

# LXP-15 II

Multi-Effects  
Processor

Owner's  
Manual

**lexicon**

## Unpacking and Inspection

After unpacking the LXP-15 II, save all packing materials in case you ever need to ship the unit. Thoroughly inspect the LXP-15 II and packing materials for signs of damage. Report any shipment damage to the carrier at once; report equipment malfunction to your dealer.

## Notice

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designated to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment OFF and ON, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna
- Relocate the computer with respect to the receiver
- Move the computer away from the receiver
- Plug the computer into a different outlet so that the computer and receiver are on different branch circuits.

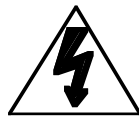
If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to identify and Resolve Radio/TV Interference Problems."

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

This triangle, which appears on your component, alerts you to the presence of uninsulated, dangerous voltage inside the enclosure... voltage that may be sufficient to constitute a risk of shock.



This triangle, which appears on your component, alerts you to important operating and maintenance instructions in this accompanying literature.

### **WARNING:**

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THE UNIT TO RAIN OR MOISTURE.

### **WARNING:**

DO NOT DEFEAT OR REMOVE GROUND PIN ON THE POWER PLUG.

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Lexicon Part #070-10273

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## Safety Suggestions

**Read Instructions** Read all safety and operating instructions before operating the unit.

**Retain Instructions** Keep the safety and operating instructions for future reference.

**Heed Warnings** Adhere to all warnings on the unit and in the operating instructions.

**Follow Instructions** Follow operating and use instructions.

**Heat** Keep the unit away from heat sources such as radiators, heat registers, stoves, etc., including amplifiers which produce heat.

**Ventilation** Make sure that the location or position of the unit does not interfere with its proper ventilation. For example, the unit should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a cabinet which impedes the flow of air through the ventilation openings.

**Wall or Ceiling Mounting** Do not mount the unit to a wall or ceiling except as recommended by the manufacturer.

**Power Sources** Connect the unit only to a power supply of the type described in the operating instructions, or as marked on the unit.

**Grounding or Polarization\*** Take precautions not to defeat the grounding or polarization of the unit's power cord.

\*Not applicable in Canada.

**Power Cord Protection** Route power supply cords so that they are not likely to be walked on or pinched by items placed on or against them, paying particular attention to cords at plugs, convenience receptacles, and the point at which they exit from the unit.

**Nonuse Periods** Unplug the power cord of the unit from the outlet when the unit is to be left unused for a long period of time.

**Water and Moisture** Do not use the unit near water — for example, near a sink, in a wet basement, near a swimming pool, near an open window, etc.

**Object and liquid entry** Do not allow objects to fall or liquids to be spilled into the enclosure through openings.

**Cleaning** The unit should be cleaned only as recommended

by the manufacturer.

**Servicing** Do not attempt any service beyond that described in the operating instructions. Refer all other service needs to qualified service personnel.

**Damage requiring service** The unit should be serviced by qualified service personnel when:

the power supply cord or the plug has been damaged, objects have fallen, or liquid has been spilled into the unit,

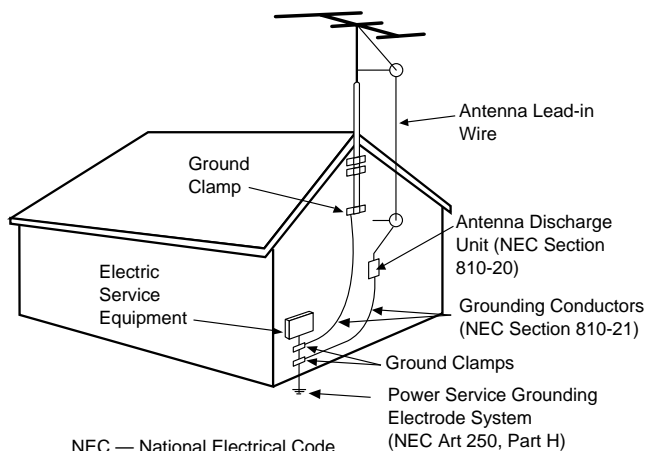
the unit has been exposed to rain,

the unit does not appear to operate normally or exhibits a marked change in performance,

the unit has been dropped, or the enclosure damaged.

**Outdoor Antenna Grounding** If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70-1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna-discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See figure below.

**Power Lines** An outside antenna should be located away from power lines.



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**Introduction** Congratulations on your purchase of the LXP-15 II Multi-Effects Processor! You are about to experience superb sound quality and a full range of reverb, pitch shifting, and delay effects, coupled with fast, intuitive editing of preset sounds and an industry-leading MIDI implementation.

The LXP-15 II offers a rich and distinctive palette of special effects, including 128 preset effects programs to get you started. Each program has up to five display pages of variable parameters that you can adjust for subtle or dramatic changes in the program's sound, and you can store as many as 128 customized programs in user memory. All of the LXP-15 II functions are accessible from the front panel, or via MIDI, providing truly world-class flexibility and control. From pitch shifting to stereo delays and flanging, the LXP-15 II delivers superior performance. Whether you are a producer, engineer, or musician—whether you work on stage or in the studio—the LXP-15 II will quickly become an indispensable part of your sound.

We're confident you'll find that the LXP-15 II's unique combination of state-of-the-art sound and extraordinary versatility is exactly what you're looking for. A Quick Reference card provides the basics of operation in a compact format to get you up and running as quickly as possible — but to make sure you don't miss out on anything, we'd like you to read this manual. It provides a thorough explanation of both front panel and MIDI operation, program descriptions, and complete MIDI Implementation data — all the information you need to access the full power of the LXP-15 II.

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## Installing the LXP-15 II

### Unpacking

After unpacking the LXP-15 II, save all packing materials in case you ever need to ship the unit. Thoroughly inspect the LXP-15 II and packing materials for signs of damage. Report any shipment damage to the carrier at once. The following accessories are included with the LXP-15 II:

1. Power Cable
2. Feet (for use if not rack-mounted)
3. Owner's Manual
4. Quick Reference Guide
5. Warranty card (USA only)

### Power

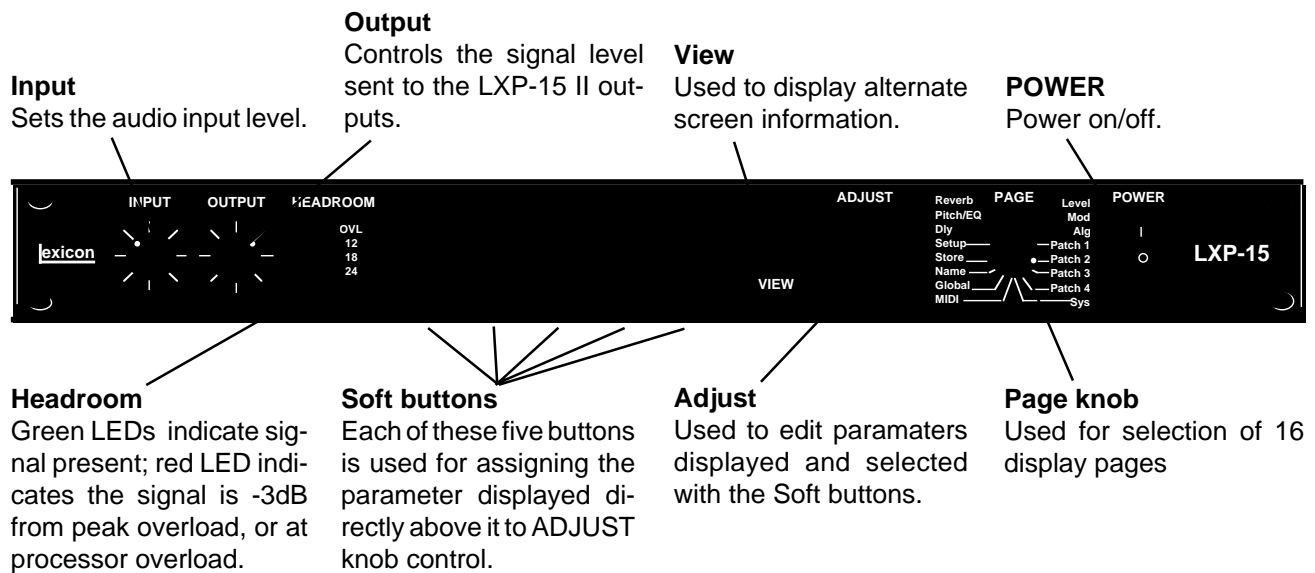
Connect the cable end of the LXP-15 II line cord to the LXP-15 II power connector. Then plug the line cord into an appropriate AC wall socket.

### Mounting

The LXP-15 II measures 19"W x 1.75"H x 13.9"D (483 x 45 x 353 mm). Make sure that the LXP-15 II is securely screwed into the rack, and that support is provided for the rear of the chassis during transport to avoid possible damage from severe mechanical shock.

The maximum ambient operating temperature is 95°F (35°C). Provide adequate ventilation if the LXP-15 II is mounted in a closed rack with heat-producing equipment such as synthesizer modules, effects units, or power amplifiers. Avoid mounting the LXP-15 II directly above power amplifiers.

# LXP-15 II Front Panel Controls





## LXP-15 II Rear Panel Connectors

### MIDI IN

Receives MIDI information from other MIDI equipment such as master keyboard controllers, MIDI foot controllers, sequencers and synthesizers.

### MIDI THRU

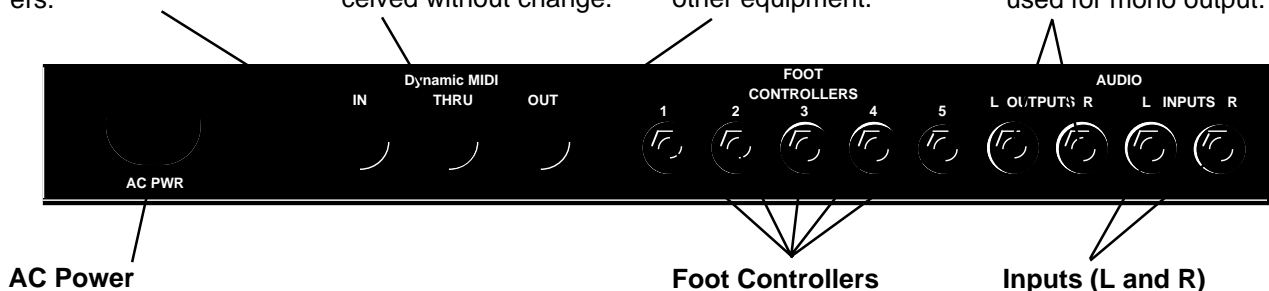
Passes any MIDI data received without change.

### MIDI OUT

Transmits MIDI data to other equipment.

### Outputs (L and R)

Single-ended (unbalanced) stereo outputs provide +4dBu nominal output level. Either can be used for mono output.



**AC Power**

### Foot Controllers

Five connectors for toggle (Push on/push off) momentary contact foot switches, or continuous footpedals (50 k $\Omega$ ).

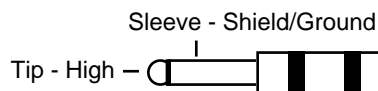
### Inputs (L and R)

Single-ended (unbalanced) inputs accept levels as low as -26dBu. Input impedance is 50 k $\Omega$  in stereo, 25 k $\Omega$  in mono. Either can be used for mono input.

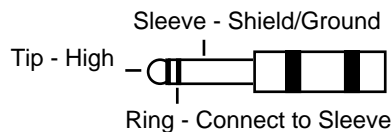
**MIDI Connections** MIDI connections are dependent on your applications, and on the equipment available in your system. For examples of MIDI system connections, see Chapter 6: *MIDI Operation*.

**Audio Connections** This section outlines several connection possibilities for the LXP-15 II. Because each sound system is unique, we recommend experimentation to arrive at the best configuration for your system. Always check connections for proper impedance, polarity, and levels.

Audio connections to the LXP-15 II are unbalanced, and should be made with high quality shielded cables with 1/4" tip-sleeve phone jacks at the LXP-15 II end. The connectors must be wired as shown below:



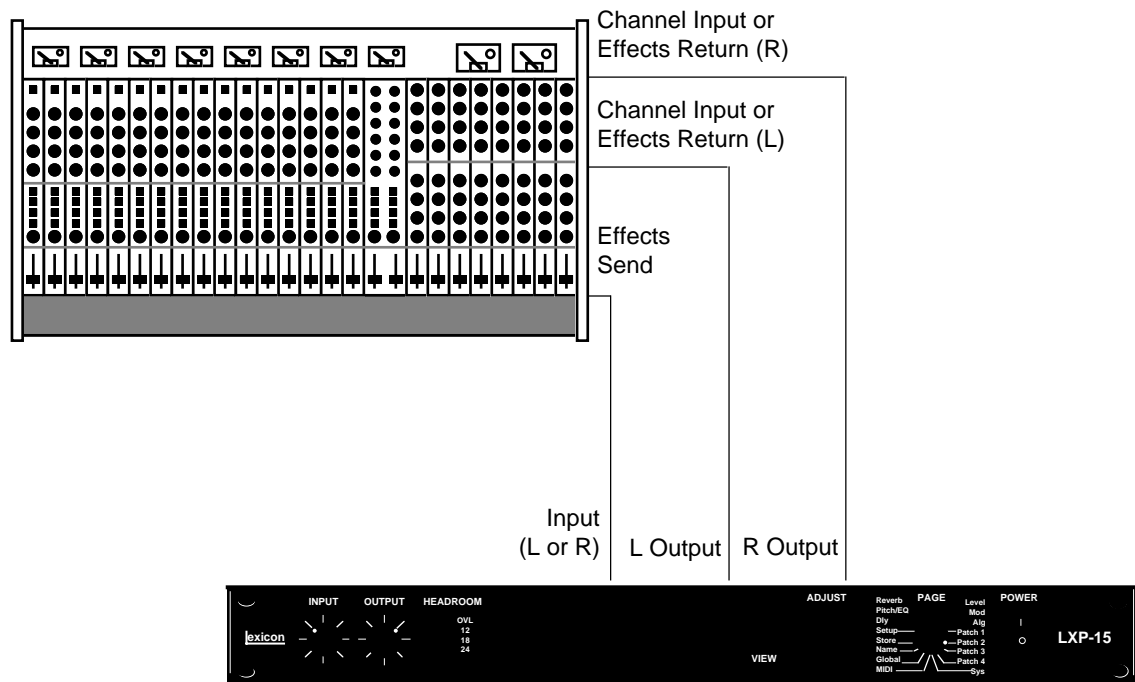
If only 1/4" tip-ring-sleeve phone jacks are available, they must be wired as shown:



**Mono or stereo?** The LXP-15 II produces wonderful stereo effects from either mono or stereo signal sources. For mono sources, use either of the two input connectors; the dry signal appears (along with the stereo effects) in mono at both output connectors. For instruments and sources with stereo outputs, use both inputs. We recommend using both LXP-15 II outputs whenever possible but, if mono output is required, you can use just one of the two output connectors. When only one output is used, the left and right signals are summed internally.

Some of the examples on the following pages use stereo instruments and amplification systems, others use mono. Feel free to adapt the examples to your specific requirements.

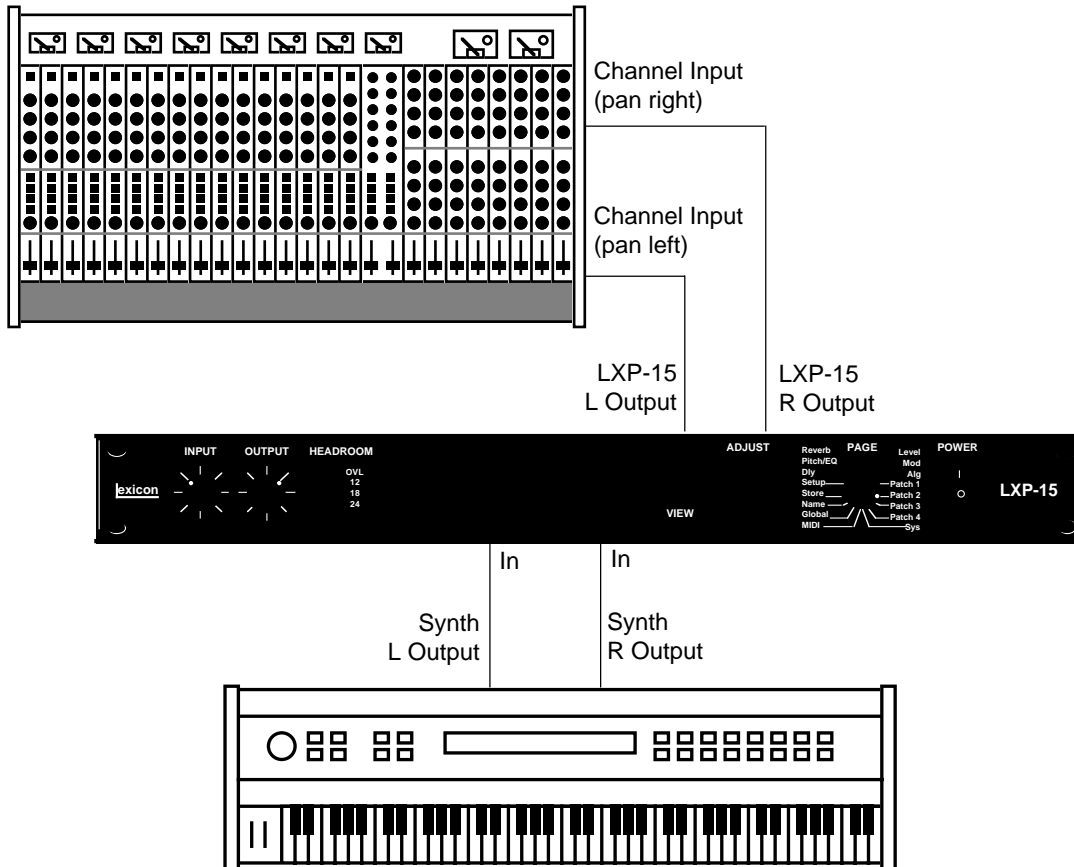
## Connection to a mixing console's effects sends



If you will be using an LXP-15 II as your primary effects unit, and your system includes a console with one or more auxiliary (effects) sends, connect the LXP-15 II as shown above. In most applications, it is preferable to connect the LXP-15 II outputs to two of the console's input channel strips, panned full left and right, rather than the effects returns. This allows the greatest flexibility in routing and equalization.

In this configuration the console controls are used to set the amount of effect heard—the LXP-15 II program's MIX control should be set to 100% wet.

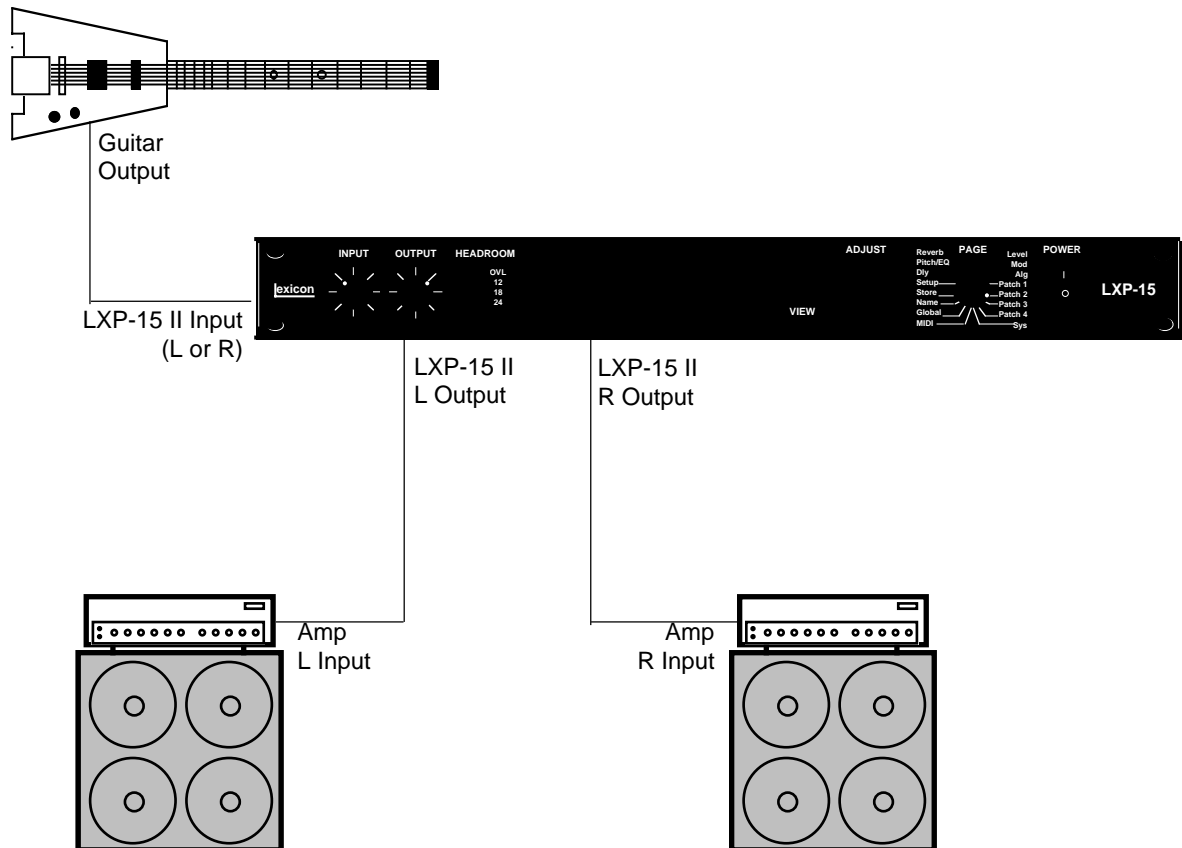
### Connection between instrument and console



In some applications (such as when an LXP-15 II is used for a single instrument) it may be desirable to patch the LXP-15 II between the instrument and console. This makes it possible to keep the LXP-15 II up on stage with other MIDI gear, rather than in the console effects rack, making MIDI control much easier.

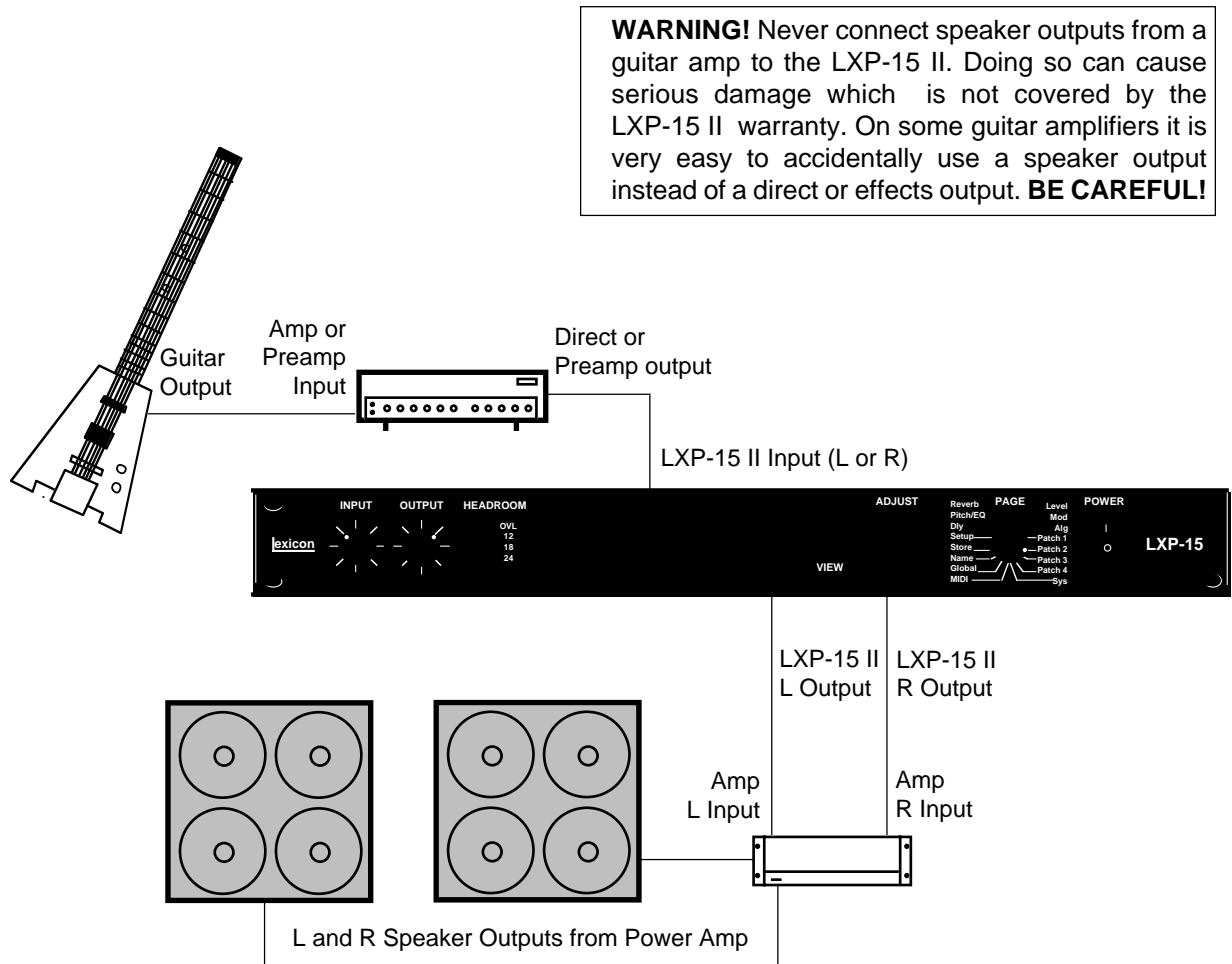
Set the LXP-15 II MIX control to approximately 50%.

## Connection between instrument and amplifier



For a very spacious guitar sound, connect the LXP-15 II between a guitar and two amp and speaker stacks. Set the LXP-15 II MIX control to approximately 50%. The only problem with this setup is that if you use overdrive distortion created by the amplifier, changing settings on the LXP-15 II also affects the quantity and quality of your distortion. If you use a separate distortion box, you can get around this problem by connecting it before the LXP-15 II. If you prefer amplifier-generated distortion, try the setup shown on the next page.

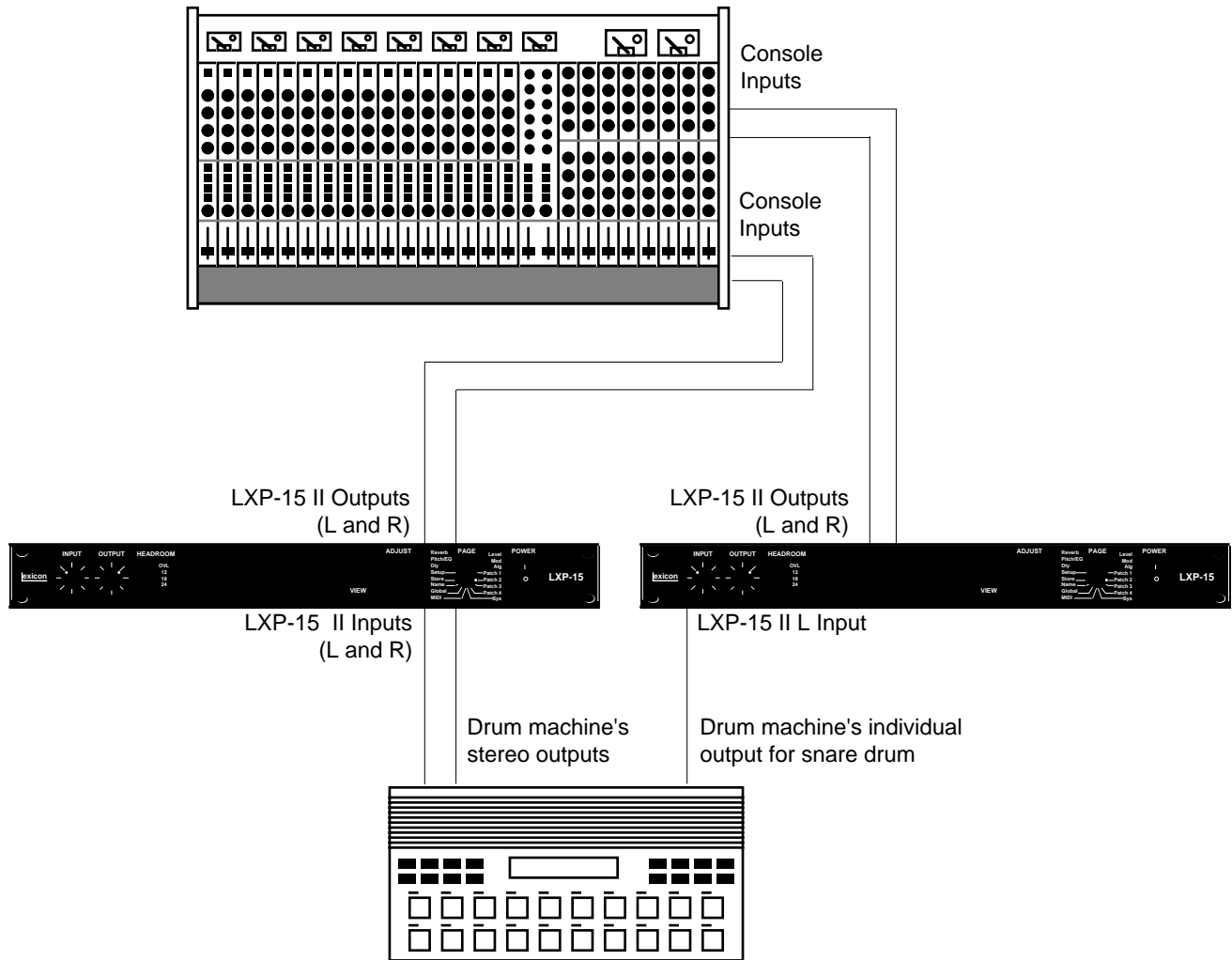
## Connection between instrument preamp and power amplifier(s)



If you use overdrive distortion, it's usually better to create the overdrive *before* sending the signal to the LXP-15 II to ensure that the effects don't change the quantity and quality of your distortion. In this setup, you need a guitar preamplifier or a guitar amp with a direct output. Feed this signal to either of the LXP-15 II inputs, and then on to a stereo power amp or a pair of guitar amps. (A few guitar amplifiers become unhappy if they are operated without speakers connected. Consult the amp manufacturer for details.)

You can use the effects send and return connectors on a mono guitar amp to obtain similar results. Adjust the LXP-15 II output level so that the amp produces the same output with the LXP-15 II as it does without it.

## Connection between drum machine and console



Using two LXP-15 II units between your drum machine and console can make your drum machine sound much more exciting, since it allows you to process the all-important snare drum separately from the rest of the mix. Make sure you remove the snare from the drum machine's main stereo mix.





## Front Panel Operation

### Terms used in this manual

**Algorithm** The LXP-15 II contains several *algorithms*. An algorithm is a set of instructions that tells the LXP-15 II's microprocessor how to process the input signal. One algorithm produces pitch/delay, another produces gated reverb, etc.

**Parameter** Each algorithm has a set of *parameters* (controls) that uniquely characterize it. The settings of the parameters can be changed to create radically different sounds from a single algorithm.

*Program Parameter* values are stored/recalled in setups. Some examples are: delay time, pitch shift, etc.

*System Parameter* values are not associated with a particular setup. System parameters are not stored in registers or presets, nor do their values change when a new setup is recalled. Examples are: display contrast and brightness, MIDI Channel number, etc.

**Patch** A patch is a routing assignment that allows an LXP-15 II parameter to be driven by a source control such as a footpedal, or a synthesizer mod wheel.

**Setup** A *setup* is a collection of specific parameter values responsible for a certain sound (and as many as four general purpose patches). Each register or preset is a setup, as is the current state of the machine.

**Pages** *Pages* are groups of parameters (or other quantities) whose names and/or values are displayed simultaneously.

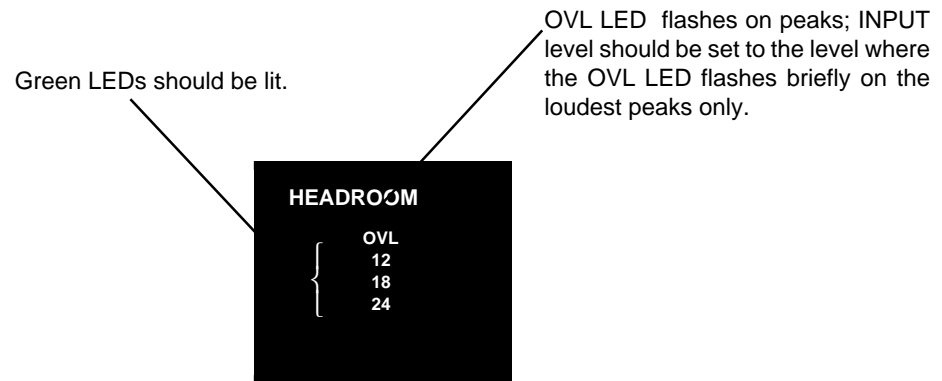
**Register/Preset** The LXP-15 II contains 256 setups. 128 of these are *presets* which are useful setups permanently initialized at the factory; 128 are *registers* which are available for storing your own setups and effects. The factory presets cannot be overwritten, but they can be modified and stored into registers (or copied into registers, then modified). When shipped, the LXP-15 II already has a duplicate of the presets loaded into its registers.

**Setting Audio Levels** The wide range of adjustment available with the LXP-15 II INPUT and OUTPUT controls allow it to be used with virtually any kind of equipment found in the studio or on the road.

To set audio levels:

1. Turn the LXP-15 II INPUT and OUTPUT controls all the way down (fully counterclockwise).
2. Set the instrument output, preamp output, or effects send that feeds the LXP-15 II input(s) to a nominal level. With an instrument, this should be your loudest normal playing level; with a preamp output or console, adjust the output(s) or effects send(s) to produce the highest level possible with the least amount of noise. If the output you are using doesn't have a level control, don't worry about it!
3. While sending audio to the LXP-15 II, gradually turn up the INPUT control until the red OVL LED just flashes on the loudest peaks. If it flashes continuously, turn the INPUT control down slightly. This ensures the best possible signal-to-noise ratio and dynamic range.

In general, it is best to set the gains in your system so that the nominal input to the LXP-15 II is at least 12dB from the maximum converter (peak) level.



**Note:** If the OVL LED flashes with no input present it indicates processor overload is occurring.

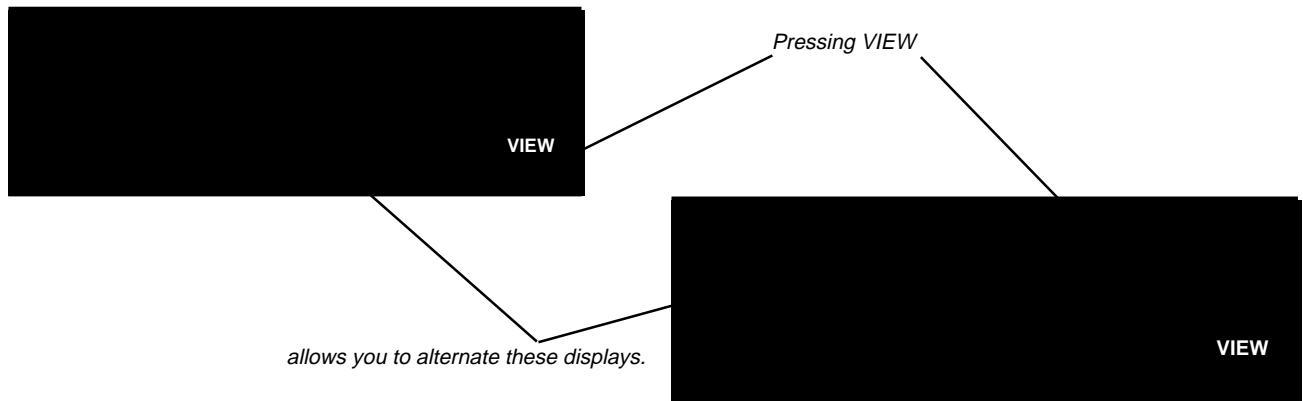
4. Turn the LXP-15 II OUTPUT control up.

## The LXP-15 II Display

On most of the LXP-15 II display pages, three lines of alphanumeric information are available:

1. System status
2. Parameter names
3. Parameter settings

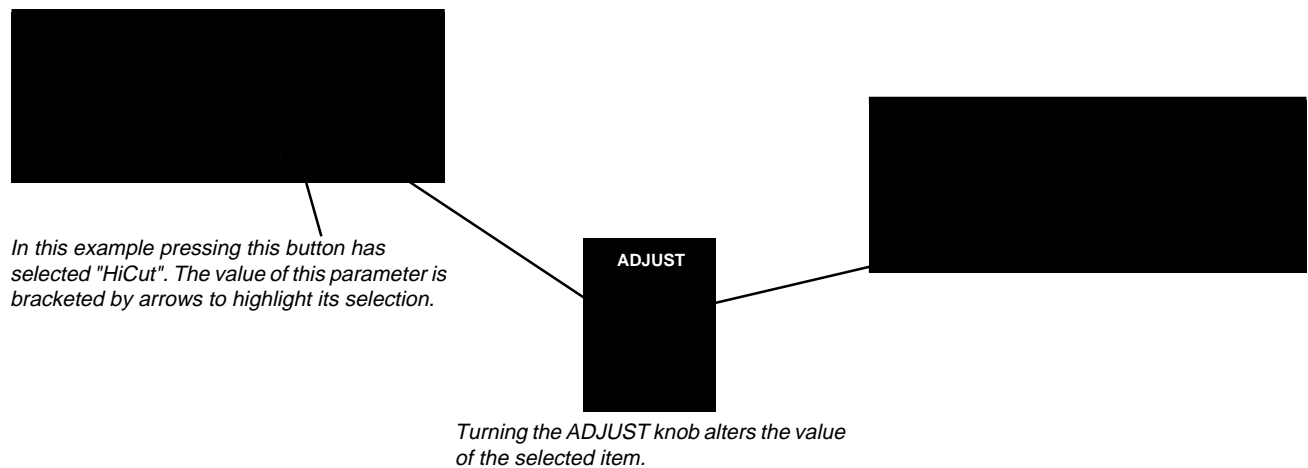
The front panel VIEW button allows you to choose between display of the first and second, or the second and third lines.



Each display line is divided into five 7-character fields. This allows as many as five items to be displayed simultaneously.

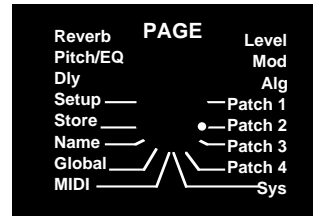


In general, pressing the button below any display field will select the item in that field for modification by the ADJUST knob.



## The Page Knob

The PAGE knob has 16 labeled settings. These selections are grouped into three basic functional areas. The upper section provides for selection of the available parameters which define the sound of each algorithm (Reverb, Pitch EQ, Delay, Level, Modulation, and Algorithm).



The settings grouped on the lower left allow various routine functions to be performed on setups (recalling, storing, naming, specifying MIDI Channel, etc.) These pages do not have an alternate display.

System parameters, and patch assignments are selected at the settings grouped on the lower right.

## Presets and User Setups

### Selecting LXP-15 II presets

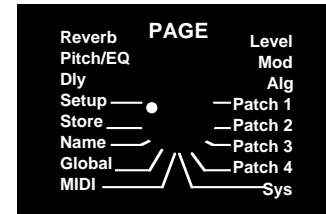
Any one of 128 preset setups can be selected by the PAGE and ADJUST knobs on the front panel. To select a preset, first turn PAGE to SETUP.

The following display will appear:

Preset #	Name	alg: XX		
Preset	Registr	Pre scan	Reg scan	Load

If you press the button directly below "Preset" the ADJUST knob will scroll through (and sequentially load) each one of the 128 presets. Pressing "Pre scan" allows you to use the ADJUST knob to simply scroll through the list of preset names without loading them. If you use this method, you must press the button beneath "Load" to actually select a preset. (Viewing, selecting and loading registers follow exactly the same procedure.)

For quick reference, the names of the 128 presets are shown in the table below. The presets are grouped generally into two categories: Studio and Stage (1-64 Studio; 65-128 Stage).



Use PAGE to select "SETUP".

Press "Preset", then use ADJUST to select and load a specific preset.

or

Press "Pre scan", then use ADJUST to scan the presets. Press "Load" to select any displayed preset.

1	Large Hall	33	Snare & Toms	65	Guit:EKORoom	97	Tape Stretch
2	Brite Hall	34	Small Gate	66	Solo Plate	98	Bass Doubler
3	Dark Hall	35	Medium Gate	67	Guitar Plate	99	GearMotor
4	CompressHall	36	Large Gate	68	StageJizz	100	Dyna-Rev
5	Vocal Hall	37	Bright Gate	69	Foot1 Dlay	101	Metal Gate
6	Chamber	38	Mega Gate	70	Pedal Slap	102	TransLument
7	Large Club	39	Env:Gate	71	Pedal Verb	103	MoanVerb
8	LargeDrkRoom	40	VibraRoom	72	Step On It!	104	GatedDive
9	Medium Room	41	VibraRoom II	73	Foot Spoooge	105	Solo Bass1.5
10	Medium &Short	42	2 Tap Detune	74	Foot1 Wave	106	Wasteland 1
11	Atrium	43	Small&Flange	75	Inf:Foot 1	107	Elvis Gate
12	Tiled Room	44	Long Echoes	76	Foot1 Whammy	108	Dense Dance
13	Small Room	45	L&R Delays	77	Speed+Pan 1	109	Boot Da Bass
14	Vocal Room	46	Space Echoz	78	Funky Keys	110	Oddness Mix1
15	Full Closet	47	Delay Cloud	79	Sheen	111	Big Dipper
16	Guitar Room	48	AmbiDetune	80	CrossDelays	112	RisingCloud
17	Stage Reflex	49	Amb.+4th Down	81	Pole Flange	113	DlyLoopMIDI
18	No Room	50	Amb+5th Up	82	SlowFoot	114	SpacLoopMIDI
19	Tall Room	51	Amb. + Oct. Up	83	Bass Korus	115	LongAmbiMAT
20	Smako!	52	6VoiceChorus	84	Leni Chorus	116	VaryCaveFoot
21	Warehouse	53	Vocal Chorus	85	WayOut There	117	FadelnBox
22	MediumDlyRoom	54	ChorusSlaps	86	Solo Spoooge	118	FadelnDetune
23	DarkDlyRoom	55	Cave &Chorus	87	2ndLeadAbove	119	Env: Panner
24	Verb Panner	56	GuitarDetune	88	Evil 3rds	120	FadeUpChorus
25	Splattered	57	Flange Room	89	BatCave+5th	121	InfiniteHall
26	Slap Vocal	58	Slowrollin'	90	Big 4th Down	122	Env:Dtune
27	Vocal Plate	59	Image Shift	91	Glub...Glub	123	Rvrb>XDly
28	Big Plate	60	Step Flange	92	Self D 1	124	RoomChrEnv
29	Small Plate	61	LFO Guitar	93	LongKorusEKO	125	EnvDetune3
30	Long Plate	62	1/16thMAT Slap	94	Slap Chorus	126	AmbiChrEnv>
31	Drum Plate	63	Chorus MAT	95	Small&Flange	127	Cascad8Env>
32	Rusty Plate	64	Thru a Ringer	96	Chorus Hall	128	Bypass

**Loading a preset** If you have chosen a preset with "Pre scan" selected, press the button directly below "Load" to load it. If you made your selection with "Preset" selected, you're all set, since this mode automatically loads the preset you've selected. (For footswitch control of preset changes, see Chapter 4: *Creating Sounds and Effects*)

**Modifying a preset** Once you've selected a preset, turn the PAGE knob to select one of the six parameter pages (Delay, Pitch/EQ, Reverb, Level, Mod or Alg). One page of parameters will appear on the display.

<b>Preset 2</b>		<b>Bright Hall</b>	<b>alg: Dly/Rvb</b>	
<b>Decay</b>	<b>Treble</b>	<b>Bass Mpy</b>	<b>Size</b>	<b>Diffus</b>

The PAGE knob will step through the other available parameter pages. You can change the value of any parameter by selecting it (push the button directly beneath it) and then turning the ADJUST knob to a new value.

When you turn the ADJUST knob, the bottom line of the display will change to show the full name of the selected parameter and the selected value. These values will change as you continue to turn ADJUST.

<b>Preset 2</b>		<b>Bright Hall</b>	<b>alg: Dly/Rvb</b>	
<b>Decay Time</b>		<b>3.6s</b>		

Full name of selected parameter.

Parameter value - this will change as you turn ADJUST.

The screen will return to its normal 5-parameter display if you select another parameter, or if 2 seconds pass without further parameter adjustment.

When the display returns to its normal state the setup name will be marked with an asterisk to indicate that the setup has been modified. This asterisk will remain until the setup is stored, or until another setup is loaded (clearing this setup and any changes made to it).

<b>Preset 2</b>		<b>*Bright Hall</b>	<b>alg: Dly/Rvb</b>	
<b>Decay</b>	<b>Treble</b>	<b>Bass Mpy</b>	<b>Size</b>	<b>Diffus</b>

The setup name is now marked to show that it has been modified.

Remember that pressing VIEW will display the parameters along with their settings.

<b>Decay</b>	<b>Treble</b>	<b>Bass Mpy</b>	<b>Size</b>	<b>Diffus</b>
<b>3.6s</b>	<b>8.98kHz</b>	<b>0.71x</b>	<b>64Meter</b>	<b>75%</b>

If you want to keep this modified preset as a new setup, it is a good idea to assign it a new name before storing it. To change the name of a setup, turn PAGE to "Name". The following display will appear.

### Naming your new setup

<b>Preset #</b>	<b>Name Edit:</b>	<b>Bright Hall</b>		
<Char	Char>	-	-	-

Note that the first letter of the current setup name is underlined by a cursor, indicating that it is selected. Turning the ADJUST knob allows you to replace this character with the first letter of the name you want. The ADJUST knob dials sequentially through a list of alphanumeric characters in the following order: (space), 0-9, A-Z, a-z, and an assortment of standard symbols. Pressing the buttons under "<Char" and "Char>" will step the cursor to the left and right, allowing you to choose the characters you want to change.

After creating a new sound, and assigning it a name, you may want to save it for future use in one of the LXP-15 II's 128 registers. — New entries will overwrite any program stored at that location, so be careful not to store into a location that contains a setup you want to save. (We have provided a chart for you to record your own program entries at the end of this manual.)

### Storing a new sound

To store a setup, turn PAGE to "Store". The following display will appear.

<b>Store into Registr XX</b>	<b>Briter Hall</b>			<b>?</b>
<b>Reg #</b>	-	-	-	<b>Store</b>

If the register shown on the top line of the display contains a setup you want to keep, select "Reg #" and turn ADJUST to a register you don't mind overwriting. When the display shows the register you want, simply press the button beneath "Store". Successful storage is indicated by the following display:

<b>Stored Registr XX</b>	<b>Briter Hall</b>			
<b>Reg #</b>	-	-	-	<b>Store</b>

**Note:** The LXP-15 II will not perform a store instruction if memory write-protect is enabled (see next page), or if you accidentally try to store into a Preset location.

To recall a register, simply turn PAGE to "Setup", select "Registr" and dial the ADJUST knob to the register you want. The setup is automatically recalled and ADJUST may be used to modify the sound. (For footswitch control of setup changes, see Chapter 4: *Creating Sounds and Effects*.)

### Recalling a register

**System Parameters** To access LXP-15 II System Parameters, simply turn the PAGE knob to "Sys". The following display will appear:

<b>MIDlchn</b>	<b>Contrst</b>	<b>Bright</b>	<b>MemProt</b>	<b>Update</b>
(1-16,OMNI)	(1-16)	(0-15)	(On/Off)	(On/Off)

Pressing the button directly beneath any of these displayed items will select that item for alteration with the ADJUST knob.

**MIDlchn** This control sets the MIDI channel. When selected, the ADJUST knob allows you to choose MIDI Channels 1-16 (for both transmitting and receiving MIDI data), or to choose OMNI (messages received on all channels and transmitted on Channel 1).

**Contrst** Adjusting the contrast of the display allows you to optimize it for different viewing angles.

**Bright** The LXP-15 II has 15 brightness levels to allow adjustment for different lighting conditions.

**Memory Write-Protect** Memory Write-Protect is a feature that lets you prohibit the overwriting of the setups stored in the registers. If the write-protect function is enabled, any attempt to store to a register will cause the following display to appear:

<b>Registr XX</b>	<b>Name not stored !</b>			
<b>Reg #</b>	-	-	-	<b>Store</b>

Selecting "Mem Prot" in System Parameter mode allows you to choose ON or OFF with the ADJUST knob.

**Update** This feature allows you to choose continual display update of patched parameter values (ON), or display of only the base values of patched parameters (OFF). See Chapter 4: *Creating Sounds and Effects* for details on patched parameters.

Note: Selection of Display Update ON will slow down the operation of the LXP-15 considerably. It is primarily useful when *setting up* patches, after which it is recommended that it be turned OFF.



## The Algorithms

The LXP-15 II contains five effects algorithms: Delay/Reverb, Pitch/Delay, Gate, Plate, and Chorus Delay. When a preset or register is loaded, its algorithm is shown in the top line of the display. (See Chapter 5: *The Presets* for a list of the algorithms used in each preset.)

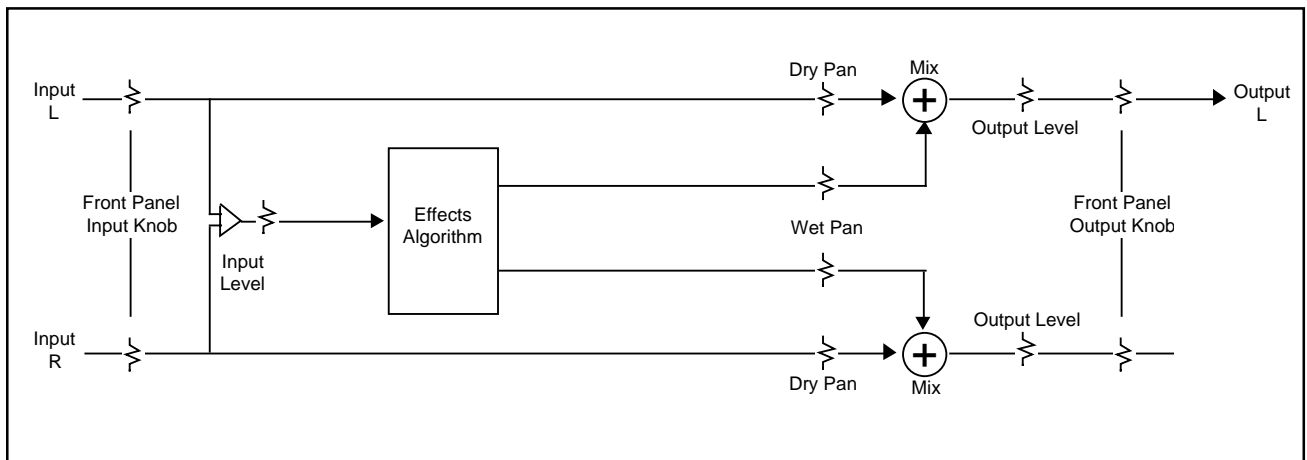
The algorithm parameters are grouped by function onto five pages: Delay, Pitch EQ, Reverb, Levels and Mod. This format allows you to find the delay parameters, for example, at the same page and display location in each algorithm. Parameters which are not available in an algorithm are assigned a blank space to maintain this format.

**NOTE:** You can change the current algorithm by turning the PAGE knob to "Alg" and using ADJUST to select a different algorithm. Be aware that different algorithms have different parameters. Changing algorithms with ADJUST may cause some parameters to be set to undesirable values. For this reason, when you want to work with a different algorithm, select and load a preset or register with the desired algorithm. This ensures that all parameters are set to normal values.

The general signal flow through the LXP-15 II, as well as the features and parameters of each of the five effects algorithms are described on the following pages.

The general signal flow through the LXP-15 II is illustrated below.

### Signal Flow



The routing and mixing of input and output signals for all algorithms are controlled by the five parameters found on the "Level" page. As these parameters are common to all LXP-15 II algorithms, they are described first. The algorithm-specific parameters will be described with each algorithm.

LEVEL				
<b>InLevl</b>	<b>Mix</b>	<b>Wet Pan</b>	<b>Dry Pan</b>	<b>OutLevl</b>
0-100%	0-100%	100%L-51%L, Center, 51%R-100%R	100%R-51%R, Center, 51%R-100%R	0-100%

**Input Level:** Adjusts the amount of input signal sent into the effects algorithm. This signal is the sum of the left and right inputs, after the front-panel input control.

**Mix:** Adjusts the mixture of the dry (left and right inputs) and wet (the left and right algorithm outputs) signals sent to the left and right outputs. When set to 0%, only dry signal is present at the outputs. When set to 100%, only wet signal is present at the outputs.

**Dry Pan:** A pan control for the dry signal. When a mono input source is used, Dry Pan will "move" the sound between the left and right speakers. When a stereo, or two-channel input source is used, Dry Pan will make one channel louder as the other gets softer.

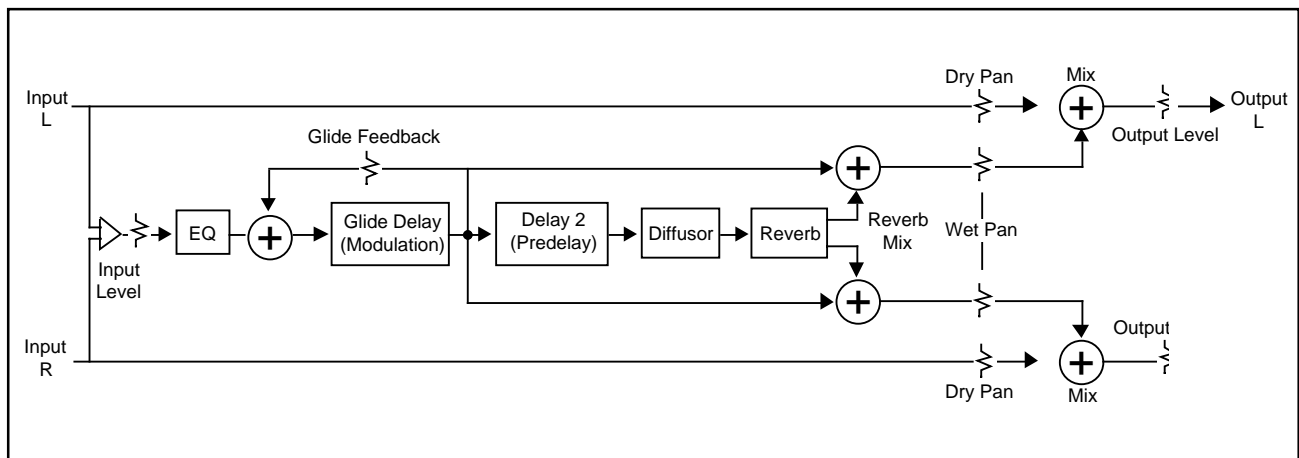
**Wet Pan:** A pan control for the wet signal. All effects in the LXP-15 II are mono-in/stereo-out. Wet Pan will make one effects channel louder as the other gets softer.

**Output Level:** Adjusts the amount of dry/wet mix sent to the front panel output control.

## Delay/Reverb

To get some idea of the types of sounds and effects that can be created with the Delay/Reverb algorithm, be sure to listen to and experiment with presets built on this algorithm. (See Chapter 5: *The Presets*.)

The Delay/Reverb algorithm consists of an equalizer in series with a unique glide delay line and reverb simulator. The glide delay can be smoothly modulated through its entire range with no glitches. While it is being modulated, the glide delay produces pitch shift effects. Increasing delay times will shift the pitch of signals being processed flat; decreasing delay times will shift the pitch sharp. The amount of pitch shift will decrease as the glide delay stabilizes at the new delay time. (There is no pitch shift when the delay has stabilized.) The reverberator is a full-featured room simulator with its own pre-delay. Its many parameters allow you to design almost any space you can imagine. One unique feature of this reverberator is infinite reverb: a wash of reverberated sound that sustains forever. (See *Decay* )



DELAY				
<b>Glidely</b> 0-638ms (64µs steps)	<b>Gldfbk</b> 0-100%	<b>Delay 2</b> 0-179ms (20µs steps)	-	-
PITCH EQ				
-	-	-	<b>HiCut</b> 320Hz-11.6kHz, Full	<b>LoCut</b> Full, 19Hz-1.35kHz
REVERB				
<b>Decay</b> .6-6.1s, Infinite	<b>Treble</b> 320Hz-11.6kHz, Full	<b>BassMpy</b> .35x-2.50x	<b>Size</b> 8M-71M	<b>Diffus</b> 0-100%
LEVEL				
<b>InLevl</b> 0-100%	<b>Mix</b> 0-100%	<b>Wet Pan</b> 100%L-51%L, Center, 51%R-100%R	<b>Dry Pan</b> 100%R-51%R, Center, 51%R-100%R	<b>OutLevl</b> 0-100%
MODULATION				
<b>LFO Rat</b> .03Hz-4.84Hz	<b>Rvb Mix</b> 0-100%	-	-	-

Parameter pages in the Delay/Reverb algorithm

**Delay/Reverb parameters** **Glide Delay:** The master predelay for this algorithm, providing up to 683ms of delay. Glide Delay produces pitch shift effects while it is being modulated. Controlling Glide Delay with the LFO can produce vibrato, chorus and flanging effects.

When creating patches, Glide Delay is controlled from two patch page parameters. Gldlyhi provides coarse control over the entire delay range for the parameter (0-683ms). Gldly provides fine control over a smaller range (0-16.1ms).

**Glide Feedback:** A positive feedback loop around Glide Delay. When set to maximum (100%), it continues to add input signal into the feedback loop. Use feedback for repeating echo effects and to deepen chorus/flanging effects created by modulating Glide Delay.

**Delay 2:** Reverb predelay following the glide delay. It can provide as much as 179ms of additional delay. For setups that use a mix of both the glide delay and reverberator outputs, use Delay 2 to acoustically separate the two effects. Like Glide Delay, Delay 2 is controlled from two patch page parameters. Dly2hi provides coarse control over the entire delay range for the parameter (0-179ms). Dly2 provides fine control over a smaller range (5.04ms).

**HiCut:** Adjusts high frequency roll-off for the algorithm. Roll-off is adjustable in 16 steps from flat to 320Hz.

**LoCut:** Adjusts low frequency roll-off for the algorithm. Roll-off is adjustable in 32 steps from flat to 19Hz.

**Decay:** Adjusts the reverb time for mid-frequency signals. Because low frequency reverb time (Bass Multiply) is a multiplier of decay time, this parameter acts as a master control for reverb time.

In this algorithm, Decay can be set to produce infinite reverb effects. When set to "Inifnit," sounds in the reverb continue to reverberate, but do not decay. (For a truly infinite reverb effect, all of the reverb page settings must be set appropriately. See *Patching Examples* for an example of this effect.) While decay is set to "Inifnit," input is locked out of the reverberator. This allows you to play over the reverb wash, and prevents cumulative overloading. Experiment with controlling Decay with MIDI Velocity or the input envelope follower for performance control of this effect.

**Treble :** Sets the frequency above which sounds decay at a progressively faster rate. When set relatively low, it gives a darker tone to the reverberation, simulating the effect of air absorption in a real hall. Maximum setting gives a flat response through the filter section.

**Bass Multiply:** Sets the reverb time for low-frequency signals, as a multiplier of the Decay parameter. For example, if Bass Multiply is set to 2X and Decay is set for 2 seconds, the low-frequency reverb time will be 4 seconds. For a natural-sounding hall ambience, values of 1.5X or less are recommended.

**Size:** Sets the rate of buildup of diffusion after the initial period (which is set by Diffusion). It also acts as a master control for Decay. Because of this link, Size changes a reverb sound from very large to very small. Generally, you should set Size before adjusting anything else. The size in meters is roughly equivalent to the longest dimension of the space you are trying to create. Note that changing Size temporarily mutes the outputs.

**Diffusion:** Controls the degree to which initial echo density increases over time. High settings of Diffusion result in high initial buildup of echo density; low settings cause low initial buildup. Echo density is affected by Size — smaller spaces will sound denser. To enhance percussion, use high settings of Diffusion. For clearer and more natural vocals, mixes and piano music, use low or moderate Diffusion settings.

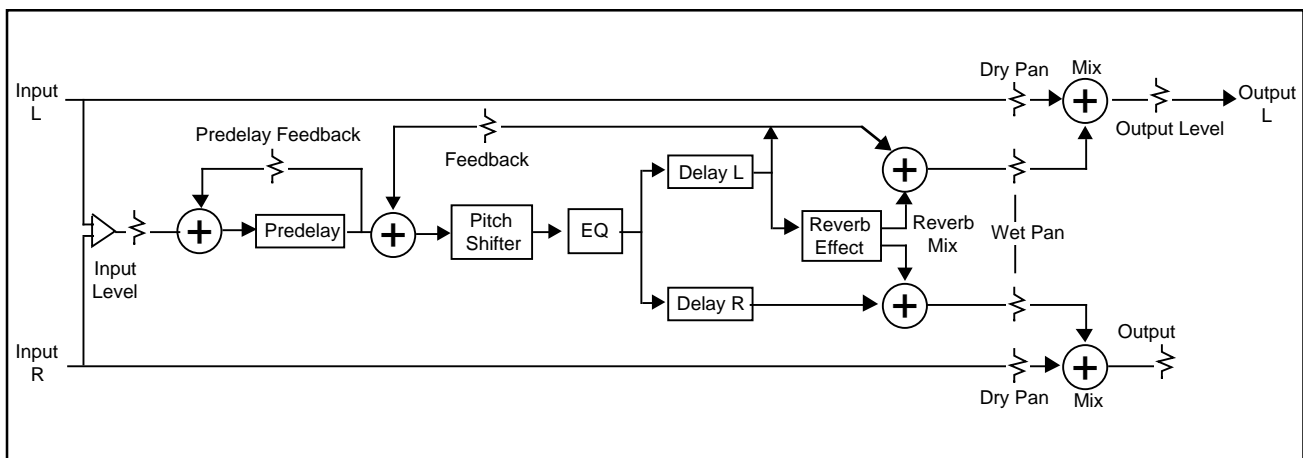
**LFO Rate:** Adjusts the rate of the internal Low Frequency Oscillator. Note that in order to hear the effect of changing the LFO Rate, the LFO must first be patched to control some parameter in the algorithm.

**Reverb Mix:** Adjusts the mix of reverb with glide delay effects. You can listen to the glide delay output without any reverb effects by setting Reverb Mix to 0.

**Pitch/Delay** To get some idea of the types of sounds and effects that can be created with the Pitch/Delay algorithm, be sure to listen to and experiment with presets built on this algorithm. (See Chapter 5: *The Presets*.)

The Pitch/Delay algorithm allows as many as six simultaneous effects in series: long delay with infinite looping, pitch shift, EQ, stereo delay, reverb, and a panner. Delay L can be fed back through the pitch shifter for cascade effects. Pitch/Delay is very useful for creating complex layered effects for instruments and vocals. For example, you can have filtered echoes, pitch shift chorusing, enhanced stereo spread, and reverb, all at once.

A special feature of this algorithm is loop sampling. The Predelay can be used as a loop sampler controlled by Predelay Feedback. Any Pitch/Delay setup can use the loop sampling feature. Choose a length for Predelay, and set Predelay Feedback to 100% to start recirculation and lock out further input. To precisely cue the end of the loop, set the Mix control to 0% and listen to the input. Once the loop is captured, experiment with changing Predelay to shorten it, or Interval to change its pitch.



DELAY				
<b>Predely</b> 0-1.04s (64 $\mu$ s steps)	<b>PdlyFbk</b> 0-100%	<b>Delay L</b> 0-325ms (20 $\mu$ s steps)	<b>Feedbak</b> 0-100%	<b>Delay R</b> 0-325ms (20 $\mu$ s steps)
PITCH EQ				
<b>Pitch</b> On, Off	<b>Intervl</b> -2oct to +1oct (in semitones)	<b>PchFine</b> -64 to +63 (128 steps)	<b>HiCut</b> 320Hz-11.6kHz, Full	<b>LoCut</b> Full, 19Hz-1.35kHz
REVERB				
<b>Decay</b> .6-6.1s, Infinite	<b>Treble</b> 320Hz-11.6kHz, Full	<b>BassMpy</b> .35x-2.50x	<b>Size</b> 8M-33M	<b>Diffus</b> 0-100%
LEVEL				
<b>InLevl</b> 0-100%	<b>Mix</b> 0-100%	<b>Wet Pan</b> 100%L-51%L, Center, 51%R-100%R	<b>Dry Pan</b> 100%R-51%R, Center, 51%R-100%R	<b>OutLevl</b> 0-100%
MODULATION				
<b>LFO Rat</b> .03Hz-4.84Hz	<b>Rvb Mix</b> 0-100%	-	-	-

Parameter pages in  
the Pitch/Delay algorithm

**Predelay:** The master predelay for the algorithm, providing as much as 1.04 seconds of delay. It serves as the base delay for the pitch shifter and stereo delay. It can also be used to capture and loop up to 1.04 seconds of audio to create loop sampler effects.

### Pitch/Delay parameters

When creating patches, Predelay is controlled from two patch page parameters. Pdlyhi provides coarse control over the entire delay range for the parameter (0-1.04s). Pdly provides fine control over a smaller range (0-16.1ms).

**Predelay Feedback:** A positive feedback loop around predelay. When set to maximum (100%), it locks out further input and begins an infinite loop with a length equal to the current setting of Predelay.

**Delay L:** Reverb predelay and source for left channel unreverberated signal and feedback. Like Predelay, Delay L is controlled from two patch page parameters. DlyLhi provides coarse control over the entire delay range for the parameter (0-325ms). DlyL provides fine control over a smaller range (0-5.04ms).

**Feedback:** A positive feedback loop around the pitch shifter, EQ and Delay L. When the pitch shifter is enabled, feedback will produce *cascade* effects. Short Delay L times will produce chords; long Delay L times will produce arpeggios. The higher the feedback setting, the more notes in the chord or arpeggio. If HiCut or LoCut are set to produce roll-off, feedback will increase the roll-off with each recirculation. When set to maximum (100%), feedback continues to add input signal into the feedback loop.

**Delay R:** Delay for right channel unreverberated signal. Like Predelay, Delay R is controlled from two patch page parameters. DlyRhi provides coarse control over the entire delay range for the parameter (0-325ms). DlyR provides fine control over a smaller range (0-5.04ms).

**Pitch On/Off:** Enables the pitch shifter. Selecting “Off” bypasses the pitch shifter and the small delay associated with it.

**Interval:** Adjusts the pitch shift in semitone increments from two octaves below to one octave above the original pitch. Control this parameter with Last Note, High Note or Low Note for MIDI harmonizer or loop sampler effects.

**Pitch Fine:** Provides a fine adjustment of pitch for detuning effects. The MIDI source range of 0-127 is interpreted as being centered on 64. Control this parameter with such sources as the LFO and input envelope follower to produce vibrato, doubling and detune effects.

**HiCut and LoCut:** Adjusts high-frequency and low-frequency roll-off. Setting both HiCut and LoCut to “Full” gives a flat response through the EQ block. The EQ block of this algorithm is within a feedback loop. When roll-off (either HiCut or LoCut) is used with feedback, the amount of roll-off will increase as the recirculation is increased. Also, if the predelay loop is used for loop sample effects, the EQ section can dynamically alter the tone of the loop.

**Decay:** Adjusts the reverb time for mid-frequency signals. Because low frequency reverb time (Bass Multiply) is a multiplier of decay time, this parameter acts as a master control for reverb time.

**Treble :** Sets the frequency above which sounds decay at a progressively faster rate. When set relatively low, it gives a darker tone to the reverberation, simulating the effect of air absorption in a real hall. Maximum setting gives a flat response through the filter section.

**Bass Multiply:** Sets the reverb time for low-frequency signals, as a multiplier of the Decay parameter. For example, if Bass Multiply is set to 2X and Decay is set for 2 seconds, the low-frequency reverb time will be 4 seconds. For a natural-sounding hall ambience, values of 1.5X or less are recommended.

**Size:** Sets the rate of buildup of diffusion after the initial period (which is set by Diffusion). It also acts as a master control for Decay. Because of this link, Size changes a reverb sound from very large to very small. Generally, you should set Size before adjusting anything else. The size in meters is roughly equivalent to the longest dimension of the space you are trying to create. Note that changing Size temporarily mutes the outputs.

**Diffusion:** Controls the degree to which initial echo density increases over time. High settings of Diffusion result in high initial buildup of echo density; low settings cause low initial buildup. Echo density is affected by Size — smaller spaces will sound denser. To enhance percussion, use high settings of Diffusion. For clearer and more natural vocals, mixes and piano music, use low or moderate Diffusion settings.

**LFO Rate:** Adjusts the rate of the internal LFO. Note that in order to hear the effect of changing the LFO Rate, the LFO must first be patched to control some parameter in the algorithm.

**Reverb Mix:** Adjusts the mix of reverb with pitch shift/EQ/stereo delay effects.

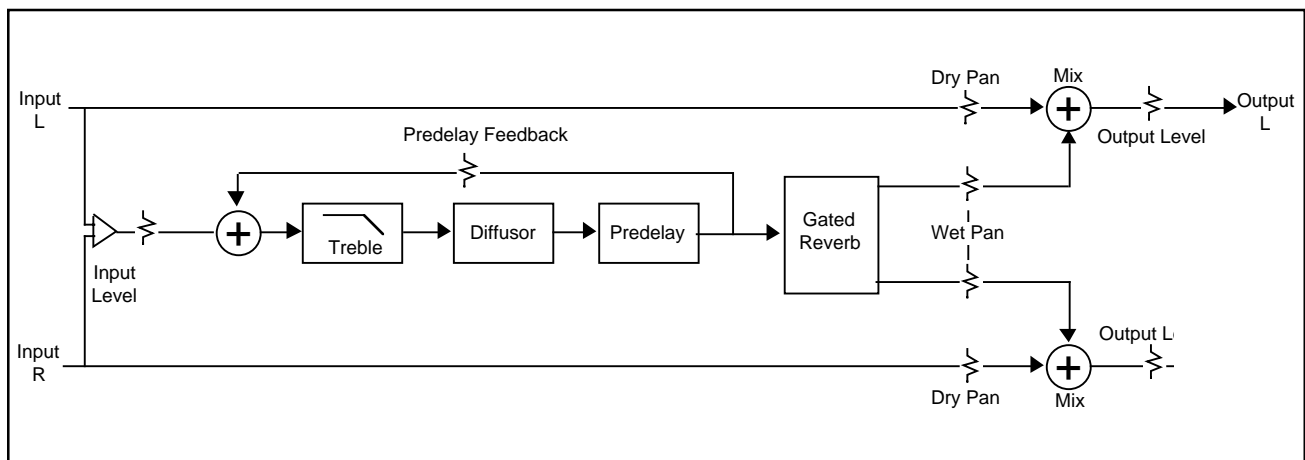


## Gate

To get some idea of the types of sounds and effects that can be created with the Gate algorithm, be sure to listen to and experiment with presets built on this algorithm. (See Chapter 5: The Presets.)

The Gate algorithm is a reverb effect with a fairly constant sound and no decay until the reverb is cut off abruptly. This algorithm is a popular choice for percussion – particularly for snare and toms, but be sure to experiment with other sound sources as well.

The Mix, Predelay, and Treble parameters are very important in this algorithm, allowing you to create anything from an enhancement or subtle thickening, to a solid wall of reverb.



DELAY				
<b>Predely</b> 0-262ms (32µs steps)	<b>PdlyFbk</b> -99% to +99%	-	-	-
PITCH EQ				
-	-	-	-	-
REVERB				
<b>Slope</b> 0-127 (128 steps)	<b>Treble</b> 320Hz-11.6kHz, Full	-	<b>Size</b> 8M-39M	<b>Diffus</b> 0-100%
LEVEL				
<b>InLevl</b> 0-100%	<b>Mix</b> 0-100%	<b>Wet Pan</b> 100%L-51%L, Center, 51%R-100%R	<b>Dry Pan</b> 100%R-51%R, Center, 51%R-100%R	<b>OutLevl</b> 0-100%
MODULATION				
<b>LFO Rat</b> .03Hz-4.84Hz	-	-	-	-

Parameter pages in the Gate algorithm

**Gate parameters** **Predelay:** A predelay providing up to 262ms of delay. It is located after Treble and Diffusion and before the gated reverb. Relatively short predelay times (60ms or less) will add depth to gate effects that use a mix of wet and dry signal. Longer predelay times will produce a noticeable slap, or echo, between the wet and dry signals.

When creating patches, Predelay is controlled from two patch page parameters. Pdlyhi provides coarse control over the entire delay range for the parameter (0-262ms). Pdly provides fine control over a smaller range (3.96ms).

**Predelay Feedback:** A feedback loop around Treble, Diffusion, and Predelay. When set to maximum ( $\pm 99\%$ ), it continues to add input signal to the feedback loop. Feedback can be positive or negative. Note that since Treble and Diffusion are within the feedback loop, their effects on the overall sound will be enhanced as feedback is increased.

**Slope:** Determines how the amplitude builds over time (Size). Low Slope settings result in a higher amplitude at the beginning of the gated reverb; high Slope settings result in a higher amplitude at the end of the gate.

**Treble:** Adjusts high-frequency roll-off. Setting Treble to "Full" gives a flat response. As noted above, Treble is within the Predelay feedback loop. If Treble is set to some value other than Full, then the roll-off slope at the selected frequency will increase with each pass through the feedback loop. For example, if Predelay and Predelay Feedback are set to produce echoes (200ms and 75%) and Treble is set to 1.92kHz, the echoes will become progressively darker.

**Size:** Sets the rate of buildup of diffusion after the initial period (which is set by Diffusion). It also acts as a master control for Slope. Because of this link, Size changes a gated reverb sound from very large to very small. Generally, you should set Size before adjusting anything else. The size in meters is roughly equivalent to the longest dimension of the space you are trying to create. Note that changing Size temporarily mutes the outputs.

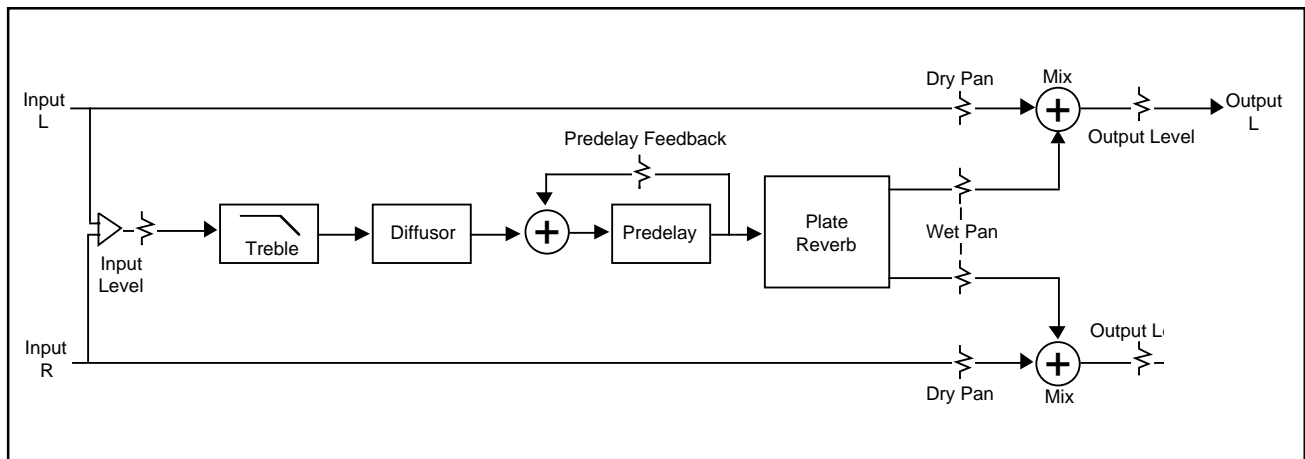
**Diffusion:** Controls the degree to which initial echo density increases over time. High settings of Diffusion result in high initial buildup of echo density; low settings cause low initial buildup. Echo density is affected by Size — smaller spaces will sound denser. To enhance percussion, use high settings of Diffusion. Like Treble, Diffusion is also inside the Predelay feedback loop. When feedback and diffusion are used together, the amount of diffusion will increase with each repetition of the loop.

**LFO Rate:** Adjusts the rate of the internal LFO. Note that in order to hear the effect of changing the LFO Rate, the LFO must first be patched to control some parameter in the algorithm.

To get some idea of the types of sounds and effects that can be created with the Plate algorithm, be sure to listen to and experiment with presets built on this algorithm. (See Chapter 5: The Presets.)

## Plate

The Plate algorithm is a reverb simulator that produces reverb effects with the characteristic sound of metal-plate reverberators. It has high initial diffusion and a relatively bright, colored sound. Its effect is designed to be heard as part of the music, enhancing and thickening the source material. The Plate algorithm is often the best choice for percussion, and also works well with other types of source material such as acoustic guitars and piano.



DELAY				
<b>Predely</b> 0-262ms (32μs steps)	<b>PdlyFbk</b> -99% to +99%	-	-	-
PITCH EQ				
-	-	-	-	-
REVERB				
<b>Decay</b> .6-6.1s	<b>Treble</b> 320Hz-11.6kHz, Full	<b>BassMpy</b> .35x-2.50x	<b>Size</b> 8M-87M	<b>Diffus</b> 0-100%
LEVEL				
<b>InLevl</b> 0-100%	<b>Mix</b> 0-100%	<b>Wet Pan</b> 100%L-51%L, Center, 51%R-100%R	<b>Dry Pan</b> 100%R-51%R, Center, 51%R-100%R	<b>OutLevl</b> 0-100%
MODULATION				
<b>LFO Rat</b> .03Hz-4.84Hz	-	-	-	-

Parameter pages in the Plate algorithm

**Plate parameters** **Predelay:** Predelay for the plate. When creating patches, Predelay is controlled from two patch page parameters. Pdlyhi provides coarse control over the entire delay range for the parameter (0-262ms). Pdly provides fine control over a smaller range (3.96ms).

**Predelay Feedback:** A feedback loop around the predelay. It can be set for positive or negative feedback. When set to maximum ( $\pm 99\%$ ), input signal continues to be added to the loop.

**Decay:** Adjusts the reverb time for mid-frequency signals. Because low frequency reverb time (Bass Multiply) is a multiplier of decay time, this parameter acts as a master control for reverb time.

**Treble :** Sets the frequency above which sounds decay at a progressively faster rate. When set relatively low, it gives a darker tone to the reverberation, simulating the effect of air absorption in a real hall. Maximum setting gives a flat response through the filter section.

**Bass Multiply:** Sets the reverb time for low-frequency signals, as a multiplier of the Decay parameter. For example, if Bass Multiply is set to 2X and Decay is set for 2 seconds, the low-frequency reverb time will be 4 seconds. For a natural-sounding plate reverb, 1.0X or less is recommended.

**Size:** Sets the rate of buildup of diffusion after the initial period (which is set by Diffusion). It also acts as a master control for Decay. Because of this link, Size changes a reverb sound from very large to very small. Generally, you should set Size before adjusting anything else. The size in meters is roughly equivalent to the longest dimension of the space you are trying to create. Note that changing Size temporarily mutes the outputs.

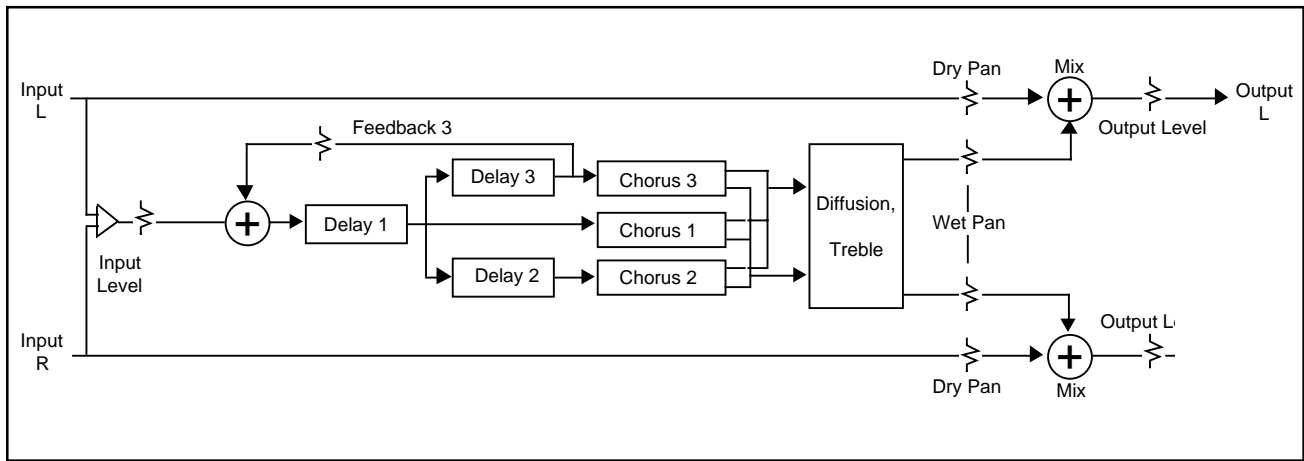
**Diffusion:** Controls the degree to which initial echo density increases over time. High settings of Diffusion result in high initial buildup of echo density; low settings cause low initial buildup. Echo density is affected by Size — smaller spaces will sound denser. To enhance percussion, natural vocals, mixes and piano music, use high settings of Diffusion.

**LFO Rate:** Adjusts the rate of the internal LFO. Note that in order to hear the effect of changing the LFO Rate, the LFO must first be patched to control some parameter in the algorithm.

To get some idea of the types of sounds and effects that can be created with the Chorus Delay algorithm, be sure to listen to and experiment with presets built on this algorithm. (See Chapter 5: The Presets.)

## Chorus Delay

The Chorus Delay algorithm is a six voice chorus configured as three stereo pairs. Delay 1 sets the base delay for all three pairs, Delay 2 and Delay 3 set an additional delay offset for Chorus 2 and Chorus 3. Random chorusing of  $\pm 4\text{ms}$  of all three pairs is controlled by Chorus Rate. The feedback loop around Chorus 1 and Chorus 3 provides positive and negative feedback for dramatic chorus and flanging effects.



DELAY				
<b>Delay1</b> 0-794ms (8.19ms steps)	-	<b>Delay2</b> 0-1.04s (8.19ms steps)	<b>Feedbk3</b> -99% to +99%	<b>Delay3</b> 0-1.04s (8.19ms steps)
PITCH EQ				
-	-	-	<b>Treble</b> 320Hz-11.6kHz, Full	-
REVERB				
-	-	-	-	<b>Diffus</b> 0-100%
LEVEL				
<b>InLevl</b> 0-100%	<b>Mix</b> 0-100%	<b>Wet Pan</b> 100%L-51%L, Center, 51%R-100%R	<b>Dry Pan</b> 100%R-51%R, Center, 51%R-100%R	<b>OutLevl</b> 0-100%
MODULATION				
<b>LFO Rat</b> 03Hz-4.84Hz	<b>ChorRat</b> 1-16 (16 steps)	-	-	-

Parameter pages in the Chorus Delay algorithm

**Chorus Delay parameters**

**Delay 1:** Delay setting for the first pair of chorus outputs providing up to 794ms of delay. Also the base delay setting for the Delay 2 and Delay 3. When creating effects with multiple delay settings, use Delay 1 to set the *shortest* delay.

**Delay 2:** The delay setting for the second pair of chorus outputs providing up to 1.04 seconds of additional delay. Note that the total delay setting for this pair of outputs is the value of Delay 1 added to Delay 2. (The maximum total delay is 1.798 seconds.)

**Delay 3:** The delay setting for the third pair of chorus outputs providing up to 1.04 seconds of additional delay. Note that the total delay setting for this pair of outputs is the value of Delay 1 added to Delay 3. (The maximum total delay is 1.798 seconds.)

**Feedback 3:** Feedback loop around Delay 1 and Delay 3. When set to maximum ( $\pm 99\%$ ), it continues to add input signal to the loop. Note that feedback in this algorithm can be either positive or negative. Both produce a more pronounced chorusing effect, but each produces a different tonal quality for a given set of delay values.

**Treble:** Adjusts the high frequency roll-off of the summed stereo outputs of the three chorus voices.

**Diffusion:** Adjusts the diffusion of the summed stereo outputs of the three chorus voices. Higher diffusion settings will soften the attack of percussive sounds.

**Chorus Rate:** Adjusts the overall depth and rate of all three chorus voices.

**LFO Rate:** Adjusts the rate of the internal LFO. Note that in order to hear the effect of changing the LFO Rate, the LFO must first be patched to control some parameter in the algorithm.

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## Creating Sounds and Effects

The presets in the LXP-15 II provide you with a wide range of sounds and effects which you can use right out of the box. You can create new sounds simply by calling up one of these presets and experimenting with the parameters until you get a sound that you like. Not only can you adjust parameters with the front-panel ADJUST knob, but you can change them automatically with a number of control Sources. This ability to assign a control Source to an effect parameter is called “patching.” It is one of the most powerful features of the LXP-15 II. Patching allows you to create sounds and effects that change dynamically in response to real-time performance.

To exploit the full potential of the LXP-15 II’s patching abilities, it is helpful to understand which parameters control different aspects of an effect—and what, in fact, each effect is. Following is a brief overview of some common effects. If you are already familiar with these, you may want to skip ahead to the next section where we discuss patching on the LXP-15 II.

Sounds have distinctive characteristics which make them recognizable to us. It is no surprise then that an analysis of the sound waves generated, for example, by a piano can be readily distinguished from those generated by a wind instrument. The art of synthesizing sounds such as these is now commonplace. The simulation of effects is more concerned with our perception of sounds and, generally, requires synthesis of the environment in which sounds occur — effects can create the impression of a piano playing in a padded cell, for example, or in a concert hall.

### Sounds and Effects

All sounds are affected by their environment. From the moment a sound is generated and begins to travel (at the rate of one foot in about .9 milliseconds), it begins to change — merely passing through the air absorbs some of its energy. In the real world, sounds are distorted in a variety of ways between the time they occur and the time it takes them to reach our ears. They bounce off of near and far surfaces, each of which absorbs some of their energy and reflects them in various directions. Sounds seem to change in pitch when generated by moving objects as they approach and recede from us. Our perception of sounds changes as we approach their source, and as we hear them in different settings. Even the difference in the amount of time it takes a sound to reach our two ears contributes to the audio clues we use to identify sounds and to accurately locate their sources.

All of these characteristics can be used to simulate environments, to create the effect of sounds reaching us from a great distance, of performances in vast halls or tiny rooms. Extensive research into the acoustic properties of rooms, etc. has gone into the design of the LXP-15 II. The basic parameters of different environments have already been defined and are at your disposal when creating your own effects.

**Reflections** When a sound is reflected from walls and other surfaces, it loses some of its high frequency content. If the surface is soft, or padded, such as a curtain or rug, more high frequency content will be lost than if the surface is hard like tile or paneling. Harder surfaces give rise to more reverberation; they are more "live".

**Echo** True echo occurs when a sound bounces off an acoustically hard surface; its return is heard as a distinct repetition of the original sound. When synthesizing an echo, the level and the high frequency content of the delayed sound, relative to the original sound in the output mix, gives audible clues as to the hardness of the reflecting surface(s). The initial delay time determines the impression of the relative distance between the sound source, the imaginary reflecting surface, and the listening position. Long delay times provide a very distinct repetition of the source. Recirculation of the delayed sound (feedback) provides multiple repetitions, and suggests two or more reflective surfaces that are bouncing the sound back and forth.

**Slap Echoes** An echo of around one-tenth of a second (100 milliseconds) delay time can be heard as a distinct repetition of the original, but is so close that it is heard more as a rhythmic enhancement rather than as a separate sound. A repeat of this type is commonly called a "slap echo". Often, the delay time is carefully adjusted so that a simple relationship exists between the tempo of the music and the delay time. On drums, the slap is often positioned on the opposite side of the stereo field from the original sound. Careful use of slap echoes can increase the rhythmic density and spatial interest of a musical arrangement. The "Tempo" patch source of the LXP-15 II can be used to automatically synchronize slap rhythms to a wide range of MIDI tempos.

**Ambient echo** Ambient echo effects simulate sound reflections from room surfaces — with random reflections, a gradual decay of overall level, and a gradual narrowing of the bandwidth. If the reflected sound continues to bounce back and forth between surfaces, it provides a long decaying "tail". To produce this effect, use 30-100ms of delay, in conjunction with feedback. Experiment with Hi and Lo cut filters to simulate different absorption characteristics of the reflecting surfaces (and of the air between them). To further enhance diffusion, try very small amounts of LFO modulation of delay time at a slow rate.

Delay settings can be varied to create larger or smaller spaces. The longer the delay times, the larger the space. Variation in the amount of feedback corresponds to the hardness of the imaginary reflecting surfaces, and use of rolloff can simulate the effects of air absorption on the high end of the sonic spectrum.

**Plates** Plate effects were originally generated by large, thin sheets of metal suspended upright under tension on springs. Transducers attached to the metal plate would transmit a signal which would, in turn, vibrate the plate. Because the plate provided a denser medium than air, sounds broadcast through it would seem to be occurring in a large open space. Synthesized plate effects mimic the sound of metal plates, with high initial diffusion and a relatively bright, colored sound. They are designed to be heard as part of the music, mellowing and thickening the initial sound itself. The plate sound is what most people used to associate with the term "reverb", and it is useful for all popular music, particularly percussion. The LXP-15 II has a Plate algorithm dedicated to these effects.



Vibrato is the effect produced by small, regular variations in a sound's pitch; guitar vibrato, for example, is created by alternately stretching and relaxing the strings. The LXP-15 II can create automatic regular vibrato for a single instrument, or mix of sounds, by means of sine wave modulation (LFO) of Glide Delay or Pitch fine. Personal control of the rate of vibrato can be created by patching an external foot pedal to the LFO.

### **Vibrato**

Short delays (5ms) should be used with no feedback, and 100% delayed sound fed to the output. Moderate depth is more natural sounding, especially with realistic rate settings. (Both depend on the instrument and the music.)

True doubling is done by having a performer overdub a performance on a different track of a multitrack recorder. When the "takes" are synchronized, the normal variations in each performance provide enhancement — the effect is to "thicken" vocal tracks. Synthetic doubling combines the original sound with a delayed version (30ms) in order to make a single performer sound like two or more. The illusion of double tracking can be greatly improved by introducing a small amount of pitch vibrato (modulation of Glide Delay or Pitch fine), particularly if some envelope follower modulation (InLvl) is combined with sine wave modulation (LFO). This makes the pitch variations seem more random, more like what actually happens when a performer dubs in a second part.

### **Doubling**

Chorusing is closely related to the doubling effect, but is more suggestive of a rotary speaker. The delay times used are usually somewhat shorter (20ms), the LFO modulation may be a little more exaggerated and, very often, feedback is introduced to increase the intensity of the effect. There are many possible variations of the chorusing effect; some shade into flanging, or doubling, or even echo. The LXP-15 II provides a Chorus Delay algorithm which allows all of these variations.

### **Chorusing**

Originally, flanging effects were created by simultaneously playing two identical programs on two tape recorders. By using hand pressure against the flange of the tape reels, one machine was slowed down slightly, then the other. The result was a series of changing phase cancellations and reinforcements, providing a "comb filter" and a characteristic swishing tunneling and fading sound.

### **Flanging**

Flanging with a delay is much simpler; two tape recorders need not be kept in relative sync. In fact, no tape machine is necessary — flanging can be done as a live effect. A short delay (5-10ms), modulated by an LFO, is mixed with the original signal, causing cancellation (nulling) at a frequency whose period (the time for one cycle) corresponds to twice the delay time. Cancellation also occurs on odd harmonics of that frequency. The depth of cancellation depends on the level balance of direct and delayed sounds; maximum cancellation occurs at a 50-50 mix.

The flanging effect can be further altered by recirculating the delay with the feedback control. Larger amounts of feedback cause exaggerated "deep" flanges. Use of the envelope follower produces an interesting "talking flange"; where a sweep is produced for each attack of the input. Envelope and sine wave modulation can be mixed for a complex sweep which is really quite pleasing.

**Resonant Effects** Singing in the shower is one way to obtain a moderate, natural resonant effect. Startling resonances are possible with the LXP-15 II by using short delay times with a lot of feedback. This causes a build-up of fundamental notes and harmonies whose period (the time for one cycle) is equal to the set delay time. These emphasized pitches are said to “resonate”. The effect can be characterized as adding a ringing, metallic quality to the sound.

The pitch and tone of the resonance is affected by delay time, phase, amount of feedback, and output mix. Care must be taken to keep feedback below the point where the unit will spontaneously oscillate (runaway feedback). Use of the Hi and Lo cut filters allows greater amount of feedback to be used.

**Long Delay Effects** When the delay time is equal to, or greater than, the time for a single beat of the music, it becomes possible to play counterpoints and harmonies against previously-performed phrases. Careful synchronization of the performance and the delay time allows “polyphonic” sound from a single melodic line. A chart showing conversion of tempo (in beats/minute) to Delay Time (in milliseconds) is given at the end of this manual. The “Tempo” patch control source can be used to automatically synchronize rhythms to a wide range of MIDI tempos.

With no feedback, only one previous phrase will be audible; if feedback is added, each delay period will repeat more than once before it dies away. With large amounts of feedback, the performances will pile up, one phrase over another, until input to the delay line ceases. Using this overlay technique, it is possible to create compositions and rhythmic beds in real-time that can be continuously evolved by adding new notes as older ones are fading out.

**Gating** Gating is an effect which does not have its origins in real-world situations (except perhaps the silent slamming of a heavily insulated door shutting off all sound beyond it.) Gating allows you to cut off reverberation at any point before its natural decay time — which is in itself a dramatic effect. The LXP-15 II has a Gate algorithm dedicated to these effects.

**Pitch Shifting** Altering the pitch of the duplicate of a sound allows a variety of effects ranging from subtle vibrato to extreme swings in pitch. Pitch shifting can be used to create chorusing, doubling effects, or musical harmonies. The LXP-15 II has a Pitch/Delay algorithm dedicated to these effects. Use LFO modulation or Pitch fine for vibrato; use MIDI Note Number control of Pitch Interval for harmonizing.

**Localization**

A sound source can be located along two dimensions in the stereo field: lateral (left–right) and frontal (near–far). Lateral perception of a sound is affected by relative differences between left ear and right ear perception of loudness and the arrival time of sound from a single source. For lateral localization effects, you can control the left-right loudness of both the dry and wet signal with Dry Pan and Wet Pan. You can also create lateral localization effects by setting up a relative delay between the left and right signals. The sound will be perceived as coming from the undelayed side. Increasing the delay will increase the lateral shift. (Since the maximum distance between the ears and any path a sound might take to the ears is less than one foot, the maximum delay used for lateral localization is less than one millisecond.)

Frontal perception of sound is affected by such factors as relative loudness, high-frequency content and the relative mix of direct and reflected sound. As the sound source moves away, it grows softer, its high-frequency content decreases and more reflected sound is heard. If the source is moving relatively quickly, a pitch shift is heard as well. The pitch increases as the source approaches and decreases as it moves away. You can create frontal localization effects by controlling input/output levels, high-frequency roll-off, dry/wet mix, and pitch.

A useful localization effect for sound reproduction is to use delays to eliminate echoes and increase the intelligibility of sound systems.

Time delay can't eliminate reflections from walls or boundaries, but it can be used to eliminate the confusion that results when sound arrives at the listener from different loudspeakers at different times.

Ideally, the sound should arrive at the listener first from the main speakers and then about 20 milliseconds later from the auxiliary speaker (like the delay towers near the middle of the audience at a large rock concert). The LXP-15 II can provide two delay paths for two zones of auxiliary speakers by using the stereo delay in the Pitch/Delay algorithm.

The correct amount of delay can be approximated by using the formula:

$$(d \times .885) + 20$$

where d = the difference in the path length to the listener from the main and the auxiliary speaker.

The result is the approximate number of milliseconds of delay required for the auxiliary speaker.

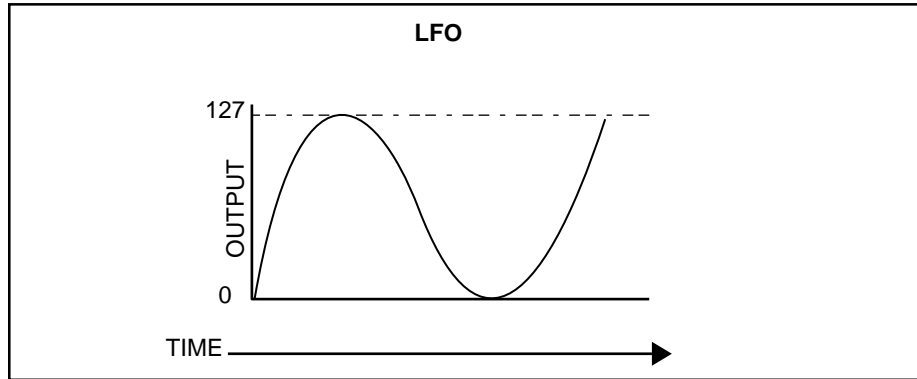
**Patching** Patching, as described previously, is the ability to assign a control (*Source*) to any LXP-15 II parameter (*Destination*). This allows you to alter the value of the parameter by manipulating the control Source. For example, you can use a foot pedal as a Source and output level as a Destination. This patch will allow you to dynamically alter the volume of the sound with the motion of your foot. You can specify what position of the pedal corresponds to the initial setting of the parameter (pedal down, pedal up, or anywhere in between.) Furthermore you can specify how much of a change will be produced by a full sweep of the pedal, and which direction of motion (up or down) corresponds to an increase or decrease of the parameter value.

**Sources** All Sources are the same in the sense that each generates an output value in the range of 0-127. The output value is used to increase or decrease the initial setting of a Destination parameter. Sources differ in the manner in which they generate an output. Some generate values continuously (they're always "on"); some generate output based on the position of a particular slider, pedal or wheel on an external MIDI instrument. Some Sources generate output based on aspects of physical performance such as how loud, how fast, or how hard you play. The LXP-15 II allows you to choose from a selection of 78 different Sources for each Destination. A table of the Sources available on the LXP-15 II is shown on the following page, followed by a brief description of the different types of control Sources.

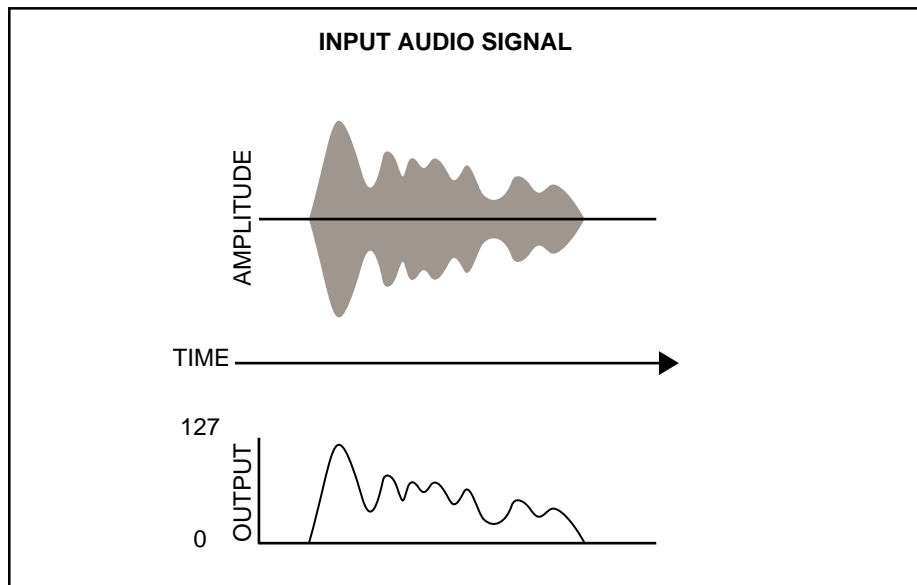
<b>Source</b>	<b>Description</b>	<b>Type</b>
InLevl	internal controller	input envelope follower
Foot 5	rear-panel analog controller	slider or switch
Foot 4	rear-panel analog controller	slider or switch
Foot 3	rear-panel analog controller	slider or switch
Foot 2	rear-panel analog controller	slider or switch
Foot 1	rear-panel analog controller	slider or switch
Hi Note	highest MIDI note played	note number
Low Note	lowest MIDI note played	note number
LFO Out	internal controller	LFO sinewave
Tempo	MIDI clock	tempo
PchBend	MIDI pitch bender	bidirectional slider
Aftrtch	MIDI channel pressure	pressure
Velocity	MIDI note on velocity	velocity
LastNot	last MIDI note played	note number
PhasDep	MIDI phaser depth control	slider
DetDept	MIDI detune control	slider
ChorDep	MIDI chorus depth control	slider
TremDep	MIDI tremolo depth control	slider
ExtDept	MIDI ext effect depth control	slider
70-90	MIDI controllers 70-90	slider
Hold 2	MIDI hold2 ON/OFF	switch
68	MIDI controller 68	slider
Soft	MIDI soft pedal	switch
Sosten	MIDI sostenuto	switch
Portmnto	MIDI portamnto ON/OFF	switch
Sustain	MIDI sustain pedal	switch
12-31	MIDI controllers 12-31	slider
Expresn	MIDI expression controller	slider
Pan	MIDI pan controller	bidirectional slider
9	MIDI controller 9	slider
Balance	MIDI balance controller	bidirectional slider
Volume	MIDI volume controller	slider
Data	MIDI data controller	slider
PortTim	MIDI portamento time	slider
Foot	MIDI foot controller	slider
3	MIDI controller 3	slider
Breath	MIDI breath controller	pressure
Mod Whl	MIDI modulation wheel	slider
0	MIDI controller 0	slider

*Control Sources*

**LFO** The LFO Source is an internally generated low-frequency sinewave. The LFO rate is variable from 0.03Hz to 4.84Hz. The LFO will produce smooth, continuous changes of a parameter value. Use it to create such effects as vibrato, chorus, and flange.

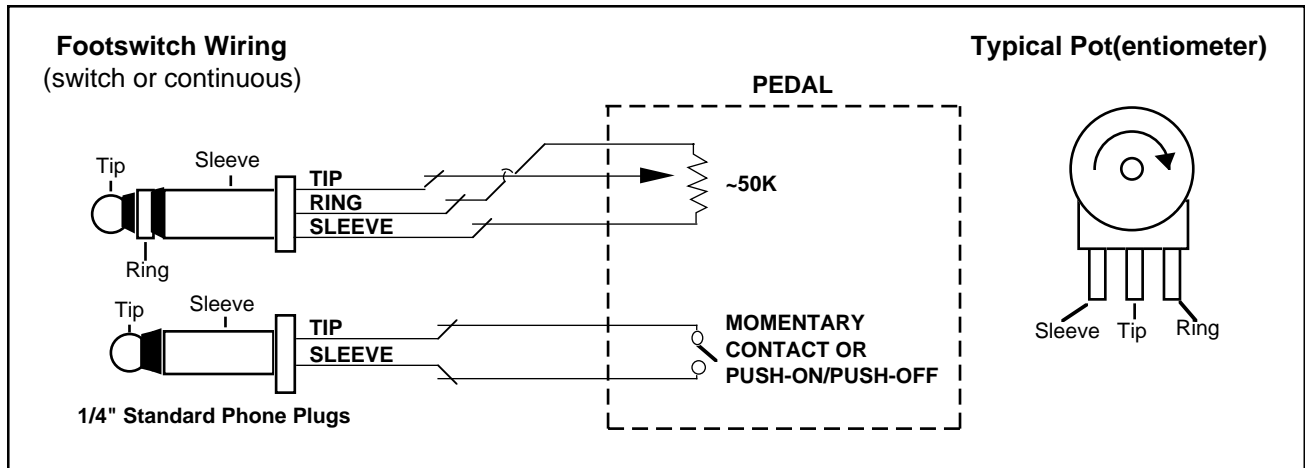


**Input Envelope Follower** The Input Envelope Follower (InLevel) is an internal Source that generates output based on the loudness (amplitude) of the input signal. The louder the input signal, the greater the output of the envelope follower. Use the Input Envelope Follower to create effects that change with the natural dynamics of the audio signal.



Each of the five rear-panel foot controller phone jacks can be connected to any compatible analog footswitch or pedal. These correspond to Sources Foot 1 through Foot 5. Foot pedals and switches allow you to control parameters during performance while keeping your hands free. You can also make your own analog rotary or slider controls using the following wiring diagram as a guide. Analog rotary and slider controls are good choices for controlling parameters used to fine tune the overall effect.

### Analog Controllers

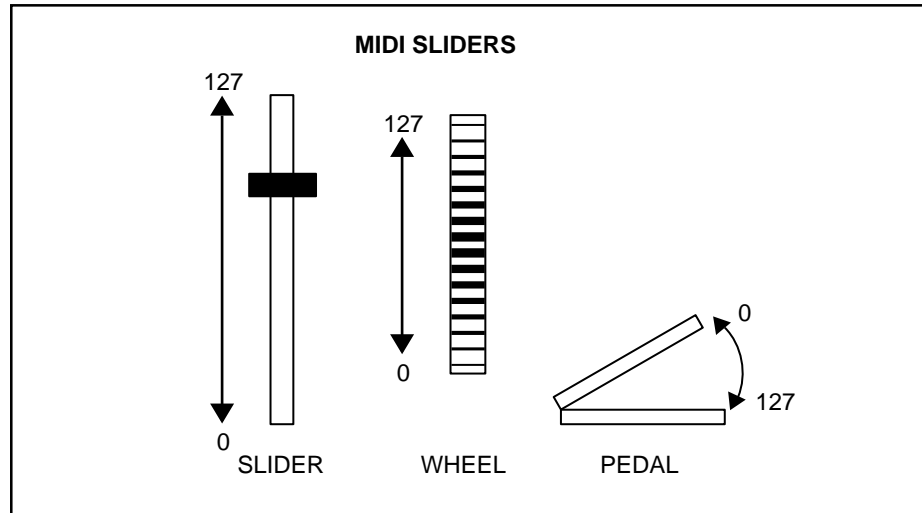


Almost all of the controllers found on a MIDI keyboard or other MIDI instrument can be used as Sources patched to control LXP-15 parameters in real-time. This feature is called Dynamic MIDI®. Most of the MIDI Sources correspond to MIDI *continuous controllers* (Mod Wheel, Volume, Sustain Pedal, etc.). The rest correspond to other specific MIDI messages (Velocity, After Touch, Note Number, Pitch Bend and MIDI Clock). Although there are more than 70 MIDI Sources recognized by the LXP-15 II, they can be grouped into six types of controls: sliders, switches, pressure, note number, velocity and tempo.

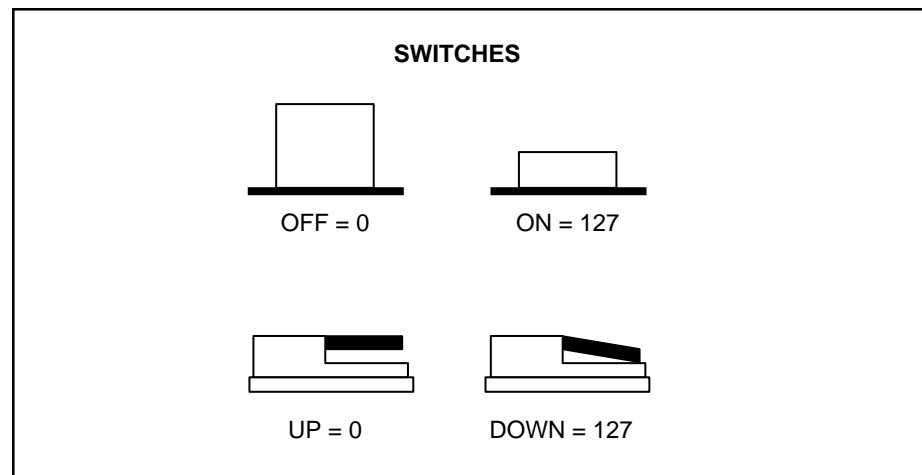
### MIDI Sources

Not all messages are transmitted by every MIDI instrument. The *MIDI Implementation Chart* supplied with the MIDI instrument will detail which particular messages it can transmit.

**MIDI Sliders** Slider Sources correspond to some type of slider, pedal or wheel on the MIDI instrument. The output is determined by the physical position of the slider or wheel. Most sliders and wheels are implemented as unidirectional controllers. "Off" or "no change" corresponds to the minimum position. Pitch Bend, Pan and Balance are implemented as bidirectional controllers. "Off" or "no change" corresponds to the middle position of the control.



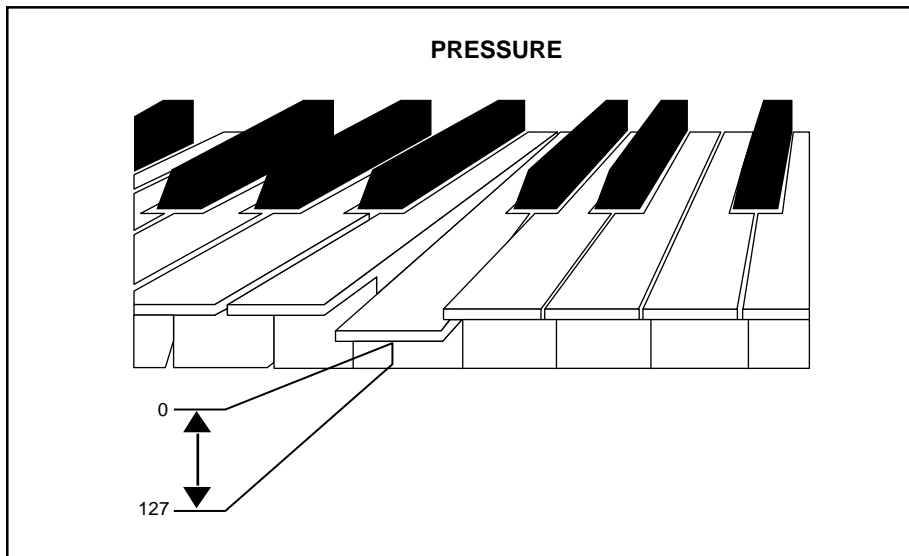
**MIDI Switches** The Switch Sources correspond to foot switches or front panel switches on the MIDI instrument. Switches generate 0 when the corresponding control is "off" and 127 when it is "on".





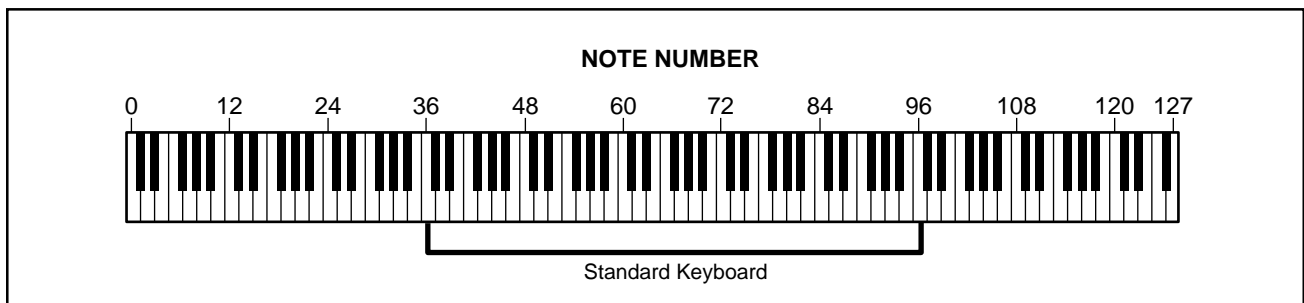
After Touch and Breath Sources correspond to pressure-type controllers on the MIDI instrument. After Touch produces output based on how hard the keys of a MIDI controller are pressed down after the initial velocity. Breath produces output based on how hard you blow into a wind controller. Minimum pressure generates 0 and maximum pressure generates 127. Note that these controllers differ from other MIDI controllers in that they are “return-to-zero” controllers. Their output will always cycle smoothly from 0 to some higher value (corresponding to the maximum amount of pressure applied to the controller) and then return to 0 again. Use After Touch and Breath to control parameters that will produce audible changes in the sound of an effect as it is processing audio.

### MIDI Pressure

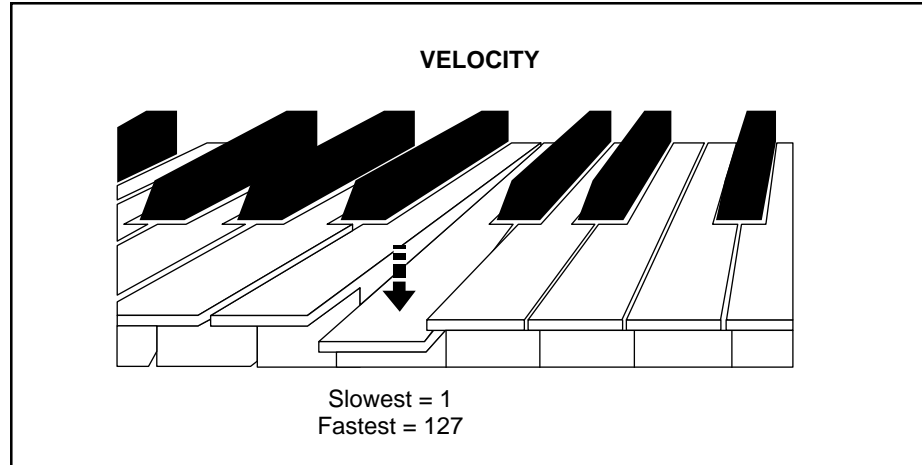


The Note Number Sources produce output based on the note played on the MIDI instrument. For reference, Note Numbers are shown here as they correspond to a MIDI keyboard, but they can also be generated from non-keyboard devices such as sequencers, guitar, wind and percussion controllers. Use Note Number controllers to control parameters that you want to vary within the pitch range of the control Source. (For example, a keyboard-controlled auto pan.) There are three different types of Note Number control Sources on the LXP-15 II: LastNote, LowNote, and HiNote. LastNote generates output based on the last note played. LowNote is similar to LastNote except that when more than one note is played at once, it generates output based on the lowest note played. HiNote is the same as LowNote, except it generates output based on the highest note played when more than one note is played at once.

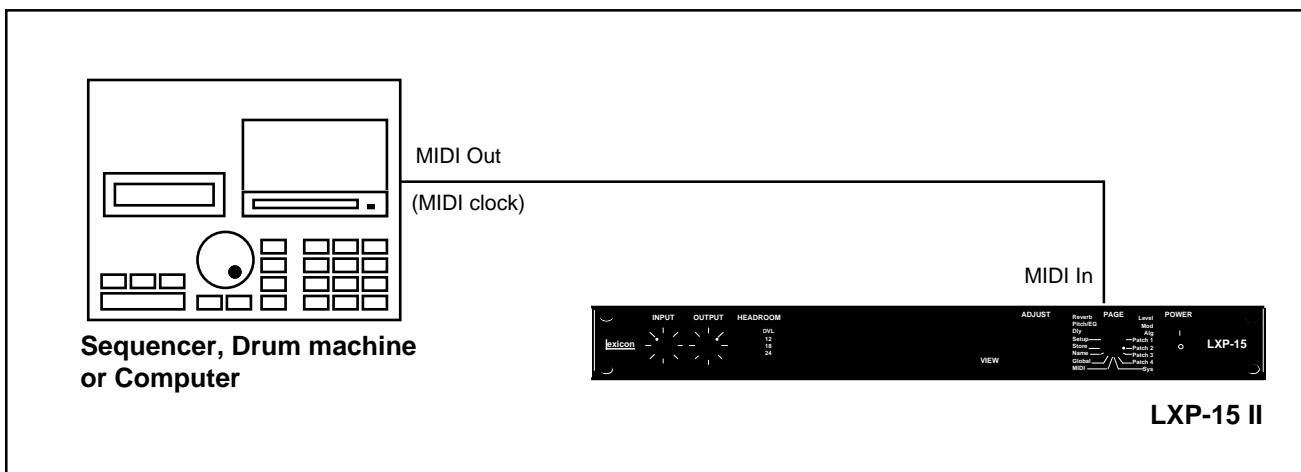
### MIDI Note numbers



**MIDI Velocity** The Velocity Source generates output based on the Note On velocity transmitted by the MIDI instrument. Depending on the type of controller, this corresponds to how quickly a key is depressed, how hard a string is picked, how hard a percussion pad is struck, etc.



**MIDI Tempo** Tempo is different from other control Sources in that its value is determined by the rate of incoming MIDI Clock messages rather than by the physical position of a pedal, slider or other controller. Slower clock rates produce higher Tempo values; faster clock rates produce lower Tempo values. This allows you to create rhythmic echoes and other effects that can be synchronized to the tempo of MIDI drum machines and sequencers. In order to use Tempo patches, the MIDI Clock output of a drum machine or sequencer must be patched into the LXP-15's MIDI IN port. In *Using Scale with Tempo*, we'll describe how to use Tempo to produce specific rhythm values.



There are two types of patches possible on the LXP-15 II: Global patches and General Purpose patches. Global patches, accessed by turning PAGE to "Global," are simple Source-to-Destination links that are active for all setups. As many as 28 global patches can be active at once. General Purpose patches provide a more flexible Source-to-Destination link. General Purpose patches allow you to customize the range and sensitivity of control with threshold and scale functions. There can be as many as four General Purpose patches per setup. The four General Purpose patches for each setup are accessed by turning PAGE to "Patch 1," "Patch 2," "Patch 3," and "Patch 4."

### Global and General Purpose Patches

Delay/Reverb	Pitch/Delay	Gate	Plate	Chorus Delay
Alghthm (global patches only)				
Glidely	Predely	Predely	Predely	Delay 1
Gldyhi	Pdlyhi	PredlyHi	PredlyHi	2
Gldfbk	PdlyFdbk	PdlyFbk	PdlyFbk	Feedback 3
Delay 2	Delay L	4	4	Delay 2
Delay2hi	DlyLhi	5	5	5
6	Feedbak	6	6	6
7	Delay R	7	7	Delay 3
8	DlyRhi	8	8	8
9	Pitch	9	9	9
10	Intervl	10	10	10
11	PchFine	11	11	ChorRat
Decay	Decay	Slope	Decay	12
Treble	Treble	Treble	Treble	13
BassMpy	BassMpy	14	BassMpy	14
Size	Size	Size	Size	15
Diffus	Diffus	Diffus	Diffus	Diffus
HiCut	HiCut	17	17	Treble
LoCut	LoCut	18	18	18
Rvb Mix	Rvb Mix	19	19	19
WetPan				
Dry PanMix				
OutLevel				
InLevl				
LFO Rat				
Setup + (global patches only)				
SetUp - (global patches only)				

*Destination Parameters*

## Setting up Global Patches

NOTE: The Update function on the "Sys" page is an aid to creating patches. When Update is set to "On," the displayed Destination and Offset values will change as the Source controller is moved. This allows you to see the effect of a Source on its Destination. The Update function affects the response time of the LXP-15 II. Once you've got the patch set up the way you want, set Update to "Off" for the fastest response during performance.

Global patches can be enabled/disabled from the front-panel of the LXP-15 II. To do this, simply turn the PAGE knob to "Global." The display will show:

PgmChg	MapVal	Dest	Source	Mode
X	X	X	X	X

**Mode** Pressing the button directly beneath "Mode" allows ADJUST to select: Off, Delayed or Immed.

Off disables all global patches.

When Delayed is selected and a new setup is recalled, the Destination values will remain at their initial settings until the assigned controllers are moved.

When Immed is selected and a new setup is recalled, the Destination values will immediately change to the current value of the assigned controllers.

NOTE: Set the Source for all Destinations you *don't* want to control globally to "Off." If the Destination is set to a Source not physically connected to the LXP-15 II, its value will jump to minimum when in the Immediate mode.

The Delayed mode is the best choice for most applications because the initial settings are retained until a control Source is moved.

**Dest and Source** Pressing the button immediately beneath Dest allows ADJUST to select any of the Destinations shown in the *Destination Parameters* table on the previous page. Destinations that are active in the algorithm of the current setup are displayed with a text label (Pitch, Delay L, etc.). Inactive Destinations are indicated by a number. As you scroll through the available Destinations, the Source currently assigned to each Destination will also be displayed. To change the Source assignment for any displayed Destination, press the button directly beneath "Source." ADJUST will now allow you to select any Source. Selecting "Off" as a Source disables the Source assignment (i.e. there will be no global patch assignment for the displayed Destination).

The relationship of Source position to Destination value is as follows for all Global patches: As the Source is moved from its minimum position to its maximum position, the Destination changes from its minimum value to its maximum value.

The Global patching system is provided so you can customize the overall response of the LXP-15 II to your specific needs. Here are some general things to keep in mind about Global patching:

- The Delayed mode is the best choice for most performance applications since it retains recalled settings until you move a patched control.
- The Immed mode is the best choice for editing sessions when you want to create new setups “from scratch.”
- Don’t assign Alghm or Size to performance Sources like Velocity, Note Number, etc. These two parameters temporarily mute the outputs of the LXP-15 II when they are changed.
- Although you can have as many as 28 global patches active at the same time, be aware that large numbers of active patches may cause the response time of the LXP-15 II to slow down. (During performance, always set the Update mode on the Sys page to “Off” for optimum response time.)
- Global patches provide control over the entire range of the assigned Destination. The minimum and maximum values of the Destination correspond to the minimum and maximum positions of the Source. If you want to tailor the response of the Destination to the Source, use a General Purpose patch instead of a Global patch.
- Several delay times can be controlled with either fine or coarse parameters. The coarse parameters: Gldyhi, Pdlyhi, DlyLhi, etc., allow you to control the entire delay range with the Source. The fine parameters: Glidely, Predely, Delay L, etc., provide very fine control over a small portion of the total range. Use the coarse parameters for dramatic changes, and the fine parameters for subtle enhancements.
- Assigning the LFO Source to multiple Destinations may cause the response time of the LXP-15 to slow down.
- Controlling the LFO Rat Destination will not produce any audible effect unless LFO Rat is first patched to control some other Destination.

### Tips for Using Global Patches

With a momentary-contact footswitch, you can specify a global patch that will allow you to step sequentially through your setups. To do this, set up a global patch (in *Delayed* mode) with "Setup +" as a destination and "Foot 1" (or whichever footswitch connector you are using) as the source. With global patches enabled, every click of the footswitch will increment the setup number, allowing you to cycle through all presets and registers. The current setup will always be the starting point of the cycle. You can also choose "Setup -" as a destination to reverse direction.

*Performance Tip:* Arrange your setups in the registers to match your set list. By selecting the first register at the beginning of your first set, you can simply click through all the setup changes you need.

### Footswitch Control of Setup Change

**Footswitch Control of Mute and Bypass**

You can use a toggle footswitch (switch open = maximum value, switch closed = minimum value) or a momentary-contact switch to control either mute or bypass of LXP-15 II effects.

To do either, first go to the global patch page and select the *Delayed* mode, then select "Foot 1" (or whichever footswitch connector you are using) as the source.

Selecting "InLevl" as the destination, allows you to turn off the input level with the footswitch, allowing the effect to ring on.

Selecting "OutLevl" as the destination allows you to kill the output of the LXP-15 II with the footswitch.

Selecting "Mix" as the destination (with the mix control set to 100% Dry and 100% scaling), allows you to use the footswitch to bypass the effect.

**Level Page Parameters**

The five "Level" page parameters (InLevl, Mix, Wet Pan, Dry Pan and OutLevl) are good choices for global control. They are common to all five algorithms, and the types of changes they produce are the same for every setup. For example, you could assign them to Foot 1–5 (connected to five analog rotary controls) and have levels, mix, and panning adjustments for all setups at your disposal.

**Setting up General Purpose Patches**

NOTE: The Update function on the "Sys" page is an aid to creating patches. When Update is set to "On," the displayed Destination and Offset values will change as the Source controller is moved. This allows you to see the effect of a Source on its Destination. The Update function affects the response time of the LXP-15 II. Once you've got the patch set up the way you want, set Update to "Off" for the fastest response during performance.

Four General Purpose patches are available for each setup in the LXP-15 II. A controller *threshold* is used along with a *scale factor* to calculate an *offset value*. The offset value is added to (or subtracted from) the initial value of the Destination parameter. The last calculated offset is stored with the patch so that, on recall, the parameter will have this value until the controller is moved. Four General Purpose patches may be stored with any setup by using front panel controls.

General Purpose patches are created from the four "Patch" pages of the LXP-15 II. To create a General Purpose patch, first recall any setup and modify any parameters necessary to obtain the desired sound. Turn PAGE to any of the four "Patch" pages. Once a patch page has been selected, the patch page will be displayed.

<b>Src 1</b>	<b>Thresh</b>	<b>Dest</b>	<b>Scale</b>	<b>Offset</b>
X	X	X	X	X

The patch is set up as follows (Patch 1 is used in this example. The same procedure is used for the other three patch pages.):

- Press the button directly beneath “Dest 1” and use ADJUST to select the desired Destination parameter.
- Press the button directly beneath “Src 1” and use ADJUST to select the desired control Source.
- If desired, press the button directly beneath “Thresh” and use ADJUST to set the threshold value. (See *Setting Threshold Values.*)
- Press the button beneath “Scale 1” and use ADJUST to set the scale range and polarity. (See *Setting Scale Values.*)

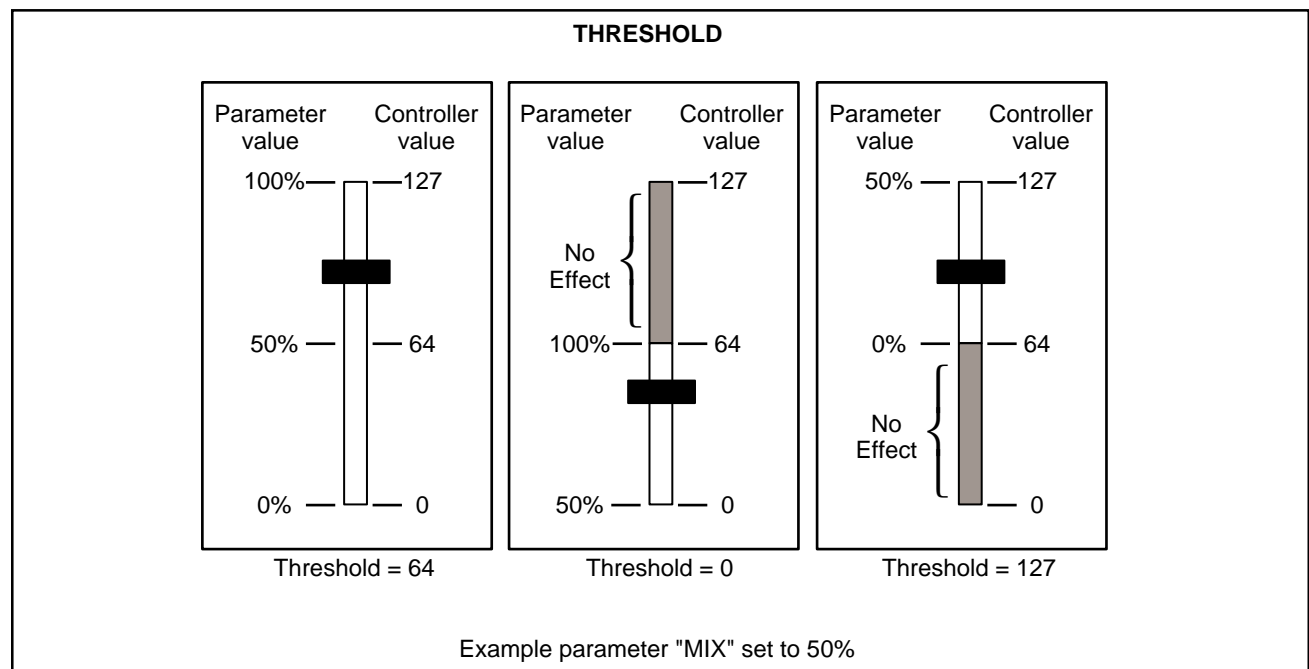
If the Update function is “On,” you will see the value of “Offset 1” change when you move the Destination controller.

After a patch is created, it can be saved in a register. Up to four General Purpose patches can be created and saved with any setup. (See page 2-7 *Storing a new sound.*)

### Saving Patches

Threshold allows you to match any position of the Source controller to the initial value of the Destination parameter. Threshold values are 0-127. This corresponds to the value range of typical MIDI controllers. Setting the threshold to 0 sets the the *minumum* position of the controller to the initial value of the Destination parameter. This will allow you to *increase* (but not decrease) the parameter’s value. Setting the threshold to 127 sets the *maximum* position of the controller to the initial value of the Destination parameter. This allows you to *decrease* (but not increase) the parameter’s value. Setting the threshold to 64 sets the *middle* position of the controller to the initial parameter value. (This allows you to *both increase and decrease* the parameter’s value by equal amounts.)

### Setting Threshold Values



When using any of the Note Sources (LastNote, HiNote, LoNote), the threshold value is the *Note Number* that will correspond to the initial Destination parameter value. (On a standard 5-octave MIDI keyboard, 36 corresponds to the lowest C, 60 is middle C, and 96 is the highest key.) Threshold should be set to a value within the overall Note Number range of the MIDI controller.

**Tips for Setting Threshold Values**

Always set the initial parameter values first, *before* assigning patches. For most applications:

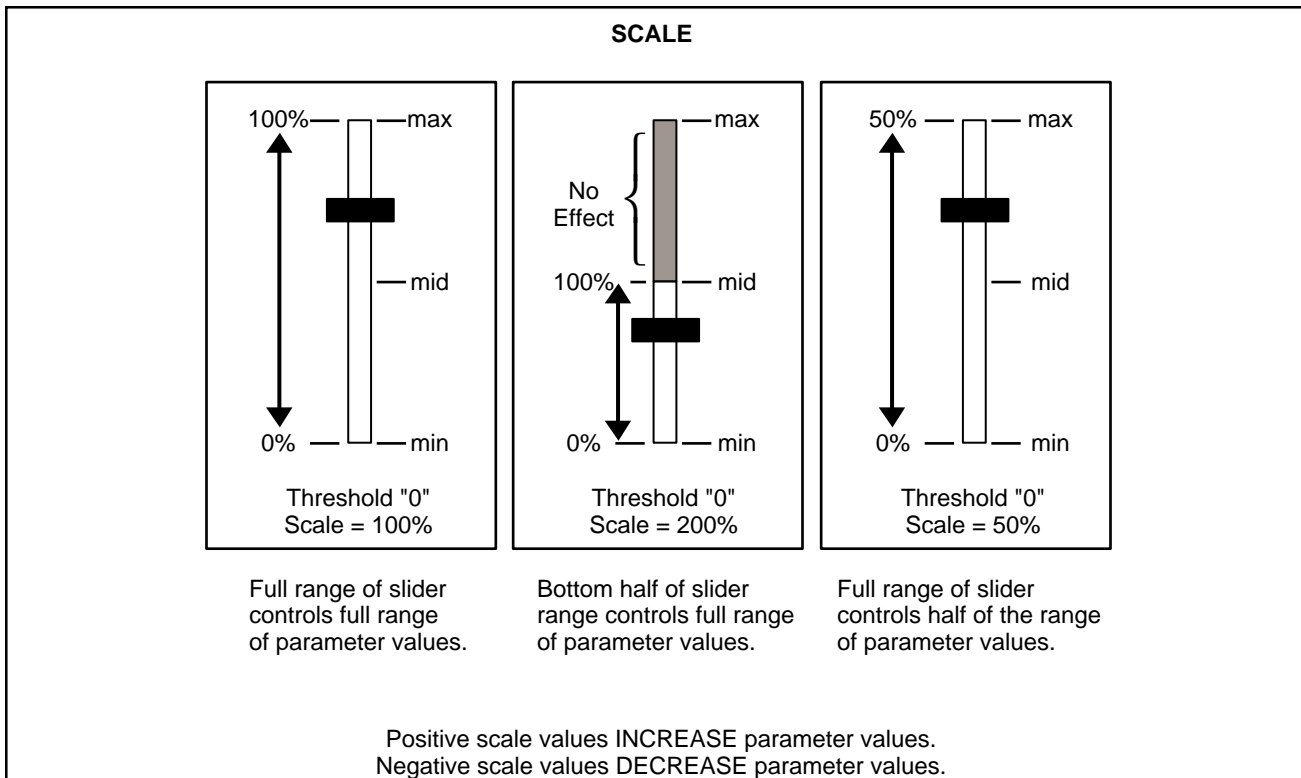
- If the initial value is set to maximum, set the threshold to 127 or the highest Note Number.
- If the initial value is set to minimum, set the threshold to 0 or the lowest Note Number.
- If the initial value is set to 50% or center, set threshold to 64 or the middle Note Number.

When using a bidirectional MIDI slider as a Source (Pitch Bend, Balance, Pan), set threshold to 64.

When After Touch or Breath are used as Sources, set threshold to 0 or 127.

**Setting Scale Values**

Scale values can be positive or negative. Positive values will increase the value of the Destination parameter as the Source controller is moved from minimum to maximum (from 0 to 127). Negative scale values invert this relationship — the value of the Destination parameter will *decrease* as the control is moved from minimum to maximum.





The scale value determines the effective range of the Source controller. For example, a scale value of 50% means that moving the controller through its full range of motion moves the Destination parameter through 50% of its total range. The upper and lower limits of the scale range are determined by the threshold and initial parameter values. For example, if Dry Pan is set to center and Scale is set to 100%R and the controller is moved through its full range, here's how different threshold values will affect the scale range limits:

- If threshold is set to 0, Dry Pan will vary between center and 100% right.
- If threshold is set to 127, Dry Pan will move between 100% left and center.
- If threshold is set to 64, Dry Pan will move from 100% left to 100% right.

Scale can be set to values greater than the range of the Destination parameter. (For most parameters, scale can be set to at least twice the full range.) This allows you to control the full range of a parameter with less than the full range of a controller.

One of the most useful tempo patches is to use Tempo to control any of the coarse delay parameters (PdlyHi, GlyHi, DlyLHi, etc.) to produce a delay with a specific rhythmic value. The scale value is set to determine the specific rhythmic duration as follows:

### Using Scale with Tempo

<u>Rhythm</u>	<u>Scale Value</u>
1/4	2.00s
1/8	1.00s
1/8 triplet	666ms
1/16	500ms
1/16 triplet	333ms
1/32	250ms

The length of a rhythmic duration is limited by the maximum delay time available for a given delay parameter and the tempo transmitted from the sequencer or drum machine. In order to preserve an acceptable rhythmic relationship, when the calculated delay value exceeds the maximum delay value for the parameter, it will be repeatedly cut in half until it is within the parameter range. Gldlyhi (Delay/Reverb) and Pdlyhi (Pitch/Delay) offer the widest ranges of rhythmic durations.

**Tips for Using  
General Purpose Patches**

The General Purpose patching system allows you to customize the response of each LXP-15 II setup to your requirements. Here are some tips and techniques for getting the most from General Purpose patches.

- Fine tune the parameters on the Delay, Pitch/EQ, Reverb, Level, and Mod pages *before* creating any General Purpose patches for the setup.
- Don't assign Size to performance Sources like velocity, note number, etc. Changing Size temporarily mutes the outputs of the LXP-15 II.
- During performance, always set the Update mode on the Sys page to "Off" for optimum response time.
- Assigning the LFO Source to multiple Destinations may cause the response time of the LXP-15 II to slow down.
- Controlling the LFO Rat Destination will not produce any audible effect unless LFO Rat is first patched to control some other Destination.

## Patching Examples

Here are some patching examples to try out:

- Use the Chorus Delay algorithm.
- LFO control of ChorRat controls the depth and rate of the chorus effect.
- Threshold set to 64 “centers” the control range of the LFO.
- Scaling of 75% limits change of ChorRat between 1 and 12.
- You can use Mod Wheel, Velocity, Input Level or any other controller as a Source instead of LFO. (Leave all other settings the same.)

### LFO Controlled Chorus

#### Parameter Settings

<b>LFO Rat</b>	<b>ChorRat</b>	-	-	-
0.51Hz	7	-	-	-

#### Patch Settings

<b>Src 1</b>	<b>Thresh1</b>	<b>Dest 1</b>	<b>Scale 1</b>	<b>Offset 1</b>
LFO	64	ChorRat	75%	-

- Use with any algorithm. Dry Pan settings will pan the unchanged input signal. Wet Pan setting will pan the processed output signal.
- Dry Pan “moves” a mono input signal between the left and right outputs. With stereo input signals, Dry Pan inverts the left and right signal levels.
- Threshold set to 66 “centers” panning in the middle of a standard 5-octave keyboard (F# above middle C).
- 199% scale value allows full range control of the parameter from a 61-note keyboard
- Positive (R) scaling makes panning go from left to right as notes are played from low to high. Negative (L) scaling pans from right to left when notes are played low to high.

### Keyboard Cross-Pan

#### Parameter Settings

<b>InLevl</b>	<b>Mix</b>	<b>Wet Pan</b>	<b>Dry Pan</b>	<b>OutLevl</b>
100%	0%	Center	Center	100%

#### Patch Settings

<b>Src 1</b>	<b>Thresh1</b>	<b>Dest 1</b>	<b>Scale 1</b>	<b>Offset 1</b>
LastNot	66	Dry Pan	199%R	-
<b>Src 2</b>	<b>Thresh2</b>	<b>Dest 2</b>	<b>Scale 2</b>	<b>Offset 2</b>
LastNot	66	Wet Pan	199%L	-

- MIDI Harmonizer**
- Use the Pitch/Delay algorithm
  - The MIDI keyboard should not be the audio source. In this example it would serve as a controller only. Audio from another source (microphone, tape track, etc.). Harmony is determined by playing the MIDI keyboard.
  - Harmony is relative to middle C (note 60).
  - Mod Whl control of feedback determines the depth of cascade effects.
  - MIDI Volume pedal control of Delay L changes the cascade effect from chords to arpeggios.

**Parameter Settings**

<b>Pitch</b> On	<b>Intervl</b> Unison	<b>PchFine</b> 0	<b>HiCut</b> don't care	<b>LoCut</b> don't care
<b>Predely</b> 0µs	<b>PdlyFdbk</b> 0%	<b>Delay L</b> 0µs	<b>Feedback</b> 75%	<b>Delay R</b> don't care

**Patch Settings**

<b>Src 1</b> LastNote	<b>Thresh1</b> 60	<b>Dest 1</b> Intervl	<b>Scale 1</b> 100%	<b>Offset 1</b> -
<b>Src 2</b> Mod Whl	<b>Thresh2</b> 127	<b>Dest 2</b> Feedbk	<b>Scale 2</b> 100%	<b>Offset 2</b> -
<b>Src 3</b> Volume	<b>Thresh3</b> 0	<b>Dest 3</b> Dlylhi	<b>Scale 3</b> 325ms	<b>Offset 3</b> -

**NOTE:** You may have to play with the Scale adjustment a bit. Start with Scale set to "0" and turn ADJUST one click at a time until the value changes to "1".

- Tempo Controlled Reverb**
- Use the Delay/Reverb algorithm.
  - Tempo control of Decay tailors decay time to tempo. The faster the tempo, the shorter the decay time. The settings here will modify decay time through a wide range of tempos (50BPM-240BPM).

**Parameter Settings**

<b>Decay</b> 6.1s	<b>Treble</b> 6.94kHz	<b>BassMpy</b> .77x	<b>Size</b> 64 meters	<b>Diffus</b> 77%
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**Patch Settings**

<b>Src 1</b> Tempo	<b>Thresh1</b> 127	<b>Dest 1</b> Decay	<b>Scale 1</b> 88%	<b>Offset 1</b> -
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- Use the Gate algorithm
- Initial setting of Predely to 0 is necessary for proper use of tempo control.
- Tempo control of Pdlyhi provides a slap/predelay rhythm that stays constant through a wide range of MIDI tempos.
- Scale value of 249ms sets the slap rhythm to 32nd-note.
- Tempo control of Slope tailors gate to tempo.

### Tempo Controlled Gate

#### Parameter Settings

<b>Predely</b> 0	<b>PdlyFbk</b> 0	- -	- -	- -
<b>Slope</b> 127	<b>Treble</b> don't care	- don't care	<b>Size</b> don't care	<b>Diffus</b> don't care

#### Patch Settings

<b>Src 1</b> Tempo	<b>Thresh1</b> 0	<b>Dest 1</b> Pdlyhii	<b>Scale 1</b> 249ms	<b>Offset 1</b> -
<b>Src 2</b> Tempo	<b>Thresh2</b> 127	<b>Dest 2</b> Slope	<b>Scale 2</b> 72%	<b>Offset 2</b> -

- Use the Delay/Reverb algorithm.
- InLevl control of Decay turns on infinite reverb. Scale sets the level of the signal that will trigger the effect. The setting here will cause relatively loud signals to trigger infinite reverb. To use the effect, play softly to load sounds into the reverb — then play loudly to layer dry sounds over the reverb wash.
- Experiment with different Sources like Velocity, Pedals or Sliders.

### Infinite Reverb

#### Parameter Settings

<b>InLevl</b> 100%	<b>Mix</b> 50%	<b>Wet Pan</b> Center	<b>Dry Pan</b> Center	<b>OutLevl</b> 100%
<b>Decay</b> 6.1s	<b>Treble</b> Full	<b>BassMpy</b> 1.00x	<b>Size</b> 71 meters	<b>Diffus</b> 50%

#### Patch Settings

<b>Src 1</b> InLevl	<b>Thresh1</b> 0	<b>Dest 1</b> Decay	<b>Scale 1</b> 6%	<b>Offset 1</b> -
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## The Presets

### About the presets

The LXP-15 II is factory-loaded with 128 preset effects. These can be used as is or modified to create new sounds. (128 User registers are provided for you to store your own sounds.) The presets themselves are permanently installed in your unit; they can be modified, then stored to a User register, but they cannot be overwritten. When shipped, the LXP-15 II has a duplicate set of the preset effects stored in Registers 1-128.

To make this assortment of effects more useful, we have grouped them into two categories: Studio (1-64), and Stage (65-127).

Presets in the Studio category are set up with the wet/dry mix control set to 100% wet, for use with a console's effects sends. Presets in the Stage category are pre-mixed with various amounts of dry signal present. This assumes you are plugging an instrument directly into the LXP-15 II, or that you are sending a muted PRE-Fader signal from your console. Of course, you may find presets which are equally useful in either category. We suggest that you listen to all of the presets, no matter what your application may be.

This chapter will provide a brief description of each preset so that you can quickly find a preset which matches your needs, or one close enough to use as a starting point for a new sound.

A simple chart of the Preset names is given in Chapter 2, and on the Quick Reference card. The chart on the following pages provides additional comments on each of the presets provided with your unit. The parameters of each preset, and their values, can be seen on the LXP-15 II display whenever a preset is loaded.

Notes on the Preset Charts:

- Foot** A foot pedal is used as a controller. In the presets, a continuous control pedal was used which may have different resistance characteristics than yours. If this causes unpleasant effects (such as runaway feedback), you will want to modify these presets to suit your controller.
- MAT** (MIDI Auto Tempo) indicates MIDI Clock is used as a control source — when no MIDI Clock is present, delays default to 0ms.

**Studio Presets**

Preset		Alg	Patch	Description
#	Name			
1	Large Hall	Dly/Rvb	none	Standard starting point for all great sounds. Use on voice or instruments. Room size controls density and sustain. Reverb time contours the release of the reverb.
2	Brite Hall	Dly/Rvb	none	Brighter version of Large Hall. This preset gives tracks a brighter overall sound.
3	Dark Hall	Dly/Rvb	none	This preset combines elements of cave and church acoustics. Great for choral works or sound effects.
4	CompressHall	Dly/Rvb	InLevel	When signal is present, reverb depth is lessened, when signal stops, reverb time and mix are increased. Nice on vocals.
5	Vocal Hall	Dly/Rvb	none	Bigger space than Vocal Room with a richer initial envelope. Think of this as a large recital hall at your favorite university.
6	Chamber	Dly/Rvb	none	Typical sound from a plastered harp-shaped reverb chamber with a speaker at each end and a microphone in the middle. One of our favorites!
7	Large Club	Dly/Rvb	none	Reflective and bright. An empty space which is modestly big. Great for the whole mix or put it on individual tracks.
8	LargeDrkRoom	Dly/Rvb	none	Darker version of above club space with more diffusion. General pop voice or bright sources which need a soft "space" added to it.
9	Medium Room	Dly/Rvb	none	Room full of people (some absorption). Tighter sound because of the smaller size. Pop electronic drums or acoustic. Great for dance stuff.
10	Medium &Short	Dly/Rvb	none	Thinner, less diffused, and more reflective space. Adds acoustic brightness to sound sources.
11	Atrium	Dly/Rvb	none	Denser, more diffuse and more reflective. This space starts to separate from the source audio. Dialog tracks, and acoustic guitars.
12	Tiled Room	Dly/Rvb	none	Bright and tight for all percussive sounds. Adjust reverb time to work with the tempo of the music.
13	Small Room	Dly/Rvb	none	Close space with a healthy resonance. Good starting point for Dialog ADR work. Use Hi Cut to create high frequency sound absorption.
14	Vocal Room	Dly/Rvb	none	Good starting point for any vocal track. Use longer reverb times for slow tempos, and shorter reverb times for quick tempos.
15	Full Closet	Dly/Rvb	none	Production preset for the obvious.
16	Guitar Room	Dly/Rvb	LFO	For any guitar, acoustic or electric. Increase BassMpy to add more "chunk" to the room.

Preset		Alg	Patch	Description
#	Name			
17	Stage Reflex	Pch/Dly	none	This is a real punchy effect. Lots of delay relections and a bright 90 foot stage. Vary RvbMix for more less ambience on voices or punctuated percussion tracks.
18	No Room	Dly/Rvb	none	Simulates microphones in the upper corners of a small room. Compress this reverb and throw on some drums.
19	Tall Room	Pch/Dly	none	Contains reflection elements which steer towards the center of the stereo output. Good for any type of sound input. Mix heavy for a strong but unobtrusive reverb effect.
20	Smako!	Pch/Dly	InLevel	Adds dynamic reverb to any punctuated sound source.
21	Warehouse	Dly/Rvb	none	Off the back wall with a rebound — open and expansive. Use Delay2 to closely tweak the fill to tempo.
22	MediumDlyRoom	Dly/Rvb	none	Smaller version of the warehouse theme.
23	DarkDlyRoom	Dly/Rvb	none	Round-sounding room. Great for sharp, transient keyboards.
24	Verb Panner	Dly/Rvb	LFO, InLvl	This preset modulates the position of the stereo reverb output. The input level dictates the speed of the pan. Input level also drives the glide delay, adding a slight chorusing effect. Long fade sources like sustained key pads.
25	Splattered	Pch/Dly	none	Small space great for extra definition in a mix. Similar to reflective living room.
26	Slap Vocal	Dly/Rvb	none	Similar size to Vocal Hall but with a back wall slap 131ms after the initial sound source. Adjust glide delay to match tempo.
27	Vocal Plate	Plate	none	Bright and very diffuse. Will brighten up any vocal track. Lower reverb times for fast paced tempos.
28	Big Plate	Plate	none	This preset is great for adding extra energy to “one-shot” sounds such as accent hand claps or vocal hits.
29	Small Plate	Plate	none	Adds a nice “sparkle” to to any track.
30	Long Plate	Plate	none	Extremely long reverb time. Apply for a three-second music sting ring out.
31	Drum Plate	Plate	none	Dense and bright. Throw it on individual drums or the entire drum submix.
32	Rusty Plate	Plate	none	Not so diffuse and a bit “chatterly.” Needs oil, but gives good color to any sound source.
33	Snare & Toms	Gate	none	Similar to Small Gate with extra predelay and less diffusion. For snare and toms.
34	Small Gate	Gate	none	Very short and abrupt reverb effect. Adjust predelay to separate the effect from the source. Electronic and sampled drums have traditionally been used as sources but don’t exclude other percussive sources.



Preset		Alg	Patch	Description
#	Name			
35	Medium Gate	Gate	none	A longer version of Small Gate.
36	Large Gate	Gate	none	Big open and shut effect. A bit extreme, very dance-worthy!!
37	Bright Gate	Gate	none	Brighter and less diffuse. Add to percussion tracks for more brilliance. Vary Duration to fit the beat.
38	Mega Gate	Gate	none	Multiple repeats applied to predelay add a different twist to an otherwise standard delay effect on guitar.
39	Env:Gate	Gate	InLevel	Varies the time constant of the slope, making it more inverse sounding with additional input. Good for any track which might have different sources with wide dynamic ranges.
40	VibraRoom	Dly/Rvb	LFO	Quick-modulating early reflection creates a great effect for clean, compressed, funky electric guitar and other sustained sound sources.
41	VibraRoom II	Dly/Rvb	LFO	A deeper, faster version of VibraRoom 1.
42	2 Tap Detune	Pch/Dly	none	Two slaps slightly out of tune with the source, creating a simple 2-voice chorus. Good effect for punchy electrobass tracks.
43	Small&Flange	Pch/Dly	LFO	Varying amounts of sweeping flange. A small room adds life to the party.
44	Long Echoes	ChorDly	none	Additional reflections followed by longer repeating echoes. Use Delay3 to adjust to tempo.
45	L&R Delays	Pch/Dly	none	Great effect alternative for a vocal track. Use Feedback to limit or extend the number of repeats. For best left and right results, always set Delay L to twice the value of Delay R.
46	Space Echoz	Pch/Dly	InLvl	This is a long echo effect with a slightly rising pitch after each repeat. For a really deep effect, turn up Decay. Ballad solo.
47	Delay Cloud	Pch/Dly	LFO, InLvl	Varies with input level . More reflective-sounding with strong input, more reverberant with less input.
48	AmbiDetune	Pch/Dly	none	Similar to 2 Tap Detune, but with more room ambience around the sound. The detuning adds a rolling richness to the source. Adjust RvbMix on the MOD page to add or subtract room ambience. Power chords on electric guitar.
49	Amb.+4th Down	Pch/Dly	none	Adds a 4th pitch down in a bigger more diffuse room. Beast in a room. Cartoon effect for voice.
50	Amb+5th Up	Pch/Dly	none	Adds a 5th pitch up while adding a reverb "bloom" to the effect. Small creature in a room.
51	Amb. + Oct. Up	Pch/Dly	none	Chipmunk sized room. We had to include it.

Preset		Alg	Patch	Description
#	Name			
52	6VoiceChorus	ChorDly	none	Bright medium rate chorus. Just enough diffusion to take the edge off a source. Baseline effect for any source.
53	Vocal Chorus	ChorDly	none	Longer, more diffuse reflections and a deeper chorus. Stack on "stacked" vocals.
54	ChorusSlaps	ChorDly	none	Deeper still... Really wanks on the sound! Almost like a chorused VFW Hall.
55	Cave &Chorus	Chor/Dly	InLevel	Very deep recirculating echo effect with heavy chorusing. For slower paced tunes only.
56	GuitarDetune	Pch/Dly	LFO	Swept pitch shift. The LFO glides the relative amount of fine pitch shift. An alternative to standard chorusing.
57	Flange Room	Dly/Rvb	LFO, InLvl	The input level determines the LFO rate driving the gliding delay causing the flange. Any source which has a dirty characteristic will accentuate this effect.
58	Slowrollin'	Dly/Rvb	LFO	Gentle chorus added to a moderately large hall reverb. Background vocals work great.
59	Image Shift	Pch/Dly	LFO	Causes the stereo image to wander from left to right, back and forth. A slight amount of predelay separates the source from the effect. Subtle but haunting. Use on background or even lead vocals.
60	Step Flange	Pch/Dly	LFO	A staircase flange. Use on a ripping guitar solo for added edge.
61	LFO Guitar	ChorDly	LFO,InLvl	LFO changes the amount of chorusing, and the input level changes the LFO rate. Bass tracks seem to like this one.
62	1/16thMAT Slap	Pch/Dly	MIDI Tempo	MIDI Clock tied to predelay. Each quarter-note beat yields a sixteenth-note delay. For most applications this means a straight ahead slap echo in sync with your sequencer. No tempo clock no delay...
63	Chorus MAT	ChorDly	MIDI Tempo	Feed in MIDI Clock and the echoes sync automatically to quarter notes.
64	Thru a Ringer	ChorDly	none	Spacey sound effect. Voice or percussion works great!

## Stage Presets

Preset		Alg	Patch	Description
#	Name			
65	Guit:EKORoom	Dly/Rvb	Foot 1	Punctuated sound for short stacatto guitar sources, acoustic or electric.
66	Solo Plate	Plate	Foot 1	Use controller to set the mix for your solo.
67	Guitar Plate	Plate	none	Standard plate effect for any guitar
68	StageJizz	Dly/Rvb	LFO	A very wet effect covering a little bit of everything. The LFO is patched to the glide delay.
69	Foot1 Dlay	Pch/Dly	Foot 1	Connect a voltage control pedal to foot controller 1 to allow direct control of the entire range of the predelay parameter.
70	Pedal Slap	Pch/Dly	Foot 1	Similar to Foot1 Dlay, but with a smaller range.
71	Pedal Verb	Dly/Rvb	Foot 1	Foot 1 controls reverb decay time as well as the input to the DSP. Works like a sustain pedal!
72	Step On It!	Pch/Dly	Foot 1	Big concert sound for a ripping guitar track.
73	Foot Spooge	Pch/Dly	Foot 1	A little more aggressive version of the above.
74	Foot1 Wave	Pch/Dly	Foot 1	Controller changes the shape of the decay/delay effect. Keyboard or vocal effect.
75	Inf:Foot 1	Dly/Rvb	Foot 1, InLevel	Reverb becomes infinite as the controller is advanced. The reverb mix is lowered and more of the gliding chorus delay can be played while the infinite loop continues.
76	Foot1 Whammy	Pch/Dly	Foot 1	Step on controller and pitch sinks into a pool of primordial reverb.
77	Speed+Pan 1	Dly/Rvb	LFO, Foot 1	Foot1 controls the LFO speed, which drives the wet pan. Grunge guitars or anything with a lot of sustain.
78	Funky Keys	Dly/Rvb	LFO	Brings additional life to anything which has well-defined transients with sustain.
79	Sheen	Chor/Dly	Foot 1	Foot controller opens the chorus effect as well as brightening the sound. Great for percussive horn sounds.
80	CrossDelays	Chor/Dly	LFO, InLevel, Foot1	This guitar effect moves the dry and wet signals in opposite directions. As the dry signal goes left, the wet signal goes right. LFO speed is controlled by the input level. Foot controller varies Delay 3.
81	Pole Flange	Pch/Dly	none	A downward "jet-like" flange for dirtier source sounds.
82	SlowFoot	Dly/Rvb	LFO, Foot 1	Really wet with a very wide sound field. Great for clean guitar or keyboards. Controller varies the preset to a closer but more reverberant sound which modulates faster.
83	Bass Korus	Dly/Rvb	Foot 1, LFO	Try it, you'll like what happens when you use the foot controller

Preset		Alg	Patch	Description
#	Name			
84	Leni Chorus	Pch/Dly	LFO, Foot 1	Variable chorus effect tied to LFO rate. Controller varies the reverb mix with the chorus delay effect.
85	WayOut There	Pch/Dly	InLevel	Long recirculating effect great for vocals. Use sparingly. Increased input level lessens the reverb. When signal disappears, more reverb returns.
86	Solo Spooge	Pch/Dly	Foot 1	As you advance the foot controller the effect becomes longer and brighter with more recirculations. Helps any rock and roll solo cut through the mix.
87	2ndLeadAbove	Pch/Dly	LFO	A harmonic patch which generates a harmony of a major 2nd. Designed for scathing lead guitar work
88	Evil 3rds	Pch/Dly	LFO, Foot 1	Sets an evil tone to any track. Advancing the controller sends the sound deeper into the reverb "pool".
89	BatCave+5th	Pch/Dly	LFO, Foot 1	Similar to Evil 3rds, with the controller varying the reverb mix as well as the reverb time. The LFO varies the fine pitch of the 5th up.
90	Big 4th Down	Pch/Dly	none	Carries the sound source 4 steps down and passes it to a large reverb space.
91	Glub...Glub.	Pch/Dly	none	Octave divider in a room. Interesting addition for percussion on stage.
92	Self D 1	Pch/Dly	Foot 1	Lowers the input source one octave. Foot controller varies the mix. A great octave divider for the guitar lower octaves.
93	LongKorusEKO	Chor/Dly	Foot 1	Long recirculating effect for vocals or single instruments. Foot controller varies the amount of feedback around Delay 3.
94	Slap Chorus	Chor/Dly	none	A single slap echo with minimal feedback to produce a smooth rolling chorus. Great for background vocals, guitars or other instruments on stage.
95	Small&Flange	Pch/Dly	LFO	A different version with more reverberation.
96	Chorus Hall	Dly/Rvb	LFO, Foot 1	Great standard effect for any instrument. The space is gentle with the chorus more present than the reverb. Foot controller adjusts the reverb mix.
97	Tape Stretch	Dly/Rvb	InLevel, LFO	Gliding delay effect which is really twisted and stretched. Input level drives the overall speed of the effect.
98	Bass Doubler	Chor/Dly	InLevel	Input varies the amount of feedback. Constantly varying effect.
99	GearMotor	Dly/Rvb	LFO, InLevel	A variant of tape stretch, sounding much like a dynamic deep chorus effect.

Preset		Alg	Patch	Description
#	Name			
100	Dyna-Rev	Pch/Dly	InLevel	Reverb decay time increases with input level. Useful for sharp transient sources and rhythm guitar.
101	Metal Gate	Gate	none	Tight inverted gate effect useful for many different stage sources.
102	TransLument	Pch/Dly	LFO, Foot 1	A long duration effect where advancing the foot controller deepens the mix but also reduces the high-frequency content.
103	MoanVerb	Dly/Rvb	LFO	Alien-sounding reverb for any sound source.
104	GatedDive	Pch/Dly	none	A different downward flange effect with lots of recirculation. Distorted guitars or other grungy sources.
105	Solo Bass1.5	Dly/Rvb	Foot 1, InLevel	Footcontroller adjusts the mix of the reverb relative to the gliding delay which modulates against the input level.
106	Wasteland 1	Dly/Rvb	Foot 1	Footcontroller adjusts reverb mix. Full minimum setting yields a generous slap delay while full maximum pours on the reverb.
107	Elvis Gate	Gate	Foot 1	Footcontroller adjusts the mix which intensifies the effect. Great for slap bass.
108	Dense Dance	Pch/Dly	Foot 1	For bass players wanting a different edge to a really deep reverb/pitch effect.
109	Boot Da Bass	Chor/Dly	Foot 1	Foot controller adds deeper recirculation and increased chorus rates.
110	Oddness Mix1	Pch/Dly	InLevel, Foot 1	Input changes the pitch interval. Foot controller drives the mix control. A thoroughly odd effect!!
111	Big Dipper	Pch/Dly	Foot 1, InLevel	Big Dipper is driven real hard by the input level. The foot control input determines the mix.
112	RisingCloud	Pch/Dly	InLevel	For that lofty solo which rises into the sky after the last note.
113	DlyLoopMIDI	Pch/Dly	ModWheel, Sustain Pedal	This keyboard /MIDI controlled effect links the mod wheel with the input level while the sustain pedal controls the amount of feedback.
114	SpacLoopMIDI	Pch/Dly	ModWh, Sustain Pedal, Pitch Wh	Similar to DlyLoopMIDI with the addition of a patch linking the pitch wheel to the fine pitch parameter.
115	LongAmbiMAT	Pch/Dly	MIDI Tempo	Without MIDI tempo information this preset has a bright slap/ambient characteristic. With MIDI tempo, predelay is an eighth-note .
116	VaryCaveFoot	Pch/Dly	LFO, Foot 1	Foot controller launches you deeper into the cave...

Preset		Alg	Patch	Description
#	Name			
117	FadeInBox	Gate	InLevel	A gated effect which increases with increased input level. For percussion or other stacatto sources.
118	FadeInDetune	Pch/Dly	InLvl, Foot 1	Fades the input into the processor as a function of the input to the converter. The mix control may need to be adjusted to suit your application.
119	Env: Panner	Dly/Rvb	LFO, Foot 1	Mixed 100% and moves from left to right based on the speed of the LFO. Foot controller varies the LFO rate.
120	FadeUpChorus	Chor/Dly	InLevel	Chorus changes depth along with the gain. Great for any long sustained signal source. Originally done with a stomp-box compressor and a Telecaster.
121	InfiniteHall	Dly/Rvb	InLevel, LFO	Input level controls reverb time. When signal is present a medium reverb time occurs. When signal disappears the reverb jumps to Infinite. Play soft enough and the infinite reverb sustains indefinitely while providing a smooth gliding chorus delay.
122	Env:Dtune	Pch/Dly	InLevel	Downward detune with stronger input levels. Provides a dynamic chorus effect which passes into a lengthy reverberation.
123	Rvr>XDly	Pch/Dly	InLevel	Varies with signal level. More input less reverb. For keyboard or guitar.
124	RoomChrEnv	Pch/Dly	InLevel	Beautiful with acoustic instruments. Increased input levels increase the input to the processor and adjust the feedback content and reverb mix.
125	EnvDetune3	Pch/Dly	InLevel	Another version of detuning based on input level. This one is a bit more aggressive and probably should be used with a heavy rock and roll attitude.
126	AmbiChrEnv>	Pch/Dly	InLevel	As input level increases, reverb decay and delay feedback are reduced. Once signal stops the reverb tail washes out.. Works well with guitar through a stage volume pedal.
127	Cascad8Env>	Pch/Dly	InLevel	This effect fades in, then decreases the overall depth of the sound. An octave-up pitch shift creates a very interesting wash against the source. Long sustain sources work best.
128	Bypass	Dly/Rvb	none	Dry audio.



# 6

## MIDI Operation

All LXP-15 II parameters, presets and registers can be accessed by MIDI. All MIDI applications require the LXP-15 II to be connected with one or more MIDI devices with standard MIDI cables via the rear-panel MIDI jacks. We'll describe several typical MIDI configurations below.

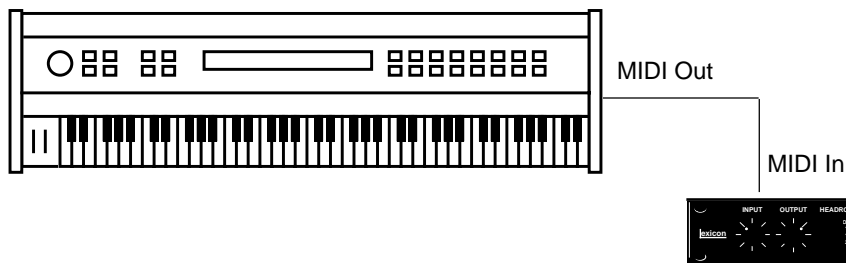
Before you can use the LXP-15 II with other MIDI devices, they must all be set to the same MIDI channel. To set the LXP-15 II MIDI channel:

1. Set the controller you will be using (keyboard, sequencer, other LXP-15 II, etc.) to transmit on any MIDI channel (1-16).
2. On the LXP-15 II, turn PAGE to "Sys." The display will show:

MIDI chn	Contrast	Bright	Mem Prot	Update
1	8	3	Off	Off

Select "MIDI chn" by pressing the button directly beneath it. Then use ADJUST to select the same MIDI channel as your controller.

NOTE: When "MIDI chn" is set to "OMNI," the LXP-15 II transmits on channel 1 and receives on channels 1-16.



## Accessing Registers and Dynamic MIDI®

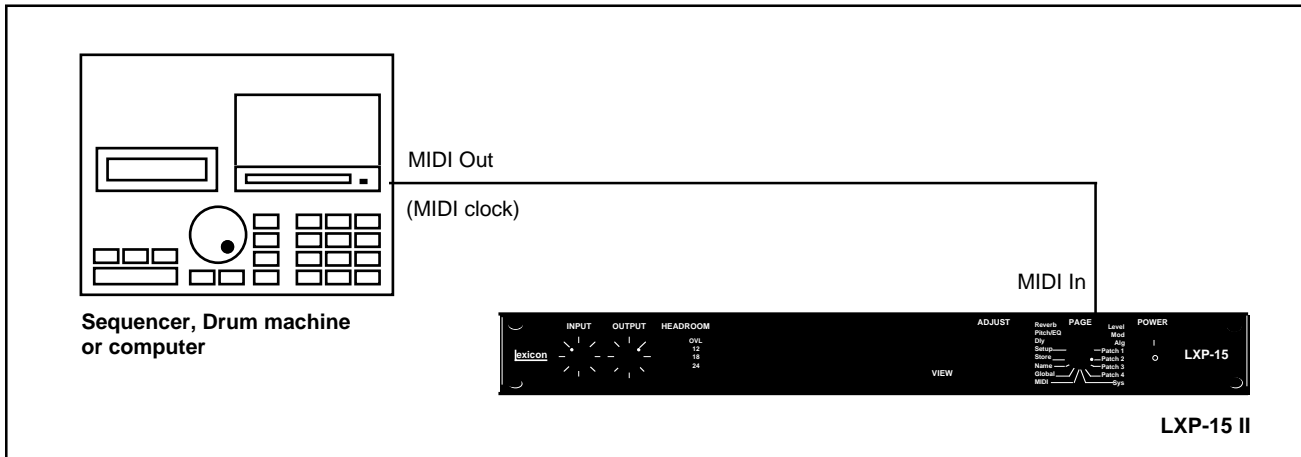
Some extremely useful effects can be created by controlling the LXP-15 II's variable parameters remotely in real time. Almost all of the controllers found on a MIDI keyboard or MIDI foot controller (pitch benders, mod wheels, sliders, switches, breath controllers, foot pedals and footswitches) can be used to adjust the LXP-15 II's parameters. We refer to this real time remote control capability as Dynamic MIDI®.

Sending a MIDI Program Change message (1-128) from the controller will load the corresponding LXP-15 II register. If any MIDI sources are active as global or general purpose patches, moving the appropriate control on the controller will cause the patched destination parameter to change. (See *Patching*.) If you want to use Dynamic MIDI, but don't want the LXP-15 II to load new registers when you change programs on your controller, set your controller so that it doesn't transmit Program Change messages, or set LXP-15 II MIDI Program Change to Off. (See page 6-4.)

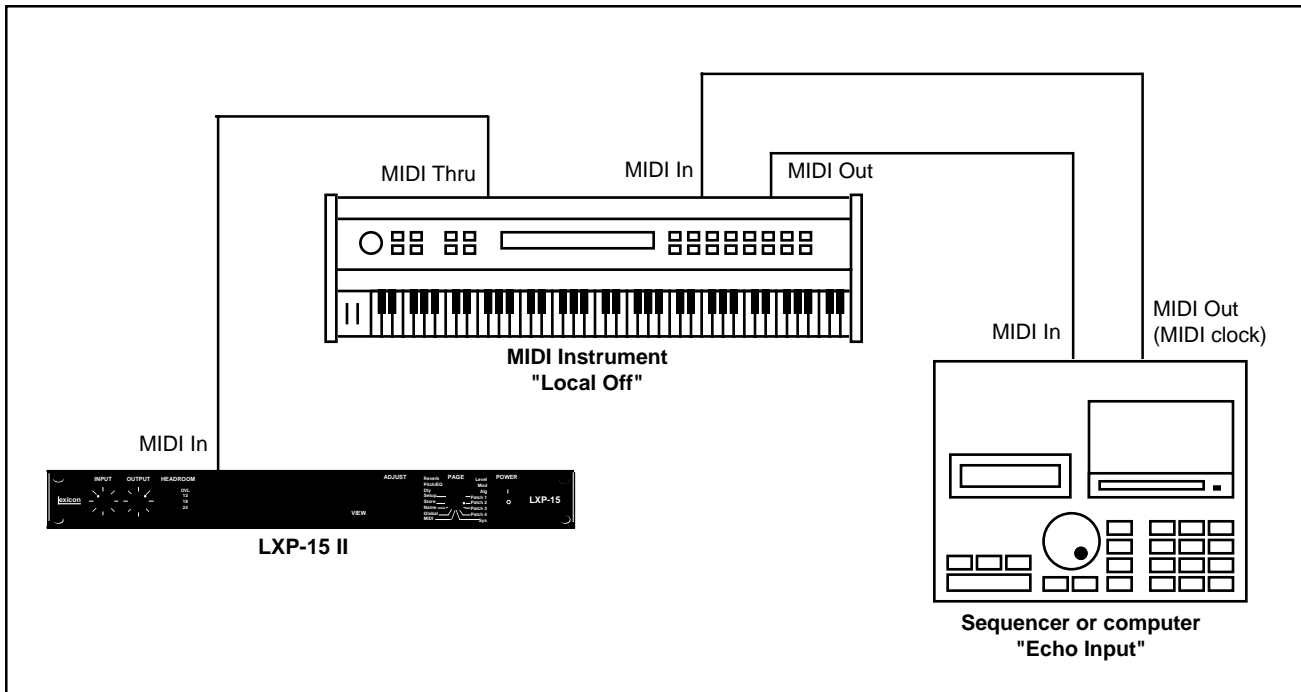


**Controller quirks** Some synthesizers and controllers cannot send the full range of MIDI program change messages (1-128). With them, you can't access all the registers in the LXP-15 II. Others may appear to be able to send only 32, but actually have a bank mode that *does* let you send all 128 program change messages. Also, be aware that some MIDI devices use a program numbering system that uses 0-127 instead of 1-128. If in doubt, see the manual for your controller.

**MIDI Tempo control** When using Tempo as a control Source (see *Patching*), you must send MIDI Clock messages from the MIDI controller to the LXP-15 II as shown below.

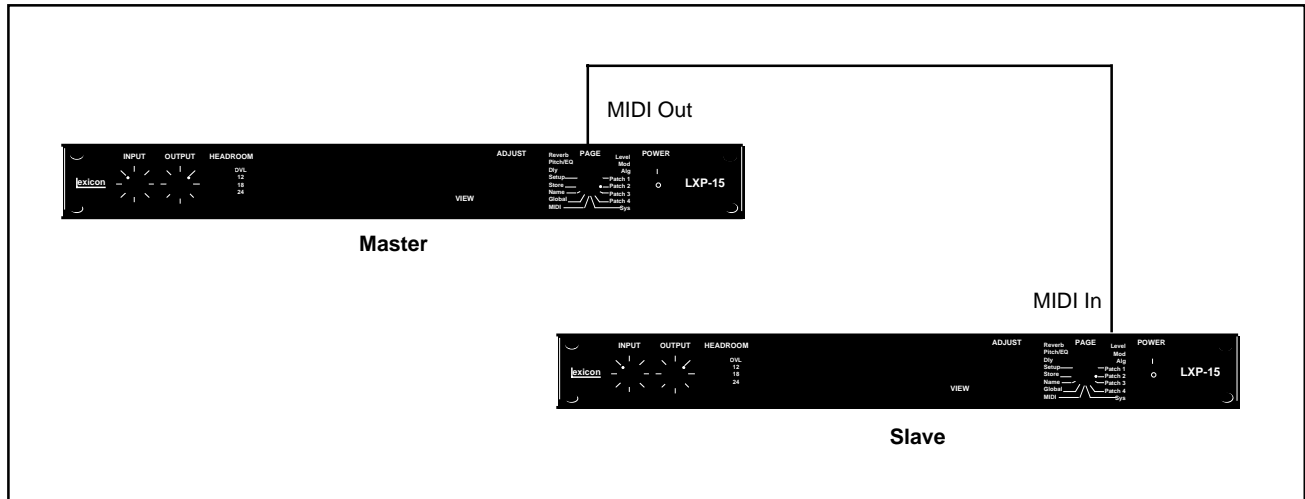


The figure below shows the MIDI connections for controlling the LXP-15 II simultaneously with MIDI Clocks from a sequencer, and messages from another MIDI controller. Note that the controller is set to "local control off" and the sequencer is set to "echo input."



Two LXP-15 IIs can be slaved together by connecting a cable from the MIDI OUT jack of the master to the MIDI IN jack of the slave. Additional LXP-15 IIs can be slaved to the master by connecting a cable from the MIDI THRU port of one slave unit to the MIDI IN port of the next unit. All of the LXP-15 IIs must be set to the same MIDI channel.

### Slaving two or more LXP-15 IIs



When connected in this way, the slave LXP-15 II(s) will be remotely controlled by the front panel of the master as follows:

- In general, whenever the master's ADJUST knob is used to change a parameter value, a corresponding parameter change will occur on the slave(s).
- Loading presets or registers from the setup page in either the "Preset" or "Register" modes will cause the slave(s) to load their preset or register *of the same number*. (Note: a slave's register contents will not necessarily be the same as the master's.)
- Loading presets or registers in either the "PreScan" or "RegScan" modes will cause the slave(s) to select the preset and register *of the same number*. The "Load" button of the slave must be pressed to actually load the preset or register.
- Changes made on the "Store" page are not transmitted to the slave(s).

Patches can also be created using LXP-15 II MIDI System Exclusive data. This is perhaps the most complicated but also the most flexible way of creating patches to control the LXP-15 II.

### Creating Patches using MIDI SysEx

Chapter 7 provides the information necessary for programming LXP-15 II MIDI SysEx data.

**The MIDI Page** The LXP-15 II allows dumping of a single parameter, the contents of a single register, or all register contents from the front panel MIDI page. To access this page, simply turn the PAGE knob to "MIDI". The display will show:

<b>SysEx Param</b>	<b>Transmit Registr</b>	<b>Parameter -</b>	<b>Alghm -</b>	<b>Send</b>
------------------------	-----------------------------	------------------------	--------------------	-------------

**Parameter dump** Selecting "Param" allows the ADJUST knob to be used to scroll through the available parameters of whatever setup is currently loaded. Wherever parameters are not available in a particular algorithm, their position is indicated by a number rather than by parameter name. Selecting "Send" will cause the displayed parameter to be transmitted.

**Register dump** Selecting "Registr" allows the ADJUST knob to be used to scroll through the LXP-15 II's 128 registers. The next selection is "All". Selecting "Send" will cause the contents of the displayed register (or the contents of all registers) to be transmitted. The last selection on the list is "MIDI Map Table".

**MIDI Program Change** Turn the PAGE knob to "Global".

<b>Pgm Chg</b>	<b>Map Val</b>	<b>Dest</b>	<b>Source</b>	<b>Mode</b>
<b>x</b>	<b>-</b>	<b>x</b>	<b>x</b>	<b>x</b>

Selecting "Pgm Chg" allows the ADJUST knob to be used to scroll through the following choices:

- Off MIDI Program Changes messages will be ignored
- Pre MIDI Program Change messages will load presets.
- Reg MIDI Program Change messages will load registers.
- Mapxxx MIDI Program Change messages will be mapped according to Map Val numbers.

Selecting "Map Val" allows the ADJUST knob to be used to scroll through the following choices:

- Prexxx Load preset xxx.
- Regxxx Load Register xxx.
- Off Ignore this MIDI Program Change message.

Note: LXP-15 II preset and register numbers, are offset by 1 relative to MIDI Program Change numbers. (MIDI Program Change 0 = preset 1.)

When Pgm Chg is set to "Mapxxx" and Map Val is set to "Off", a long display of the Preset/Register name and algorithm are briefly displayed on the top line.

## MIDI Implementation Data

The information contained in this chapter is intended to assist experienced programmers in developing software for use with the LXP-15 II.

LXP-15 II System Exclusive (SysEx) implementation can be divided into two basic categories: Data and Event Requests, and Data Transmit and Receive.

Data Requests prompt the LXP-15 II to transmit specified data. Event Requests prompt the LXP-15 II to store the data currently in the edit buffer to a specific memory location (register), or to retrieve stored data and place it in the edit buffer.

## Data and Event Requests

### Data Requests

Byte	Value	Description
0	F0 (hex)	System Exclusive
1	06	Lexicon ID
2	06	LXP-15/LXP-15 II ID
3	0011 nnnn(bin)	n = MIDI Channel 0-15
4	0eee eeee	e =event code: 60h = active setup data 61h = one register 62h = small param data 64h = all user data 65h = big param data 66h = MIDI map data
5	0ppp pppp	p = register number 0 - 127 for e = 61 = param number for e = 62, e = 65 above; else present but ignored
6	F7 (hex)	End of SysEx message

### Event Requests

Byte	Value	Description
0	F0 (hex)	System Exclusive
1	06	Lexicon ID
2	06	LXP-15/LXP-15 II ID
3	0110 nnnn(bin)	n = MIDI Channel 0-15
4	0eee eeee	e = event code: 70h = store register 71h = recall register
5	0ppp pppp	p = register number 0 - 127
6	F7 (hex)	End of SysEx message

**Transmit/Receive Data** Data is identical in format whether transmitted as a response to a Data Request or received as a Data Dump.

When the front panel ADJUST knob is assigned to a parameter and turned, the LXP-15 II will transmit a parameter change message reflecting the new position of the knob (See *Parameter Adjust* for the format.). The transmitted parameter number will reflect the specific parameter to which the knob is assigned. Recalling a program from the front panel will cause the appropriate program parameter change message to be sent. Single Program data is always stored in Register 1 when received. To specify a different register for storage, use the Event Request message.

Two LXP-15 IIs can be slaved together by connecting a cable from the MIDI OUT jack of the *master* to the MIDI IN jack of the *slave*. Additional LXP-15 IIs can be slaved to the same master by connecting a cable from the MIDI THRU port of one slave unit to the MIDI IN port of the next unit.

All LXP-15 IIs must be set to the same MIDI Channel.

#### Active Setup Data

Byte	Value	Description
0	F0 (hex)	System Exclusive
1	06	Lexicon ID
2	06	LXP-15/LXP-15 II ID
3	0000 nnnn(bin)	n = MIDI Channel 0-15
4	7B (hex)	data byte count (123)
5	0vvv vvvv(bin)	7-bit data
	.	
	.	
	.	
127	0vvv vvvv	
128	0sss ssss	checksum of data bytes
129	F7 (hex)	End of SysEx message

#### Stored (Single Program) Data

Byte	Value	Description
0	F0 (hex)	System Exclusive
1	06	Lexicon ID
2	06	LXP-15/LXP-15 II ID
3	0001 nnnn(bin)	n = MIDI Channel 0-15
4	0ppp pppp	p = register number 0 - 127
5	43 (hex)	data byte count (67)
6	0vvv vvvv	7-bit data
	.	
	.	
	.	
72	0vvv vvvv	
73	0sss ssss	checksum of data bytes
74	F7 (hex)	End of SysEx message

**Small Parameter Adjust**

Byte	Value	Description
0	F0 (hex)	System Exclusive
1	06	Lexicon ID
2	06	LXP-15/LXP-15 II ID
3	0010 nnnn(bin)	n = MIDI Channel 0-15
4	0ppp pppp	p = parameter number 0 - 127
5	0vvv vvvv	7-bit data
6	F7 (hex)	End of SysEx message

**Big Parameter Adjust**

Byte	Value	Description
0	F0 (hex)	System Exclusive
1	06	Lexicon ID
2	06	LXP-15/LXP-15 II ID
3	0101 nnnn(bin)	n = MIDI Channel 0-15
4	0ppp pppp	p = parameter number 0 - 127
5	0vvv vvvv	7-bit data (lsb)
6	0vvv vvvv	7-bit data (msb)
7	F7 (hex)	End of SysEx message

**All User Data**

Byte	Value	Description
0	F0 (hex)	System Exclusive
1	06	Lexicon ID
2	06	LXP-15/LXP-15 II ID
3	0100 nnnn(bin)	n = MIDI Channel 0-15
4	43 (hi) (hex)	data byte count
5	00 (lo)	(8576 = 0x2180 = 0x4280 in 7-bit)
6	0vvv vvvv(bin)	7-bit data
.	.	.
8581	0vvv vvvv	
8582	0sss ssss	checksum of data bytes
8583	F7 (hex)	End of SysEx message

**MIDI Map Data**

Byte	Value	Description
0	F0 (hex)	System Exclusive
1	06	Lexicon ID
2	06	LXP-15/LXP-15 II ID
3	0111 nnnn(bin)	n = MIDI Channel 0-15
4	0 (lo) (hex)	data byte count
5	2 (hi)	(256 7-bit values)
6	0vvv vvvv(bin)	7-bit data
.	.	.
261	0vvv vvvv	
262	0sss ssss	checksum of data bytes
263	F7 (hex)	End of SysEx message

## Data Dump Contents

### Single Program and All User Data Dump

The Single Program and All User Data dump share the same format. The Single Program dump sends all of the stored parameters for the selected setup; the All User Data dump sends all 128 copies of the stored programs.

Data Byte #	Data Param #	Data Description
0-26	0-26	Microcode Parameters
27	27	General Purpose Patch 1 Source
28	28	General Purpose Patch 1 Threshold
29	29	General Purpose Patch 1 Destination
30,31	+30(31)	General Purpose Patch 1 Scale
32,33	+32(33)	General Purpose Patch 1 Offset
34-40	34-40	General Purpose Patch 2
41-47	41-47	General Purpose Patch 3
48-54	48-54	General Purpose Patch 4
55-66	55-66	Name (12 characters)

### Active Setup Dump

The Active Setup data dump sends all the parameters for the current setup as well as the global parameters. The format is:

Data Byte #	Data Param #	Data Description
(Program parameters)		
0-26	0-26	Microcode Parameters
27	27	General Purpose Patch 1 Source
28	28	General Purpose Patch 1 Threshold
29	29	General Purpose Patch 1 Destination
30,31	+30(31)	General Purpose Patch 1 Scale
32,33	+32(33)	General Purpose Patch 1 Offset
34-40	34-40	General Purpose Patch 2
41-47	41-47	General Purpose Patch 3
48-54	48-54	General Purpose Patch 4
55-66	55-66	Name (12 characters)
(System parameters)		
67	67	Setup Increment
68	68	Setup Decrement
69	69	Display Contrast
70	70	Display Brightness
71-74	71-74	Reserved
75	75	Register Number
76	76	Preset Number
77,78	+77(78)	Setup Number
79	79	MIDI Channel
80	80	Global Patch mode
81	81	Display Update
82	82	Memory Protect (nonzero=protected)
83-95	83-95	Reserved
96-124	96-124	Global Patch Sources

+ indicates a big parameter. There may be others in Microcode Parameters, depending on the program. The number in parentheses is the coarse portion.

Most LXP-15 II parameters fit into 7 data bits to make it easier to transfer data via MIDI. We've labeled these "Small Parameters". A few parameters, notably delays, require more than this range. These "Big Parameters" are constructed of two consecutively numbered small parameters. The lower-numbered parameter can be accessed as the Fine portion of the big parameter, and always has a range of 128. The higher-numbered parameter can be used to access the Coarse portion of the big parameter. The full range of the Fine portion (128 steps) always equals one step of the Coarse portion. When reference is made to a big parameter, the number given is that of the Fine portion.

When setting or requesting a big parameter value via SysEx, the value can be sent either by a big parameter message, or by two small parameter messages.

All parameters are accessible by Parameter Change messages. There are two major parameter classifications: Program parameters and System parameters.

## Parameter Definitions

Generally, program parameter values will change when each new setup is loaded. Typically, this means that the values of these parameters are stored as part of a program. Similarly, when a new setup is retrieved, all of its stored program parameters are retrieved with it.

All program parameters are accessible via the front panel ADJUST knob and MIDI SysEx. A SysEx change of one of these parameters will overwrite any existing value set by a previous knob change and vice-versa (a knob change will overwrite any existing value set by a previous SysEx change).

## Program Parameters

System parameters are not associated with any particular program. These parameters are responsible for the overall operation of the LXP-15 II. They include MIDI Channel, Display Contrast and Brightness, Global Patch mode and sources.

## System Parameters



**Parameter Map**

Param #	Data
(Program parameters)	
0 - 26	Microcode Parameters
27	General Purpose Patch 1 Source
28	General Purpose Patch 1 Threshold
29	General Purpose Patch 1 Destination
+30(31)	General Purpose Patch 1 Scale
+32(33)	General Purpose Patch 1 Offset
34-40	General Purpose Patch 2
41-47	General Purpose Patch 3
48-54	General Purpose Patch 4
55-66	Name (12 characters)
(System parameters)	
67	Setup Increment
68	Setup Decrement
69	Display Contrast
70	Display Brightness
71-74	Reserved
75	Register number
76	Preset number
+77(78)	Setup number
79	MIDI Channel
80	Global Patch mode
81	Display Update
82	Memory Protect (nonzero=protected)
83-95	Reserved

**General Purpose Patch Parameter Map**

Param #				
Patch 1	Patch 2	Patch 3	Patch 4	Data
27	34	41	48	Patch Source (0 - 127, see below)
28	35	42	49	Patch Threshold (0 - 127)
29	36	43	50	Patch Destination (microcode param # 1-22)
+30(31)	+37(38)	+44(45)	+51(52)	Patch Scale Factor (-64 to +64, 2's compl.)
+32(33)	+39(40)	+46(47)	+53(54)	Patch Offset

**MIDI Patch Sources  
(General Purpose and Global)**

Control #	Function
0 - 31	Continuous controller 0 - 31
32 - 63	7-bit controllers 32-63
64	Last note played
65	Last note's velocity
66	Channel aftertouch value
67	Pitch bend value
68	MIDI tempo period
69	LFO value
70	Lowest note held
71	Highest note held
72-76	Foot controllers 1-5
77	Input signal level

Global patch parameter numbers 96-122 correspond to microcode parameter numbers 0-26. Global patch parameter numbers 123 and 124 correspond to parameter numbers 67 (Setup Increment) and 68 (Setup Decrement). If you want to globally patch Foot Controller 1 to Input level (microcode parameter number 24) you would use the global patch parameter number of 120 (96+24). Its data value would be 72, corresponding to Foot Control 1 controller number.

The MIDI patch Offset values are generated internally by the equation:

$$\text{Offset} = [\text{Source-Threshold}] \times \text{Scale factor}$$

where Source equals the value of the specified controller.

This calculated Offset value is added to the stored (base) value of the specified destination parameter. The sum of the offset and base values is the number used by the audio processor and the parameter transmit routines. The programmer should be aware that the offset values are internally updated whenever the Source controller is changed — therefore if the programmer changes the offset value externally it may be over-written shortly thereafter. The offset parameters are most useful when read to determine the MIDI patch contribution to the parameter values transmitted by the LXP-15 II.

**Note:** When the LXP-15 II *receives* a parameter change, the received value is used as the new base parameter value. However, when the LXP-15 II *transmits* a parameter value, this value equals the sum of the base parameter value and any applicable MIDI patch offsets.

## LXP-15 II Microcode Parameters

All microcode parameters in the LXP-15 II have a fixed MIDI control range.

MSB always equals zero.

All microcode parameters are accessible via MIDI SysEx. These parameters can also be controlled through the front panel ADJUST knob and Dynamic MIDI®.

The following charts show parameters and their maximum values for each of the LXP-15 II's five algorithms.

DELAY/REVERB			
Param #	Global Patch	Parameter Name	Max. Value
1(2)	97(98)	Glide Delay (Gldlyhi)	9983
3	99	Glide Feedback	127
4(5)	100(101)	Delay 2 (Dly2hi)	8959
6	102	Unused	-
7(8)	103(104)	Unused	-
9	105	Unused	-
10	106	Unused	-
11	107	Unused	-
12	108	Decay Time	15
13	109	Treble Decay	15
14	110	Bass Multiply	31
15	111	Size	63
16	112	Diffusion	100
17	113	High Cut Filter	15
18	114	Low Cut Filter	31
19	115	Rvb Mix	127
20	116	Wet Pan	126
21	117	Dry Pan	126
22	118	Mix	127
23	119	Output Level	127
24	120	Input Level	127
25	121	LFO Rate	127

PITCH DELAY			
Param #	Global Patch	Parameter Name	Max. Value
1(2)	97(98)	Predelay (Pdlyhi)	16,383
3	99	Predelay Feedback	127
4(5)	100(101)	Delay L (DlyLhi)	16,255
6	102	Feedback	126
7(8)	103(104)	Delay R (DlyRhi)	16,255
9	105	Pitch On/Off	1,0
10	106	Pitch Interval	36
11	107	Pitch Fine	127
12	108	Decay Time	14
13	109	Treble Decay	15
14	110	Bass Multiply	31
15	111	Size	25
16	112	Diffusion	100
17	113	High Cut Filter	15
18	114	Low Cut Filter	31
19	115	Reverb Balance	127
20	116	Wet Pan	126
21	117	Dry Pan	126
22	118	Mix	127
23	119	Output Level	127
24	120	Input Level	126
25	121	LFO Rate	127

GATE			
Param #	Global Patch	Parameter Name	Max. Value
1(2)	97(98)	Predelay (Pdlyhi)	8191
3	99	Predelay Feedback	127
4	100	Unused	-
5	101	Unused	-
6	102	Unused	-
7	103	Unused	-
8	104	Unused	-
9	105	Unused	-
10	106	Unused	-
11	107	Unused	-
12	108	Slope	127
13	109	Treble Decay	15
14	110	Unused	-
15	111	Size	31
16	112	Diffusion	127
17	113	Unused	-
18	114	Unused	-
19	115	Unused	-
20	116	Wet Pan	126
21	117	Dry Pan	126
22	118	Mix	127
23	119	Output Level	127
24	120	Input Level	127
25	121	LFO Rate	127

<b>PLATE</b>			
<b>Param #</b>	<b>Global Patch</b>	<b>Parameter Name</b>	<b>Max. Value</b>
1(2)	97(98)	Predelay (Pdlyhi)	8191
3	99	Predelay Feedback	127
4	100	Unused	-
5	101	Unused	-
6	102	Unused	-
7	103	Unused	-
8	104	Unused	-
9	105	Unused	-
10	106	Unused	-
11	107	Unused	-
12	108	Decay Time	0 - 15
13	109	Treble Decay	0 - 15
14	110	Bass Multiply	0 - 31
15	111	Size	0 - 79
16	112	Diffusion	127
17	113	Unused	-
18	114	Unused	-
19	115	Unused	-
20	116	Wet Pan	126
21	117	Dry Pan	126
22	118	Mix	127
23	119	Output Level	127
24	120	Input Level	127
25	121	LFO Rate	127

<b>CHORUS DELAY</b>			
<b>Param #</b>	<b>Global Patch</b>	<b>Parameter Name</b>	<b>Max. Value</b>
1	97	Delay 1	97
2	98	Unused	-
3	99	Feedback 3	127
4	100	Delay 2	127
5	101	Unused	-
6	102	Unused	-
7	103	Delay 3	127
8	104	Unused	-
9	105	Unused	-
10	106	Unused	-
11	107	Chorus Rate	15
12	108	Unused	-
13	109	Unused	-
14	110	Unused	-
15	111	Unused	-
16	112	Diffusion	127
17	113	Treble	15
18	114	Unused	-
19	115	Unused	-
20	116	Wet Pan	126
21	117	Dry Pan	126
22	118	Mix	127
23	119	Output Level	127
24	120	Input Level	126
25	121	LFO Rate	127

- 1(2) Glide Delay (Gldlyhi)** Provides (coarse) and fine adjustment of mono delay time. This control is called **Predelay (Pdlyhi)** in the Pitch/Delay , Gate and Plate algorithms, and **Delay 1** in Chorus Delay.
- 3 Glide Feedback** Adjusts positive feedback around the mono delay. In Delay/Reverb, 100% feedback does not cut the input, but continues to add it in. There is also a slight high frequency rolloff through the gliding delay mechanism of Delay/Reverb. In Pitch/Delay (where it is called **Predelay Feedback**), 100% feedback automatically cuts the input, and can be used as a manual, or MIDI controlled, delay line sampler. In Chorus/Delay (where it is called **Feedback 3**) it recirculates the output of Delay 1 and Delay 3 before it enters the third chorusing circuit.
- 4(5) Delay 2 (Dly2hi)** Provides (coarse) and fine adjustment of two-channel delay time. In Delay/Reverb, provides a predelay adjustment for the reverb. In Pitch/Delay (where it is called **Delay L (DlyLhi)** ) this control provides a reverb predelay and adjusts the left channel. In Chorus/Delay, Delay 2 adds an additional offset to the value of Delay 1 for the second pair of chorused taps.
- 6 Feedback 3** Adjusts feedback around the pitch shifter and left channel delay. This control is called **Feedback** in Pitch/Delay.
- 7(8) Delay R (DlyRhi)** Provides (coarse) and fine adjustment for right channel delay.
- 9 Pitch On/Off** Used to enable the pitch shifter. Selecting 0 (Defeat) bypasses the pitch shifter and the small delay associated with it.
- 10 Pitch Interval** Adjusts the pitch shift from two octaves down (Pitch ON=1; Pitch Interval=0) to one octave up.
- 11 Pitch Fine** Provides a fine adjustment of pitch for detuning. The MIDI value 0-127 is interpreted as being centered on 64. Adjusts **Chorus Rate** in the Chorus Delay algorithm.
- 12 Decay Time** Adjusts mid reverb time. Infinite reverb is available in Delay/Reverb algorithm only. Adjusts **Slope** in the Gate algorithm.
- 13 Treble Decay** Provides an adjustment of the low pass filter within the reverb. Maximum setting gives a flat response through the filter section.
- 14 Bass Multiply** Provides control over bass reverb time.
- 15 Size** Adjusts the room size. The range is for one side of a room; cube these values to get the approximate room volume.
- 16 Diffusion** Softens attack of percussive sounds in the reverberator.
- 17 High Cut Filter** Provides adjustment of high frequency roll-off. Maximum setting gives flat response through the filter section.
- 18 Low Cut Filter** Provides adjustment of low frequency roll-off. Minimum setting gives flat response through the filter section.
- 19 Reverb Balance** Adjusts the mix of reverb with delay effects.
- 20 Wet Pan** Provides a pan control for the wet output.

## Notes on the Parameters

- 21 Dry Pan** Provides a pan control for the dry output.
- 22 MIX** Adjusts the wet/dry mix.
- 23 Output Level** Adjusts the output level of the signal processor.
- 24 Input Level** Adjusts the input level to the signal processor.
- 25 LFO Rate** Adjusts the frequency of the low frequency oscillator.

## MIDI Implementation Chart

### Lexicon LXP-15 II Multi-Effects Processor

Function		Transmitted	Recognized	Remarks
Basic Channel	Default Channel	1 1-16	1 1-16	Memorized
Mode	Default Messages Altered		Mode 1, 3	
Note Number	True Voice	X	0 - 127	Used as controller*
Velocity	Note ON Note OFF	X X	O X	*
After Touch	Keys Channels	X X	X O	*
Pitch Bender		X	O	7-bit resolution*
Control Change		X	0 - 95	7-bit resolution*
Program Change	True #	X	0 - 127 1 - 128	Note 1
System Exclusive		O	O	Note 2
System Common	:Song Pos :Song Sel :Tune	X X X	X X X	
System Real Time	:Clock :Commands	X X	O X	Used as controller*
Aux Messages	:Local ON/OFF :All Notes OFF :Active Sense :Reset	X X X X	X X X O	

Mode 1: OMNI ON, POLY  
Mode 3: OMNI OFF, POLY

Mode 2: OMNI ON, MONO  
Mode 4: OMNI OFF, MONO

O : Yes  
X : No

#### Notes

- loads registers 1-128; presets 1-128 accessed via SysEx
  - data dumps, parameters
- \* can be assigned to control any LXP-15 II effect parameter





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## Troubleshooting

This chapter is intended primarily to help you to recognize some common error states which can be corrected from the LXP-15 II front panel controls, or by simple means such as cable replacement. Any error states which are not covered here should be referred to Lexicon Customer Service.

In a low voltage, or "brown-out" condition, the LXP-15 II will freeze in its current state. None of the controls will have any effect. When power returns to a normal level the unit will reset itself as though it had just been powered on. After the initial power up display message, the unit will return itself to the state it was in when the power dropped. If the unit does not reset itself, turn the power OFF, then ON to resume normal operation.

### Low Voltage

Temperature extremes may cause the LXP-15 II to exhibit unpredictable behavior. If the unit has been subjected to temperatures below 32°F (0°C) or above 95°F (35°C), it should be turned off and allowed to return to normal temperature before use. The unit may be damaged by exposure to temperatures below -22°F (-30°C) or above 167°F (75°C), or by exposure to humidity in excess of 95%. If a unit exposed to such conditions fails to operate after it returns to a normal operating temperature, contact Lexicon Customer Service.

### Overheating

#### **No output from the LXP-15 II.**

Check to see if Global Patches are set to *Immediate* mode. *If you don't have a control source patched to a destination, the controller will go to its minimum value!* If you don't have anything patched to the input and output parameters, this may result in no output. When you access a preset, all of the parameter values will immediately jump to whatever value you have selected, destroying the preset's sound. See page 4-14.

### Common MIDI Problems

#### **The LXP-15 II doesn't respond to MIDI.**

- Check to make sure a MIDI cable is connected to MIDI OUT of the external device and to MIDI IN on the LXP-15 II.
- Test the MIDI cable.
- Verify that you have the LXP-15 II and the external device communicating on the same MIDI Channel. See page 6-1.

A MIDI indicator in the upper lefthand corner of the display will flash to indicate the LXP-15 II is receiving MIDI data on the selected channel.

#### **The LXP-15 II doesn't go to the Program Change number transmitted — it's off by 1.**

Your MIDI device is transmitting Program Changes 0-127. The LXP-15 II translates 0 to 1, 1 to 2, etc. Subtract 1 from the LXP-15 II program number you want, and transmit that Program Change number. See page 6-2.

## Restoring Factory Presets and Registers

This procedure allows you to restore the LXP-15 II memory to its original condition (as shipped by Lexicon).

**!CAUTION!**

**This procedure will erase the entire contents of the User registers and replace it with a copy of the original factory-loaded presets. If you have setups stored in the User registers that you don't want to lose, make a record of them *before* performing this procedure.**

To perform this procedure, the LXP-15 II must be put in Diagnostic mode. To do this:

1. Power OFF the LXP-15 II.
2. Power ON the LXP-15 II while holding down the front panel VIEW button.

This puts the LXP-15 II in Diagnostics mode. The display will show:

**LXP-15 II Diagnostics**  
Turn ADJUST to select test.

Diagnostic Tests
<p><b>Do not run any test other than "Clear All RAM" unless instructed by Lexicon Customer Service</b></p>
<ul style="list-style-type: none"> <li>Pre burn in Test</li> <li>Switch Test</li> <li>Direct Audio Test</li> <li>Processed Audio Test</li> <li>ADC Test (factory only)</li> <li>Go To System</li> <li>Post Burn in Test</li> <li>ADC Monitor</li> <li>Bank Test</li> <li>Base ROM Test</li> <li>Bank A ROM Test</li> <li>Bank B ROM Test</li> <li>All ROM Test</li> <li>Master RAM Test</li> <li>Shared RAM Test</li> <li>Master WCS Test</li> <li>Master All RAM Test</li> </ul>
<p><b>Clear All RAM</b></p>
<ul style="list-style-type: none"> <li>Interrupt Test</li> <li>MIDI Test</li> <li>Non-Volatile Memory Test</li> <li>Non-Volatile Test Init</li> <li>Audio DRAM Test</li> <li>Go to System (skip Diagnostics)</li> <li>Slave Reset</li> <li>Slave Communications Test</li> <li>Slave RAM Test</li> <li>Slave WCS Test</li> <li>All Slave Tests</li> <li>Display Contrast</li> <li>Display Brightness</li> <li>Display Test</li> <li>Repeating Test</li> </ul>

The ADJUST knob allows you to scroll through the list of 33 diagnostic tests shown in the column at the left. About half-way through this list is a test called *Clear ALL RAM*. Turn ADJUST to select this test. **Do not run any other test unless instructed by Lexicon Customer Service.** The display will show:

**Clear ALL RAM, (inits registers)**  
Press VIEW to start.

Press VIEW. The following display will appear:

|  
V
**Are you sure?**  
(Press these to confirm)
|  
V

Simultaneously pressing the two buttons directly beneath the displayed arrows (the button farthest to the left and the button farthest to the right) will initiate the reinitialization procedure. While the procedure is running (approximately 5 seconds) the display will show:

**Clear ALL RAM, (inits registers)**  
Running . . .

When the reinitialization procedure is successfully completed, the green LED at the bottom of the Headroom section on the LXP-15 II front panel will flash once, and the screen should show:

<b>Clear ALL RAM, (inits registers) Press VIEW to start.</b>	<b>passed</b>
--	---------------

An error condition is signaled by the illumination of the red overload LED for approximately half a second, and the message "Failed" on the display.

Once this procedure is completed, simply power OFF the LXP-15 II and power ON again to resume normal system operation.



## Specifications

### Audio Inputs (2)

Level: -26 dBu minimum  
(0 dBu = 0.775 Vrms)

Impedance: Stereo: 50 k $\Omega$ ,  
unbalanced  
Mono: 25 k $\Omega$   
unbalanced

Connectors: 1/4" tip/sleeve  
phone jacks (L or R may be  
used for mono input)

### Audio Outputs (2)

Level: +4 dBu nominal,  
+8 dBu max into 600 $\Omega$   
+14 dBu max into >10k $\Omega$

Impedance: 600 $\Omega$  unbalanced  
Connectors: 1/4" tip/sleeve  
phone jacks (L or R may be  
used for mono output.)

### Mute Protection

removes unwanted transients dur-  
ing power up/down or any power  
interruption

### Static Protection

### Frequency Response

Wet: 20 Hz to 15 kHz +1.0/-1.5 dB  
Dry: 20 Hz to 20 kHz  $\pm$ 0.1 dB

### Dynamic Range

85 dB typical, 20 Hz to 20 kHz band-  
width

### Total Harmonic Distortion and Noise

Wet: <0.03% at 1 kHz  
Dry: <0.02% at 1 kHz

### Encoding

16-bit linear PCM

### Sampling Frequency

31.25 kHz

### Memory

128 presets with 128 user registers  
available

### Dynamic MIDI<sup>®</sup>

5-pin DIN connectors provided for  
MIDI IN, MIDI OUT, and MIDI THRU

### Controller Inputs

Five 1/4" tip/ring/sleeve phone jack  
inputs provided for connection to  
any on/off toggle switch, analog  
voltage controller, or 50k $\Omega$  control  
pedal

### Signal Level Indicators

Four signal level LED indicators,  
including processed signal over-  
load

### Front Panel Display

Two lines of 40 alphanumeric char-  
acters each, backlit liquid crystal  
display

### Front Panel Controls

Input Level Adjust  
Output Level Adjust  
Page knob: used for selecting  
16 display pages  
View button: used for viewing  
additional display pages  
Adjust knob: used for editing  
parameters  
Soft buttons (5): used for assigning  
Adjust knob parameters  
Power Switch

### RFI Shielding

Complies with FCC Class A require-  
ments for computer equipment

### Power Requirements

100/120/220/240 VAC  
50-60 Hz 20W

### Dimensions

19.0"W x 1.75"H x 13.9"D  
(483 x 45 x 353mm)  
Conforms to 19" rack mount  
standard, 1U high

### Weight

12.0 lbs (5.5 kg)  
Shipping Weight 14.0 lbs  
(6.4 kg)

Shipping materials meet or exceed  
Project 1A of the National Safe Transit  
Association (NSTA) packaged-product  
specifications: vibration test, drop test,  
static compression test.

### Environment

Operating Temperature: 32° to  
95°F (0° to 35° C)  
Storage Temperature: -22° to  
167°F (-30° to 75°C)  
Humidity: 95% maximum without  
condensation

*Specifications subject to change without notice.*

# Tempo to Delay Time Conversion

(Tempo in beats per minute; Delay values to the nearest millisecond)



Tempo	1/4	1/8	1/8T	1/16
60	1000	500	333	250
61	984	492	328	246
62	968	484	323	242
63	952	476	317	238
64	938	469	313	234
65	923	462	308	231
66	909	455	303	227
67	896	448	299	224
68	882	441	294	221
69	870	435	290	217
70	857	429	286	214
71	845	423	282	211
72	833	417	278	208
73	822	411	274	205
74	811	405	270	203
75	800	400	267	200
76	789	395	263	197
77	779	390	260	195
78	769	385	256	192
79	759	380	253	190
80	750	375	250	188
81	741	370	247	185
82	732	366	244	183
83	723	361	241	181
84	714	357	238	179
85	706	353	235	176
86	698	349	233	174
87	690	345	230	172
88	682	341	227	170
89	674	337	225	169
90	667	333	222	167
91	659	330	220	165
92	652	326	217	163
93	645	323	215	161
94	638	319	213	160
95	632	316	211	158
96	625	313	208	156
97	619	309	206	155
98	612	306	204	153
99	606	303	202	152
100	600	300	200	150
101	594	297	198	149
102	588	294	196	147
103	583	291	194	146
104	577	288	192	144
105	571	286	190	143
106	566	283	189	142
107	561	280	187	140
108	556	278	185	139
109	550	275	183	138
110	545	273	182	136
111	541	270	180	135
112	536	268	179	134
113	531	265	177	133
114	526	263	175	132
115	522	261	174	130
116	517	259	172	129
117	513	256	171	128
118	508	254	169	127
119	504	252	168	126

Tempo	1/4	1/8	1/8T	1/16
120	500	250	167	125
121	496	248	165	124
122	492	246	164	123
123	488	244	163	122
124	484	242	161	121
125	480	240	160	120
126	476	238	159	119
127	472	236	157	118
128	469	234	156	117
129	465	233	155	116
130	462	231	154	115
131	458	229	153	115
132	455	227	152	114
133	451	226	150	113
134	448	224	149	112
135	444	222	148	111
136	441	221	147	110
137	438	219	146	109
138	435	217	145	109
139	432	216	144	108
140	429	214	143	107
141	426	213	142	106
142	423	211	141	106
143	420	210	140	105
144	417	208	139	104
145	414	207	138	103
146	411	205	137	103
147	408	204	136	102
148	405	203	135	101
149	403	201	134	101
150	400	200	133	100
151	397	199	132	99
152	395	197	132	99
153	392	196	131	98
154	390	195	130	97
155	387	194	129	97
156	385	192	128	96
157	382	191	127	96
158	380	190	127	95
159	377	189	126	94
160	375	188	125	94
161	373	186	124	93
162	370	185	123	92
163	368	184	123	92
164	366	183	122	91
165	364	182	121	91
166	361	181	120	90
167	359	180	120	90
168	357	179	119	89
169	355	178	118	88
170	353	176	118	88
171	351	175	117	88
172	349	174	116	87
173	347	173	116	87
174	345	172	115	86
175	343	171	114	86
176	341	170	114	85
177	339	169	113	85
178	337	169	112	84
179	335	168	112	84

60,000 ms (1 minute) ÷ Tempo (bpm) = Delay Time in ms for quarter-note beats

1/4 = quarter-note echo

1/8 = eighth-note echo

1/8T = eighth-note triplet echo

1/16 = sixteenth-note echo

## LXP-15 II User Log



#	Setup Name	#	Setup Name	#	Setup Name	#	Setup Name
1		33		65		97	
2		34		66		98	
3		35		67		99	
4		36		68		100	
5		37		69		101	
6		38		70		102	
7		39		71		103	
8		40		72		104	
9		41		73		105	
10		42		74		106	
11		43		75		107	
12		44		76		108	
13		45		77		109	
14		46		78		110	
15		47		79		111	
16		48		80		112	
17		49		81		113	
18		50		82		114	
19		51		83		115	
20		52		84		116	
21		53		85		117	
22		54		86		118	
23		55		87		119	
24		56		88		120	
25		57		89		121	
26		58		90		122	
27		59		91		123	
28		60		92		124	
29		61		93		125	
30		62		94		126	
31		63		95		127	
32		64		96		128	

This page may be copied as needed for documenting the sounds stored in LXP-15 II User memory.





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