press the DIRECTION “►” button once.



The box underneath “BND” should be highlighted.

BND - External Zone Pitch Bend

This Parameter allows you to select whether you want to send Pitch Bend information as part of the selected External Zone.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to turn Pitch Bend for the selected Zone On or Off.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “MOD” should be highlighted.

MOD - External Zone Modulation Wheel

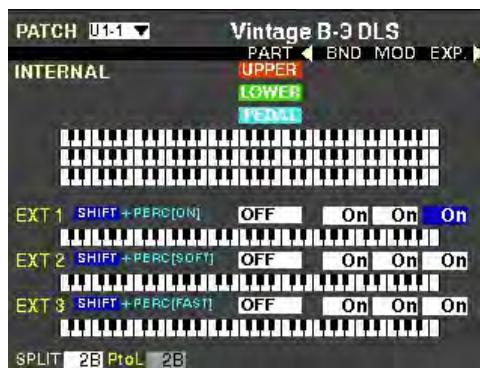
This Parameter allows you to select whether you want to send information from the Modulation Wheel as part of the selected External Zone.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to turn Modulation for the selected Zone On or Off.

From the above screen, press the DIRECTION “►” button once.



The box underneath “EXP” should be highlighted.

EXP - External Zone Expression ON/OFF

This Parameter allows you to select whether a connected Expression Pedal will affect the selected Zone.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to turn Expression for the selected Zone On or Off.

NOTE: In order for this Parameter to work, the Expression Control Number must be set to “7:VOL.” If the Expression Control Number is set to “11:EXP,” changing this parameter will have no effect.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “E.MIN” should be highlighted.

E.MIN - External Zone Minimum Volume

This Parameter allows you to adjust the volume level when the Expression Pedal is “closed,” or set at minimum. You may select from 0 through 63. At 0 no sound will be heard. At 127 the sound will be heard at its maximum level regardless of the setting of the connected Expression Pedal.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to increase the Volume setting for the selected External Zone.

Turn the VALUE knob to the left to decrease the Volume setting for the selected External Zone.

From the above screen, press the DIRECTION “►” button once.



The box underneath “E.MAX” should be highlighted.

E.MAX - External Zone Maximum Volume

This Parameter allows you to adjust the volume level when the Expression Pedal is all the way “open,” or set at maximum. You may select from 64 through 127.

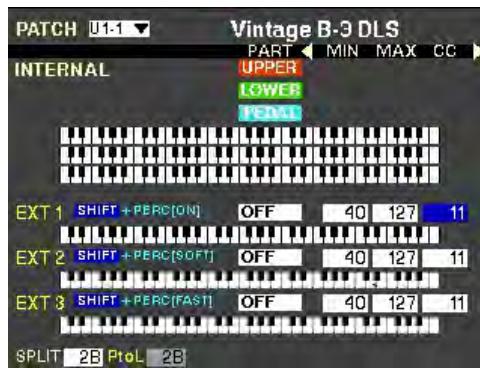
Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to increase the Volume setting for the selected External Zone.

Turn the VALUE knob to the left to decrease the Volume setting for the selected External Zone.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “CC” should be highlighted.

CC - External Zone Expression Control Number

This Parameter allows you to select how you want to control the level of the selected External Zone. You may select either VOL (Volume or Controller #7) or EXP (Expression or Controller #11).

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to select 7 or 11.

What Is the Difference Between “Volume” and “Expression?”

In purely technical terms, Volume and Expression are identical - both control loudness or sound level. The difference lies with how they are customarily used in MIDI applications, particularly in creating and playing back MIDI sequences.

The generally accepted protocol is to use Controller #7 (Volume) to set the overall or absolute level of a voice or sound, and use Controller #11 (Expression) to make variations (such as crescendi or diminuendi) against the overall level set by Controller #7. This is recommended particularly if you want to use your XK-4 as a MIDI input device to record a sequence.

NOTE: In order for the External Zone Volume Parameter to work, the Expression Control Number must be set to 7 (Volume). If this parameter is set to 11 (Expression), changing the External Zone Volume Parameter will have no effect.

PATCH EDIT -EXT ZONE FUNCTION Mode Page

This Page allows you to change the characteristics of the External Zones of your XK-4. All of these Parameters can be Recorded to a Patch.

TRY THIS:

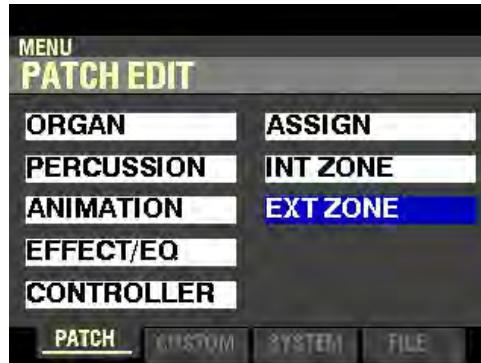
1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



2. Press the DIRECTION "►" button once. The Information Center Display should now look like this:



2. Press the DIRECTION “▼” button two times. The Information Center Display should now look like this:

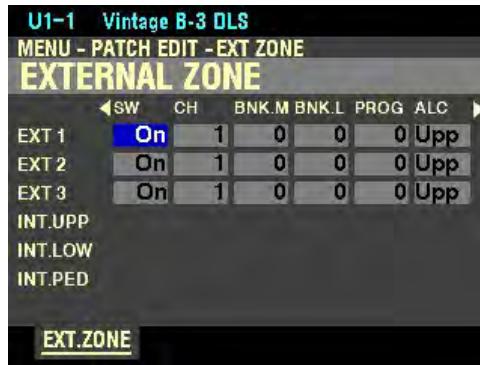


3. Press the PAGE “▶” button four times. The Information Center Display should now look like this:



You can now use the DIRECTION and PAGE buttons in conjunction with the VALUE knob to make changes to the External Zones of your XK-4. These changes are explained starting on the next page.

NOTE: The External Zone Parameters are identical for all three External Zones; therefore for the sake of brevity only “1” screens will be shown and described.

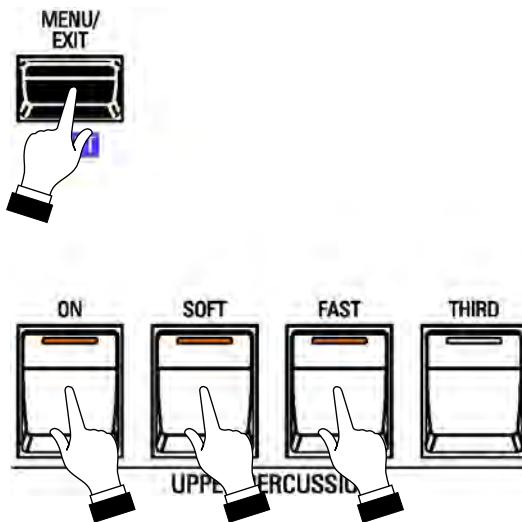


SW - External Zone Switch

This Parameter allows you to turn the selected External Zone “ON” (MIDI information will be transmitted) or “OFF” (no MIDI information will be transmitted).

You can turn the External Zones “ON” or “OFF” in one of two ways:

1. Use the DIRECTION buttons to highlight the EXTERNAL ZONE SW box you want and turn the VALUE knob to turn the selected Zone On or Off.
2. Press and Hold the SHIFT button and press one of the PERCUSSION buttons shown in the illustration below to turn the selected Zone On or Off.



The data chart below shows how the External Zones are controlled by the PERCUSSION buttons.

EXTERNAL ZONE SWITCH Options	
PERCUSSION button	Function
ON	Use this button to turn EXTERNAL ZONE 1 <u>On</u> or <u>Off</u> .
SOFT	Use this button to turn EXTERNAL ZONE 2 <u>On</u> or <u>Off</u> .
FAST	Use this button to turn EXTERNAL ZONE 3 <u>On</u> or <u>Off</u> .

SPECIAL NOTE:

If the EXTERNAL ZONES Parameter in the SYSTEM - MIDI - GENERAL FUNCTION Mode Page (described on pages 388 to 390) is set to “Off,” the Information Center Display will look similar to this:



Notice that all the boxes are “greyed out.” This indicates that no External Zone MIDI data will be transmitted even if the SW settings are set to On.

If the EXTERNAL ZONES Parameter is On, the Information Center Display will look similar to this:



The boxes are now showing white. This lets you know that External Zone data will be transmitted to a connected MIDI Device. Use the SW Parameters to control External Zones 1, 2 and 3 separately.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “CH” should be highlighted.

CH - External Zone Channel

This Parameter allows you to select the MIDI Channel on which MIDI data from the selected External Zone will be transmitted. You may select from 1 through 16.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to scroll forward through the Channels.

Turn the VALUE knob to the left to scroll backward through the Channels.

From the above screen, press the DIRECTION “►” button once.



The box underneath “BNK-M” should be highlighted.

The two Parameters described on this page allow you to perform a Bank Select to give you access to more sounds. For a fuller explanation of Bank Select, please consult page 493 of the APPENDIX chapter of this Guide.

BNK-M - External Zone Bank Select MSB

This Parameter allows you to set the value for Controller #0 - Most Significant Byte.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to select the value you want.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “BNK-L” should be highlighted.

BNK-L - External Zone Bank Select (LSB)

This Parameter allows you to set the value for Controller #32 - Least Significant Byte.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to select the value you want.

From the above screen, press the DIRECTION “►” button once.



The box underneath “PROG” should be highlighted.

PROG - External Zone Program Number

This Parameter allows you to select from the Program Number, and therefore the Voice, for the selected External Zone.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to select the Program Number you want.

From the screen shown at the bottom of the previous page, press the DIRECTION “▶” button once.



The box underneath “ALC” should be highlighted.

ALC - External Zone Allocate

This Parameter allows you to select which Part will control the selected External Zone.

The data chart below explains each of the settings in more detail.

EXTERNAL ZONE ALLOCATE Options	
Setting	Description
Upp	Use this setting to allocate the selected External Zone to the UPPER keyboard.
Low	Use this setting to allocate the selected External Zone to the LOWER keyboard.
Ped	Use this setting to allocate the selected External Zone to the PEDAL Part. (NOTE: The PEDAL Part will play either from a connected MIDI pedal clavier or from the LOWER keyboard when PEDAL TO LOWER is activated.)
Off	Use this setting if you have external MIDI instruments connected and you do not wish to send Note messages (Note On, Note Off and Note Velocity), but you still want to transmit MIDI Program Changes or Controller Changes.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to select the option you want.

From the screen shown on the previous page, press the DIRECTION “►” button once.



The box underneath “OCT” should be highlighted.

OCT - External Zone Octave

This Parameter allows you to determine the Octave or pitch at which the External Zone will sound. Use this Parameter if an external sound plays in a pitch range other than the one you find desirable.

The data chart below shows the options you may select.

OCTAVE Options	
Setting	Description
-2	The sound is two octaves below the regular pitch.
-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.
+2	The sound is two octaves above the regular pitch.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to raise the Octave of the selected External Zone.

Turn the VALUE knob to the left to lower the Octave of the selected External Zone.

From the screen shown on the previous page, press the DIRECTION “►” button once.



The box underneath “XPOSE” should be highlighted.

XPOSE - External Zone Transpose

This Parameter allows you to adjust the sounding pitch of the selected External Zone by half-steps. You may select from -63 (down five octaves and a third) to 63 (up five octaves and a third). At 0 there is no transposition.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to transpose the selected External Zone higher.

Turn the VALUE knob to the right to transpose the selected External Zone lower.

From the above screen, press the DIRECTION “►” button once.



The box underneath “LOW” should be highlighted.

LOW - External Zone Lower Note Limit

This Parameter allows you to set the lower note limit for the External Zone. You may select from -2C to 8G..

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to locate the note limit for the selected External Zone higher.

Turn the VALUE knob to the left to locate the note limit for the selected External Zone lower.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “HIGH” should be highlighted.

HIGH - External Zone Upper Note Limit

This Parameter allows you to set the upper note limit for the External Zone. You may select from -2C to 8G.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to locate the note limit for the selected External Zone higher.

Turn the VALUE knob to the left to locate the note limit for the selected External Zone lower.

NOTE: The Upper Limit number cannot be lower than the Lower Limit number.

From the above screen, press the DIRECTION “►” button once.



The box underneath “VOL” should be highlighted.

VOL - External Zone Volume

This Parameter allows you to control the volume (Controller #7) of the sound controlled by the selected External Zone. You may select from 0 (no volume) through 127 (maximum volume).

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to increase the volume for the selected External Zone.

Turn the VALUE knob to the left to decrease the volume for the selected External Zone.

NOTE: In order for this Parameter to work, the Expression Control Number must be set to 7 (Volume). If this Parameter is set to 11 (Expression), changing the External Zone Volume Parameter will have no effect.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “PAN” should be highlighted.

PAN - External Zone Pan

This Parameter allows you to set the directionality or Pan setting (Controller #10). You may select from L63 (the sound plays entirely through the Left channel), through to 0 (the sound is heard equally through both channels) and on through R63 (the sound plays entirely through the Right channel).

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to emphasize the Right channel for the selected External Zone.

Turn the VALUE knob to the left to emphasize the Left channel for the selected External Zone.

NOTE: In order to hear the effect of this Parameter, the sound controlled from the External Zone must be connected via Stereo (both Left and Right channel) outputs.

From the above screen, press the DIRECTION “►” button once.



The box underneath “VEL” should be highlighted.

VEL - External Zone Velocity

This Parameter allows you to sets the character of the velocity to send to this zone. The setting range is Off and 1 to 4. At Off, the velocity is fixed at 100. The “press” (velocity response) of the keyboard progresses from 1 (heavier) through 4 (lighter).

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to make the velocity response for the selected External Zone lighter.

Turn the VALUE knob to the left to make the velocity response for the selected External Zone heavier.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “DAMP” should be highlighted.

DAMP - External Zone Damper

This Parameter allows you to select whether you want to send Damper (Controller #64) information as part of the selected External Zone.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to turn Damper On or Off for the selected External Zone.

From the above screen, press the DIRECTION “►” button once.



The box underneath “BEND” should be highlighted.

BEND - External Zone Pitch Bend

This Parameter allows you to select whether you want to send Pitch Bend information as part of the selected External Zone.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to turn Pitch Bend On or Off for the selected External Zone.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “MOD” should be highlighted.

MOD - External Zone Modulation Wheel

This Parameter allows you to select whether you want to send information from the Modulation Wheel as part of the selected External Zone.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to turn Modulation Wheel information On or Off.

From the above screen, press the DIRECTION “►” button once.



The box underneath “EXP” should be highlighted.

EXP - External Zone Expression ON/OFF

This Parameter allows you to select whether a connected Expression Pedal will affect the selected Zone.

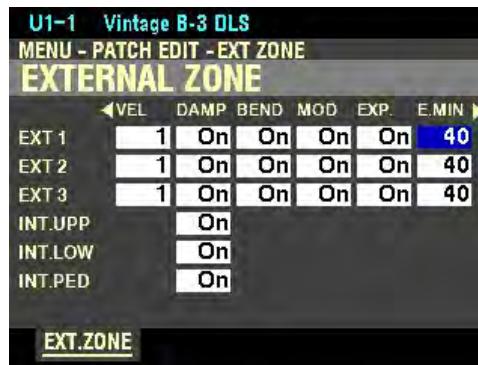
Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to turn Expression for the selected Zone On or Off.

NOTE: In order for this Parameter to work, the Expression Control Number must be set to 7 (Volume). If this Parameter is set to 11 (Expression), changing the External Zone Volume Parameter will have no effect.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “E.MIN” should be highlighted.

E.MIN - External Zone Minimum Volume

This Parameter allows you to adjust the volume level when the Expression Pedal is “closed,” or set at minimum. You may select from 0 through 127. At 0 no sound will be heard. At 127 the sound will be heard at its maximum level regardless of the setting of the connected Expression Pedal.

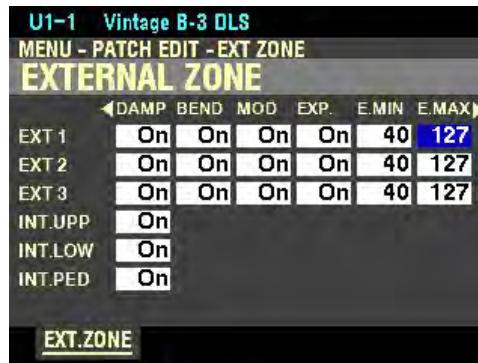
Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to increase the Minimum Volume.

Turn the VALUE knob to the left to decrease the Minimum Volume.

From the above screen, press the DIRECTION “►” button once.



The box underneath “E.MAX” should be highlighted.

E.MAX - External Zone Maximum Volume

This Parameter allows you to adjust the volume level when the Expression Pedal is all the way “open,” or set at maximum. You may select from 64 through 127.

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to the right to increase the Maximum Volume.

Turn the VALUE knob to the left to decrease the Maximum Volume.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “E.CC” should be highlighted.

E.CC - External Zone Expression Control Number

This Parameter allows you to select how you want to control the level of the selected External Zone. You may select either 7 (Volume or Controller #7) or 11 (Expression or Controller #11).

Use the DIRECTION “▲” and “▼” buttons to move up and down among External Zones, 1, 2 and 3.

When you have made your selection:

Turn the VALUE knob to select 7 or 11.

What Is the Difference Between “Volume” and “Expression?”

In purely technical terms, Volume and Expression are identical - both control loudness or sound level. The difference lies with how they are customarily used in MIDI applications, particularly in creating and playing back MIDI sequences.

The generally accepted protocol is to use Controller #7 (Volume) to set the overall or absolute level of a voice or sound, and use Controller #11 (Expression) to make variations (such as crescendi or diminuendi) against the overall level set by Controller #7. This is recommended particularly if you want to use your XK-4 as a MIDI input device to record a sequence.

NOTE: In order for the External Zone Volume feature to work, the Expression Control Number must be set to 7 (Volume). If this parameter is set to 11 (Expression), changing the External Zone Volume Parameter will have no effect.

◆ **MIDI All Notes Off and Parameter Reload (“MIDI Panic”)**

MIDI plays notes from an external instrument by sending two commands - “Note On” which starts the note playing, and “Note Off” which releases the note and stops it from playing. These two commands are always sent in pairs.

Once in a while, a Note Off command may not follow a Note On command, causing a note or notes to cipher, or sound continuously (the phenomenon popularly referred to as “stuck notes”). In this case, you need to send a MIDI command to the receiving instrument to clear the ciphering notes.

To do this, press the DIRECTION “▲” and “▼” buttons simultaneously.



Doing this will send a “MIDI All Notes Off” as well as a “MIDI Reset All Controllers” command to the receiving instruments. The stuck notes will be turned off and the settings for the External Zones will be reset, then the External Zone settings will be re-sent. Normal playing can then be resumed.

HAMMOND



XK-4

**SPECIAL
UTILITY
FEATURES**

SPECIAL UTILITY FEATURES

Your Hammond XK-4 has a number of special features which would not normally be accessed during performance, but which enable you to make certain adjustments to the organ's playing features, as well as give you specific information about the organ. The following pages explain these features in detail

◆ AUDIO FUNCTION Mode

This FUNCTION Mode allows you to see which audio connections are active

NOTE: All the AUDIO connections are on the Accessory Panel on the rear of the instrument and are explained in the INTRODUCTION chapter of this Guide starting on page 6.

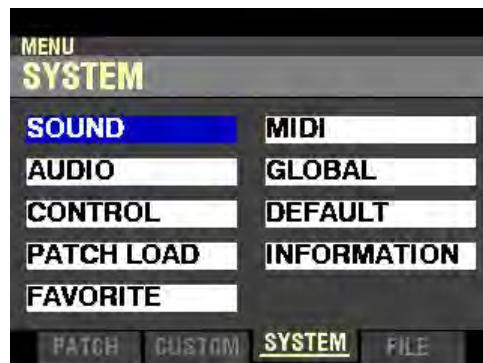
To access the AUDIO FUNCTION Mode, do the following:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The "ORGAN" box should be highlighted.

2. Press the PAGE "►" button two times to highlight the "SOUND" box.



3. Press the DIRECTION “▼” button once. The Information Center Display should now look like this:



4. Press the ENTER button. The Information Center Display should now look like this:



You are now in the AUDIO FUNCTION Mode.

◆ SETTING

This FUNCTION Mode Page allows you to see which audio connections are active. The following paragraphs explain this in more detail.

ROTARY OUT

This Parameter allows you to select the status of the ROTARY OUT jack. The data chart below shows the options you may select.

ROTARY OUT Options	
Setting	Description
Not Used	No audio signal will be sent from the ROTARY OUT jack
Used	ORGAN Tone Wheel and Transistor Organ tones will be sent out from the ROTARY OUT jack. The ORGAN tones will not be sent out from the LINE OUT jacks.

Turn the VALUE knob to select Not Used or Used.

NOTE: This Parameter does not affect the Pipe ORGAN Voices.

From the screen shown on the previous page, press the DIRECTION "▼" button once.



The box underneath "MOD" should be highlighted.

ORGAN PEDAL OUT

This Parameter allows you to select the status of the ORGAN PEDAL OUT jack. The data chart below shows the options you may select.

ORGAN PEDAL OUT Options	
Setting	Description
Not Used	No audio signal will be sent from the ORGAN PEDAL OUT jack.
Used	The PEDAL tones from the ORGAN Section will be sent out from the ORGAN PEDAL OUT jack. Use this jack to connect a powered sub-woofer to increase the bass, or to bypass the Leslie for the PEDAL tones.

Turn the VALUE knob to select Not Used or Used.

SPECIAL NOTE: Notice the four light blue boxes in the AUDIO SETTING screen.



When you select settings for the three AUDIO SETTING Parameters, you will see the characters underneath each blue box change in accordance with each setting you make. For example, if you select Used for the ORGAN PEDAL OUT jack you will see the P underneath the LINE OUT and ORGAN PEDAL OUT boxes disappear. This indicates the ORGAN PEDAL tones are no longer being sent to the LINE OUT jacks but are instead going to the ORGAN PEDAL OUT jack. In this way you can connect a subwoofer to the ORGAN PEDAL OUT jack for very deep pedal tones.

NOTE: If the INDIVIDUAL OUT jacks are used, the ORGAN Section will not sound through the LINE OUT jacks. Also, no Effects such as Reverb will sound through the INDIVIDUAL OUT jacks. This is so you can use a separate Effects box for the ORGAN Section.

From the screen shown on page 423, press the DIRECTION “►” button once.



The box to the right of “CHANNEL” should be highlighted.

◆ EXT. LESLIE

This Parameter allows you to select the routing of audio channels to Leslie Speaker connected to the instrument via the 11-pin interface. The data chart below shows the options you may select.

EXT.LESLIE Options	
Setting	Description
1	If a single channel Leslie Speaker is connected, the audio from the Tone Wheel / Transistor Organs is sent to the Rotary Channel regardless of the status of the BYPASS button (models 122XB, 981, 991, 3300, 3300W, 3500, 3500W).
1, w/Pre	Same as <u>1</u> , but adds special tonal characteristics which duplicate the sound from a Leslie Speaker with a built-in Pre-Amplifier (Heritage Series models 122H or 142H).
3	If a multi-channel Leslie Speaker is connected, the audio from the Tone Wheel / Transistor Organs is sent to the Rotary Channel only if the BYPASS button is “ON.” If the BYPASS button is “OFF,” the audio from the Tone Wheel / Transistor Organs is sent to the Stationary Channel(s) (models 2101, 2101 mk 2).

Turn the VALUE knob to select the option you want.

◆ SOUND FUNCTION Mode

This FUNCTION Mode allows you to adjust the sound qualities which affect the entire instrument (MASTER TUNE, MASTER TRANPOSE, and MASTER EQUALIZER).

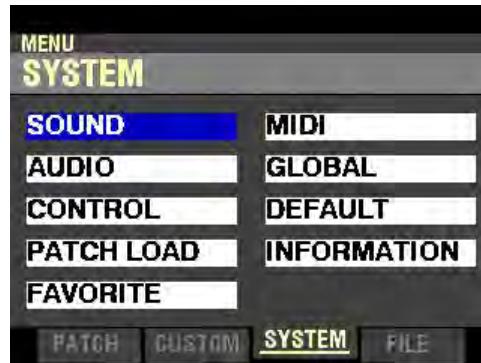
To access the SOUND FUNCTION Mode, do the following:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

2. Press the PAGE “▶” button two times to highlight the “SOUND” box.



3. Press the ENTER button. The Information Center Display should now look like this:



If you followed the instructions on the previous page, the Information Center Display should look like this:



The box to the right of "TUNE" should be highlighted.

◆ MASTER TUNE

This Parameter allows you to change the overall tuning pitch of the entire instrument. The reference pitch is "A-440." The selectable range is from A-430 to A-450.

Turn the VALUE knob to the right to raise the pitch.

Turn the VALUE knob to the left to lower the pitch.

From the above screen, press the PAGE "►" button once.



The box to the right of "TRANSPOSE" should be highlighted.

◆ MASTER TRANSPOSE

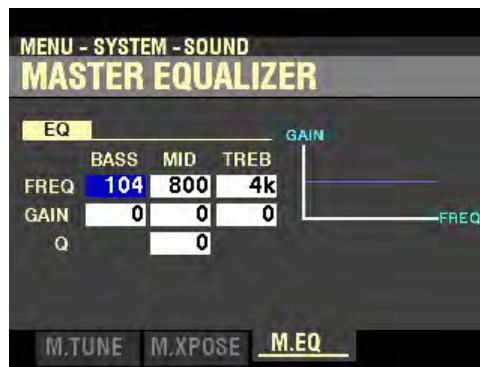
This Parameter allows you to shift the musical key of the entire instrument. This is useful if you have a piece of music written in one key but which needs to sound in another key; for example, a song written and played in C Major, could sound in G Major. TRANSPOSE will step either up or down six (6)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

Turn the VALUE knob to the right to transpose the instrument up.

Turn the VALUE knob to the left to transpose the instrument down.

NOTE: The MASTER TRANSPOSE Parameter is linked to the TRANSPOSE button, plus the DOWN and UP buttons to the right of the TRANSPOSE button. For more information please consult the SPECIAL PERFORMANCE FEATURES chapter of this Guide starting on page 320.

From the screen shown at the bottom of the previous page, press the PAGE "►" button once.



The box to the right of "EQ" should be highlighted.

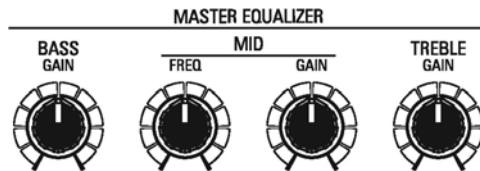
◆ MASTER EQUALIZER

These Parameters allow you to customize the tone quality of the entire instrument.

What Is "Equalization?"

"Equalization" is a term used by sound engineers to describe changes or alterations they make to the character of sound. For example, if a piano is being "miked," (its sound output being picked up by a microphone) and the tone needs to sound brighter or to have more bass, a sound engineer can increase or decrease the level of individual "frequency bands," as they are called, to achieve just the desired effect. The "BASS" and "TREBLE" tone controls on a home stereo amplifier can be said to be a very elementary type of equalization. However, a true equalizer allows you control over more areas of the frequency range than just "highs" and "lows." The Equalizer functions of your XK-4 have this capability.

MASTER EQUALIZER knobs

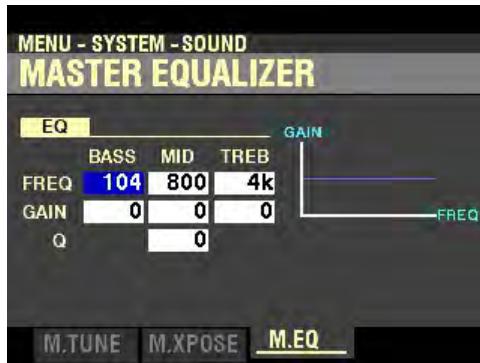


These controls allow you to adjust the Gain for the Bass, Mid and Treble frequency bands and to adjust the crossover frequency for the Mid frequency band.

Turning these knobs will change the Parameters. You will see the indicators on the right of the display change in response to the movements of the knobs.

NOTE: Moving any of these four knobs will cause a POPUP screen to display showing the current setting. For more information about POPUPs please consult page 351.

If you followed the instructions on the previous pages, the Information Center Display should look like this:



The box to the right of "FREQ" and underneath "BASS" should be highlighted.

FREQ

These Parameters allow you to adjust the central frequency of the BASS, MID and TREBLE frequency bands.

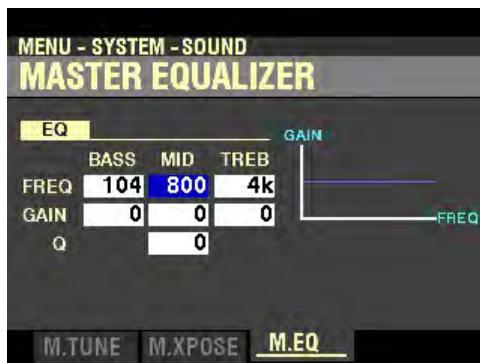
BASS - Bass Central Frequency

This Parameter allows you to adjust the central frequency of the Bass frequency band. You may select from 20Hz to 200Hz.

Turn the VALUE knob to the right to raise the central frequency.

Turn the VALUE knob to the left to lower the central frequency.

From the above screen, press the DIRECTION "►" button once.



The box underneath "MID" should be highlighted.

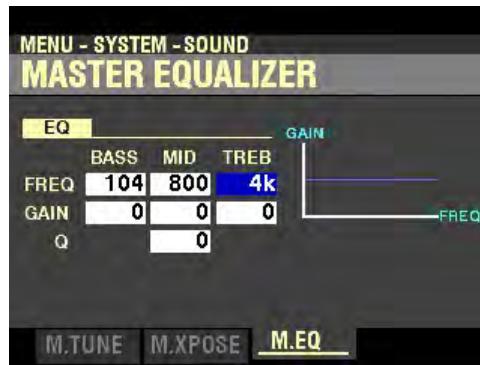
MID - Midrange Central Frequency

This Parameter allows you to adjust the central frequency of the Midrange frequency band. You may select from 250Hz to 3.1kHz.

Turn either the VALUE knob or the MID FREQ knob to the right to raise the central frequency.

Turn either the VALUE knob or the MID FREQ knob to the left to lower the central frequency.

From the screen shown at the bottom of the previous page, press the DIRECTION “►” button once.



The box underneath “TREB” should be highlighted.

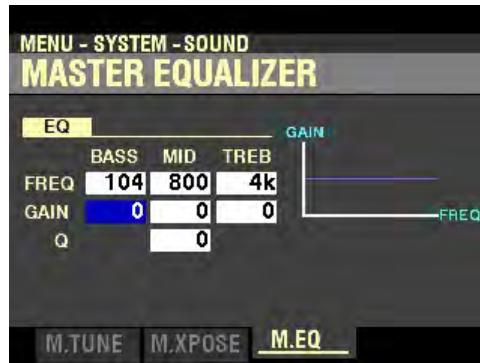
TREB - Treble Central Frequency

This Parameter allows you to adjust the central frequency and amount of the Treble frequency band. You may select from 4.0kHz to 8.0kHz.

Turn the VALUE knob to the right to raise the central frequency.

Turn the VALUE knob to the left to lower the central frequency.

From the above screen, use the DIRECTION buttons to move the cursor to the box to the right of “GAIN” and underneath “BASS.”



GAIN

This Parameter allows you to adjust the amount of the BASS, MID and TREBLE frequency bands.

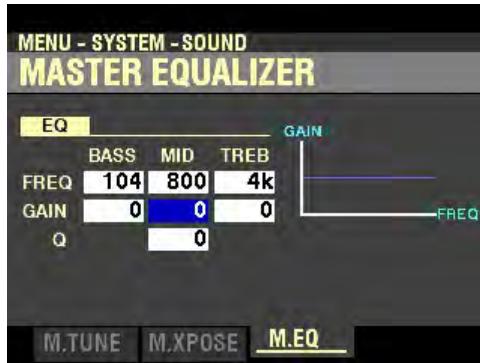
BASS - Bass Gain

These Parameters allow you to adjust the amount of the Bass frequency band. You may select from -9 to +9.

Turn either the VALUE knob or the BASS GAIN knob to the right to increase the amount.

Turn either the VALUE knob or the BASS GAIN knob to the left to decrease the amount.

From the screen shown at the bottom of the previous page, press the DIRECTION “▶” button once.



The box to the right of “GAIN” and underneath “MID” should be highlighted.

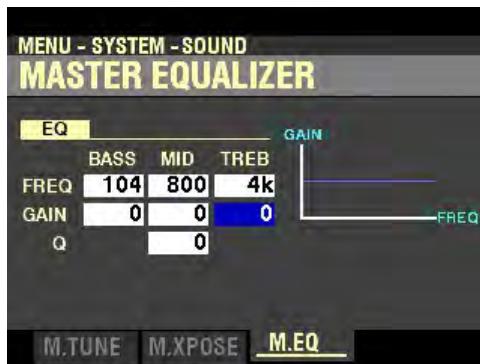
MID - Midrange Gain

This Parameter allows you to adjust the amount of the Midrange frequency band. You may select from -9 to +9.

Turn either the VALUE knob or the MID GAIN knob to the right to increase the amount.

Turn either the VALUE knob or the MID GAIN knob to the left to decrease the amount.

From the screen shown at the bottom of the previous page, press the DIRECTION “▶” button once.



The box to the right of “GAIN” and underneath “TREB” should be highlighted.

TREB - Treble Gain

This Parameter allows you to adjust the amount of the Treble frequency band. You may select from -9 to +9.

Turn either the VALUE knob or the TREBLE GAIN knob to the right to increase the amount.

Turn either the VALUE knob or the TREBLE GAIN knob to the left to decrease the amount.

From the above screen, use the DIRECTION buttons to move the cursor to the box to the right of “Q.”



Q - Mid Resonance

This Parameter allows you to adjust the resonance of the Middle frequency band. You may select from 0 to 63.

Turn the VALUE knob to the right to increase the resonance amount.

Turn the VALUE knob to the left to decrease the resonance amount.

◆ **GLOBAL FUNCTION Mode**

◆ **POWER AUTO OFF**

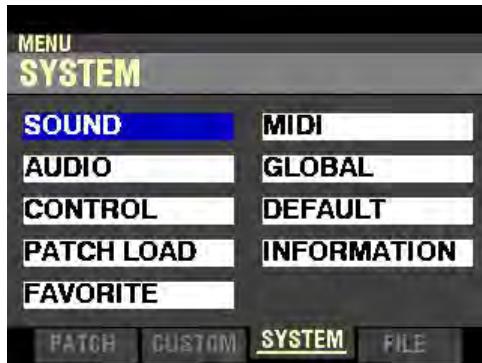
For safety reasons, the XK-4 is equipped with a POWER AUTO OFF feature which turns the power to the instrument “OFF” if no keys or controls are touched within a 30-minute period. This **FUNCTION** Mode Page allows you to enable or disable this feature.

1. From either of the **PLAY** Mode Pages, press the **MENU / EXIT** button. The Information Center Display should now look like this:

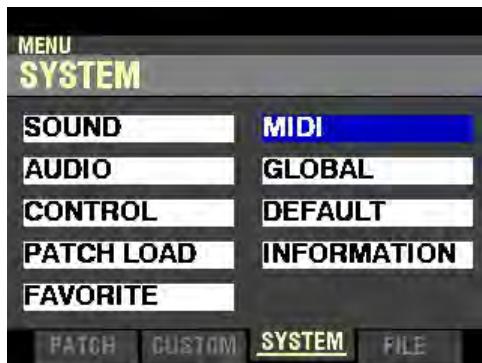


The “ORGAN” box should be highlighted.

2. Press the **PAGE ▶** button two times to highlight the “SOUND” box.



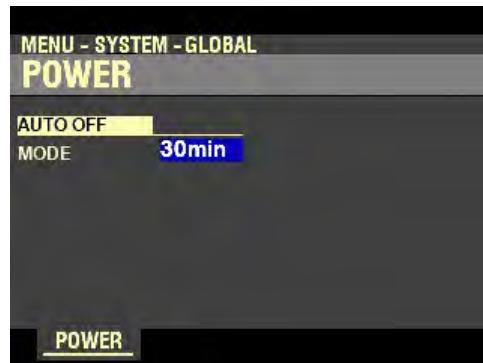
3. Press the **DIRECTION ▶** button once. The Information Center Display should now look like this:



4. Press the DIRECTION “▼” button once. The Information Center Display should now look like this:



5. Press the ENTER button. The Information Center Display should now look like this:



Use the VALUE knob to select the option you want. The data chart below shows the options you may select.

POWER AUTO OFF Options	
Setting	Description
30min	The AC power to the instrument will turn “OFF” after 30 minutes have elapsed with no keys or buttons being pressed.
Disable	The instrument will turn “ON” or “OFF” with the AC Power Switch, but not turn “OFF” automatically.

Turn the VALUE knob to select 30min or Disable.

◆ INFORMATION FUNCTION Mode

This FUNCTION Mode allows you to see critical Information about the instrument.

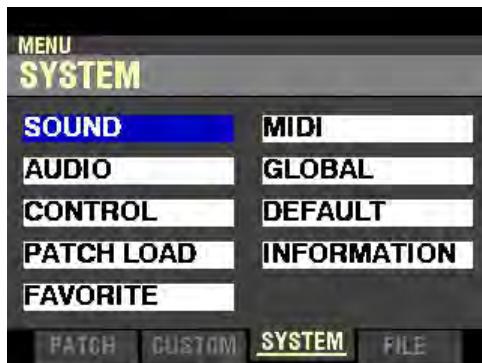
To access the INFORMATION FUNCTION Mode, do the following:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:

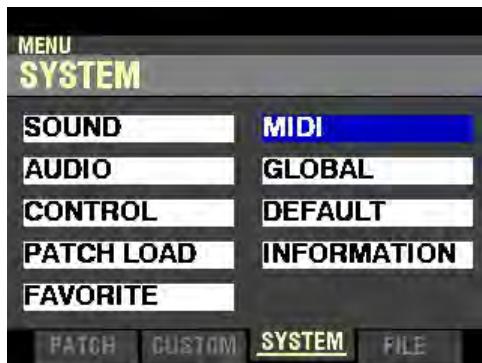


The “ORGAN” box should be highlighted.

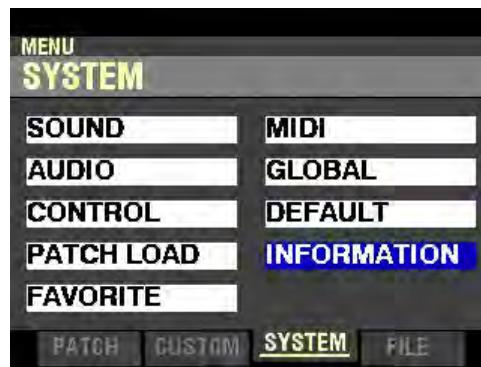
2. Press the PAGE “▶” button two times to highlight the “SOUND” box.



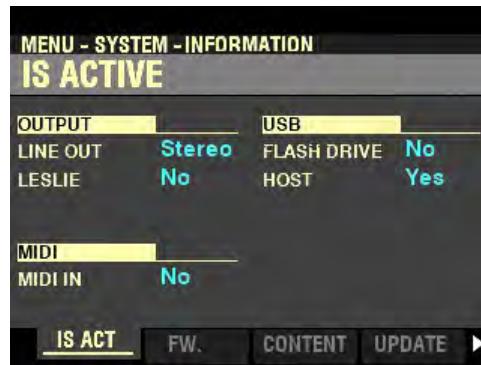
3. Press the DIRECTION “▶” button once. The Information Center Display should now look like this:



4. Press the DIRECTION “▼” button four times. The Information Center Display should now look like this:



5. Press the ENTER button. The Information Center Display should now look like this:



◆ IS ACTIVE

This FUNCTION Mode Page allows you to see which peripheral devices are connected.

The data charts below explain the different screen messages.

LINE OUT	
Mono	Only the L/MONO jack is connected.
Stereo	Both the L/MONO and R jacks are connected.

NOTE: The full effect of the sounds produced by the XK-4 is best heard in Stereo (both LINE OUT jacks connected to two sound sources physically separated). If only the L/MONO jack is connected, the "Pan" function will not be heard.

LESLIE	
No	A Leslie Speaker cabinet is not connected via the 11-pin Leslie socket.
Yes	A Leslie Speaker cabinet is connected via the 11-pin Leslie socket.

MIDI IN	
No	A MIDI device is not connected via the MIDI IN Port.
Yes	A MIDI device is connected via the MIDI IN Port.

NOTE: This shows the receiving condition of the "Active Sense" message. It may display "No" even if connected if the connected device cannot send an Active Sense message (such as the XPK-100 pedal clavier).

USB FLASH DRIVE	
No	A USB Flash Drive is not present at the TO FLASH DRIVE Port.
Yes	A USB Flash Drive is present at the TO FLASH DRIVE Port.

NOTE: Use this Parameter to determine if a USB Flash Drive is compatible with the XK-4.

USB TO HOST	
No	A USB cable is not connected to the TO HOST port.
Yes	A USB cable is connected to the TO HOST port.

◆ VERSION - FIRMWARE

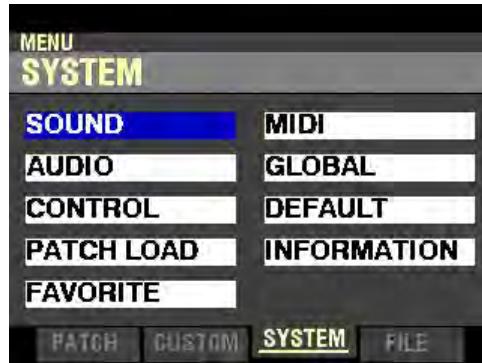
This FUNCTION Mode Page allows you to see the versions of the main system software.

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:

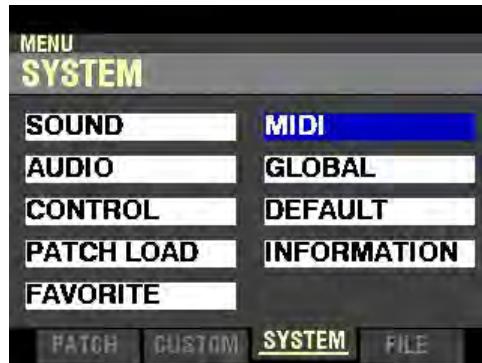


The “ORGAN” box should be highlighted.

2. Press the PAGE “▶” button two times to highlight the “SOUND” box.



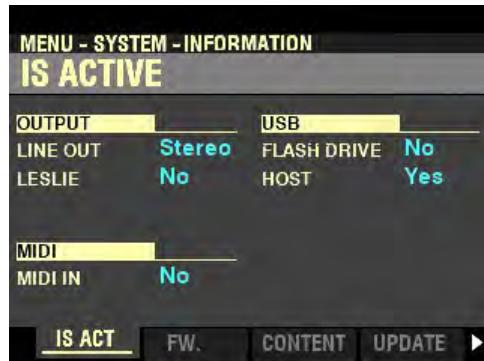
3. Press the DIRECTION “▶” button once. The Information Center Display should now look like this:



4. Press the DIRECTION “▼” button four times. The Information Center Display should now look like this:



5. Press the ENTER button. The Information Center Display should now look like this:



6. Press the PAGE “▶” button once. The Information Center Display will show the current software for the main system (see the date chart below).

VERSION - FIRMWARE	
Software Module	Description
RELEASE	Release number
MAIN	Main Processor
SUB	Sub Processor
KEYSCAN	Keyscan Processor
PANEL	Control Processor

◆ VERSION - CONTENTS

This FUNCTION Mode Page allows you to see the versions of the Voice Cells.

From the screen shown on the previous page, press the PAGE “▶” button once. The Information Center Display will show the versions of the Voice Cells (see the date chart below).

You will see an arrow in the lower right corner of the screen indicating more contents below the displayed area. Use the DIRECTION “▼” button to scroll down and see the entire list of Voice Cells.

VERSION - CONTENTS	
Software Module	Description
F.CONTENT	Factory Contents. This is integrated pre-loaded data. The details are listed below.
TW.ORGAN	Tone Wheel Organ
TR.ORGAN 1	Transistor Organ 1
TR.ORGAN 2	Transistor Organ 2
PIPE	Pipe Organ
PEDAL DB.	Pedal Drawbars

◆ **DEFAULT FUNCTION** Mode

This FUNCTION Mode allows you to initialize all or part of the XK-4 to factory-default settings.

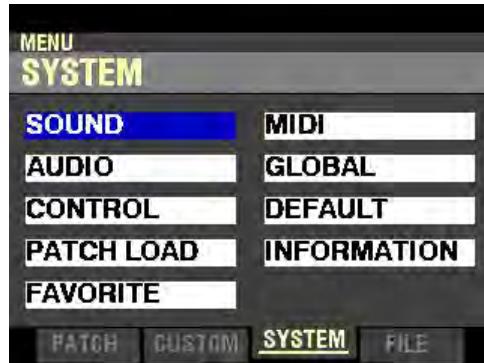
To access the DEFAULT FUNCTION Mode, do the following:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:

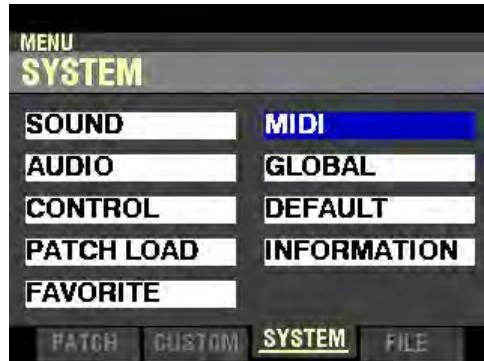


The “ORGAN” box should be highlighted.

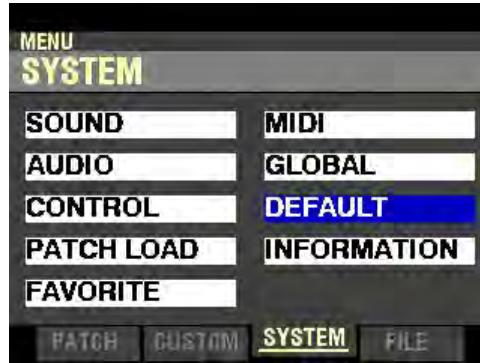
2. Press the PAGE “▶” button two times to highlight the “SOUND” box.



3. Press the DIRECTION “▶” button once. The Information Center Display should now look like this:



4. Press the DIRECTION “▼” button three times. The Information Center Display should now look like this:



5. Press the ENTER button. The Information Center Display should now look like this:



WARNING!: Doing any of the following procedures will erase all parameters, settings and registrations, returning the instrument to the original Hammond factory default settings.

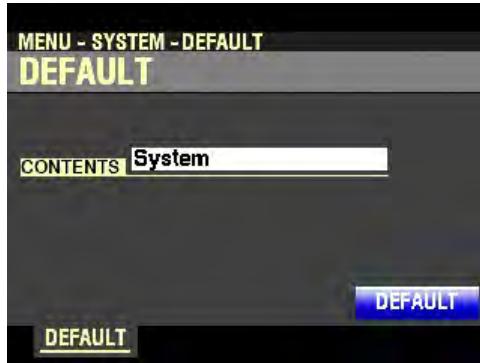
The data chart below shows the options you may select.

DEFAULT Options	
Setting	Description
PATCH	Resets the selected Patch.
TONE WHEEL	Reset the Custom Tone Wheels.
LESLIE	Resets the Custom Leslie Cabinets.
PEDAL REG	Resets the Custom Pedal Registrations.
PIPE	Resets the Custom Pipes.
SYSTEM	Resets the System Parameters only.
ALL	Resets the entire instrument.

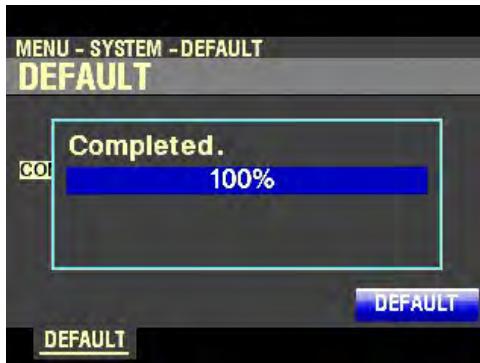
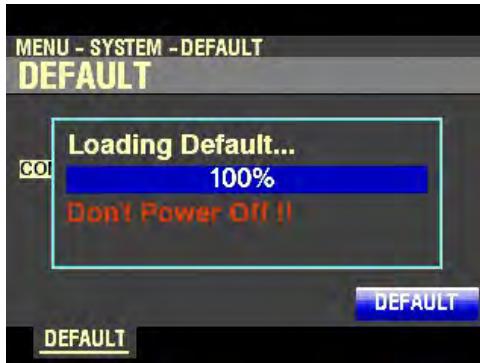
Turn the VALUE knob to the right to scroll forward through the choices.

Turn the VALUE knob to the left to scroll backward through the choices.

6. After you have made your selection, press the DIRECTION “▼” button once to highlight the “DEFAULT” box.



7. Press the ENTER button. You will see the following messages flash in the display for approximately 1 second each:



NOTE: If you DO NOT wish to Reset, press either the PLAY or the MENU / EXIT button.

NOTE: You can also perform a DEFAULT ALL by turning the power “ON” while Pressing and Holding the red RECORD button.

NOTE: Please consult page 449 for a list of System Parameters.

◆ SYSTEM APP MENU

When you are editing SYSTEM Parameters, you can access the APP MENU to register Pages to a FAVORITE button for quicker access. The following paragraphs will explain this in more detail.

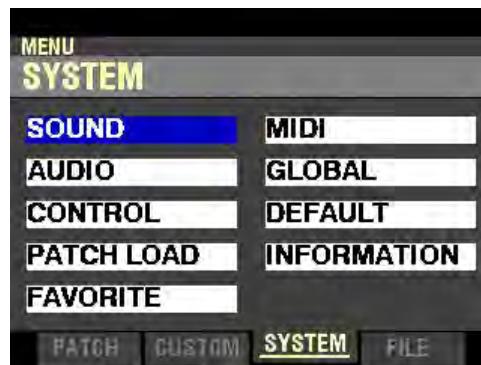
TRY THIS:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

2. Press the PAGE “▶” button two times. The Information Center Display should now look like this:

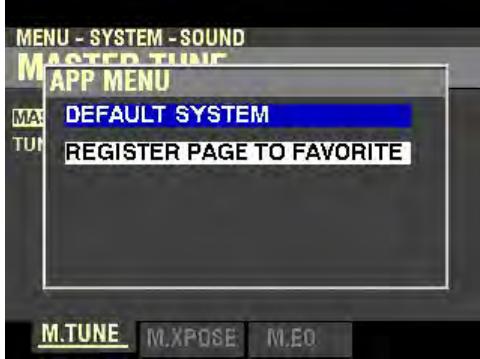


3. Press the DIRECTION buttons to select the SYSTEM FUNCTION Mode you want to work with and press the ENTER button. The SYSTEM APP MENU can be used for any of the FUNCTION Modes in the SYSTEM Menu; however, for this example, press the ENTER button to select the SOUND FUNCTION Mode Page. The Information Center Display should look like this:



This is Page 1 of the SOUND FUNCTION Mode.

4. Press and Release the **MANUAL** “” button. The Information Center Display should now look like this:



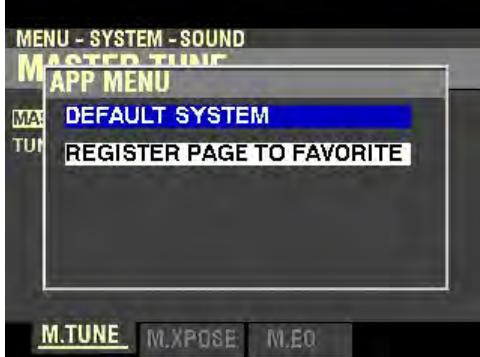
This is the APP MENU for the FUNCTION Mode Pages in the SYSTEM Menu.

◆ **DEFAULT SYSTEM**

This allows you to initialize the SYSTEM Parameters of the XK-4 to factory-default settings.

To access the DEFAULT FUNCTION Mode, do the following:

1. Access the SYSTEM APP MENU using the procedure described on the previous pages. The Information Center Display should now look similar to this:

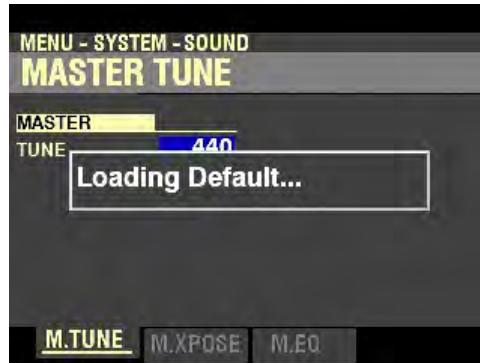


2. Press the ENTER button. The Information Center Display should now look like this:



WARNING!: Doing the following procedures will erase all parameters, settings and registrations, returning the instrument to the original Hammond factory default settings.

3. Press the ENTER button. You will see the following messages flash in the display for approximately 1 second each:



NOTE: If you DO NOT wish to Reset, press either the PLAY or the MENU / EXIT button.

NOTE: You can also perform a DEFAULT ALL by turning the Power "ON" while Pressing and Holding the red RECORD button.

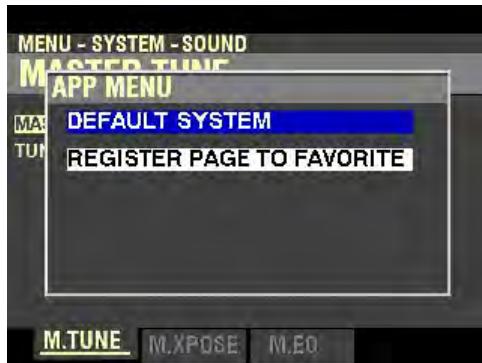
NOTE: Please consult page 449 for a list of System Parameters.

◆ REGISTER PAGE TO FAVORITE

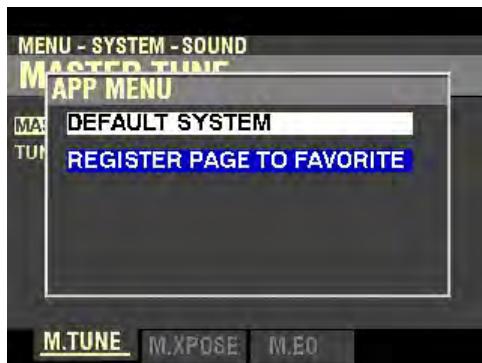
This allows you to register the current Page to one of the FAVORITE buttons for quick access.

To register a Page from the SYSTEM FUNCTION Mode to a FAVORITE, do the following:

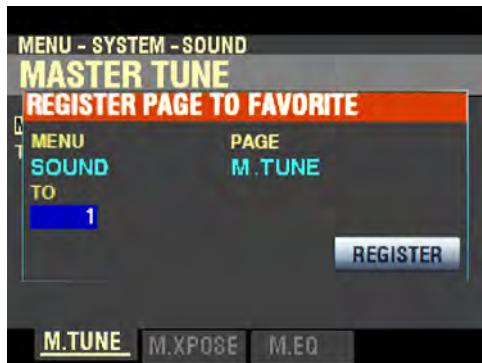
1. Access the SYSTEM APP MENU using the procedure described on the previous pages. The Information Center Display should now look similar to this:



2. Press the DIRECTION "▼" button once. The Information Center Display should now look like this:

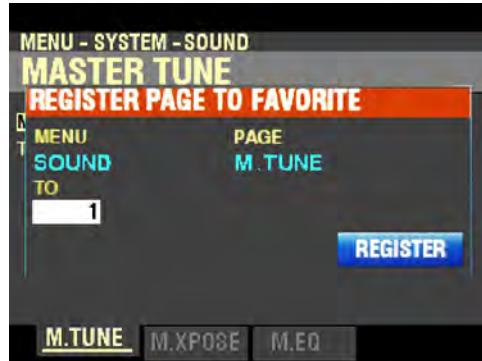


3. From the above screen, press the ENTER button. The Information Center Display should look similar to this:



4. Use the VALUE knob to select which FAVORITE button you want to recall the selected Page. You may select from 1 to 10.

5. After you have made your selection, press the DIRECTION “▼” button to highlight the “REGISTER” box.

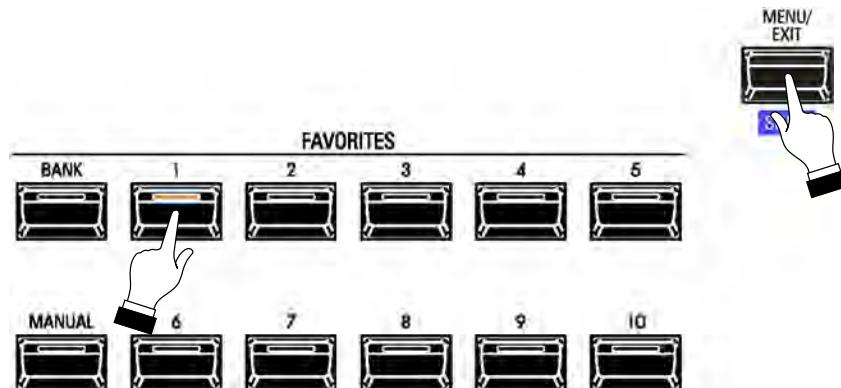


6. Press the ENTER button. You will see the messages “Recording...” and “Completed.” flash in the display for approximately 1 second each.

NOTE: If you DO NOT wish to register the selected Page, press the MENU / EXIT or PLAY button instead of the ENTER button.

You have now registered a FUNCTION Mode Page to a FAVORITE button. In this way, you can access Menu Pages you use frequently with a single button-press. If you wish, you can register up to 100 Pages to the FAVORITE buttons by utilizing the 10 available Favorite Banks.

To access a Page or screen saved to a FAVORITE button, Press and Hold the SHIFT button and press the numbered FAVORITE button where the Page is registered.



NOTE: More information regarding FAVORITES and Favorite Banks can be found in the **PATCHES / FAVORITES** chapter of this Guide starting on page 59.

◆ SYSTEM PARAMETER LIST

Category	Parameter	NRPN		SysEx Address		SysEx Length	Data
		MSB (63)	LSB (62)	MSB to LSB			
Tune	Master Tune	01	00	00	01	00	02 032E - 0338 - 0342 (A= 430 - 440 - 450 Hz)
	Transpose	01	01	00	01	01	02 3F 7A - 40 00 - 40 06 (-6 - ±0 - +6 semitones)
	Velocity Offset	01	02	00	01	02	02 3F 60 - 40 00 - 40 20 (-32 ±0 - +32)
	Pitch Bend Depth	01	03	00	01	03	01 00 - 0D (Patch, ±0 - ±12 semitones)
	Organ Sounding Point	01	04	00	01	04	01 00, 01 (Shallow, Deep)
	TW Brake Range	01	05	00	01	05	02 3F 68 - 40 00 - 40 0C (-24 - ±0 - +12 semitones)
	TW Brake Time	01	06	00	01	06	01 00 - 31 (0.1 - 5.0 sec)
	TW Brake Amp	01	07	00	01	07	01 00, 01 (On, On)
	Transpose Act Organ	01	08	00	01	08	01 00, 01 (Every, Next)
Expression	Transpose Act Pinno	01	09	00	01	09	01 00, 01 (Every, Next)
	Transpose Act Ensemble	01	0A	00	01	0A	01 00, 01 (Every, Next)
	Transpose Act Synth	01	0B	00	01	0B	01 00, 01 (Every, Next)
	Source	02	00	00	02	00	01 00 - 02 (Pedal, MIDI, Both)
Damper	Min. Level	02	01	00	02	01	01 00 - 29 (Off, -40 - ±0dB)
	Min. Limit LF	02	02	00	02	02	01 00 - 29 (Off, -40 - ±0dB)
	Min. Limit HF	02	03	00	02	03	01 00 - 29 (Off, -40 - ±0dB)
	Pedal Type	02	06	00	02	06	01 00, 01 (H or R, Y or K)
Foot Switch	Gain	02	07	00	02	07	01 00 - 3C (70 - 130 %)
	Curve	02	08	00	02	08	01 00 - 02 (Audio, Linear, Capacitor)
	Pedal Type	03	03	00	03	03	01 00 - 03 (Switch, HalfY, HalfR, HalfK)
	Gain	03	04	00	03	04	01 00 - 3C (70 - 130 %)
User Button	Mode Foot Tip	07	00	00	07	00	01 00 - 24
	Mode Foot Ring	07	01	00	07	01	01 00: Off 07: Spring Shock
	Mode Leslie Tip	07	02	00	07	02	01 01: Leslie S/F Alt 08: MFX2 Delay Time
	Mode Leslie Ring	07	03	00	07	03	01 02: Leslie S/F Mom 09: Org U&L Sustain
							03: Leslie S/F Tri 0A: Pedal To Lower
							04: TW Brake 0B-23: Bass 1C - 3C
Display							05: Favorite Fwd 24: ProChord
							06: Favorite Rev
	Leslie Switch Device	07	04	00	07	04	01 00, 01 (Foot Switch, Leslie Switch)
	Mode	08	00	00	08	00	01 00 - 0E
Audio							00: Off 08: Organ MFX2
							01: Pedal Sustain 09: Piano MFX1
							02: Org U Sustain 0A: Piano MFX2
							03: Org L Sustain 0B: Ens MFX1
Master Equalizer							04: TW Brake 0C: Ens MFX2
							05: Spring Shock 0D: Synth MFX1
							06: MFX2 Delay Time 0E: Synth MFX2
							07: Organ MFX1
MIDI Common	Short Cut	--	--	--	--	--	-- 00 - 03 (0, 1, 2 sec, No)
	Time Out	--	--	--	--	--	-- 00 - 03 (4, 8, 16 sec, No)
	Pop Up	--	--	--	--	--	-- 00 - 03 (No, 5, 10, 20 sec)
	Auto Power Off	--	--	--	--	--	-- 00, 01 (Disable, 30min)
	Knobs	--	--	--	--	--	-- 00, 01 (Every, Across)
	USB Mass Storage	--	--	--	--	--	-- 00, 01 (Off, On)
	Individual Out	04	00	00	04	00	01 00 - 06
							00: Off 04: Piano / Ensemble
							01: Piano Stereo 05: Piano / Synth
							02: Ensemble Stereo 06: Ensemble / Synth
MIDI Channel	Ext. Leslie Ch.	04	01	00	04	01	01 00 - 02 (1, 3, 1-Line)
	Use Rotary Out	04	02	00	04	02	01 00, 01 (Off, On)
	Use Pedal Out	04	03	00	04	03	01 00, 01 (Off, On)
	On	05	00	00	05	00	01 00, 01 (Off, On)
Patch Load	Bass Gain	05	01	00	05	01	01 00 - 09 - 12 (-9 - ±0 +9)
	Mid Gain	05	02	00	05	02	01 00 - 09 - 12 (-9 - ±0 +9)
	Treble Gain	05	03	00	05	03	01 00 - 09 - 12 (-9 - ±0 +9)
	Bass Freq	05	04	00	05	04	01 00 - 18 (20 - 308Hz)
	Mid Freq	05	05	00	05	05	01 00 - 0F (250 - 3,1kHz)
	Treble Freq	05	06	00	05	06	01 00 - 13 (3.0k - 8.0kHz)
	Mid Q	05	07	00	05	07	01 00 - 3F (0 - 63)
	MIDI In Mode	--	--	--	--	--	-- 00 - 09
							00: Upper 05: Organ Upper
							01: Lower 06: Piano
MIDI Channel	Local Control	--	--	--	--	--	-- 00, 01 (Off, On)
	TRx NRPN	--	--	--	--	--	-- 00, 01 (Off, On)
	TRx Program Change	--	--	--	--	--	-- 00, 01 (Off, On)
	TRx Drawbar Regi	--	--	--	--	--	-- 00, 01 (Off, On)
	Tx Multi Contact	--	--	--	--	--	-- 00, 01 (Off, On)
	Rx Multi Contact	--	--	--	--	--	-- 00, 01 (Off, On)
Patch Load	Tx External Zone	--	--	--	--	--	-- 00, 01 (Off, On)
	Device ID	--	--	--	--	--	-- 00 - 7F (0 - 127)
	Rx Dump	--	--	--	--	--	-- 00, 01 (Off, On)
	Tx Upper	--	--	--	--	--	-- 00 - 0F (1 - 16)
	Tx Lower	--	--	--	--	--	-- 00 - 0F (1 - 16)
	Tx Pedal	--	--	--	--	--	-- 00 - 0F (1 - 16)
Patch Load	Rx Upper	--	--	--	--	--	-- 00 - 0F (1 - 16)
	Rx Lower	--	--	--	--	--	-- 00 - 0F (1 - 16)
	Rx Pedal	--	--	--	--	--	-- 00 - 0F (1 - 16)
	Organ - Link L/P	60	01	00	60	01	01 00, 01 (Off, On)
	Combi - Int Zone	60	02	00	60	02	01 00, 01 (Off, On)
	Combi - Ext Zone	60	03	00	60	03	01 00, 01 (Off, On)
	Organ - Organ Effect	60	04	00	60	04	01 00, 01 (Off, On)
	Organ - Animation	60	05	00	60	05	01 00, 01 (Off, On)
	Combi - Reverb	60	06	00	60	06	01 00, 01 (Off, On)
	Organ - Drawbar	60	07	00	60	07	01 00, 01 (Off, On)
	Organ - Percussion	60	08	00	60	08	01 00, 01 (Off, On)
	Organ - Registration	60	09	00	60	09	01 00, 01 (Off, On)
	Combi - Piano	60	0A	00	60	0A	01 00, 01 (Off, On)
	Combi - Ensemble	60	0B	00	60	0B	01 00, 01 (Off, On)
	Combi - Synth	60	0C	00	60	0C	01 00, 01 (Off, On)
	Combi - Organ	60	0D	00	60	0D	01 00, 01 (Off, On)

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HAMMOND



XK-4

**USING A
USB
FLASH DRIVE**

USING A USB FLASH DRIVE

Your Hammond XK-4 is equipped with two (2) USB Ports:

1. USB TO FLASH DRIVE, and
2. USB TO HOST.

“USB” is an acronym for Universal Serial Bus), which is a method developed in the mid-1990s for allowing connection, communication and power supply between computers and electronic devices. There have been several revisions to the USB protocol since it was first introduced which are distinguished from one another by version numbers. As with software version numbers, the higher the number the more recent the revision. The version supported by the XK-4 is USB 3.0.

Many different USB-compatible electronic devices - digital cameras, GPS navigation systems, etc. - are now available; however, the USB Port on the XK-4 designed for use with a USB Flash Drive (example pictured below):



A USB Flash Drive is so-called because it includes what is called flash memory with an integrated Universal Serial Bus (USB) interface. USB Flash Drives are available in many different memory capacities; however, 1 or 2 Gigabytes (Gb) will be enough for the applications unique to the XK-4.

The term, “drive” is not technically accurate since no moving parts are involved; however, since the same types of operations are used with a USB Flash Drive as for an old-style floppy disk drive, the “drive” terminology is still used - much in the same manner as the term “Patch” is used even though modern-day synthesizer- type instruments do not utilize patch cords.

On the XK-4, a USB Flash Drive allows you to:

1. Save Patches, Setups and Custom Sets,
2. Load previously stored Patches, Setups or Custom Sets from a USB Flash Drive into the XK-4,
3. Delete previously stored Patches, Setups or Custom Sets from a USB Flash Drive.
4. Install software upgrades to the XK-4 operating system.

The following pages will explain how to do each operation.

◆ Preparing a USB Flash Drive for use with the XK-4

In order to use a USB Flash Drive with the XK-4, several special directories or Folders have to be created on the Flash Drive itself. The XK-4 has a facility that automatically creates these directories for you. The following paragraphs will explain how to do this.

1. Locate a USB Flash Drive you want to use with the XK-4.
2. When you have located a suitable Flash Drive, insert it into the TO FLASH DRIVE Port of the XK-4. You will see the following message flash in the display for approximately 1 to 3 seconds:

Confirming USB...

When the above message disappears, the USB Flash Drive is ready for use with the XK-4.

◆ Formatting a USB Flash Drive in the XK-4

Most USB Flash Drives currently available are “pre-formatted” - usually, inserting the drive into the XK-4 and creating the folders and sub-folders described above will be all that is necessary. However, there may be occasions where you will need to Format a Flash Drive manually. The following paragraphs will explain this in detail.

1. Locate a USB Flash Drive which either is empty or which does not have data you want to save. The Formatting procedure will erase any data which may already be on the drive.
2. When you have located a suitable Flash Drive, insert it into the TO FLASH DRIVE Port of the XK-4. You will see the following message flash in the display for approximately 1 to 3 seconds:

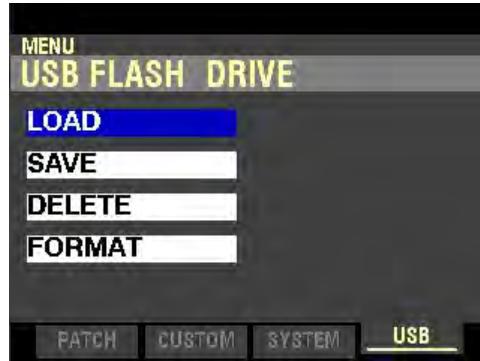
Confirming USB...

3. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

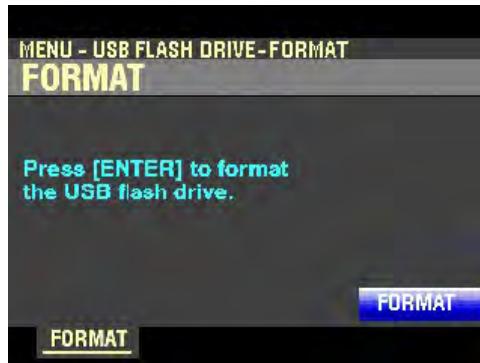
4. Press the PAGE “▶” button three times to highlight the “LOAD” box.



5. Press the DIRECTION “▼” button three times. The Information Center Display should now look like this:

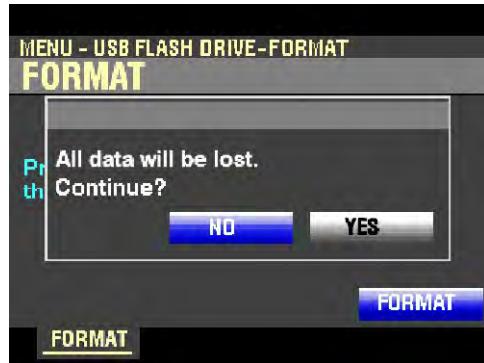


6. Press the ENTER button. The Information Center Display should now look like this:



The “FORMAT” box should be highlighted.

7. Press the ENTER button. The Information Center Display should now look like this:

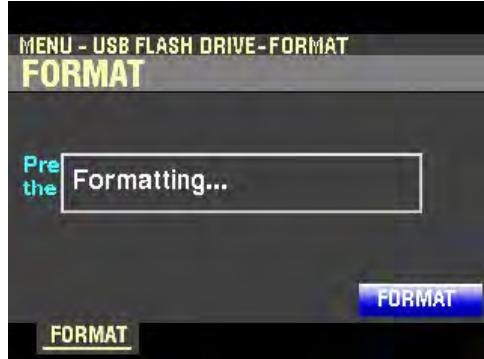


If there is any data on the USB Flash Drive, formatting the drive will erase it. Therefore if you DO NOT wish to format the USB Flash Drive, press either the MENU / EXIT or PLAY Touch buttons.

8. If you wish to proceed with the formatting operation, from the above screen press the DIRECTION "►" button. The Information Center Display should now look like this:



9. From the screen shown at the bottom of the previous page, press the ENTER button. The Information Center Display will display the following message:



After approximately 30 ~ 45 seconds: the following message will flash for approximately 1 second:



After the above message disappears, the USB Flash Drive will be formatted and ready for use.

10. Press the PLAY button to return to PLAY Mode.

◆ SPECIAL NOTE - Macintosh computers

If you are using a Macintosh-based system with your XK-4, you may find it necessary to Format the USB Flash Drive you wish to use in your computer prior to using it with your instrument. The XK-4 will not recognize USB Flash Drives formatted in a Macintosh-specific format such as APFS. A Flash Drive must be Formatted as MS DOS or ExFAT to be used with your XK-4.

To Format a USB Flash Drive on a Macintosh computer for use with an XK-4, do the following:

1. Insert the USB Flash Drive into an open USB Port on your Macintosh computer.

If you receive a message on your computer screen that the inserted USB Drive is not recognized, follow the steps below.

2. Go to the Utilities Folder in the Applications Folder on your Home Drive.
3. Launch the Disk Utility App inside the Utilities folder.
4. Locate the inserted USB Flash Drive in the list on the left side of the Disk Utility Screen, under External, and select it.

SPECIAL NOTE: Be sure not to perform this procedure on any other drives shown in the Disk Utility list. Unrecoverable data loss can occur on your Home Drive, Time Machine Drive, or any other drive attached to your computer.

5. When you have selected the correct Drive, select Erase in the Disk Utility Window. A Dialogue will appear.
6. Name your Drive-we suggest "XK-4."
7. Select ExFAT or MS-DOS (Fat).
8. If there is an option entitled Scheme, select Master Boot Record.
9. Click "ERASE" in the lower right corner of the dialogue box.

After formatting, your Drive will appear on your desktop. Your Macintosh computer will recognize this Drive, and you can use it for any downloads from the Hammond website, as well as for backing up your XK-4.

NOTE: Use the above procedure only on USB Drives you want to use in your XK-4. It is not recommended to use drives formatted in this way for regular Macintosh uses.

◆ Upgrading the XK-4 software

The different components of the software of your XK-4 can be upgraded to new versions. To do this, you must first download the software update from the Hammond website and install it to your USB Flash Drive.

◆ Preparing a USB Flash Drive

1. Go to the Hammond website (<http://hammondorganco.com>) and select Support
2. When the Support page finishes loading, select Downloads from either of the two links on the page.
3. When the Downloads page finishes loading, select System Downloads from either of the two links on the page.
4. On the left side of the System Downloads page you will see information about the latest system software upgrade and a link to a file named "skproReleaseX.zip." The number of the release will be the latest software available.
5. 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 upgrades, it is frequently necessary to combine the individual files into one file, called an archive, 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."

6. 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.
7. 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."
8. Insert a USB Flash Drive that has been formatted for use with the XK-4 into an open USB port on your computer.
9. Open the "hammond" directory on the USB Drive, then the "sk_pro" sub-directory. You will see a folder labeled "system." The "system" folder is the one to which you will copy the system software files.
10. 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 your USB Drive (see the illustration below).



You have now prepared the USB Flash Drive with all the necessary information for upgrading your XK-4 with the latest system software. The following pages will explain in detail how to upgrade the XK-4 with the new software.

◆ Installing a software upgrade to the XK-4

1. Make sure the power to the XK-4 is “OFF.”
2. Turn the power to the XK-4 “ON.” Wait until the operating system finishes loading (approximately 55 seconds).

The Information Center Display will show the following:



3. Insert the USB Flash Drive containing the system upgrade software into the TO FLASH DRIVE Port of the XK-4. You will see the following message flash in the display for approximately 1 second:

Confirming USB...

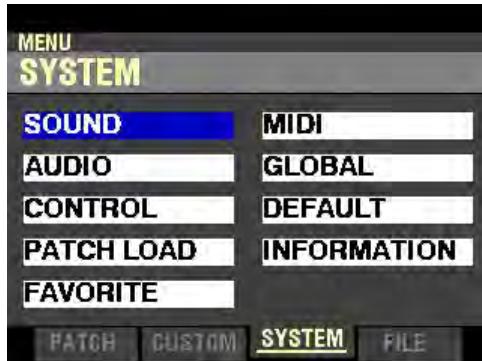
The amount of time necessary to upgrade the system software will depend upon the software modules to be updated. The range is from 2 to 15 minutes.

4. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:

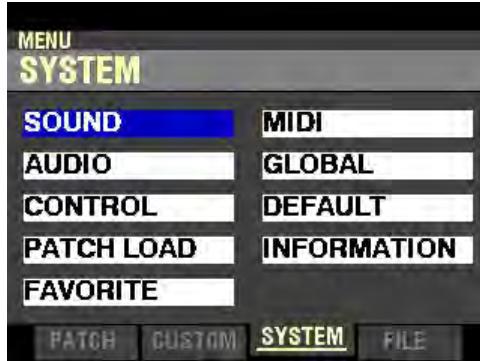


The “ORGAN” box should be highlighted.

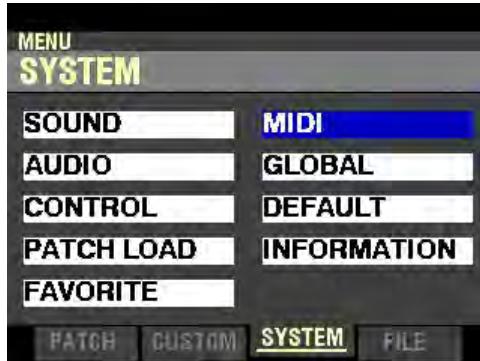
5. Press the PAGE “▶” button two times to highlight the “SOUND” box.



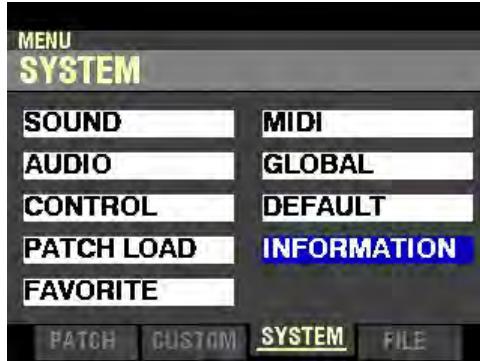
5. Press the PAGE “▶” button two times to highlight the “SOUND” box.



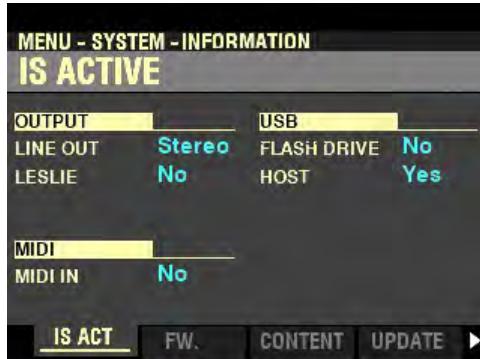
6. Press the DIRECTION “▶” button once. The Information Center Display should now look like this:



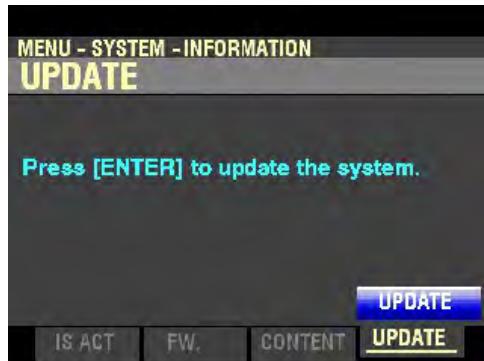
7. Press the DIRECTION “▼” button four times. The Information Center Display should now look like this:



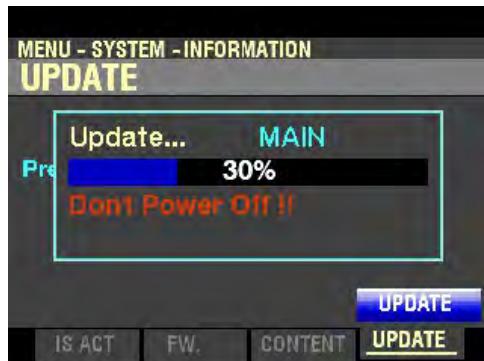
8. Press the ENTER button. The Information Center Display should now look like this:



9. Press the PAGE “▶” button three times. The Information Center Display should now look like this:

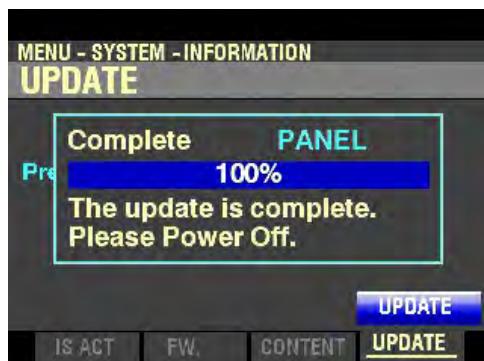


10. Press the ENTER button. You will see a screen similar to this:



During the Update procedure you will see status bars in the middle of the screen as the different software modules are loaded and installed.

When the system software has finished upgrading, the Information Center Display will show:



12. Turn the power to the XK-4 “OFF” then back “ON.” Wait for the system to load. When the system has finished loading your XK-4 will be ready to play with the updated software.

◆ USB FLASH DRIVE FUNCTION Mode

Your Hammond XK-4 instrument gives you the ability to Load, Save or Delete files to a USB Flash Drive for later use. You can work with Setups, Patches or Custom Sets.

◆ What Is A “Setup”?

As explained in previous sections of this Guide, your XK-4 can be customized in a number of different ways - you can create and Record your own Patches, Custom Sets, etc. After you have made your changes, you can either Save individual Patches and Custom Tone Wheels or Custom Pipes, or Save your edits and custom settings as a Setup. In this way you can customize the instrument in several different ways and Save each series of edits as a separate Setup. This makes it easy to configure the instrument the way you want without having to re-create all your custom settings manually each time you play.

◆ Saving a Setup, Patch or Custom Set

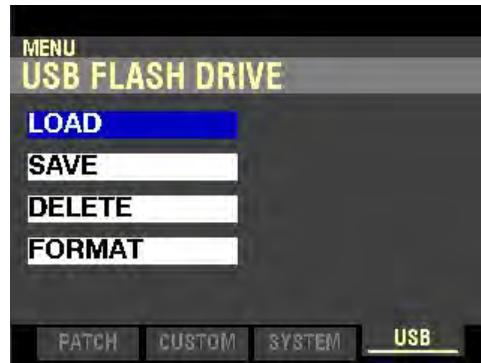
After you have customized your XK-4, you can Save your settings as a Setup. To do this:

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:



The “ORGAN” box should be highlighted.

2. Press the PAGE “▶” button three times. The Information Center Display should now look like this:



3. Press the DIRECTION “▼” button once. The Information Center Display should now look like this:



4. Press the ENTER button. The Information Center Display should now look similar to this:



5. Use the VALUE knob to select the type of content to Save. The data chart below shows the options you may select.

SAVE Options	
Contents	Description
Setup	Setup file.
Patch	User Patch.
Tone Wheel	Custom Tone Wheel.
Pipe	Custom Pipe.

Turn the VALUE knob to the right to scroll forward through the choices.

Turn the VALUE knob to the left to scroll backward through the choices.

6. Press the DIRECTION “▼” button to move the cursor to the next box down. It may say PATCH or CUSTOM depending on the type of file you are Saving.



NOTE: The number of boxes below the “CONTENTS” box will be different depending on the type of file being Saved. Setup will display only the TO box (the file destination). Organ Patch and Pipe will display two boxes - the Patch or Custom Number to be Saved and the TO box. Tone Wheel will have an additional box, DB TYPE, which will allow you to select which Drawbar Organ Type to Save the Custom Tone Wheel to. For more information consult the CUSTOM SETS chapter of this Guide.

NOTE: Because the Setup option will have only the TO box, if you are Saving a Setup, skip Step 6.

7. Press the DIRECTION “▼” button to move the cursor to TO and use the VALUE knob to select the location to which to Save the selected file. Select a file location marked New File if you wish to Save a new file.



8. Press the DIRECTION “▼” button to move the cursor to “SAVE.”



9. Press the ENTER button. The Information Center Display will look similar to this:



This is the screen you will use to Name your file. You can use the FAVORITE buttons and the BANK and MANUAL buttons. The data chart below explains the function of each button.

NAMING Options		
Character	Button	Description
Aa1	BANK	Changes the character type (Capital and lower-case letters, numbers, special characters).
Delete	MANUAL	Deletes the character at the cursor.
space	FAVORITE 1	Replaces the character at the cursor with a space.
Insert	FAVORITE 6	Inserts a space at the cursor.
ABC, etc.	FAVORITES 2 ~ 5, 7 ~ 10.	Use these to cycle through and select the characters for the highlighted location. Each successive touch will cause the next character to display - for example, touching the Number 2 button will display A , touching it again will display B and touching it a third time will display C .

You can also turn the VALUE knob to select characters. If you wish to do this, use the DIRECTION “◀” and “▶” buttons to move back and forth through the characters.

10. When you have finished the Naming procedure, press the ENTER button to complete the Saving procedure. You will see the following messages flash in the display for approximately 1 second each:

Saving...

Completed.

When the above message disappears, your file has been saved.

◆ Loading a Setup, Patch or Custom Set

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should look like this:



The "ORGAN" box should be highlighted.

2. Press the PAGE "►" button three times. The Information Center Display should now look like this:



3. Press the ENTER button. The Information Center Display should now look similar to this:



Use the VALUE knob to select the type of content to Load. The data chart below shows the options you may select.

LOAD Options	
Contents	Description
Setup	Setup file.
Organ Patch	User ORGAN Patch.
Tone Wheel	Custom Tone Wheel.
Pipe	Custom Pipe.

Turn the VALUE knob to the right to scroll forward through the choices.

Turn the VALUE knob to the left to scroll backward through the choices.

6. Press the DIRECTION “▼” button to move the cursor to the next box down. It may say PATCH or CUSTOM depending on the type of file you are Loading.



7. From the screen shown at the bottom of the previous page, press the DIRECTION “▼” button to move the cursor to TO and use the VALUE knob to select the location from which to Load the selected file.



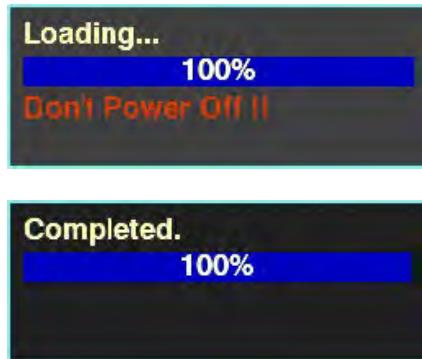
NOTE: The Setup option will not have the TO box. If you are Loading a Setup, skip Step 7.

NOTE: If the TO location displays Empty, there is no File to Load.

8. From the above screen, press the DIRECTION “▼” button to move the cursor to “LOAD.”



9. Press the ENTER button to complete the Loading procedure. You will see the following messages flash in the display:



When the above message disappears, your file has been Loaded.

◆ Deleting a Setup, Patch or Custom Set

1. From either of the PLAY Mode Pages, press the MENU / EXIT button. The Information Center Display should now look like this:

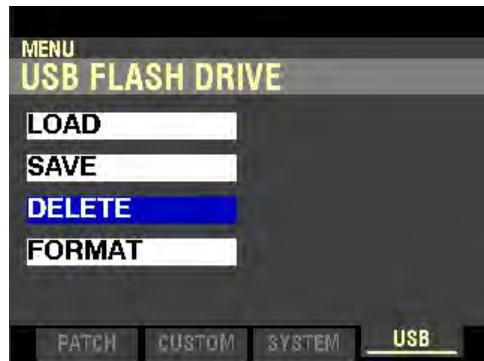


The “ORGAN” box should be highlighted.

2. Press the PAGE “▶” button three times. The Information Center Display should now look like this:



3. Press the DIRECTION “▼” button two times. The Information Center Display should now look like this:



4. Press the ENTER button. The Information Center Display should now look similar to this:



Use the VALUE knob to select the type of content to Delete. The data chart below shows the options you may select.

DELETE Options	
Contents	Description
Setup	Setup file.
Organ Patch	User Patch.
Tone Wheel	Custom Tone Wheel
Pipe	Custom Pipe

Turn the VALUE knob to the right to scroll forward through the choices.

Turn the VALUE knob to the left to scroll backward through the choices.

7. Press the DIRECTION “▼” button to move the cursor to the next box down and select the file you want to Delete.



NOTE: If a file location displays No File, there is no File to Delete.

8. Press the DIRECTION “▼” button to move the cursor to DELETE.



9. Press the ENTER button to complete the Deleting procedure. You will see the following messages flash in the display for approximately 1 second each:



When the above message disappears, your file has been Deleted.

NOTE: If you DO NOT wish to Delete the selected file, press the MENU / EXIT or PLAY button instead of the ENTER button.

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XK-4

APPENDIX

APPENDIX**◆ FACTORY PATCHES**

Patch #	Category	Name
F1-1	Showcase	Vintage B-3 DLS
F1-2	Showcase	Vintage B-3 Solo
F1-3	Showcase	Classic Gospel
F1-4	Showcase	Vintage B-3 Spenc
F1-5	Showcase	Contemporary Gospel
F1-6	Showcase	Vx Reeds
F1-7	Showcase	String Ens Farf
F1-8	Showcase	Principal Chorus
F1-9	Showcase	Shout Gospel
F1-10	Showcase	Vintage B-3 Power 1
F2-1	Showcase	Vintage B-3 JOS
F2-2	Showcase	Vintage B-3 Squabble
F2-3	Showcase	Purple
F2-4	Showcase	Emerson
F2-5	Showcase	Vintage B-3 Classic Rock
F2-6	Showcase	Vintage B-3 LG
F2-7	Showcase	DB 16' 8' 4'
F2-8	Showcase	Tibia & Vox
F2-9	Showcase	Lee Bee
F2-10	Showcase	Vintage B-3 Power 2
F3-1	DB Tibia	DB 8' & 4'
F3-2	DB Tibia	DB 8' & 2'
F3-3	DB Tibia	DB 8' & 1'
F3-4	DB Tibia	DB 8' 4' 2'
F3-5	DB Tibia	DB 16' & 8'
F3-6	DB Tibia	DB 16' & 4'
F3-7	DB Tibia	DB 16' 8' & 2'
F3-8	DB Tibia	DB 16' 8' 4' & 2'
F3-9	DB Tibia	DB 16' 8' 4' 2' & 1'
F3-10	DB Tibia	DB Full Organ
F4-1	Rock	Vintage B-3 Rock
F4-2	Rock	Jerry C
F4-3	Rock	Booker
F4-4	Rock	Vintage B-3 Clean
F4-5	Rock	Vintage B-3 Stomp
F4-6	Rock	Vintage B-3 OD on Mod
F4-7	Rock	96-Farf
F4-8	Rock	Vintage B-3 Full 1
F4-9	Rock	Vintage B-3 Full 2
F4-10	Rock	Full Overdrive
F5-1	Rock	Principal Chorus + Mixture
F5-2	Classic Pipe	Flute Chorus
F5-3	Classic Pipe	Gamba Celeste
F5-4	Classic Pipe	Sesquialtera II
F5-5	Classic Pipe	Stopped Flute
F5-6	Classic Pipe	Diapason 8' & 4'
F5-7	Classic Pipe	Bourdon 16' & Principal 2'
F5-8	Classic Pipe	Flutes w/Tremulant
F5-9	Classic Pipe	Hautbois Solo
F5-10	Classic Pipe	Sforzando

Patch #	Category	Name
F6-1	Theatre Pipe	Tibia 8'
F6-2	Theatre Pipe	Tibias 8' & 4'
F6-3	Theatre Pipe	Style D Trumpet Solo
F6-4	Theatre Pipe	Oboe 8' & Tibia 4'
F6-5	Theatre Pipe	Tibias 16' & 4'
F6-6	Theatre Pipe	Brass Trumpet Solo
F6-7	Theatre Pipe	Strings & Boxes
F6-8	Theatre Pipe	Tibia 16' 8' 2' & Vox
F6-9	Theatre Pipe	Full Tibias & Voxes
F6-10	Theatre Pipe	Full Comb & Posthorn
F7-1	Lo & Hi	Lo & Hi 1
F7-2	Lo & Hi	Lo & Hi 2
F7-3	Lo & Hi	Lo & Hi 3
F7-4	Lo & Hi	Odd Harmonic
F7-5	Lo & Hi	Pop Solo
F7-6	Lo & Hi	Cute Solo
F7-7	Lo & Hi	Perc 16' & 4'
F7-8	Lo & Hi	Solo 16' & 2'
F7-9	Lo & Hi	Solo 16' & 1'
F7-10	Lo & Hi	Full Hammond
F8-1	Pop	Sylvia
F8-2	Pop	Lady
F8-3	Pop	Yeh Yeh
F8-4	Pop	Season Time
F8-5	Pop	On a Clear Day
F8-6	Pop	Twee motten
F8-7	Pop	Toccata Live
F8-8	Pop	Je t'aime moi non plus
F8-9	Pop	Early Bird
F8-10	Pop	Bluesette
F9-1	Vx	Vx Mellow
F9-2	Vx	Vx Bright
F9-3	Vx	Vx Mixture
F9-4	Farf	Farf Flute
F9-5	Farf	Farf Brass
F9-6	Farf	Farf Reeds
F9-7	Farf	Farf Strings
F9-8	Farf	Farf Full
F9-9	Ace	Ace Flute
F9-10	Ace	Ace Reeds
F10-1	Ace	Ace Strings
F10-2	Contemp	Summer Samba
F10-3	Contemp	Touch Wah
F10-4	Contemp	Pipe Mixture
F10-5	Contemp	California Girl
F10-6	Contemp	Won't Get Fooled
F10-7	Contemp	Master Comp
F10-8	Contemp	Swet Carpet
F10-9	TW Basic	DB Reed
F10-10	TW Basic	DB Diapason

◆ PATCH PARAMETERS

Category	Parameter	NRPN		SysEx Address			SysEx Length	Data
		MSB (63)	LSB (62)	MSB to LSB				
Name		--	--	--	--	--	--	16 letters
Reverb	On	10	00	00	10	00	01	00, 01 (Off, On)
	Type	10	01	00	10	01	01	00 - 07 00: Room 1 05: Church 01: Room 2 06: Plate 02: Ballroom 07: Spring 03: Hall 1 04: Hall 2
	Depth	10	02	00	10	02	01	00 - 7F (0 - 127)
	Time	10	03	00	10	03	01	00 - 7F (0 - 127)
Organ Upper	Pre-LPF	10	04	00	10	04	01	00 - 7F (0 - 127)
	Octave	24	28	00	24	28	02	3F 7E - 40 00 - 40 02 (-2 - ±0 - +2)
	Key Range Low	24	1E	00	24	1E	01	00 - 7F: note number
	Key Range High	24	1F	00	24	1F	01	00 - 7F: note number
Organ Lower	Impedance Reduction	24	0D	00	24	0D	01	00, 01 (Off, On)
	Octave	24	29	00	24	29	02	3F 7E - 40 00 - 40 02 (-2 - ±0 - +2)
	Key Range Low	24	21	00	24	21	01	00 - 7F: note number
	Key Range High	24	22	00	24	22	01	00 - 7F: note number
Organ Pedal	Octave	24	2A	00	24	2A	02	3F 7E - 40 00 - 40 02 (-2 - ±0 - +2)
	Key Range Low	24	24	00	24	24	01	00 - 7F: note number
	Key Range High	24	25	00	24	25	01	00 - 7F: note number
	Octave Upper	17	00	00	17	00	02	3F 7E - 40 00 - 40 02 (-2 - ±0 - +2)
Internal Zones	Octave Lower	17	01	00	17	01	02	3F 7E - 40 00 - 40 02 (-2 - ±0 - +2)
	Octave Pedal	17	02	00	17	02	02	3F 7E - 40 00 - 40 02 (-2 - ±0 - +2)
	Octave Real Lower	17	03	00	17	03	02	3F 7E - 40 00 - 40 02 (-2 - ±0 - +2)
	Split On	17	04	00	17	04	01	00, 01 (Off, On)
	Split Point	17	05	00	17	05	01	00 - 7F: note number
	Pedal to Lower On	17	06	00	17	06	01	00, 01 (Off, On)
	Pedal to Lower Upper Limit	17	07	00	17	07	01	00 - 7F: note number
	Pedal to Lower Mode	17	08	00	17	08	01	00 - 02 (Lowest, Chord, Poly)
	Pedal Key Mono/Poly	17	0B	00	17	0B	01	00, 01 (Mono, Poly)
	Octave Button To ExZ	17	0E	00	17	0E	00	00, 01 (Off, On)
External Zones	On	1n	00	00	1n	00	01	00, 01 (Off, On)
	MIDI Channel	1n	01	00	1n	01	01	00 - 0F (1 - 16)
	Octave	1n	02	00	1n	02	02	3F 7E - 40 00 - 40 02 (-2 - ±0 - +2)
	Transpose	1n	03	00	1n	03	02	3F 7A - 40 00 - 40 06 (-6 - ±0 - +6)
	Bank Select MSB	1n	04	00	1n	04	01	00 - 7F (0 - 127)
	Bank Select LSB	1n	05	00	1n	05	01	00 - 7F (0 - 127)
	Program Change	1n	06	00	1n	06	01	00 - 7F (0 - 127)
	Allocate	1n	07	00	1n	07	01	00 - 03 (Off, Upper, Lower, Pedal)
	Key Range Low	1n	08	00	1n	08	01	00 - 7F: note number
	Key Range High	1n	09	00	1n	09	01	00 - 7F: note number
	Volume	1n	0A	00	1n	0A	01	00 - 7F (0 - 127)
	Expression Enable	1n	0B	00	1n	0B	01	00, 01 (Off, On)
	P. Bend Enable	1n	0C	00	1n	0C	01	00, 01 (Off, On)
	Mod. Enable	1n	0D	00	1n	0D	01	00, 01 (Off, On)
	Damper Enable	1n	0E	00	1n	0E	01	00, 01 (Off, On)
	Pan	1n	0F	00	1n	0F	01	00 - 40 - 7F (Left - Center - Right)
	Velocity Curve	1n	10	00	1n	10	01	00 - 04 (Off, Hard - Easy)
Control	Expression Minimum	1n	11	00	1n	11	01	00 - 3F (0 - 63)
	Expression Maximum	1n	12	00	1n	12	01	40 - 7F (64 - 127)
	Expression CC	1n	13	00	1n	13	01	00, 01, 02 (Off, 7, 11)
	Pitch Bend Range Up	24	1B	00	24	1B	01	00 - 0C (0 - 12)
	Pitch Bend Range Down	24	1C	00	24	1C	01	00 - 18 (0 - 24)
	Mod. Mode	24	1D	00	24	1D	01	00 - 04 (Off, OD, MFX1, MFX2, Leslie)
Control	Damper Enable Upper	24	20	00	24	20	01	00, 01 (Off, On)
	Damper Enable Lower	24	23	00	24	23	01	00, 01 (Off, On)
	Damper Enable Pedal	24	26	00	24	26	01	00, 01 (Off, On)

Category	Parameter	NRPN		SysEx Address			SysEx Length	Data
		MSB (63)	LSB (62)	MSB to LSB				
Assignable Control	Button 1	24	17	00	24	17	01	00 - 0A 00: Off 01: Sustain Upper 02: Sustain Lower 03: TW Brake 04: Spring Shock 05: Delay Time
	Knob 1	24	18	00	24	18	01	00 - 0E 00: Off 01: Multi Effects 1 02: Multi Effects 2 03: Leakage Level 04: Key Click Level 05: VMC Depth 06: Tr. Vibrato Rate 07: Tremulant Rate 08: Tone Control
	Button 2	24	19	00	24	19	01	Same as Button 1
	Knob 2	24	1A	00	24	1A	01	Same as Knob 1
Category	Parameter	NRPN		SysEx Address			SysEx Length	Data
		MSB (63)	LSB (62)	MSB to LSB				
Volume	Patch Volume	24	0C	00	24	0C	01	00 - 7F (0 - 127)
Upper Registration	16'	--	--	00	21	00	01	00 - 08 (0 - 8)
	5 1/3'	--	--	00	21	01	01	00 - 08 (0 - 8)
	8'	--	--	00	21	02	01	00 - 08 (0 - 8)
	4'	--	--	00	21	03	01	00 - 08 (0 - 8)
	2 2/3'	--	--	00	21	04	01	00 - 08 (0 - 8)
	2'	--	--	00	21	05	01	00 - 08 (0 - 8)
	1 3/5'	--	--	00	21	06	01	00 - 08 (0 - 8)
	1 1/3'	--	--	00	21	07	01	00 - 08 (0 - 8)
	1'	--	--	00	21	08	01	00 - 08 (0 - 8)
Lower Registration	16'	--	--	00	22	00	01	00 - 08 (0 - 8)
	5 1/3'	--	--	00	22	01	01	00 - 08 (0 - 8)
	8'	--	--	00	22	02	01	00 - 08 (0 - 8)
	4'	--	--	00	22	03	01	00 - 08 (0 - 8)
	2 2/3'	--	--	00	22	04	01	00 - 08 (0 - 8)
	2'	--	--	00	22	05	01	00 - 08 (0 - 8)
	1 3/5'	--	--	00	22	06	01	00 - 08 (0 - 8)
	1 1/3'	--	--	00	22	07	01	00 - 08 (0 - 8)
	1'	--	--	00	22	08	01	00 - 08 (0 - 8)
Pedal Registration	16'	--	--	00	23	00	01	00 - 08 (0 - 8)
	8'	--	--	00	23	01	01	00 - 08 (0 - 8)
Lower and Upper	Organ Type	24	00	00	24	00	01	00 - 04 00: Tone Wheel 01: Vx 02: Farf 03: Ace 04: Pipe
	Key Click Level	24	01	00	24	01	01	00 - 7F (0 - 127)
	Leakage Level	24	02	00	24	02	01	00 - 7F (0 - 127)
	Custom TW	24	03	00	24	03	01	00 - 07 (U1 - F4)
	Custom Pipe	24	04	00	24	04	01	00 - 07 (U1 - F4)
	Tone Control	24	05	00	24	05	01	00 - 09 - 12 (-9 - ±0 +9)
	VMC Mode	24	06	00	24	06	01	00, 01 (Random, Velocity)
	VMC Depth	24	07	00	24	07	01	00 - 7F (0 - 127)
	Sustain Upper On	24	08	00	24	08	01	00, 01 (Off, On)
	Sustain Upper Length	24	09	00	24	09	01	00 - 04 (1 - 5)
Pedal	Sustain Lower On	24	0A	00	24	0A	01	00, 01 (Off, On)
	Sustain Lower Length	24	0B	00	24	0B	01	00 - 04 (1 - 5)
	Type	25	00	00	25	00	01	00, 01 (Normal, Muted)
	Key Click Mode	25	01	00	25	01	01	00, 01 (Off, U&L)
	Custom Sub Drawbars	25	02	00	25	02	01	00 - 07 (U1 - F4)
	Pedal Sustain On	17	09	00	17	09	01	00, 01 (Off, On)
	Pedal Sustain Length	17	0A	00	17	0A	01	00 - 04 (1 - 5)

Category	Parameter	NRPN		SysEx Address		SysEx Length	Data
		MSB (63)	LSB (62)	MSB to LSB			
Percussion	On	26	00	00	26	00	01 00, 01 (Off, On)
	Harmonic	26	01	00	26	01	01 00, 01 (Second, Third)
	Fast Decay	26	02	00	26	02	01 00, 01 (Slow, Fast)
	Volume Soft	26	03	00	26	03	01 00, 01 (Normal, Soft)
	Level at Soft	26	04	00	26	04	01 00 - 63 (0 - 127)
	Level at Normal	26	05	00	26	05	01 00 - 63 (0 - 127)
	Decay at Fast	26	06	00	26	06	01 00 - 18 (0 - 24)
	Decay at Slow	26	07	00	26	07	01 00 - 18 (0 - 24)
	Touch	26	08	00	26	08	01 00, 01 (Off, On)
	1' Cancel	26	09	00	26	09	01 00, 01 (Off, On)
Animation	Drawbar Level	26	0A	00	26	0A	01 00, 01 (0, Soft)
	Leslie Bypass	27	00	00	27	00	01 00, 01 (Off, On)
	Leslie Stop	27	01	00	27	01	01 00, 01 (Off, On)
	Leslie Fast	27	02	00	27	02	01 00, 01 (Off, On)
	Custom Cabinet	27	03	00	27	03	01 00 - 0F (U1 - P8)
	Vibrato Upper	27	04	00	27	04	01 00, 01 (Off, On)
	Vibrato Lower	27	05	00	27	05	01 00, 01 (Off, On)
	Vibrato Mode	27	06	00	27	06	01 00 - 05 (V1 - C3)
	Vibrato Pedal On	27	07	00	27	07	01 00, 01 (Off, On)
	Vibrato Model	27	08	00	27	08	01 00 - 02 (Big Box, Small Box, Metal Box)
	Vibrato Rate (TW)	27	09	00	27	09	01 00 - 99 (5.78 - 7.90 Hz)
	Vibrato Chorus Mix	27	0A	00	27	0A	01 00 - 7F (0 - 127)
	Vibrato Rate (Transistor)	27	0E	00	27	0E	01 00 - 7F (0 - 127)
Transformer	Vibrato Rate (Pipe)	27	0F	00	27	0F	01 00 - 7F (0 - 127)
	Leslie On Reverb	27	10	00	27	10	01 00, 01 (Off, On)
	Drive Level	28	00	00	28	00	01 00 - 7F (0 - 127)
	Hysteresis	28	01	00	28	01	01 00 - 7F (0 - 127)
	Depth Upper	28	02	00	28	02	01 00 - 7F (0 - 127)
	Depth Percussion	28	03	00	28	03	01 00 - 7F (0 - 127)
	Depth Lower	28	04	00	28	04	01 00 - 7F (0 - 127)
Overdrive	Depth Pedal	28	05	00	28	05	01 00 - 7F (0 - 127)
	On	28	06	00	28	06	01 00, 01 (Off, On)
	On	29	00	00	29	00	01 00, 01 (Off, On)
	Type	29	01	00	29	01	01 00 - 03 (Tube Amp, Stomp Box, Clip, EP Amp)
	Drive Level	29	02	00	29	02	01 00 - 7F (0 - 127)
	Exp. Control On	29	03	00	29	03	01 00, 01 (Off, On)
Effect 1, Effect 2	Crossover Freq	29	04	00	29	04	01 00 - 7F (400Hz - 14.7kHz)
	Blend	29	05	00	29	05	01 00 - 7F (0 - 127)
	On	2x	00	00	2x	00	01 00, 01 (Off, On)
	Type	2x	01	00	2x	01	01 00 - 03 for Effect1, 00 - 04 for Effect 2 00: Tremolo 00: Auto Pan 01: Wah-Wah 01: Phaser 02: Ring Mod 02: Flanger 03: Compressor 03: Chorus 04: Delay
	Param 1	2x	02	00	2x	02	01 00 - 7F (0 - 127)
	Param 2	2x	03	00	2x	03	01 00 - 7F (0 - 127)
	Param 3	2x	04	00	2x	04	01 00 - 7F (0 - 127)
	Param 4	2x	05	00	2x	05	01 00 - 7F (0 - 127)
Equalizer	Param 5	2x	06	00	2x	06	01 00 - 7F (0 - 127)
	Param 6	2x	07	00	2x	07	01 00 - 7F (0 - 127)
	Param 7	2x	08	00	2x	08	01 00 - 7F (0 - 127)
	Param 8	2x	09	00	2x	09	01 00 - 7F (0 - 127)
	Bass Gain	2C	00	00	2C	00	01 00 - 09 - 12 (-9 - ±0 +9)
	Mid Gain	2C	01	00	2C	01	01 00 - 09 - 12 (-9 - ±0 +9)
	Treble Gain	2C	02	00	2C	02	01 00 - 09 - 12 (-9 - ±0 +9)
	Bass Freq	2C	03	00	2C	03	01 00 - 18 (20 - 308Hz)
	Mid Freq	2C	04	00	2C	04	01 00 - 0F (250 - 3.1kHz)
	Treble Freq	2C	05	00	2C	05	01 00 - 13 (3.0k - 8.0kHz)

◆ PIPE ORGAN STOPS

#	Pipe Voice
1	C-Open Diapason
2	C-Principal
3	C-Diapason
4	C-Bourdon 1
5	C-Bourdon 2
6	C-Gedeckt
7	C-Rohr Flute
8	C-Flute Hamonic
9	C-Flautino
10	C-Voix Celeste II
11	C-Clarinet
12	C-Hautbois
13	C-Oboe
14	C-Vox Humana
15	C-Trompette
16	C-Cornet V
17	C-Mixture III
18	C-Mixture IV
19	C-Sesquialtera II
20	C-Reserved
21	C-Reserved
22	T-Tibia Clausa
23	T-Brass Saxophone
24	T-Brass Trumpet
25	T-Clarinet
26	T-English Post Horn
27	T-Orchestral Oboe
28	T-Style "D" Trumpet
29	T-Viol d'Orchestre
30	T-Vox Humana
31	T-Viol Celeste
32	T-Reserved
33	T-Reserved
34	P-CotVln 32' & Brdn 16'
35	P-CtlBmb 32' & Prn 16'
36	P-CntBrdn 32' & Flte 16'
37	P-Trompette 16'
38	P-Fagott 16'
39	P-SubBs 16' & Gedeckt 8'
40	P-Diapason 8' & Flute 4'
41	P-PrnChors 8' & Mixt IV
42	P-Tibia 16' & Flute 8'
43	P-Diap 16' & PostHorn
44	P-Cornopean
45	P-Reserved
46	P-Reserved

C Classical
 T Theatre
 P Pedal

◆ CUSTOM SETS

CUSTOM TONE WHEELS

TW

F1: A-102 #35564

A-102, serial number #35564.

F2: B-3 A27563

B-3, serial number #A27563.

F3: B-3 #364839

B-3, serial number #364839.

F4: Mellow

No leakage tones, wow, flutter or wheel eccentricity.

CUSTOM SUB DRAWBARS

F1: A-100 #35564

F2: B-3 A27563

F3: B-3 #364839

F4: Solid

Each Custom setting replicates the organ shown above. "Solid" refers to a generic electronic organ.

CUSTOM LESLIE CABINETS

F1: 122 Gentle

Replicates 122 cabinet (Large body, peaking horn driver) heard from a distance, rear.

F2: 122 Wild

Replicates 122 cabinet heard from a closer distance, front.

F3: 122 Hot

Replicates 122 cabinet with deeper modulation, rear.

F4: 122 Bass Stop

Replicates 122 cabinet with stopped bass(drum) rotor, front.

F5: 147 Gentle

Replicates 147 cabinet (Large body, wide range) heard from a distance.

F6: 147 Wild

Replicates 147 cabinet heard from a closer distance, front.

F7: 145 Gentle

Replicates 145 cabinet (Middle body, slightly narrow range) heard from a distance, rear.

F8: 145 Wild

Replicates 145 cabinet heard from a closer distance, front.

CUSTOM PIPES

F1: Classic 1

Classical or Liturgical stops.

F2: Classic 2

A Classical Pipe set suitable for Baroque music (Bach, Buxtehude, etc.).

F3: Theatre 1

Theatre stops based on Wurlitzer Style 210.

F4: Theatre 2

Theater stops based on Wurlitzer Style 260 Special.

◆ CUSTOM TONE WHEEL PARAMETERS

Category	Parameter	SysEx Address		SysEx Length	Data	Description
		MSB	to LSB			
Temporary Tone Wheels	Name	--	--	--	(10 characters)	
	Foldback Low	10	00	01	01 00 - 0C (TW#01 - #12)	
	Foldback High	10	00	02	01 00 - 05 (TW#91 - #96)	
	Wheel Level	10	01	tt	02 00 00 - 05 01 (0 - 641: -inf, -60.0 - +4.0[dB])	tt: Tone Wheel number: 00 - 0B (#01 - #12), 0C - 17 (#F01 - F12), 18 - 66 (#13 - #91), 67 - 6B (#F92 - #F96)
	Leak Trim	10	03	tt	01 00 - 7F (0 - 127)	
	Wow Flutter Depth	10	04	tt	01 00 - 7F (0 - 127)	
	Wow Flutter Speed	10	05	tt	01 00 - 7F (0 - 127)	
	Eccentricity Depth	10	06	tt	01 00 - 7F (0 - 127)	
	Eccentricity Speed	10	07	tt	01 00 - 7F (0 - 127)	
	Complex LPF	10	08	00	01 00 - 7F (0 - 127)	
Matrix Level		2p	nn	0g	02 00 00 - 05 01 (0 - 641: -inf, -60.0 - +4.0[dB])	p: Part (0 = UPPER, 1 = Lower, 2 = Percussion, 3 = Pedal) nn: Note number g: Footage (p = 0 - 2); 0 = 16', 1 = 5 1/3' ... 8 = 1' g: Footage (p = 3); 0 = 16' - 16', 1 = 16' - 5 1/3' ... 7 = 16 - 1 1/3' 8 = 8' - 16', 9 = 8' - 5 1/3' ... 15 = 16 - 1 1/3'
	Leak Level	3p	tt	ll	02 00 00 - 05 01 (0 - 641: -inf, -60.0 - +4.0[dB])	tt: Fundamental TW #; 00 - 5F (#01 - #96) ll: Leaking TW #; 00 - 5F (#01 - #96)

◆ CUSTOM PEDAL REG PARAMETERS

Category	Parameter	SysEx Address		SysEx Length	Data	Description
		MSB	to LSB			
Temporary Pedal Sub Drawbars	Name	--	--	--	(10 characters)	
	Normal 16' - 16'	50	00	01	01 00 - 08 (0 - 8)	
	Normal 16' - 5 1/3'	50	00	02	01 00 - 08 (0 - 8)	
	Normal 16' - 8'	50	00	03	01 00 - 08 (0 - 8)	
	Normal 16' - 4'	50	00	04	01 00 - 08 (0 - 8)	
	Normal 16' - 2 2/3'	50	00	05	01 00 - 08 (0 - 8)	
	Normal 16' - 2'	50	00	06	01 00 - 08 (0 - 8)	
	Normal 16' - 1 3/5'	50	00	07	01 00 - 08 (0 - 8)	
	Normal 16' - 1 1/3'	50	00	08	01 00 - 08 (0 - 8)	
	Normal 8' - 16'	50	00	09	01 00 - 08 (0 - 8)	
	Normal 8' - 5 1/3'	50	00	0A	01 00 - 08 (0 - 8)	
	Normal 8' - 8'	50	00	0B	01 00 - 08 (0 - 8)	
	Normal 8' - 4'	50	00	0C	01 00 - 08 (0 - 8)	
	Normal 8' - 2 2/3'	50	00	0D	01 00 - 08 (0 - 8)	
	Normal 8' - 2'	50	00	0E	01 00 - 08 (0 - 8)	
	Normal 8' - 1 3/5'	50	00	0F	01 00 - 08 (0 - 8)	
	Normal 8' - 1 1/3'	50	00	10	01 00 - 08 (0 - 8)	

◆ CUSTOM PIPE PARAMETERS

Category	Parameter	SysEx Address		SysEx Length	Data	Description
		MSB	to LSB			
Pipes	Name	--	--	--	(10 characters)	
	Assign	40	01	pp	02 00 00 - 00 2D (C-Open Diapason - P-Cornopean)	pp: Pipe Stop number 00 - 13 (#01 - #20)
	Tremulant	40	02	pp	01 00, 01 (Off, On)	
	Footage	40	03	pp	01 00 - 09 (32' - 1')	
	Volume	40	04	pp	02 00 00 - 01 41 (0 - 193: -inf, -92.0 - +4.0[dB])	
	Detune	40	05	pp	02 3F 4E - 40 00 - 40 32 (-50 - ±0 - +50[cent])	
	Chiff	40	06	pp	01 00 - 03 (Off, Soft, Normal, Loud)	
	Cut Off Frequency	40	07	pp	02 3F 01 - 40 00 (-127 - 0)	
	Pan - Direction	40	08	pp	01 00 - 40 - 7F (L64 - Center - R63)	
	Pan - Imaging	40	09	pp	01 00 - 04 (Fixed, L-R, R-L, Pyramid, Inverted Pyramid)	

◆ CUSTOM LESLIE PARAMETERS

Category	Parameter	NRPN		SysEx Address			SysEx Length	Data
		MSB (63)	LSB (62)	MSB to LSB				
Cabinet	Name	--	--	--	--	--	--	(10 Characters)
	Speaker	06	17	00	06	17	01	00 - 07 00: 145 Front 04: 122 Front 01: 145 Rear 05: 122 Rear 02: 147 Front 06: Cone Type 03: 147 Rear 07: PR-40
	Slow Speed Horn	06	01	00	06	01	02	00 00, 00 01 - 00 65 (0, 20 - 120 rpm)
	Slow Speed Drum	06	02	00	06	02	02	00 00, 00 01 - 00 65 (0, 20 - 120 rpm)
	Fast Speed Horn	06	03	00	06	03	02	00 00, 00 01 - 02 2D (0, 200 - 500 rpm)
	Fast Speed Drum	06	04	00	06	04	02	00 00, 00 01 - 02 2D (0, 200 - 500 rpm)
	Rise Time Horn	06	09	00	06	09	01	00 - 24 (0.8 - 12.5 sec)
	Rise Time Drum	06	0A	00	06	0A	01	00 - 23 (1.0 - 12.5 sec)
	Fall Time Horn	06	0B	00	06	0B	01	00 - 24 (0.8 - 12.5 sec)
	Fall Time Drum	06	0C	00	06	0C	01	00 - 23 (1.0 - 12.5 sec)
	Brake Time Horn	06	0D	00	06	0D	01	00 - 24 (0.8 - 12.5 sec)
	Brake Time Drum	06	0E	00	06	0E	01	00 - 23 (1.0 - 12.5 sec)
	Delay Time Horn	06	0F	00	06	0F	01	00 - 05 (0.0 - 1.0 sec)
	Delay Time Drum	06	10	00	06	10	01	00 - 05 (0.0 - 1.0 sec)
	Mic. Width Horn	06	11	00	06	11	01	00 - 64 (0 - 100 cm)
	Mic. Width Drum	06	12	00	06	12	01	00 - 64 (0 - 100 cm)
	Mic. Center Horn	06	05	00	06	05	01	0E - 40 - 72 (-50 - ±0 - +50 cm)
	Mic. Center Drum	06	06	00	06	06	01	0E - 40 - 72 (-50 - ±0 - +50 cm)
	Mic. Distance Horn	06	07	00	06	07	02	00 1E - 01 48 (30 - 200 cm)
	Mic. Distance Drum	06	08	00	06	08	02	00 1E - 01 48 (30 - 200 cm)
	Level Horn	06	13	00	06	13	01	00, 01 - 4D (-Inf, -76 - 0 dB)
	Level Drum	06	14	00	06	14	01	00, 01 - 4D (-Inf, -76 - 0 dB)
	Level Sub Bass	06	15	00	06	15	01	00, 01 - 4D (-Inf, -76 - 0 dB)

◆ SYSTEM PARAMETERS

Category	Parameter	NRPN		SysEx Address			SysEx Length	Data
		MSB (63)	LSB (62)	MSB to LSB				
Tune	Master Tune	01	00	00	01	00	02	032E - 0338 - 0342 (A= 430 - 440 - 450 Hz)
	Transpose	01	01	00	01	01	02	3F 7A - 40 00 - 40 06 (-6 - ±0 - +6 semitones)
	Velocity Offset	01	02	00	01	02	02	3F 60 - 40 00 - 40 20 (-32 ±0 - +32)
	Organ Sounding Point	01	04	00	01	04	01	00, 01 (Shallow, Deep)
	TW Brake Range	01	05	00	01	05	02	3F 68 - 40 00 - 40 0C (-24 - ±0 - +12 semitones)
	TW Brake Time	01	06	00	01	06	01	00 - 31 (0.1 - 5.0s)
	TW Brake Amp	01	07	00	01	07	01	00, 01 (Off, On)
Expression	Transpose Act	01	08	00	01	08	01	00, 01 (Every, Next)
	Source	02	00	00	02	00	01	00 - 02 (Pedal, MIDI, Both)
	Min. Level	02	01	00	02	01	01	00 - 29 (Off, -40 - ±0dB)
	Min. Limit LF	02	02	00	02	02	01	00 - 29 (Off, -40 - ±0dB)
	Min. Limit HF	02	03	00	02	03	01	00 - 29 (Off, -40 - ±0dB)
	Pedal Type	02	06	00	02	06	01	00, 01 (H or R, Y or K)
	Gain	02	07	00	02	07	01	00 - 3C (70 - 130 %)
Damper	Curve	02	08	00	02	08	01	00 - 02 (Audio, Linear, Capacitor)
	Pedal Type	03	03	00	03	03	01	00 - 03 (Switch, HalfY, HalfR, HalfK)
Damper	Gain	03	04	00	03	04	01	00 - 3C (70 - 130 %)
	Foot Switch	07	00	00	07	00	01	00 - 24
	Mode Tip	07	01	00	07	01	01	00: Off 07: Spring Shock 01: Leslie S/F Alt 08: MFX2 Delay Time 02: Leslie S/F Mom 09: U&L Sustain 03: Leslie S/F Tri 0A: Pedal To Lower 04: TW Brake 0B-23: Bass 1C - 3C 05: Favorite Fwd 06: Favorite Rev
User Button	Mode	08	00	00	08	00	01	00 - 08 00: Off 05: Spring Shock 01: Pedal Sustain 06: MFX2 Delay Time 02: Upper Sustain 07: MFX1 03: Lower Sustain 08: MFX2 04: TW Brake
Display	Short Cut	--	--	--	--	--	--	00 - 03 (0, 1, 2 sec, No)
	Time Out	--	--	--	--	--	--	00 - 03 (4, 8, 16 sec, No)
	Pop Up	--	--	--	--	--	--	00 - 03 (No, 5, 10, 20 sec)
	Auto Power Off	--	--	--	--	--	--	00, 01 (Disable, 30min)
	Knobs	--	--	--	--	--	--	00, 01 (Every, Across)
	USB Mass Storage	--	--	--	--	--	--	00, 01 (Off, On)
Audio	Ext. Leslie Ch.	04	01	00	04	01	01	00, 01 (1, 3)
	Use Rotary Out	04	02	00	04	02	01	00, 01 (Off, On)
	Use Pedal Out	04	03	00	04	03	01	00, 01 (Off, On)
Master Equalizer	Bass Gain	05	01	00	05	01	01	00 - 09 - 12 (-9 - ±0 +9)
	Mid Gain	05	02	00	05	02	01	00 - 09 - 12 (-9 - ±0 +9)
	Treble Gain	05	03	00	05	03	01	00 - 09 - 12 (-9 - ±0 +9)
	Bass Freq	05	04	00	05	04	01	00 - 18 (20 - 308Hz)
	Mid Freq	05	05	00	05	05	01	00 - 0F (125 - 4kHz)
	Treble Freq	05	06	00	05	06	01	00 - 13 (3.0k - 8.0kHz)
	Mid Q	05	07	00	05	07	01	00 - 3F (0 - 63)
MIDI Common	MIDI In Mode	--	--	--	--	--	--	00 - 09 00: Upper 05: Organ Upper 01: Lower 06: Piano 02: Pedal 07: Ensemble 03: Lower+Pedal 08: Synth 04: Upper+Pedal 09: Sequencer
	Local Control	--	--	--	--	--	--	00, 01 (Off, On)
	TRx Individual Parameters	--	--	--	--	--	--	00 - 02 (Off, NRPN, SysEx)
	TRx Program Change	--	--	--	--	--	--	00, 01 (Off, On)
	TRx Drawbar Regi	--	--	--	--	--	--	00, 01 (Off, On)
	Tx External Zone	--	--	--	--	--	--	00, 01 (Off, On)
	Device ID	--	--	--	--	--	--	00 - 7F (0 - 127)
	Rx Dump	--	--	--	--	--	--	00, 01 (Off, On)
MIDI Channel	Tx Upper	--	--	--	--	--	--	00 - 0F (1 - 16)
	Tx Lower	--	--	--	--	--	--	00 - 0F (1 - 16)
	Tx Pedal	--	--	--	--	--	--	00 - 0F (1 - 16)
	Rx Upper	--	--	--	--	--	--	00 - 0F (1 - 16)
	Rx Lower	--	--	--	--	--	--	00 - 0F (1 - 16)
	Rx Pedal	--	--	--	--	--	--	00 - 0F (1 - 16)

Category	Parameter	NRPN		SysEx Address		SysEx Length	Data
		MSB (63)	LSB (62)	MSB to LSB			
MIDI Common	MIDI In Mode	--	--	--	--	--	00 - 09 00: Upper 05: Organ Upper 01: Lower 06: Piano 02: Pedal 07: Ensemble 03: Lower+Pedal 08: Synth 04: Upper+Pedal 09: Sequencer
	Local Control	--	--	--	--	--	00, 01 (Off, On)
	TRx NRPN	--	--	--	--	--	00, 01 (Off, On)
	TRx Program Change	--	--	--	--	--	00, 01 (Off, On)
	TRx Drawbar Regi	--	--	--	--	--	00, 01 (Off, On)
	Tx Multi Contact	--	--	--	--	--	00, 01 (Off, On)
	Rx Multi Contact	--	--	--	--	--	00, 01 (Off, On)
	Tx External Zone	--	--	--	--	--	00, 01 (Off, On)
	Device ID	--	--	--	--	--	00 - 7F (0 - 127)
	Rx Dump	--	--	--	--	--	00, 01 (Off, On)
MIDI Channel	Tx Upper	--	--	--	--	--	00 - 0F (1 - 16)
	Tx Lower	--	--	--	--	--	00 - 0F (1 - 16)
	Tx Pedal	--	--	--	--	--	00 - 0F (1 - 16)
	Rx Upper	--	--	--	--	--	00 - 0F (1 - 16)
	Rx Lower	--	--	--	--	--	00 - 0F (1 - 16)
	Rx Pedal	--	--	--	--	--	00 - 0F (1 - 16)
Patch Load	Organ - Link L/P	60	01	00	60	01	01
	Combi - Int Zone	60	02	00	60	02	01
	Combi - Ext Zone	60	03	00	60	03	01
	Organ - Organ Effect	60	04	00	60	04	01
	Organ - Animation	60	05	00	60	05	01
	Combi - Reverb	60	06	00	60	06	01
	Organ - Drawbar	60	07	00	60	07	01
	Organ - Percussion	60	08	00	60	08	01
	Organ - Registration	60	09	00	60	09	01
	Combi - Piano	60	0A	00	60	0A	01
	Combi - Ensemble	60	0B	00	60	0B	01
	Combi - Synth	60	0C	00	60	0C	01
	Combi - Organ	60	0D	00	60	0D	01

FAVORITES

Category	Parameter	SysEx Address		SysEx Length	Data	Default	Description
		MSB	LSB				
Favorites	Assign	73	0b	0n	02	00 00 - 00 63 (B001 - B100), 00 64 - 01 47 (U001 - U100), 01 48 - 02 2B (F001 - F100)	same as Combination# b: Bank 0 - 9 (1 - 10) n: Number 0 - 9 (1 - 10)

Example Set 5-2 at U005 via System Exclusive.....F0 55 dd 10 24 13 73 04 01 00 68 F7 (dd = Device ID)

◆ MIDI TEMPLATES

Template		Basic	2 Man Lower	2 Man Upper
Messages	MIDI IN	Sequence	Lower	Upper
	Local Control	On	On	On
	NRPN	On	On	On
	Program Change	On	On	On
	Drawbar Registration	On	On	On
	External Zone	Off	Off	Off
Transmit Channel	Tx. Upper	1	1	1
	Tx. Lower	2	2	2
	Tx. Pedal	3	3	3
	Rx. Upper	1	1 (disregarded, off)	1 (disregarded, off)
	Rx. Lower	2	2 (disregarded, off)	2 (disregarded, off)
	Rx. Pedal	3	3 (disregarded, omni)	3 (disregarded, omni)
Comments		Record and Playback between the XK-4 (stand alone) and external sequencer.	Play with expanded LOWER Keyboard connected to the MIDI IN Port. (*1) Your performance will be transmitted from the MIDI OUT Port and recorded by an external sequencer.	Play with expanded UPPER Keyboard connected to the MIDI IN Port. Same as (*1).

Template		Pedal KBD	3 KBD Lower	3 KBD Upper
Messages	MIDI IN	Pedal	Low + Ped	Up + Ped
	Local Control	On	On	On
	NRPN	On	On	On
	Program Change	On	On	On
	Drawbar Registration	On	On	On
	External Zone	Off	Off	Off
Transmit Channel	Tx. Upper	1	1	1
	Tx. Lower	2	2	2
	Tx. Pedal	3	3	3
	Rx. Upper	1 (disregarded, off)	1	1
	Rx. Lower	2 (disregarded, off)	2	2
	Rx. Pedal	3 (disregarded, omni)	3	3
Comments		Play with expanded Pedalboard connected to the MIDI IN Port. Same as (*1).	Play with both expanded LOWER Keyboard (Ch. 2) and Pedalboard (Ch. 3) connected to the MIDI IN Port. Same as (*1).	Play with both expanded UPPER Keyboard (Ch. 1) and Pedalboard (Ch. 3) connected to the MIDI IN Port. Same as (*1).

Template		EXZ	EXZ 2 Man Lower	ExZ 2 Man Upper
Messages	MIDI IN Local Control NRPN Program Change Drawbar Registration External Zone	Sequence	Lower	Upper
Transmit Channel	Tx. Upper Tx. Lower Tx. Pedal Rx. Upper Rx. Lower Rx. Pedal	Off Off Off Off Off Off	Off Off Off Off Off Off	Off Off Off Off Off Off
Comments	(*) Control the MIDI equipment by using External Zones and MIDI OUT Port.	Play with expanded LOWER Keyboard connected to the MIDI IN Port. Same as (*2).	Play with expanded UPPER Keyboard connected to the MIDI IN Port. Same as (*2).	Play with expanded UPPER Keyboard connected to the MIDI IN Port. Same as (*2).
Template		EXZ Pedal KBD	EXZ 3 KBD Lower	EXZ 3 KBD Upper
Messages	MIDI IN Local Control NRPN Program Change Drawbar Registration External Zone	Pedal	Low + Ped	Up + Ped
Transmit Channel	Tx. Upper Tx. Lower Tx. Pedal Rx. Upper Rx. Lower Rx. Pedal	Off Off Off 1 (disregarded, off) 2 (disregarded, off) 3 (disregarded, omni)	Off Off Off 1 2 3	Off Off Off 1 2 3
Comments	Play with expanded Pedalboard connected to the MIDI IN Port. Same as (*2).	Play with both expanded LOWER Keyboard (Ch. 2) and Pedalboard (Ch. 3) connected to the MIDI IN Port. Same as (*2).	Play with both expanded UPPER Keyboard (Ch. 1) and Pedalboard (Ch. 3) connected to the MIDI IN Port. Same as (*2).	

◆ MIDI TEMPLATES - PARAMETERS

Template		Basic	2 Man Lower	2 Man Upper
Messages	MIDI IN	Sequence	Lower	Upper
	Local Control	On	On	On
	NRPN	On	On	On
	Program Change	On	On	On
	Drawbar Registration	On	On	On
	External Zone	Off	Off	Off
Transmit Channel	Tx. Upper	1	1	1
	Tx. Lower	2	2	2
	Tx. Pedal	3	3	3
	Rx. Upper	1	1 (disregarded, off)	1 (disregarded, off)
	Rx. Lower	2	2 (disregarded, off)	2 (disregarded, off)
	Rx. Pedal	3	3 (disregarded, omni)	3 (disregarded, omni)
Comments		Record and Playback between the SK PRO (stand alone) and external sequencer.	Play with expanded LOWER Keyboard to the MIDI IN port. (*1) Your performance will be transmitted from the MIDI OUT Port and recorded by an external sequencer.	Play with expanded UPPER Keyboard to the MIDI IN port. Same as (*1).

Template		Pedal KBD	3 KBD Lower	3 KBD Upper
Messages	MIDI IN	Pedal	Low + Ped	Up + Ped
	Local Control	On	On	On
	NRPN	On	On	On
	Program Change	On	On	On
	Drawbar Registration	On	On	On
	External Zone	Off	Off	Off
Transmit Channel	Tx. Upper	1	1	1
	Tx. Lower	2	2	2
	Tx. Pedal	3	3	3
	Rx. Upper	1 (disregarded, off)	1	1
	Rx. Lower	2 (disregarded, off)	2	2
	Rx. Pedal	3 (disregarded, omni)	3	3
Comments		Play with expanded Pedalboard to the MIDI IN Port. Same as (*1).	Play with both expanded LOWER Keyboard (Ch. 2) and Pedalboard (Ch. 3) to the MIDI IN Port. Same as (*1).	Play with both expanded UPPER Keyboard (Ch. 1) and Pedalboard (Ch. 3) to the MIDI IN Port. Same as (*1).

Template		Organ Upper	Piano	Ensemble
Messages	MIDI IN	Organ Upper	Piano	Ensemble
	Local Control	On	On	On
	NRPN	On	On	On
	Program Change	On	On	On
	Drawbar Registration	On	On	On
	External Zone	Off	Off	Off
Transmit Channel	Tx. Upper	1	1	1
	Tx. Lower	2	2	2
	Tx. Pedal	3	3	3
	Rx. Upper	1 (disregarded, off)	1 (disregarded, off)	1 (disregarded, off)
	Rx. Lower	2 (disregarded, off)	2 (disregarded, off)	2 (disregarded, off)
	Rx. Pedal	3 (disregarded, off)	3 (disregarded, off)	3 (disregarded, off)
Comments		Play the ORGAN Section Upper directly by expanded MIDI keyboard to the MIDI IN port.	Play the PIANO Section directly by expanded MIDI keyboard to the MIDI IN port.	Play the ENSEMBLE Section directly by expanded MIDI keyboard to the MIDI IN port.

Template		Synth	EXZ	EXZ 2 Man Lower
Messages	MIDI IN	Synth	Sequence	Lower
	Local Control	On	On	On
	NRPN	On	On	On
	Program Change	On	On	On
	Drawbar Registration	On	On	On
	External Zone	Off	On	On
Transmit Channel	Tx. Upper	1	Off	Off
	Tx. Lower	2	Off	Off
	Tx. Pedal	3	Off	Off
	Rx. Upper	1 (disregarded, off)	Off	Off
	Rx. Lower	2 (disregarded, off)	Off	Off
	Rx. Pedal	3 (disregarded, off)	Off	Off
Comments	Play the MONO SYNTH Section directly by expanded MIDI keyboard to the MIDI IN port.		(*)2) Control the MIDI equipment by using External Zones and MIDI OUT Port.	Play with expanded LOWER Keyboard to the MIDI IN port. Same as (*2).
Template		ExZ 2 Man Upper	EXZ Pedal KBD	EXZ 3 KBD Lower
Messages	MIDI IN	Upper	Pedal	Low + Ped
	Local Control	On	On	On
	NRPN	On	On	On
	Program Change	On	On	On
	Drawbar Registration	On	On	On
	External Zone	On	On	On
Transmit Channel	Tx. Upper	Off	Off	Off
	Tx. Lower	Off	Off	Off
	Tx. Pedal	Off	Off	Off
	Rx. Upper	Off	1 (disregarded, off)	1
	Rx. Lower	Off	2 (disregarded, off)	2
	Rx. Pedal	Off	3 (disregarded, omni)	3
Comments	Play with expanded UPPER Keyboard to the MIDI IN port. Same as (*2).		Play with expanded Pedalboard to the MIDI IN port. Same as (*2).	Play with both expanded LOWER Keyboard (Ch. 2) and Pedalboard (Ch. 3) to the MIDI IN port. Same as (*2).
Template		EXZ 3 KBD Upper		
Messages	MIDI IN	Up + Ped		
	Local Control	On		
	NRPN	On		
	Program Change	On		
	Drawbar Registration	On		
	External Zone	On		
Transmit Channel	Tx. Upper	Off		
	Tx. Lower	Off		
	Tx. Pedal	Off		
	Rx. Upper	1		
	Rx. Lower	2		
	Rx. Pedal	3		
Comments	Play with both expanded UPPER Keyboard (Ch. 1) and Pedalboard (Ch. 3) to the MIDI IN port. Same as (*2).			

◆ MIDI INFORMATION

CHANNEL VOICE MESSAGES

Note Off

Status	2nd Byte	3rd Byte
8nH	kkH	vvH, or
9nH	kkH	00H
n=MIDI Channel Number:	0H - FH (Ch. 1 - 16)	
kk=Note Number:	00H - 7FH (0 - 127)	
vv=Velocity (disregard):	00H - 7FH (0 - 127)	

Note On

Status	2nd Byte	3rd Byte
9nH	kkH	vvH
n=MIDI Channel Number:	0H - FH (Ch. 1 - 16)	
kk=Note Number:	00H - 7FH (0 - 127)	
vv=Velocity:	00H - 7FH (0 - 127)	

Control Change

Bank Select (CC#0, 32)

Status	2nd Byte	3rd Byte
BnH	00H	mmH
BnH	20H	llH
n=MIDI Channel Number:	0H - FH (Ch. 1 - 16)	
mm, ll=Bank Number:	00H 00H = User 01H 00H = Factory 64H 00H - 6DH 00H = Bank [1] to [10]	

Modulation (CC#1)

Status	2nd Byte	3rd Byte
BnH	0BH	vvH
n=MIDI Channel Number:	0H - FH (Ch. 1 - 16)	
vv=Modulation:	00H - 7FH (0 - 127)	

Volume (CC#7)

Status	2nd Byte	3rd Byte
BnH	07H	vvH
n=MIDI Channel Number:	0H - FH (Ch. 1 - 16)	
vv=Volume:	00H - 7FH (0 - 127)	

Controls Patch Volume.

Expression (CC#11)

Status	2nd Byte	3rd Byte
BnH	0BH	vvH
n=MIDI Channel Number:	0H - FH (Ch. 1 - 16)	
vv=Expression:	00H - 7FH (0 - 127)	

Spring Shock (CC#48)

Status	2nd Byte	3rd Byte
BnH	30H	vvH
n=MIDI Channel Number:	0H - FH (Ch. 1 - 16)	
vv=Velocity:	00H - 7FH (0 - 127)	

TW Brake (CC#49)

Status	2nd Byte	3rd Byte
BnH	31H	vvH
n=MIDI Channel Number:	0H - FH (Ch. 1 - 16)	
vv=Control Value:	00H - 7FH (0 - 127) 0 - 63=Off, 64 - 127=On	

Damper (CC#64)

Status	2nd Byte	3rd Byte
BnH	40H	vvH
n=MIDI Channel Number:	0H - FH (Ch. 1 - 16)	
vv=Control Value:	00H - 7FH (0 - 127) 0 - 63=Off, 64 - 127=On	

Sustain (CC#69)

Status	2nd Byte	3rd Byte
BnH	45H	vvH
n=MIDI Channel Number:	0H - FH (Ch. 1 - 16)	
vv=Control Value:	00H - 7FH (0 - 127) 0 - 63=Off, 64 - 127=On	

Activates Sustain on UPPER and LOWER ORGAN Parts.

Leslie Fast (CC#92)

Status	2nd Byte	3rd Byte
BnH	5CH	vvH
n=MIDI Channel Number:	0H - FH (Ch. 1 - 16)	
vv=Control Value:	00H - 7FH (0 - 127) 0 - 63=Off, 64 - 127=On	

This control is receive only.

NRPN MSB/LSB (CC#98, 99)

Status	2nd Byte	3rd Byte
BnH	63H	mmH
BnH	62H	llH
n=MIDI Channel Number:	0H - FH (Ch. 1 - 16)	
mm, ll=upper byte of the Parameter number specified by NRPN		
ll=lower byte of the Parameter number specified by NRPN		

Data Entry (CC#6, 38)

Status	2nd Byte	3rd Byte
BnH	06H	mmH
BnH	26H	llH
n=MIDI Channel Number:	0H - FH (Ch. 1 - 16)	
mm, ll=the value of the Parameter specified by NRPN		

Program Change

Status	2nd Byte	
CnH	ppH	
n=MIDI Channel Number:	0H - FH (Ch. 1 - 16)	
pp=Program Number:	00H - 63H = Patch# 1-1 to 10-10 64H - 6DH = Favo. Number [1] to [10] 7FH = [Manual]	

Example of operation

ex: select Patch# F2-6

Bx 00 01 Bx 20 00 Cx 0F (x=UPPER Channel)

ex: select Favorite Bank[2], Number[6]

Bx 00 65 Bx 20 00 Cx 69 (x=UPPER Channel)

ex: select Manual

Cx 7F (x=UPPER Channel)

CHANNEL MODE MESSAGES

All Sounds Off (CC#120)

Status	2nd Byte	3rd Byte
BnH	78H	00H
n=MIDI Channel Number:	0H - FH (Ch. 1 - 16)	

When this message is received, all currently-sounding notes on the corresponding channel will be turned off immediately.

Reset All Controllers (CC#121)

Status	2nd Byte	3rd Byte
BnH	79H	00H
n=MIDI Channel Number:	0H - FH (Ch. 1 - 16)	

When this message is received, the following controllers will be set to their reset values.

Expression: 127, TW Brake: 0, Damper: 0

NRPN: unset; previously set data will not change

All Notes Off (CC#123)

Status	2nd Byte	3rd Byte
BnH	7BH	00H
n=MIDI Channel Number:	0H - FH (Ch. 1 - 16)	

When All Notes Off is received, all notes on the corresponding channel will be turned off. However if Hold 1 or Sostenuto is ON, the sound will be continued until these are turned off.

◆ MIDI IMPLEMENTATION CHART

Drawbar Keyboard
Model: XK-4

MIDI Implementation Chart

Date: 7-Feb-2023
Version: 1.0

Function		Transmitted	Recognized	Remarks
Basic Channel	Default Changed	*1 1 - 16	*1 1 - 16	*1: Upper = 1, Lower = 2, Pedal = 3 when MIDI Template is recalled at "Basic".
Mode	Default Messages Altered	3 X *****	3 X 1	Switched by MIDI IN Mode.
Note Number	: True Voice	12 - 120 (61 key)*2 *****	0 - 127 0 - 127	*2: with oct. shift
Velocity	Note ON Note OFF	O O	O O	
After Touch	Key's Ch's	X X	X X	
Pitch Bend		O	O	
Control Change	0, 32	O	O	Bank Select MSB, LSB
	1	O	O	Modulation
	6, 38	O	O	Data Entry MSB, LSB
	7	O	O	Volume
	10	O	X	Pan
	11	O	O	Expression
	12 - 20	O	O	Drawbar Reg. Upper
	21 - 29	O	O	Drawbar Reg. Lower
	33, 35	O	O	Drawbar Reg. Pedal
	48	O	O	Spring Shock
	49	O	O	TW Brake
	64	O	O	Damper
	69	O	O	Sustain
	92	X	O	Leslie Fast
	98, 99	O	O	NRPN LSB, MSB
Program Change	: True #	O 0 - 127	O 0 - 99, 127	
System Exclusive		O	O	
System Common	: Song Position	X	X	
	: Song Select	X	X	
	: Tune	X	X	
System Real Time	: Clock	X	X	
	: Commands	X	X	
Aux Messages	: All Sounds Off	X	O	(120)
	: Reset All Controllers	O	O	(121)
	: Local On/Off	X	X	
	: All Notes Off	O	O	
	: Active Sense	O	O	
	: Reset	X	X	

Mode 1: OMNI ON, POLY Mode 2: OMNI ON, MONO
Mode 3: OMNI OFF, POLY Mode 4: OMNI OFF, MONO

O: Yes
X: No

◆ MIDI CHANNELS AND MESSAGES

	External Zone (Tx. only)	Upper Keyboard	Lower Keyboard	Pedal Keyboard
Note	O	O	O	O
Pitch Bend	O	O	X	X
Modulation	O	O	X	X
Volume, Pan (7, 10)	O	O *1*2	X	X
Expression (11)	O	O *1	X	X
Damper (64)	O	O	O	O
Sustain (69)	X	O	X	X
Drawbar Reg.	X	12 - 20 (Upper) 21 - 29 (Lower) 33, 35 (Pedal)	X	X
Spring Shock (48)	X	O	X	X
TW Brake (49)	X	O	X	X
Leslie Fast (92)	X	O *2	X	X
RPN (100, 101)	X	X	X	X
NRPN (98, 99)	X	O	X	X
All Notes Off (123)	O	O	X	X
All Sounds Off (120)	X	O *2	X	X
Reset All Ctrl. (121)	O	O	X	X
Bank Select (0, 32)	Change the voice for each zone.	Patch#	X	X
Program Change			X	X

*1: Affects all Parts (audio controlled)

*2: For Rx. only.

◆ GENERAL MIDI

◆ What Is “General MIDI?”

With the advent of the newer General MIDI (GM) standard, it is now easier for someone to connect two or more brands of MIDI devices and use them. As an example, before General MIDI different manufacturers assigned different program numbers to different sounds. If, for example, Program Number 4 is Strings on a “brand X” MIDI device and Program Number 4 is Trumpet on a “brand Y” device, and you sent MIDI Program Number 4 from a keyboard you were playing to each device, you would hear Strings from one and Trumpet from the other. However, you wanted both units to play Strings.

The General MIDI addition to the original MIDI specification was created so that generic Standard MIDI Files created on a sequencer or notation application may be played back on another device while preserving the integrity of the original selection. It follows a standard that assigns 128 instrument sounds to specific numbers. There are sixteen specific families or types of instruments and eight instruments within each group. A separate group of percussion sounds is usually available on MIDI channel 10, and they are assigned to specific notes on a MIDI keyboard.

GENERAL MIDI VOICE GROUPS			
Piano	Chromatic Percussion	Organ	Guitar
Bass	Strings	Ensemble	Brass
Reed	Pipe	Synth Lead	Synth Pad
Synth F/X	Ethnic	Percussive	Sound F/X

NOTE: The General MIDI information provided here is to assist you when transmitting to a MIDI device such as a sound module or synthesizer, particularly if you are using External Zones. The MIDI mapping of the XK-4 is “product-specific” and so is not compatible with General MIDI.

◆ General MIDI Instrument Chart

Here is the list of General MIDI voices followed by their Program Numbers.

NOTE: These Program Numbers apply to outgoing MIDI data only. Also, they apply only to MIDI data transmitted to a MIDI device implementing General MIDI.

Program	Instrument	Program	Instrument	Program	Instrument	Program	Instrument
1	Grand Piano	33	Wood Bass	65	Soprano Sax	97	Ice Rain
2	Bright Piano	34	Fingered Bass	66	Alto Sax	98	Soundtrack
3	Electric Grand	35	Pick Bass	67	Tenor Sax	99	Crystal
4	Honky Tonk	36	Fretless Bass	68	Baritone Sax	100	Atmosphere
5	Electric Piano	37	Slap Bass 1	69	Oboe	101	Brightness
6	Electric Piano	38	Slap Bass 2	70	English Horn	102	Goblin
7	Harpsichord	39	Synth Bass 1	71	Bassoon	103	Echo Drops
8	Clavi	40	Synth Bass 2	72	Clarinet	104	Sci-Fi
9	Celesta	41	Violin	73	Piccolo	105	Sitar
10	Glockenspiel	42	Viola	74	Flute	106	Banjo
11	Music Box	43	Cello	75	Recorder	107	Shamisen
12	Vibraphone	44	Double Bass	76	Pan Flute	108	Koto
13	Marimba	45	Tremolo	77	Blown Bottle	109	Kalimba
14	Xylophone	46	Pizzicato	78	Shakuhachi	110	Bagpipe
15	Tubular Bells	47	Harp	79	Whistle	111	Fiddle
16	Dulcimer	48	Timpani	80	Ocarina	112	Shanai
17	Drawbar	49	Strings 1	81	Square Lead	113	Tinkle Bell
18	Percussive	50	Strings 2	82	Sawtooth	114	Agogo Bells
19	Rock Organ	51	Synth Strings 1	83	Calliope Lead	115	Steel Drum
20	Church Organ	52	Synth Strings 2	84	Chiff Lead	116	Wood Block
21	Reed Organ	53	Choir Aahs	85	Charanga	117	Taiko Drum
22	French	54	Choir Oohs	86	Voice Lead	118	Melodic Tom
23	Harmonica	55	Synth Choir	87	Fifth Lead	119	Synth Tom
24	Tango	56	Orchestral Hit	88	Bass & Lead	120	Reverse
25	Nylon String	57	Trumpet	89	New Age Pad	121	Guitar Fret
26	Steel String	58	Trombone	90	Warm Pad	122	Breath Noise
27	Jazz Guitar	59	Tuba	91	Poly Synth	123	Seashore
28	Clean Guitar	60	Muted Trumpet	92	Choir Pad	124	Bird Tweet
29	Muted Guitar	61	French Horn	93	Bowed Pad	125	Telephone
30	Overdriven	62	Brass Section	94	Metal Pad	126	Helicopter
31	Distortion	63	Synth Brass 1	95	Halo Pad	127	Applause
32	Guitar	64	Synth Brass 2	96	Sweep Pad	128	Gunshot

The General MIDI logo looks like this:



Any MIDI device with this logo will conform to the General MIDI Standard.

Any MIDI device that conforms to the General MIDI Standard will assign a specific number to each instrument, and will have at least a 24-note polyphonic capability.

What Is “Bank Select?”

“Bank Select” is closely related to “Program Change.” As explained on page 491, General MIDI provides for a variety of different sounds, called Programs and grouped by instrument type. However, General MIDI only allows 128 separate Programs and does not allow for variations of instruments. Thus, if you want, say, an Acoustic Piano, you would have no choice but to use the one Acoustic Piano sound provided for by General MIDI, whereas actual acoustic pianos differ greatly in sound and timbral character.

In order to satisfy the requirement for different variations in tone quality within a specific sound category, several methods have been devised to allow one Program Number to represent multiple varieties or Variations of a basic sound such as Piano, Vibes, Trumpet, etc. The method employed on the XK-4 provides the means to have up to 16,384 different sounds instead of only 128. This is accomplished by providing up to 128 banks of voices for each of the 128 Program Numbers in General MIDI ($128 \times 128 = 16,384$). It should be noted that this is a theoretical limit - the actual number is typically much less (anywhere from 300 ~ 900 sounds and/or drum samples).

A method called Bank Select is used to select the different sound banks. It does this by sending two additional Controller Numbers ahead of the Program Number so that the instrument will know which sound to play. Controller #32 (Bank Select LSB - Least Significant Bit) is used to select a particular bank scheme or “family,” while Controller #0 (Bank Select MSB - Most Significant Bit) is used to set a particular voice variation within that bank. For more information about Bank Select on the XK-4 please consult page 493 of the APPENDIX chapter of this Guide.

SPECIAL NOTE: The number of available voices will depend on the particular MIDI instrument you are using. Please consult the documentation provided with the MIDI instrument you are using to find which additional voices are available. This information will usually be found in either the Owner’s Manual or an additional Reference Guide.

◆ DRAWBAR DATA LIST

Part	Control Number								
	16'	5 1/3'	8'	4'	2 2/3'	2'	1 3/5'	1 1/3'	1'
Upper	0CH(12)	0DH(13)	0EH(14)	0FH(15)	10H(16)	11H(17)	12H(18)	13H(19)	14H(20)
Lower	15H(21)	16H(22)	17H(23)	18H(24)	19H(25)	1AH(26)	1BH(27)	1CH(28)	1DH(29)
Pedal	21H(33)	-	23H(35)	-	-	-	-	-	-

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

ex: Set Lower 8' to level 7 via MIDI. Bx 17 70 (x=UPPER Channel)

◆ SYSTEM EXCLUSIVE MESSAGES

MEMORY DUMP

1. Each Packet (139 Bytes)

F0	System Exclusive
55	SUZUKI ID
dd	Device ID (refer to page 133)
10	Model ID MSB
25	Model ID LSB
11	Command: Data Packet
[TYPE]	Data Type 07H, 08H = Temp. Dump 0AH = System Dump
[PNH]	Packet Number MSB
[PNL]	Packet Number LSB
[DATA]	64 Bytes Data 128 Bytes niblized ASCII ex: 7EH - 37H, 45H
[CHD]	Check Digit Lower 7 bits of XOR [DATA]
F7	End Of Exclusive

2. Acknowledge

F0	System Exclusive
55	SUZUKI ID
dd	Device ID
10	Model ID MSB
25	Model ID LSB
14	Command: Acknowledge
[TYPE]	Data Type
[AK]	Result 00H = OK 05H = Check Digit Error 06H = Receive Protected
[PNH]	Packet Number MSB
[PNL]	Packet Number LSB
F7	End Of Exclusive

3. # of Packets

Temp. Dump: 46
System Dump: 11

DUMP REQUEST (Rx. Only)

F0	System Exclusive
55	SUZUKI ID
dd	Device ID
10	Model ID MSB
25	Model ID LSB
12	Command: Dump Request
[TYPE]	Data Type 07H = Temp. Dump 0AH = System Dump
F7	End Of Exclusive

NRPN SWITCH

F0	Suzuki Exclusive
55	SUZUKI ID
dd	Device ID
10	Model ID MSB
25	Model ID LSB
02	Command: NRPN Sw.
[DATA]	00H = Off, 7FH = On
F7	End Of Exclusive

When this device receives this message, Tx & Rx NRPN is switched in the Control channel.

DATA SET

F0	System Exclusive
55	SUZUKI ID
dd	Device ID
10	Model ID MSB
25	Model ID LSB
13	Command: Data Set
aa	Address MSB
bb	Address
cc	Address LSB
[DATA]	Data (Flexible bytes)
F7	End Of Exclusive

IDENTITY REQUEST (RX. ONLY)

F0	System Exclusive
7E	Universal non real-time
dd	Device ID
06	Sub ID #1
01	Sub ID #2
F7	End Of Exclusive

IDENTITY REPLY (TX. ONLY)

F0	System Exclusive
7E	Universal non real-time
dd	Device ID
06	Sub ID #1
02	Sub ID #2
55	SUZUKI ID
00 10	Device Family code
00 25	Device Family number
00 00	
00 00	
F7	End Of Exclusive

When Identity Request is received, Identity Reply will be transmitted.

◆ SPECIFICATIONS

Sound Engine

ORGAN Section

MTWII (Modeled Tone Wheel II), Polyphony: 61 (Tone Wheel Organ)

Keyboard

61 note, with velocity, semi-weighted, square-front ("waterfall" type)

ORGAN Section

Parts

3 (Upper, Lower, Pedal)

Drawbars

1 set, 9 pitches

Voicing

Upper & Lower: 5(TW, Vx., Farf, Ace, Pipe)

Pedal: 3 (Normal, Muted, Pipe)

Percussion

Buttons: On, Volume Soft, Fast Decay, Third Harmonic

Effects

Patch

Vibrato & Chorus, Multi Effect 1, Overdrive, Multi Effect 2, Matching Transformer, Leslie, Equalizer & Tone Control, Reverb

Master

Equalizer

Key Map

Internal Zone

Transpose, Octave, Split, Pedal To Lower, Allocate, Pedal Sustain

External Zones

3 Zones (assignable to each keyboard)

Controllers

Pitch Bend Wheel, Modulation Wheel, Leslie (Bypass, Stop, Fast)

Memory

Favorites

10 banks x 10 numbers (Patches), 10 numbers (Display Pages)

Patch

Factory: 100, User: 100, Bundle: 100

Custom Tone Wheel

Factory: 4, User: 4

Custom Pedal Registration

Factory: 4, User: 4

Custom Pipe

Factory: 4, User: 4

Custom Cabinet

Factory: 8, User: 8

Storage

USB Flash Drive

Display

320 x 240 pixels

Connections

MIDI

IN, OUT

USB

To Host

Audio

Line Out L, R, Headphones, Rotary Out, Organ Pedal Out, Aux In (with Volume control)

Leslie

11 - pin, 1 and 3 channels available

Others

Leslie Switch, Foot Switch, Damper Pedal, Expression Pedal

Dimensions

1004(W), 322(D), 109(H) mm

39.5"(W), 12.7"(D), 4.3"(H)

Weight

9.4 kg

20.7 lbs

Accessory

AC Power Cord

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:

HAMMOND SUZUKI USA, Inc.
219. W Wrightwood Ave
Elmhurst , IL, 60126-1112
UNITED STATES

In Europe and the U.K. contact:

HAMMOND SUZUKI EUROPE B.V
Ir. D.S. Tuynmanweg 4A
4131 PN Vianen
THE NETHERLANDS

All other countries contact:

HAMMOND SUZUKI Ltd.
25-12, Ryoke 2 Chome
Hamamatsu 430-0852 (Shizuoka)
JAPAN

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

Manufacturer:

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

