XL-7 COMMAND STATION

128-Voice Synth Multi Track Sequencer

Owners Manual

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FI11541 Rev. F

Important Notice:

In order to obtain warranty service on your XL-7 unit, the serial number sticker must be intact and you must have a sales receipt or other proof of purchase. If there is no serial number sticker on the XL-7, please contact E-MU Systems at once.

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Introduction

XL-7 truly represents the ultimate melding of E-MU's pristine audio quality and cutting edge controller technologies, making it uniquely qualified to serve as the control center of your MIDI studio or live performance rig.

Product Description

Upgradable Sounds

XL-7 contains a thorough collection of Electronica/Dance presets. These sounds are rich in harmonic texture and a perfect complement to the Z-plane filters. XL-7 contains three additional, user-upgradable sound SIMM sockets, allowing you to mix and match sound sets according to your needs. New sounds can be added as easily as plugging in a new 16MB or 32MB SIMM module. Each E-MU sound set has been meticulously crafted to be the finest of its kind. Samples are matched across the keyboard, perfectly looped, and rich in harmonic texture.

1024 Presets & more

XL-7 contains 512 user presets and 512 factory ROM presets, but it can be expanded with literally thousands of ROM presets. *(ROM presets are automatically added when sound SIMMs are installed. As an example, a 32 MB SIMM may contain up to 1024 ROM presets.)* XL-7's Sound Navigator makes it easy to find the exact sound you want. It's powerful, yet simple to use.

Velocity & Pressure Sensitive Pads

Thirteen velocity-sensitive pads with aftertouch allow you to perform live or into the 16-track sequencer. These pads have been specifically designed for the Command Station and are extremely responsive, capturing all the subtle nuances of your performance.

Multi-Function Controllers

Multi-function buttons allow you to trigger sequences, arpeggiators and loops internally or on any of your other MIDI devices. They can act as Note Inputs for Grid or Step recording, Track Select, Mute or MIDI Trigger buttons (latched or unlatched).

Sixteen real-time controller knobs are also multi-function controls. These knobs make it a snap to edit and modify internal preset parameters. Another useful mode allows the knobs to control volume and pan for all sixteen MIDI channels. These controllers are fully programmable and can control internal preset or other MIDI equipment on multiple MIDI channels. They can be programmed to adjust multiple internal parameters at once, allowing complex levels of control. For example, a single knob can simultaneously turn up filter cutoff, while detuning one sample, and adjusting the release time of the volume envelope. Virtually every synth parameter in the XL-7 is controllable using the real-time knobs or by any internal or external control source.

Super Sequencer

XL-7contains a powerful, yet simple to use 16-track interactive sequencer. You can record in real-time, step and grid modes and can switch modes without ever stopping your creative flow. Sixteen dedicated Mute/Select buttons allow you to add, monitor and modify parts on the fly without cumbersome menu scrolling. It's never been this easy to lay down your ideas. The XL-7 Command Station can store over 300,000 notes and you can import and export MIDI files to and from your Mac or PC using E-MU's E-Loader program.

Multi-Channel Arpeggiators

XL-7's Rhythmic Pattern Generator/Arpeggiator can play up to 32 synchro-nized arpeggiator patterns at once using a different sound for each! Patterns can be edited using pattern flow commands such as: delay for 2 bars, play for 4 bars, hold for 2 beats and repeat. You can program or download 100 user patterns in addition to the 200 factory patterns.

Ultra Powerful Synthesizer

The extremely flexible yet easy to use 4-layer synthesizer voices make it easy to build sounds of any kind. Layers can be switched or crossfaded using key position, velocity, real-time controllers or any modulation source. 128 voice polyphony ensures that you can play and sequence the most complex material. XL-7 also contains 50 different 2nd to 12th order resonant & modeling filters which are used to shape and modify over 1200 waveforms contained in 32 megabytes (MB) of ROM.

Sixty four modulation sources include three multistage envelopes and two LFOs per layer, as well as full MIDI control over virtually every parameter. The digital patch bay, with 24 cords per layer, (and 12 more cords per preset) lets you connect modulation sources to 64 destinations in any imaginable way. The patch bay also contains a set of arithmetic modifiers, allowing you to create complex synthesis models. Synth parameters as well as arpeggiator and BEAT tempos can be controlled from XL-7's internal clock (or an external MIDI clock). Up to 8 LFOs and 12 envelopes can be perfectly synchronized at different rates. This is an extremely powerful synthesizer!

24-bit Effects

Once you have created your preset, you can add richness to your sound using XL-7's 24-bit stereo effects. You can choose a different effects setup for each preset from over 60 algorithms. XL-7's effects section is actually two separate effects processors with control over each wet/dry mix level on four effects sends. Effects Processor "A" contains primarily ambiance algorithms like reverb and delays, while effects processor "B" contains primarily spectral algorithms such as chorus, flange, phase, distortion, and delay. Effects can be linked to each preset or used globally to further enhance your sound.

Other features include multiple solo, voice assignment and performance modes for expressive control, 12 user-definable alternate tunings, and, of course, an extensive MIDI implementation.

Important Safety Instructions

Use in countries other than the U.S.A. may require the use of a different line cord or attachment plug, or both. Refer all servicing to qualified service personnel. There are no user serviceable parts or adjustments inside the unit. There are no user serviceable parts inside the power supply enclosure.

WARNING: To reduce the risk of fire or electric shock, do not expose this product to rain or moisture.

Grounding Instructions

This product must be grounded. If it should malfunction or break down, grounding provides a path of least resistance for electric current, reducing the risk of electric shock. This product is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet properly installed and grounded in accordance with all local codes and ordinances.

Mains Switch

The front panel On/Off switch is a "Soft" power switch that can be used to turn power on and off when the XL-7 is rack mounted. Use the AC power switch on the rear panel if you wish to completely disconnect XL-7 from the AC mains.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

~100-240VAC 50/60Hz 1A

Danger!

Improper connection of the equipment's grounding conductor can result in the risk of electric shock. Check with a qualified electrician or service personnel if you are in doubt as to whether the product is properly grounded. Do not modify the plug provided with this product. If it will not fit the outlet, have a proper outlet installed by a qualified technician.

User Maintenance Instructions
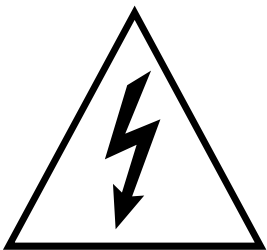
1. The XL-7 should be kept clean and dust free. Periodically wipe the unit with a clean, dry, lint free cloth. Do not use solvents or cleaners.
2. There are no user lubrication or adjustment requirements.

Caution -*Servicing instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in these operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.*

INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS

READ THESE INSTRUCTIONS: When using electric products, basic precautions should always be adhered to, including the following:

1. Read all instructions before using XL-7.
2. Keep these instructions.
3. Heed all warnings.
4. Follow these instructions.
5. Do not use near water.
6. Clean only with a dry cloth.
7. Install in accordance with E-MU's instructions. Do not block any openings. This apparatus should be situated so that its location or position does not interfere with proper ventilation. The ventilation should not be impeded by covering the ventilation openings with items such as newspapers, tablecloths, curtains, etc.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) which produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the grounding prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and at the point where they exit from the apparatus.
11. Use only attachments/accessories specified by E-MU Systems.
12. Use only with the cart, stand, tripod, bracket, or table specified by E-MU or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug the XL-7 from the power outlet during lightning storms or when left unused for a long period of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power

This symbol is intended to alert you to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the unit.

This symbol is intended to alert you to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert you to use caution when moving a cart/apparatus combination to avoid injury.

supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, the does not operate normally or has been dropped.

15. No open flame sources, such as lit candles, should be placed on the apparatus.

16. The apparatus is designed for use in moderate climates.

17. The apparatus shall not be exposed to dripping or splashing. No objects filled with liquids, such as vases, shall be placed on the apparatus.

18. To reduce the risk of injury, close supervision is necessary when using the apparatus near children.

19. The apparatus should be connected only to a power supply of the type described in the operating instructions and marked on the product.

20. This product, in combination with an amplifier and headphones and speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, consult an audiologist.

Radio and Television Interference

The equipment described in this manual generates and uses radio-frequency energy. If it is not installed and used properly —that is, in strict accordance with our instructions— it may cause interference with radio and television reception.

This equipment has been tested and complies with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of the FCC rules. These rules are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that the interference will not occur in a particular installation, especially if a "rabbit ear" TV antenna is used.

If XL-7 does cause interference to radio or television reception, you can try to correct the interference by using one or more of the following measures:

• Turn the television or radio antenna until the interference stops.

• Move XL-7 to one side or the other of the television or radio.

• Move XL-7 farther away from the television or radio.

• Plug XL-7 into an outlet on a different circuit than the television or radio.

• Consider installing a rooftop antenna with a coaxial lead-in between the antenna and television set.

Foreign Language Warnings - German

Wichtige Sicherheitsvorschriften

In Ländern ausserhalb den U.S.A. können andere Kabel oder Stecker notwendig werden. Zur Verminderung des Risikos von Feuer oder eines elektrischen Schlages übergebe man den Service an qualifizierte Fachleute. Das Gerät niemals Regen oder Nässe aussetzen.

Erdungsinstruktionen

Das Gerät muss geerdet sein. Bei einem Defekt oder Ausfall bietet Erdung dem elektrischen Strom den Weg des geringsten Widerstandes und reduziert das Risiko eines Schlages. Dieses Gerät ist mit einem geerdeten Kabel und Stecker ausgerüstet. Der Stecker muss in eine passende, einwandfrei montierte und geerdete Steckdose in Übereinstimmung mit den örtlichen Vorschriften eingeführt werden.

Gefahr

Unvorschriftsgemässer Anschluss des Gerätes kann zum Risiko eines elektrischen Schlages führen. Im Zweifelsfalle über die ordnungsgemässe Erdung soll ein qualifizierter Elektriker oder eine Serviecestelle beigezogen werden. Ändern Sie den mitgelieferten Stecker nicht. Sollte er nicht in die Steckdose passen, soll die einwandfreie Installation durch einen qualifizierten Techniker erfolgen.

Vorsicht

Wird der XL-7 (Modell Nummer 7750)in einem Rackgestell montiert, muss ein offener 19-Zollrahmen verwendet werden.

Unterhaltsin-struktionen für anwender

1. XL-7 soll sauber und staubfrei gehalten werden. Das Gerät mit einem sauberen und säurefreien Tuch periodisch abreiben. Keine Lösungs- oder Reinigungsmittel anwenden.
2. Schmieren und Justieren sind nicht notwendig.
3. Bei weiteren Servicefragen wende man sich an eine qualifizierte Service-stelle.

Vorsicht

Diese Gebrauchsanweisungen sind nur für qualifizierte Techniker beabsichtigt. Um die Gefahr eines elektrischen Schlages zu vermeiden, sollen Sie keine Arbeit unternehmen, die nicht in diesen Instruktionen vorgeschrieben ist. Wenden Sie Sich bei weiteren Servicefragen an eine qualifizierte Servicestelle.

Dieses Symbol weist den Anwender auf wichtige Gebrauchs- und Service-Vorschriften in den beilieg-enden Drucksachen.
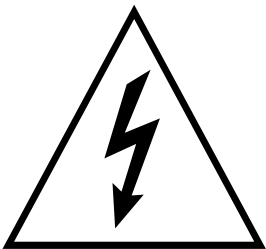
Dieses Symbol verweist auf nicht-isolierte Stromspan-nungen im Geräte-Innern, welche zu einem elektrischen Schlag führen könnten.

INSTRUKTIONEN BETR. FEUERRISIKO, ELEKTROSCHOCK ODER VERLETZUNG VON PERSONEN

WARNUNG; Beim Einsatz elektrischer Geräte sollten folgende Vorsichtsmassregeln stets beachtet werden:

1. Lesen Sie vor dem Einschalten des XL-7 alle Instruktionen.
2. Zur Vermeidung von Verletzungsrisiken müssen Kinder bei einge-schaltetem XL-7 sorgfältig überwacht werden.
3. XL-7 nicht in der Nähe von Wasser in Betrieb nehmen -- z.B. in der Nähe von Badewannen, Waschschüsseln, auf nassen Gestellen oder am Swimmingpool.
4. XL-7 stets so aufstellen, dass seine Belüftung nicht beeinträchtigt wird.
5. XL-7 nicht in der Nähe von Hitze aufstellen, wie Heizkörper, offenem Feuer, Öfen oder von Backöfen.
6. XL-7 ausschliesslich mit einem Netzgerät gemäss Bedienungsanleitung und Gerätemarkierung verwenden.
7. Dieses Gerät kann bei Verwendung von Kopfhörern und Verstärkern hohe Lautpegel erzeugen, welche zu bleibenden Gehörschäden führen. Arbeiten Sie nicht während längerer Zeit mit voller Lautstärke oder hohem Lautpegel. Stellen Sie Gehörverlust oder Ohrenläuten fest, wenden Sie sich an einen Ohrenartz.
8. XL-7 kann mit einem polarisierten Kabelstecker (mit ungleichen Stiften) ausgerüstet sein. Das geschieht für Ihre Sicherheit. Können Sie den Stecker nicht in die Steckdose einführen, ändern Sie nicht den Stecker ab, sondern wenden Sie sich an einen Elektriker.

9. Das Netzkabel des XL-7 bei längerem Nichtgebrauch aus der Steckdose ziehen.

10. Vermeiden Sie sorgfältig das Eindringen von Gegenständen oder Flüssigkeiten durch die Gehäuseöffnungen.

11. Das Gerät soll durch qualifizierte Serviceleute gewartet werden, falls:

    A. das Netzkabel beschädigt wurde, oder

    B. Gegenstände oder Flüssigkeit in das Gerät gelangten,

    C. das Gerät Regen ausgesetzt war, oder

    D. das Gerät nicht normal oder einwandfrei arbeitet, oder

    E. das Gerät stürzte oder sein Gehäuse beschädigt wurde.

12. Servicearbeiten sollten nur qualifizierten Fachleuten anvertraut werden.

DIESE INSTRUKTIONEN AUFBEWAHREN

Foreign Language Warnings - French

Instructions de Sécurité Importantes

Une utilisation dans des pays autres que les U.S.A. peut nécessiter l'usage d'un cordon d'alimentation différent. Afin de réduire les risques d'incendie ou d'électrocution, référez-vous à un personnel de service qualifié, et n'exposez pas cet appareil à la pluie ou à l'humidité.

Instructions de Mise à la Terre

Cet appareil doit être relié à la terre. Dans le cas d'une malfonction éventuelle, la terre fournit un passage de moindre résistance pour le courant électrique, réduisant ainsi les risques d'électrocution. Le XL-7 est équipé d'un cordon muni d'un conducteur et d'une fiche devant être branchée dans une prise appropriée et reliée à la terre en conformité avec les normes locales.

Danger

Une connexion incorrecte peut résulter en des risques d'électrocution. Vérifiez avec un technicien qualifié si vous avez des doutes quant à la connexion. Ne modifiez pas vous-même le cordon d'alimentation livré avec cet appareil; s'il ne rentre pas dans la prise, faites-en installer un autre par un technicien qualifié.

Attention

Si le XL-7 (Model 7750) est installé dans un rack, utilisez un rack standard ouvert de 48.25cm.

Instructions de Maintenance

1. Le XL-7 doit être maintenu propre et sans poussière. Nettoyez-le périodiquement à l'aide d'un chiffon propre et non-pelucheux. N'utilisez pas de solvants, ou d'autres produits de nettoyage.
2. Aucune lubrification et aucun réglage ne sont nécessaires de votre part.
3. Pour tout autre service, référez-vous à un personnel qualifié.

Instructions Concernant les Risques d'Incendie, d'Electrocution, ou de Blessures Corporelles.

ATTENTION: Lorsque vous utilisez des appareils électriques, certaines précautions élémentaires doivent toujours être prises, incluant les suivantes:

Ces instructions de dépanage sont destinées uniquement aux personnes qualifiées. Afin d'éviter les risques d'électrocution, n'effectuez que les opérations décrites dans ce manuel, à moins que vous ne soyez qualifiê pour cela. Faites effectuer toute r'eparation par une personne qualifié.

Ce symbole vous alerte de la présence d'instructions importantes d'opération et de maintenance dans la notice accompagnant l'appareil.
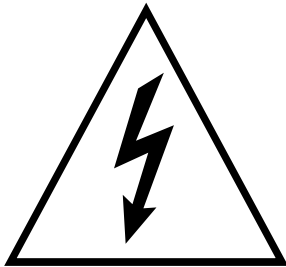
Ce symbole vous alerte de la présence d'un voltage non-isolé dangereux à l'intérieur de l'appareil, pouvant être d'une magnitude suffisante pour constituer un risque d'électrocution.

1. Lisez bien toutes les instructions avant d'utiliser le XL-7.

2. Afin de réduire les risques de blessures, une attention particulière est nécessaire en la présence d'enfants en bas âge.

3. N'utilisez pas le XL-7 dans ou près d'endroits humides - par exemple près d'une baignoire, d'un lavabo, dans les toilettes, dans une cave humide, sur un bar fréquenté, en présence d'un bull-dog en rut, ou dans une piscine pleine. Protégez cet appareil de tout liquide, éclaboussure ou fuite.

4. Le XL-7 doit être placé de façon à ce que sa position n'interfére pas avec sa propre ventilation.

5. Le XL-7 doit être placé loin de sources de chaleur telles que des radiateurs, cheminées, fours, ou groupies en chaleur.

6. Le XL-7 doit uniquement être connecté à une alimentation du type décrit dans les instructions d'opération et tel qu'indiqué sur l'appareil.

7. Une attention particulière doit être observée quant aux objets pouvant tomber et aux liquides pouvant être versés sur et à l'intérieur de le XL-7.

8. Le XL-7 peut être équipé d'une fiche secteur polarisée (avec une broche plus large que l'autre). C'est une mesure de sécurité. Si vous ne pouvez pas brancher cette fiche dans une prise, ne neutralisez pas cette sécurité. Contactez plutôt un électricien pour remplacer la prise obsolète.

9. Evitez de marcher sur le cordon d'alimentation ou de le coincer, particulièrement près des prises de courant, des boitiers 'electriques dt du point de sortie de l'appareil.

10. Le cordon d'alimentation de le XL-7 doit être débranché lorsque ce dernier n'est pas utilisé pendant une longue période.

11. Cet appareil, combiné avec un amplificateur, des haut-parleurs, et/ou un casque, est capable de générer des niveaux sonores pouvant occasionner une perte de l'ouïe permanente. Ne travaillez pas trop longtemps à un volume trop élevé ou même inconfortable. Si vous observez une perte de l'audition ou un bourdonnement dans les oreilles, consultez un O.R.L.

12. N'utilisez que les accessoires sp'ecifi'es par E-MU Systems.

13. Cet appareil doit être examiné par un personnel qualifié lorsque:

   A. Le cordon d'alimentation a été endommagé, ou

B. Des objets sont tombés, ou du liquide a été versé sur/à l'intérieur de l'appareil, ou

C. Le XL-7 a été exposé à la pluie, ou

D. Le XL-7 est tombé, ou

E. Le XL-7 ne fonctionne pas normalement, ou affiche un changement radical de performance.

14. Tout service doit être effectué par un personnel qualifié.

SAUVEGARDEZ CES INSTRUCTIONS

Interférences Radio et Télévision

L'appareil décrit dans cette notice génére et utilise une énergie de fréquence-radio. S'il n'est pas installé et utilisé correctement - c'est à dire en suivant strictement nos instructions - il peut occasionner des interférences avec la réception d'une radio ou d'une télévision.

Cet appareil a été testé et est conforme aux normes de Classe A en accord avec les spécifications du paragraphe J de la section 15 des lois FCC. Ces lois sont désignées pour fournir une protection raisonnable contre de telles interférences dans une installation résidentielle. Toutefois, il n'est pas garanti qu'aucune interférence n'apparaisse dans des installations particulières, et plus spécialement lorsqu'une antenne de télévision en «oreilles de lapin» est utilisée.

Si le XL-7 occasionne des interférences , vous pouvez essayer de les corriger en utilisant une ou plusieurs des mesures suivantes:

• Tournez l'antenne de la télé ou de la radio jusqu'à ce que les interférences disparaissent.

• Déplacez le XL-7 d'un côté ou de l'autre de la télé ou de la radio.

• Eloignez le XL-7 de la télé ou de la radio.

• Branchez le XL-7 sur une prise différente que la télé ou la radio.

• Installez une antenne sur le toit munie d'une connexion coaxiale entre elle et le poste de télévision.

Declaration of Conformity

$$C\epsilon$$

Manufacturer:

E-MU Systems
1600 Green Hills Road
Scotts Valley, CA 95067-0015 USA

We hereby declare that the equipment listed herin conforms to the harmonized standards of the following European Commission Directives: 89/336/EEC and 72/23/EEC.

Trade Name: XL-7

Model Number: 7750

Under 89/336/EEC as amended by 92/31/EEC, and 93/68/EEC

In accordance with EN 55103-1:1996, Emission   Environments E4

In accordance with EN 55103-2:1996, Immunity   Environments E4

Test information is contained in a report by Atlas Compliance and Engineering, Inc.

Dated July 5, 2001

Report No.: 0126EMUx17_103

Under 73/23/EEC as amended by 93/68/EEC

In accordance with EN 60950 with amendments A1, A2, A3, A4, A11

This Declaration is made July 5, 2001

Setup

This section thoroughly describes how to set up your new XL-7 for use. Setup includes unpacking instructions, how to hook up the unit to your sound system and, most importantly, how to turn the thing on and off.

Unpacking

Carefully remove XL-7 from the packaging material. Take care to save the packing materials in case you need to transport the unit. Check to make sure all components are included and in good condition. If there are missing or damaged components, contact E-MU Systems immediately for replacement or repair.

The XL-7 box should include the following components:

- XL-7 unit
- Power cable
- This operation manual
- Command Station CD-ROM

The following optional accessories are NOT included with your XL-7, but are available from your E-MU dealer for a nominal fee:

- Model 7770 - Rack Mounting Ears
- Model 7771 - XL-7 Gig Bag
- Model 7773 - Locking 12VDC Lamp

Connection Instructions

Basic Setup

MIDI Sound Module

The Headphone
Output is located
on the Front Panel

MIDI In

Power Switch

**110V/220V
50-60 Hz**
(auto-select)

Main Outs to Mixer In

Footswitch   Footswitch

Mixer

Amp

Speakers
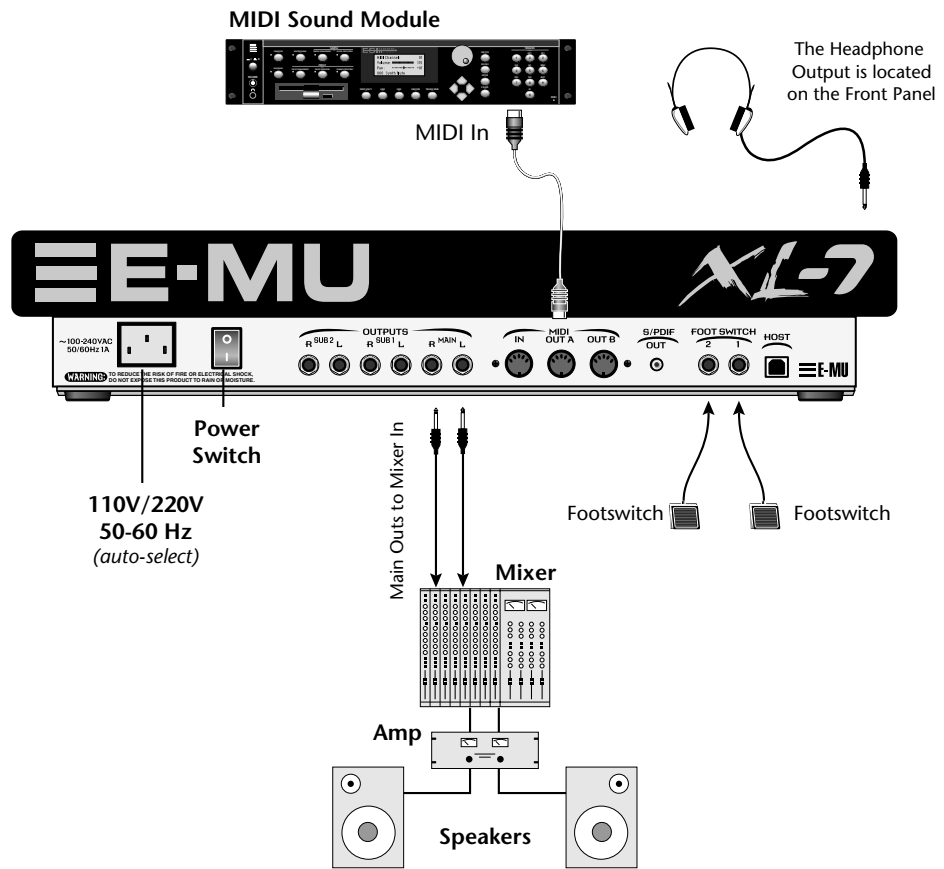
Power Switch & AC Receptacle
The AC power switch located on the rear panel is a "hard" power switch. The front panel On/Off switch is a "soft" power switch that can be used to turn power on and off when the XL-7 is rack mounted. There is no 110/220 Volt power selector switch since XL-7 utilizes an auto-switching power supply which accepts from 100V-250V, 50-60Hz.

Outputs
In order to reproduce XL-7's wide dynamic range and frequency response, use a high quality amplification and speaker system and a stereo setup is highly desirable The headphone output is the same as the Main output signal. The headphone jack is located on the left side of the front panel.

Footswitches 1 & 2
Connect one or more momentary footswitches for additional control. XL-7 auto-senses either normally-open or normally-closed switches when they are plugged in. Their functions are programmable in the Controllers, Footswitch menu and the Preset Edit, PatchCord menu.

The Right Main output jack carries a mono mix of the left and right channels when the Left Main plug is not plugged in.

The Left Main output jack is a stereo jack carrying both channels when the right output jack is empty.

Studio Setup
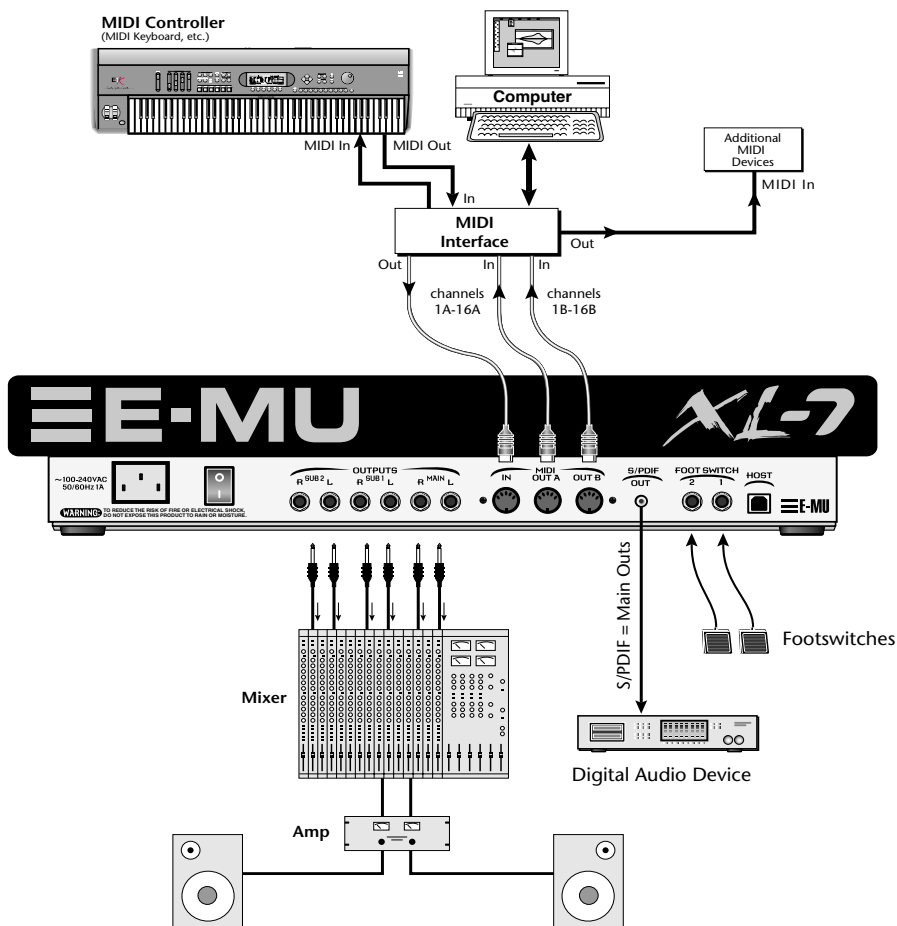
MIDI In
In this setup, XL-7 is controlled by MIDI messages received at the MIDI input, which are routed by a computer MIDI interface. Any MIDI controller, such as a MIDI keyboard or a computer, can control the module.

MIDI Out

XL-7 contains two MIDI output ports (A & B) so that it can transmit on 32 MIDI channels instead of the usual 16.**Audio Outputs**
Three sets of programmable stereo outputs (Main, Sub 1, and Sub 2) are provided. The internal effects are available only on the Main outputs. Specific presets (or MIDI channels) can be routed to one of these stereo pairs in order to be processed further or mixed separately. The S/PDIF output duplicates the function of the main outputs.

Footswitches 1 & 2
The two footswitch inputs accept either normally-open or normally-closed momentary footswitches and are programmable in the Controllers, Footswitch menu and the Preset Edit, PatchCord menu.

✎ Channels 01A-16A normally go to MIDI Out port A and channels 01B-16B normally go to MIDI Out port B.

Performance Setup
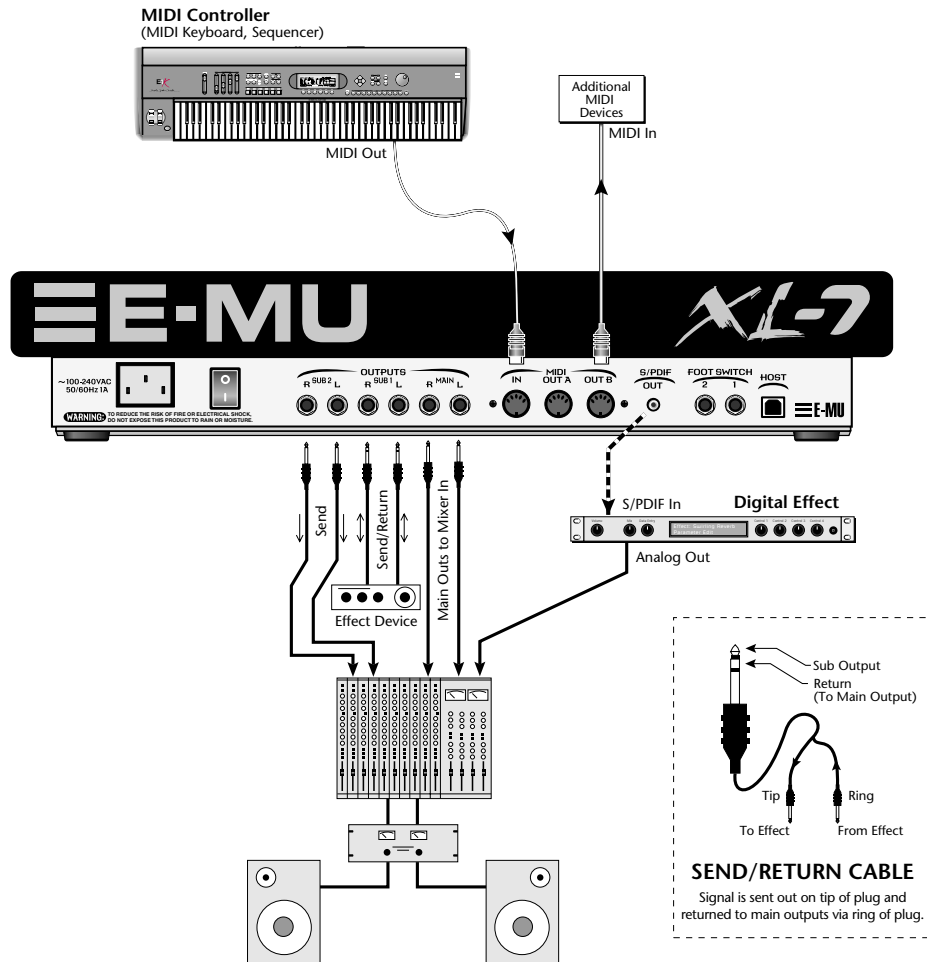
MIDI In
In this setup, XL-7 is additionally controlled by a MIDI keyboard.

MIDI Out
In this setup, XL-7 is controlling another MIDI sound module using its '"B" MIDI Port. MIDI data from the keyboard can be merged with XL-7's MIDI data and then be retransmitted out port B. See page 146.

Audio Outputs
The Sub 1 and Sub 2 output jacks are stereo jacks. The tip of each jack (accessed when a standard phone plug is inserted) connects to the left or right output of that group. The S/PDIF output is a digital copy of the stereo signal on the main outputs.

If you insert a stereo plug into one of the Sub Outputs, the ring of the plug serves as a signal Return which sums into the Main outputs.

Therefore, the Sub 1 and Sub 2 jacks can serve as effect sends and returns in order to further process selected instruments and then return them to the main mix.

You can use the Sub 1 and Sub 2 jacks as send/returns in order to further process selected XL-7 presets without using the effects bus on the mixing board. In a pinch, the effect returns can be used to sum additional instruments into the main outputs. It's like having an extra line mixer when you need more inputs!

Output Section
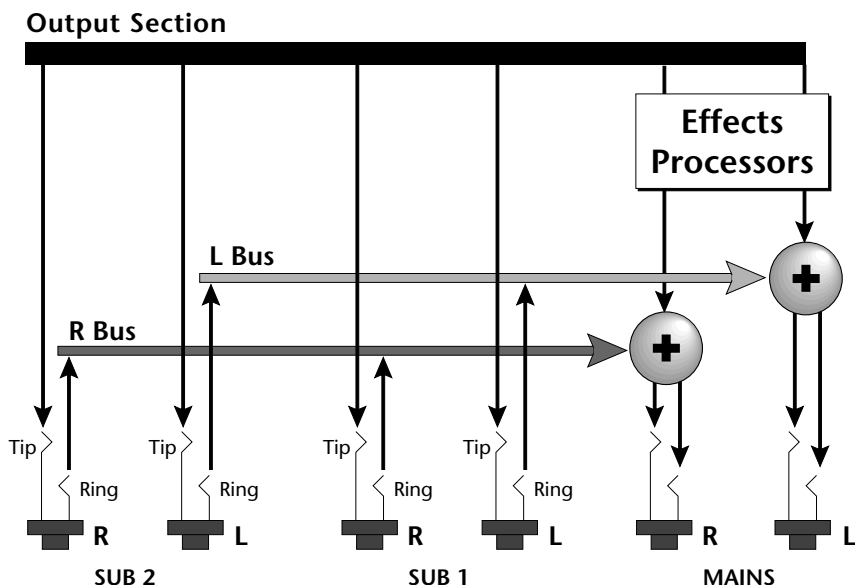
You can use the Sub 1 and Sub 2 jacks as effect returns to the Main Outputs.
Note that the Effects Processors are only routed to the Main Outputs.

Power Down Sequence

To avoid accidentally turning off the power while playing XL-7, the front panel power switch incorporates a five second "fail-safe" feature when powering down. Once the power down sequence has begun, you have five seconds to press the power switch again and stop XL-7 from turning off.

```
****  POWERING DOWN : 4
Press On / Off to Abort . . .
```

Rack Mounting XL-7

XL-7 can be rack mounted if you so desire. You'll need (6) rack spaces to fit XL-7 into your rack. The black end caps remove easily with three screws to reduce the width to 19 inches. Rack mounting ears are available from your E-MU dealer (Model 7770).

Instant Gratification

This section presents step-by-step instructions for the most fundamental operations to get you up and running as quickly as possible.

Playing Patterns & Songs

When you turn XL-7 on, it comes up in Pattern mode. XL-7 comes with over a hundred factory patterns. The Pattern screen is shown below.

```
ᵀ01  STOP   Ln:08    Bar:01 .1
000ᴼ  Ambideep
```

▶ **To Play Patterns**

1. **Select a pattern** using the data entry control.
2. Press the **Play** button, located near the center of the unit. The pattern begins playing and the lower line of the display changes.

```
ᵀ01  STOP   Ln:08    Bar:01 .1
CurPat: 002ᴼ   NextPat: 002ᴼ
```

3. While the pattern is playing, **select another pattern** using the data entry control. The name of the pattern to be played next is now shown. Notice that the Home/Enter LED is now flashing.

```
ᵀ01  STOP   Ln:08    Bar:01 .1
015ᴼ Club Luv
```

4. Press the **Home/Enter** button to select the new pattern. The lower line of the display now shows the numbers of the Current and Next

patterns. The new pattern will begin playing when the current pattern has finished.

```
ᵀ01  STOP    Ln:08    Bar:01 .1
CurPat: 002⁰    NextPat: 022⁰
```
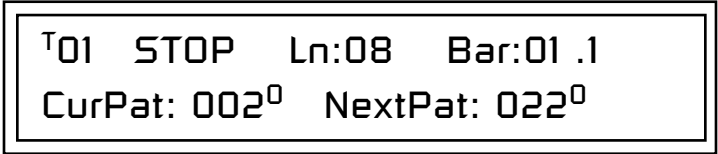
5. **Select a new pattern**, press **Stop,** then press **Play** to change patterns without waiting for the current pattern to end.

Track Muting

6. Press the **Track Enable/Mute** buttons to bring tracks in and out. Every factory pattern has from eight to sixteen tracks. The LED in each button illuminates when a track is enabled (unmuted). The diagram below shows the default factory track assignments.

✎ *XL-7's buttons have been designed so that you can slide your fingers across them to quickly mute and unmute tracks.*

Kick 1	Snare 1	Hi-Hat 1	Perc 1 or Fill 1	Kick 2	Snare 2	Hi-Hat 2	Perc 2 or Fill 2
1	2	3	4	5	6	7	8

Instr or Perc 1	Instr or Perc 2	Instr or Perc 3	Instr or Perc 4	Instr or Perc 5	Instr or Perc 6	Instr or Perc 7	Instr or Perc 8
9	10	11	12	13	14	15	16
Main Bass	Main Lead	Main Comp					
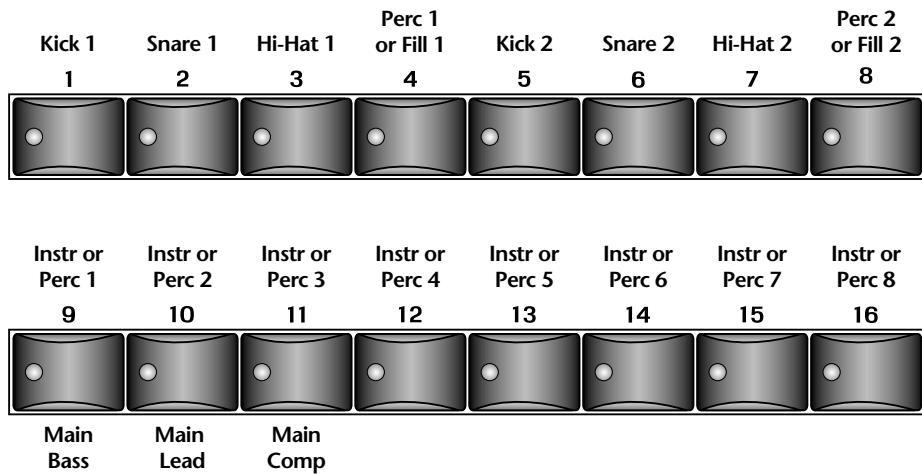
Track Mixing

7. Press the **Mix** button (located beneath the LCD) while a pattern is playing. The Channel Volume display screen appears, showing the volumes of all 32 channels.

```
CH VOLS ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
01A:125 ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
```

○ QUICK EDIT ○ PROGRAM ○ VOLUME ○ PAN
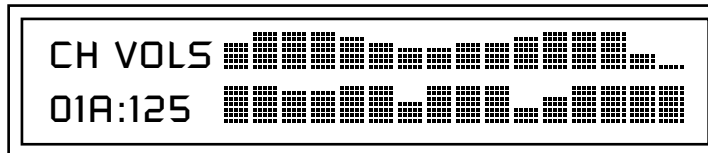
8. Now press the **Controller Function Select** button (located above the controller knobs) twice so that Volume is selected.

9. The sixteen controller knobs now function as volume controls for MIDI channels 01A-16A.

• While we're on the subject of Tracks and Channels, it might be a good time to mention that in all the factory patterns, a given track will control the MIDI channel of the same number. That means Track 1 will play the preset on channel 01A, track 2 will play channel 02A and so on up to 16. Feel free to turn the knobs and remix the pattern. The LEDs next to the knobs flash to indicate activity on that channel/track.

Change the Sound

10. Adjust your remix so that track 9 (the bass) is the most prominent instrument in the mix.

11. Press the **Preset View** button and select Track 9 using the Track/Channel buttons to the left of the LCD.

12. Now repeatedly press the **Controller Function Select** button until "Quick Edit" is selected.

13. Now the knobs control the bass sound. You know what to do.

14. Turn the **data entry control** to completely change the preset.

15. Use the **Track/Channel** select buttons to change any of the presets. In XL-7's default mode, the rubber keypads are active on whichever preset is showing in the preset view screen. They can be set to always play a specific channel in the Controllers menu (page 120).

• Nothing is made permanent until you save the pattern or preset, so play around as much as you like.

Jump Back

16. You can jump between Volume mode, Quick Edit mode or Pattern mode at any time without missing a beat. Select a new pattern, tweak parameters, change the mix, enable or mute tracks.

Playing Songs

Now that you've explored Pattern mode a little, check out Song mode. In its most basic form, a song is just a sequence of patterns chained together one after another.

▶ To Play a Song

1. Select Song mode by pressing the **Song** button located underneath the LCD. (Stop the sequencer first.)

2. Select one of the factory programmed songs using the **data entry control**.

3. Press **Play**. The song begins playing.

*If you move the cursor underneath the **Preset Name** before changing the preset, another bass preset will be selected.*

*Press the **Pattern Mode** button while a Song is playing to loop on the current pattern. Pressing **Song Mode** continues playing the song.*

Playing Demo Sequences

XL-7 has several factory demonstration sequences that let you hear what this incredible machine can do. The actual number of demo sequences depends on which ROM sounds sets are installed. You can play these demo sequences by accessing the Demo Sequence page.

```
┌──────────────────────────────────────┐
│                                      │
│  DEMO SEQUENCES            XL-7       │
│  Arctic  Drift                       │
│                                      │
└──────────────────────────────────────┘
```
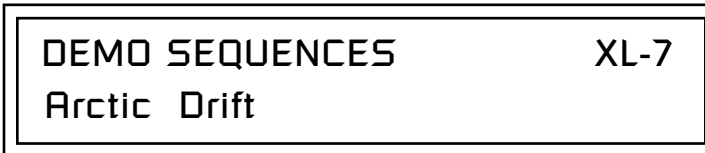
▶ To Play a Demo Sequence

1. Press and hold the **Song** and **Pattern** buttons at the same time to enter the Demo Sequence page. The screen shown above appears.
2. Select a sequence using the **data entry control**. The Enter LED will be flashing.
3. Press the **Enter** button to begin playing the selected sequence. The following screen appears.

```
┌──────────────────────────────────────┐
│                                      │
│  PLAYING: Arctic Drift               │
│  Press ENTER to stop                 │
│                                      │
└──────────────────────────────────────┘
```

4. Press the **Enter** button again to stop playing the sequence.
5. When a demo sequence plays to the end, the next demo will automatically begin playing. The screen will display the new demo name.
6. With the sequence stopped, **press any other button** to Exit demo sequence mode.

Auditioning Presets

The front panel audition button allows you to hear any preset in XL-7 without even playing a note! When the Audition button is pressed, the button's LED will illuminate and a short "Riff" (programmed as part of the preset) will play. The Riff is latched on and plays continuously until the button is pressed again. Presets can be changed while Audition is latched.

The top line of the Preset View display changes to show the MIDI Bank Select controller values needed to select the preset being auditioned. This is an extremely handy feature when sequencing.

✎ *To audition presets with their programmed effects, switch to Omni or Poly mode (located in the MIDI menu). Remember to switch back to Multi mode before playing sequences again.*

```
┌─────────────────────────────────────────┐
│ Bank    MSB:007   LSB:1    XL-7          │
│ 125²    key: SynhissOrgan                │
└─────────────────────────────────────────┘
```
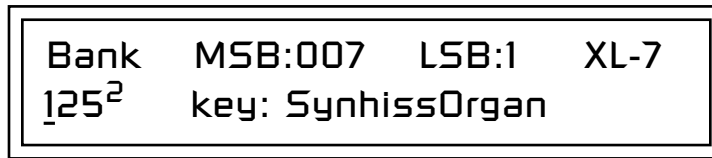
▶ **To Audition a Preset**

1. Select **Preset View** mode by pressing the preset button in the Mode/ View section immediately below the LCD.

2. Select a preset by turning the **data entry control** while the cursor is anywhere on the lower line. The preset number field (shown above) is the normal position of the cursor and pressing the Enter button will return the cursor to this position.

3. Press the **Audition** button on the front panel. The Audition LED will illuminate and a short riff will play the selected preset.

4. Continue to select and audition presets.

5. Press the **Audition** button again to turn Audition mode off. The LED will extinguish.

6. Play the rubber keypads.

7. Be sure to check out the Transposition buttons and Touchstrip.

Selecting and Quick Editing Presets

The first thing you'll do with the XL-7 is select and play the factory provided presets. XL-7 comes standard with 8 banks containing 128 presets each. See "Preset Screen" on page 44.

```
      Channel     Initial    Initial
      Number      Volume     Pan      Arpeggiator  Preset
                  Setting    Setting  Setting      Location
         │           │          │          │          │
         ▼           ▼          ▼          ▼          ▼
   ┌──────────────────────────────────────────────────────┐
   │ C01A    V127    P01ᵣ    A:off    User                 │
   │ 125²    key: SynhissOrgan                             │
   └──────────────────────────────────────────────────────┘
        │     │       │          │          │
     Blinking Preset  Bank     Preset      Preset
     Cursor   Number  Number   Category    Name
```
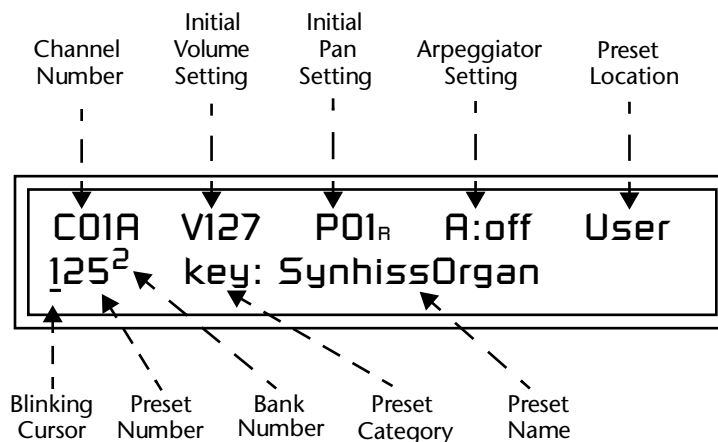
The first four banks are USER locations that can be overwritten and used to store your own presets. The presets that come stored in the USER presets are duplicated in banks 0-3 of the "XL-7" ROM bank, so feel free to overwrite them with your own presets. You won't be losing anything.

The *ROM Card* identifier is shown in the top right of the display. The preset is identified in the bottom line of the main screen (the screen that appears when you press the Mode/View Preset button).

Each bank of 128 presets is identified by a superscripted *Bank Number* to the right of the preset number. The bank numbers reset to 0 at the start of each ROM card you have installed. So with the XL-7 ROM installed, the USER banks will go from 0-3, then start over from 0-3 for the XL-7 ROM banks.

Bank Organization

USER	Bank 0	128 Presets
USER	Bank 1	128 Presets
USER	Bank 2	128 Presets
USER	Bank 3	128 Presets
XL-7	Bank 0	128 Presets
XL-7	Bank 1	128 Presets
XL-7	Bank 2	128 Presets
XL-7	Bank 3	128 Presets

The User Banks are duplicated in the XL-7 ROM bank.
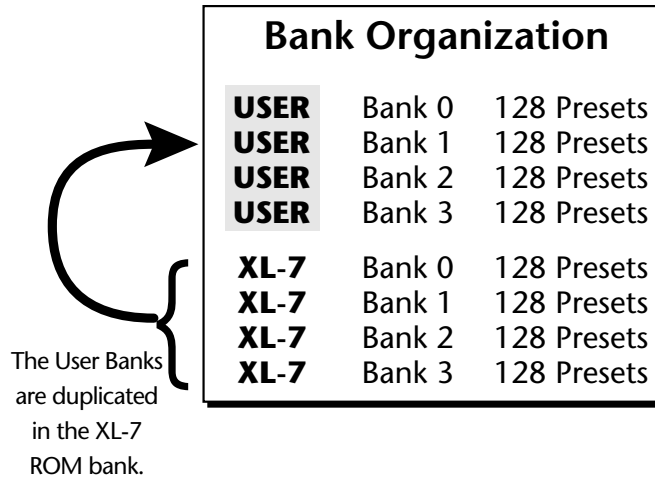
The four User Banks can hold 512 custom presets. Feel free to overwrite these since the factory user presets are duplicated in nonvolatile ROM.

To the right of the preset number and bank is the preset *Category* name followed by the *Preset Name*.

▶ To Change the Preset

1. Press the **Preset** button in the Mode/View box directly below the liquid crystal display. The main Preset selection screen appears.

2. The cursor will be located under the first character in the Preset Number field. This is the "Home" position which is selected instantly when you press the Home/Enter button. Pressing either of the two cursor buttons repeatedly also gets you there.

3. Turn the **data entry control** knob on the front panel to select a new preset number. If you turn the knob slowly, the presets advance one number for each "click" of the knob. If you spin the knob quickly, the numbers advance much faster (more than one number per click).

4. **Play the keyboard** (or press the Audition button) and listen to the sounds made by your XL-7!

5. **TRY OUT ANY OF THE 16 KNOBS** on the front panel *(in Quick Edit mode)* and note how they change the sound of each preset! Don't worry about ruining the sound, the values are automatically reset as soon as you select a new preset.

You can select presets from the Preset Number, Bank Number, Preset Category or Preset Name fields.

Notice that an asterisk appears in the display when you change the knobs. This indicates that you have edited the preset.

Exploring the Master Arpeggiator

XL-7's multi-channel Pattern Generator/Arpeggiator is one of the greatest features ever put in a synth. Let's explore the Master Arpeggiator.

▶ **To Arpeggiate a Single Preset:**

1. **Select a preset**. Note that the factory presets all have prefixes which describe the type of sound. For this investigation it might be best to choose a preset with the prefix "arp," for arpeggiator. These presets are optimized for use with the arpeggiator.

2. Set the Arp parameter in the main preset selection screen to "**M**" for Master Arpeggiator.

```
C01    V127   P01ʀ    A:M    XL-7
123³    arp: OrbisTabula1
```
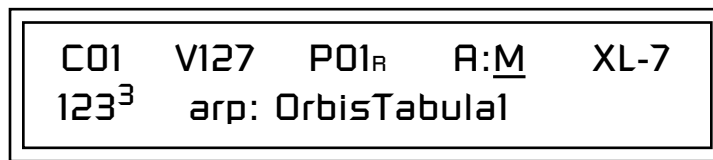
3. Press the **Arp** button in the Edit section of the front panel to access the master Arpeggiator menu, then use the **data entry control** to scroll to the screen shown below.

```
   MASTER  ARPEGGIATOR
Status                    on
```
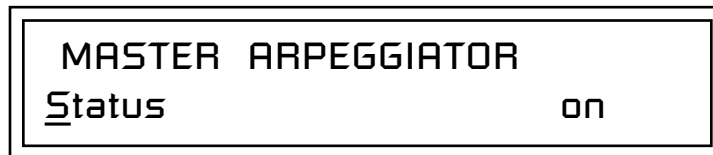
4. Make sure the arpeggiator Status is "**on**." Play the keyboard to start arpeggiating.

5. Press either **cursor key** repeatedly to move the cursor below the Status field.

6. Turn the **data entry control** clockwise one click. The Mode screen appears.

✎ Try using control knobs 15 & 16 to change the arpeggiator parameters.

```
   MASTER  ARPEGGIATOR
Mode               up
```

7. Use the **cursor keys** to move the cursor to the *Mode* field (up, down, up/down, forw asgn, backw asgn, forw/backw, random, pattern). Try out the different modes as you play the keyboard.

8. Move the cursor back to the lower left position and explore the other parameters. The *Note Value* parameter changes the rate of the arpeggios. By the way, note value is a divisor based on the Master Tempo. Try changing the tempo, but come right back.

9. Let's check out the pattern generator. Go back to the **Mode** screen and set the mode to "Pattern".

10. Now advance to the Pattern screen (shown below) and move the cursor to the **Pattern Number** field (the second field from the left).

```
MASTER ARPEGGIATOR
Pattern 38⁰ Inversions
```

11. Try the various patterns. There are 200 permanent factory patterns and 100 user locations to store the patterns you create. Each pattern can have up to 32 notes.

Multi-Channel Arpeggiator

XL-7 is totally unique in its ability to run up to 32 arpeggiators at once! Even two or three patterns at once can create very complex sequences and dynamic landscapes of sound.

Here's one way to access this ultra-powerful feature. There is one arpeggiator for each MIDI channel. First you'll assign three of the Trigger Keys to MIDI channels 01A-03A. Next, you'll assign arpeggiator presets to these channels. Then you'll become addicted to this new way of making music.

Program the Trigger Keys

1. Press the **Controllers** button, then turn the data entry control until the screen shown below appears.

```
T1  TRIGGERS  Latch: off
Key:C3  Ch: Basic  Vel: 064
```
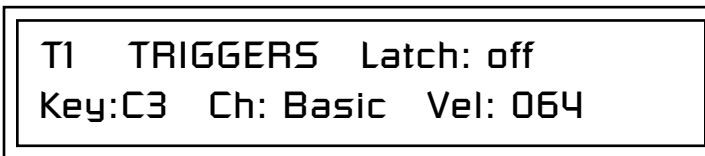
2. Move the **cursor** until it is underneath the **Latch** field and turn Latch mode On.

3. Move the **cursor** until it is underneath the **Channel** field (Ch) and set the channel to 01A.

4. Move the **cursor** until it is underneath the **Trigger** field (T1) and change the **Trigger to T2** (trigger button 2).

5. Turn **Latch On** for trigger button 2 and set the channel to **02A**.

6. Change the **Trigger to T3** (trigger button 3).

7. Turn **Latch On** for trigger button 3 and set the channel to **03A**.

Set up the Presets

8. Press the **Preset View** button (located beneath the LCD). The preset select screen appears.

9. Move the cursor underneath the **Category** field (as shown above) and

```
C01A   V127   P00    A:P   XL-7
026³   arp:Hollographik
```
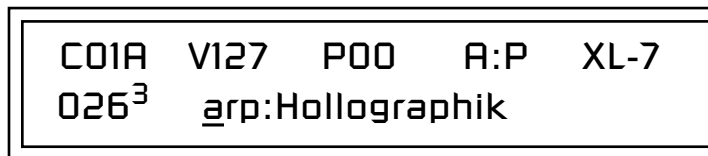
select the "**arp**" category.

10. Move the **cursor** underneath the preset name and select any "arp" preset for channel **1A**.

11. Press the "+" **Track/Channel** select button (located to the left of the LCD), so that **C02A** is displayed.

12. Select any other "arp" preset for channel **2A**.

13. Select channel **03A** and choose another arp preset.

Select Trigger Mode

14. Press the **Selector Button** in the upper left corner of the Command Functions section. Pressing this button will switch between Track Enable/Mute and Triggers mode. Select Triggers mode.

Play it!

15. Now press **Trigger Buttons 1, 2 and 3**. You should be hearing three arpeggiators playing at once.

16. **Change the arp preset** on the current MIDI channel. Since the cursor is located on the preset name, all your selections will be in the arp category.

17. Press the **Track/Channel** button and change the arp presets for channels 1A, 2A & 3A. Since each factory preset has differently programmed arpeggiator settings, changing the preset not only changes the sound, but the arpeggiator as well.

18. You can also **play the keypads**. You'll be playing the preset currently showing in the display.

19. Press the **Control Select** button above the knobs so that "Quick Edit" is selected. Adjusting the front panel control knobs now modifies the preset showing on the LCD.

20. Press the **Control Select** button above the knobs again so that "Volume" is selected. The first three knobs now control the volume of each arpeggiator preset.

✎ *Sometimes a simple volume change will bring out hidden voices and patterns.*

There's lots more to the arpeggiators. To find out more, refer to the arpeggiator chapter beginning on page 227.

Time to Save?

If you want to SAVE everything exactly as it is, continue on.

Multisetups save your entire XL-7 setup. Find out more on page 130.

1. Press the **Save/Copy** button.
2. Rotate the **data entry control** until you get to the menu shown below.

```
MULTISETUP NAME
User Setup
```

3. Press the **right cursor** button to move to the lower line.
4. **Name your Multisetup** so you can find it later, then press **Enter**.
5. Scroll to the next screen using the **data entry control**.

```
SAVE SETUP TO
002 User Setup
```

6. Move the **cursor** to the lower line, select a location and press **Enter**.

Basic Operations
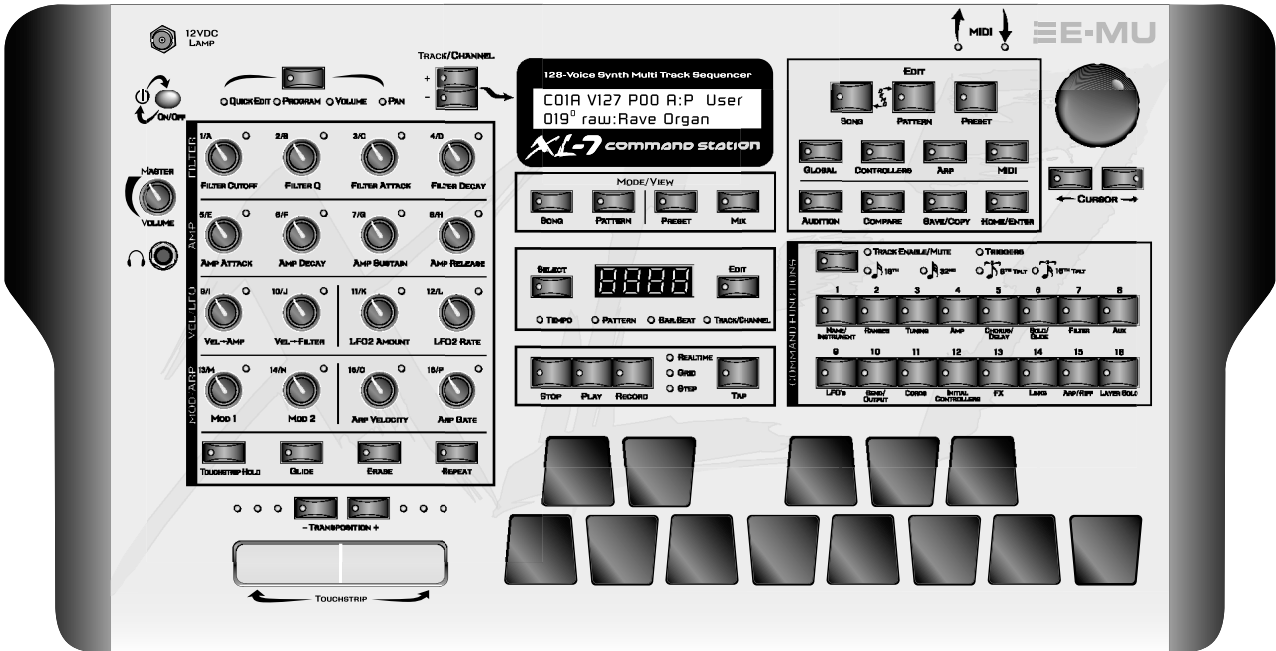
The XL-7 front panel contains an LCD screen, 13 velocity & pressure sensitive performance pads, a bi-directional touchstrip, 49 buttons, and 16 real-time controller knobs. Functions are grouped logically and the controls are arranged for ease of use.

Power Switch

The front panel On/Off switch is a "Soft" power switch that can be used to turn power on and off when the XL-7 is rack mounted. Use the AC power switch on the rear panel if you wish to completely disconnect XL-7 from the AC mains.

The power switch incorporates a "fail-safe" feature when powering down. Once the power down sequence has begun, you have five seconds to press the power switch again and stop XL-7 from turning off.

Volume Control

This control is the master volume control for all audio outputs. The Volume Control does not affect any editing or user interface operations. The front panel volume control is a digital attenuator. For maximum dynamic range, turn this knob all the way up and control the volume from your mixer or amplifier.

12VDC Lamp

The BNC connector in the upper left corner of the XL-7 panel supplies 12 volts DC at 250 mA to power a standard mixing desk lamp. (Order E-MU Model Number 7773 - Locking Lamp from your E-MU dealer.)

Mode/View Buttons

MODE/VIEW

SONG   PATTERN | PRESET   MIX
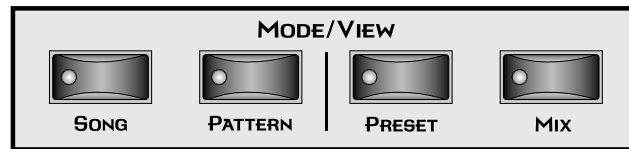
The Song and Pattern buttons change both the mode and current display view. Pressing Song or Pattern places the XL-7 in the selected mode.

Since Song and pattern are Mode buttons, the LEDs stay on when they have been selected, even if Preset or Mix view buttons are activated.

Song Mode Display

```
♩:100   M:04/4    Bar:001.1
000  256  bar blank
```

Pattern Mode Display

```
ᵀ01  STOP  Ln:01  Bar: 01.1
009¹  Smooth 6
```

✎ *An asterisk (*) appears in the Pattern, Song or Preset display to indicate that the item needs to be saved.*

The Preset button brings up the Preset/MIDI Channel selection screen shown below. This important screen allows you to change the Preset, Volume and Pan position for all 32 MIDI channels. The Preset button does not change the Song or Pattern mode status and this screen can be edited while a Pattern or Song is playing back.

Preset Select Screen

```
C01    V127   P01ᴿ   A:off   USER
079³   bts: Logic
```

The Mix button brings up a graphic display of the volume settings for all 32 MIDI channels. This is the same volume setting as in the Preset Select screen except that all 32 MIDI channels can be simultaneously viewed and edited. The Mix button does not change the Song or Pattern mode status and this screen can be edited while a Pattern or Song is playing back.

Mix Screen

```
CH VOLS ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
01A:125  ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
```

▶ **To View the Pan Settings for all 32 Channels**

1. Press the **Home/Enter** key *(to move the cursor to "Home" position)* and turn the **data entry control** clockwise from the Mix screen.

Track/Channel +/- Buttons

These very handy buttons, located to the left of the LCD, serve as a shortcut to increment or decrement the Track (in Pattern mode), the MIDI Channel (in Preset mode), Layer (in Preset Edit mode) or Step Numbers (in Arpeggiator Edit mode).

Data Entry Control

The data entry control is a stepped, variable control switch used to change parameter values. The wheel increments or decrements the current value one unit with each click. This control incorporates acceleration, which advances the value faster if the data entry control is turned quickly.

Left/Right Cursor Buttons

These buttons move the cursor to the next parameter on the display. (The cursor is a little flashing line underneath one of the parameters in the display.) Press either cursor button until the cursor is underneath the desired parameter. The cursor buttons have an auto-repeat feature which advances the cursor when the button is held continuously.

The cursor can be moved bidirectionally using the data entry control while either cursor select button is held down (for example, press and hold the right cursor button and turn the data entry control).

LED View Select Section

The numeric LED display in the center of the XL-7 can display: Tempo, Pattern Number, the current Bar/Beat, or the MIDI Channel. Repeatedly pressing the Select button cycles through the four modes.
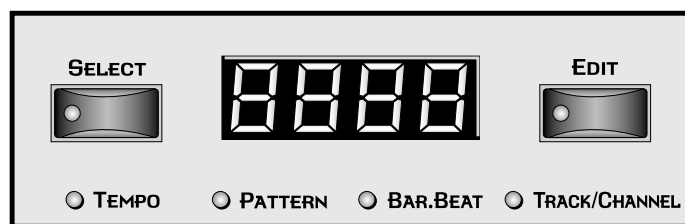
Selecting patterns using this method allows you to see the current and next pattern numbers.

Pressing the Edit button lights its associated LED and allows you to edit the displayed value using the data entry control. Pressing Edit again deactivates this mode. To select a new pattern, you must **exit Edit mode** for the new pattern to be selected.

By pressing and holding the Edit button, and then turning the data entry control, the displayed parameter can be quickly edited without latching the Edit mode on.

Sequencer Controls

These buttons control the sequencer transport functions.
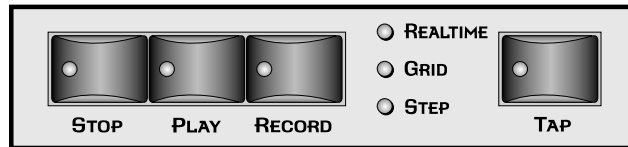
Stop Button

Pressing the **Stop** button immediately stops any currently playing Pattern Sequence or Song Sequence. The sequence remains at its current location.

Press the **Play** button to resume from the current location.

Press the **Stop** button when the sequence is stopped to return to the beginning of the sequence (RTZ). Pressing the **Stop** button a third time reloads the initial setup information for the Pattern or Song.

Play Button

The **Play** button engages the transport, regardless of sequencer mode (except in step edit). The LED in the button will be illuminated when the sequence is running.

Pressing **Play** while in **Record** mode puts the sequencer into **Pause** mode. The sequencer stops and the Play LED flashes. Pressing **Play** again resumes **Record** mode.

Record Button

The Record button selects one of the three Pattern record modes or two Song record modes.

Song Record modes *(from Song mode)*
• One press .... Realtime record mode
• Two presses .... Step record mode

Pattern Record modes *(from Pattern mode)*
• One press .... Realtime record mode
• Two presses .... Grid record mode
• Three presses .... Step record mode

*While a pattern is playing, **press and hold the Play button and press Record** to jump into Grid Edit mode.*

The LEDs to the right of the button indicate the record mode. After selecting a record mode, the Play button LED will be flashing. Press **Play** to begin recording.

You can press **Record** at any time during recording or playback to go in and out of Realtime Record mode (i.e. Punch In & Out)

Tap Tempo

The Tap Tempo button allows you to change the tempo at any time by tapping the button at the desired tempo. Three taps are initially required to change the tempo and then the tempo follows with each subsequent tap.

Edit Section

EDIT

SONG   PATTERN   PRESET

GLOBAL   CONTROLLERS   ARP   MIDI

AUDITION   COMPARE   SAVE/COPY   HOME/ENTER
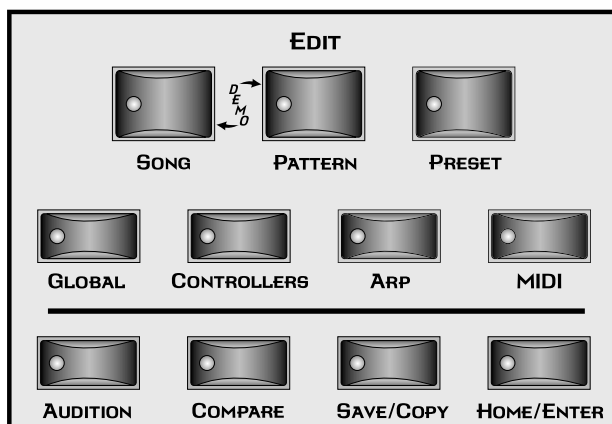
Song Edit Button

The Song Edit menu allows you to name and edit songs. An illuminated LED in the button indicates that you are in Song Edit mode. For more information about Songs and Song mode, see page 94. When pressed in combination with the Pattern Edit button, Song Edit puts the XL-7 in Demo mode.

Pattern Edit Button

The Pattern Edit menu allows you to name and edit patterns. An illuminated LED in the button indicates that you are in Pattern Edit mode. For more information about Patterns and Pattern Editing, see page 54. When pressed in combination with the Song Edit button, this button puts XL-7 in Demo mode.

Preset Edit Button

The Preset Edit menu allows you to create and edit presets. An illuminated LED in the button indicates that you are in Preset Edit mode. For more information about the Preset Edit menu, see page 183.

Global Button

The Global menu contains parameters that affect the entire machine. An illuminated LED in the button indicates that you are in the Global menu. For more information about the Global menu, see page 129

Controllers Button

The Controllers menu contains parameters that are related to the front panel controller knob and button triggers. An illuminated LED in the button indicates that you are in the Controllers menu. For more information about the Controllers menu, see page 119.

Arpeggiator Button

The Arpeggiator menu contains parameters that are related to the Master Arpeggiator such as creating and editing arpeggiator patterns. An illuminated LED in the button indicates that you are in the Arpeggiator menu. For more information about the Arpeggiator menu, see page 227

MIDI Button

The MIDI menu contains parameters that are MIDI related. An illuminated LED in the button indicates that you are in the MIDI menu. For more information about the MIDI menu, see page 143.

MIDI Panic Button

Pressing the MIDI and Home/Enter buttons simultaneously sends a MIDI "All Notes Off" and "All Sound Off" for all 32 MIDI channels.

Home/Enter Button

The Home/Enter button is dual purpose. In general, this button acts as the "Home" button. For example, when in an Edit menu, this button snaps the cursor to the page name field of the current screen. When viewing the Preset Select screen, this button snaps the cursor to the preset number field. The flashing green LED of the Home/Enter button indicates that pressing the button will initiate a particular operation.

Save/Copy Button

The Save/Copy button is used to save changes to a pattern, song, preset, copy data between presets, randomize presets and to move other types of data. Selected groups of parameters, such as PatchCord settings, can be copied between Presets and/or between Layers using this menu. The menu is context-sensitive and will start at the appropriate save screen. See Save/Copy on page 269 for more information.

The LED in the button illuminates to indicate that you are in the Save/Copy menu. The LED also illuminates when any preset parameter has been changed in the Edit menu (or if the front panel knobs have been moved with Quick-Edit mode enabled).

Compare Button

The Compare button allows you to toggle between an edited version of a preset and the original, unedited version. When a preset has been edited, an asterisk appears in the preset name field and the Save/Copy LED flashes. Press the Compare button, lighting it's LED, to hear the unedited preset. Press the Compare button again to hear the edited preset. If edits are made to the preset while listening to the compared original version, compare mode is aborted and the compare LED goes off.

Audition Button

When the Audition button is pressed, the LED next to the button will illuminate and a short "Riff" (programmed as part of the preset) will play. The Riff is latched on and plays continuously until the button is pressed again. Presets can be changed while Audition is latched on. *See "Bank Select Commands" on page 180 for more information on selecting banks via MIDI.*

The top line of the Preset display changes to show the MIDI Bank Select controller values needed to select the preset being auditioned. This handy feature lets you know the exact Bank and Preset number.

MSB   LSB

```
Bank   MSB:007   LSB:3    XL-7
082³    bts: Kraftwork
```

Preset #

Real-time Controller Knobs
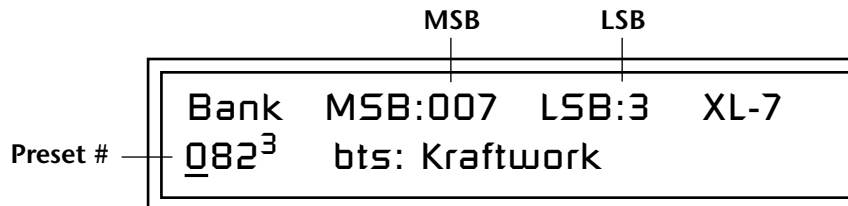
The Real-time Controller Knobs can serve several purposes. The first four functions are selected using the **Controller Function Select** button above the realtime control knobs. Preset Quick Edit can be enabled to use the knobs for editing in the Preset Edit menu.

1. **Quick Edit** - Real-time control of internal synthesizer parameters and "Quick Editing" the initial settings of the real-time controllers
2. **Programmable Knobs** - Real-time control of MIDI continuous controllers on external synthesizers
3. **Volume** - Setting the volume of 16 channels.
4. **Pan** - Setting the pan position of 16 channels.

Controller Function Select

○ QUICK EDIT ○ PROGRAM ○ VOLUME ○ PAN

1/A FILTER CUTOFF	2/B FILTER Q	3/C FILTER ATTACK	4/D FILTER DECAY
5/E AMP ATTACK	6/F AMP DECAY	7/G AMP SUSTAIN	8/H AMP RELEASE
9/I VEL→AMP	10/J VEL→FILTER	11/K LFO2 AMOUNT	12/L LFO2 RATE
13/M MOD 1	14/N MOD 2	15/O ARP VELOCITY	16/P ARP GATE

FILTER
AMP
VEL/LFO
MOD/ARP
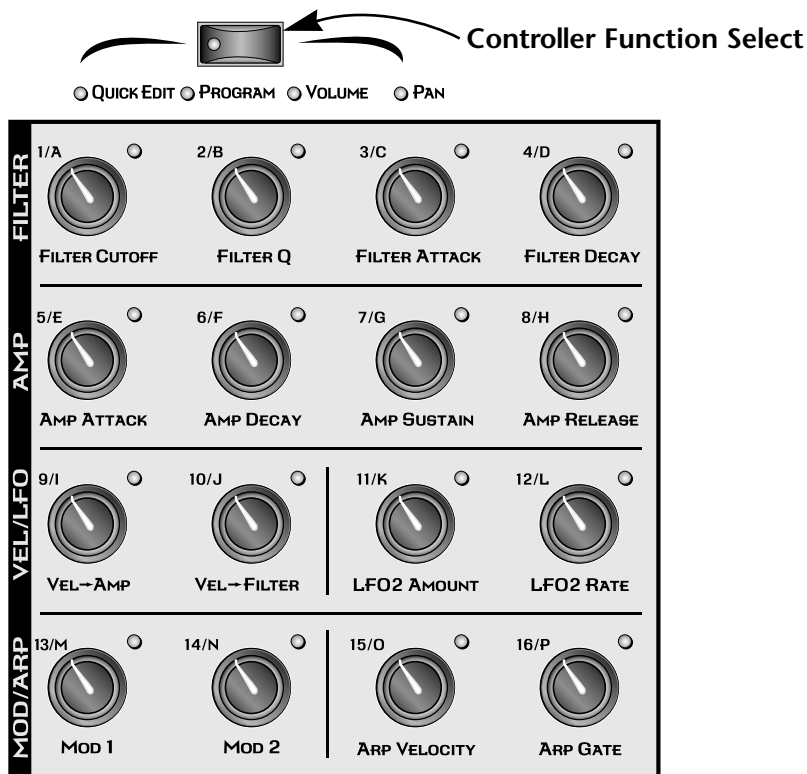
Knob Functions

✎ *Quick Edit knob movements can be recorded into the sequencer using realtime song or pattern record modes.*

Quick Edit mode

The Real-time controller knobs provide direct control of the XL-7's synthesizer parameters when the Controller Function Select is set to Quick Edit.

There is an LED next to each of the control knobs which illuminates to indicate that the knob setting has been changed from the value programmed in the preset ("Knobs Preset Quick Edit" mode must be enabled in the Controllers menu). If the knob position is returned to the original setting, the LED is extinguished.

Initial controller values can be stored in every preset. When you move a knob with Quick-Edit enabled, the Initial Controller Value is updated with the knob's new value. The knob's LED lights indicating that the preset value has been changed. The MIDI A-P values are stored in the corresponding *Initial Controller Amount* parameter in the Preset Edit menu (see "Initial Controller Amount" on page 221). The Save/Copy button LED flashes to remind you that the preset has been edited. "Quick-Edits" made to a preset are lost if you select another preset before saving them.

The four rows of knobs always control the preset on the basic MIDI channel (the channel showing on the preset select screen), when the control switch is set to Quick Edit.

The labels (Filter Cutoff, Filter Q, Filter Attack, Filter Decay, etc.) printed on these rows show how the factory ROM presets are programmed to respond. *(The controls may not exactly conform to the front panel labels depending on the preset.)* You can change the way a preset responds to MIDI A-P messages from the Preset Edit menu (PatchCords). The knobs only generate a message when you move a knob to a new value. The current value jumps to the new value.

▶ To Quick-Edit a Preset

1. Select **Quick Edit** mode using the Controller Function Select button.
2. Use the Control Knobs to change the sound of the current preset as desired. An asterisk (*****) appears in the preset view display indicating that the preset has been modified.
3. Press the **Save/Copy** button. You may have to turn the data entry control so that the display reads, "Save PRESET to."
4. Press the right cursor button to select the bottom row.
5. **Optional:** Select a new preset location if you don't want to overwrite the current preset, or if the current preset is a ROM preset.
6. Press the **Enter** button to save the preset.

Programmable Knobs mode

If the "*Programmable Knobs*" parameter in the Controllers menu is set to "Ext," or "Both," the system sends MIDI controller messages when you turn the Controller knobs. Each knob can be programmed to send on any MIDI channel (01A-16B) and on any continuous controller number from 1-95. The knobs only generate a message when you move a knob to a new value. The Controller Knob LEDs always remain off in this mode. See "Programmable Knobs" on page 125.

▶ **To Program the Programmable Knobs**

1. Press the **Controllers** button. Its LED will illuminate.

2. Turn the data entry control to select the **Programmable Knobs screen**.

Turning a knob while in this screen automatically selects that knob for programming!

Knob # ——

```
K1   PROGRAMMABLE KNOBS
Ctrl: 22   Ch:01A        Ext
```

CC#   MIDI Chan   Int/Ext/Both/Seq
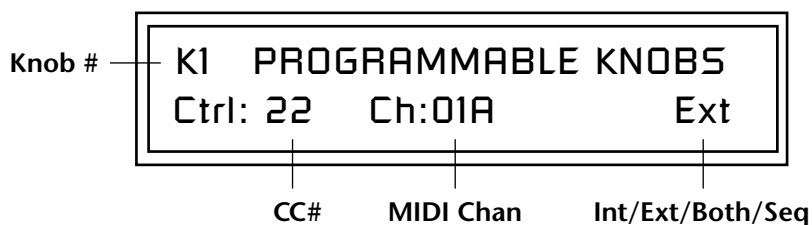
3. Use the left/right cursor controls to select the fields.

4. Select the MIDI Continuous Controller number, the MIDI channel, and Internal/External or Both for each of the 16 knobs.

5. **Save the Multisetup** if you want to save these settings. See page 131.

Multichannel Volume Knobs

In this mode, each of the 16 knobs will control MIDI Channel Volume for the like-numbered channel. This directly edits the value shown on the preset select screen and is equivalent to sending MIDI cc#7.
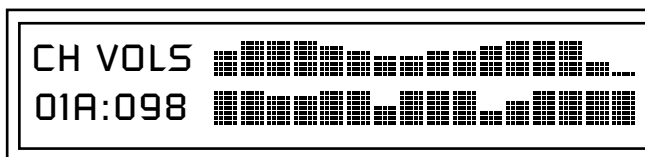
```
CH VOLS  ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮
01A:098  ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮
```

View Mode must be set to "MIX" in order to see the display shown above.

When "Knobs MIDI Out" in the MIDI menu is enabled, any knob change will send MIDI cc#7 to the MIDI out port as well as controlling the internal channel volume.

In this mode, the LEDs next to the sixteen knobs blink to indicate MIDI activity on the same numbered MIDI channel (from the keypads, sequencer or external MIDI sources).

Multichannel Pan Knobs
In this mode, each of the 16 knobs will control MIDI Channel Pan for the like-numbered channel.This directly edits the value shown on the preset select screen and is equivalent to sending MIDI cc#10.
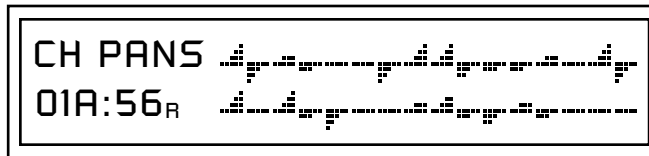
```
CH PANS
01A:56ᴿ
```

View Mode must be set to "MIX" in order to see the display shown above.

When "Knobs MIDI Out" in the MIDI menu is enabled, any knob change will send MIDI cc#10 to the MIDI out port as well as controlling the internal channel volume.

In this mode, the LEDs next to the sixteen knobs blink to indicate MIDI activity on the same numbered MIDI channel (from the keypads, sequencer or external MIDI sources).

Trigger Buttons

The trigger button section serves multiple purposes which are listed below.

- Assignable & latchable note triggers. See page 124.
- Sequencer track select buttons See page 22 and page 54.
- Sequencer grid edit entry keys. See page 63.
- Preset Edit menu jump keys. See below.

Mode Switch

✎ *Trigger button presses can be recorded into patterns and songs.*
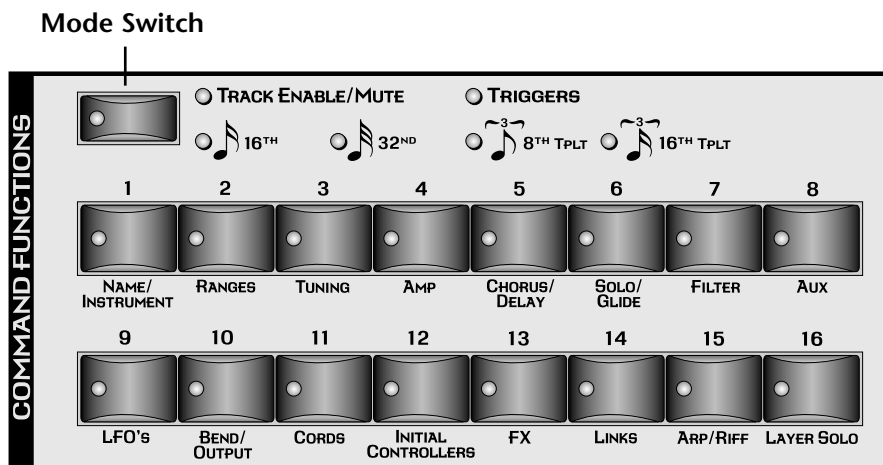
The mode switch is normally used to select between Triggers and Track Select/Mute. In Sequencer Grid Edit, the mode switch is used to select step resolution.

Trigger Mode

Select Triggers mode by pressing the mode select button so that the "Triggers" LED is illuminated. Now the 16 buttons work like keyboard notes. Each of the 16 buttons can be assigned to any MIDI note, on any MIDI Channel (01A-16B), with any velocity (0-127), and can be set to be latched or momentarily on. Latched note will hold until the button is pressed again. Latched notes will be indicated by the LEDs. When Beats mode is selected, the Trigger Keys are used to enable or mute Beats Parts.

Trigger keys are assigned from the Controllers menu. See page 124 for more information.

Preset Menu Jump Keys

Whenever you are in the Preset Edit menu, the sixteen command buttons function as "jump" buttons to the various screens in the Preset Edit menu. The jump location is labelled directly below each button.

Pressing a jump button instantly takes you to the first screen in the selected category. Pressing the button again takes you to the second screen in the category and so on. Repeated pressing will rotate you back to the first screen in the category.

Touchstrip, Transpose, Keypads & Glide

The Touchstrip is a bi-directional controller which is normally connected to control pitch. It can, however, be patched in to any modulation destination in the Cords section of the Preset Edit menu. The Touchstrip is referred to and programmed as "Pitch Wheel" in the Cords menu. See page 211.
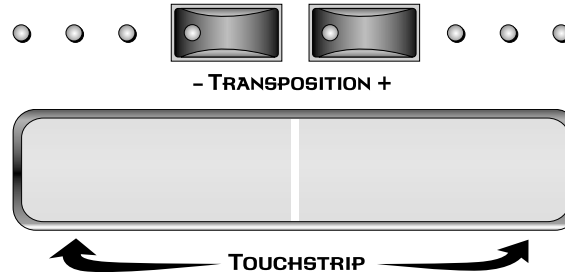
Simply slide your finger along the touchstrip while playing the keypads to hear pitch bend. There is a slight "dead band" in the very center of the strip to facilitate starting on pitch. You can press anywhere along the strip and the pitch will instantly jump to that setting. When you release your finger, the pitch will jump back to normal.

Touchstrip Hold

The Touchstrip Hold button holds the pitch at the position last touched so that it doesn't jump back to center when released. The LED in the button illuminates when this function is on.

Transpose Buttons

These buttons transpose the current range of the rubber keyboard up and down in one octave intervals. The LEDs on either side of the transpose buttons show the currently selected range. With no LEDs illuminated, the keyboard is in its normal range, Middle C to High C (60-72). Each LED to the right of the buttons stands for one octave up. Each LED to the left of the buttons stands for one octave down.

Rubber Keypads

The velocity and pressure-sensitive keypads can play on any MIDI channel as programmed in the Controllers menu. They are normally set to play on the "Basic" channel, which means that they play the preset currently showing in the preset view screen. The keypads output channel (mono) pressure internally (routed in the PatchCords) and both channel and polyphonic pressure over MIDI.

Glide Button

This button turns Glide (portamento) on or off for the current preset. The LED in the button illuminates when Glide is on. See Glide on page 201.

Erase Button

When this button is latched on (LED illuminated) while recording a pattern, any note played on the keyboard will remove that note from the pattern as long as the keyboard key is held down. This allows you to quickly removed any "flubbed" notes without having to enter Pattern Edit mode.

In Grid record mode, pressing the Erase button while the cursor is on one of the grid locations, removes the note from that location.

In Song step record mode, pressing the Erase button erases the currently selected step from the song.

Repeat Button

When this button is latched on (LED illuminated) while recording a pattern, played notes will repeat at the current pattern quantize setting (page 55). You can get some great effects with this feature by simultaneously changing the volume or pitch as the sound repeats.

In Song step edit mode, the Repeat button functions as a "Pattern Insert" button. See page 95 for more information.

Preset Screen

The Preset Select screen is accessed by pressing the Preset View button located directly under the LCD. From this screen you can examine or change the Preset, Volume, Pan Position and Preset Location for each of the 32 MIDI channels.

```
CO1A   V127   PO1ᵣ   A:off   User
079³   kit: Hide & Seek
```

MIDI Channel Selection

▶ **To Change the MIDI Channel**

1. Press the Preset View button to display the Preset Select screen.

2. Press the Track/Channel inc/dec buttons located to the left of the liquid crystal display to select channels 01A through 16B. The preset, volume and pan settings for each channel will be displayed as you scroll through the channels.

The channel number shown in the main screen is the "basic MIDI channel" when in Omni or Poly modes.

Preset Selection

▶ **To Change the Preset**

1. Press the **Preset View** button to display the Preset Select screen.

2. Press either **cursor key** until the cursor is underneath the preset number. (The cursor is a little flashing line underneath one of the parameters in the display.) As you rotate the data entry control, the preset number and name changes.

3. The displayed preset is assigned to the displayed MIDI channel. Presets are arranged into banks of 128, as shown in the diagram at left.

Bank	Contents
0	**– 128 RAM Presets**
1	**– 128 RAM Presets**
2	**– 128 RAM Presets**
3	**– 128 RAM Presets**
0	– 128 ROM Presets
1	– 128 ROM Presets
2	– 128 ROM Presets
⋮	⋮
??	*Depending on ROM sets installed*

USER (spanning banks 0–3), ROM 1 (spanning ROM banks)

Bank Number

Preset Number

```
CO1A   V127   PO1ᵣ   A:off   User
079³   bts: Logic              ✱
```

Indicates that the preset was modified
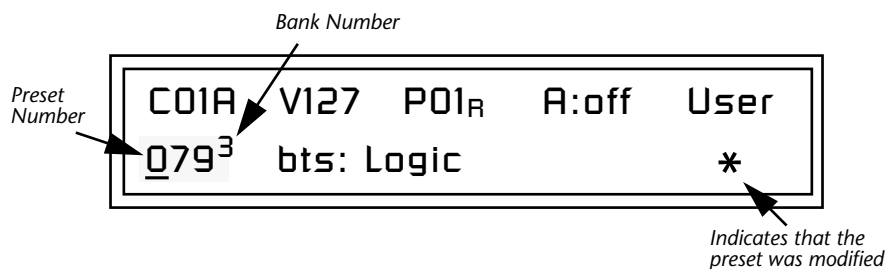
🔖 *An asterisk ✱ in the preset view screen indicates that the preset has been modified.*
(Change the preset without saving to remove the asterisk.)

Using the screen above as an example, the superscripted number 2 in the second line of the display identifies the current bank number.

• Select banks independently of the of the preset number by locating the cursor on the Bank field and turning the data entry control.

MIDI BANK SELECT			
	MSB	**LSB**	
	cc00	**cc32**	
USER	00	00	Bank 0
USER	00	01	Bank 1
USER	00	02	Bank 2
USER	00	03	Bank 3
XL-7	14	00	Bank 0
XL-7	14	01	Bank 1
XL-7	14	02	Bank 2
XL-7	14	03	Bank 3

This chart shows the MSB and LSB numbers needed to select preset banks over MIDI. Select a bank, then send the program change number. Without a bank select command, presets are selected from within the current bank.

Channel Volume

Channel Volume sets the volume of the selected MIDI channel in relation to the other channels. This is the same parameter as MIDI volume control #7, and changes made over MIDI are shown in the display.

Volume

```
C01    V127   P01ᴿ   A:off   User
079³   bts: Logic
```
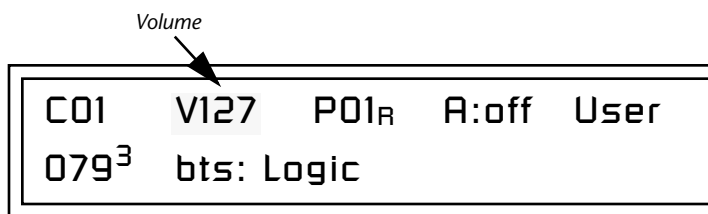
▶ **To Change the Channel Volume**

1. Press the **Preset View** button to display the Preset Select screen.
2. Press either **cursor key** until the cursor is underneath the volume value.
3. Rotate the **data entry control** to select a volume level. The Channel Volume range is 000-127.

Channel Pan

Channel Pan sets the stereo position of the selected MIDI channel. This control operates like the balance control on your home stereo system. Channel Pan is the same parameter as MIDI pan controller #10, and changes made over MIDI are shown in the display.

Pan Position

```
┌─────────────────────────────────────┐
│                                      │
│  C01   V127  P01ᴿ    A:off  User     │
│  079³   bts: Logic                   │
│                                      │
└─────────────────────────────────────┘
```
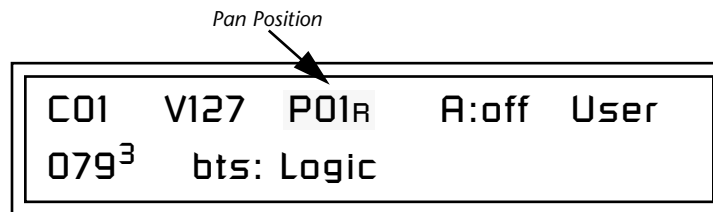
Note: Pan settings in the preset ADD algebraically with the Channel Pan setting. Therefore, if the pan setting in the preset were set to "63ᴿ," moving the Channel Pan setting full left would return the sound to the center position.

▶ To Change the Channel Pan

1. Press the **Preset View** button to display the Preset Select screen.
2. Press either **cursor key** until the cursor is underneath the pan field.
3. Rotate the data entry control to **select a pan value**. 64ʟ indicates a hard left pan, 63ʀ indicates a hard right pan. With a setting of "00," the sound is centered in the stereo field.

Channel Arpeggiator

This function controls the arpeggiator for each MIDI channel. When the channel arpeggiator mode is set to Off, then there is no arpeggiation on that channel, regardless of what is set up in the Master Arpeggiator or preset. If the channel arpeggiator is On, the preset's arpeggiator is used, regardless of whether or not it is turned on in the Preset Edit menu. This lets you turn on arpeggiation from the main screen.

If the mode is set to "P" (for preset), the preset's arpeggiator settings and on/off status is used. If the mode is set to "M" (for master), the master arpeggiator settings and on/off status (located in the Arp menu) are used. *See the "Arpeggiator/Beats Menu" on page 227 for more information.*

▶ To Play the Arpeggiator (Quick Start)

1. From the **Preset View** screen, press either cursor key repeatedly until the cursor is underneath the **arpeggiator field** (A:).
2. Rotate the data entry control to select "**P**" for preset.
3. Press either cursor key repeatedly until the cursor is underneath the **Preset Category** field and select "**arp:**" using the data entry control.
4. Press the right cursor button to move it to the **Preset Name** field.
5. **Play notes or chords** on the keyboard. Change presets as desired to audition the various patterns and presets.

Sound Navigator

Sound Navigator allows you to search through preset and instrument categories to find the type of sound you're looking for. Each preset and instrument has a name and a three letter preset category. You can create your own categories in order to group favorite presets. The preset category is assigned in the Preset Edit menu (Preset Name). Instrument categories are fixed.

Preset Category

When you want to find presets in a particular category, you simply change the category field in the Preset View screen, then move the cursor to the preset name field to scroll through all the presets in the selected category.

When the cursor is on the Preset Category field, turning the data entry control selects different preset categories. The Name Field will change to show the first preset in each category.

```
C01   V127   P00   A:off   User
064¹    w_al: Raverotic
```

Preset Category   *Preset Name*
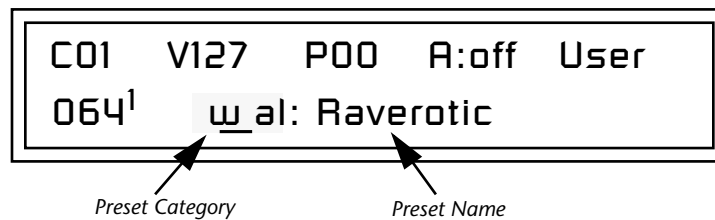
▶ To Change the Preset Category

1. From the Preset View screen (shown above), press either cursor key repeatedly until the cursor is underneath the preset category field.
2. Rotate the data entry control to select one of the preset categories. Preset Categories are displayed in alphabetical order.

▶ To Select a Preset within a Category

1. After selecting a category, move the cursor to the Preset Name field.
2. Rotate the data entry control to scroll through the presets in the selected category. Note that the preset numbers will no longer change sequentially.

Instrument Category

When the cursor is on the Instrument Category field (Preset Edit menu), turning the data entry control selects different instrument categories. The Name Field changes to show the first instrument in each category. Move the cursor back to the instrument name to choose other instruments in the selected category.

```
L1 INSTRUMENT          ROM:XL-7
064¹    wal: Raverotic
```

Sequencer

The XL-7 Sequencer is an extremely powerful, yet easy to use MIDI recording device. Several different methods of creating and editing sequences are provided to suit your personal style of composition.

▶ To Enable the Sequencer
XL-7 always powers up in pattern mode. Pattern mode can be selected from any other screen by pressing the Pattern mode button below the LCD.

A Pattern can be immediately started by pressing the Play button. Press the Song mode button to select Song mode.

▶ To Select a Song or Pattern
With the XL-7 in Song mode and the cursor in the Home position, turn the data entry control to select a new song.

With the XL-7 in Pattern mode and the cursor in the Home position, turn the data entry control to select a new pattern.

▶ To Edit a Pattern
Select the pattern you wish to edit, then press the Pattern Edit button. Turn the data entry control to scroll through the Pattern Edit menu items. See page 70.

▶ To Edit a Song
Select the song you wish to edit, then press the Song Edit button. Turn the data entry control to scroll through the song edit menus. See page 99.

*Warning: Sequencer Patterns and Songs are **NOT** saved until you save them in the Save/Copy menu.*

An asterisk (*) appears in the Pattern or Song display to indicate that the item needs to be saved. The Save/Copy button LED will also be flashing to remind you.

Overview

XL-7's sequencer is a Song/Pattern based recorder featuring high resolution recording at 384 ticks per beat. Multiple record modes - Song, Pattern, Grid, Step & Realtime Record allow you ultimate flexibility in the way you compose you music. You can add, monitor and modify parts on the fly or switch recording modes without stopping. The sequencer features 16 tracks, each of which can record up to 16 channels. Automated mixing and synth control is a snap. Read on and discover just how easy recording can be.

Definitions

The various components of XL-7 sequences are described below, starting from the smallest units "events" and ending with the largest element, a "song". Songs can be up to 999 bars in length.

Events

Events are the smallest bits of information that are recorded into a sequencer. Note-on, note-off, continuous controller messages, MIDI clocks, and program change commands are all events.

Tracks

Tracks are groups of events that will be assigned to a specific MIDI channel for playback. A single track can be assigned to one or two MIDI channels (one normal, one aux). A track can play internally only, externally only, both internally and externally, or not assigned at all. See page 86.

Tracks may also contain information encoded on multiple MIDI channels. XL-7 can assign these multichannel events to play on their assigned MIDI channels or it can force them all to a new assigned channel. See page 86.

Individual tracks can be muted on playback. The sequencer supports 16 tracks (T1 - T16).

Patterns

Patterns are collections of tracks and are the basic unit of storage for sequences. You cannot save a track unless it is part of a pattern.

Patterns can be up to 32 bars in length. After playing to the end of its specified length, a pattern will loop back to the start. Looping repeats indefinitely as long as the sequencer is running.

Patterns store the following information in non-volatile Flash memory which is recalled just before the pattern is played.

☞ Important: *Pattern Setup information is saved as it was set at the moment you saved the pattern.*

- Pattern Name & Number
- Track Events
- Initial Tempo & Meter
- Master FX setup
- Track to MIDI Channel mapping....
- Track Mutes ....
- Bank/Program changes...................
- Volume & Pan settings...................
- Mix Output setup...........................
- Arp Status (off, on, preset, master)..

These parameters are stored for each track used in the pattern.

Pattern Recording & Editing

Patterns can be edited in three ways:

Press Once

○ REALTIME
○ GRID
○ STEP

STOP   PLAY   RECORD

- **Realtime Record** - Events are stored in the designated track as they are played on the keypad or from the MIDI input port. Events are over-dubbed into the track as the track plays and loops. The original channel of each event is maintained when recorded.

  Individual events can be erased by pressing the realtime erase button and re-playing the event during the time that the event occurs in the pattern.

Press Twice

○ REALTIME
○ GRID
○ STEP

STOP   PLAY   RECORD

- **Grid Editing** - In this mode, the sixteen trigger buttons become a time grid. A note event is first selected and is then placed at any time location by pressing the appropriate grid button.

  The grid resolution can be changed to allow a whole measure or a fraction of a measure to be displayed on the button grid.

Press 3 Times

○ REALTIME
○ GRID
○ STEP

STOP   PLAY   RECORD

- **Step Edit** - In this mode, you can single-step through the time locations (bars, beats, & ticks) and place events anywhere you want.

  The play button jumps from the current location to the next note value as determined by the resolution setting.

The Asterisk

Asterisk Appears	No Asterisk
Pressing Rec	*Changing:*
List Edit (press enter)	*tempo, meter, length, name, chan. asssign, etc.*
Executing an Edit function	

When a pattern (or song) has been edited and needs to be saved an asterisk (*) appears in the display. The Save/Copy LED will also be flashing as a reminder to save your work. The asterisk and your edits remain in the single edit buffer even if you change patterns. Edits are only erased by saving the pattern, editing another pattern, invoking the "Revert To Saved" feature, or turning the unit off. Saving saves the current pattern and NOT the edit buffer.

> ᵀ01 STOP   Ln: 08   Bar: 01 . 1
> 000⁰ Start of IT   *
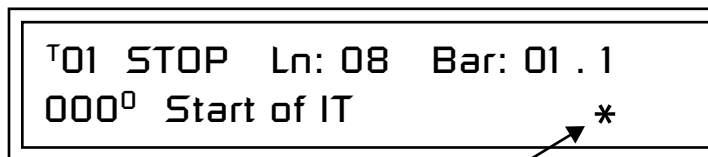
Indicates that the Pattern needs to be saved.

✎ *Use the "Revert to Saved Pattern" feature to remove the asterisk and discard your pattern edits. See page 93 for more information.*

Standard MIDI Files

Patterns can also be imported from a Standard MIDI File (SMF) dump. SMF type 0 files are imported with MIDI channels 1-16 going to the same numbered XL-7 track. SMF type 1 files are imported with tracks 1-16 going to the same numbered XL-7 track. Tracks 17 and above will not be imported into XL-7.

Songs

Songs are recorded on a single track which allows you to record Pattern Play messages as well as real-time note and controller information. This lets you link previously recorded patterns together to form more intricate arrangements, then overdub controller information such as volume, pan or other controller information or additional note information. You can change pattern length and track mutes in song mode without affecting your stored patterns.

Song mode is also useful when you wish to record, playback or import a sequence longer than 32 bars. For example, you could import a long multi-channel sequence created on another sequencer as an XL-7 song.

…as set when the Song was saved

tempo
preset
volume
pan
mix
arp
FX

The Song Track

Controller data   *Note data*   *Note data*

Pattern 032   Pattern 002   Pattern 204   End

Note data   *Pattern play/mutes*   *Pattern play/mutes*   *Pattern play/mutes*
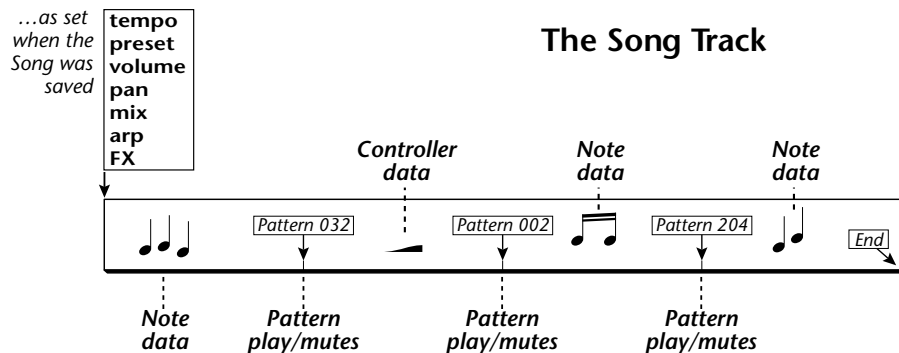
The Song Track contains Pattern Play events as well as real-time data (note-on/off, continuous controllers and other MIDI data).
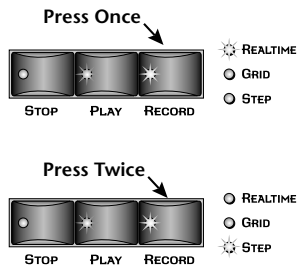
Song Record Modes

- **Realtime Record** - Events are stored as they are played on the keypad, controllers or from the MIDI input port as the single realtime track plays. The original channel of each event is maintained when recorded.
- **Step Edit** - In this mode, you can single-step through the bar locations and place Pattern Inserts wherever you want.

Songs store the following information in non-volatile Flash memory:
- Song Name & Number
- Realtime note & controller information
- Track Mutes for each Pattern Play event (these can be different than the mutes stored in each Pattern.)

The following events are also saved as they were set **when the Song was saved.** The "Event Source" option in the Song Edit menu (page 99) determines whether song or pattern events will be used in the song.
- Initial Tempo
- Master FX setup
- Event Source
- Volume ....
- Pan..
- Mix Output setup ....
- Arp channel status *(off/on/preset/master)*

These parameters are stored for each channel used in the song.

Press Once

☼ REALTIME
○ GRID
○ STEP

STOP   PLAY   RECORD

Press Twice

○ REALTIME
○ GRID
☼ STEP

STOP   PLAY   RECORD

✎ *The 16 tracks of a song can be assigned to either the A or B channels using the "Song Channel Assign" function on page 110.*

Event Timing

The following information is intended for advanced users. If you are just getting started with XL-7 you can skip this section for now.

Songs and patterns both contain *pre-sequence setup* information that is loaded just before a song or sequence plays. This pre-sequence information is not reloaded when a pattern loops. Reloading this setup information each time a pattern looped would cause data clogging and possible timing errors in the sequence.

- The first two ticks (0 & 1) are reserved for pre-sequence setup information. Tick 0 is reserved for the internal pre-sequence setup information. **Tick 1 is used to place your own pre-sequence setup information so that it won't loop and cause timing errors.**
- Events (controller data, program changes, sysex, etc.) are played before Notes, even if they are located on the same numbered Tick. This is done so that volume changes and other programming information will be in place when the notes turn on.

  When a track is set to "ext" (external transmit only), you will be allowed to see the tick 0 spot for EVENTS. This allows you to remove any pre-sequence setup data (which is stored at Tick 0) left over from when the track may have been internal or both.

Events	Notes	
tick 0		*Pattern/Song Setup Info* **Pre-Sequence**
tick 1		*Reserved for User Events* **Setup Info**
	tick 0	
	tick 1	
tick 2		
	tick 2	
tick 3		
	tick 3	
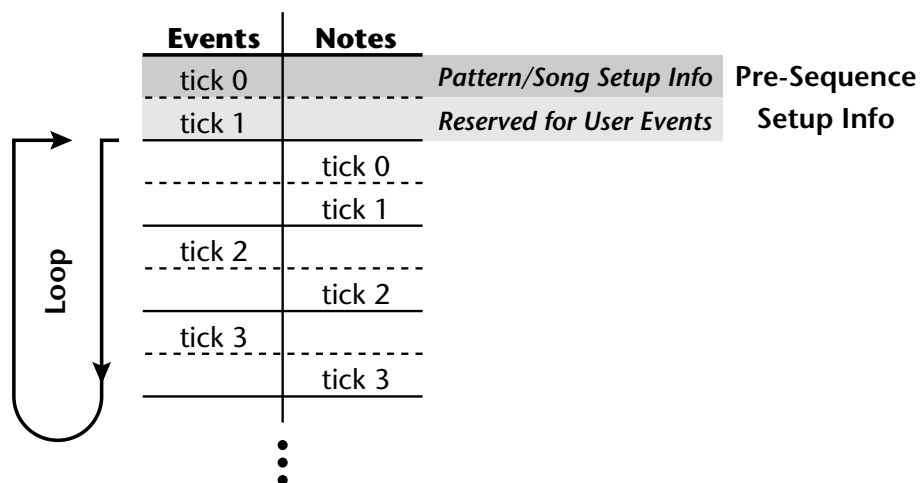
Loop

This chart shows how notes and other MIDI events are recorded at the beginning of a pattern or song.

Notes are played after other MIDI events. Ticks 0 and 1 are reserved for *pre-sequence setup* information which does not loop. Beginning at tick 2 of the pattern or song, information is recorded normally (events first, then notes).

Track Priority

The XL-7 sequencer handles lower numbered tracks first. Therefore, you should put your most timing-critical data on low numbered tracks. Normally this will not be important since the sequencer timing is so good, but if you create very dense sequences, this information might be useful.

Pattern Mode

Pattern mode is selected by pressing the **Pattern mode** button beneath the liquid crystal display. The screen shown below is displayed in Pattern mode when the sequencer is stopped.

```
┌──────────────────────────────────────────┐
│ T01  STOP   Ln: 08   Bar: 01 . 1          │
│ 000⁰  Start of IT                         │
└──────────────────────────────────────────┘
```
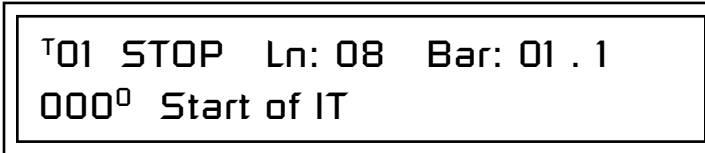
Pattern Play

PLAY

Pressing **Play** in Pattern mode causes the selected pattern to continuously play and loop. The display changes as shown.

```
┌──────────────────────────────────────────┐
│ T01   STOP    Ln:08    Bar:01 .1          │
│ CurPat: 002⁰    NextPat: 002⁰             │
└──────────────────────────────────────────┘
```
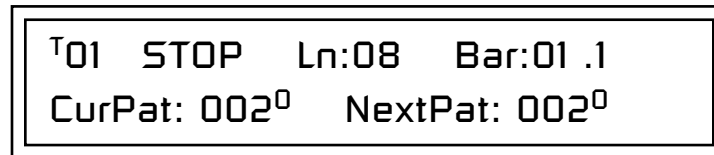
The **Track Mute** buttons can be used to select specific tracks for playback. The track mute settings are saved when the pattern is saved and restored when the pattern is run.

✎ *L.E.D. Beat Markers*
• The Tap Tempo LED stays on slightly longer at each bar.

• The Tap Tempo LED flashes to mark each quarter note.
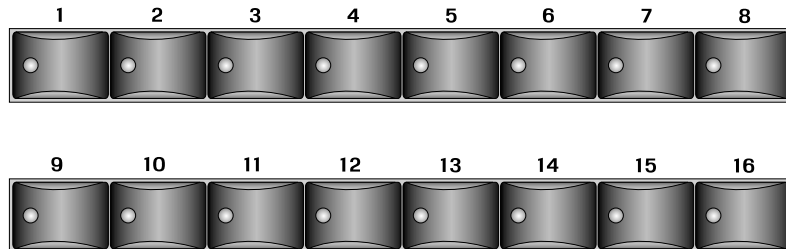
STOP

Pressing the **Stop** button stops the pattern immediately. Pressing **Stop again** rewinds the pattern to the beginning (RTZ).

Pressing the **Stop** button a third time reloads the initial setup information for the Pattern (or Song).

To select another pattern while one is already playing: Turn the data entry control in Pattern Mode/View. The lower line of the display changes to show the name and number of the pattern you have selected. The Home/Enter LED will be flashing.

```
┌──────────────────────────────────────────┐
│ T01   STOP    Ln:08    Bar:01 .1          │
│ 015⁰ Club Luv                             │
└──────────────────────────────────────────┘
```
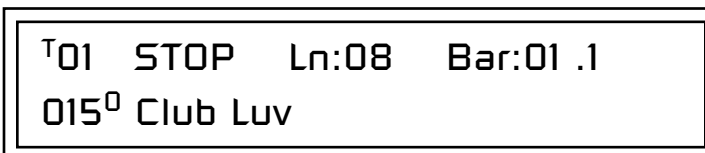
Press **Enter** to jump to the new pattern when the current pattern ends. The lower line of the display now again shows the current and next pattern numbers.

```
┌─────────────────────────────────────┐
│ ᵀ01  STOP   Ln:08   Bar:01 .1        │
│ CurPat: 002⁰   NextPat: 022⁰         │
└─────────────────────────────────────┘
```
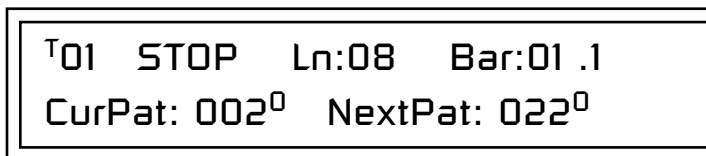
To start a new pattern immediately, press **Stop**, select the new pattern and press **Play**.
or… To select a pattern while playing, press **Enter**, press **Stop**, then **Play.**

Realtime Recording

As described on page 51, there are three ways to record patterns. Realtime recording is the easiest way to begin recording. Notes and Controller events are recorded into a pattern. External MIDI data can also be recorded.

Preparing to Record a Pattern

Before you record a pattern there are a few things you'll want to set up. Most of these steps apply to realtime or step recording.

- **Erasing** the pattern (if necessary).
- Program the **Metronome** (if necessary). Page 72.
- Define the pattern's **Time Signature** and **Pattern Length**. Page 58.
- Setting the **Count-in** length (if necessary). Page 57.
- Setting **Input Quantize** (to correct timing errors in Realtime Recording, to set the step rate in Step Recording, or to set the repeat rate when using the front panel Repeat button). Page 55.

Select the desired **Channel**, **Track** and **Preset** for recording.

Input Quantize

Input quantize corrects your timing and places notes exactly on the note value of your choice. You can choose any of the following note values: quarter notes, quarter note triplets, eighth notes, eighth note triplets, sixteenth notes, sixteenth note triplets, thirty second notes, or thirty second note triplets.

The illustration below shows one measure of 4/4 music (there are four quarter notes, 8 eighth notes, and 16 sixteenth notes in a measure of 4/4).
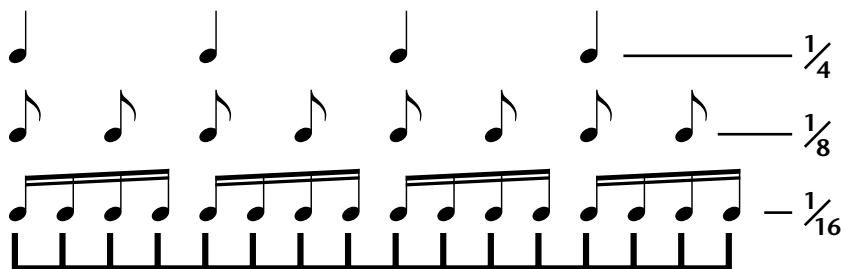
Suppose you wanted to record a bass drum beat on every quarter note. The upper row of dots in the diagram below shows where you might have played the four drum beats. The lower row of dots shows what happens when Input Quantize is set to eighth note resolution. Each beat is now moved to the nearest eighth note.

← **What you play**
← **Beats fall on**

Eighth Note Input Quantize
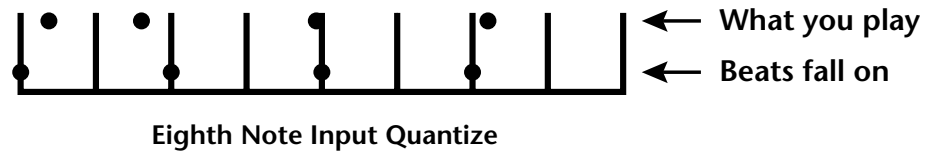
In the next example we'll set Input Quantize to sixteenth note resolution. In this example the beats you played have been assigned to the nearest sixteenth note, which works on beats 3 & 4, but not on 1 & 2.

← **What you play**
← **Beats fall on**

Sixteenth Note Input Quantize
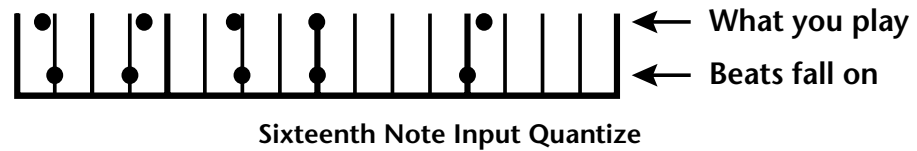
This brings up an important point.

Use the Lowest Quantization value needed.

If you're recording a simple snare backbeat, there's no point in using higher quantization than eighth notes. To record something more complex, use a finer resolution such as sixteenth or thirty-second notes.

You can change the Input Quantize setting in Pattern mode whether the XL-7 is running or stopped, recording or not. You can also use different resolutions on the same part. Use low resolution to record most of the part, then switch to a finer resolution to add complexity.

Recording triplets is easy since there are four triplet modes (1/4t, 1/8t, 1/16t and 1/32t). You can also switch between triplet and non-triplet modes to record complex polyrhythms.

When Input Quantize is turned Off, you are recording in XL-7's high resolution mode in which beats can be placed on any one of 384 ticks per measure. High resolution recording is great if you're a good player and want your performance captured as accurately as possible.

▶ **To Set Input Quantize:**

Input Quantize only works in Pattern mode.

1. Choose Pattern mode and **select a Pattern**.

2. Go into Record mode by pressing the **Record** button. The Pattern Record screen shown below appears.

```
┌─────────────────────────────────────┐
│ ᵀ01 REC    Ln: 08   Bar: 01. 1      │
│ Quan: 8    Met: on    Cnt: 0        │
└─────────────────────────────────────┘
```
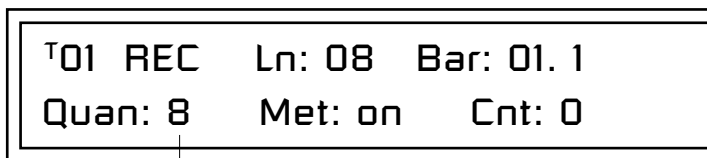
*Note
Value*

3. Choose the desired **Input Quantize** value using the data entry control.

4. Press **Play** to begin recording.

Count In

The Count-in feature lets you hear the metronome for either one or two measures before recording begins. This helps you get the feel of the beat before you actually begin recording.

▶ **To set Count-in:**

1. Choose Pattern mode and **select a Pattern**.

2. Go into Record mode by pressing the **Record** button. The Pattern Record screen shown below appears.

```
┌─────────────────────────────────────┐
│ ᵀ01 REC    Ln: 08   Bar: 01. 1      │
│ Quan: 8    Met: rec   CntIn: 0      │
└─────────────────────────────────────┘
```
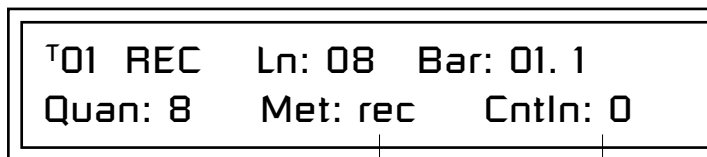
Metronome   Count-in

3. Move the cursor underneath the **Count-in** (Cnt) field using cursor keys.

4. **Select 0, 1, or 2 bars** of count-in using the data entry control.

5. Press **Play** to begin recording.

Pattern Length

You can set the length of a pattern from 1 to 32 bars, either before, after or even during recording.

▶ **To Set the Pattern Length from the Main Pattern Screen:**

1. **Select the pattern** in Pattern mode.

2. Move the cursor to the **Length** (Ln) field using the cursor keys.

```
┌─────────────────────────────────────┐
│  ᵀ01  STOP   Ln: 0̲2   Bar: 01 . 1   │
│  000⁰  Start of IT                   │
└─────────────────────────────────────┘
```
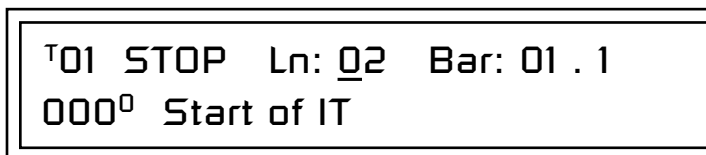
3. Set the **Length** of the pattern using the data entry control.

Metronome

The metronome is a timing aid when recording or playing back patterns which produces an accented click on the first beat of each measure and a softer click on other beats. This setting is NOT saved with the pattern.

▶ **To Set the Metronome:.**

1. Go into Record mode by pressing the **Record** button.

2. Scroll to the **Metronome** screen using the data entry control.

3. Move the cursor underneath the **Metronome** field and set it to **On**, **Off** or **Rec** using the data entry control. Set to **On**, the metronome plays during recording and playback. Set to **Rec**, the metronome only plays while recording.

4. The metronome value is set in the Pattern Edit menu. See page 72.

Recording a Pattern

▶ **To Record a new Pattern:**

1. Press the **Pattern** mode button. The screen shown below appears.

```
┌─────────────────────────────────────┐
│  ᵀ01  STOP   Ln: 08   Bar: 01. 1    │
│  000⁰  Start of IT                   │
└─────────────────────────────────────┘
```
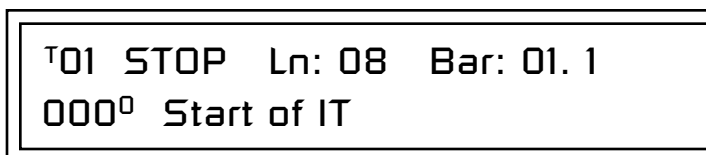
2. Select a Blank pattern to begin recording using the data entry control.

3. Press the **Record** button. The screen shown below appears.

Track Number   *Pattern Length*   *Current Position*

```
┌─────────────────────────────────────┐
│  ᵀ01  REC    Ln: 08   Bar: 01. 1    │
│  Quan: 8     Met: on    Cnt: 0       │
└─────────────────────────────────────┘
```

Auto-Correct   *Metronome on/off*   *Count-in Bars*

✎ *For these instructions, make sure Keyboard/Knob Channel in the Controllers menu is set to "Basic Channel".*
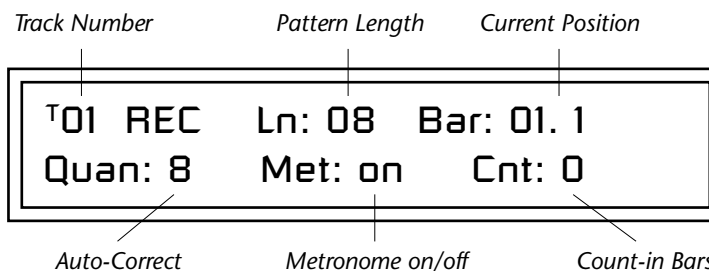
4. Set the **Pattern Length** and **Input Quantize** value. For more information on Input Quantize see page 55.

5. Set the number of count-in bars if you wish.

6. Select a **Track** number. The default value is Track one. This is fine for the first track.

7. Press the **Preset View** button. The preset screen shown below appears.

```
C01A  V127  P00  A:P  User
050³ kit:80's Tones
```

8. **Select a Preset** for your first track.

9. Press the **Preset View** button again after you've selected a preset. The LED will go out and you'll be returned to the Pattern screen.

Get ready to record the first track!

✎ *You can go in and out of Record mode at any time by pressing the **Record** button*

10. Press **Play** to begin recording. Recording will begin after the count-in period (if any). The pattern will loop when it reaches the end of its length.

11. Press **Stop** when you're finished recording.

Are you happy with your performance? If not, you can erase the track and try again.

To Erase the Track:

✎ **To Erase an Entire Pattern:** *Copy an "Empty Sequence" over the pattern. (Save/Copy menu).*

12. Press the **Pattern Edit** button and turn the data entry control until you find the "Cut Track to Clipboard" screen.

13. Move the cursor to the lower line of the display under **Track 1**.

14. Press the flashing **Enter** button to erase the track.

15. Press the **Pattern Edit** button again to exit the menu, then go back to step 10 and re-record the track.

To Erase Specific Notes:

16. Press the **Erase** button in Realtime Record mode and **hold down the keyboard note** you wish to erase. The note will be erased when it comes around in the pattern.

To Record another Track:

17. Press the **+Track** button located to the left of the LCD. The track number increments to Track 02.

18. Press the **Preset View** button. Notice that the MIDI channel has also incremented to C02A. Select a preset.

19. Press the **Preset View** button again after you've selected a preset. You'll be returned to the Pattern screen.

20. Press the **Stop** button to return the beginning of the pattern.

21. Press **Record**, then **Play** to begin recording on track 2.

22. After recording track 2, check out the **Track Enable** buttons to mute and un-mute the tracks.

23. A pattern must be SAVED or it will be erased when you change the pattern. See "Save Pattern" on page 269.

    You can continue to add up to 16 tracks. If you need more than this, keep in mind that you can add up to 16 channels of data to each track! Normally, it's simpler to use just one channel per track.

 • To setup a track for multichannel playback see "Channel Assign" on page 86.

▶ Saving Patterns

When you save a pattern (page 269), the following settings are also saved (as set at the moment you saved). These setting are restored just before pattern playback.

 • Tempo & Meter
 • Master FX setup *(See page 136)*
 • Track to MIDI Channel mapping *(See page 86)*
 • Track Mutes ....
 • Bank/Program changes....................................
 • Initial Volume & Pan settings ....
 • Mix Output setup *(See page 134)* ....
 • Arp Status *(off, on, preset, master)*.....................

These parameters are stored for each track used in the pattern.

The Event Source parameter (page 99) controls how pattern settings are used in Song mode.

▶ To Record Realtime Controller Data

You can mix and embellish your patterns by recording continuous controllers along with note data.

1. Start by recording and saving a pattern.

Recording Quick Edits

The Quick Edit knobs are only active on the Basic Channel *(the channel currently displayed in the Preset View screen)*.

2. Select **Quick Edit** mode by pressing the Controller Function Select button.

3. **Select the channel** with the preset you wish to Quick Edit.

4. Practice your knob movements before recording by **Playing the pattern** and twisting the knobs.

5. When you're ready to record, press **Record** while the sequencer is playing (to punch-in), then perform the knob movements.

Too much controller information can clog the sequencer causing sluggish performance and sloppy timing. Use the "Thin Events" function (page 76) to reduce the amount of controller data in the pattern.

Record Multitrack Volume and Pan Information

You can record Volume and Pan information for all 16 channels simultaneously by using Volume Knob mode. You'll be recording multichannel volume or pan data onto a track. The default channel assignment will rechannelize this data to a single channel. You must change this.

6. **Select a track** for the Realtime Controller data.
7. Press the **Pattern Edit** button and scroll to the "**Channel Assign**" page.
8. Set the track to **MultiA**. Now the track will record multichannel data.
9. Press the **Pattern Edit** button to exit the menu.

Automating the Volume of each Channel

10. Select **Volume** knob mode by repeatedly pressing the Controller Function Select button (page 37).
11. Select **Mix** View mode if you wish to view the volume settings.
12. Press the **Stop** button twice to make sure the pattern starts at the beginning.
13. Press the **Record** button in Pattern mode to get ready to realtime record. The Play button LED will be flashing.
14. Press the **Play** button to begin recording. The controller knobs now adjust the volumes of all 16 channels.
15. Press **Stop** when you're finished recording.

✎ *Use the "Erase cc# Events" function (page 77) to erase controller data from the pattern.*

Real-time Panning

16. Select **Pan Knob** mode by pressing the Controller Function Select button.
17. Select **Mix View** mode by pressing the Mix button (if it's not already selected).
18. Turn the data entry control clockwise to select **Ch Pan** view.
19. Press the **Stop** button twice to make sure the pattern starts at the beginning.
20. Press the **Record** button in Pattern mode to get ready to record. The Play button LED will be flashing.
21. Press the **Play** button to begin recording. The controller knobs now adjust the pan positions of all 16 tracks.
22. Press **Stop** when you're finished recording.

▶ **Erasing Controller Data**

1. The **Erase Events** function (page 77) can be used to erase controller data from a pattern.

2. Find the realtime controller number of the knob you wish to erase in the Controllers menu.
    (Volume is always cc#7, and Pan is always cc#10. The numbers of the 16 controller knobs can vary.)

3. Press the **Pattern Edit** button.

4. Scroll to **Erase Events** and move the cursor to the lower line of the display.

5. **Select the realtime controller** number from step 2.

6. Press **Enter** to erase the controller data.

▶ **Using Realtime Repeat**

When this button is latched on (LED illuminated) while recording a pattern (or song), played notes will repeat at the current pattern quantize setting (page 55). You can get some great effects with this feature by simultaneously changing the volume or pitch as the sound repeats.

1. Press the **Record** button once to go into Realtime Record mode.

2. Set the **Input Quantize** resolution on the LCD to the desired rate.

3. Press the **Repeat** button illuminating the LED.

4. Press **Play** to begin recording.

5. **Play the Keypads** (or keyboard). Notes now repeat according the Input Quantize setting.

• You can change the Input Quantize setting at any time while recording.

Automatic Channel Assignment

Whenever you change a channel, the sequencer looks for a track that is assigned to that channel. This feature automatically selects the proper track in most cases, freeing you from having to think about it.

For your information, the algorithm works as follows:

1. If the current track is already assigned to this channel, or if this track is a "multi" track containing this channel (i.e. MultiA if channel was set to 07A) it does not change the current track.

2. If not, it starts at track 1 and looks for a track that is assigned to this exact channel, and sets it to the **first** track that is.

3. If there wasn't one, again it starts at track 1 and looks for a "multi" track that contains this channel, and sets it to the first track that does.

4. If none of the above succeed (meaning that this channel is not being played on any track), it does not change the current track.

Also, changing the track in the list editors or channel assignment screens sets the current track and vice versa.

Grid Recording

Grid recording allows you to lay out notes along a pre-defined grid. This is a very visual way to lay down a beat and it makes it easy to experiment, since you can change everything by just turning buttons on and off. XL-7 brings a host of new features to the party.

What is Grid Recording?

Grid recording can be visualized as a series of notes placed along a line where each note can be turned On or Off with a button. In the example below, you'll hear sixteen notes to a measure in 4/4 time.
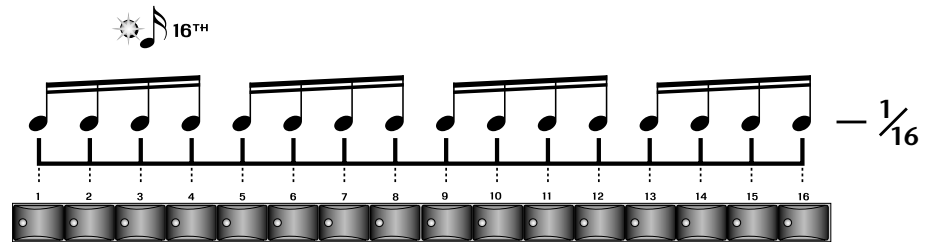
To program quarter notes, you would turn on one note out of every four as shown below.

Quarter Notes
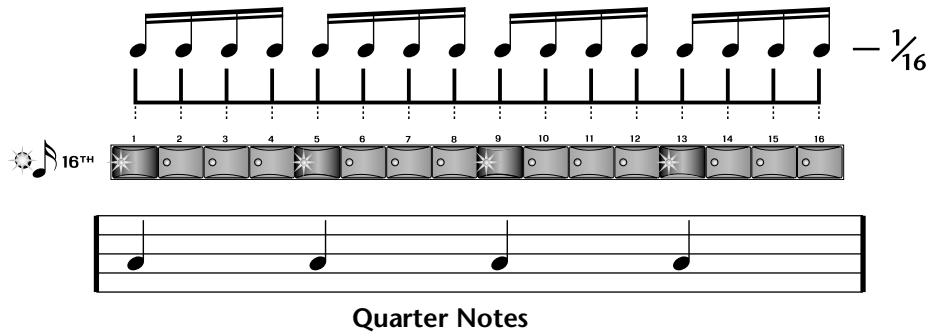
Turning on every other button with the 16th note grid selected gives you Eighth notes.

Eighth Notes
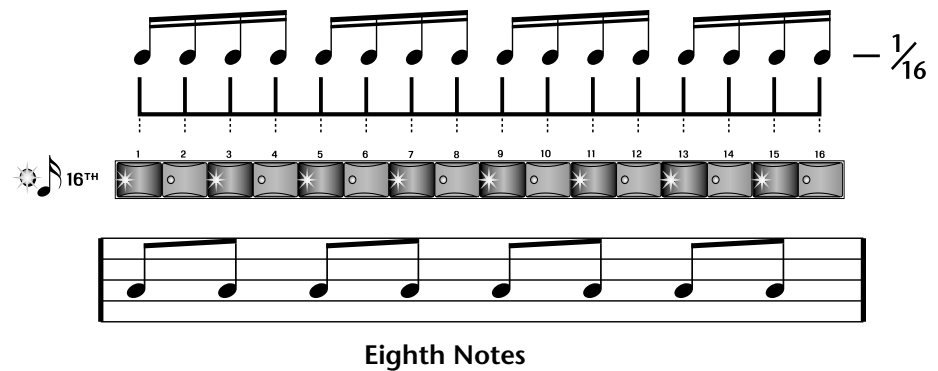
The grid can be set up for 16th notes, 32nd notes, 8th note triplets or 16th note triplets.

When using 32nd notes or recording patterns longer than one bar, the grid displays as much of the pattern as it can then switches to the next section. When playing one bar of 32nd notes, for example, the sixteen grid buttons and LEDs show the first 16 notes, then switch to the second group of sixteen notes.

The liquid crystal display shows the status of the 16 grid locations.
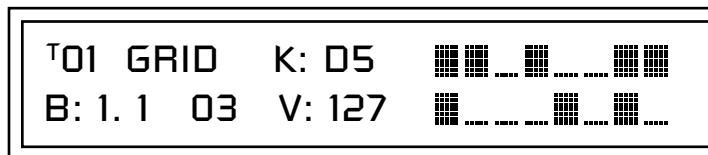
The time signature determines how the grid is laid out. The pattern below is in 3/4 time and so only 12 locations are needed.
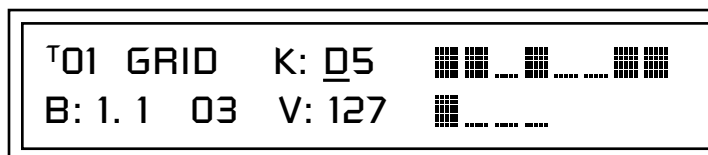
Grid mode can also be used in conjunction with either of the other record modes. You can go into grid record mode and edit a pattern you created in realtime record mode, or you could start with grid recording and record over it in either realtime or step mode.

To examine a pattern in grid mode, place the cursor under the **Key** field and turn the data entry control while the pattern is playing. When you find a recorded note, you'll see bars appear and the grid button LEDs will illuminate.

*Press and hold **Play**, then press **Record** while a pattern is playing to jump right into Grid Record mode.*

▶ **To Record a Pattern using Grid Recording:**

1. Press the **Pattern** mode button. The screen shown below appears.

```
ᵀ01 STOP  Ln: 08  Bar: 01. 1
000⁰ Start of IT
```
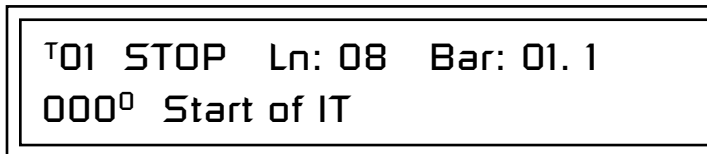
2. Select an empty sequence to begin recording using the data entry control.

3. For now, set the pattern **Length** to **1 Bar**. This will make Grid mode easier to understand at first.

4. Press the **Record** button. The Realtime LED illuminates and the screen shown below appears.

```
ᵀ01 REC   Ln: 01  Bar: 01. 1
Quan: 8   Met: on   Cnt: 0
```
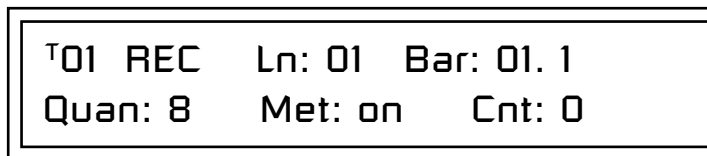
5. Press the **Record** button again. The Grid LED illuminates and the screen shown below appears.

Track Number   *Current Key*   *8 note positions*

```
ᵀ01 GRID  K: C1  _ _ _ _ _ _ _ _
B: 01. 1  V:000  _ _ _ _ _ _ _ _
```

Bar:Beat   *Note Velocity*   *8 note positions*
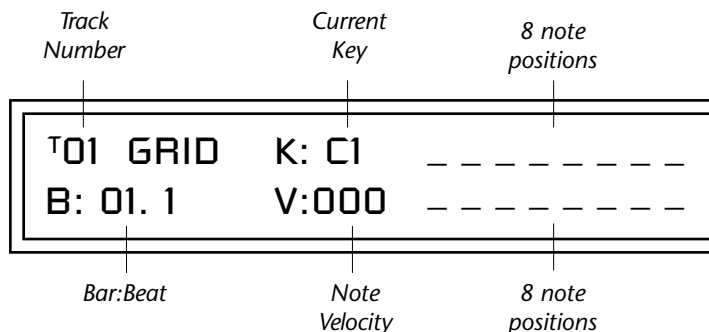
6. Press the **Preset View** button and select a preset to use for track one. A "prc" or "kit" preset might be a good choice. Press the **Preset View** button again after you've made your selection to return to the Grid recording screen.

7. Select a note using the rubber keypad. Press the transposition buttons to find other sounds. Note that the **Current Key** field in the LCD changes as you play the keypad.

8. Now turn on a few of the grid buttons. It doesn't matter which for now.

9. Press **Play**. You'll be hearing some sort of rhythm.

10. Go ahead and change the grid buttons. Play around until you get something you like.

The LCD will now probably look something like the next screen. The vertical bars correspond to the grid buttons you've selected.
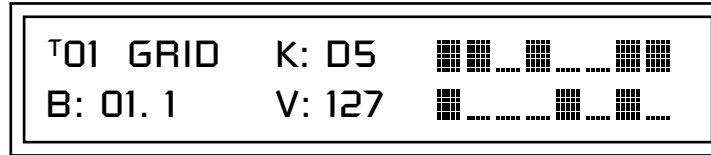
```
ᵀ01 GRID    K: D5    ▓▓▓_▓▓__▓▓
B: 01. 1    V: 127   ▓▓____▓▓_▓▓_
```

Another Rhythm?

11. Without even stopping, play another note. Keep hunting until you find one you like. The last played key will be the selected sound.

12. With the new sound selected, turn on some grid buttons. (Note that they all went off when you changed sounds.)

Change of Velocity

13. To pause the sequencer without exiting Grid mode, press the **Play** button. Press the **Play** button again to continue.

14. Press one of the Grid buttons. The flashing cursor is now positioned underneath that bar in the display.

```
ᵀ01 GRID    K: D5    ▓▓▓_▓▓__▓▓
B: 01. 1    V: 127   ▓▓____▓▓_▓▓_
```
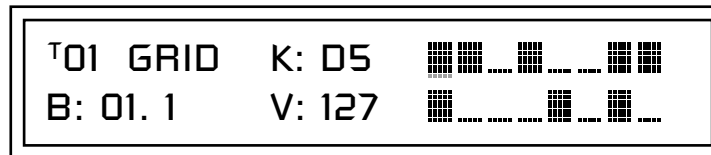
15. Now turn the data entry control. The height of the selected bar changes, as does the velocity readout. This is one way to change the velocities of grid notes. *(You can also simply play the velocity on the keypads.)*

16. Turn some of the grid buttons on and off. Note that they now have the same velocity as the last note you modified. Since velocity is often coupled to volume in the preset, changing the velocities of notes can have a dramatic effect on the sequence.

17. Now press the **Home/Enter** button. The cursor is now underneath the **Key** field. pause the sequencer by pressing the **Play** button.

18. **Re-key** the note. If you didn't hit the right note the bars will disappear. When you find a recorded note the bars will reappear.

19. Re-key the note playing hard and soft on the keypads. Note that when you select grid buttons, the last played velocity is used.

Double Time

20. With the sequencer running, select one of the Grid positions by pressing its button.

21. Press the **Repeat** button located below the controller knobs. A number now appears at the grid location which indicates the number of times that the grid resolution has been increased for that location. For example, if the number is 2, the note will play twice in that time slot.

You could also assign each new part to another Track … or not. It's up to you.

If you accidentally press the Stop button by mistake, simply press the Record button twice to return to Grid mode.

You can also use the data entry control to select notes.

- Pressing the **Erase** button while the cursor is on one of the grid locations, removes the note from that location.

```
ᵀ01 GRID   K: D5   2▓▒_▓▒__▓▓
B: 1. 1   01  V: 127  ▓____▓_▓_
```
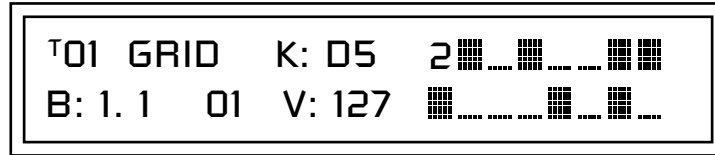
22. Repeatedly pressing the repeat button increments the number. The display goes up to nine times, but it will go even faster if you keep pressing the repeat button. Special effects anyone?

23. The **Erase** button, located right next to the Repeat button, turns off the grid locations (as does the grid button itself).

Step Time Recording

In this mode, you can insert events one at a time and place them exactly where you want. In Step mode, key events, knobs or external MIDI events are recorded into the current pattern step. The resolution of the step is selected and indicated in the "Res" field on the LCD. In Step Record mode, the Resolution (Res) setting determines the rhythmic value of each step. For example, with Resolution set to 1/8 notes, you will step through the pattern an eighth note at a time. Step recording records the actual "played" velocity of note-on events.

Another cool feature is that each quantized step is from the current time setting. This allows you to easily create complex offbeats using the quantize feature.The way it works is simple. If you offset the current time using the data entry control, the next step will be quantized *from that point!*

As an example, let's say you started at Bar:01.01.0000 with Resolution set to 8. The next step would be Bar:01.01.0192, the next at Bar:01.02.0000 and so on. If the initial time setting was instead, Bar:01.01.0050, the next step would be, Bar:01.01.0242 (192 + 50).

When Auto mode is enabled (Y), the step is automatically incremented when a note is entered. The step is not recorded and incremented until the last "key up" of a chord. This allows you to make changes to the step as long as one key is still held.

The Gate field allows you to set the note-on duration for note-on events. A setting of 50% with eighth note resolution would keep the note held for half that period (or a 16th note). Settings of greater than 100% hold the note over into the next note.

Note Value/Number of Ticks

Resolution	Ticks	Resolution	Ticks
Whole notes	1536	Eighth note triplets	128
Half notes	768	Sixteenth notes	96
Quarter notes	384	Sixteenth notes triplets	64
Quarter note triplets	256	32nd note	48
Eighth notes	192	32nd note triplets	32

▶ **To Record a new Pattern in Step Time:**

1. Press the **Pattern** mode button. The screen shown below appears.

> ᵀ01 STOP Ln: 02   Bar: 01. 1
> 000⁰ Start of IT
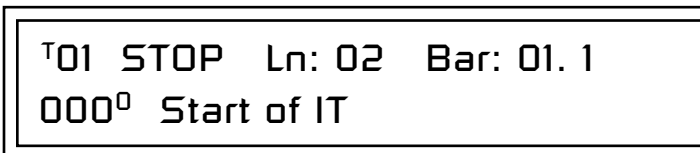
2. Select an empty sequence to begin recording using the data entry control.

3. Set the **Pattern Length**. Choose a one or two bar length to start.

4. Press the **Record** button three times to select Step Record mode. The screen shown below appears.

Track
Number   *Bar   Beat   Tick*

```
ᵀ01  STEP     Bar: 01. 01.  0000
Res: 8    Gate: 85%     Auto:Y
```

Step   *Gate On*   *Auto Increment*
Resolution   *Percentage*   *On/Off*
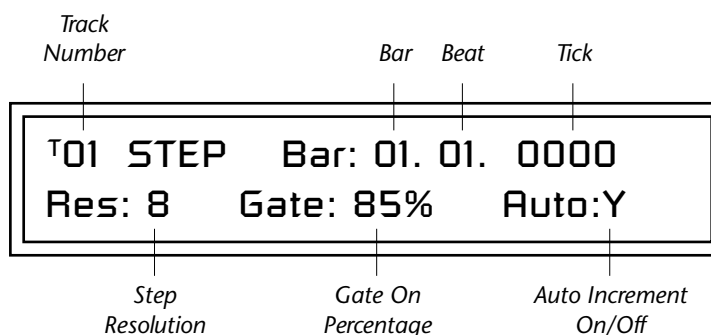
5. Select a **Track** number. The default value is Track one.

6. Turn **Auto Increment** On. This feature automatically increments the step (by the selected step resolution) each time you press the Play button.

7. Press the **Preset View** button. The preset screen shown below appears.

```
C01A   V127   P00   A:P   User
050³  kit:80's Tones
```

8. **Select a Preset** for your first track.

9. Press the **Preset View** button again after you've selected a preset. The LED will go out and you'll be returned to the Pattern screen.

Get ready to record!

10. Set the **Step Resolution** to eighth notes for now (8).

11. Play a note (or notes) on the keypad. The step records and increments when you release the keys. Note the setting of the bar.beat.tick display as the steps increment.

12. Keep adding notes to steps. You can also record knob settings. Simply turn the knobs in any of the controller knob modes and these moves will be recorded.

13. Press **Stop** when you've finished recording.

14. Press **Stop** again to rewind to the beginning of the pattern.

15. Change the **Resolution** and record another pass.

To Erase the Pattern:

16. There are several ways to erase entire pattern. Probably he easiest way is to simply Save an empty sequence over the pattern you want to erase.

• You could also "Erase All Events" from the Pattern Edit menu.

Pattern Edit Menu

The Pattern Edit menu contains housekeeping, pattern editing filters and other tools.

The Pattern Edit button is DISABLED unless you are in Pattern Mode!

Track Enable/Mute Buttons

IMPORTANT: In Pattern Edit mode, Track Enable/Mute buttons are used to select which tracks will be affected by the editing operation.

1	2	3	4	5	6	7	8
◉	◉	◉	◉	◉	◉	◉	◉
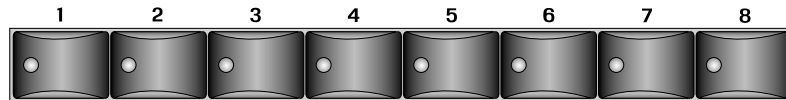
Any enabled tracks will be edited and any disabled tracks will be unaffected by the editing operation—Quantize, Thin Events, Erase Events, Velocity Scale/Shift, Extend or Transpose.

Name Pattern

Patterns can be named with up to 16 characters. Position the cursor under the character location and use the data entry control to change the character.

```
PATTERN NAME
006¹ Metallic 6
```
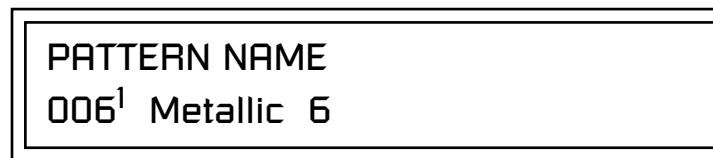
Pattern Length

Patterns can be anywhere from one to thirty two measures in length. A pattern loops when it reaches the end whether in record or playback modes.

A pattern's length can also be changed at any time, before or after recording. If you increase the length of a pattern after recording, it will play silently for the extra time unless new data is recorded there. If you shorten a pattern's length after recording, it will play up to it's new length then loop. Changing the length of a pattern does not change any data until you save it. If you save a shortened pattern, the unplayed data will be erased.

▶ **To Set the Pattern Length from the Pattern Edit menu:**

1. Select **Pattern Edit** mode from Pattern mode.
2. Locate the **Pattern Length** screen using the data entry control.

```
PATTERN  LENGTH
Length: 32 bars
```

3. Move the cursor to the lower line of the display using either cursor key, then set the **length** of the pattern using the data entry control.

▶ **To Set the Pattern Length from the Main Pattern Screen:**

1. **Select the pattern** in Pattern mode.

2. Move the cursor to the **Length** (Ln) field using the cursor keys.

```
┌─────────────────────────────────────┐
│ ᵀ01 STOP  Ln: 0̲2  Bar: 01 . 1        │
│ 000⁰ Start of IT                     │
└─────────────────────────────────────┘
```

3. Set the **Length** of the pattern using the data entry control.

*Setting Meter
(Time Signature)*

XL-7 allows you to set almost any conceivable time signature. The numerator (indicating number of beats in a measure) can be set from 1 to 99. The denominator (indicating the rhythmic value of each beat) can be set to 1, 2, 4, 8, 16, 32, or 64. The time signature can be changed at any time before or after recording.

The meter setting affects the bar:beat display, the pattern length, metronome accent, and the grid recording display.

For background information about Time Signatures, see page 316.

▶ **To Set the Time Signature:**

1. **Select the pattern** in which you want to record.

2. Press the **Pattern Edit** button. The Pattern Edit menu screen displays the menu page most recently selected since powering up XL-7.

3. Scroll to the **Meter** screen using the data entry control. The meter setting will probably show the 04/4 default time signature.

```
┌─────────────────────────────────────┐
│ METER     METRONOME     VALUE        │
│ 0̲4 / 4    off           1/8          │
└─────────────────────────────────────┘
```

4. Press the right cursor button once to move the cursor underneath the numerator field.

5. Set the **time signature numerator** value using the data entry control.

6. Press the right cursor button again to move the cursor underneath the denominator field.

7. Set the **time signature denominator** value using the data entry control.

8. Press the **Pattern Edit** button again to exit pattern edit mode.

Metronome

The metronome is a timing aid when recording or playing back patterns and songs and can be set to a wide variety of different beats. The metronome produces an accented click on the first beat of each measure and a softer click on other beats. The following metronome beat options are available:

Symbol		Symbol	
1/1	whole notes	1/2d	dotted half notes
1/2	half notes	1/4d	dotted quarter notes
1/4	quarter notes	1/8d	dotted eighth notes
1/8	eighth notes	1/4t	quarter note triplets
1/16	sixteenth notes	1/8t	eighth note triplets
1/32	thirty-second notes	1/16t	sixteenth note triplets
		denom	uses the denominator value of the meter setting

The metronome setting is NOT saved with the pattern.

▶ **To Set the Metronome:**

1. Press the **Pattern Edit** button. The Pattern Edit menu screen displays the menu page most recently selected since powering up XL-7.
2. Scroll to the **Metronome** screen using the data entry control.

Play the pattern to listen to the Metronome while you set the Value.

```
METER      METRONOME      VALUE
04 / 4     off                1/8
```

3. Move the cursor underneath the **Metronome** field and turn the metronome to **On**, **Off** or **Rec** using the data entry control.

  • **Off** - the metronome doesn't play.
  • **On** - the metronome plays during recording and playback.
  • **Rec** - the metronome only plays while recording.

4. Move the cursor underneath the **Value** field and set the metronome beat value using the data entry control.

Quantize

The timing can also be changed after a pattern has been recorded. Quantize moves all the note start times in the track to fall on (or closer to) the specified time values.

▶ **To Quantize a Pattern:**

1. **Select the pattern.**

2. Select the **Track(s)** you wish to quantize using the Track Enable/Mute buttons.

3. Press the **Pattern Edit** button.

4. Scroll to the **Quantize** screen shown below using the data entry control.

```
QUANTIZE   Resolution: 16
Amount: 75%   Swing: 50%
```
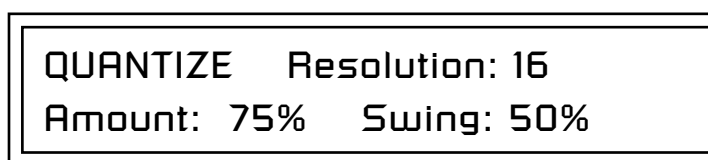
5. Set up the **Quantize parameters** as desired. The Home/Enter LED will be flashing once the cursor is moved to one of the editable fields.

6. Press **Enter** to Quantize or add Swing. Press any other button to **Cancel** the operation.

Quantize Parameters

Resolution- Sets the desired note value to which note-on events will be corrected. With sixteenth notes selected, Quantize will move played notes toward, or exactly onto, sixteenth note time slots.

Amount - Controls how much quantization is applied. With a setting of 100%, events are moved all the way to the specified note value. With a setting of 50%, events are moved 50% closer to the specified note value.

Quantization   Resolution: 8
                        Amount: 50%

With an amount of 50%, notes are moved 50% closer to the specified Quantization value.

Swing - Swing adds a rhythmic feel by shifting the time allocated to every other grid point in a pattern. In the default case where swing is set to 50% (No Swing), the first eighth note takes up 50% of the quarter note and the second eighth note takes up the remaining 50% of the time.

50% Swing
Eighth notes play at regular intervals

0%   50%   100%
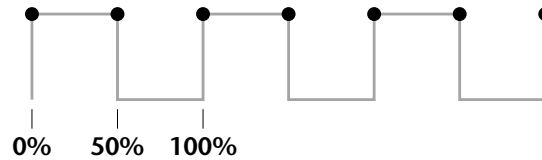
If swing were set to 67%, the first eighth note falls on the beat, but the second eighth note is delayed by 67%.

67% Swing
Every other eighth note plays late

0%   67%
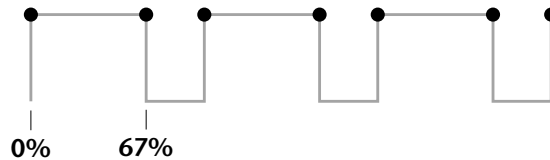
Values below 50% give a kind of "reverse swing" where every other eighth note comes in early. Odd, but maybe just the thing for your style of music.

30% Swing
Every other eighth note plays early

30%
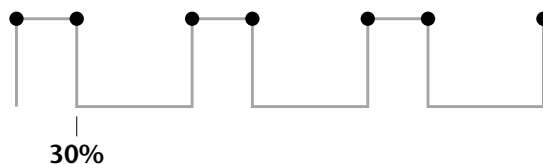
More about Swing
Swing can help add a more human "feel" to a series of repeating patterns. For example, if you repeat the same pattern four times, try setting a swing factor of 54% for, say, the third pattern. This results in a series of patterns which are more psycho-acoustically interesting than merely repeating the same pattern over and over.

67% is considered the "classic" jazz swing factor, where the first eighth note is 2/3 of a quarter note, and the second eighth note is 1/3 of a quarter note (i.e. the second eighth note behaves more like an eighth note triplet). If this sounds too "perfect", try a swing factor of 64% instead. The results will be similar, but the "feel" will be slightly different.

Scale/Shift Duration

This filter allows you to either scale (multiply by a value) or shift (add a value to) the note durations in the selected tracks. The Scale function is performed before the Shift value is added.

Scale - Multiplies all note durations by a percentage from 0% to 125%. Scaling by 100% would leave all note durations untouched. Scaling by 50% would cut all note durations in half.

Shift - Adds or subtracts a specific note duration in quarter notes and ticks to note-on events in the selected tracks.

▶ **To Scale or Shift Note Duration:**

1. **Select the pattern** you wish to edit.

2. Select the **Track(s)** you wish to Scale or Shift using the Track Enable/Mute buttons.

3. Press the **Pattern Edit** button.

4. Scroll to the **Scale/Shift Note Duration** screen shown below using the data entry control.

✎ **Tip:** *To set all notes to a particular value, set Scale to 0%, (this zeros the value) then set Shift to the desired duration.*

```
SCALE/SHIFT NOTE DURATION
Scale: 87%   Shift: +00.000
```

Quarter Notes   *Ticks*
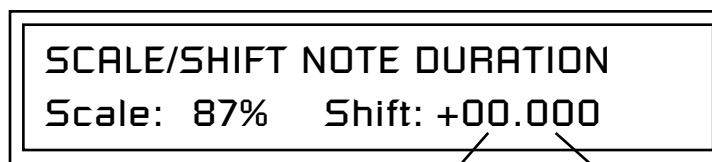
5. Select the **amount of note duration scaling or shift (offset)**. The Home/Enter LED will be flashing once the cursor is moved to the lower line of the display.

6. Press **Enter.** The screen shown below appears to remind you to select the tracks you want to filter. Select a key range for filtering. The default setting is all keys.

```
SELECT TRACKS
Key Range: C-2   to:G8
```

Low Key   *High Key*
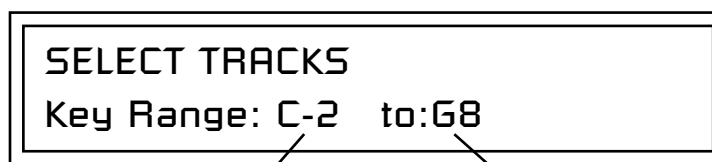
7. Press **Enter** to scale/shift the note durations. Press any other menu button to **Cancel** the operation.

Thin Events

Event thinning is usually performed to reduce the amount of extraneous controller data and thus reduce the memory size of patterns. This filter reduces the number of events in a musical fashion. Events may be reduced by a specified amount from 1 to 128. The setting represents the smallest change that will be kept. For example, if the setting were set to 3 and you were thinning a controller sweep that went 1-2-3-4-5-6-7, you would be left with:1-4-7. The filter also keeps any change in direction values.
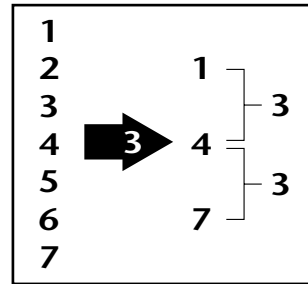
The setting represents the smallest change that will be kept.
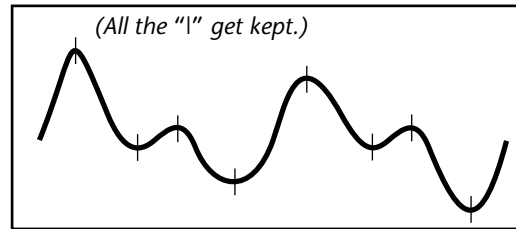
Direction Changes are always kept.

(All the "|" get kept.)

👀 *If too much data is recorded into a pattern, the sequencer may slow or clog. Use the "Thin Events" function to reduce the amount of extraneous data in the pattern.*

The following types of events can be thinned:

- Tempo
- Poly Aftertouch
- Channel Aftertouch
- Pitch Wheel (Touchstrip)
- Any Continuous Controller (1-95)

▶ **To Thin Events in a Pattern:**

1. **Select the pattern** you wish to edit.
2. Select the **Track(s)** you wish to thin using the Track Enable buttons.
3. Press the **Pattern Edit** button.
4. Scroll to the **Thin Events** screen shown below using the data entry control.

```
THIN EVENTS
chan aftertouch  Amt: 40
```

5. Select the **type of event** you want thinned, then set the **amount** of thinning. The Home/Enter LED will be flashing once the cursor is moved to one of the editable fields.

6. Press **Enter.** The screen shown below appears to remind you to select the tracks you want to thin. Select a key range for thinning. The default setting is all keys.

```
┌──────────────────────────┐
│ SELECT TRACKS            │
│ Key Range: C-2  to:G8    │
└──────────────────────────┘
```
            Low Key   *High Key*
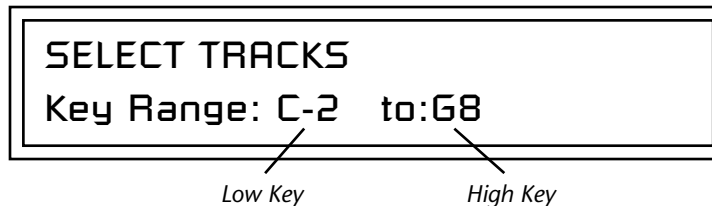
7. Press **Enter** to thin events. Press any other menu button to **Cancel** the operation.

Erase Events

Specific types of events can be completely erased from a pattern.

The following types of events can be erased:

- All Track Events
- Notes
- All Controllers
- Program Changes
- SysEx Data
- Meter
- Tempo
- Poly Aftertouch
- Channel Aftertouch
- Pitch Wheel (Touchstrip)
- Any Continuous Controller (1-119)

▶ **To Erase Events from a Pattern:**

1. **Select the pattern** you wish to edit.
2. Select the **Track(s)** you wish to erase using the Track Enable/Mute buttons.
3. Press the **Pattern Edit** button.
4. Scroll to the **Erase Events** screen shown below using the data entry control.

```
┌──────────────────────────┐
│ ERASE EVENTS             │
│ program change           │
└──────────────────────────┘
```

5. Select the **type of events** you want erased. The Home/Enter LED will be flashing once the cursor is moved to the lower line of the display.

6. Press **Enter.** The screen shown below appears to remind you to select the tracks you want to erase. Select a key range. The default setting is all keys.

```
SELECT TRACKS
Key Range: C-2   to:G8
```

7. Press **Enter** to erase the events. Press any other menu button to **Cancel** the operation.

Transpose

All notes in a pattern can be transposed up or down from -127 to +127 semitones. For example with a setting of +7, all notes in the pattern would be transposed up a perfect fifth.

Warning: If you transpose notes past the hard limits of 0 and 127, those notes will be erased from the pattern.

▶ **To Transpose a Pattern:**
1. **Select the pattern** you wish to edit.
2. Select the **Track(s)** you wish to Transpose using the Track Enable/Mute buttons.
3. Press the **Pattern Edit** button.
4. Scroll to the Transpose screen shown below using the data entry control.

```
TRANSPOSE
+7  semitones
```

5. Select the a**mount of transposition** you want. The Home/Enter LED will be flashing once the cursor is moved to the lower line of the display.
6. Press **Enter.** The screen shown below appears to remind you to select the tracks you want to transpose. Select a key range. The default setting is all keys.

```
SELECT TRACKS
Key Range: C-2   to:G8
```

7. Press **Enter** to transpose the selected tracks. Press any other button to **Cancel** the operation.

Scale/Shift Velocity

This filter allows you to either scale (multiply by a value) or shift (add a value to) the velocity values of notes in a pattern. The Scale function is performed before the Shift value is added.

Scale - Multiplies all note-on velocities by a percentage from 0% to 125%. Scaling by 100% would leave all velocity values untouched. Scaling by 50% would cut all velocity values in half.

Shift - Adds or subtracts a specific velocity value (-127 to +127) to every note-on event in the pattern.

▶ **To Scale or Shift Velocity:**

1. **Select the pattern** you wish to edit.

2. Select the **Track(s)** you wish to Scale or Shift using the Track Enable/Mute buttons.

3. Press the **Pattern Edit** button.

4. Scroll to the **Scale/Shift Velocity** screen shown below using the data entry control.

✎ **Tip:** *To set all notes to a particular velocity value, set Scale to 0%, then set Shift to the desired velocity.*

```
SCALE/SHIFT VELOCITY
Scale: 87%  Shift: +0
```

5. Select the **amount of velocity scaling or shift**. The Home/Enter LED will be flashing once the cursor is moved to the lower line of the display.

6. Press **Enter.** The screen shown below appears to remind you to select the tracks you want to velocity scale or shift. Select a key range. The default setting is all keys.

```
SELECT TRACKS
Key Range: C-2  to:G8
```

7. Press **Enter** to change velocity in the selected tracks. Press any other button to **Cancel** the operation.

Extend Sequence
Data To

This feature lets you change the length of any selected tracks after recording a pattern. If you are lengthening a pattern, the pattern is looped to fill in the empty space. If you set the length shorter than the existing pattern, the pattern will be truncated.

You can set the pattern length before you extend so that only those bars will be copied. The copied data will be merged with the data in the subsequent bars of the pattern.

To Extend the 1st Bar over 4 Bars

1. Set Pattern
   Length to 1-bar

2. Extend Sequence
   Data to 4-bars
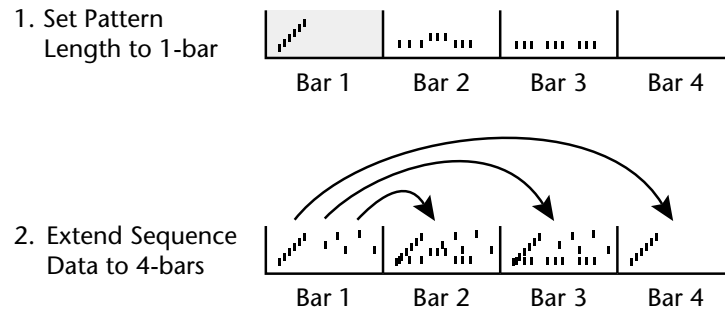
▶ **To Extend the Length of Selected Tracks:**

1. **Select the pattern** you wish to extend.
2. **Select the Track(s)** that you want to extend using the Track Enable/ Mute buttons.
3. Press the **Pattern Edit** button from pattern mode.
4. Scroll to the **Pattern Length** screen and set the length to the measures you wish to extend. For example, if you want to copy the first measure, set the length to 1.
5. Scroll to **Extend Sequence Data** using the data entry control.

```
EXTEND SEQUENCE DATA TO
bar: 8
```
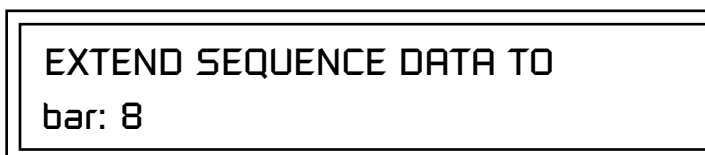
6. Move the cursor to the lower line of the display and select the new pattern length.
7. Press **Enter**. The following screen appears.

```
--- PERFORM OPERATION? ---
Enter = Yes    Other = Cancel
```
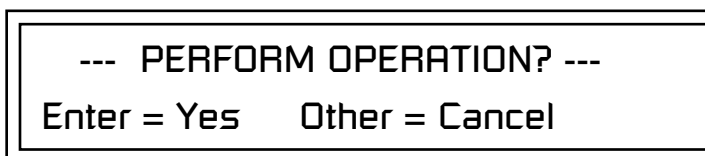
8. Press **Enter** again to extend the pattern or any other menu button to cancel the operation.

Erase Track

An entire track or a section of a track can be erased in a single operation. This feature makes it easy to erase a flubbed take or erase a section of track before pasting new data.

Erase Pattern or Song Track
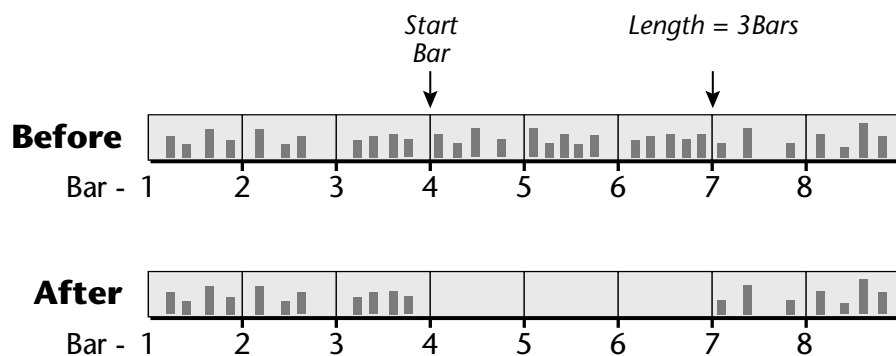
To Erase a Track:

1. Press the **Pattern Edit or Song Edit** button.
2. Scroll to the **Erase Track** screen shown below using the data entry control.

```
ERASE TRACK
Track: 1    Bar:01    Len:32
```

Track to be Erased   Start Location   Length in bars
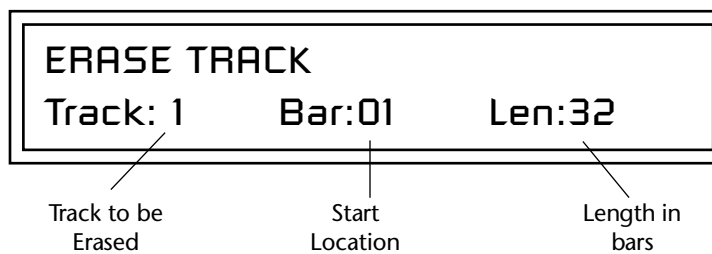
3. **Select the track** you want to erase. The Home/Enter LED will be flashing once the cursor is moved to the lower line of the display.
4. **Select the first Bar** you want to erase. The bar range for patterns is 01-32; the bar range for songs is 001-999.
5. **Select the Length** of the track you want erased.
6. Press **Enter** to erase the selected section of the Track.
7. Press any other menu button or exit the edit menu to **Cancel** the operation.

Cut Track to Clipboard

✎ *Cut track can be used as a way to erase a track.*

An individual track or a section of a track can be cut or copied and held on a digital "clipboard" so that it can be pasted into another track or pattern. This function cuts or removes a track (or section of a track) from the pattern and places it on the clipboard, where it will be held until it is replaced with another cut or copy operation, or the power to XL-7 is turned off.

Cutting a section from a track will leave a blank space in the track.
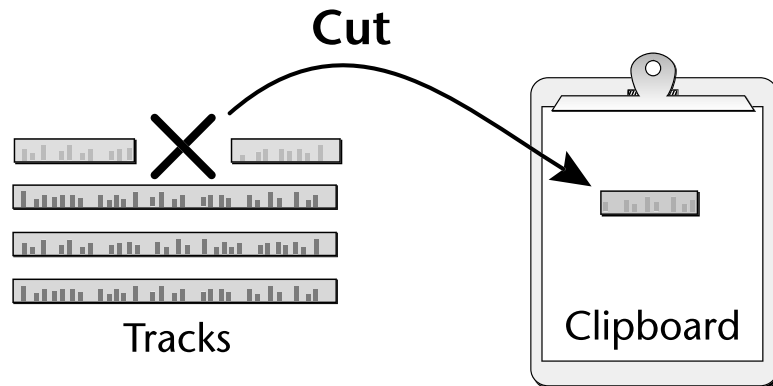
The cut section is placed on the clipboard leaving a blank space in the track where the data was cut out.

✎ *Tracks can be freely cut, copied or pasted between songs and patterns.*

▶ **To Cut a Track:**

1. **Select the pattern** you wish to edit.
2. Press the **Pattern Edit** button.
3. Scroll to the **Cut Track to Clipboard** screen shown below using the data entry control.

```
CUT TRACK TO CLIPBOARD
Track: 1    Bar:04    Len:07
```
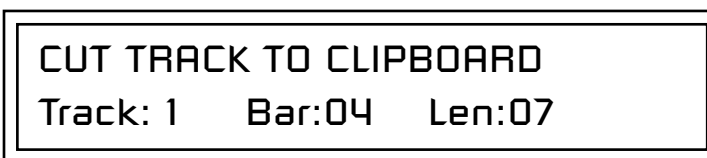
4. **Select the track** to be cut. The Home/Enter LED will be flashing once the cursor is moved to the lower line of the display.
5. Select the **Start Bar** and the **Length** (in bars) to be cut.
6. Press **Enter** to cut the track. Press any other menu button to **Cancel** the operation.

*Copy Track to
Clipboard*

An individual track or a section of a track can be copied and held on a digital "clipboard" so that it can be pasted into another track or pattern. This function makes a digital copy of the selected track and places it on the clipboard, where it will be held until it is replaced with another cut or copy operation, or the power to is turned off.
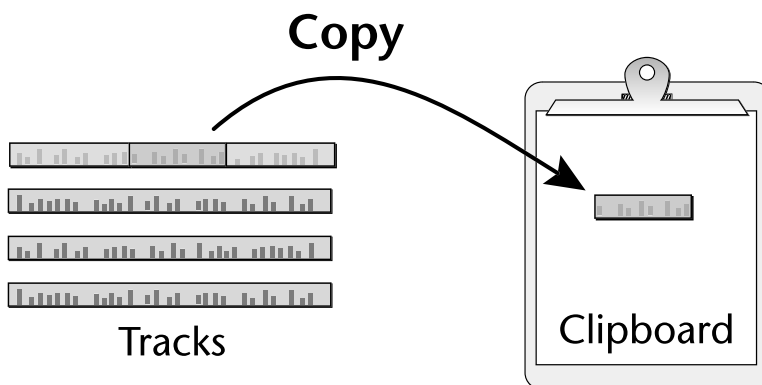
Copy

Tracks   Clipboard

▶ **To Copy a Track:**

1. **Select the pattern** you wish to edit.

2. Press the **Pattern Edit** button.

3. Scroll to the **Copy Track to Clipboard** screen shown below using the data entry control.

```
COPY TRACK TO CLIPBOARD
Track: 1    Bar:06    Len:07
```

4. **Select the track** to be copied. The Home/Enter LED will be flashing once the cursor is moved to the lower line of the display.

5. Select the **Start Bar** and the **Length** (in bars) to be copied.

6. Press **Enter** to copy the track. Press any other menu button to **Cancel** the operation.

Paste Clipboard to Track

Once a track (or a section of a track) has been cut or copied to the "clipboard", it can be pasted into another track or pattern from 1 to 99 times. The Paste operation *Merges* the clipboard data with the data on the destination track. It adds the new information to the existing data with the start of the data in the clipboard placed at the selected bar position.

Because of the data merging feature, the Paste operation can be used to "bounce down" multiple tracks to a single multichannel track. *See below.*
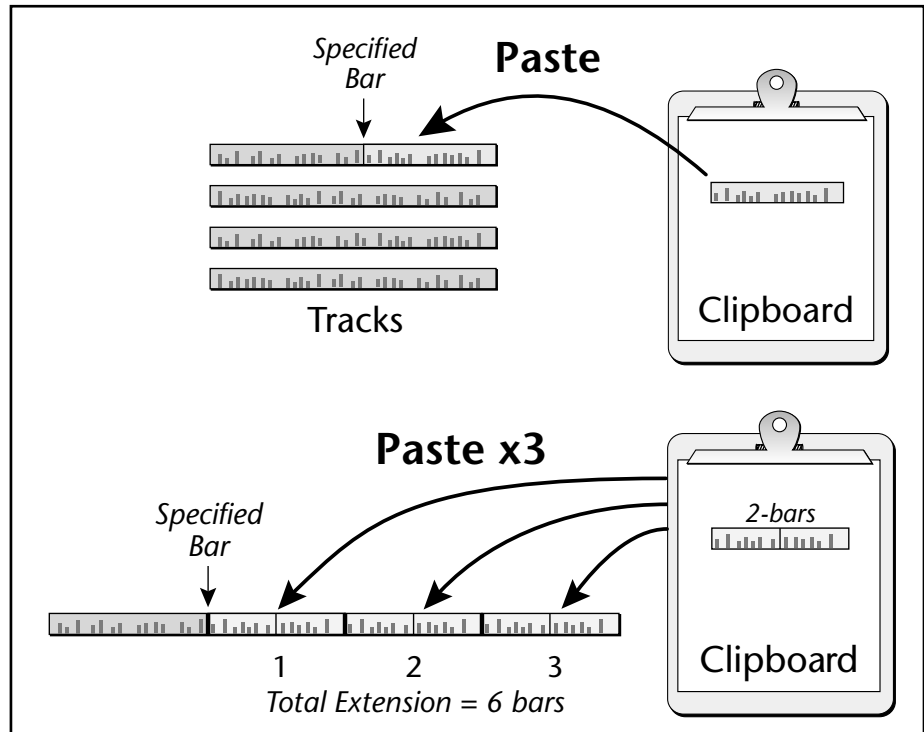
▶ **To Paste the Clipboard into a Track:**

Tracks can be freely cut, copied or pasted between songs and patterns.

1. Press the **Pattern Edit** button.

2. **Cut or Copy** data to the clipboard. See pages 82 and 83.

3. Scroll to the **Paste Clipboard to Track** screen shown below using the data entry control.
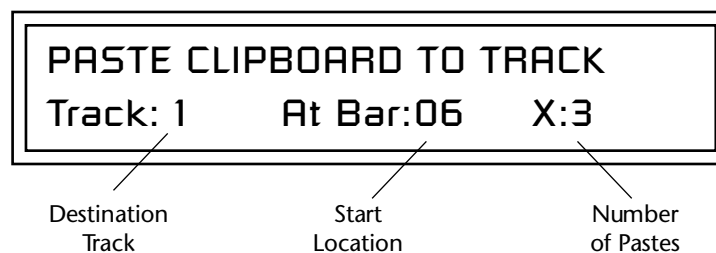
```
PASTE CLIPBOARD TO TRACK
Track: 1      At Bar:06      X:3
```

Destination Start Number
Track Location of Pastes

You will not hear the results of the Paste operation until the sequence cycles around. (Hint: Press RTZ)

4. **Select the track** where you want the clipboard data to be pasted. The Home/Enter LED will be flashing once the cursor is moved to the lower line of the display.
5. **Select the bar** where the clipboard contents will be pasted.
6. **Select the number of times** you want the clipboard data pasted.
7. Press **Enter** to paste the data. Press any other menu button to **Cancel** the operation.

▶ **To Bounce Tracks:**
1. **Copy the first track** you wish to bounce.
2. **Paste the track** to the desired destination track.
3. **Repeat steps 1 & 2** for the other tracks you wish to bounce down.
4. Press the **Pattern Edit** button and scroll to the **Channel Assign** screen.
5. **Set the Track** containing all your bounced tracks **to MultiA**. (or **MultiB** if the original tracks were recorded using the "B" channels.)

Channel Assign

This important screen assigns each track to a Main channel (01A-16B). This "rechannelizes" the data on the track to the channel you choose here. The default mode of operation for XL-7 is to have tracks assigned to the same-numbered MIDI channel. This convention makes it easy to keep everything organized and it works well for most recording.

Because tracks can be recorded with multiple MIDI channels, "Multi A" and "Multi B" options are provided in the channel selection field. The Multi options route data to either the A or B channels (internal or external). For example, you could route a multichannel track to only use the B channels.

Each track can also be routed to: internal MIDI channels, the external MIDI ports, both, or none. Channels 1A-16A and Multi A are routed to MIDI port A and channels 1B-16B and Multi B are routed to MIDI port B, if "ext" or "both" is selected as a destination for that track.

Important Note: Program change messages are NOT transmitted externally if the destination is set to Both. To transmit program changes to external MIDI devices, set the destination to External (EXT).

You might want to designate a certain track to handle external program changes. Set this track to "Ext" and choose "MultiA" or "MultiB".

Track   **Channel**   **Destination**

▶ **To Assign Tracks to MIDI Channels:**

1. **Select the pattern** you wish to edit.
2. Press the **Pattern Edit** button.
3. Scroll to the **Select Track Changes** screen shown below using the data entry control.

```
ᵀ01 CHANNEL ASSIGN
Channel: 01A:     Dest:both
```
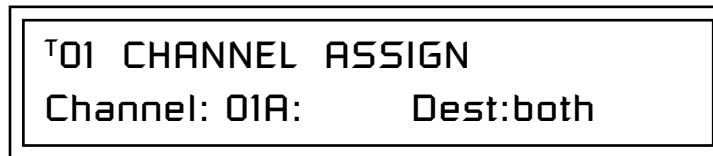
4. **Select the desired track(s)**.
5. Select the desired **channel** for the track.
6. Select the desired **destination** for the track.
7. Press the **Pattern Edit** button again to exit the module.

Multichannel Track Recording

Each of XL-7's 16 tracks can contain multichannel MIDI data. Because tracks can be routed internally or externally on either of the two MIDI ports, the XL-7 sequencer can actually control up to 64 separate MIDI channels (16 internal-A, 16 internal-B, 16 MIDI port-A, 16 MIDI port-B). Once a track is enabled for multichannel recording you can record into it using the rubber keypads or external MIDI.

▶ **To Setup a Track for Multichannel Recording**

1. **Select the pattern** you wish to record.

Playback Setup (steps 2-7 set up the track for multi-channel play back)

2. Press the **Pattern Edit** button.
3. Scroll to the **Select Track Changes** screen shown below using the data entry control.

✎ *The Channel Assignment screen is a MIDI rechannelizer. The Multi A or B assignments allow multiple MIDI channels on a track.*

```
ᵀ01 CHANNEL ASSIGN
Channel: 01A:      Dest:both
```

4. **Select the desired track**.
5. Set the track to **MultiA** or **MultiB**.
6. Select the desired **destination** for the track (internal, external or both).
7. Press the **Pattern Edit** button again to exit the module.

Continue on to Record a Multichannel Track using the Rubber Keypads…

8. Press the **Controllers** button and make sure "Keyboard/Knob Channel" is set to "Basic". This feature automatically changes the channel of the keypad to whatever channel is shown in the preset view display.

9. Make sure the multichannel track you set up (step 4 above) is selected.

10. Set the Pattern Length.

Ready to Record

11. Press the **Preset View** button.

12. **Select a preset** for channel 01A.

13. Press **Record**, then **Play**. Start playing!

Record Channel 2

14. **Select channel 02A**.

15. **Select a preset** for channel 02A.

16. Press **Record**, then **Play**. Start playing!

17. Continue to record channels.

Aux Channel Assign

Each track can also be assigned to a separate Aux channel. This assignment works exactly like the main channel assignment (page 86). In certain situations it may be useful to transmit using two MIDI channels or both MIDI ports.

The Aux Channel assignments are NOT saved with the pattern or multi-setup and reverts to its default state upon power-up.

Note List Editor

Individual MIDI notes in the pattern can be edited, inserted or deleted from this screen. **Place the cursor underneath the "Event Scroll Field" shown below and turn the data entry control to navigate through events.**

- Hold the **Enter** button and turn the **data entry control** to scroll through events when the cursor is on any other field

Event Scroll Field

Track Number   *(scroll though events)*   *Time Location*

```
ᵀ01   NOTE    <->    002.03.008
C01  C#1    v:100    dur:00.083
```

MIDI   *MIDI*   *Note*   *Note*
Channel   *Note*   *Velocity*   *Duration*
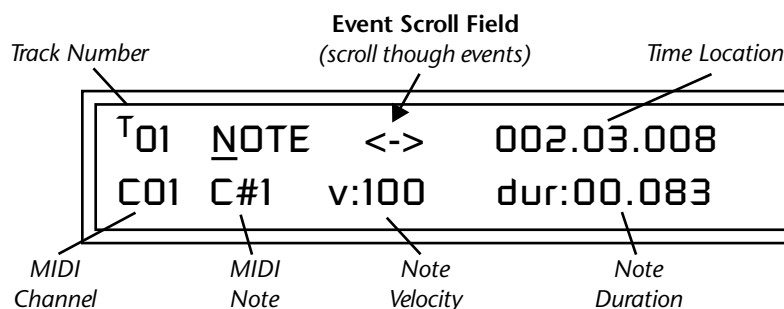
- **Erase** button - - - - - Erases the currently selected note.
- **Repeat** button - - - - Duplicates the currently selected note, allowing you to edit and create a new note.
   1) Press Repeat.
   2) Change the time, channel, or MIDI note.

Note: You cannot have two events with the exact same time and data in a pattern. XL-7 will delete any duplicate events as soon as you increment the event or exit the screen.

▶ **To Edit a MIDI Note:**

1. **Select the pattern** you wish to edit.
2. Press the **Pattern Edit** button.
3. Scroll to the **Note List Editor** screen shown below using the data entry control.
4. Press the **Enter** button as prompted by the display to begin editing.
5. Select the **Track** that you want to edit using the Track/Channel select button near the LCD.

```
ᵀ01   NOTE    <->    002.03.008
C01  C#1    v:100    dur:00.083
```

6. Press the **right Cursor** button to move the cursor underneath the Event Scroll field (<->).
7. Turn the **data entry control** to scroll through the event list and locate the event you want to edit.
8. Move the cursor to the data field you want to edit and make changes using the data entry control.
9. Press the **Pattern Edit** button to exit the Pattern Edit module.

You can edit notes and note velocity by playing the keyboard.

Event List Editor

Continuous controller, pitch wheel. mono pressure, poly pressure and program change MIDI messages can be edited, inserted or deleted using this menu. **Place the cursor underneath the "Event Scroll Field" shown below and turn the data entry control to navigate through events.**

The event list editor also allows you access to the *Conductor Track* which sets the tempo and meter for the pattern.

Hold the **Enter** button and turn the **data entry control** to scroll through events when the cursor is on any other field.

- **Erase** button - - - - - Erases the currently selected event.
- **Repeat** button - - - - Duplicates the currently selected event, allowing
    you to edit and create a new event.
    1) Press Repeat.
    2) Change the time, channel, or MIDI event type.
- **Note:** You cannot have two events with the exact same time and data in a pattern. XL-7 will delete any duplicate events as soon as you increment the event or exit the screen.

Continuous Controller Edit
Continuous controller numbers 1-95 can be edited. Continuous controllers and Channel Pressure messages may range in value from 0-127.

Continuous Controller Screen

Track Number   **Event Scroll Field**
               (scroll though events)   *Time Location*

```
┌─────────────────────────────────────┐
│ ᵀ01  EVENT  <->     002.03.008       │
│ C01   controller #1      v:52        │
└─────────────────────────────────────┘
```

MIDI   *Event*   *Controller*   *Event*
Channel   *Type*   *No. Field*   *Value*

Pitch Strip Edit
Pitch Strip messages are bidirectional and may range in value from -8192 to +8191.

Pitch Strip Screen

```
┌─────────────────────────────────────┐
│ ᵀ01  EVENT  <->     002.03.004       │
│ C01   pitch strip:      -49          │
└─────────────────────────────────────┘
```
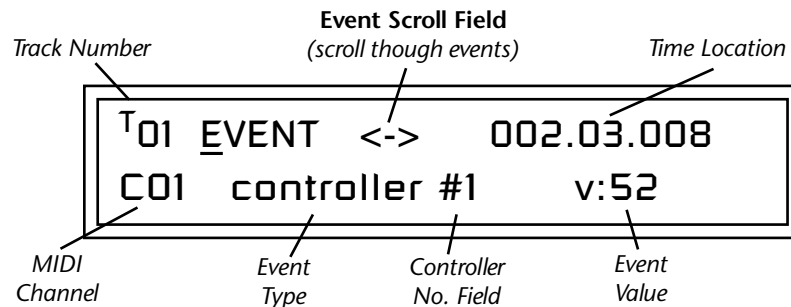
Bidirectional Pitch Value
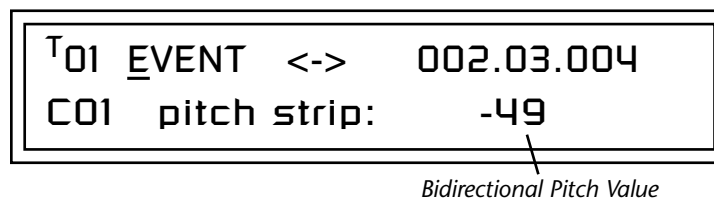
Poly Pressure Edit

Polyphonic pressure messages are assigned on a per note basis and have range of 0-127. XL-7 can generate polyphonic pressure messages, but it cannot receive them.

Poly Pressure Screen

```
ᵀ01  EVENT  <->      002.03.004
C01   polypress:    C1        62
```

                      MIDI   Poly Pressure
                      Note   Value
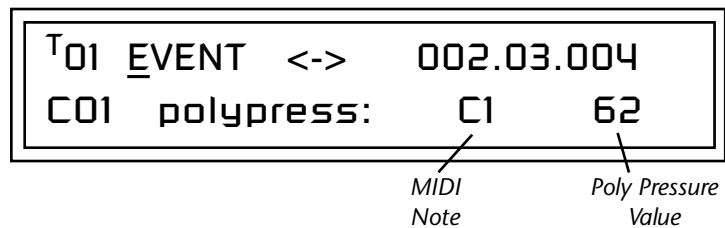
Program Change Edit

Program change numbers from 0-127, and on any bank number, can be inserted, deleted or edited in this screen. If you do not select bank numbers (off), the program change will be sent to the currently selected bank. See "Bank Select Commands" on page 180.

👀 *In order to send program changes to external devices, the Track must be assigned to an "external" channel. See page 86 for details.*

Program Change Screen

```
ᵀ01  EVENT  <->      003.02.026
C01   prog: 10      m:off    l:off
```

            Program   Bank   Bank
            Change   Number MSB   Number LSB
            Number   cc:0   cc:32

▶ **To Edit a MIDI Event:**

1. **Select the pattern** you wish to edit.
2. Press the **Pattern Edit** button.
3. Scroll to the **Event List Editor** screen shown below using the data entry control.
4. Press the **Enter** button as prompted by the display to begin editing.
5. Select the **Track** that you want to edit using the Track/Channel select button near the LCD.

```
ᵀ01  EVENT   <->     002.03.008
C01   controller #1      v:52
```
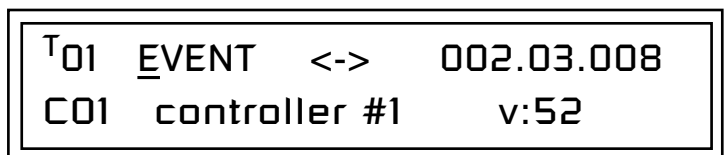
6. Press the **right Cursor** button to move the cursor underneath the **Event Scroll Field** (<->).

7. Turn the **data entry control** to scroll through the event list and locate the event you want to edit.

8. Move the cursor to the data field you want to edit and make changes using the data entry control.

9. Press the **Pattern Edit** button to exit the Pattern Edit module.

The Conductor Track (track 0)

The conductor track allows you to insert tempo and meter changes anywhere in the pattern. Select the track below track 1 and the first screen shown below will appear.

Conductor Track Screens

```
ᵀCT  EVENT   <->      003.01.000
C01  tempo:  138 bpm
```

```
ᵀCT  EVENT   <->      003.01.000
C01  meter:    04/4
```

▶ **To Insert a Tempo Change into the Conductor Track:**

1. **Select the pattern** you wish to edit.

2. Press the **Pattern Edit** button.

3. Press the (-) **Track/Channel** button until "CT" appears in the track field.

4. Press the **Enter** button as prompted by the display to begin editing.

5. Move the cursor to the lower line of the display and select **tempo**.

Track field   Time Location

```
ᵀCT   EVENT    <->      002.03.008
          tempo:  120 bpm
```

Tempo/Meter field   BPM field
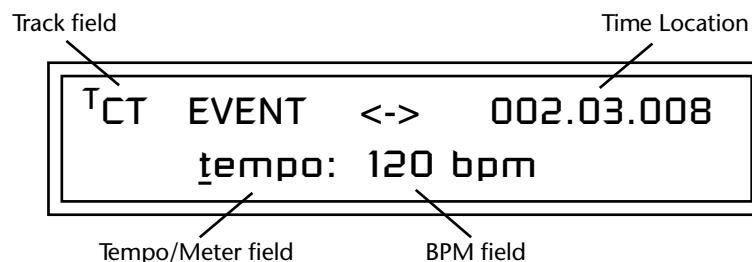
6. Move the cursor under the **bpm field** and set the tempo.

7. Set the **Time Location** where you want the tempo change to occur.

8. If you want to add another tempo change, press the **Repeat** button on the XL-7 front panel.
9. Change the **Time Location** and **Tempo.**
10. Press the **Pattern Edit** button to exit the Pattern Edit module.

▶ **To Remove or edit a Tempo Change from the Conductor Track:**

1. **Select the pattern** you wish to edit.
2. Press the **Pattern Edit** button.
3. Press the **(-) Track/Channel** button until "CT" appears in the track field.
4. Press the **Enter** button as prompted by the display to begin editing.
5. Press the **right Cursor** button twice to move the cursor underneath the **Event Scroll** field (<->).
6. Turn the **data entry control** to scroll through the event list and locate the tempo change you want to edit.

Event Scroll Field
(scroll though events)

```
 ᵀCT  EVENT   <->     002.03.008
      tempo:  120 bpm
```
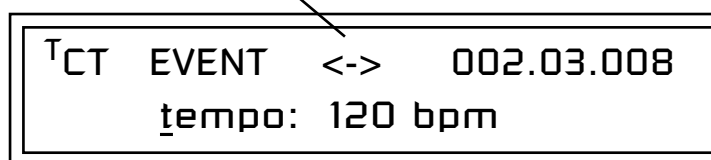
7. Press the front panel **Erase** button on XL-7 to erase the tempo event.
8. Simply change the **Tempo** or **Location** fields to modify the tempo or time of the event.
9. Press the **Pattern Edit** button to exit the Pattern Edit module.

▶ **To Insert or Edit Meter Changes:**
Meter changes are inserted and edited exactly like tempo changes.

Revert to Saved Pattern

This screen allows you to discard any edits made to the pattern and restore the last saved version. This is not the same as an "Undo" function since Revert permanently discards any edits you have made since saving. This function removes the asterisk in the display that appears after you've edited the pattern.

Song Mode

Song mode is selected by pressing the **Song mode** button beneath the liquid crystal display. The screen shown below is displayed in Song mode. See "Songs" on page 52.

```
♩:150    M: 04 / 4    Bar: 001 . 1
000⁰  Start of IT
```
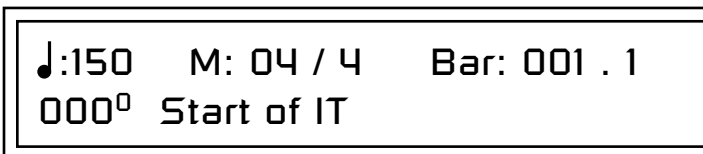
Song Play

Pressing **Play** in Song mode causes the selected song to play.

Pressing the **Stop** button stops the song immediately. Pressing **Stop again** rewinds the song to the beginning (RTZ). Pressing **Stop** a third time reloads the initial setup information for the Song.

Song Step Recording

As described on page 52, songs can be recorded in two ways. Step recording involves linking patterns together to form more intricate arrangements.

▶ **To Step Record a Song:**

1. Press the **Song** mode button. The screen shown below appears.
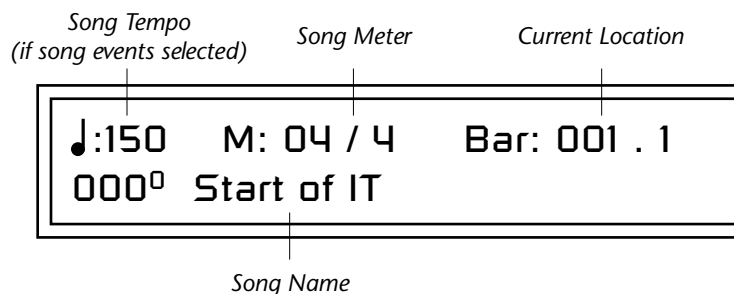
Song Tempo (if song events selected)   *Song Meter*   *Current Location*

```
♩:150    M: 04 / 4    Bar: 001 . 1
000⁰  Start of IT
```

Song Name

2. **Select a Blank song** to begin recording using the data entry control.

3. Press the **Record** button twice to select Step Record mode. The Step record LED illuminates and the screen shown below appears.
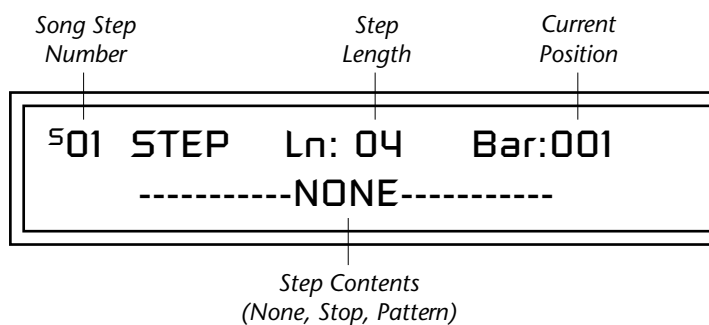
Song Step Number   *Step Length*   *Current Position*

```
ˢ01  STEP   Ln: 04    Bar:001
----------NONE----------
```

Step Contents (None, Stop, Pattern)

*You must press the **Enter** button to confirm each step change. Any changes you make without pressing Enter will be discarded.*
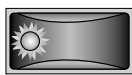
HOME/ENTER

You can move the cursor to any field can change it while in step record mode.

4. The cursor is on the lower line of the display. Turn the data entry control to **select a Pattern** for step one.

> ᔆ01 STEP   Ln: 04   Bar:001
> 000º Ambideep
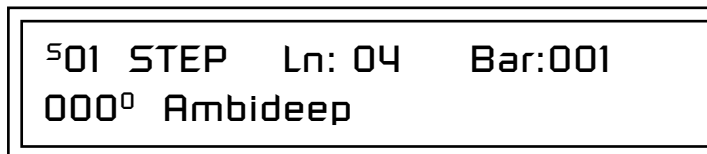
5. Press **Enter** to choose the pattern and increment the step counter. Note that the current position (Bar) field now indicates the bar position just beyond the length of the first pattern.

6. **Select another pattern** for song step 2. Press the **Play** button to audition the pattern before pressing Enter.

> ᔆ02 STEP   Ln: 99   Bar:009
> 001º Amsterdam
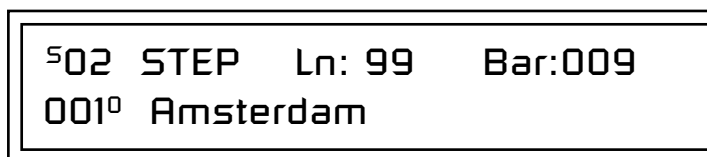
7. Press **Enter** when you've made your selection and the step counter increments again.

8. **Continue to add Patterns.** When you're ready for the Song to end, turn the **data entry control** counter-clockwise and select the **STOP** command. If you don't insert a "Stop" command, the last pattern will simply continue to play indefinitely.

Changing the Length of Patterns

9. While in Step Record mode, you can move the cursor to the Length (Ln) field and change the length of the pattern at that step. Lengthening a pattern will cause it to loop. Shortening a pattern will truncate the playback to the selected length.

Deleting a Pattern

10. Pressing the **Erase** button (located below the controller knobs) erases the currently selected step from the song.

Inserting a Pattern

11. You can insert a pattern at any bar of the song. Select the insert point by moving the cursor beneath the **Step Number** or the **Bar** field.

12. Select the pattern you wish to insert, press and hold the **Repeat** button (located below the controller knobs), then press **Enter**. The new pattern will be inserted at the selected bar location.

Inserting Track Mutes

13. You can set the Track Mutes for each step in the song by simply selecting them. Track mutes are selected at the beginning of each step.

Stop the Song

14. Turn the data entry control counter-clockwise until you find the STOP command. This will be the last step of your song.

Time to Save?

15. Changes are not made permanent until you **Save** the song. An asterisk will appear in the Song display if the Songs has been modified and needs to be saved. The Save/Copy button LED will also be flashing.

Press **Save/Copy**, scroll to the Save Song screen, select a location and press **Enter**.

The following parameters are also saved with the Song. Set these parameters, then save the song again if you wish. The "Event Source" option in the Song Edit menu (page 99) determines whether song or pattern events will be used in the song.

The 16 tracks of a song can be assigned to either the A or B channels using the "Song Channel Assign" function on page 110.

- Initial Tempo
- Volume for 16 channels
- Pan for 16 channels
- Mix Output setup for 16 channels
- Arp channel status *(off/on/preset/master)* for 16 channels
- Master FX setup
- Event Source

Realtime Song Recording

Realtime Song Recording lays down a single track which may contain multichannel: note, program change and controller data (but no SysEx). Realtime data will retain its recorded channel information so you can lay in multichannel note and controller information. Multiple channel information received over MIDI will also be recorded.

▶ **To Record a Song in Realtime mode:**

1. Press the **Song** mode button. The screen shown below appears.
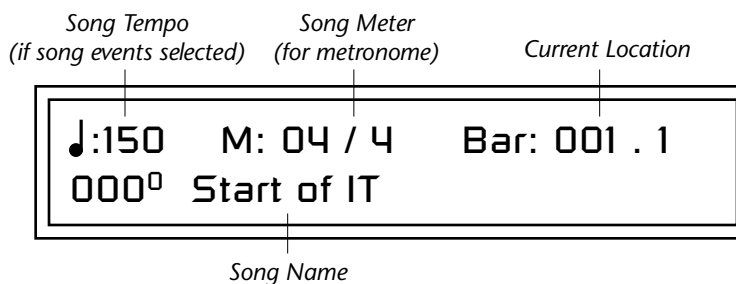
Song Tempo
(if song events selected)   *Song Meter*
(for metronome)   *Current Location*

```
♩:150    M: 04 / 4     Bar: 001 . 1
000⁰  Start of IT
```

Song Name

2. Select a Blank song to begin recording using the data entry control.

3. Press the **Record** button once to select Realtime Record mode. The Realtime record LED illuminates and the screen shown below appears. If you have already step recorded any pattern inserts, their numbers will appear on the lower line of the display.

4. Set the metronome to **On** or **Rec** if you want a timing reference.

Song Tempo   *Current Location*

```
♩:130   - - - REC - - -   Bar: 001 . 1
Quan: off      Met: rec      CntIn: 0
```

Auto-Correct   *Metronome on/off/rec*   *Count-in Bars*
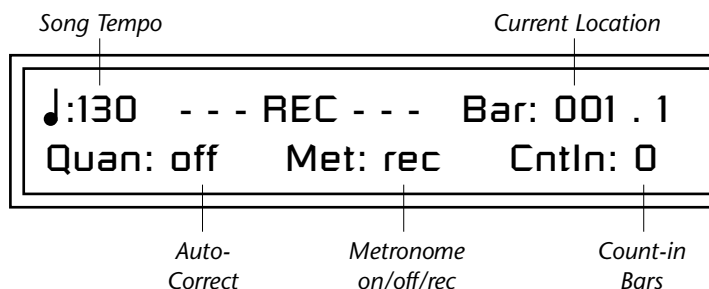
5. Press the **Play** button to begin realtime recording. As in Pattern Record Mode, the Record button can be pressed at any time to disable recording. Similarly, the Play button can be pressed while recording to affect a "record-pause" mode.

To Erase Specific Notes:

6. Press the **Erase** button in Realtime Record mode and **hold down the keyboard note** you wish to erase. The note will be erased when it comes around in the pattern.

▶ To Overdub Realtime Controller Data over Patterns

This may be the most common way to use Realtime Song mode. After arranging your song using step record mode, you can mix and embellish your song by recording continuous controllers over the top. You might also want to add additional musical lines over your patterns.

1. Start by recording and saving a song by following the instructions on page 94.

Volume Mixing

2. Press **Song Edit** and scroll to the **Event Source** page.

3. Move the cursor to the lower line and select "volume: song events only".

4. Press **Song Edit** again to exit the menu.

5. Select **Volume** knob mode by repeatedly pressing the Controller Function Select button (page 37).

6. Select **Mix** View mode if you wish to view the volume settings.

7. Press the **Stop** button twice to make sure the song starts at the beginning.

8. Press the **Record** button in Song mode to get ready to record. The Play button LED will be flashing.

✆ Too much controller information can clog the sequencer causing sluggish performance and sloppy timing. Use the "Thin Events" function (page 103) to reduce the amount of controller data in the song.

✎ *Use the "Erase cc#
Events" function (page 104) to
erase controller data from the
song.*

9. Press the **Play** button to begin recording. The controller knobs now adjust the volumes of all 16 tracks.

10. Press **Stop** when you're finished recording.

Realtime Panning

11. Select **Pan Knob** mode by pressing the Controller Function Select button.

12. Select **Mix View** mode by pressing the Mix button (if it's not already selected).

13. Turn the data entry control clockwise to select **Ch Pan** view.

14. Press the **Stop** button twice to make sure the song starts at the beginning.

15. Press the **Record** button in Song mode to get ready to record. The Play button LED will be flashing.

16. Press the **Play** button to begin recording. The controller knobs now adjust the pan positions of all 16 tracks.

17. Press **Stop** when you're finished recording.

Recording Quick Edits

The Quick Edit knobs always record on the Basic Channel *(the channel currently displayed in the Preset View screen)*.

18. Select **Quick Edit** mode by pressing the Controller Function Select button.

19. Select the channel with the preset you wish to Quick Edit.

20. Practice your knob movements before recording by playing back the song and twisting the knobs.

21. When you're ready to record, press **Record**, then **Play**, then perform the knob movements.

▶ **Erasing Controller Data**

1. The **Erase Events** function (page 104) can be used to erase controller data.

2. Find the realtime controller # of the knob you wish to erase in the Controllers menu.
   (Volume is always cc#7, and Pan is always cc#10. The numbers of the 16 controller knobs can vary.)

3. Press the **Song Edit** button.

4. Scroll to **Erase Events** and move the cursor to the lower line of the display.

5. **Select the realtime controller** number from step 2.

6. Press **Enter** to erase the controller data.

Song Edit Menu

The Song Edit menu allows you to name and edit songs as well as control which controller data will be used when the song is played.

The Song Edit button is DISABLED unless you are in Song Mode.

An XL-7 Song is a one track sequence of any length. Pattern Play events will typically be recorded into a song so that specific patterns will begin playing at specific bar locations (only one pattern can play at a time). Note-on/off, controller and program change information can also be recorded into the Song track.

Song Name

Songs can be named with up to 16 characters. Position the cursor under the character location and use the data entry control to change the character.

```
SONG NAME
Blue Beats
```
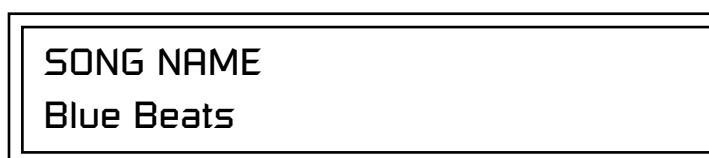
Event Source

This function determines how certain controls programmed into the pattern will be used in the song.

Event Source is a playback filter. Realtime Song data will be recorded regardless of the Event Source settings, but it might be confusing if you don't hear what you just recorded. Therefore, it's always a good idea to check the Event Source settings before recording realtime song data.

- Tempo
- Preset (program change)
- Volume
- Pan
- Mix
- Arp
- Master Effects (FX)

✎ *When you save a sequence (song or pattern) it picks up the current settings and saves them at the head of the track.*

For each type of control listed above, you can choose one of these options:

- **Song Events Only** Uses song events; ignores pattern events
- **1st Pattern Only** Uses events from the 1st pattern; ignores song events
- **All Patterns** Uses the events programmed into each pattern
- **Song & Patterns** Uses both song and pattern events

The song and pattern option makes the song track extremely flexible because the song track can be used for volume mixing, realtime control or lead lines over a traditional pattern-based song structure. The song and pattern option also allows presets to be selected correctly when using channels 1B-16B for song events.

▶ **To Set the Event Sources for a Song:**

1. **Select the Song** you wish to edit in Song mode.

2. Press the **Song Edit** button.

3. Scroll to the **Event Source** screen shown below using the data entry control.

```
EVENT SOURCE

tempo:     song events only
```

4. Select: **Song Events Only**, **First Pattern Only**, **All Patterns, or Song & Patterns** for each event type.

5. Press the **Song Edit** button again to exit the module.

Setting Meter (Time Signature)

XL-7 allows you to set almost any conceivable time signature. The numerator (indicating number of beats in a measure) can be set from 1 to 99. The denominator (indicating the rhythmic value of each beat) can be set to 1, 2, 4, 8, 16, 32, or 64. The time signature can be changed at any time before or after recording.

The meter setting affects the bar:beat display, the pattern length, metronome accent, and the grid recording display.

For more information about Time Signatures, see page 316.

▶ **To Set the Time Signature:**

1. **Select the song** in which you want to record in Song mode.

2. Press the **Song Edit** button. The Song Edit menu screen displays the menu page most recently selected since powering up XL-7.

3. Scroll to the **Meter** screen using the data entry control. The meter setting will probably show the 04/4 default time signature.

```
METER      METRONOME      VALUE
04 / 4     off            1/8
```

4. Press the right cursor button once to move the cursor underneath the numerator field.

5. Set the **time signature numerator** value using the data entry control.

6. Press the right cursor button again to move the cursor underneath the denominator field.

7. Set the **time signature denominator** value using the data entry control.

8. Press the **Song Edit** button again to exit Song Edit mode.

Metronome

The metronome is a timing aid when recording or playing back songs and can be set to a wide variety of different beats. The metronome produces an accented click on the first beat of each measure and a softer click on other beats. The metronome beat options are listed on page 72.

The metronome setting is NOT saved with the Song.

▶ **To Set the Metronome:**

1. Press the **Song Edit** button. The Pattern Edit menu screen displays the menu page most recently selected since powering up XL-7.

✎ *Play the pattern to listen to the Metronome while you set the Value.*

2. Scroll to the **Metronome** screen using the data entry control.

```
┌────────────────────────────────────┐
│  METER    METRONOME    VALUE        │
│  04 / 4     off          1/8        │
│             ‾                       │
└────────────────────────────────────┘
```

3. Move the cursor underneath the **Metronome** field and turn the metronome to **On**, **Off** or **Rec** using the data entry control.

   • **Off** - the metronome doesn't play.
   • **On** - the metronome plays during recording and playback.
   • **Rec** - the metronome only plays while recording.

4. Move the cursor underneath the **Value** field and set the metronome beat value using the data entry control.

Quantize

The timing of note events can be changed after a song has been recorded. Quantize moves all the note start times in the track to fall on (or closer to) the specified time values. *See "Quantize" on page 73 for more information about quantization.*

Note: This filter quantizes note data recorded in Realtime Song mode. It does NOT affect the notes in Patterns.

▶ **To Quantize Note Events in a Song:**

1. **Select the song.**
2. Press the **Song Edit** button.
3. Scroll to the **Quantize** screen using the data entry control.

```
┌────────────────────────────────────┐
│  QUANTIZE    Resolution: 16         │
│  Amount: 75%    Swing: 50%          │
└────────────────────────────────────┘
```

4. Set up the **Quantize parameters** as desired. The Home/Enter LED will be flashing once the cursor is moved to one of the editable fields.
5. Press **Enter** to Quantize or add Swing. Press any other button to **Cancel**.

Scale/Shift Duration

This filter allows you to either scale (multiply by a value) or shift (add a value to) the note durations in the song track. The Scale function is performed before the Shift value is added.

Scale - Multiplies all note durations by a percentage from 0% to 125%. Scaling by 100% would leave all note durations untouched. Scaling by 50% would cut all note durations in half.

Shift - Adds or subtracts a specific note duration in beats and ticks to note-on events in the selected tracks.

▶ **To Scale or Shift Note Duration:**

1. **Select the song** you wish to edit.
2. Press the **Song Edit** button.
3. Scroll to the **Scale/Shift Note Duration** screen shown below using the data entry control.

✎ **Tip:** *To set all notes to a particular value, set Scale to 0%, (this zeros the value) then set Shift to the desired duration.*

```
SCALE/SHIFT NOTE DURATION
Scale: 87%    Shift: +00.000
```
                                     Beats   *Ticks*

4. Select the **amount of note duration scaling or shift**. The Home/Enter LED will be flashing once the cursor is moved to the lower line of the display.
5. **Press Enter.** Select a key range for filtering. The default setting is all keys.

```
SELECT TRACKS
Key Range: C-2   to:G8
```
           Low Key   *High Key*
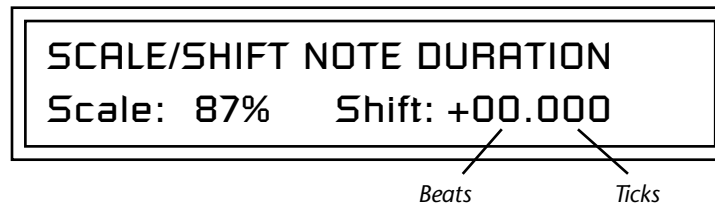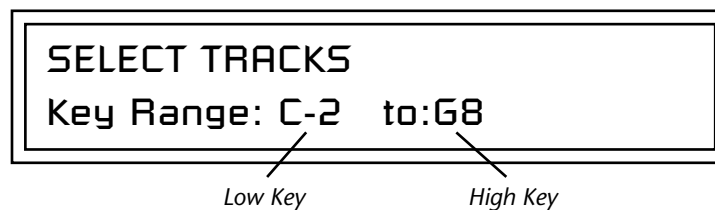
6. Press **Enter** to scale/shift the note durations. Press any other button to **Cancel** the operation.

Thin Events

Event thinning is usually performed to reduce the amount of extraneous controller data and thus reduce the memory size and microprocessor load. This filter reduces the number of events in a musical fashion. The setting represents the smallest change that will be kept. See page 76 for more information. The filter also keeps change in direction values.

Note: This filter thins note and controller data recorded in Realtime Song mode. It does NOT affect Pattern data.

The following types of events can be thinned:

• Tempo
• Poly Aftertouch
• Channel Aftertouch
• Pitch Wheel (Touchstrip)
• Any Continuous Controller (1-95)

▶ **To Thin Events from a Song:**

1. **Select the song** you wish to edit.
2. Press the **Song Edit** button.
3. Scroll to the **Thin Events** screen shown below using the data entry control.
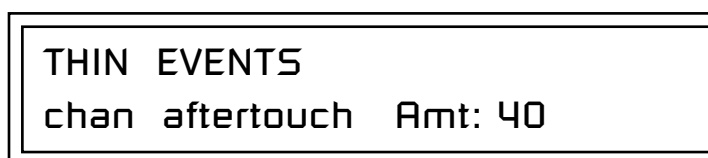
```
THIN EVENTS
chan aftertouch   Amt: 40
```

4. Select the **type of event** you want thinned, then set the **amount** of thinning. The Home/Enter LED will be flashing once the cursor is moved to one of the editable fields.
5. Press **Enter**. Select a key range for thinning. The default setting is all keys.

```
SELECT KEY RANGE
Key Range: C-2  to:G8
```
Low Key   *High Key*
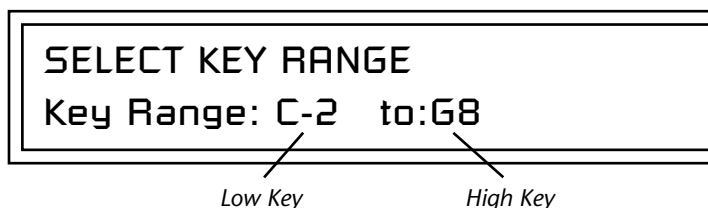
6. Press **Enter** to thin events. Press any other button to **Cancel** the operation.

Erase Events

Specific types of events can be completely erased from a song.

Note: This filter erases event data recorded in Realtime Song mode. It does NOT affect Pattern data.

Events that can be Erased

Notes	Tempo
Program Changes	Poly Aftertouch
SysEx Data	Channel Aftertouch
Meter	Pitch Wheel (Touchstrip)
Any Continuous Controller (1-95)	

▶ **To Erase Events from a Song:**

1. **Select the song** you wish to edit.

2. Press the **Song Edit** button.

3. Scroll to the **Erase Events** screen shown below using the data entry control.

```
ERASE EVENTS
program change
```

4. Select the **type of events** you want erased. The Home/Enter LED will be flashing once the cursor is moved to the lower line of the display.

5. Press **Enter**. Move the cursor to the lower line to select a key range for erasure. The default setting is all keys.
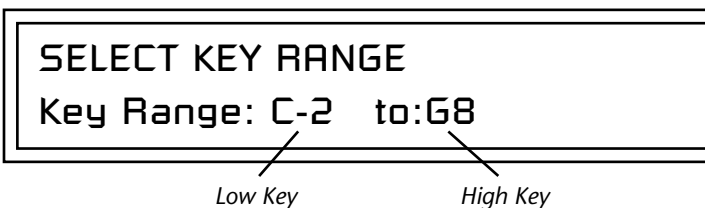
```
SELECT KEY RANGE
Key Range: C-2   to:G8
```

Low Key   *High Key*

6. Press **Enter** to erase the events. Press any other button to **Cancel** the operation.

Transpose

All notes in a song can be transposed up or down from -127 to +127 semitones. For example with a setting of +7, all notes in the song would be transposed up a perfect fifth.

Note: This filter transposes note data recorded in Realtime Song mode. It does NOT affect notes recorded into Patterns.

▶ **To Transpose Notes in a Song:**

1. **Select the song** you wish to edit.
2. Press the **Song Edit** button.
3. Scroll to the Transpose screen using the data entry control.

```
TRANSPOSE
+7  semitones
```

4. Select the **amount of transposition** you want. The Home/Enter LED will be flashing once the cursor is moved to the lower line of the display.
5. Press **Enter**. Move the cursor to the lower line to select a key range to be transposed. The default setting is all keys.

```
SELECT KEY RANGE
Key Range: C-2  to:G8
```

Low Key   *High Key*
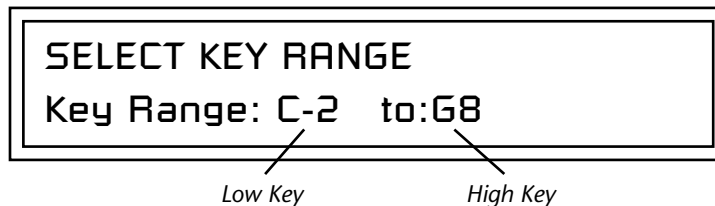
6. Press **Enter** to transpose the pattern. Press any other button to **Cancel** the operation.

Scale/Shift Velocity

This filter allows you to either scale (multiply by a value) or Scale (add a value to) the velocity values of notes in a song. The Scale function is performed before the Shift value is added.

Scale - Multiplies all note-on velocities by a percentage from 0% to 125%. Scaling by 100% would leave all velocity values untouched. Scaling by 50% would cut all velocity values in half.

Shift - Adds or subtracts a specific velocity value (-127 to +127) to every note-on event in the song.

Note: This filter scales velocity data recorded in Realtime Song mode. It does NOT affect the velocity values of Pattern data.

▶ **To Scale or Shift Velocity:**

1. **Select the song** you wish to edit.
2. Press the **Song Edit** button.
3. Scroll to the **Scale/Shift Velocity** screen shown below using the data entry control.

```
SCALE/SHIFT VELOCITY
Scale: 87%    Shift: +0
```

Tip: To set all notes to a particular value, set Scale to 0%, (this zeros the value) then set Shift to the desired duration.
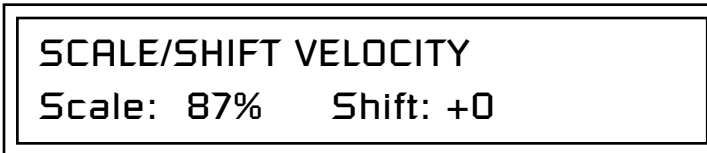
4. Select the a**mount of velocity scaling or shift**. The Home/Enter LED will be flashing once the cursor is moved to the lower line of the display.
5. Press **Enter**. Move the cursor to the lower line to select a key range to be velocity scaled or shifted. The default setting is all keys.

```
SELECT KEY RANGE
Key Range: C-2   to:G8
```
                       Low Key   *High Key*
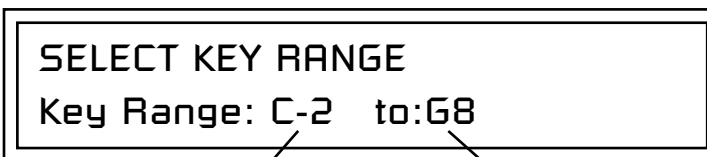
6. Press **Enter** to change velocity in the song. Press any other button to **Cancel** the operation.

Cut Track to Clipboard

A section of the a track can be cut or copied and held on a digital "clipboard" so that it can be pasted into another location in the track. The clipboard contents will be held until replaced with another cut or copy operation, or the power to XL-7is turned off. Cutting a section from a track will leave a blank space in the Song.

Cut track can be used as a way to erase a track.

Pattern Play events are NOT affected by the cut operation. Pattern play events must be edited using Step Record.
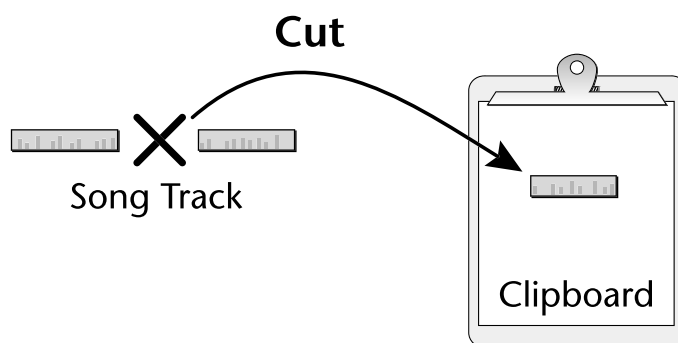
The cut section is placed on the clipboard leaving a blank space in the song track where the data was cut out.

▶ **To Cut a Section of the Song Track:**

1. **Select the song** you wish to edit.

2. Press the **Song Edit** button.

3. Scroll to the **Cut Track to Clipboard** screen shown below using the data entry control.

The Track Number cannot be changed in a Song since there is only one track.

```
CUT TRACK TO CLIPBOARD
Track: 1    Bar:04   Len:07
```
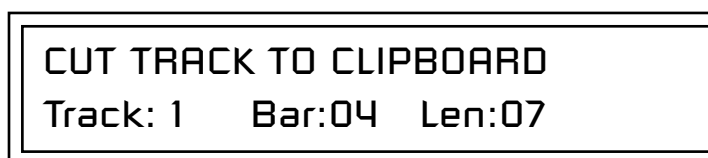
4. Select the **Start Bar** and the **Length** (in bars) to be cut. The Home/Enter LED will be flashing once the cursor is moved to the lower line of the display.

5. Press **Enter** to cut the track. Press any other menu button to **Cancel** the operation.

Copy Track to Clipboard

A section of a track can be copied and held on a digital "clipboard" so that it can be pasted into another location on the song track. This function makes a digital copy of the track and places it on the clipboard, where it will be held until it is replaced with another cut or copy operation, or the power to XL-7 is turned off. The copied *Paste* functions.

Pattern Play events are NOT affected by the copy operation. Pattern play events must be edited using Step Record.

Copy

Song Track
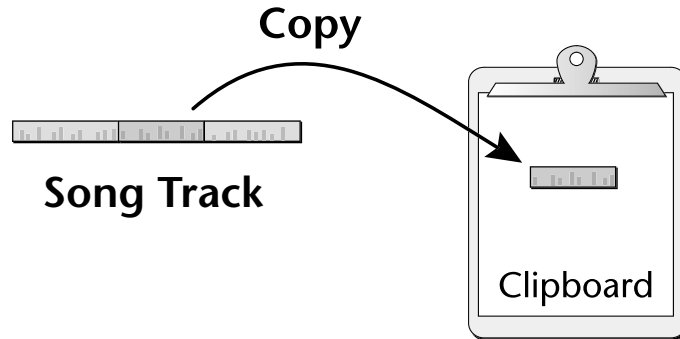
Clipboard

The copied section is placed on the clipboard leaving the song track intact and untouched.

▶ **To Copy a Track:**

1. **Select the pattern** you wish to edit.

2. Press the **Pattern Edit** button.

3. Scroll to the **Copy Track to Clipboard** screen shown below using the data entry control.

✎ *The Track Number cannot be changed in a Song since there is only one track.*

```
COPY TRACK TO CLIPBOARD
Track: 1    Bar:06   Len:07
```
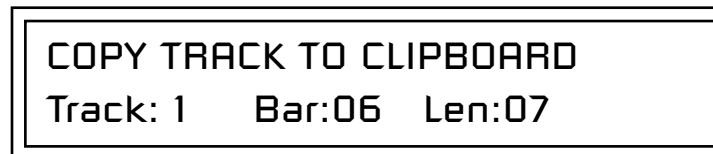
4. Select the **Start Bar** and the **Length** (in bars) to be copied. The Home/Enter LED will be flashing once the cursor is moved to the lower line of the display.

5. Press **Enter** to copy the track. Press any other menu button to **Cancel** the operation.

Paste Clipboard to Track

Tracks can be freely cut, copied and pasted between songs and patterns.

Once a track or track section has been cut or copied to the clipboard, it can it can be pasted into another location on the song track from 1 to 99 times. The Paste operation *Merges* the clipboard data with the data on the destination track at the selected bar position. This feature allows you to "bounce down" multiple tracks to a single multichannel track. *See below.*

Pattern Play events are NOT affected by the Paste operation. Pattern play events must be edited using Step Record.
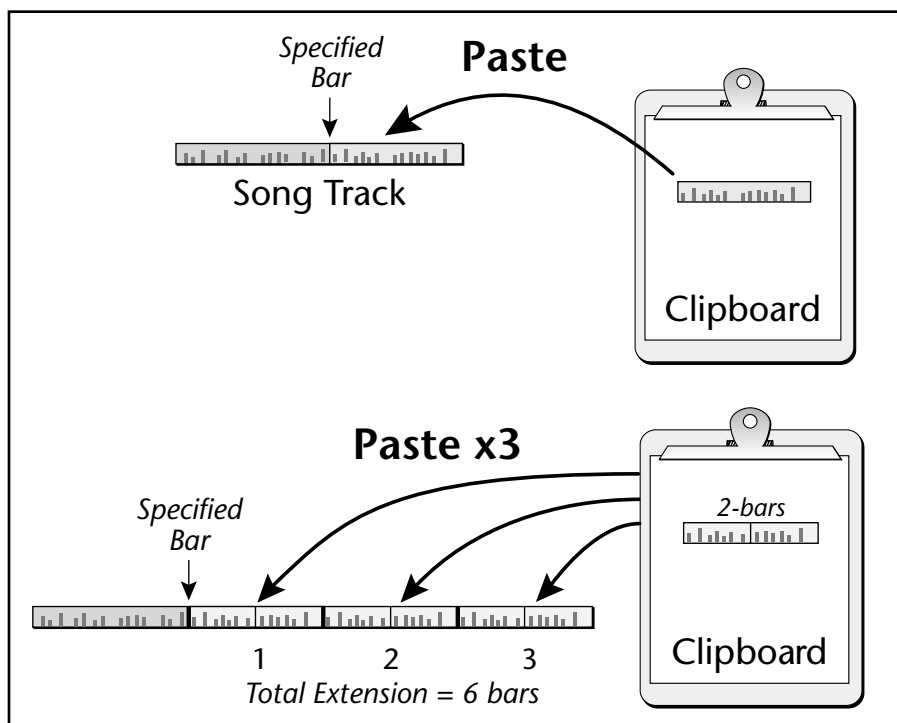
▶ **To Paste the Clipboard into a Track:**

1. **Select the pattern** you wish to edit.
2. Press the **Pattern Edit** button.
3. Scroll to the **Paste Clipboard to Track** screen shown below using the data entry control.

The Track Number cannot be changed in a Song since there is only one track.

```
PASTE CLIPBOARD TO TRACK
Track: 1     At Bar:06    X:1
```

You will not hear the results of the Paste operation until the sequence cycles around. (Hint: Press RTZ)

4. **Select the number of times** you want the clipboard data pasted.
5. **Select the bar** where the clipboard contents will be pasted.
6. Press **Enter** to paste the data. Press any other menu button to **Cancel** the operation.

Song Channel Assign

This screen allows you to assign the song track to channels1A-16A, or 1B-16B, or to MIDI Out port A or B. The song track can be routed to: internal MIDI channels (either A or B), the external MIDI ports, both, or none. Multi A is routed to MIDI port A and Multi B is routed to MIDI port B, if "ext" or "both" is selected as a destination. Selecting "None" disables playback.

🐦 **Important Note:**
Program change messages are NOT transmitted externally if the destination is set to Both. To transmit program changes to external MIDI devices, set the destination to External (EXT).

```
SONG CHANNEL ASSIGN
Channel: MultiA    Dest:both
```

▶ **To Assign the Song Track to the A or B channels:**

1. Press the Song Edit button.
2. Scroll to the **Song Channel Assign** screen shown above using the Data Entry control.
3. Select **MultiA** if you want the song track to go to channels 1A-16A or MIDI port A. Select **MultiB** if you want the song track to go to channels 1B-16B or MIDI port B.
4. Select the desired **destination** for the track (internal channels, external MIDI channels, both, or none).
5. Press the **Song Edit** button again to exit the module.
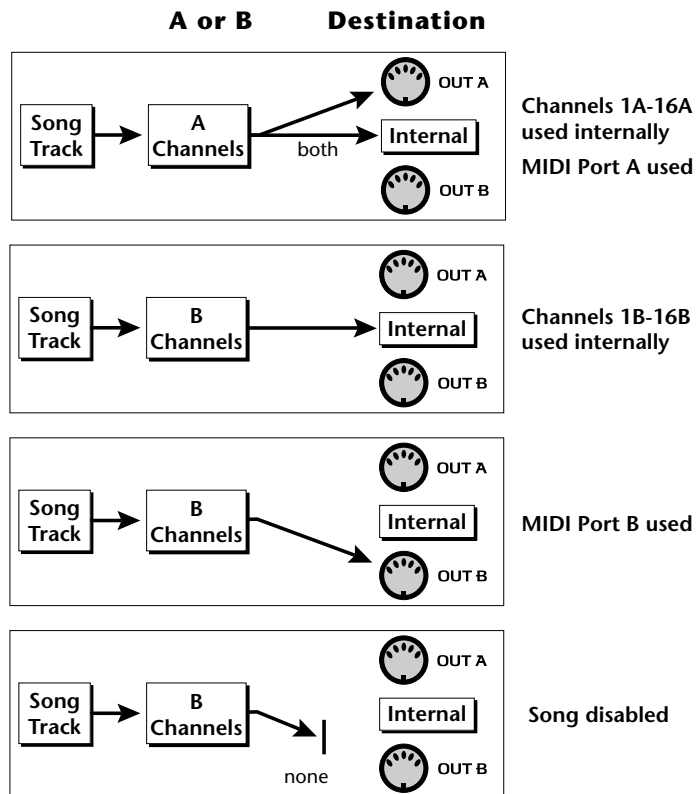
Note List Editor

Individual MIDI notes in the song can be edited, inserted or deleted from this screen. **Place the cursor underneath the "Event Scroll Field" shown below and turn the data entry control to navigate through events.**

- Hold the **Enter** button and turn the **data entry control** to scroll through events when the cursor is on any other field

Track 01

Event Scroll Field
(scroll though events)

Time Location

```
 T01  NOTE   <->    002.03.008
 C01  C#1   v:100   dur:00.083
```

MIDI
Channel

MIDI
Note

Note
Velocity
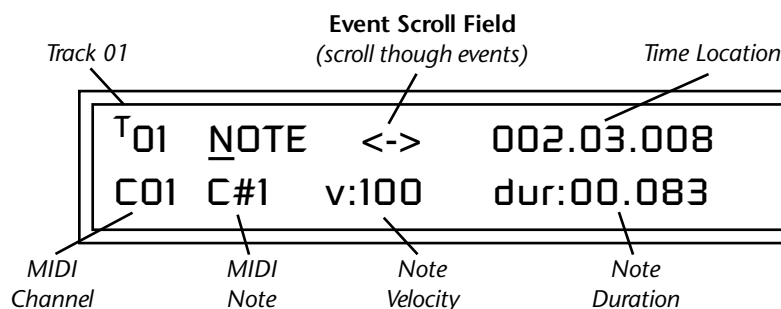
Note
Duration

- **Erase** button - - - - - Erases the currently selected event.
- **Repeat** button - - - - Duplicates the currently selected note, allowing you to edit and create a new note.
    1) Press Repeat.
    2) Change the time, channel, or MIDI note.

Note: You cannot have two events with the exact same time and data in a song. XL-7 will delete any duplicate events as soon as you increment the event or exit the screen.

▶ **To Edit a MIDI Note:**

1. **Select the song** you wish to edit.
2. Press the **Song Edit** button.
3. Scroll to the **Note List Editor** screen shown below using the data entry control.
4. Press the **Enter** button as prompted by the display to begin editing.

```
 T01  NOTE   <->    002.03.008
 C01  C#1   v:100   dur:00.083
```
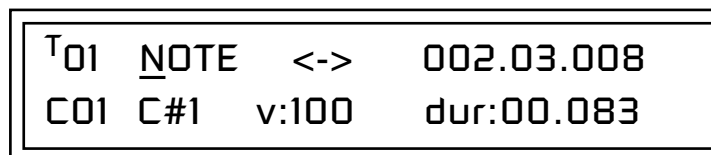
5. Press the **right Cursor** button to move the cursor underneath the Event Scroll Field (<->).
6. Turn the **data entry control** to scroll through the event list and locate the event you want to edit.
7. Move the cursor to the data field you want to edit and make changes using the data entry control.
8. Press the **Song Edit** button to exit the Song Edit module.

You can edit notes and note velocity by playing the keyboard.

Event List Editor

Continuous controller, pitch wheel. mono pressure, poly pressure and program change MIDI messages can be edited, inserted or deleted using this menu. **Place the cursor underneath the "Event Scroll Field" shown below and turn the data entry control to navigate through events.**

The event list editor also allows you access to the *Conductor Track* which sets the tempo and meter for the pattern.

Hold the **Enter** button and turn the **data entry control** to scroll through events when the cursor is on any other field.

- **Erase** button - - - - - Erases the currently selected event.
- **Repeat** button - - - - Duplicates the currently selected event, allowing you to edit and create a new event.
    1) Press Repeat.
    2) Change the time, channel, or MIDI event.
- **Note:** You cannot have two events with the exact same time and data in a pattern. XL-7 will delete any duplicate events as soon as you increment the event or exit the screen.

Continuous Controller Edit
Continuous controller numbers 1-95 can be edited. Continuous controllers and Channel Pressure messages may range in value from 0-127.

Continuous Controller Screen

Track 01 **Event Scroll Field** *(scroll though events)* Time Location

```
ᵀ01  EVENT  <->     002.03.008
C01   controller #1      v:52
```

MIDI Channel   Event Type   Controller No. Field   Event Value

Pitch Strip Edit
Pitch Strip messages are bidirectional and may range in value from -8192 to +8191.

Pitch Strip Screen

```
ᵀ01  EVENT  <->     002.03.004
C01   pitch strip:     -49
```

Bidirectional Pitch Value

Poly Pressure Edit

Polyphonic pressure messages are assigned on a per not basis and have range of 0-127. XL-7 can generate polyphonic pressure messages, but it cannot receive them.

Poly Pressure Screen

```
┌─────────────────────────────────┐
│ ᵀ01  EVENT  <->     002.03.004  │
│ C01  polypress:    C1      62   │
└─────────────────────────────────┘
```

                             MIDI   *Poly Pressure*
                             Note   *Value*

Program Change Edit

Program change numbers from 0-127, and on any bank number, can be inserted, deleted or edited in this screen. If you do not select bank numbers (off), the program change will be sent to the currently selected bank. See "Bank Select Commands" on page 180.

Program Change Screen

```
┌─────────────────────────────────┐
│ ᵀ01  EVENT  <->     003.02.026  │
│ C01  prog: 10     m:off   l:off │
└─────────────────────────────────┘
```

              Program   *Bank*   *Bank*
              Change   *Number MSB* *Number LSB*
              Number   *cc:0*   *cc:32*

▶ **To Edit a MIDI Event:**

1. **Select the pattern** you wish to edit.

2. Press the **Pattern Edit** button.

3. Scroll to the **Event List Editor** screen shown below using the data entry control.

4. Press the **Enter** button as prompted by the display to begin editing.

```
┌─────────────────────────────────┐
│ ᵀ01  EVENT  <->     002.03.008  │
│ C01  controller #1     v:52     │
└─────────────────────────────────┘
```
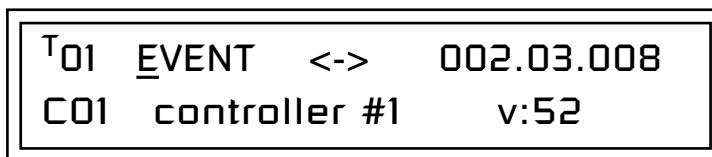
5. Press the **right Cursor** button to move the cursor underneath the **Event Scroll Field** (<->).

6. Turn the **data entry control** to scroll through the event list and locate the event you want to edit.

7. Move the cursor to the data field you want to edit and make changes using the data entry control.

8. Press the **Pattern Edit** button to exit the Pattern Edit module.

Revert to Saved Song

This screen allows you to discard any edits made to the song and restore the last saved version. This is not the same as an "Undo" function since Revert permanently discards any edits you have made since saving. This function removes the asterisk in the display that appears after you've edited the song.

☞ *Caution: Never "Revert to Saved" while the sequencer is in record mode or the computer may crash.*

```
REVERT TO SAVED PATTERN
000⁰  Arctic Drift
```

Connection Examples

The internal architecture has been changed in this software revision. These examples will help you with some common setups. When you have a working setup, it's a good idea to save and name the Multisetup to preserve your work.

Using the Internal Sequencer with an External MIDI Keyboard

In this setup, an external MIDI keyboard transmitting on a single MIDI channel is used to record into the internal sequencer. This demonstrates the new Rechannelize Input feature which frees you from changing the MIDI channel of your controller keyboard.

▶ **Setup the Following Controls:**

1. **RECHANNELIZE INPUT** *(MIDI)* - **always**
2. **KEYBOARD OUTPUTS MIDI** *(MIDI)* - **don't transmit**
3. **KNOBS OUTPUT MIDI** *(MIDI)* - **don't transmit**
4. **MERGE MIDI IN TO OUT** *(MIDI)* - Out A: **off**, Out B: **off**
5. **LOCAL CONTROL** *(Controllers)* - **on**
6. **Save** and Name the Multisetup. *(Global)*

Optional Steps:

7. **TRIGGERS** *(Controllers)* - **Seq**
   (If you want to record them into the sequencer.)
8. **PROGRAMMABLE KNOBS** *(Controllers)* - **Seq**
   (If you want to record them into the sequencer.)

✎ *If Channel Assign in the song/pattern edit menu is set to to **external** or **both**, you'll get duplicate MIDI data if steps 2 & 3 in the setup are not set to Off.*

▶ **To Record a Sequence:**

1. Select an empty pattern or song.

2. Press **Preset View** and select a preset for your first track.

3. Press **Record**, then setup the Quantize, Metronome and Length parameters.

4. Press **Play** to begin recording. Recording begins after the count-in period (if any). If you're recording into a Pattern it will loop when it reaches the end of its length.

To Record another Track

5. Press the **Track** button to the left of the LCD to increment the track number.

6. Press **Preset View** and select a preset for the next track.

7. Press the **Stop** button twice to return to the beginning of the song or pattern.

8. Press **Record**, then **Play** to begin recording.

9. Repeat steps 5 through 8 to continue laying down tracks.

▶ **Optional:** Recording Tracks to control an External Sound Module

The diagram on page 115 shows two external sound modules connected. The channel assignment screen controls the routing of sequencer tracks to internal and external MIDI channels.

1. Set **CHANNEL ASSIGN** *(Song/Pattern Edit)* - Destination - **ext**

```
┌─────────────────────────────────┐
│ ᵀ08 CHANNEL ASSIGN              │
│ Channel: 08A      Dest: ext     │
└─────────────────────────────────┘
```

2. Set the MIDI channel as desired for the external sound module. Channels 01A-16A go to the "A" MIDI port; channels 01B-16B go to the "B MIDI port.

Using an External Sequencer

In this setup, an external computer sequencer is used with the XL-7 acting as a controller/sound module. As an optional connection, another sound module can connected to the second MIDI Out of the XL-7.
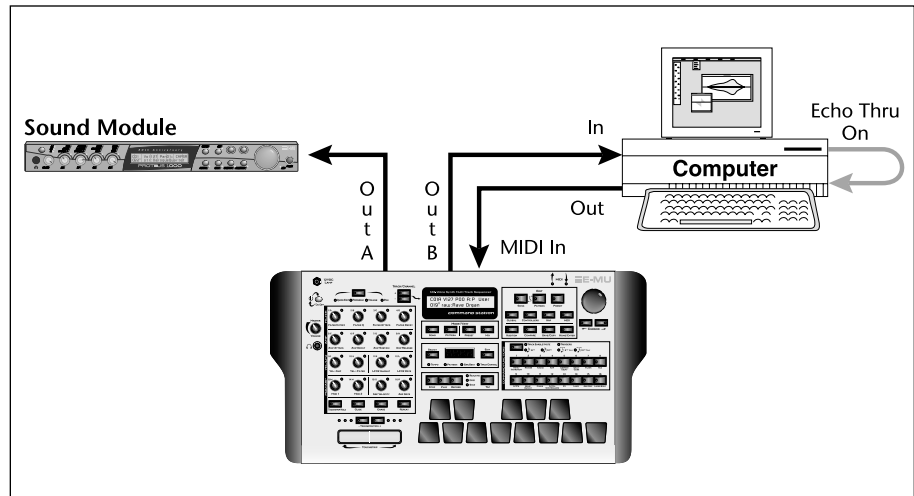
▶ **Setup the Following Controls:**

1. **RECHANNELIZE INPUT** *(MIDI)* **- off**
2. **KEYBOARD OUTPUTS MIDI** *(MIDI)* **- transmit**
3. **KNOBS OUTPUT MIDI** *(MIDI)* **- transmit**
4. **EXTERNAL SONG START/STOP** *(MIDI)* **- ignored**
5. **MERGE MIDI IN TO OUT** *(MIDI)* **-** Out B: **off** *(Out A optional)*
6. **KEYBOARD CHANNEL** *(Controllers)* **- 01B**
   (Your sequencer will rechannelize to the proper MIDI channel.)
7. **LOCAL CONTROL** *(Controllers)* **- off**
8. Enable **Echo Thru** on your external sequencer.
9. **TRIGGERS** *(Controllers)* **- ext**
10. **PROGRAMMABLE KNOBS** *(Controllers)* **- ext**
11. **Save** the Multisetup. *(Global)*

Optional Steps:

12. **BASE TEMPO** *(MIDI)* **- ext**
    (If you want to synchronize internal LFOs and clocks to the sequencer.)
13. **MERGE MIDI IN TO OUT** *(MIDI)* **-** Out A: **on**
    (If Output A is connected to another MIDI sound module or device.)

Controllers Menu

The Controllers menu contains functions related to the keypad, knobs or trigger buttons of XL-7. For example, the programmable knobs and triggers are programmed in this menu. All Controllers menu data is saved with the Multisetup. See page 130 for more information about Multisetups.

▶ **To enable the Controllers menu**
Press the Controllers button, lighting the LED. The Controllers Menu screen displays the menu page most recently selected since powering up XL-7. The cursor appears below the first character of the screen heading on line one.

▶ **To select a new screen**
Press the Home/Enter button or press the Cursor button repeatedly until the cursor is below the screen title heading. Rotate the data entry control to select another screen.

▶ **To modify a parameter**
Press either Cursor button repeatedly (or hold down the right cursor button while turning the data entry control) until the cursor is below the desired parameter value. Rotate the data entry control to change the value.

▶ **To return to the previously selected Mode/View screen**
Press the Controllers button, turning off the LED.

Realtime Control Functions

This section describes how set up the Realtime Controllers on XL-7. Realtime Controllers are performance controls such as the controller knobs, velocity-sensitive keypads, and trigger buttons.

Keyboard Transpose

This option allows you to offset the transposition of the rubber keypads in semitone intervals. This is allows you to easily play in different keys with the one octave keypad and lets you access different groups of instruments in a drum map. The transpose range is ±36 semitones.

```
KEYBOARD TRANSPOSE
+00 semitones
```

Keyboard Channel

This option allows you to select which channel is controlled by the Keypads, Knobs and Touchstrip. You can select any of the 32 channels or "Basic". The "Basic" channel is the normal connection. With Basic selected, the Keypads and knobs always control the preset showing in the Preset View screen.

✎ *in Quick Edit mode the front panel knobs only control the "Basic Channel".*

```
KEYBOARD CHANNEL
Channel: Basic
```

Aftertouch Curves

✎ *Aftertouch is called "Pressure" in the Preset Edit, Cords menu. Pressure must be programmed in the Cords section for Aftertouch to have any effect on the sound. See page 211 for more information about PatchCords.*

XL-7 's internal voices do not use the poly aftertouch data, even though it can be transmitted out over MIDI.

```
AFTERTOUCH CURVES
channel: 1            poly: off
```

▶ **To Change the Aftertouch Curve:**

1. Press the **Controllers** button.
2. Scroll to the **Aftertouch Curves** screen using the data entry control.
3. Move the cursor to the channel field and **select curve 1-4 or off**.
4. Press the **Controllers** button again to leave the menu.
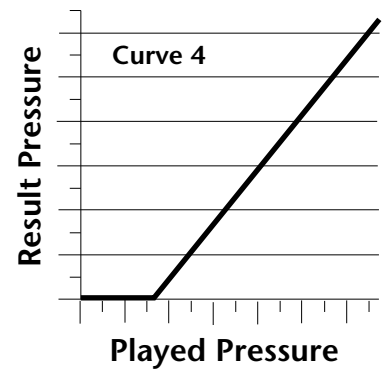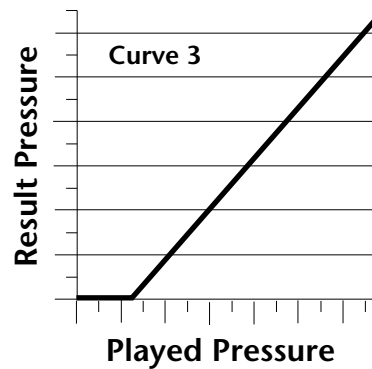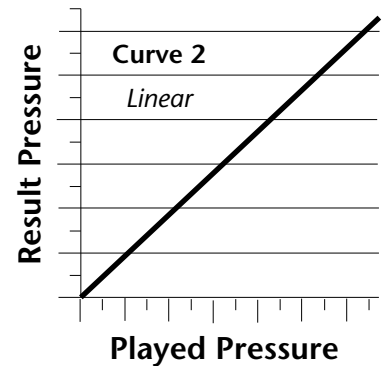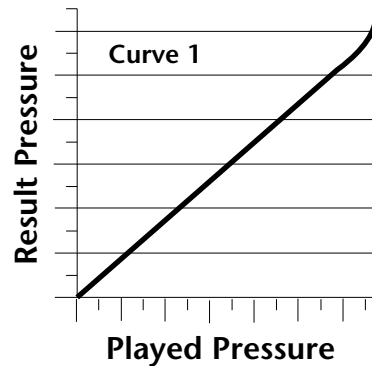
Local Control On/Off

Local Control is used to disconnect the keypad and controllers (knobs, touchstrip, footswitches) from the sound generating section. Even though disconnected from the internal synthesizer, the keypad and controllers are still transmitted over MIDI. Local Control is normally turned Off when recording into an external MIDI sequencer (set sequencer to Echo Thru). Played data and recorded data are merged in the computer sequencer and then sent back to the module. This feature can also be used if you want to control another MIDI sound generator from the rubber keypads without playing internal sounds.

```
LOCAL CONTROL        CHANGE
on                   ignored
```

MIDI local control mode change messages can either be accepted or ignored depending on the setting of the change field. With this set to "ignored", an incoming command to turn local control on or off would be ignored.
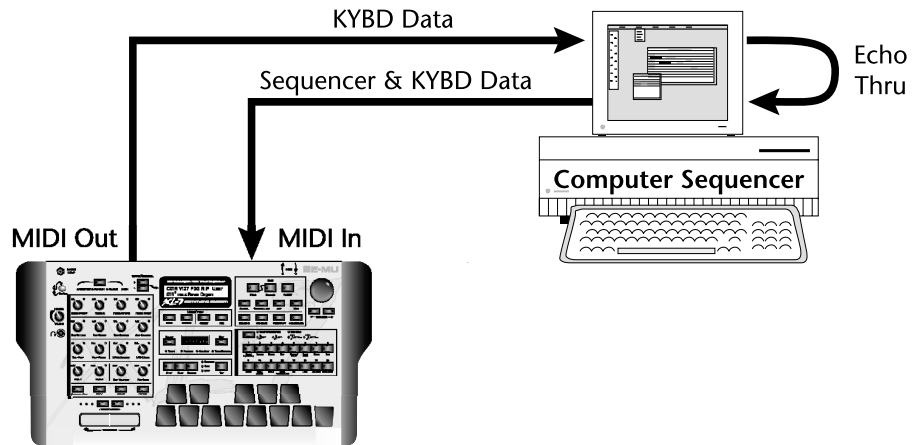
Turning Local Control Off allows you to use the Echo Thru feature on your sequencer while sequencing. In conjunction with Echo Thru, Local Control Off allows you to record into the external sequencer and hear the correct sounds whether you are recording or playing back the sequence.

Footswitch Jack Function

The two footswitch jacks on XL-7's rear panel can be programmed to perform a variety of functions. The footswitch jacks are designed to accept momentary footswitches which connect the tip and ring. XL-7 senses either normally-on or normally-off switches on power-up.

Each footswitch can be independently programmed. The following functions can be controlled via the footswitches.

```
FOOTSWITCH  JACK  FUNCTION
1: MIDI FtSw    2: Tap Tempo
```

- **MIDI Footswitch**   In this mode the footswitch is routed to the Patch-Cord in the Preset Edit, Cords menu. *(See pages 213 and 220.)* It is also transmitted out on the Footswitch Controller number as programmed in the Controllers menu. *(See page 127.)*

- **Play/Stop**   Pressing the footswitch once activates the **Play** button on the front panel. Pressing the footswitch again activates the front panel **Stop** button.

- **Play**   Pressing the footswitch activates the **Play** button on the front panel. This works well in combination with the following function.

- **Stop/RTZ**   Pressing the footswitch activates the front panel **Stop** button. Pressing the footswitch again invokes the **Return-to-Zero** function.

- **Punch I/O**   When the sequencer is playing, the footswitch will activate the **Record** button in order to punch-in to record mode. Pressing the footswitch again will punch-out of record.

    When the sequencer is stopped, repeatedly pressing the footswitch cycles through the three record modes: realtime, grid & step record.

- **Tap Tempo**   Pressing the footswitch activates the front panel **Tap** button, allowing you to tap in the current tempo with your foot.

- **Channel +**   Pressing the footswitch increments the MIDI channel number.

- **Channel -**   Pressing the footswitch decrements the MIDI channel number.

- **Sequence +**   Pressing the footswitch increments the current pattern or song number. The next pattern will begin playing when the current pattern ends.

- **Sequence -**   Pressing the footswitch decrements the current pattern or song number. The next pattern will begin playing when the current pattern ends.

Trigger Buttons Function

This option selects the function of the front panel "Triggers" button. The "Triggers" button can be used either to **Play Beats Parts** or to **Play Note Events**.

- **Play Beats Parts**   In this mode and when the Triggers button is selected, the sixteen command buttons turn Beats parts on and off.

- **Play Note Events**   In this mode and when the Triggers button is selected, the sixteen command buttons work like keyboard notes. Each button can be assigned to any MIDI note, on any MIDI Channel (01-16), with any velocity (0-127), and can be set to be latched or momentarily on.

```
TRIGGER BUTTONS FUNCTION
Play Note Events
```

Trigger Buttons

Select Triggers mode by pressing the mode select button so that the "Triggers" LED is illuminated. Now the 16 buttons work like keyboard notes. Each of the 16 buttons can be assigned to any MIDI note, on any MIDI Channel (01A-16B), with any velocity (0-127), and can be set to be latched or momentarily on. Latched notes will hold until the button is pressed again. Latched notes will be indicated by the LEDs. Each trigger can also be routed to: the internal synth engine, to the MIDI ports, both internal and MIDI, or to the sequencer input.

Use the Trigger Button Key Velocity to adjust the volume of Beats relative to volume of the Pattern or Song.

Simply move the cursor from the "TRIGGERS" field and play a note to enter the MIDI key and velocity. Pressing a Trigger Button anytime while in this screen automatically selects that trigger button for programming!

See the block diagram showing "Triggers & Programmable Knobs" on page 320 for detailed information about the actual routing path.

Trigger button presses can be recorded into patterns and songs.

Trigger Button Select   **MIDI Key**   **Key Velocity**

```
T1   TRIGGERS   D3    Vel: 127
Latch:off  Ch: 01A        seq
```

Latch on/off   **MIDI Channel**   **Destination**

Latched buttons are especially useful for triggering arpeggiated presets.
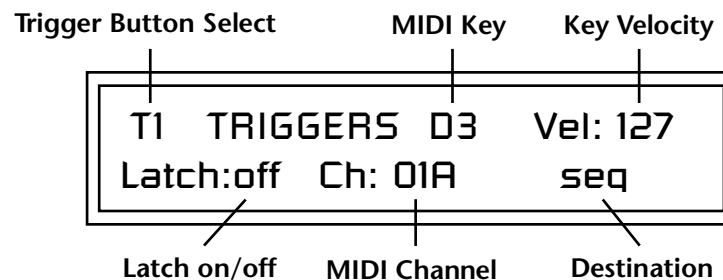
▶ **To Setup the Trigger Buttons**

1. Press the Controllers button. Its LED will illuminate.
2. Turn the data entry control to select the "TRIGGERS" screen.
3. Use the left/right cursor controls to select the fields shown above.
4. Select the MIDI key, the MIDI channel, the Velocity, Latch on/off and destination for each of the 16 trigger buttons.
5. Save the Multisetup if you want to save these settings. See page 131.

▶ **To Play the Trigger Buttons**

1. Press the Mode button so that the Triggers LED illuminates.
2. Play the Trigger buttons.

Programmable Knobs

If this parameter is set to "Ext," or "Both," the system sends MIDI controller messages when you turn the Controller knobs. If set to External, the knobs do NOT control internal synth parameters and only used as external MIDI controllers. When the programmable knobs are routed to "Seq" they can be recorded into the internal sequencer.

Each knob can be programmed to send on any MIDI channel (01A-16B) and on any continuous controller number from 1-95 The "Controller Function Select" button (page 37) must be set to "Program" in order to transmit. The knobs only generate a message when you move a knob to a new value. The Controller Knob LEDs always remain off in this mode.

See the block diagram showing "Triggers & Programmable Knobs" on page 320 for detailed information about the actual routing path.

▶ **To Program the Programmable Knobs**

1. Press the Controllers button. Its LED will illuminate.
2. Turn the data entry control to select the "Programmable Knobs" screen.

✎ Turning a knob while in this screen automatically selects that knob for programming!

Knob # ─────

```
K1   PROGRAMMABLE KNOBS
Ctrl: 22   Ch:01A        Ext
```

        CC#   MIDI Chan   Int/Ext/Both/Seq
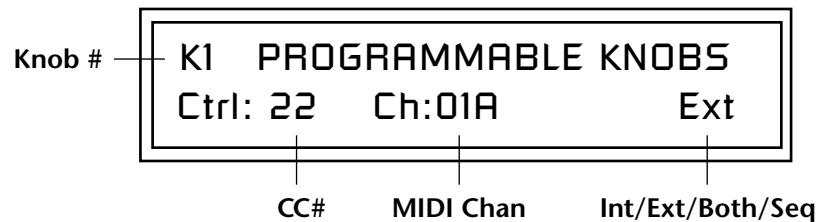
3. Use the left/right cursor controls to select the fields.
4. Select the MIDI Continuous Controller number, the MIDI channel, and Internal/External/Both/Sequencer for each of the 16 knobs.
5. Save the Multisetup if you want to save these settings. See page 131.

Knob Preset Quick-Edit

"Quick-Edit" changes the initial controller setting in the preset whenever you move a Control Knob. This parameter selects whether or not the front panel Controller Knobs are used to Quick-Edit the currently selected preset. See "Real-time Controller Knobs" on page 37 in the Operations chapter for more details.
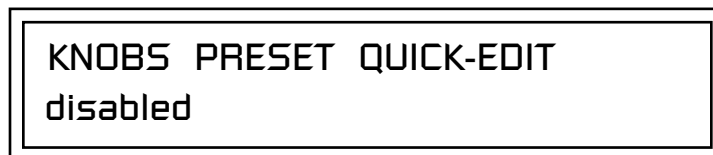
```
KNOBS PRESET QUICK-EDIT
disabled
```

Real-time Controller Assignment

Use these three pages to assign sixteen real-time control sources. Each MIDI Controller is assigned a letter (A - P). The front panel Controller Knobs *and* sixteen MIDI controller numbers share the A-P controller routings. **These screens let you select which MIDI real-time controllers numbers will be received** *(from 1 to 31 and from 64 to 95)* **and which controller numbers will be transmitted over MIDI if the front panel controls are turned**. The PatchCord routing and amount in the Preset Edit menu determine what effect the controller has on each preset. Real-time controllers are shown in the PatchCord menu as MIDI A through MIDI P.

The Real-time Controller assignment also specifies which controller numbers are transmitted when the "Knobs MIDI Out" is enabled (see "Knobs Output MIDI" on page 146).

```
REALTIME CONTROLLER #
A: 74    B: 71    C: 25    D: 26
```

```
REALTIME CONTROLLER #
E: 73    F: 75    G: 85    H: 72
```

```
REALTIME CONTROLLER #
 I: 78    J: 77    K: 27    L: 28
```

```
REALTIME CONTROLLER #
M: 01    N: 03    O: 82    P: 83
```

Note: Controllers 7 and 10 are already assigned to Volume and Pan for each MIDI channel. Controllers 91 & 93 are the standard controller numbers for reverb and chorus send amounts, but are not assigned.

Following are a few of the standardized MIDI Controller numbers as defined by the MIDI manufacturers association. The controllers shown in **Bold** are automatically routed to the destination (volume & pan) or have their own PatchCord source. Others, such as Portamento Time, can be routed using a PatchCord to have the desired effect.

1 - **Modulation Wheel**	7 - **Volume**
2 - Breath Controller	8 - Balance
3 - **Aftertouch**	9 - Undefined
4 - **Foot Pedal**	10 - **Pan**
5 - Portamento Time	11 - **Expression**
6 - Data Entry	

MIDI Footswitch Assign

Like the MIDI Controllers, you can assign three MIDI footswitches to MIDI footswitch numbers. Footswitches numbers are from 64-79. Destinations for the footswitch controllers are programmed in the PatchCord section of the Preset Edit menu. The rear panel footswitches 1 & 2 are connected to footswitch controllers 1 & 2 in this screen. Pressing a footswitch transmits on the MIDI controller number programmed here. Footswitch 3 routes incoming MIDI footswitch data to the PatchCord section of XL-7.

```
FOOTSWITCH CONTROLLER #
1: 64     2: 65      3: 66
```

Tempo Controller

This function allows a MIDI controller to change the Base Tempo of the Master Clock. The Master Clock is used by the sequencer, arpeggiators, clock divisor PatchCords, tempo-based envelopes and synced LFOs. (See "Clock Modulation" on page 160.) You can assign any controller number from 0-31, mono key pressure, or the Touchstrip to change the Global Tempo.

A different controller can be used to change the tempo up or down. The Touchstrip can be assigned to both the up and down parameters to vary the tempo up and down from a single controller. If any other controller is assigned to both the up and down parameters, XL-7 redefines the center of the controller's range as zero (so it acts like a pitch wheel).

MIDI Controller values are added to the Base Tempo with a range of ±64. When the controller is set to "off" the tempo returns to its original setting. Controllers are only recognized on the selected MIDI channel, unless XL-7 is in Omni mode, in which case all channels are accepted. This control has no effect when using an external clock.

```
TEMPO  CONTROLLER#        CHAN

Up:  03    Down: 09         16B
```

Global Menu

The Global menu contains functions that affect the overall operation of XL-7. For example, changing the Master Tune parameter changes the tuning of all the presets, not just the one currently displayed.

▶ To enable the Global menu
Press the Global button, lighting the LED. The Global Menu screen displays the menu page most recently selected since powering up XL-7. The cursor appears below the first character of the screen heading on line one.

▶ To select a new screen
Press the Home/Enter button or press the Cursor button repeatedly until the cursor is below the screen title heading. Rotate the data entry control to select another screen.

▶ To modify a parameter
Press either Cursor button repeatedly (or hold down the right cursor button while turning the data entry control) until the cursor is below the desired parameter value. Rotate the data entry control to change the value.

▶ To return to the previously selected screen
Press the Global button, turning off the LED.

Warning: Global Menu changes are automatically saved when you exit the menu. If the power is turned off before you exit the menu any changes you have made will be lost.

Multisetups

A Multisetup is a group of parameters that you might associate with a particular performance setup or song. It is like a "snapshot" of the current configuration of the XL-7. There are 64 setups numbered 0-63. All the Multisetups are user programmable except 63, the factory setup.

A Multisetup includes ALL the following parameters:

- Preset/Volume/Pan/Arp assignments for each of the 32 MIDI channels.
- Multisetup Name
- ALL Controllers menu parameters
- ALL Global Menu parameters, *except…*
  User Key Tuning Tables
- ALL Arp Menu parameters, *except…*
  User Arp Patterns
- ALL MIDI Menu parameters, *except…*
  MIDI Program Change->Preset Map

When a Multisetup is selected, it overwrites the current Preset/Vol/Pan/Arp selections on all MIDI channels. It also overwrites the Controllers, Global, Arp, and MIDI menu parameters (with the exceptions noted above).

If you make changes to any of these menus, XL-7 will retain the changes, even if power is turned off. They are of course, overwritten when you restore a Multisetup.

Restoring Multisetups

XL-7 contains 64 Multisetup locations. These are all User locations except location 63, which is a factory defined Multisetup.

Multisetups can be restored using a MIDI Bank Select command.
Select: cc00 = 80, cc32 = 00, (dec) then send a **Program Change** command corresponding to the Multisetup you wish to select.

```
RESTORE MULTISETUP
003   Jazzercide
```
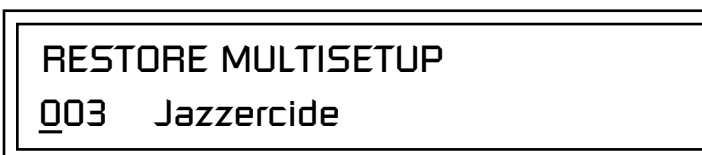
▶ **To Restore (Select) a Multisetup:**

1. From the Global menu, scroll to the **Restore Multisetup** screen using the data entry control. The menu page most recently selected since powering up XL-7 will be displayed. The cursor appears below the first character of the screen heading on line one.

2. Press either **cursor** button to move the cursor to the bottom line of the screen.

3. Now, use the **data entry control** to select a Multisetup. The Enter LED will be flashing.

4. Press the **Enter** button to load the selected Multisetup.

Multisetup Name

Multisetups can be named to make it easier to remember their purpose.

1. Scroll to the "Setup Name" screen (shown below) using the **data entry control**.

```
MULTISETUP NAME
020 User Setup 23
```
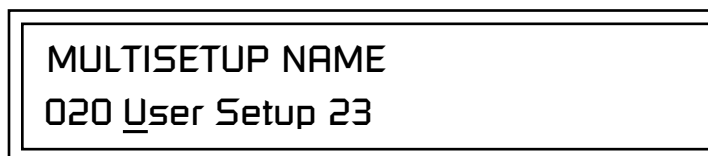
2. Press either **cursor** button to move the cursor to the bottom line of the screen.

3. Change the characters using the **data entry control**. Change the cursor position using the cursor buttons.

4. Press **Enter** or move the cursor to the top line when you're finished naming the multisetup.

Saving Multisetups

▶ **To Save a Multisetup:**

1. Set the Preset, Volume, Pan and Arp settings (in Preset View mode) for all channels. Set the Global, MIDI, and Controllers menu parameters the way you want them.

2. Press the **Global** button, then scroll to the "Save Setup" screen (shown below) using the **data entry control**.

```
SAVE SETUP TO
020  Destination Multisetup
```
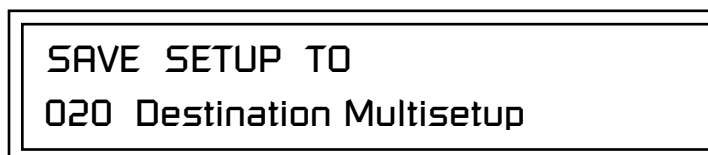
3. Press either **cursor** button to move the cursor to the bottom line of the screen.

4. Now, use the **data entry control** to select the destination location. The Enter LED will be flashing.

5. Press the **Enter** button to save the Multisetup.

Defining Global Parameters

Global setup parameters affect overall performance, range, and global effects. This section describes the Global parameters and how to define them.

Transpose/Tune

The Transpose parameter transposes the key of all presets, in semitone intervals. The transpose range is ± 24 semitones.

Master Tune adjusts the fine tuning of all presets so that you can tune XL-7 to other instruments. The master tuning range is ± 1 semitone in 1/64th semitone increments (1.56 cents). A master tune setting of "+00" indicates that XL-7 is perfectly tuned to concert pitch (A=440 Hz).

```
MASTER TRANSPOSE          TUNE
+00 semitones              +00
```

Bend Range

The Master Bend Range parameter sets the range of the touchstrip or pitch wheel if you have a MIDI keyboard connected. This affects only presets that have their individual Pitch Bend range (defined in the Preset Edit menu) set to Master. *See page 214.* The maximum pitch bend range is ±12 semitones or one octave in each direction.

```
MASTER BEND RANGE
+/- 7 semitones
```

Velocity Curve

Incoming velocity data or keypad velocity can be altered by one of thirteen velocity curves. These specially designed curves allow you to customize the dynamic feel of the pads to your individual playing style, or to better adapt XL-7 to a external MIDI controller. You can select one of thirteen global velocity curves or to leave the data unaltered (linear).

```
┌─────────────────────────────────────┐
│                                      │
│   MASTER VELOCITY CURVE              │
│   13                                 │
│                                      │
└─────────────────────────────────────┘
```
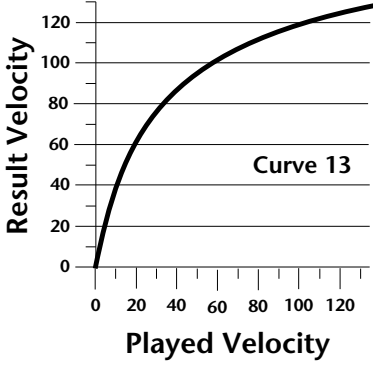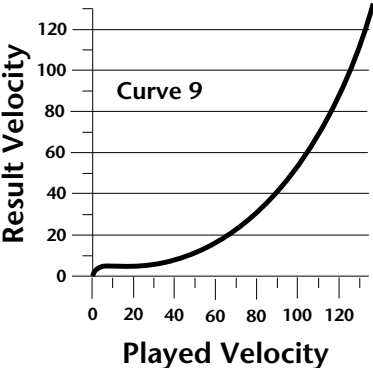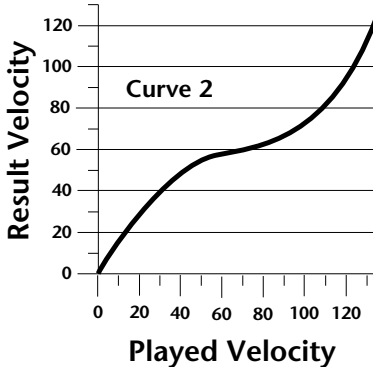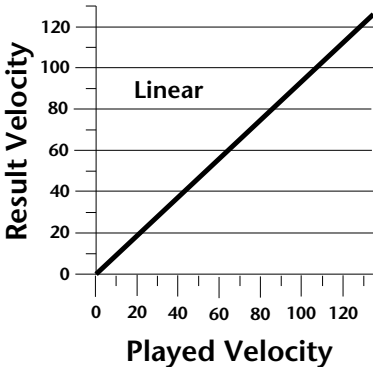
For a complete list of all available velocity curves, see "Velocity Curves" on page 314 of the Appendix.

Mix Output

The Mix Output parameter allows you to override the routing assignments made in each preset and instead assign the outputs according to MIDI channel. For each of the 32 MIDI channels, you can select Send 1-4, or Preset. When Preset is selected, the output assignment defined in the Preset Edit menu is used.

```
MIX OUTPUT
channel 16A:  Send2->main
```
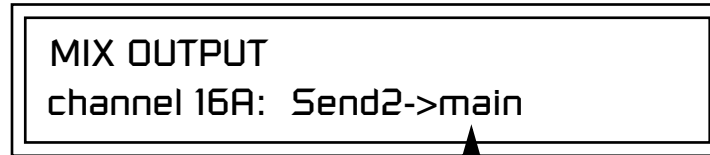
Indicates that the dry signal is
routed to the Main output jacks.

The **Output Routing** field (pointed to by the arrow) reflects the true routing of Send 2 or Send 3 to either:
1) the effects processor input or… 2) the rear panel submix jacks.

Since the Sub 1 output is NOT being used, the signal is routed through the effects processors, then on to the main outputs. If a plug were inserted into one of the Sub 1 jacks the destination field would read "Sub1" and the dry signal would be routed directly to the Sub 1 outputs on the back panel.

```
MIX OUTPUT
channel 15A: use preset
```

Send Routings
Send 1 - Main Outputs
Send 2 - Subout 1 or Main Outs
Send 3 - Subout 2 or Main Outs
Send 4 - Main Outputs

The Sends function as effect processor inputs (effect sends). Send 2 and Send 3 are also used to route sounds to the Sub 1 and 2 outputs on the back panel. When a plug is inserted into the associated Submix jack on the back panel, **the Dry portion of the Send is disconnected** from the effects processor and the signal is routed directly to the output jack. **The Arrow points to the actual output routing.** If you don't want the wet portion of the signal in the main mix, turn down the Send Level. *The entire Send is disconnected from the Effects Processors even if only one plug is inserted into the Submix jack.*

The four Effect Sends allow you to get the most out of the two effect processors. For example, with Effect B set to an echo algorithm, you could route one MIDI channel to Send 3 and set the effect amount to 80%. Another MIDI channel could be routed to Send 4 with an effect amount of only 5%. This is almost like having two different effects!

The Mix Output function is also useful when sequencing since it lets you route specific MIDI channels (and thus sequencer tracks) to specific Sub outputs (on the back panel) where there they can be processed with EQ or other outboard effects.

OUTPUT SECTION
& EFFECTS PROCESSORS
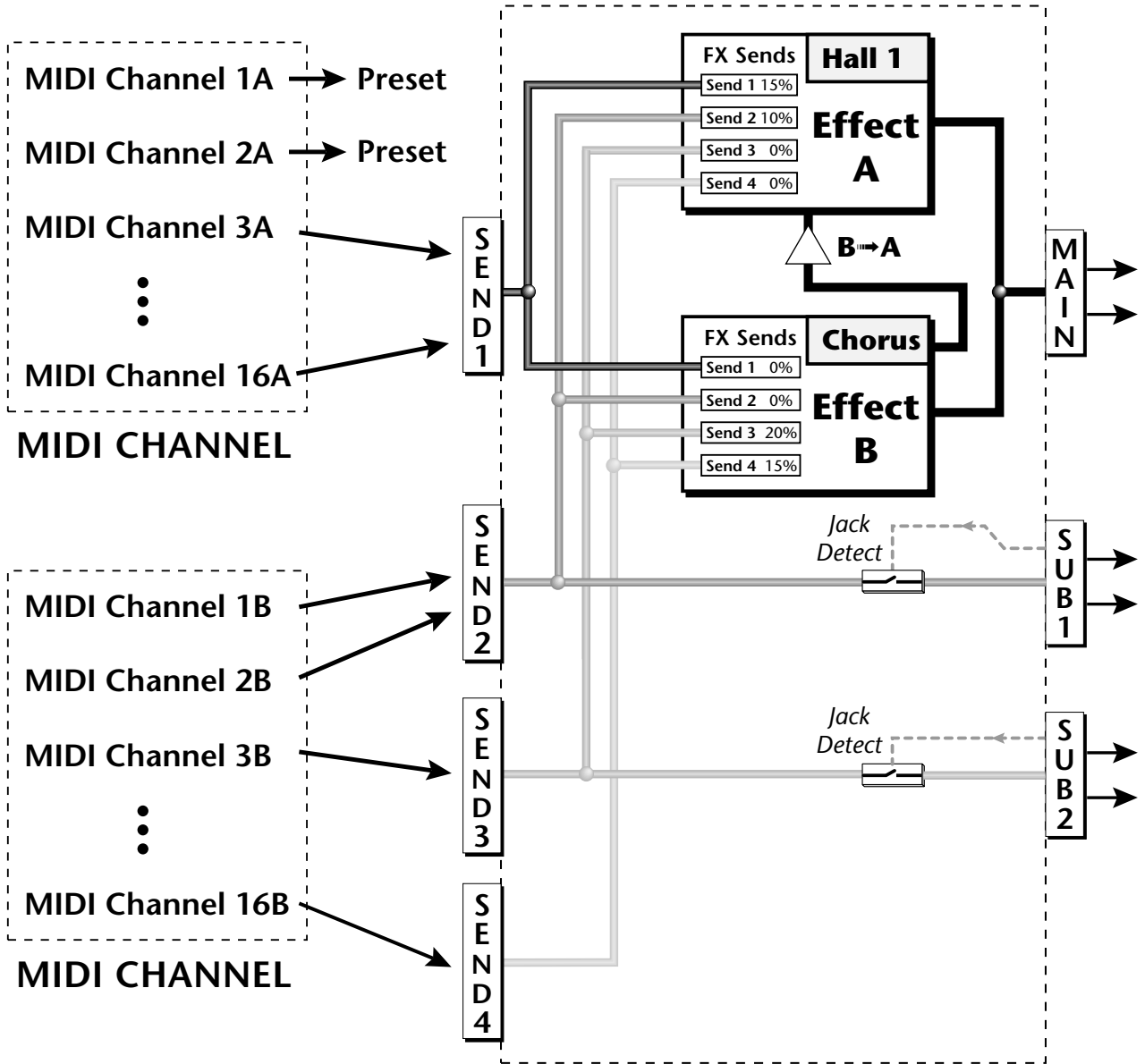
Sends 2 and 3 can be routed to the effects processors or to rear panel submix jacks. When a plug is inserted into a Submix jack, the dry portion of the Send is disconnected from the effects processor and is routed **directly** to the Submix output jacks.

Master Effects

The digital effect processors can be programmed as part of the preset (using the Preset Edit menu) so that effects will change along with the preset. However, there are only two effect processors, and so you cannot have a different effect on each preset when in Multi mode.

The Master Effects settings assign the effect processors "globally" for all presets to provide a way to use the effects in Multi mode. Detailed information is presented in the Effects chapter (see Effects on page 255).

Effects Mode

The FX Mode page enables or bypasses the effects. When the FX Mode is set to "bypass," the effects are turned off on a global scale. This includes Effects programmed in the preset.

```
FX MODE
enabled
```

Effects Multi Mode Control

The routing scheme for the two stereo effects processors provides a lot of versatility. When in multi mode, you can "use master settings" which applies the Master effects settings to all 32 MIDI channels.

```
FX MULTIMODE CONTROL
use master settings
```

If you want more control, you can use the "channel" setting which applies the effects settings of the preset on a specified channel to all the other channels. Changing the preset on the specified channel changes the effect.

```
FX MULTIMODE CONTROL
preset on channel 1
```

If you are in Omni or Poly modes this parameter is disabled and the message in parentheses explains that XL-7 is currently in Omni mode.

```
FX MULTIMODE CONTROL
(using Omni mode)
```

Master FXA Algorithm

This function selects the type of effect used for the "A" effect. The following effect types are available.

```
MASTER FXA ALGORITHM
Room 1
```

A Effect Types

1.	Room 1	**23.**	BBall Court
2.	Room 2	**24.**	Gymnasium
3.	Room 3	**25.**	Cavern
4.	Hall 1	**26.**	Concert 9
5.	Hall 2	**27.**	Concert 10 Pan
6.	Plate	**28.**	Reverse Gate
7.	Delay	**29.**	Gate 2
8.	Panning Delay	**30.**	Gate Pan
9.	Multitap 1	**31.**	Concert 11
10.	Multitap Pan	**32.**	Medium Concert
11.	3 Tap	**33.**	Large Concert
12.	3 Tap Pan	**34.**	Large Concert Pan
13.	Soft Room	**35.**	Canyon
14.	Warm Room	**36.**	DelayVerb 1
15.	Perfect Room	**37.**	DelayVerb 2
16.	Tiled Room	**38.**	DelayVerb 3
17.	Hard Plate	**39.**	DelayVerb 4 Pan
18.	Warm Hall	**40.**	DelayVerb 5 Pan
19.	Spacious Hall	**41.**	DelayVerb 6
20.	Bright Hall	**42.**	DelayVerb 7
21.	Bright Hall Pan	**43.**	DelayVerb 8
22.	Bright Plate	**44.**	DelayVerb 9

FXA Parameters: Decay/HF Damping FxB -> FxA

This page lets you define the parameters of the selected Effects algorithm. Use this page to setup the effect decay, high frequency damping amount and to route "B" effects through the "A" effects. See "Effect Parameters" on page 257 for more details.

```
┌─────────────────────────────────────────┐
│  FXA   DECAY    HFDAMP   FxB>FxA          │
│        040      096         001           │
└─────────────────────────────────────────┘
```

FXA Send Amounts

These parameters set the effects amounts for each of the four stereo effects busses. See "Master Effects" on page 260 for detailed information.

```
┌─────────────────────────────────────────┐
│  FXA SEND AMOUNTS      1:100%             │
│  2: 50%        3: 10%       4: 0%         │
└─────────────────────────────────────────┘
```

Master FXB Algorithm

This parameter selects the type of effect used for the "B" effect. The following effect types are available.

```
┌─────────────────────────────────────────┐
│  MASTER FXB ALGORITHM                     │
│  Chorus 1                                 │
└─────────────────────────────────────────┘
```

B Effect Types

1.	Chorus 1	**17.**	Ensemble
2.	Chorus 2	**18.**	Delay
3.	Chorus 3	**19.**	Delay Stereo
4.	Chorus 4	**20.**	Delay Stereo 2
5.	Chorus 5	**21.**	Panning Delay
6.	Doubling	**22.**	Delay Chorus
7.	Slapback	**23.**	Pan Delay Chorus 1
8.	Flange 1	**24.**	Pan Delay Chorus 2
9.	Flange 2	**25.**	Dual Tap 1/3
10.	Flange 3	**26.**	Dual Tap 1/4
11.	Flange 4	**27.**	Vibrato
12.	Flange 5	**28.**	Distortion 1
13.	Flange 6	**29.**	Distortion 2
14.	Flange 7	**30.**	Distorted Flange
15.	Big Chorus	**31.**	Distorted Chorus
16.	Symphonic	**32.**	Distorted Double

FXB Parameters:
Feedback/LFO Rate
Delay Time

The FXB parameters setup the characteristics of the effect. Use this page to define the feedback amount, the LFO rate and delay amount for the selected type "B" effect. See "Effect Parameters" on page 257 for details.

```
FXB    FEEDBK    LFORATE    DELAY
         000        003         0
```

FXB Send Amounts

These parameters set the effects amounts for each of the four stereo effects busses. See the Effects chapter for detailed information.

```
FXB SEND AMOUNTS      1:100%
2: 50%        3: 10%        4: 0%
```

Miscellaneous Parameters

Edit All Layers Enable

This function allows you to turn the Edit All Layers feature on or off. "Edit All Layers" is an Edit menu feature which allows you to select all layers (the letter "A" appears in the layer field) in order to edit all four layers simultaneously. Because this feature can be confusing to the beginning programmer, it can be disabled here in the Global menu.

```
┌─────────────────────────────────────┐
│ ┌─────────────────────────────────┐ │
│ │  EDIT ALL LAYERS                │ │
│ │  enabled                        │ │
│ └─────────────────────────────────┘ │
└─────────────────────────────────────┘
```
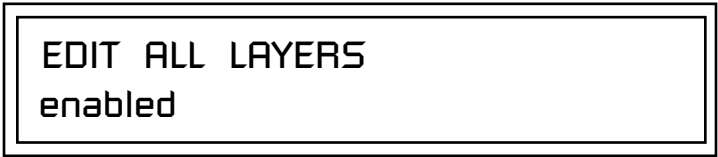
User Key Tuning

User Key Tuning lets you create and modify 12 user definable tuning tables. The initial frequency of every key can be individually tuned, facilitating the creation of alternate or microtonal scales.

Using the cursor keys and the data entry control, select the user table number, the key name, the coarse tuning and the fine tuning. The key name is variable from C-2 to G8. Coarse Tuning is variable from 0 to 127 semitones. The fine tuning is variable from 00 to 63 in increments of 1/64 of a semitone (approx. 1.56 cents). For each preset, the specific tuning table is selected in the Preset Edit menu. See page 222.

✎ *The user key tuning can be used to tune individual percussion instruments.*

```
┌─────────────────────────────────────┐
│ ┌─────────────────────────────────┐ │
│ │  USER  KEY  TUNING      Table: 1│ │
│ │  Key: C1    Crs: 036    Fine: 00│ │
│ └─────────────────────────────────┘ │
└─────────────────────────────────────┘
```
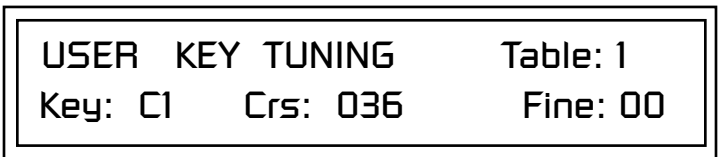
Output Format

The Output Format parameter sets the digital audio output format. The available formats are S/PDIF, and AES pro. If you are using the digital output, choose either S/PDIF or AES pro to match the format of the receiving device.

```
┌─────────────────────────────────────┐
│ ┌─────────────────────────────────┐ │
│ │  OUTPUT FORMAT                  │ │
│ │  S/PDIF                         │ │
│ └─────────────────────────────────┘ │
└─────────────────────────────────────┘
```

Although the S/PDIF digital output can transmit AES Pro format, you'll need an adapter cable for the electrical connections. The diagram below shows how an adapter cable for AES pro should be wired.
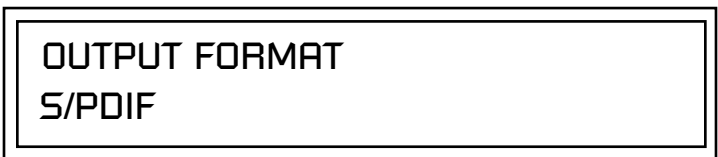
DON'T CHEAP OUT!

Always use high quality cable for digital audio connections.
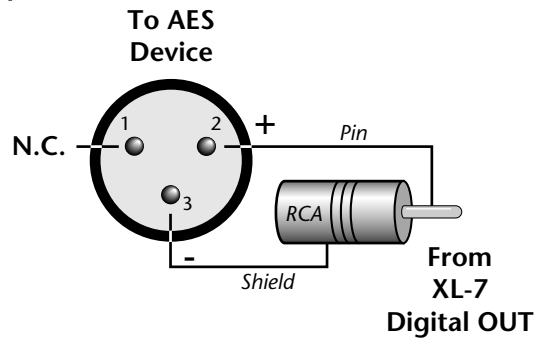
If you use an adapter cable to connect the S/PDIF digital audio output to AES gear, make sure to use high quality, low capacitance cable.

Screen Viewing Angle

This function changes the viewing angle of the display so that you can read it easily from either above or below the unit. The angle is adjustable from +7 to -8. Positive values will make the display easier to read when viewed from above. Negative values make the display easier to read from below.

```
VIEWING ANGLE
+0
```
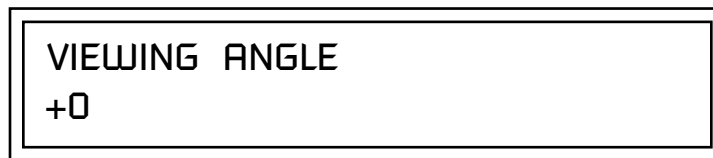
MIDI Menu

Most of the parameters in XL-7 that relate to MIDI are contained within this menu. You can merge MIDI data, change the continuous controller assignments, turn program changes off or on, and lots more.

MIDI menu settings are saved with the current Multimap.

▶ **To enable the MIDI menu**
Press the MIDI button, lighting the LED. The MIDI Menu screen displays the menu page most recently selected since powering up XL-7. The cursor appears below the first character of the screen heading on line one.

▶ **To select a new screen**
Press the Home/Enter button or press the Cursor button repeatedly until the cursor is below the screen title heading. Rotate the data entry control to select another screen.

▶ **To modify a parameter**
Press either Cursor button repeatedly (or hold down the right cursor button while turning the data entry control) until the cursor is below the desired parameter value. Rotate the data entry control to change the value.

▶ **To return to the previously selected Mode/View screen**
Press the MIDI button, turning off the LED.

☙ *Warning: MIDI Menu changes are automatically saved when you exit the menu. If the power is turned off before you exit the menu any changes you have made will be lost.*

Base Tempo

XL-7 contains an internal Master Clock which runs the sequencer, arpeggiators, synchronizes the LFOs when in tempo-based mode, controls the times of tempo-based envelopes, and can be used as a modulation source in the PatchCords section.

You'll notice that there are two tempo values shown in the display.

- **Base Tempo** - This is the base tempo setting before being modified by the Tempo Controller (if engaged). *See "Tempo Controller" on page 127.*
- **(Current Tempo)** - **This is the actual tempo!** The current tempo is equal to the base tempo modulated by the MIDI controller specified in the Tempo Controller screen. If no MIDI Tempo controller message has been received since the last Base Tempo change, the Current Tempo will be equal to the Base Tempo.

The LED to the right of the button blinks at the current tempo rate.

▶ To Change the Base Tempo

1. Move the cursor to the lower line of the display.
2. Adjust the Base Tempo using the data entry control.

```
BASE TEMPO    (0 = MidiClk)
120 bpm    (current: 182)
```

You can also tap tempo using a footswitch. See page 122.

3. **To Tap Tempo** - Tap the Tap button at least three times. Keep tapping to continuously update the tempo on each tap. The tap tempo range is 25-300 bpm. The Base Tempo values range from 1 through 300 beats per minute (BPM).

▶ To Use an External MIDI Clock:

1. Move the cursor to the lower line of the display.
2. Turn the data entry control all the way counter-clockwise and select **"ext"** to use an external MIDI clock source.

Rechannelize Input

This feature makes it easier to record to the internal sequencer using an external keyboard. **Rechannelize Input changes the channel of incoming MIDI data according to the settings in the Channel Assignment screen.**

To record multiple tracks, you simply change the track number and preset. You don't have to change the channel number of your external MIDI controller.

Rechannelize Input can be set to **Off**, **Always** or **On Record.** When set to On Record, the input will only be rechannelized when the Record LED is illuminated (Record or Record-Pause mode). This allows normal MIDI

channel routing except when recording, when the channel data will be changed to match the current track.

```
┌─────────────────────────────────┐
│ RECHANNELIZE  INPUT             │
│                                 │
│ To Track Dest: always           │
└─────────────────────────────────┘
```

▶ **Using Rechannelize Input to Record from a MIDI Keyboard:**

1. Select an empty pattern.

2. Set Rechannelize Input to **Always**.

3. **Select a preset for Channel 1** (C01A) from the Preset View screen. (Note that your MIDI keyboard always plays the preset assigned to the channel shown in the display.)

4. **Turn Preset View Off** to show the pattern screen again.

5. **Press Record**, then set the Pattern Length, Quantize & Metronome.

6. **Press Play** to begin recording.

7. Press **Stop** when finished. *(Press Stop twice to Return to Zero.)*

8. **Select a preset for Channel 2** (C02A) from the Preset View screen. Notice that the keyboard now plays the new preset.

9. Press **Record**, then **Play** to begin recording.

10. Continue to record tracks.
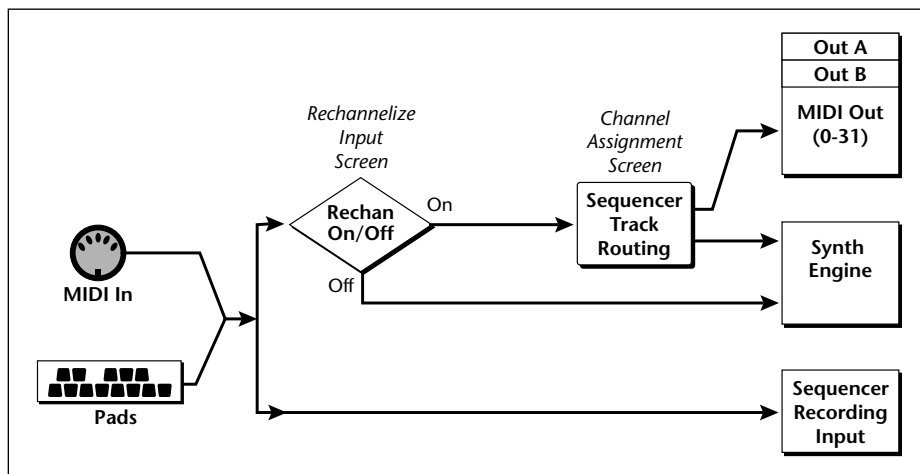
The Rechannelize Input feature routes performance data through the Sequencer Track Routing so that you don't have to change channels on your MIDI keyboard.

Keyboard Outputs MIDI

This option allows you select whether or not the keypad, touchstrip, and footswitch data is transmitted on MIDI output port A or B. When this option is set to: "don't transmit", the keypads, touchstrip, and footswitch only control the "current" preset. *(The current preset is the one currently showing in the Preset View window).* Touchstrip data is transmitted as the Pitch Wheel controller. Footswitches are transmitted on the MIDI CC numbers defined for Footswitch 1 & 2 in the Controllers menu.

```
KEYBOARD  OUTPUTS  MIDI
transmit
```

Knobs Output MIDI

This function allows you to select whether or not knob data is transmitted. The knobs transmit on the controller numbers defined by the Real-time Controller Assign parameter (See page 126).

```
KNOBS MIDI OUT
don't transmit
```

Transmit MIDI Clock

This option enables or disables the transmission of MIDI clock from the MIDI out port. When XL-7 is running on its own internal clock (page 144) it transmits 24 MIDI clocks per quarter note. When XL-7 is slaved to an external MIDI clock, it mirrors the incoming clock data.

```
TRANSMIT MIDI CLOCK
off
```

External Song Start/ Stop

This feature lets the sequencer receive or ignore incoming MIDI Song Start (0xFA), Continue (0xFB), Stop (0xFC) and Song Position Pointer (0xF2) messages.

```
EXTERNAL SONG START/STOP
accepted
```

To use the instrument as a MIDI sound module with an external sequencer, set this control to "ignored." In this setting the internal sequencer won't start up every time your computer sequencer sends a start command.

If you're using and external MIDI controller to start and stop the internal sequencer, set this control to "accepted."

Merge MIDI In to MIDI Out

MIDI data received at the MIDI In port can be merged with outgoing MIDI data at either, or both of the two MIDI out ports. This allows you to connect a MIDI keyboard to XL-7MP-7 and control both XL-7MP-7 and any other external synthesizers down the line.

```
MERGE  MIDI  IN  TO  OUT
Out  A: off      Out B: on
```
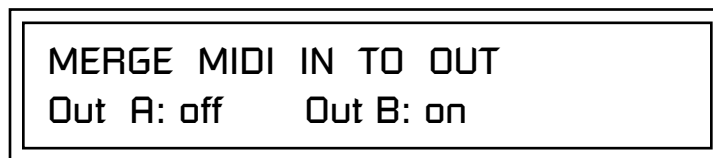
MIDI In Channels

This menu allows MIDI data received at the MIDI input port to control either the internal "A" or "B" channels. With this switch set to "B", you could play an external MIDI keyboard on channels 1B-16B while channels 1A-16A remain dedicated to the internal sequencer.

```
MIDI IN CHANNELS
0  to  16: A
```

MIDI Enable

MIDI Enable lets you turn each MIDI channel on and off independently when in Multi mode. This feature is helpful when you have other devices connected to the same MIDI line and do not want the XL-7 unit to respond to the MIDI channels reserved for the other devices.

```
MIDI ENABLE
channel 01A: On
```
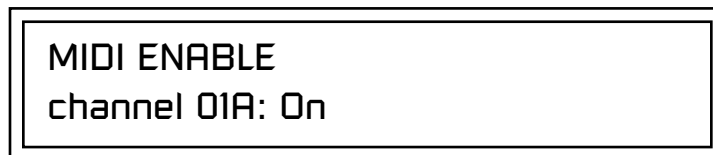
Because the MIDI Enable function only makes sense if you are in Multi mode, XL-7 disables this feature when in Omni or Poly mode.

```
                    ┌────────────────────────────────┐
   In Multi         │ MIDI   ENABLE                  │
   Mode             │ channel 16B: On                │
                    └────────────────────────────────┘

                    ┌────────────────────────────────┐
   In Omni          │ MIDI   ENABLE                  │
   Mode             │ (using  Omni  mode)            │
                    └────────────────────────────────┘
```

Receive Program Change

Use this function to instruct XL-7 to utilize or ignore incoming MIDI preset changes or Bank Select commands for each channel. Use the cursor buttons to select the channel number field, then use the data entry control to select a channel number. Use the cursor button again to select the On/Off field and the data entry control to change the value.

```
        ┌────────────────────────────────────────┐
        │ RECEIVE PROGRAM CHANGE                  │
        │ channel 01A : on                        │
        └────────────────────────────────────────┘
```

MIDI Program Change -> Preset

You can also remap incoming MIDI program changes to a different numbered preset. This is a handy feature when your master keyboard cannot send a bank change or you want to reorder preset numbers. Any preset can be mapped to any incoming MIDI program change number.

For example, you could set up the Program -> Preset map to call up preset #12 whenever XL-7 receives MIDI program change #26.

The four fields shown below are editable.

The Program->Preset Change only works for program changes received in Bank 0.

```
        ┌────────────────────────────────────────┐
        │ MIDI  PROG  CHNG    ->   PRESET         │
        │                000    User   000⁰       │
        └────────────────────────────────────────┘
```

Incoming Program   ROM Bank   Program No.   Bank No.
Change in Bank 0
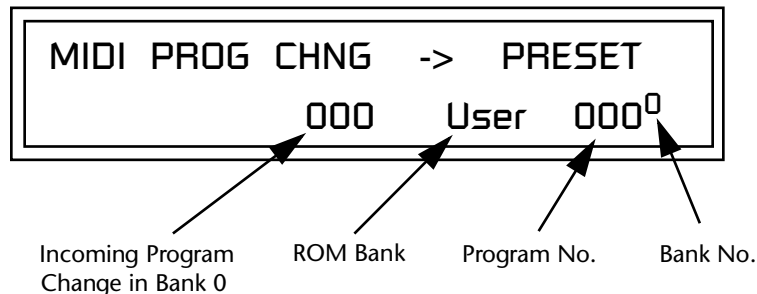
Programs and presets are the same thing. "Preset" is the E-MU term for MIDI Program.

Selected Program →

	0	1	2	3	4	5	6	7	8	9
	00^0	01^0	02^0	03^0	04^0	05^0	06^0	07^0	08^0	09^0
10	44^2	91^0	50^1	01^0	15^0	88^0	99^1	78^0	32^4	88^0
20	34^1	73^0	106^0	55^0	43^2	75^0	12^0	120^0	121^0	100^2
30	30^0	31^0	32^0	33^0	34^0	35^0	36^0	37^0	38^0	39^0
40	40^0	41^0	42^0	43^0	44^0	45^0	46^0	47^0	48^0	49^0
50	50^0	51^0	52^0	53^0	54^0	55^0	56^0	57^0	58^0	59^0
60	60^0	61^0	62^0	63^0	64^0	65^0	66^0	67^0	68^0	69^0
70	70^0	71^0	72^0	73^0	74^0	75^0	76^0	77^0	78^0	79^0
80	80^0	81^0	82^0	83^0	84^0	85^0	86^0	87^0	88^0	89^0
90	90^0	91^0	92^0	93^0	94^0	95^0	96^0	97^0	98^0	99^0
100	100^0	101^0	102^0	103^0	104^0	105^0	106^0	107^0	108^0	109^0
110	110^0	111^0	112^0	113^0	114^0	115^0	116^0	117^0	118^0	119^0
120	120^0	121^0	122^0	123^0	124^0	125^0	126^0	127^0		

→ **Mapped Program**

In this chart, program changes 10-29 have been remapped to new preset numbers. All other presets are selected normally.

MIDI SysEx ID

WARNING: *When transferring SysEx data from one XL-7 to another, the ID numbers of both units must be the same.*

This page defines the MIDI system exclusive (SysEx) device ID number. The SysEx ID lets an external programming unit to distinguish between multiple XL-7 units connected to the same preset editor. In this case each unit must have a unique SysEx ID number.

```
MIDI SYSEX ID
000
```

MIDI SysEx Packet Delay

The MIDI SysEx Packet Delay command lets you specify the amount of delay between MIDI SysEx packets going out of XL-7 so that your computer sequencer can record this large chunk of data over a longer period of time. On playback from the sequencer, the SysEx data will be fed more slowly into XL-7 so that the its input buffer does not overflow, causing an error. Many sequencers allow you to "Time Stamp" SysEx data as it is recorded. This is the preferred mode for recording SysEx data.

The packet delay range is from 0 through 8000 milliseconds. A delay value of zero allows full speed MIDI transfer. If you are experiencing data transmission errors, try increasing the delay value until the problem disappears.

```
MIDI SYSEX PACKET DELAY
300  milliseconds
```

Send MIDI System Exclusive Data

This command transmits MIDI System Exclusive (SysEx) data to the MIDI Out port of XL-7. The MIDI data can be sent to a computer, sequencer or to another XL-7. When transferring data between two XL-7s be sure both units have the same SysEx ID number! Using the cursor key and the data entry control, select the type of MIDI data you want to transmit. Following are descriptions of the types of MIDI data that can be transmitted.

Current Multisetup
Transmits all parameters in the Global menu except Tuning Tables, Program/Preset Map and Viewing Angle. Transmits the entire Controllers menu.

Program /Preset Map
Transmits the MIDI Program -> Preset Map.

Tuning Tables
Transmits all 12 user User Tuning Tables.

The Preset, Volume, and Pan information for all 32 channels is included when the Multi mode Map settings are transmitted or received.

Multimode Map
Transmits the following parameters:

- Multimode Basic Channel
- Multimode Effects Control Channel
- Multimode Tempo Control Channel

and for each MIDI Channel…

- Preset, Volume, & Pan
- Mix Output
- Multimode Channel Enable
- Multimode Bank Map
- Multimode Receive Program Change

Bank 0 User Presets

Transmits all the user defined presets in Bank 0.

Bank 1 User Presets

Transmits all the user defined presets in Bank 1.

Bank 2 User Presets

Transmits all the user defined presets in Bank 2.

Bank 3 User Presets

Transmits all the user defined presets in Bank 3.

Any Individual Preset

Transmits only the selected preset.

The Enter LED will be flashing. Press the Enter button to confirm the operation. To receive MIDI data, simply send the MIDI data into XL-7 from another XL-7 or from a computer/sequencer.

```
 ┌──────────────────────────────┐
 │ SEND MIDI SYSEX DATA         │
 │ bank 1 user presets          │
 └──────────────────────────────┘
```

▶ **To Record MIDI SysEx Data into an External Sequencer:**
1. Setup the sequencer to receive system exclusive data.
2. Place the sequencer into record mode, then Send MIDI Data.

▶ **To Receive MIDI SysEx Data from an External Sequencer:**

Simply play back the sequence containing the SysEx data into XL-7.

MIDI Mode

MIDI Mode selects one of the three MIDI modes: Omni, Poly or Multi.

```
┌─────────────────────────────────────┐
│  MIDI MODE              CHANGE       │
│  multi                  ignored      │
└─────────────────────────────────────┘
```
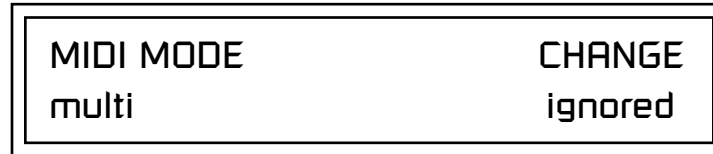
The **MIDI Mode Change** parameter specifies whether mode changes made through an external MIDI controller are accepted or ignored.

The MIDI modes are as follows:

Omni
Responds to note information on all MIDI channels and plays the preset currently displayed in the main screen.

Poly
Responds only to note information received on the currently selected MIDI channel (on the preset selection screen) and plays that channel's associated preset.

Multi
Responds to data on any combination of MIDI channels and plays the specific preset associated with each of the MIDI channels. You must select multi mode for multitimbral operation.

Programming Basics

This chapter explains how XL-7 sounds are constructed and contains important background information on how to create your own custom presets.

Your initial involvement with XL-7 will most likely be using the existing presets and selecting MIDI channels. While the factory presets are very good, there are some things you will probably want to change eventually, perhaps the LFO speed, the filter frequency or the attack time. You may also want to make your own custom presets using complex modulation routings. This instrument will do far more than you imagine with whole new classes of sound just waiting to be discovered.

Each preset can consist of up to four instrument layers. Each of the four layers can be placed anywhere on the keyboard and can be crossfaded or switched according to key position, velocity, or by using a real-time control such as a wheel, slider, pedal, LFO or envelope generator. A preset can also be "linked" with up to 2 more presets creating additional layering or splits.

XL-7 has an extensive modulation implementation using two multi-wave LFO's (Low Frequency Oscillators), three multi-stage envelope generators and the ability to respond to multiple MIDI controllers. You can simultaneously route any combination of these control sources to multiple destinations.

There are 512 user locations (USER Banks 0-3) available to store your own creations or edited factory presets. It's easy and fun to edit or create your own unique presets.

Modulation

To modulate means to dynamically change a parameter, whether it be the volume (amplitude modulation), the pitch (frequency modulation), and so on. Turning the volume control on your home stereo rapidly back and forth is an example of amplitude modulation. To modulate something we need a modulation source and a modulation destination. In this case, the source is your hand turning the knob, and the destination is the volume control. If we had a device that could turn the volume control automatically, we would call that device a modulation source.
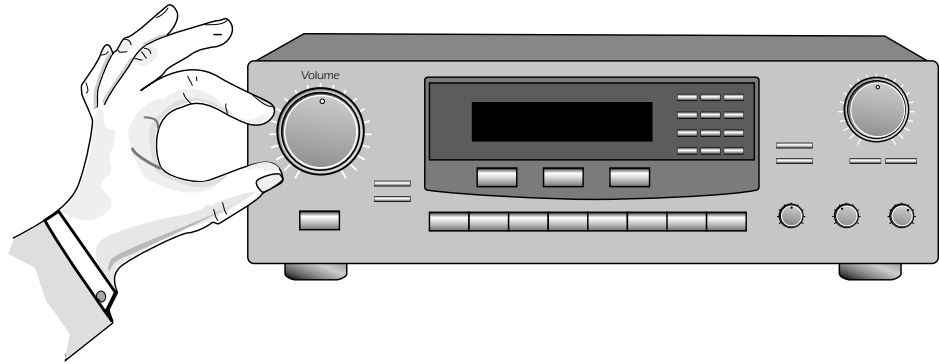
Turning the volume control back and forth on your home stereo is an example of
Amplitude Modulation.

XL-7 is designed so that each of the variable parameters, such as the volume, has an initial setting which is changed by a modulation source. Therefore in the case of volume, we have an initial volume that we can change or modulate with a modulation source.

Two main kinds of modulation sources on XL-7 are *Envelope Generators* and *Low Frequency Oscillators.* In the example above, an envelope generator could be routed to automatically turn the volume control as programmed by the envelope. Or, a low frequency oscillator could be routed to turn the volume up and down in a repeating fashion.

Positive modulation adds to the initial amount. Negative modulation subtracts from the initial amount.

Summing Nodes

All the modulation inputs on XL-7 are summing nodes. This means that you can connect as many modulation sources as you want to an input *(such as Pitch or AmpVol)*. Modulation sources are simply added algebraically—connecting two knobs one set to -100 and the other set to +100 yields a net value of zero.

Modulation Sources

Modulation sources include *Envelope Generators, Performance Controllers* and *Low Frequency Oscillators*. In the previous example, an envelope generator was routed to automatically turn the volume control as programmed by the envelope, or, a low frequency oscillator could be routed to turn the volume control up and down in a repeating fashion. The following is a list of the modulation sources used in XL-7.

Keyboard Key
Which key is pressed.

Key Velocity
How fast the key is pressed.

Release Velocity
How fast the key is released.

Gate
High if the key is pressed, low when the key is released.

Key Glide
A smoothly changing control source based on the Glide Rate and the interval between the last two notes played.

Tip: Try routing Key Glide to Filter Frequency if you want the filter to smoothly follow pitch in solo mode. Routing Key Glide to Pan creates another interesting effect.

Pitch (Touchstrip) and Mod Controllers
Synthesizer pitch bend and modulation controllers.

Keyboard Pressure (mono aftertouch)
Key Pressure applied after the keypad is initially pressed.

Pedal
A continuously variable pedal controller.

Miscellaneous Controllers A -P
Any type of MIDI continuous controller data.

Low Frequency Oscillators (2 per layer)
Generate repeating waves.

Envelope Generators (3 per layer)
Generate a programmable "contour" which changes over time when a key is pressed.

Noise & Random Generators
Generate spectrums of noise and random signals.

Footswitches
Change a parameter when the switch is pressed.

Clock Divisor
The master tempo clock can be divided and used as a modulation source.

Random Sources

Random modulation sources can be used when you want the timbre of the sound to be "animated" in a random or non-consistent manner.

• **Key Random 1 & 2** generate different random values for each layer which do not change during the note.

• The **White & Pink Noise** Generators produce varying random values. Both white and pink noise sources are low frequency noise designed for control purposes. Either noise source can be filtered even more by passing it through a lag processor.

• The **Crossfade Random** function generates the same random value for all layers in a preset. This source is designed to be used for cross-fading and cross-switching layers, although you may find other uses.

Modulation PatchCords

✎ *The controller Knobs assignments printed on the front panel are the system defaults. You can change any of these assignments using the Real-time Controller Assignment page in the MIDI menu (see page 147 for details).*

When setting up modulation with the XL-7, you define a modulation source and a modulation destination. Then, you connect the source to the destination using "PatchCords." XL-7's PatchCords are connected in the software. XL-7 has 24 general purpose PatchCords for each layer.

You can connect the modulation sources in almost any possible way to the modulation destinations. You can even modulate other modulators. Each PatchCord also has an amount parameter which determines "how much" modulation is applied to the destination. The modulation amount can be positive or negative. Negative values invert the modulation source.

Modulation Source

Amount +/-

Destination

LFO 1   -   +   Amp Volume

Modulation Source

LFO 1
LFO 2
Amp Env
Filt Env
Aux Env
Wheel
Pressure
etc.

Destination

Amp Vol
Pitch
Pan
LFO Rate
Aux Env
Env Atk
Glide
etc.

Envelope Generators

An envelope can be described as a "contour" which is used to shape the sound over time in a pre-programmed manner. There are three envelope generators per layer and all of them are the rate/level type.

This is how the rate/level *(time based)* envelopes work: When a key is pressed, envelope starts from zero and moves toward the Attack 1 Level at the Attack 1 Rate. As soon as it reaches this first level, it immediately begins the next phase and moves toward the Attack 2 level at the Attack 2 rate. As long as the key is held down, the envelope continues on through the Decay 1 and Decay 2 stages. If the key is still held when the envelope reaches the end of Decay 2, it simply waits there for you to release the key. When you release the key, the envelope continues into the Release 1 and Release 2 stages, stopping at the end of the Release 2 stage. XL-7's envelope generators provide great flexibility for programming both complex and simple envelopes.

If two adjacent segments have the same level in a "time-based" envelope, the segment will be skipped. Adjacent segments must have different levels for the rate control to work.
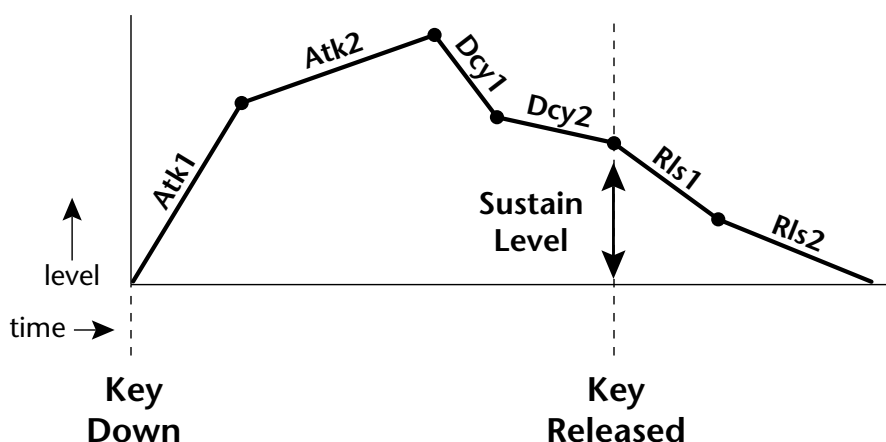
All three envelope generators have the six stages described above. The Volume Envelope generator controls the volume of the voice over time. The Filter Envelope generator is a general purpose envelope most often used to control the filter frequency. Unlike the Volume Envelope, however, the Filter Envelope can have a negative level value as well as a positive level. There is also an Auxiliary Envelope generator which is a general purpose envelope. The Auxiliary Envelope is identical to the Filter Envelope and can have negative as well as positive levels. You can adjust the time of each stage to create myriad envelope shapes, which in turn shape the sound over time.

ADSR mode: *To create a standard ADSR envelope: Set Atk1, Atk2 & Dcy1 Level to 100, Rls 1 & 2 level to 0, and Atk2, Dcy1, Rls2 Rates to 0. Program Atk1, Dcy2 and Rls1 segments as you wish. See page 285.*

By routing the Auxiliary or Filter Envelopes to control the pitch (PatchCords) you can easily hear the shape of the envelopes you are creating.

• Volume envelopes contour the way the volume of a sound changes over time determining how we perceive that sound. For example, a bell struck with a hammer is instantly at full volume, then slowly dies away. A bowed violin sound fades in more slowly and dies away slowly. Using XL-7's Volume Envelope, you can simulate the different types of natural instrument volume envelopes by programming them appropriately.

Tempo-based Envelopes

Tempo-based envelopes are based on *Time* which is controlled by the Master Tempo *(located in the Global menu)*. The Master Tempo rate scales the time of the Tempo-based envelope segments. The Master Tempo can also be derived from an external MIDI clock to synchronize the envelope times with external sequencer or arpeggiator tempo changes. See page 144.
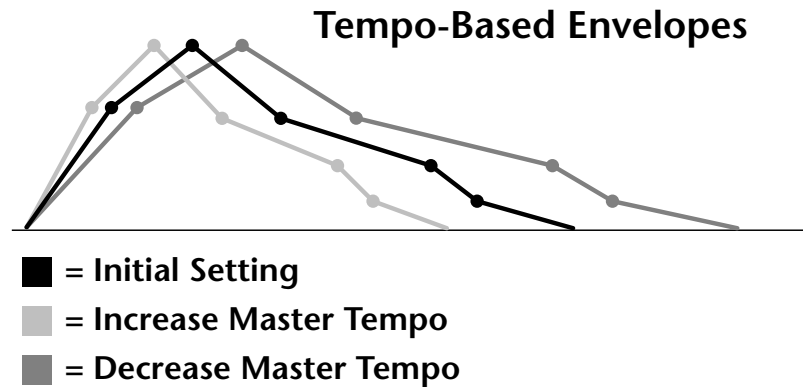
Tempo-Based Envelopes

■ = Initial Setting
■ = Increase Master Tempo
■ = Decrease Master Tempo

Envelope Repeat

The Envelope Generators can also be made to repeat. When the envelope repeat function is On, the Attack (1&2) and Decay (1&2) stages will continue to repeat as long as the key is held. As soon as the key is released, the envelope continues through its normal Release stages (1 & 2).

✎ *Only the Filter and Auxiliary Envelopes have the repeating feature.*
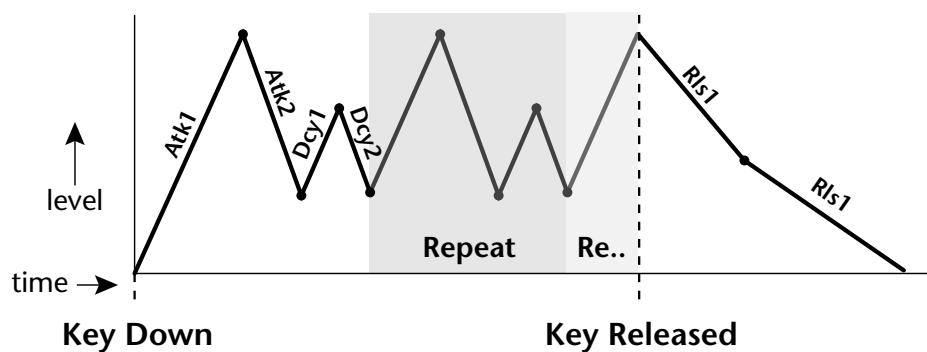
The diagram above show how the looping envelopes work. When the key is pressed the envelope goes through its regular Attack 1, Attack 2, Decay 1 and Decay 2 stages. In non-looping mode, the envelope would hold at the end of the Decay 2 stage until the key was released. In looping mode however, it jumps back to the Attack 1 stage and repeats the first four stages. It continues to loop through these four stages until the key is released where it immediately jumps to the Release 1 stage.

Low Frequency Oscillators (LFOs)

A Low Frequency Oscillator or LFO is simply a wave which repeats at a slow rate. The XL-7 has two multi-wave LFOs for each channel. The LFO waveforms are shown in the following illustration.

LFO Tricks & Tips*:*

• *The Random LFO wave is truly random and is different for each voice and layer.*

• *The Pattern (Pat) waveforms will sound the same on different layers and voices.*

• *Sine + Noise is very useful for simulating trumpet and flute vibrato.*

★ *When routing Hemi-quaver to Pitch:*

+38 = major scale
-38 = phrygian scale
+76 = whole tone scale
(+38) + (+76) = diminished (two cords)

odd amount = S+H sound

Random   **Triangle**   **Sawtooth**

Sine   **Square**   **33% Pulse**

25% Pulse   **16% Pulse**   **12% Pulse**

Pat: Octaves   **Pat: Fifth+Octave**   **Pat: Sus4 trip**
+ Octave   C   G
                  G   F
C   C
- Octave

Pat: Neener   **Sine 1,2**   **Sine 1,3,5**
C
A#
G

Sine + Noise   **Hemi-quaver**

Note: *References to musical intervals in the pattern LFO shapes are with the LFO routed to pitch and a PatchCord amount of +38.*

By examining the diagram of the LFO waveforms, you can see how an LFO affects a modulation destination. The shape of the waveform determines the result. Suppose we are modulating the pitch of an instrument. The sine wave looks smooth, and changes the pitch smoothly. The square wave changes abruptly and abruptly changes from one pitch to another. The sawtooth wave increases smoothly, then changes back abruptly. The sound's pitch follows the same course. Controlling the pitch of an instrument is an easy way to hear the effects of the LFO waves.

✎ *Try combining the Pattern LFOs, or controlling the amount of one with another, or combining them with the clock divisors.*

Like the Auxiliary Envelope, LFOs can be routed to control any real-time function such as Pitch, Filter, Panning, or Volume. A common use for the LFO is to control the pitch of the sound (LFO -> Pitch). This effect is called vibrato and is an important performance effect. Many presets use this routing with the modulation wheel controlling "how much" LFO modulation is applied. Another common effect, Tremolo, is created by controlling the volume of a sound with the LFO (LFO -> Volume).

You might use the LFOs to add a slight bit of animation to the sound by routing the LFO to control the filter. For this effect, set the LFO "amount" low for a subtle effect.

When a PatchCord amount is a negative value, the LFO shape is inverted. For example, inverting the sawtooth wave produces a wave that increases abruptly, then smoothly glides down.

Negative Amount

Sawtooth   **Inverted Sawtooth**

Clock Modulation

You can use the Master Clock as a modulation source, to trigger the Filter or Auxiliary Envelope generators, trigger Sample Start, synchronize the LFOs, or directly as a square wave modulation source. The Clock source is available in eight divisions (octal whole note, quad whole note, double whole note, whole note, half note, quarter note, eighth note, sixteenth note). You can use the different rates separately or in conjunction to create complex "synchro-sonic" rhythm patterns. You can also use a MIDI Clock as the Master Clock to synchronize to an external MIDI device such as a drum machine or sequencer. *(See Master Tempo in the Global menu.)*

Clocks are routed exactly like the other modulations sources using the PatchCords. The PatchCord Amount MUST be positive (+) for the clock to pass. By modulating the PatchCord Amount, you can route the divided clocks using real-time controllers or other modulation sources.

Envelopes are triggered on the positive going edge of the clock. LFOs are triggered on the negative going edge of the clock.

When an LFO is triggered by a clock, the LFO wave resets to zero every time the clock wave goes low. If the LFO rate is close to the clock rate, the LFO virtually synchronizes with the clock. If the two rates are far apart, the waveform of the LFO will be mildly or radically altered.

The tempo of the master clock is set in the Global menu.

Triggered LFO

LFO Wave
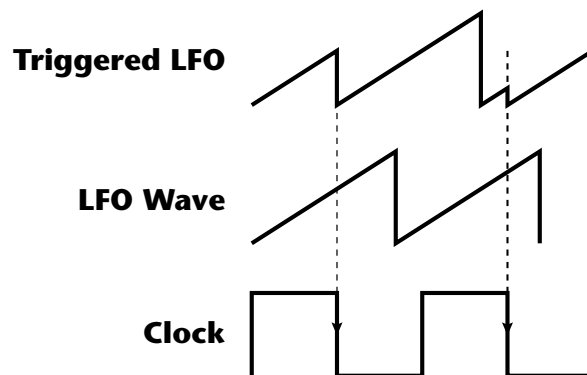
Clock

LFO Trigger causes the LFO to reset each time the clock waveform goes low.

LFOs can also be perfectly synchronized with the clock at any of 25 note divisions. This allows you to create very cool "synchro-sonic" effects that work perfectly at any tempo. Choosing one of the note divisors in the LFO rate screen selects the synced LFO function.

There are many possibilities for clock modulation and retrigger. For example, you can create a repeating six segment curve of any shape by triggering the Filter or Auxiliary Envelope generators with the clock. A few other possibilities are listed below.

LFO Synced to 1/4 Note Clock

- Turn different voice layers on and off using different clock divisors.
- Switch between Auxiliary and Filter Envelope retriggering using a slider or footswitch.
- Retrigger LFOs or Envelopes using noise or other LFOs to create random or semi random effects.
- Alter the LFO waveform by modulating the rate of a triggered LFO.
- Route multiple clocks with different divisors to the same destination (such as pitch) to create complex patterns. *(Hint: Adjust the PatchCord Amounts.)*

Eighth Note + *Quarter Note* =
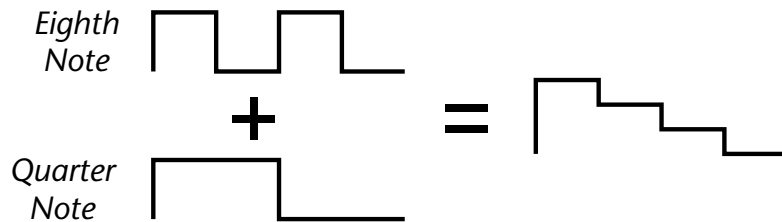
Adding these two clocks together in equal amounts produces a stairstep waveform.

16th Note + *8th Note* + *Quarter Note* =
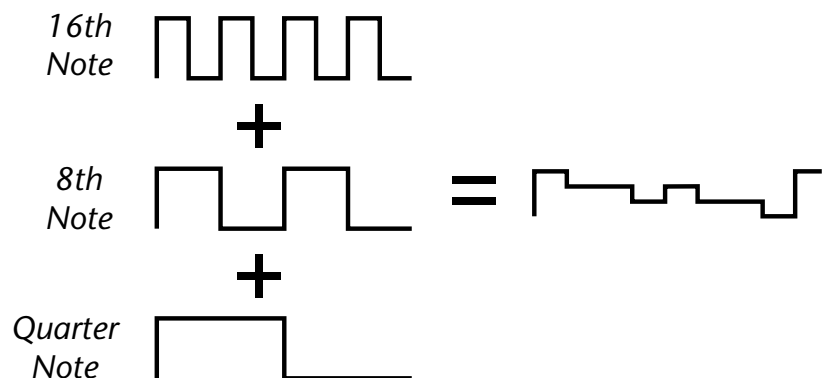
Adding multiple clocks with unequal amounts produces complex repeating patterns.

Modulation Destinations

The PatchCords section of the Preset Edit menu is where you connect sources to destinations. Each PatchCord has an amount associated with it which controls how much modulation is applied.

```
L1  PATCHCORD               #01
ModWhl  ->  RTXfade        +036
```

The PatchCords screen above and the diagram below show how modulation sources are connected to destinations. The modulation sources can control any of the destinations in the layer.

✎ *All the modulation destinations are summing nodes. This means that you can connect as many modulation sources as you want to a destination. Modulation sources are simply added algebraically — connecting two sources, one with a value of -100 and the other with a value of +100 yields a net value of zero.*
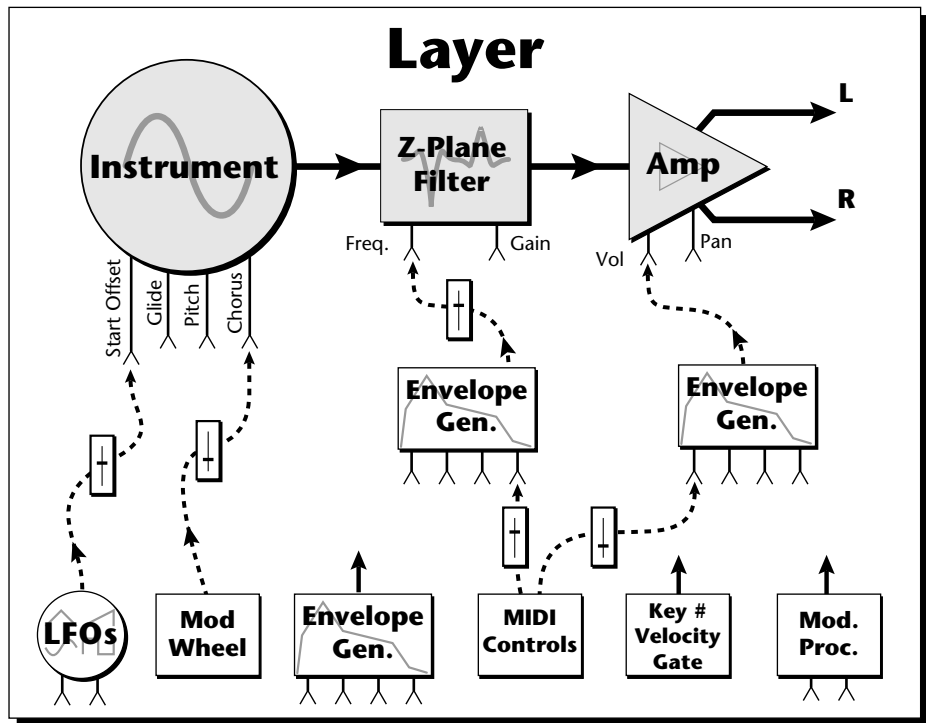
- Note-on modulation sources, such as key, velocity and gate output a single value at note-on time. Realtime modulation sources such as LFOs, envelope generators and modulation wheels output continuously changing values.

The possible modulation routings are completely flexible as shown in the diagram above. Multiple sources can control the same destination, or a single source can control multiple destinations.

Modulation Processors

Modulation processors are devices which can modify modulation sources such as LFOs and envelope generators before they are applied to a destination. Modulation processors let you create patches and do tricks which would not be possible otherwise. These modulation processors are independently programmable on each of the four layers.

Switch
Outputs a digital "1" when the input is greater than "0".
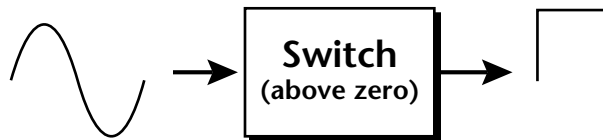
Summing Amp
Lets you add several modulation signals together before applying them to a destination. This processor can save PatchCords when routing the output to multiple destinations.
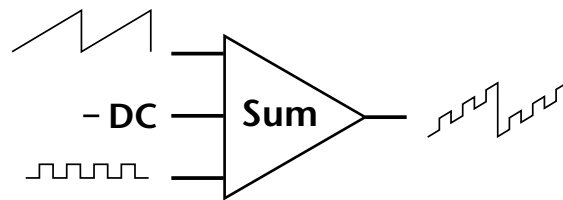
Lag Processors
Slows down rapid changes in the input signal. The output "lags" behind the input at a pre-programmed rate. There are two lag processors, Lag 0 and Lag 1. Lag 1 has a longer lag time than Lag 0.

Absolute Value
This function inverts negative input values and outputs only positive values. This device is also called a full wave rectifier.
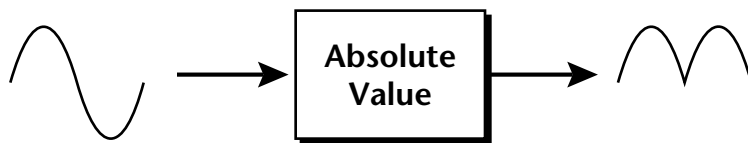
Diode

The diode blocks negative input values, passing only positive values.
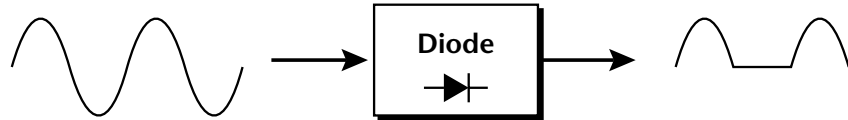
Flip-Flop

The output of this processor alternates between a digital "1" and digital "0" each time the input goes positive from zero or a negative value. With an LFO input, the output will be a square wave of half the input frequency.

The value of a digital "1" is equal to the PatchCord amount.

Quantizer

With the input PatchCord set to 100%, the output value is limited to 16 discrete values. The value of the input PatchCord controls the number of steps. The value of the output PatchCord controls the size of the steps.
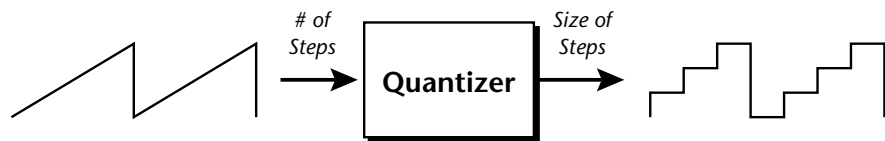
4x Gain

This processor amplifies the modulation source by a factor of 4.
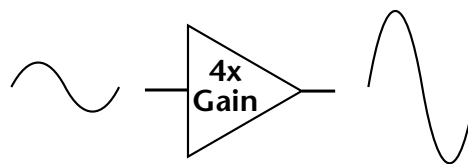
Lag Inputs

Summing Amps can be useful in complicated patches where you want to control a combination of modulation signals with a single patchcord.

The Lag processors can be used as 2 additional summing amps. Lag0sum and Lag1sum are modulation sources which equal the sum of PatchCords connected to the Lag in destination. The summing amp is located before the lag processor as shown in the following illustration.
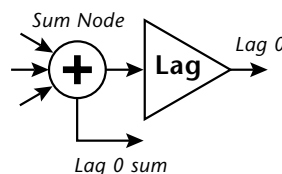
Preset Modulation Processors

✎ *Preset Modulation Processors start working as soon as the preset is selected. The Layer Modulation Processors take effect only when a key is pressed.*

There are also two "Preset Level" modulation processors located in the "Preset Patchcords" screen of the Edit menu. It is important to understand that although the preset processors *originate* at the *Preset Level PatchCords*, their output is used in the *Layer PatchCords.*

Preset Lag
Like the Layer Lag processors *(described on page 163)* the Preset Lag slows down rapid changes in the input signal. The output "lags" behind the input at a pre-programmed rate. Unlike the layer level lag processors, the *preset lag* takes effect as soon as the preset is selected. In contrast, the layer level lag processors begin acting only after a keyboard key has been depressed. The Preset Lag also has a *Lag Amount* input which controls the lag time. Positive lag amounts increase the lag time. A MIDI controller *(front panel knob)* is commonly used to control lag amount.

The preset lag can be used to "spin-up" and "spin-down" an LFO which controls some other effect, perhaps left/right panning, pitch, or the filter. A MIDI footswitch could be used as the input to the lag which acts to slow down the instantaneous change of the switch. The slowly changing output value is then routed using a layer patchcord to crossfade between layers or change the speed of an LFO.

ex. footswitch

Preset Lag

Lag Amount
(+ value = longer)
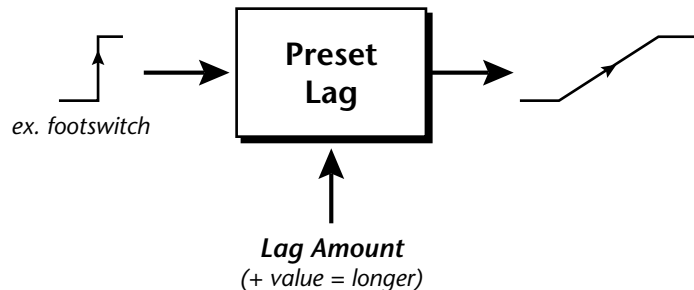
Preset Ramp
This processor generates a positive or negative going slope whenever the **first** key is depressed on the MIDI channel.

Preset Ramp
Positive Rate

1st Note Played

increase

original value

time →

Preset Ramp
Negative Rate

time →

original value

decrease

1st Note Played
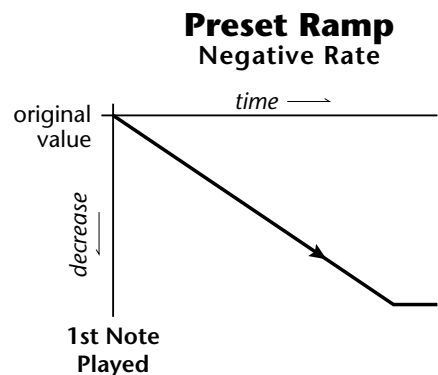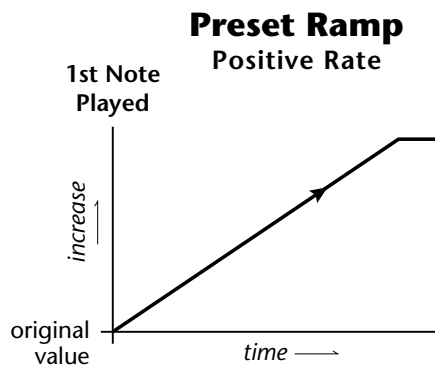
The preset ramp instantly resets when all notes have been released and the next *first key* on the MIDI channel is pressed. The Ramp Rate polarity *(+ or -)* determines if the ramp will be positive or negative going. The value of the ramp rate sets the increment. Large values produce fast ramps and small values produce slow ramps. Multiple inputs can be connected to the ramp rate (just like all the other destinations in XL-7).

The patch below shows an application for the Preset Ramp which generates an adjustable decay envelope ONLY on the first note played to bring in the sound from another layer. Instead of routing the output to the Amp Volume you could just as easily route it to control Pitch, LFO Speed or any other destination you can think of. Study this patch if you want to learn a few new tricks using the patchcords.

Real Rocket Science

1. **DC** - Sets initial ramp Fast-Positive (+100)
2. **Decay Knob** - Inverted value slows ramp as the knob value is increased.
3. **Ramp Out Cord** - Inverts Ramp slope (downward).
4. **Amp Vol** - Initial setting is Off (-96dB). Ramp cannot overcome this negative bias.
5. **Perc. Amt** - When this knob is turned up, the positive bias on the Amp is restored so that so that the Ramp can now affect Amp Volume.
6. **Volume Envelope** - Fast Attack, Full Sustain, No Release

The combination of the DC & Perc. Decay Time Cords has the effect of reversing the Percussion Decay Time knob. The decay time increases as the knob is turned up.

Using the Modulation Processors

Modulation processors are inserted into a modulation routing as shown in the following diagram.

The modular analog synthesizers of yesteryear were incredibly flexible, partly because processing devices could be connected in any order. Modulation processors are designed according to this modular concept. They can be linked and used in a wide variety of ways limited only by your imagination. Consider the following example:
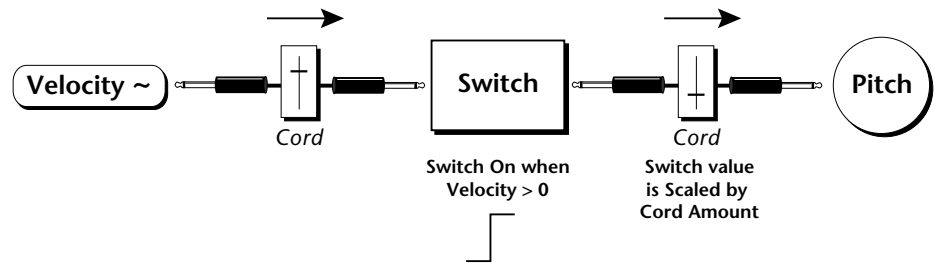
The patch illustrated above is programmed by setting the PatchCord screens as shown below.

```
ᴸ¹ PATCHCORD                    #01
Vel+-  ->   Switch              +100
```

```
ᴸ¹ PATCHCORD                    #02
Switch -> Pitch                 +022
```

This particular modulation shifts the overall pitch up a fifth when the key velocity exceeds 64. Velocities below 64 play at normal pitch. Notes with velocities of 64 and above are raised a perfect fifth. The Velocity "~" source scales the played velocity around zero. In other words, low velocities (below 64) will have negative values and high velocities (64 and above) will be positive. A velocity of 64 would be zero. The Switch module only outputs a "1" if the input value is greater than zero. This digital "1" value can be scaled through the attenuator on the PatchCord to raise or lower the pitch by any amount. In this case, a scaling value of +22 raises the pitch by a perfect fifth. The amount of the PatchCord on the input to the switch is unimportant because ANY velocity value equal or greater than 64 will flip the switch. If the input PatchCord amount were a negative value however, the action of the velocity would be reversed and velocities less than 64 would raise the pitch and velocities equal or greater than 64 would play the original pitch.

But what if you want the velocity switch point to be something other than 64? Thanks to modulation processors, it can be done. Here's how.
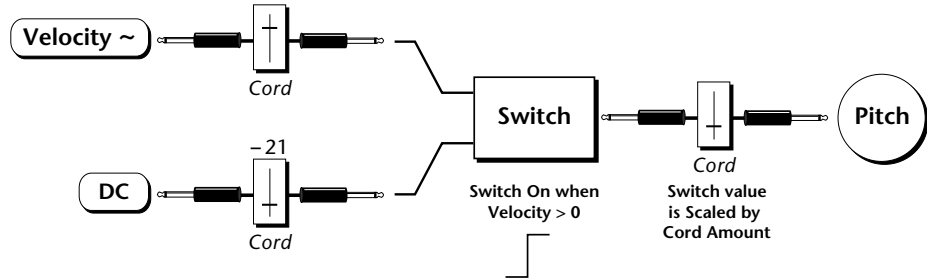
Connect the DC level to the input of the switch along with the velocity value. Note that more than one modulation source can be applied to the input of a processor.

DC offset adds a fixed value based on the PatchCord Amount setting. If applied to the switch along with the velocity, it changes the velocity value required to trip the switch. By setting the DC amount to a negative amount, higher velocity values are required to trip the switch. Setting the DC value to a positive value would bring the velocity switch point down. The PatchCord screens for this patch are shown below.

```
L1 PATCHCORD                  #01
Vel+-  ->  Switch            +100
```

```
L1 PATCHCORD                  #02
DC   ->   Switch             -021
```

```
L1 PATCHCORD                  #03
Switch   ->   Pitch          +022
```

More Examples

To derive a smooth random function you could route the Pink Noise generator through one of the Lag Processors. A smooth random wave is useful in small amounts to add a degree of natural variation to timbre when routed to filter cutoff. Normal pink noise is low pass filtered audio frequency noise with a 3 dB/octave slope to give equal energy per octave. XL-7 pink noise is actually more like very low frequency filtered noise, but it is perfect for use as a random control source.
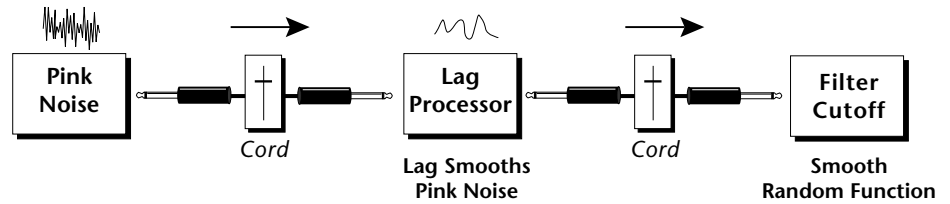
The **Quantizer** can generate interesting whole-tone scales when envelope generators or LFOs are routed to the input. The quantizer turns a smoothly changing input signal into a series of steps. By routing the output of the quantizer to Pitch and adjusting the PatchCord amounts, you can control both the number of steps and the pitch interval of each step.
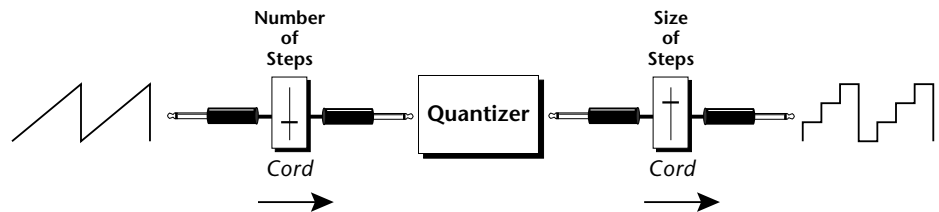
The input PatchCord amount controls how many steps will be generated. With a sawtooth wave (LFO+) feeding the input and the PatchCord amount set to 100%, sixteen steps are generated. The output PatchCord amount controls the size (or interval) of the steps.

Try setting up the following patch exactly as shown below using your favorite preset as a starting point.

```
L1 LFO1    SHAPE          SYNC
           sawtooth       key sync
```

```
L1 LFO1    RATE    DELAY    VAR
           0.35Hz   000      000
```

```
 L1  PATCHCORD                    #01
LFO1+  ->   Quantize             +030
```

```
 L1  PATCHCORD                    #02
Quantize   ->   Pitch            +100
```

```
 L1  PATCHCORD                    #03
DC   ->    Pitch                 -050
```

This patch generates an ascending arpeggio every time a key is pressed. A diagram of the patch is shown below. The patch is very straightforward except for the DC offset which was added to bring the pitch down into tune. (Sometimes you have to fix a problem, but using the mod processors there's usually a way around it to achieve the desired result.)
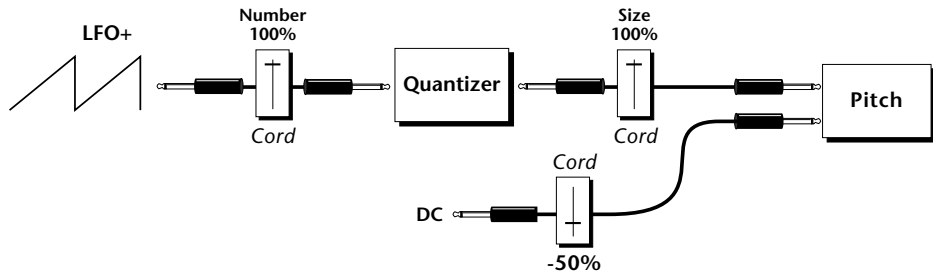
You can start to see some of the possibilities (and there are many). Whenever you find yourself wishing for some esoteric type of control, take a minute to think and see if there is a way to achieve the desired result using the modulation processors.

Dynamic Filters

The block diagram of the XL-7's signal path is shown below.
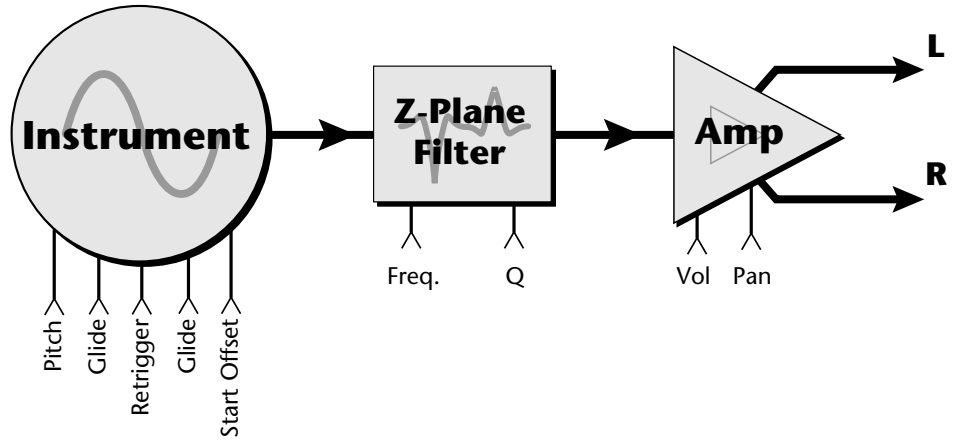
To understand how a filter works, we need to understand what makes up a sound wave. A sine wave is the simplest form of sound wave. Any waveform, except a sine wave, can be analyzed as a mix of sine waves at specific frequencies and amplitudes.
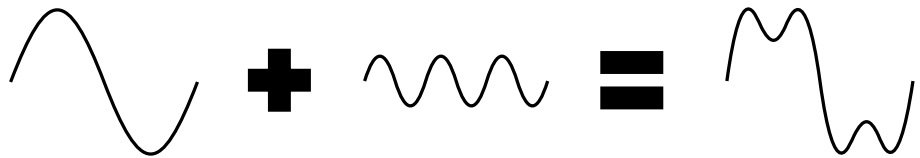
Any waveform can be analyzed as a mixture of sine waves.

One way to represent complex waveforms is to use a chart with frequency on one axis and amplitude on the other. Each vertical line of the chart represents one sine wave at a specific amplitude and frequency.
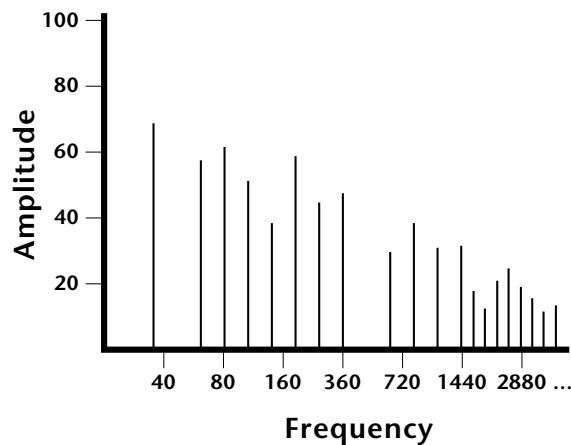
What is a Filter?

Most sounds are complex waves containing many sine waves of various amplitudes and frequencies. **A filter is a device which allows us to remove certain components of a sound depending on its frequency.** For example, a *low-pass filter* lets the low frequencies pass and removes only the high frequencies as illustrated in the following diagram.
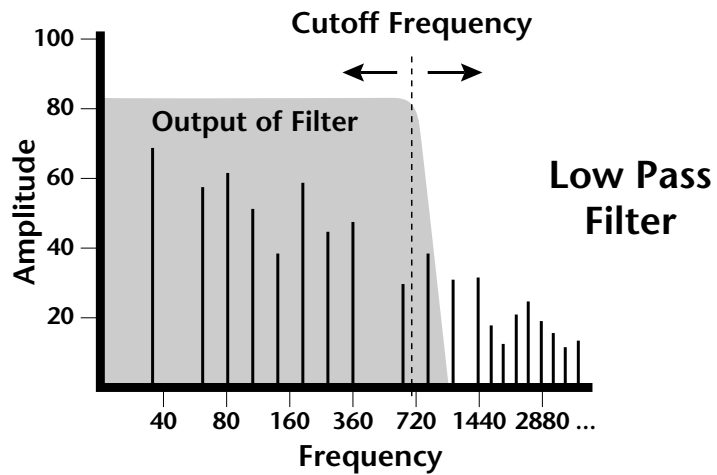
A filter that lets only the high frequencies pass is called a *high-pass filter* as illustrated in the following diagram.
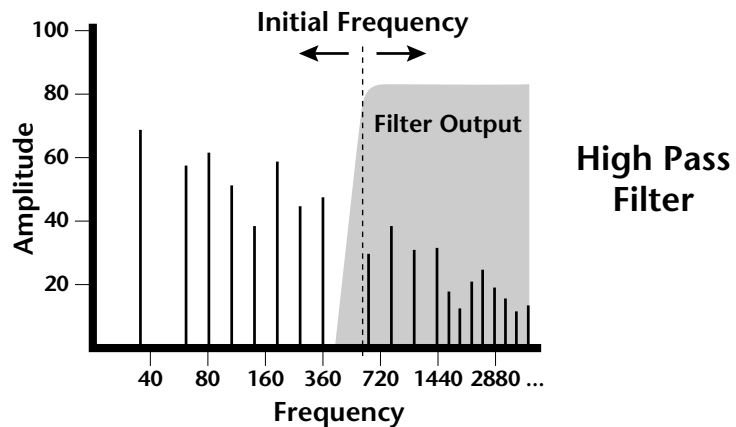
A filter which only lets a certain band of frequencies pass is called a
band-pass filter.
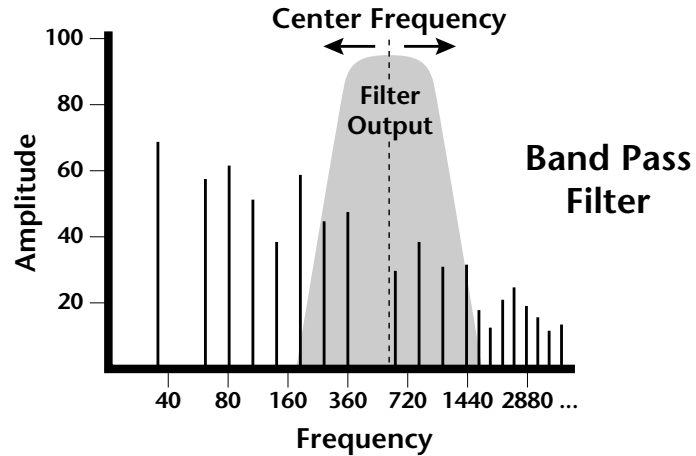
A *notch filter* is just the opposite of a band-pass filter and is used to
eliminate a narrow band of frequencies.

Another control found on traditional filters is called Q or resonance. A
lowpass filter with a high Q emphasizes the frequencies around the cutoff
frequency. The following chart shows how different amounts of Q affect
the low-pass filter response. In terms of sound, frequencies around the
cutoff tend to "ring" with high Q settings. If a filter with high Q is slowly
swept back and forth, various overtones are "picked out" of the sound and
amplified as the resonant peak sweeps over them. Bells and gongs are real
world examples of sounds which have a high Q.
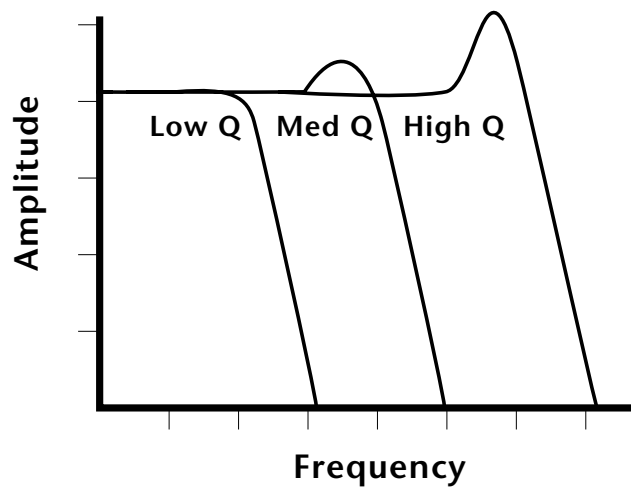
Another characteristic of a filter is the number of poles it contains. Traditional synthesizer filters were usually either 2-pole or 4-pole filters. The XL-7 has selectable 2, 4, and 6-pole low-pass filters. The number of poles in a filter describes the steepness of its slope. The more poles, the steeper the filter's slope and the stronger the filtering action. The tone controls on your home stereo are probably one-pole or two-pole filters. Parametric equalizers are usually either two-pole or three-pole filters.

In terms of vintage synthesizers, Moog and ARP synthesizers used 4-pole filters, Oberheim and E-mu synthesizers were famous for their 2-pole filter sound.
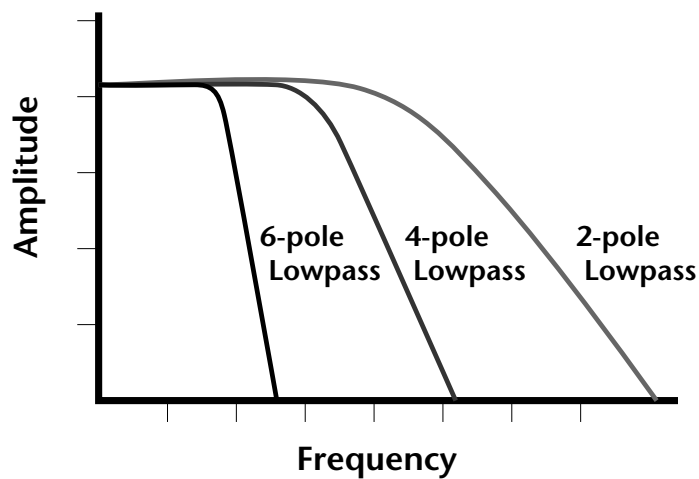
Using a filter, we have a way to control the harmonic content of a sound. As it turns out, even a simple low-pass filter can simulate the response of many natural sounds.

For example, when a piano string is struck by its hammer, there are initially a lot of high frequencies present. If the same note is played softer, there are fewer high frequencies generated by the string. We can simulate this effect by routing keyboard velocity to control the low-pass filter. The result is expressive, natural control over the sound.

If you use an envelope generator to control the cutoff frequency of a filter, the frequency content can be varied dynamically over the course of the note. This adds animation to the sound as well as simulates the response of many natural instruments.

Parametric Filters

A more complex type of filter is called a parametric filter or *Swept EQ*. A parametric filter allows control over three basic parameters of the filter. The three parameters are: *Bandwidth, Frequency* and *Gain*. The Bandwidth allows you to select the width of the range of frequencies to be boosted or cut, the Frequency defines the center frequency of the bandwidth, and the Gain parameter either boosts or cuts the frequencies within the selected band by a specified amount. Frequencies not included in the selected band are left unaltered. This is different from a band-pass filter which attenuates (reduces) frequencies outside the selected band.
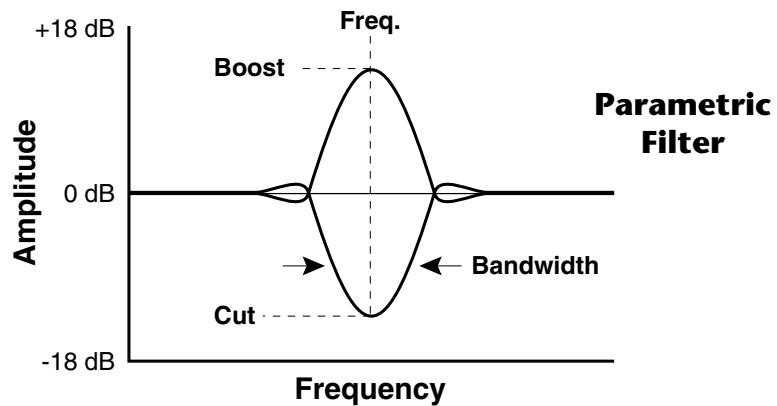
The parametric filter is quite flexible. Any range of frequencies can be either amplified or attenuated. Several parametric sections are often cascaded in order to create complex filter response curves.

If four parametric filter sections were cascaded, it would be possible to create the following complex filter response.
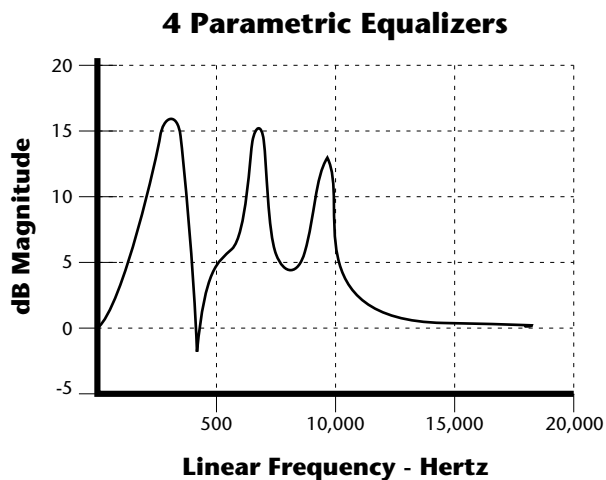
Many natural instruments have complex resonances which are based on their soundboard or tube size. The resonance shown above would be impossible to create using a normal synthesizer filter.

The Z-Plane Filter

A Z-plane filter is a filter which can change its function over time. In a Z-plane filter, we start with two complex filter types and interpolate between them using a single parameter. See the following diagram.
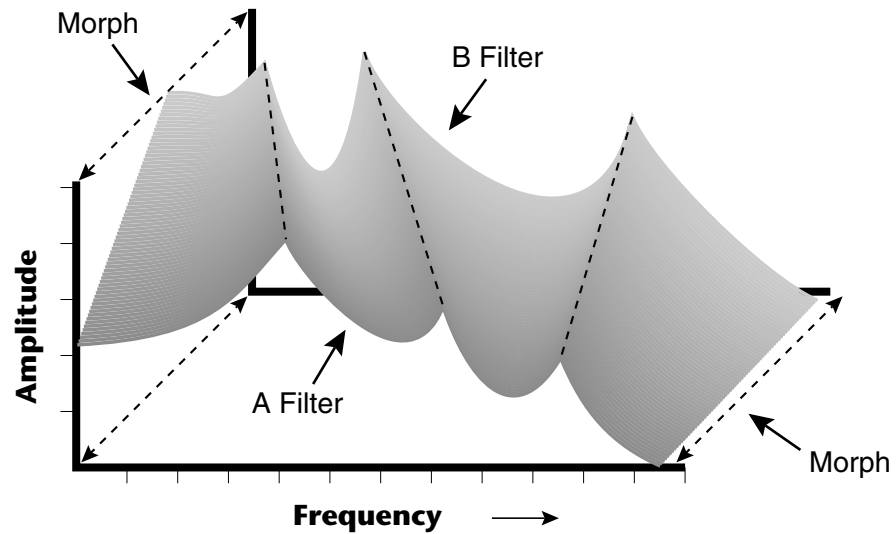
The Z-plane filter has the unique ability to change its function over time.

Filters A and B represent two different complex filters or "frames." Changing a single parameter, the Morph, changes many complex filter parameters simultaneously. Following along the Morph axis you can see that the filter response smoothly interpolates between the two filters. This is the essence of the Z-plane filter. Through the use of interpolation, many complex parameters are condensed into one manageable entity.

Consider, as an example, the human vocal tract, which is a type of complex filter or resonator. There are dozens of different muscles controlling the shape of the vocal tract. When speaking, however, we don't think of the muscles, we just remember how it feels to form the vowels. A vowel is really a configuration of many muscles, but we consider it a single object. In changing from one vowel to another, we don't need to consider the frequencies of the resonant peaks. You remember the shape of your mouth for each sound and interpolate between them.

This Z-plane filter sweep can be controlled by an envelope generator, an LFO, modulation wheels or pedals, keyboard velocity, key pressure, and so on. In fact, any of the modulation sources can control the Z-plane filter.

Because creating the complex filtering is difficult and very time consuming, we have created 50 different filters and installed them permanently in ROM for your use. You simply select and use the filters in a manner similar to choosing an instrument. Because there are so many types of instruments and filters to choose from, the number of possible permutations is staggering.

Signal Flow

Going back to the Signal Path diagram for a single channel we can reexamine the complete signal path.
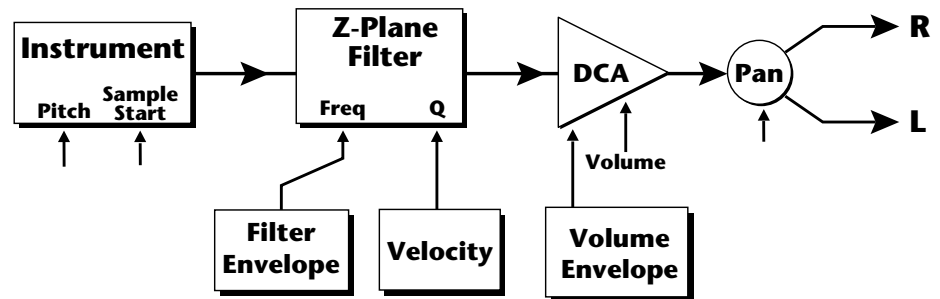
Instrument

This is the sampled sound wave. The pitch of the instrument can be modulated by any modulation source. The sample start point can be changed only at the time the note is played.

Z-Plane Filter

The Z-Plane Filter is used to shape the harmonic content of an instrument. The filter envelope is commonly used to shape the harmonic content dynamically over time but the filter frequency can be modulated by any source. The Q parameter can be modulated only at note-on time. There are 50 types of filters available. See "XL-7 Filter Types" on page 202 for a complete list of the filters.

Digitally Controlled Amplifier (DCA)

Together with the Volume Envelope, the DCA is used to shape the volume contour of a sound. The DCA can be controlled by any modulation source. Velocity is often used as a modulation source for the DCA so that the harder you play, the louder the sound becomes.

Pan

Adjusts the balance of sound to the left and right channels. Pan can be modulated by any modulation source.

MIDI Channels & Real-time Controls

The MIDI real-time controllers may seem confusing at first, but they are really very simple once you understand them. You already know that there are 16 MIDI channels per MIDI cable. Each MIDI channel uses three basic types of messages; note on/off, preset changes, and continuous controller messages. The rubber keypads, in addition to telling XL-7 which note was played, can also send real-time control information, which simply means control occurring in real-time or "live." Real-time control sources include such things as controller knobs, pitch wheels or touchstrips, modulation wheels, control pedals and aftertouch. These are used to add more expression or control.

The front panel control knobs send out real-time controller information on separate continuous controller numbers. There is a set of 32 continuous controller numbers for each MIDI channel. Some continuous controllers, such as modulation wheel, volume, and pan have standardized numbers. For example, volume is usually sent on continuous controller #7. The front panel controller knobs on are pre-programmed to control the XL-7.

✎ *The following MIDI controls are automatically routed in XL-7:*

Pitch Wheel	*pwh*
Modulation Wheel	*01*
Aftertouch	*03*
Pedal	*04*
Volume	*07*
Pan	*10*
Expression	*11*
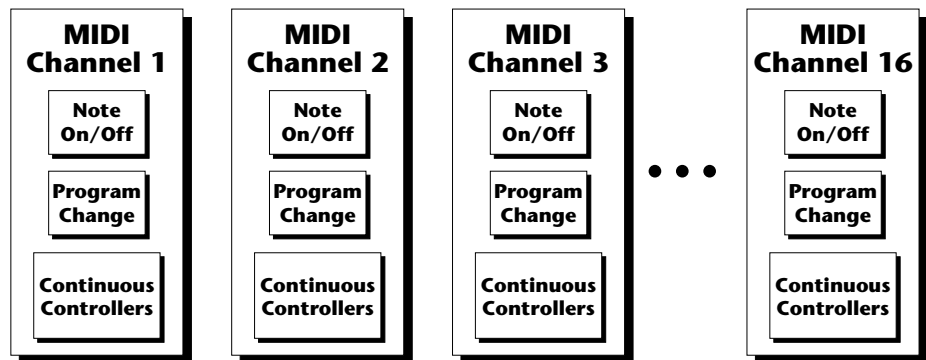
Any MIDI controller can be routed to any modulation destination. First, you have to know which controller numbers your keyboard transmits. Most modern MIDI keyboards let you select a controller number for each control on the keyboard. For example, it may let you select a number from 0-31 for the data slider. The realtime controller numbers that the keyboard transmits must match the numbers XL-7 is receiving, otherwise nothing will happen when you move the controls.

Suppose you wanted to send the four data sliders on your master keyboard. XL-7 can handle up to 16 MIDI controllers (A-P) of your choosing. "MIDI A-P" are simply names for the internal connections that link external MIDI continuous controllers to the PatchCord section of XL-7. There are two parts to the connection. First, MIDI controller numbers are assigned to the letters A-P in the Controllers menu. Next, the letters A-P are connected to synthesizer control parameters in the PatchCord section of the Preset Edit menu. The PatchCord Amount scales the amount of each controller by a positive or negative value.

The factory presets have the MIDI A-P controls connected to standard synthesizer functions (marked on the front panel). By choosing any four of

the 16 standard functions, the four sliders on your keyboard will work the same on every preset. The chart below shows how this might work if your keyboard transmitted the slider settings on MIDI controllers 21-24.

Control	MIDI Controller #	Routing	Standard Function
Slider 1	74	A	Controls Filter Frequency
Slider 2	71	B	Controls Filter Resonance
Slider 3	25	C	Controls Filter Attack
Slider 4	26	D	Controls Filter Decay
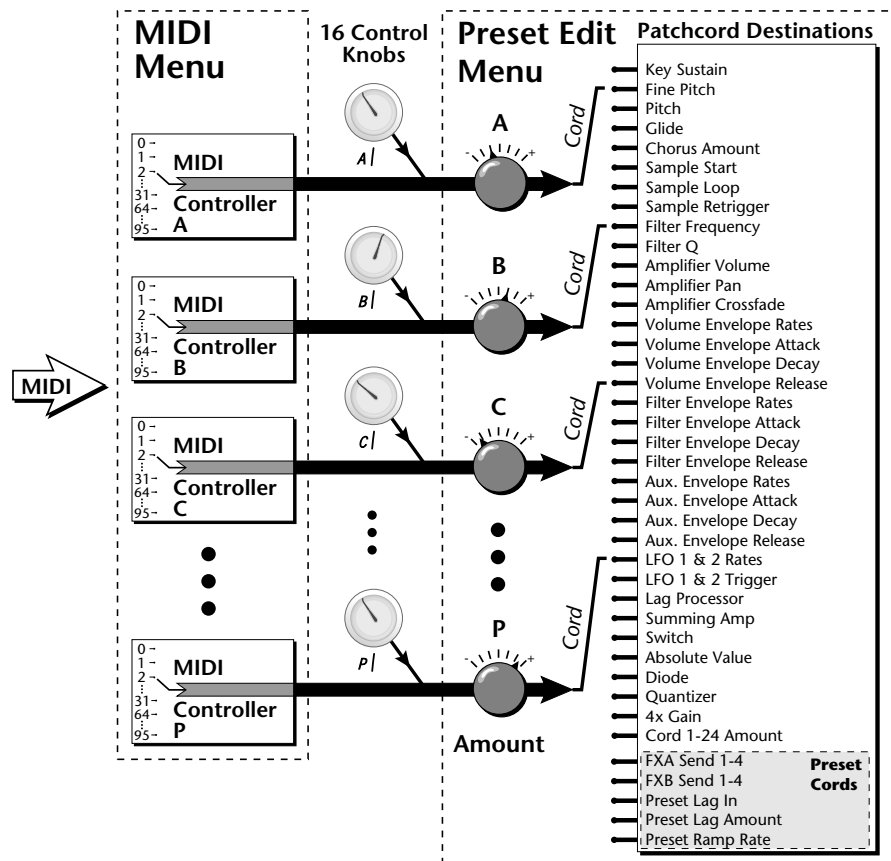
MIDI A-P are internal connections which simultaneously carry front panel controller knob data and MIDI continuous controller data.

The 16 controller knobs on the XL-7 front panel work just like MIDI real-time controllers. The four controller knobs are permanently assigned to controllers A-P. The front panel knob (A-P) and incoming MIDI controller messages assigned to that letter, both control the same parameter that you select in the PatchCord screen.

Bank Select Commands

When the original MIDI specification was developed, no synthesizer had more than 40 preset locations. At that time being able to select up to 128 presets didn't seem like much of a limitation. So it was that the original MIDI specification provided for the selection of up to 128 presets.

Musicians wanted *MORE* presets and so the MIDI specification was later amended to include **Bank Select Commands**. It was decided that Bank Select Commands would use Continuous Controllers 0 and 32 to allow the selection of up to 16,384 banks of 128 presets (over two million presets).

Because Bank Selects are implemented using Continuous Controllers, the Bank Selections can be made *per channel*. (This is getting better and better.) For each MIDI channel, you can select any of 16,384 banks and then one of the 128 presets in the bank. Of course no synthesizer has 16,384 banks (yet), but hey, it's nice to know it's possible (for that really BIG project).

Continuous Controller (CC) 0 is the MSB (most significant byte) and CC 32 is the LSB (least significant byte). Normally you send both the MSB and LSB controllers to implement a bank change.

✎ *When you press the Audition button, the Bank Select MSB and LSB are displayed on the top line of the display.*

XL-7 remembers the MSB and the LSB that were last sent (or last changed from the front panel). For example, if you have already set the Bank MSB to 04, you need only send the LSB to change banks within the XL-7 sound set. See the MIDI Bank Select chart below.

The selected bank remains selected until you change it (either via MIDI or by changing the bank from the front panel). Standard MIDI Program Change commands select from 128 presets within the selected bank.

MIDI BANK SELECT	MSB cc00	LSB cc32	
USER	00	00	Bank 0
USER	00	01	Bank 1
USER	00	02	Bank 2
USER	00	03	Bank 3
XL-7	14	00	Bank 0
XL-7	14	01	Bank 1
XL-7	14	02	Bank 2
XL-7	14	03	Bank 3

Stereo Mix Outputs

This feature is useful for adding signal processing (EQ, reverb, etc.) of individual sounds prior to final mixdown.

The routing can be performed according to MIDI channel from the Mix Output screen in the Global menu. Simply assign each channel to the desired output.

Global Menu

```
MIX OUTPUT
channel  01: Send 2
```

To route a particular preset to a Send, first go to the Mix Output screen in the Global menu and set the MIDI channel to "Preset".

Global Menu

```
MIX OUTPUT
channel  01: Preset
```

Next set the Mix Output routing in the preset to the desired output (for each layer). Yes, you can send each layer to a different send if you want.

Preset Edit Menu

```
L1  MIX OUTPUT
Send 2
```

By sending different amounts of presets to the effects, subtle or striking effects can be achieved using the two effect processors. This feature allows you to get the most out of two effects since you can have eight different mixes.

For more information, refer to the diagram on the following page or, *See "Mix Output" on page 134.*
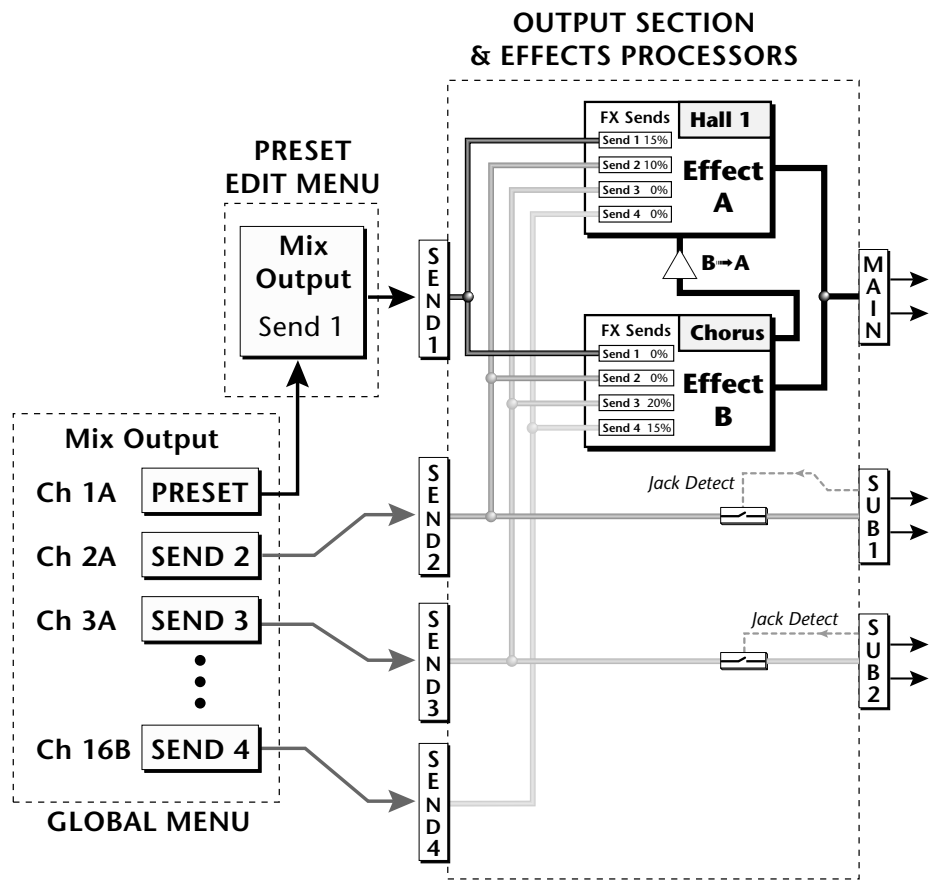
The Mix Output screen in the **Global** menu assigns each MIDI channel to a Send (1-4) or to "Preset".

The Mix Output screen in the **Preset Edit** menu is ONLY used if the Global Mix Output is set to "Preset". Otherwise the Preset Edit menu Mix Output settings are ignored.

Preset Edit Menu

The Preset Edit Menu contains four layers of preset parameters that you can modify and then save as preset information in one of the user preset locations. There are four instrument layers in the Preset Edit menu. See the illustration on page 184 for a description of the Preset Layer model.

▶ To Access the Preset Edit Menu
Press the Preset Edit button, lighting the LED. The Preset Edit Menu screen displays the menu page most recently selected since powering up XL-7. The cursor appears below the first character of the screen heading on line one.

▶ To Scroll through Layers
Place the cursor below the layer field. Rotate the data entry control to select a layer (1-4).

You can also select **All Layers** by choosing "A" in the layer field. When All Layers is selected, the existing parameter value for any field will be displayed if the values of all four layers are equal. If the values of all four layers are NOT equal, the value of layer 1 will be displayed with flashing characters. If you change the parameter value, all layers will assume the new value and the display will stop flashing.

▶ To Scroll through Pages
Whenever you are in the Preset Edit menu, the sixteen command buttons function as "jump" buttons to various screens in the Preset Edit menu, which are labelled below each button. Pressing a jump button instantly takes you to the first screen in the selected category. Pressing the button again takes you to the second screen in the category and so on. Repeated pressing will rotate you back to the first screen in the category.

You can also change pages by placing the cursor below the page title field. This will automatically be done when you press the Home/Enter button. Rotate the data entry control to scroll through the pages.

▶ To Change a Parameter
Place the cursor below the parameter field. Rotate the data entry control to change the parameter value.

Preset Name

The Preset names consists of two parts: a 3 letter preset category and a 12 letter preset name. Position the cursor under the character location and use the data entry control to change the character.

The preset category is used in conjunction with the Sound Navigator feature. Using the Sound Navigator, a category is selected and the presets in that category are listed in alphabetical order. Creating categories makes it easier to find specific sounds when you need them. For more information on Sound Navigator, see Sound Navigator in Chapter 2: Operations.

✎ *You can also select characters using the keypads or MIDI keyboard.*

```
PRESET NAME
000¹  syn: VOSIM-Voc
```

Four Layer Architecture

XL-7 provides a 4 layer instrument structure. Each layer is a complete synthesizer voice with 50 filter types, over 64 modulation sources, more than 64 modulation destinations and 24 patchcords to connect everything together. In addition, the four layers can be crossfaded or switched by key position, velocity or any real-time modulation source.
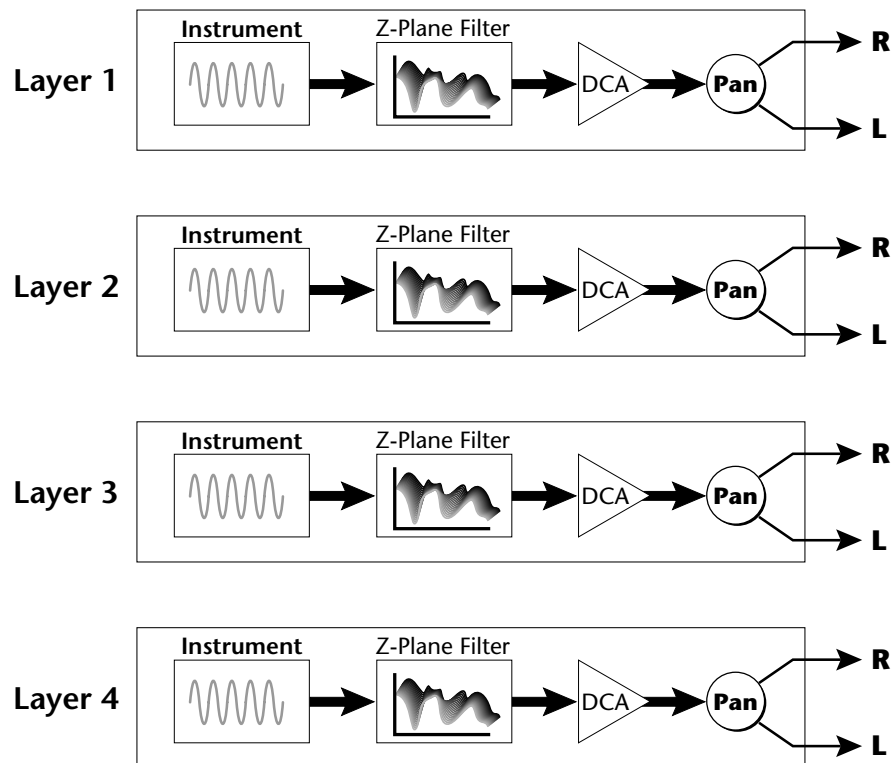
Selecting Layers

In most of the Preset Edit screens, the selected layer is shown in the upper left corner of the display. Layers 1-4 or All can be selected by positioning the cursor on this field and using the data entry control to change the layer. In the screen shown below, Layer 1 is selected.

```
 L1  INSTRUMENT          ROM:XL-7
 0305  bas:Moog Sub
```
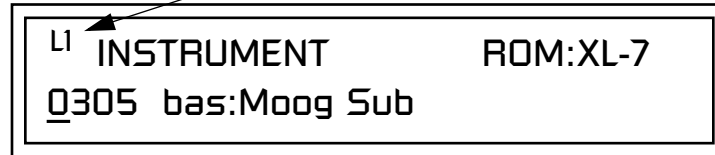
When "All Layers" (A) is selected, the existing parameter value for any field will be displayed if all layers are equal. If the layer parameter values are NOT equal, the value of Layer 1 will be displayed with flashing characters. If you move the data entry control all values will be equal to this new value and the parameter value will no longer flash.

Defining Layer Parameters

The Preset Edit menu parameters define the four layers and include the instrument assigned to the layer, the ranges of the layer, tuning, envelopes, filters, and patch cords. These parameters are defined for each layer on an individual basis (based on the currently selected layer). See "Common Preset Parameters" on page 215 for global preset settings.

Selecting an Instrument

The Instrument parameter defines which of the available instrument sounds is played by the current layer.

ROM SIMM Name

```
L1  INSTRUMENT          ROM: XL-7
0078 bas : Booty Q 2
```

Instrument Category   *Instrument Name*
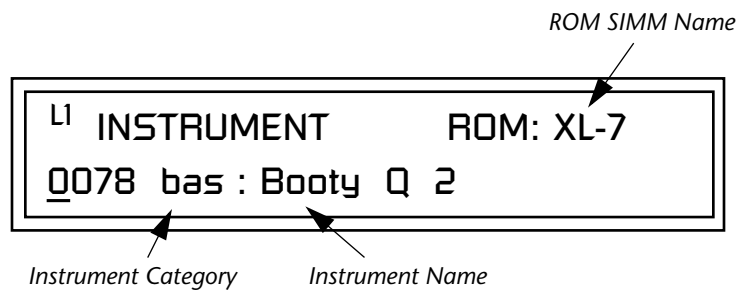
To select an instrument for the selected layer(s), move the cursor to the bottom line of the display and change the instrument using the data entry control.

Sound Navigator

Sound Navigator also works to help select Instruments although the category names are predefined. When the cursor is on the Instrument Category field, turning the data entry control selects different instrument categories. The Name Field will change to show the first instrument in each category. Move the cursor to the instrument name to select instruments in the selected category.

```
L1  INSTRUMENT          ROM: XL-7
0078 bas : Booty Q 2
```
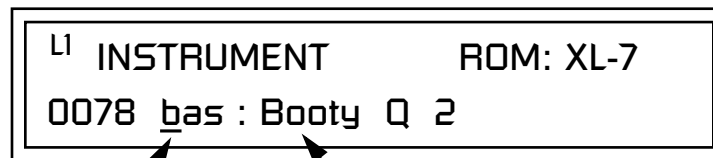
1. Choose Category

2. Scroll through Instruments

Selecting Categories of Instruments using Sound Navigator.

Defining Key Range

The Key parameter defines the range on the keyboard used by the current layer. The Key range is from C-2 through G8.
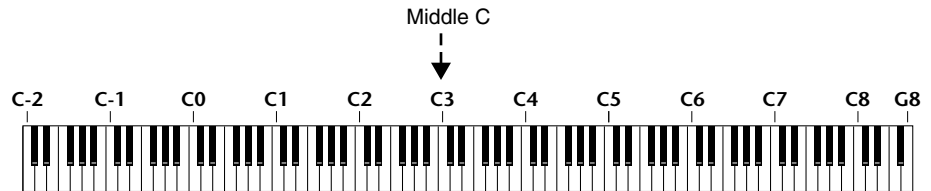
To define the range, set the low key value and the high key value.

You can select key numbers by simply pressing the desired keyboard key when the cursor is positioned on the low or high key field in the display.
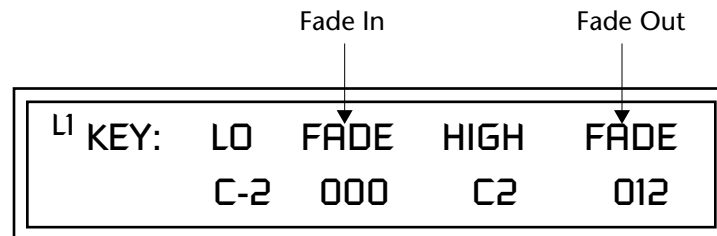
Layers can be crossfaded according to key position by adjusting the Low and High Fade parameters. The first Fade field determines how many semitones it takes the layer to Fade In from the low key. The second Fade field determines how many semitones it takes the layer to Fade Out to the high key. The screen shot above and the diagram below show Layer 1 being faded out over a one octave range.
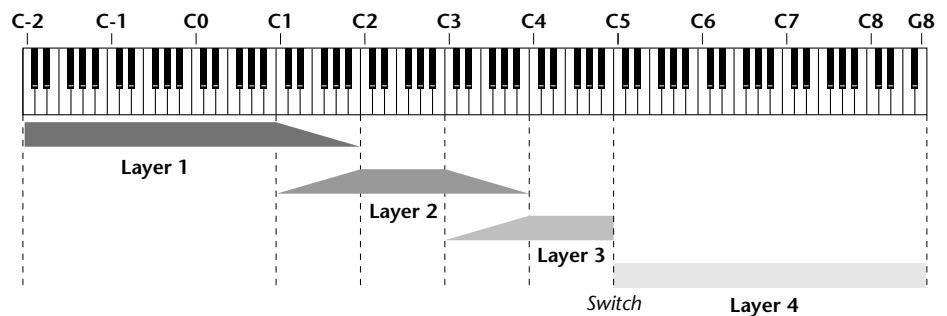
With a High Fade value of zero (as in layer 3 of the diagram), the layer simply switches off at the high key.

▶ **To Switch Layers According to Key Position**
The Key Range parameter allows you to create a "split" keyboard with up to four sounds adjacent to each other on the keyboard. This is shown in the diagram below.
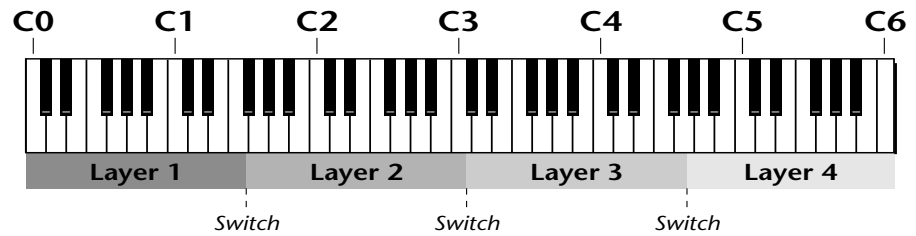
Just assign the low and high key range for each of the four layers with Fade set to zero. Set the Low and High Keys so they don't overlap other layers.

✎ You can select key numbers by simply pressing the desired keyboard key when the cursor is positioned on the low or high key field n the display.

```
L1 KEY:    LO     FADE     HIGH     FADE
           C0      000      F1      000
```

```
L2 KEY:    LO     FADE     HIGH     FADE
           F#1     000      C3      000
```

```
L3 KEY:    LO     FADE     HIGH     FADE
           C#3     000      F#4     000
```

```
L4 KEY:    LO     FADE     HIGH     FADE
           G4      000      C6      000
```

If two layers do overlap, both will play as shown in the next example.

▶ **To Stack Layers**

If the ranges of two or more Layers overlap it is called *stacking layers*. All Layers assigned to a key sound when the key is played. This is shown in the following diagram. It's very easy to stack layers. Simply duplicate the key ranges for any layers you want to stack.
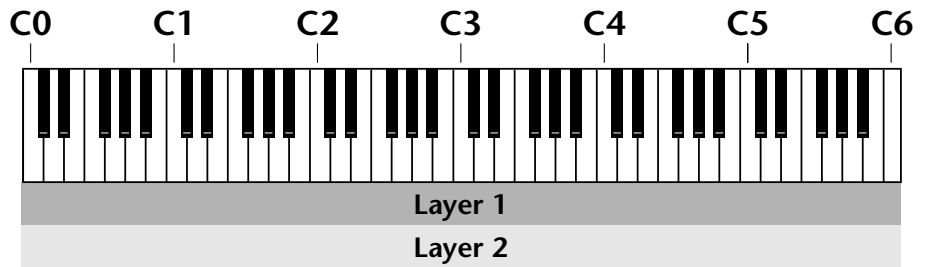

```
 L1  KEY:   LO      FADE     HIGH     FADE
            C0       000      C6       000
```

```
 L2  KEY:   LO      FADE     HIGH     FADE
            C0       000      C6       000
```

Defining the Velocity Crossfade Range

Velocity is a measure of how hard the key is pressed. Velocity Range lets you control the volume of the layers using velocity. Using this function you can crossfade or cross-switch between layers according to how hard you play the keyboard.

Set the velocity range of the layer by defining the high and low velocity values. Values range from 0 (off) to 127 (hardest).

```
 L2  VEL:   LO      FADE     HIGH     FADE
            36       012      96       012
```

The Fade fields define the velocity crossfade range for the currently selected layer. The first Fade field defines the Fade In range for the low velocity value. The second defines the Fade Out range for the high velocity value.

0	Velocity	127

Layer 1	Layer 2	Layer 3	Layer 4

Fade	Fade	Switch
36	96	
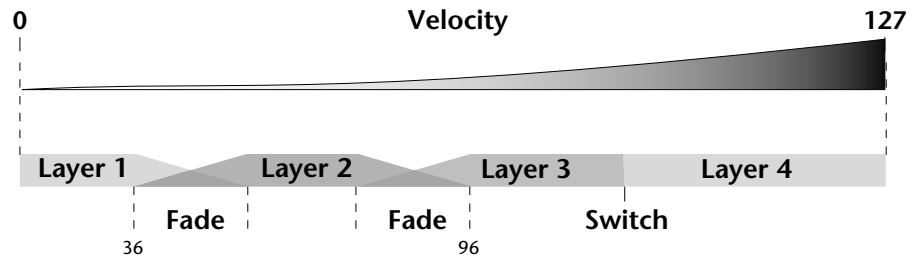
With soft playing, Layer 1 sounds. As you play harder, Layer 1 gradually fades out and Layer 2 fades in. When the keyboard is played hard, Layer 3 plays.

▶ To Set Up a Velocity Crossfade Between Layers

Set the velocity fades so that layer 1 fades out with higher key velocity, while layer 2 fades in. At a velocity of 64, the two sounds are equal volume. You may want to adjust the fade in and fade out points to achieve a natural sounding crossfade. These parameters vary depending on the sounds.

0	Increasing Velocity ⟶	127

Layer 1		Layer 2
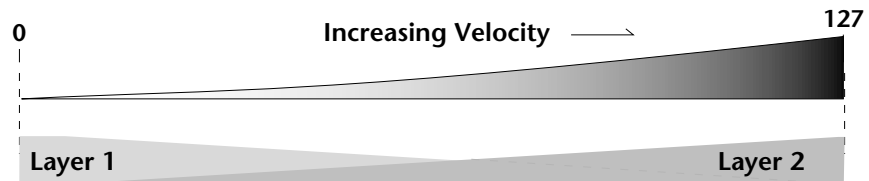
```
L1 VEL:   LO     FADE     HIGH     FADE
          000     000      127      127
```

```
L2 VEL:   LO     FADE     HIGH     FADE
          000     127      127      000
```

Defining the Real-time Crossfade Range

The Real-time Crossfade window lets you control the volume of the four layers using a real-time controller such as a front panel knob, a pedal or an LFO or Envelope generator. The controller is defined by the PatchCord parameter (see "PatchCords" on page 211).

The Fade fields define the crossfade range in velocity for the currently selected layer. The first Fade field defines the Fade In amount for the low Real-time Control value. The second defines the Fade Out amount for the high Real-time Control value. The Fade value range is from 0 to 127.

0	Realtime Control Value	127

Layer 1	Layer 2	Layer 3	Layer 4
Fade	Fade	Switch	
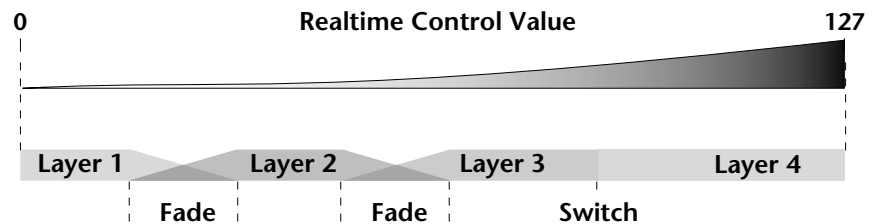
After the Ranges and Fades have been adjusted for each layer in the Real-time Crossfade screen, you must assign a real-time controller to RTXfade (Real-time Crossfade) **on each Layer** in the PatchCord screen. Set the PatchCord Amounts to +100.

▶ To Set Up a Real-time Crossfade Between Two Layers
As the real-time control (knob, pedal, LFO, etc.) is increased, Layer 1 fades out as Layer 2 fades in. This example only uses two of the possible four layers. Refer to the screen diagrams below.

```
L1 RT:  LO    FADE    HIGH    FADE
        000    000     127     127
```

```
L2 RT:  LO    FADE    HIGH    FADE
        000    127     127     000
```

1. **Select a prese**t.
2. Press the **Preset Edit** button to access the Preset Edit menu.
3. Go to the **Instrument** page and select instruments for Layers 1 and 2.

4. Press **Enter**, then use the data entry control to advance to the **Real-time Crossfade** page.

5. Define the High and Low range of each Layer. In this example the entire range of 0-127 is used.

6. Define the Fades for each Layer. This is just an initial setting. The Range and Fade parameters may have to be adjusted later to get a smooth crossfade.

7. Press **Home/Enter** and use the data entry control to advance to the **PatchCord** page. Select Layer 1.

8. Select the modulation source for the crossfade (knob, pedal, LFO, Envelope) and set the destination to RTXfade. Set the Cord Amount to +100.

9. **Select Layer 2**. Select the same source and destination for the crossfade and set the Cord Amount to +127.

```
 L1 PATCHCORD                    #01

MidiA     ->     RTXfade         +100
```

10. **Play the keyboard** while adjusting the real-time controller. Go back to the Real-time Crossfade screens to fine tune the crossfade if necessary. Decreasing the fade size will narrow the region where both layers are sounding.

▶ **To Randomly Cross-Switch Between Four Layers**
In certain situations, you may want to switch between several layers randomly. **Crossfade Random** is a modulation source specifically designed to handle this situation. Unlike the other random sources, Crossfade Random generates one random number for all layers each time a key is pressed.

To set up a four layer Cross-Switch, simply assign each of the four layers to a different Real-time Crossfade range, then assign XfdRnd to RTXfade in the PatchCords for each layer.

Realtime Control Value

0	16	32	48	64	80	96	112	127

Layer 1	Layer 2	Layer 3	Layer 4

Switch   Switch   Switch
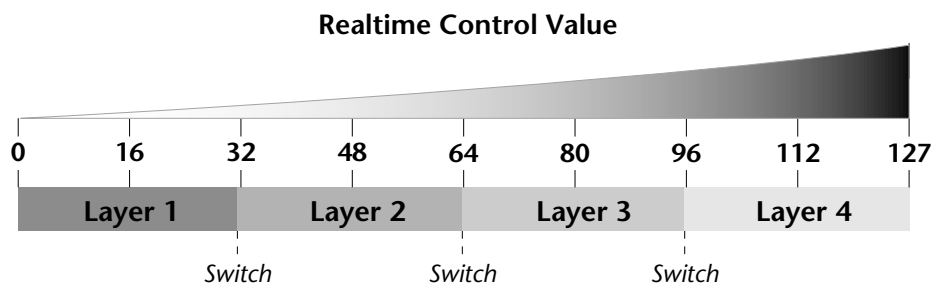
1. Press the **Preset Edit** button to access the Preset Edit menu.

2. Go to the **Instrument** screen and select Instruments for Layers 1 through 4.

3. Press **Enter**, then use the data entry control to advance to the **Real-time Crossfade** page.

```
┌─────────────────────────────────────────────┐
│ L1  RT:  LO    FADE    HIGH    FADE          │
│          000    000    031     000           │
└─────────────────────────────────────────────┘
```

```
┌─────────────────────────────────────────────┐
│ L2  RT:  LO    FADE    HIGH    FADE          │
│          032    000    063     000           │
└─────────────────────────────────────────────┘
```

```
┌─────────────────────────────────────────────┐
│ L3  RT:  LO    FADE    HIGH    FADE          │
│          064    000    095     000           │
└─────────────────────────────────────────────┘
```

```
┌─────────────────────────────────────────────┐
│ L4  RT:  LO    FADE    HIGH    FADE          │
│          096    000    127     000           │
└─────────────────────────────────────────────┘
```

4. Define the High and Low range of each Layer as shown above.

5. Press **Home/Enter** and use the data entry control to advance to the **PatchCord** page. Select Layer 1.

6. Select **XfdRnd** as the modulation source and **RTXfade** as the destination. Set the **Cord Amount to +100**.

7. Repeat step 6 for the remaining three layers.

```
┌─────────────────────────────────────────┐
│  ᴸ¹ PATCHCORD                        #01 │
│                                          │
│  XfdRand   ->   RTXfade             +100 │
└─────────────────────────────────────────┘
```

8. That's it! Now set each Layer up the way you want. Try radically different instruments, filter settings, or tunings. Or you can make each layer just slightly different for a more natural effect. Try adjusting the Fades or overlapping the ranges if you want more than one layer to play at once.

Transposing the Instrument

The Transpose parameter lets you transpose the key of the current layer's Instrument. Transpose works by shifting the keyboard position in semitone intervals relative to middle C. Use this parameter to transpose different layers apart by semitone intervals. For example, by transposing one layer by +7 semitones, it will track other layers at a perfect fifth interval.
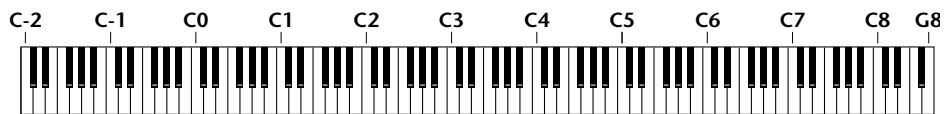
The range of transposition is -36 to +36 semitones.

```
┌─────────────────────────────────────────┐
│  ᴸ¹ TRANSPOSE                            │
│                                          │
│  +36 semitones                           │
└─────────────────────────────────────────┘
```

Tuning

The Tuning parameter changes the pitch of the key in semitone and 1/64 semitone intervals.

```
┌─────────────────────────────────────────┐
│ L1 TUNING                                │
│                                          │
│ Coarse:    +36        Fine:     +63      │
└─────────────────────────────────────────┘
```

Use the Coarse field to shift the tuning by semitone intervals. Use the Fine field to shift tuning by 1/64 semitones (or 1.56 cents) intervals.

Background: Transpose vs. Coarse Tuning
Transpose works by shifting the keyboard assignment of the Instrument (as if you were sliding the keyboard up and down with the Instrument remaining in the same position). Coarse Tuning keeps the instrument placement on the keyboard and actually tunes the samples up using a digital process called interpolation. Use Course Tuning on drum instruments to change the pitch while keeping sample placement constant. Coarse Tuning can also be useful to slightly change the timbre of the instrument.

Amplifier

This parameter sets the initial volume and pan position of the current layer. These values can be changed using any Real-time Controller set up in the PatchCords. The value range for the volume is from -96 dB to +10 dB. 0 dB is the default setting. Routinely turning the volume up to +10 dB is not recommended because it doesn't allow other modulation sources to increase the volume further.

```
┌─────────────────────────────────────────┐
│ L1 AMPLIFIER                             │
│                                          │
│ Volume:  +10dB          Pan:  48L        │
└─────────────────────────────────────────┘
```

This field determines the initial Pan value for the current layer. The value range for Pan is from 64L to 0 (left) and 0 to 63R (right). Pan adjusts the volume into the left and right output channels relative to the Pan setting in the main Preset Select screen (see "Channel Pan" on page 46). So, if you, for example, set the Pan value in the Preset Select screen to 64L and set this Pan value to 63R, the actual pan amount would be 0 as these two pan parameters are relative to each other.

Volume Envelope

An envelope can be described as a "contour" which is used to shape the sound over time. The *Volume Envelope* controls the volume of the sound in the current layer over time. The way the volume of a sound evolves has a profound effect on how we perceive the sound.

Each instrument has its own Factory preset Volume Envelope setting. The Volume Envelope allows you to program your own envelope settings.

Selecting the Mode
The Mode field determines whether the layer will use the instrument's default envelope (Factory) or use the user-programmed Volume Envelope. There are three mode options and repeat.

- **Factory**: Uses the factory preset envelope contained in each instrument. If you select the "Factory" mode, the Volume Envelope parameters are disabled and the factory defined settings are used instead.

Factory Mode is useful for Instruments containing multiple drums, since each drum can have its own envelope settings.

A factory drum kit envelope actually contains a separate envelope for every voice on every key instead of a single global envelope.

```
ᴸ¹ VOLUME ENVELOPE

Mode:  factory
```
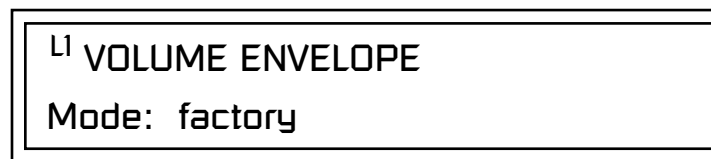
- **Time-based**: Defines the Volume Envelope rates from 0 to 127 (approximately 1 ms to 160 seconds). The Master clock has no affect on time-based rates.
- **Tempo-based**: The Volume Envelope times vary based on the master tempo setting. Note values are displayed instead of a number when the time corresponds to an exact note value. Tempo-based envelopes are useful when using external sequencers and arpeggiators because the envelope rates compress and expand according to the Master Tempo setting, keeping the envelopes in sync with the sequence or arpeggio.

If two adjacent segments have the same level in a "time-based" envelope, the segment will be skipped. Adjacent segments must have different levels for the rate control to work.

Tempo-Based Envelopes

■ = Initial Setting
▨ = Increase Master Tempo
▨ = Decrease Master Tempo
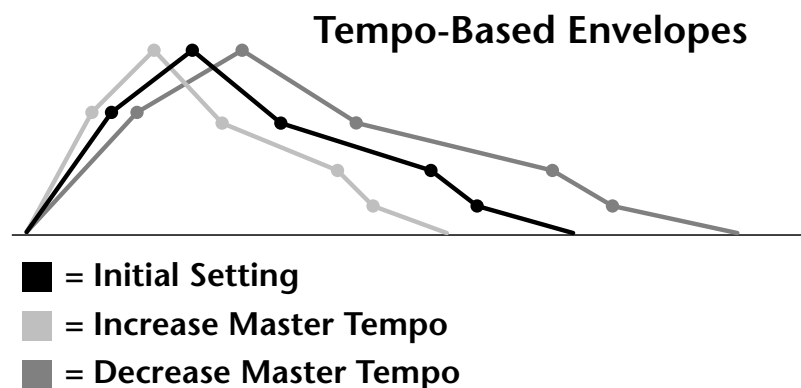
Tempo-based envelope rates change according to the Master Tempo rate.

See the Programming Basics section of this manual for detailed information about how the Envelopes work.

Defining the Volume Envelope

The Volume Envelope controls the volume of the layer over time. The Volume Envelope has six stages to the contour: Attack 1, Attack 2, Decay 1, Decay 2, Release 1 and Release 2. When a key is pressed, the Envelope goes through the first four stages. If you continue to hold down the key, the envelope holds at the Decay 2 level. When the key is released, the envelope continues through the Release stages ending at the Release 2 level.

```
L1  VOL ENV        RATE        LEVEL

    A̲ttack 1        84         100%
```

As soon as the Attack 1 level is reached, the Attack 2 phase begins. When the Attack 2 Level is reached, the Decay 1 phase begins. When the key is released, the envelope immediately jumps to the Release 1 stage, then the Release 2 stage finally ending at the Release 2 level.

If you have selected the factory mode, the Volume Envelope parameter screen looks like the following illustration.

```
L1  VOL ENV        RATE        LEVEL

    (using factory envelope)
```

If the Release 2 level is set at a value other than zero, the note will continue to sound after the key is released. This might be useful for drone effects, but the channel won't stop sounding until all channels are used up.
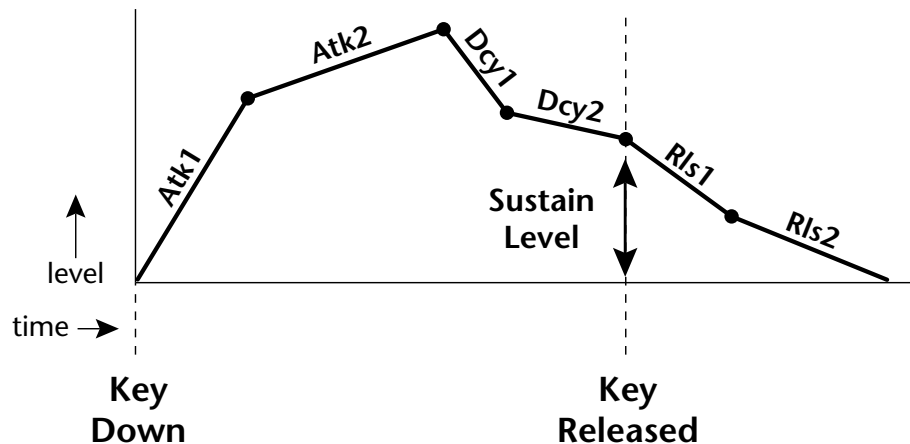
On the Volume Envelope, levels can only be set to positive values. The value range is from 0 to +100.

Chorusing the Layer

👓 *WARNING: Because it works by doubling instruments, Chorusing halves the number of notes you can play.*

Chorusing "thickens" the sound by doubling the sound in stereo and then detuning it. Every layer with chorus turned on uses twice the polyphony for that layer.

```
L1 CHORUS                  WIDTH
   off                      100%
```

The first field in this screen turns Chorus On or Off and allows you to adjust the amount of detuning (1 to 100%). The *Width* parameter controls the stereo spread. 0% reduces the chorus to mono and 100% provides the most stereo separation.

Sound Start Offset and Delay

Sound Start sets where the instrument begins playing when you hit a key. Setting the Start Offset amount to "0" plays the sample from the beginning. Higher values move the Sample Start Point further into the sample toward the end. There is also a PatchCord source which can be used to change the Sound Start point at note-on time.

```
L1  SOUND      START       DELAY
               127          127
```


Sample Start →
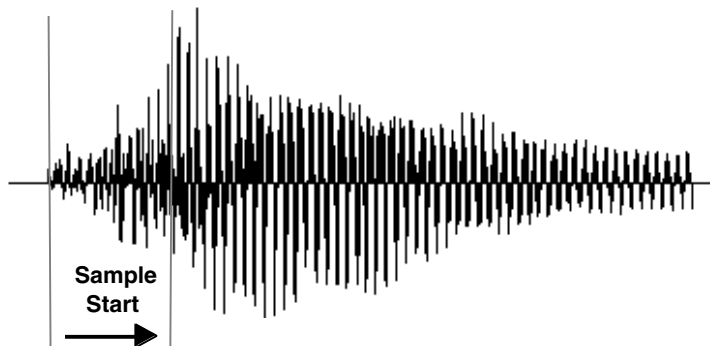
Controlling the Sound Start using Key Velocity (< Amt -) brings in the attack of the wave only when you play hard. This is especially effective with percussion instruments.

Delay defines the time between when you hit a key (note-on) and the onset of the current layer's note and the start of the envelopes (if applicable). Delay values below zero are *Tempo-based* values, meaning the time is based on the Master Tempo setting. Note values are displayed by adjusting the Delay Time value below zero. The sound will be delayed by the selected note value based on the master clock.

Non-Transpose Mode

This function turns keyboard transposition On or Off for the current layer. With Nontranspose "on," the keyboard will not control the pitch of the instrument. This is a useful function for drones, attack "chiffs," or other sound effects which you may not want to track the keyboard.

```
 L1   NONTRANSPOSE
off
```

Solo Mode

Provides the playing action of a monophonic instrument such as a lead synthesizer by preventing more than one note from sounding at once. There are eight different solo modes provided. Try setting up different layers with different solo mode and glide rates or combine solo mode with polyphonic playing modes.

```
 L1   SOLO MODE
synth (low)
```
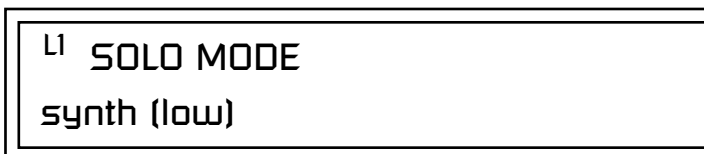
✎ *In order to define a monophonic glide (see the Portamento parameter), you must be in Solo mode.*

The Solo modes are:

Multiple Trigger: Last note priority. No key-up action. Retriggers envelopes and samples when a key is pressed.

Melody (last): Last note priority. No key-up action.

  First solo note: Envelopes start at Attack segment from zero. Samples start at the beginning.

  If previous note is releasing: Envelopes start at Attack segment, but from current level. Samples start at the beginning.

  When playing "Legato": Envelopes continue from current segment and level. Samples start at the loop or the beginning if unlooped.

Melody (low): Same as Melody (last), but with low note priority. Newly played keys which are higher than the lowest solo key held do not sound.

Melody (high): Same as Melody (last), but with high note priority. Newly played keys which are lower than the highest solo key held do not sound.

Synth (last): Similar to Melody (last) but this mode has key-up action. When you release the currently sounding solo key while holding other keys down, the highest held solo key sounds in a Legato fashion.

Synth (low): Same as Synth (last) but with low note priority. When you release the currently sounding solo key while holding other keys down, the lowest held solo key sounds in a Legato fashion (MiniMoog).

Synth (high): Same as Synth (last) but with high note priority. When you release the currently sounding solo key while holding other keys down, the highest held solo key sounds in a Legato fashion.

Fingered Glide: Same as Synth (last), except that Glide is disabled when playing Staccato, enabled when playing Legato.

Assign Group

Use the Assign Group parameter to assign a certain number of channels to each layer. By assigning all voices in the preset to assign groups, important parts are protected from being "stolen" by more recently played keys. Or you can assign a voice, such as an open high hat, to a mono channel so it is cancelled by a closed high hat on the same mono channel. Layers rotate within their assigned "bin" of channels, not interfering with other bins.

```
L1  ASSIGN GROUP
poly all
```

The modes are:

Poly All: Notes are played polyphonically with dynamic channel assignment using all 64 channels.

Poly 16 A-B: Two bins of 16 channels each. Notes are played polyphonically with dynamic channel assignment using no more than 16 channels.

Poly 8 A-D: Four bins of 8 channels each. Notes are played polyphonically with dynamic channel assignment using no more than 8 channels each.

Poly 4 A-D: Four bins of 4 channels each. Notes are played polyphonically with dynamic channel assignment using no more than 4 channels each.

Poly 2 A-D: Four bins of 2 channels each. Notes are played polyphonically with dynamic channel assignment using no more than 2 channels each.

Mono A-I: Nine monophonic channels. Any layers assigned to the same letter interrupt each other without affecting other layers.

Glide

Glide creates a smooth transition from one note to the next instead of the normal instantaneous change in pitch when a new key is pressed. This effect is commonly heard on slide guitars, synthesizers and violins.

```
L1  GLIDE RATE              CURVE
    0.000 sec/oct           linear
```

The front panel **Glide Button** LED comes on when the any layer of the current preset has a glide rate greater than 0.000 seconds (regardless of if a PatchCord is connected or not). Pressing the button turns the LED and glide off. Pressing the front panel glide button when all layers are set to a glide of 0.000 turns glide on with a rate of 0.142 seconds/octave.

The **Glide Rate** parameter defines the time it takes to glide to the new pitch (the larger the value, the slower the glide rate) The glide rate value range is from 0 through 32.738 seconds (zero means off).

The **Glide Curve** describes how the glide accelerates as it slides between notes. Because of the ear's non-linear response to pitch, a linear glide sounds slow at the beginning and speeds up toward the end. Exponential curves actually sound smoother and more linear. Eight exponential curves are provided. Choose one that suits your style.
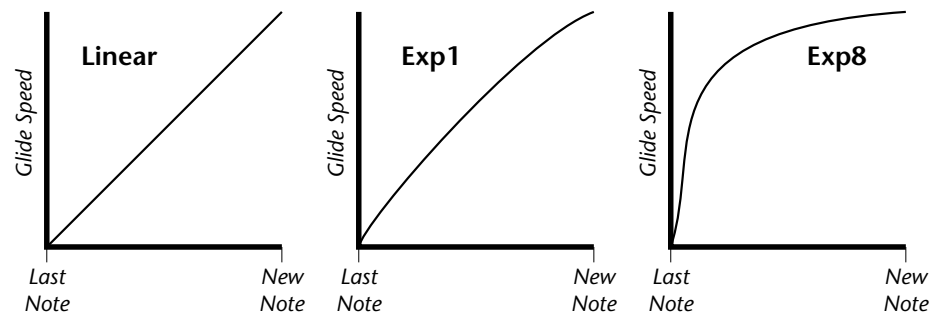
Glide can be either polyphonic or monophonic depending of the state of *Solo Mode*.

▶ **To Set up a Glide Rate Knob:**

1. Set at least one layer to the minimum setting of 0.002 sec/oct. (This forces the Glide LED to come on.)

2. Connect the MIDI controller of your choice to Glide Rate on the layers you'd like to glide. Adjust the Cord Amount for the desired range.

3. Disconnect the MIDI controller from whatever else it was connected to before you started mucking about.

4. The Glide button turns Glide on/off and the knob controls the rate.

Z-Plane Filters

A filter is a device which changes the output of a signal (sound) by removing certain elements of the signal based on the frequency and amplitude. The "Order" of a filter defines the number of filter elements it contains. The more elements, the more complex the filter.

XL-7 contains 50 different types of E-MU's celebrated Z-plane filters. In addition to the standard Low pass, High pass and Band pass filters, XL-7 contains Swept Octave Equalizers, Phasers, Flangers, Vocal Formant Filters, and digital models of classic synthesizer filters.

In the filter chart below you will notice that the "Order" of the filters varies from 2 to 12 order. Higher order filters have more sections and can produce more complex formants. XL-7 can produce 128 filters of up to 6th order or 64 filters of 12th order complexity. Therefore, if you decided to use all 12th order filters, XL-7 would be limited to 64 voices.

XL-7 Filter Types

This screen allows you to choose the type of filter for the current layer.

```
L1  FILTER          Ord       Type
    Phazer 2 E4     6         PHA
```

Filter Types

LPF	Low-pass filter
PHA	Phaser
HPF	High-pass filter
FLG	Flanger
BPF	Band-pass filter
VOW	Vowel/ formant
EQ+	EQ boost
EQ-	EQ cut
SFX	Special Effect

Filter Name	Order	Type	Description
Smooth	02	LPF	Typical OB type low-pass filter with a shallow 12 dB/octave slope.
Classic	04	LPF	4-pole low-pass filter, the standard filter on classic analog synths. 24 dB/octave rolloff.
Steeper	06	LPF	6-pole low-pass filter which has a steeper slope than a 4-pole low-pass filter. 36 dB/octave rolloff!
MegaSweepz	12	LPF	"Loud" LPF with a hard Q. Tweeters beware!
EarlyRizer	12	LPF	Classic analog sweeping with hot Q and Lo-end.
Millennium	12	LPF	Aggressive low-pass filter. Q gives you a variety of spiky tonal peaks.
KlubKlassik	12	LPF	Responsive low-pass filter sweep with a wide spectrum of Q sounds
BassBox-303	12	LPF	Pumped up lows with TB-like squelchy Q factor.
Shallow	02	HPF	2-pole high-pass filter. 12 dB/octave slope.
Deeper	04	HPF	Classic 4-pole high-pass filter. Cutoff sweep progressively cuts 4th Order High-pass.
Band-pass1	02	BPF	Band-pass filter with 6 dB/octave rolloff on either side of the passband and Q control.
Band-pass2	04	BPF	Band-pass filter with 12 dB/octave rolloff on either side of the passband and Q control.

Filter Name	Order	Type	Description
ContraBand	06	BPF	A novel band-pass filter where the frequency peaks and dips midway in the frequency range.
Swept1>1oct	06	EQ+	Parametric filter with 24 dB of boost or cut and a one octave bandwidth.
Swept2>1oct	06	EQ+	Parametric filter with 24 dB of boost or cut. The bandwidth of the filter is two octaves wide at the low end of the audio spectrum, gradually changing to one octave wide at the upper end.
Swept3>1oct	06	EQ+	Parametric filter with 24 dB of boost or cut. The bandwidth of the filter is three octaves wide at the low end of the audio spectrum, gradually changing to one octave wide at the upper end.
DJAlkaline	12	EQ+	Band accentuating filter, Q shifts "ring" frequency.
AceOfBass	12	EQ+	Bass-boost to bass-cut morph
TB-OrNot-TB	12	EQ+	Great Bassline "Processor."
BolandBass	12	EQ+	Constant bass boost with mid-tone Q control.
BassTracer	12	EQ+	Low Q boosts bass. Try sawtooth or square waveform with Q set to 115.
RogueHertz	12	EQ+	Bass with mid-range boost and smooth Q. Sweep cutoff with Q at 127.
RazorBlades	12	EQ-	Cuts a series of frequency bands. Q selects different bands.
RadioCraze	12	EQ-	Band limited for a cheap radio-like EQ
AahAyEeh	06	VOW	Vowel formant filter which sweeps from "Ah" sound, through "Ay" sound to "Ee" sound at maximum frequency setting. Q varies the apparent size of the mouth cavity.
Ooh-To-Aah	06	VOW	Vowel formant filter which sweeps from "Oo" sound, through "Oh" sound to "Ah" sound at maximum frequency setting. Q varies the apparent size of mouth cavity.
MultiQVox	12	VOW	Multi-Formant, Map Q To velocity.
Ooh-To-Eee	12	VOW	Oooh to Eeee formant morph.
TalkingHedz	12	VOW	"Oui" morphing filter. Q adds peaks.
Eeh-To-Aah	12	VOW	"E" to "Ah" formant movement. Q accentuates "peakiness."
UbuOrator	12	VOW	Aah-Uuh vowel with no Q. Raise Q for throaty vocals.
DeepBouche	12	VOW	French vowels! "Ou-Est" vowel at low Q.
PhazeShift1	06	PHA	Recreates a comb filter effect typical of phase shifters. Frequency moves position of notches. Q varies the depth of the notches.

Filter Name	Order	Type	Description
PhazeShift2	06	PHA	Comb filter with slightly different notch frequency moving the frequency of notches. Q varies the depth of the notches.
FreakShifta	12	PHA	Phasey movement. Try major 6 interval and maximum Q.
CruzPusher	12	PHA	Accentuates harmonics at high Q. Try with a sawtooth LFO.
FlangerLite	06	FLG	Contains three notches. Frequency moves frequency and spacing of notches. Q increases flanging depth.
AngelzHairz	12	FLG	Smooth sweep flanger. Good with vox waves. eg. I094, Q =60
DreamWeava	12	FLG	Directional Flanger. Poles shift down at low Q and up at high Q.
MeatyGizmo	12	REZ	Filter inverts at mid-Q.
DeadRinger	12	REZ	Permanent "Ringy" Q response. Many Q variations.
ZoomPeaks	12	REZ	High resonance nasal filter.
AcidRavage	12	REZ	Great analog Q response. Wide tonal range. Try with a sawtooth LFO.
BassOMatic	12	REZ	Low boost for basslines. Q goes to distortion at the maximum level.
LucifersQ	12	REZ	Violent mid Q filter! Take care with Q values 40-90.
ToothComb	12	REZ	Highly resonant harmonic peaks shift in unison. Try mid Q.
EarBender	12	WAH	Midway between wah & vowel. Strong mid-boost. Nasty at high Q settings.
FuzziFace	12	DST	Nasty clipped distortion. Q functions as mid-frequency tone control.
BlissBatz	06	SFX	Bat phaser from the Emulator 4.
KlangKling	12	SFX	Ringing Flange filter. Q "tunes" the ring frequency.

Filter Parameters

The Freq and Q parameters control various elements of the filter depending on the type of filter used. See the table in the *Filter Types* section for details about what the Freq and Q fields control in each filter.

```
 L1  FILTER
Freq:   255          Q:   019
```
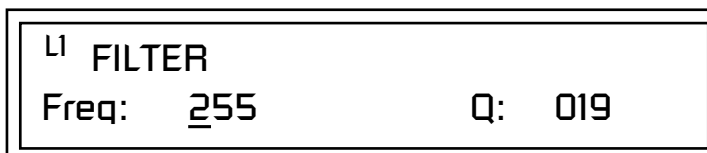
Filter Envelope

The Filter Envelope is normally used to control the filter frequency and has six stages. Unlike the Volume Envelope, the Filter Envelope must be patched to the Filter Frequency using a PatchCord. In this respect, it can be thought of as a general purpose envelope generator which is normally patched to control the filter. The Filter Envelope Levels can be negative as well as positive.

There are three mode options:

- **Time-based**: Defines the Filter Envelope rates from 0 to 127 (approximately 1 ms to 160 seconds). The Master clock has no affect on time-based rates.

```
┌─────────────────────────────────────────┐
│ L1  FILT ENV      RATE         LEVEL     │
│ Attack 1           84          100%      │
└─────────────────────────────────────────┘
```

- **Tempo-based:** The Filter Envelope times vary based on the master tempo setting and are displayed in values such as 1, 2, 3, etc. Note values are displayed instead of a number when the time corresponds to an exact note value. Tempo-based envelopes are useful when using arpeggiators and sequencers because the envelope rates compress and expand according to the Master Tempo setting, keeping the envelopes in sync with the music. See the illustration on page 158.

```
┌─────────────────────────────────────────┐
│ L1  FILT ENV      RATE         LEVEL     │
│ Attack 1           1/4         100%      │
└─────────────────────────────────────────┘
```

- **Envelope Repeat:** The Envelope Generators can also be made to repeat. When the envelope repeat function is On, the Attack (1&2) and Decay (1&2) stages will continue to repeat as long as the key is held. As soon as the key is released, the envelope continues through its normal Release stages (1 & 2). For more information see page 158.

▶ **To Turn on Envelope Repeat:**

1. Move the cursor until it is underneath the Mode field as shown below.

```
┌─────────────────────────────────────────┐
│ L1  FILTER ENVELOPE                      │
│ Mode:  time-based                        │
└─────────────────────────────────────────┘
```

2. Turn the data entry control clockwise. The lower line changes to:

```
 L1  FILTER ENVELOPE
Repeat: off
```

3. Move the cursor underneath the on/off field, then turn the data entry control clockwise so that Repeat is On.

Defining the Filter Envelope

The Filter Envelope controls the filter frequency of the layer over time. The Envelope has six stages to the contour: Attack 1, Attack 2, Decay 1, Decay 2, Release 1 and Release 2. When a key is pressed, the Envelope goes through the first four stages. If the key continues to be held, the envelope holds at the Decay 2 level. When the key is released, the envelope immediately jumps to the Release 1 stage, then the Release 2 stage finally ending at the Release 2 level.
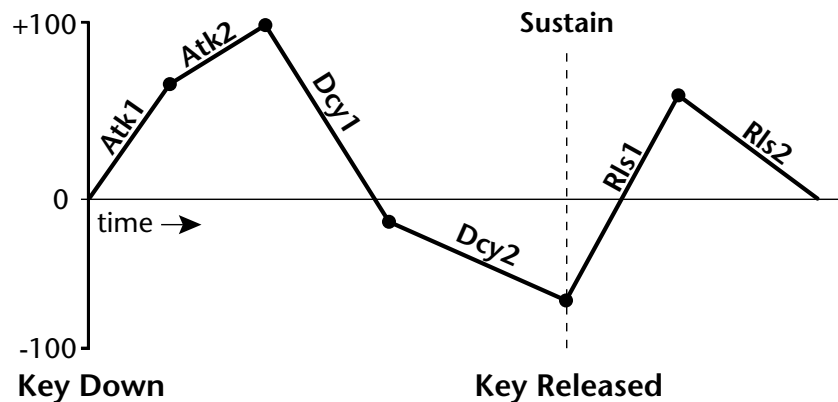
See the Programming Basics section of this manual for detailed information about how the Envelopes work.

The default PatchCord settings connect the Filter Envelope to Filter Frequency but the envelope can be routed to any real-time control destination using a PatchCord.

Auxiliary Envelope

The Auxiliary Envelope is a supplementary general purpose envelope that can be routed to any real-time control destination in the PatchCords. It is identical to the filter envelope generator. See "Filter Envelope" on page 205 for full details.

Low Frequency Oscillators (LFOs)

A Low Frequency Oscillator or LFO, is simply a wave that repeats at a slow speed. XL-7 has two LFOs per layer identified on the display as LFO1 and LFO2.

An LFO can be routed to any real-time control destination using a PatchCord. LFOs have a myriad of uses, some of which probably haven't been thought of yet. The following examples show a few common uses.

- Control the pitch of the sound (LFO -> Pitch). This effect is called "vibrato" and is an important performance tool. Many presets use this routing with the modulation wheel controlling "how much" modulation is applied.
- Create a "tremolo" effect by routing the LFO to control the volume (LFO -> AmpVolume).
- Add a bit of animation to the sound by routing the LFO to control the filter. Set the PatchCord amount low for a subtle effect.

The LFOs have five parameters: Shape, Sync, Rate, Delay and Variation.

Shape

LFO waveforms have different shapes. The shape of the waveform determines the effect of the LFO. LFOs have traditionally been used to add vibrato or repeating movement to a sound. These new shapes offer a lot of new programming possibilities.

```
┌─────────────────────────────────────────┐
│ L1  LFO1          SHAPE          SYNC    │
│                 sawtooth       key sync  │
└─────────────────────────────────────────┘
```

If you modulate the pitch of an instrument, it's easy to visualize the shape of the waveform. For example, the sine wave has a smooth, rolling shape that changes the pitch smoothly. The square waveform changes between two pitches abruptly. A sawtooth waveform increases the pitch smoothly, then abruptly changes back down. The available waveforms are shown below.

LFO Tricks & Tips:

• *The Random LFO wave is truly random and is different for each voice and layer.*

• *The Pattern (Pat) waveforms will sound the same on different layers and voices.*

• *Sine + Noise is very useful for simulating trumpet and flute vibrato.*

★ **When routing Hemi-quaver to Pitch:**

+38 = major scale
-38 = phrygian scale
+76 = whole tone scale
(+38) + (+76) = diminished (two cords)

odd amount = S+H sound

Note: *References to musical intervals in the pattern LFO shapes are with the LFO routed to pitch and a PatchCord amount of +38.*

Random

Triangle

Sawtooth

Sine

Square

33% Pulse

25% Pulse

16% Pulse

12% Pulse

Pat: Octaves
+ Octave
- Octave

Pat: Fifth+Octave
C
G
C

Pat: Sus4 trip
G
F
C

Pat: Neener
C
A#
G

Sine 1,2

Sine 1,3,5

Sine + Noise

Hemi-quaver
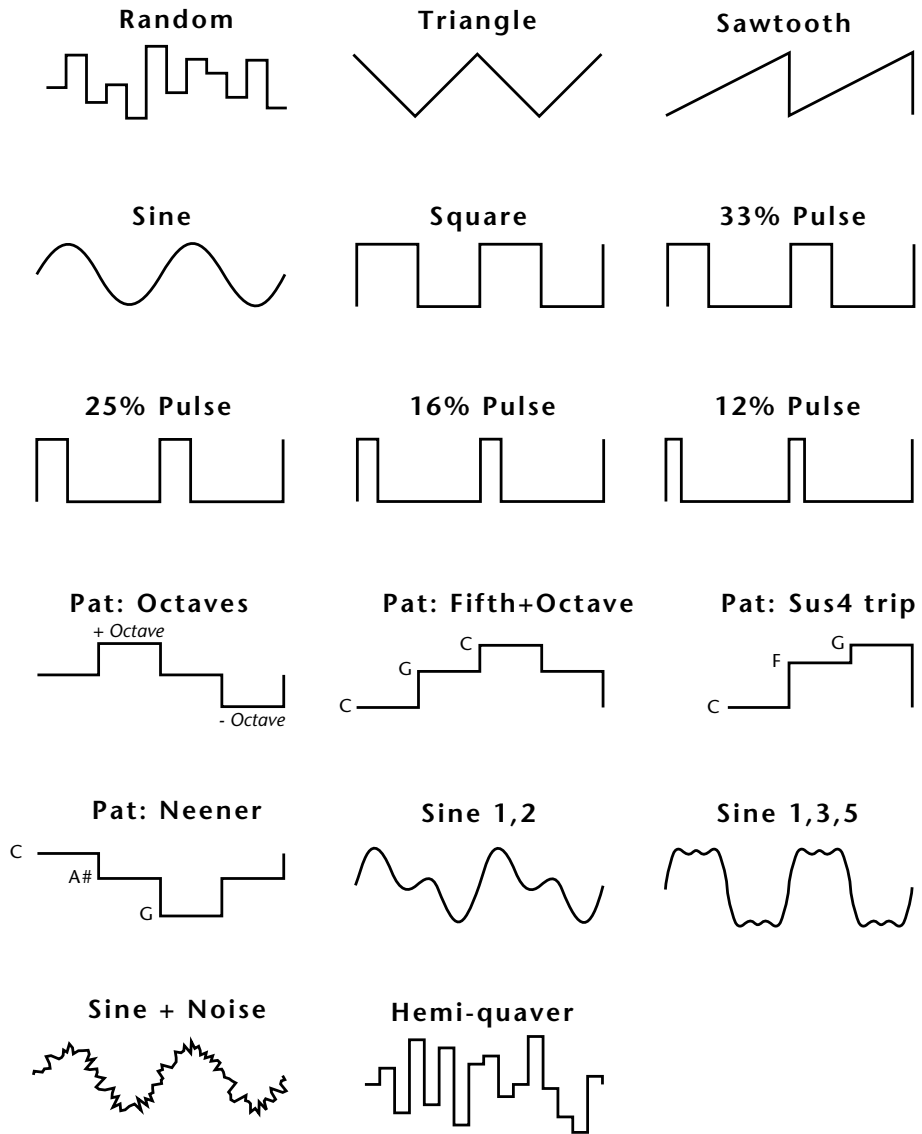
LFO Synced to 1/4 Note Clock

Sync

The Sync field specifies whether the LFO is synchronized to a key stroke or is Free Running. Key Sync starts the LFO wave at the beginning of its cycle each time you press a key on the controller. In Free Run mode, the LFO wave begins at a random point in its cycle each time you press a key on the controller.

Rate

The Rate field determines the LFO speed in absolute frequency rate values or tempo-based note values. All values equal to or greater than zero specify absolute frequency values from 0.08 Hz to 18.14 Hz.

Values less than zero specify tempo-based rates. If you modulate the rate of a tempo-based LFO, the rates will jump between the tempo-based note values with each PatchCord increment of "1". As an example: if the LFO rate was set to 8/1 and you patched the Mod Wheel to control rate with a PatchCord amount of +1, turning the Mod Wheel to maximum would change the LFO rate to 4/1d. Refer to the chart below.

```
┌─────────────────────────────────────────────┐
│ L1  LFO1    RATE     DELAY      VAR           │
│             0.08Hz      60      020           │
└─────────────────────────────────────────────┘
```

Tempo-based Rates (based on Master Tempo)	Display
octal whole note	8/1
dotted quad whole note	4/1d
octal whole note triplet	8/1t
quad whole note	4/1
dotted double whole note	2/1d
quad whole note triplet	4/1t
double whole note	2/1
dotted whole note	1/1d
double note triplet	2/1t
whole note	1/1
dotted half note	1/2d
whole note triplet	1/1t
half note	1/2
dotted quarter note	1/4d
half note triplet	1/2t
quarter note	1/4
dotted 8th note	1/8d
quarter note triplet	1/4t
8th note	1/8
dotted 16th note	1/16d
8th note triplet	1/8t
16th note	1/16
dotted 32nd note	1/32d
16th note triplet	1/16t
32nd Note	1/32

Delay

The Delay parameter defines the amount of time between hitting a key on the controller and the onset of the LFO modulation. Delay can be used to simulate an effect often used by acoustic instrument players where the vibrato is brought in only after the initial note pitch is established. The following illustration demonstrates how delay works.
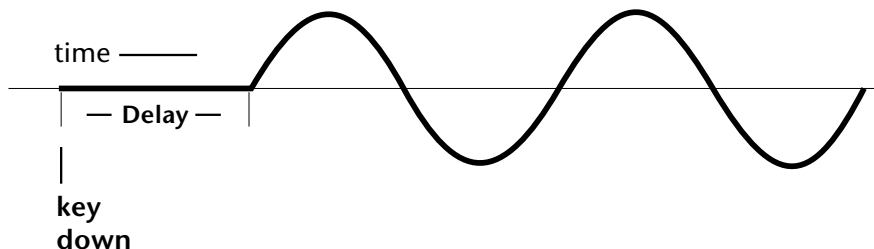
All Delay values equal to or greater than zero specify absolute time rates from 0 to 127. Values less than zero specify Tempo-based mode. Refer to the previous table for times and tempo-based rates.

Variation

LFO Variation sets the amount of random variation of the LFO each time you press a key on the controller. This creates a chorus or ensemble effect since each note played has a slightly different modulation rate. The higher the value entered, the greater the note to note variation in the LFO.

The Variation value range is from 0 through 100.

Variation is disabled when a Tempo-Based LFO is selected.
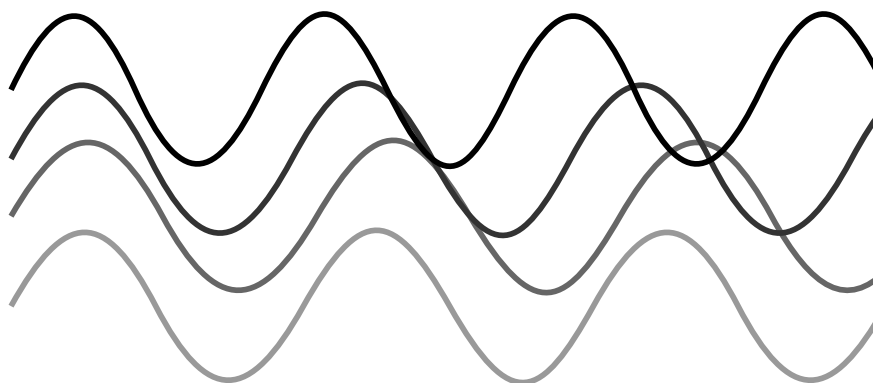
LFO variation changes the rate of each note to create an "ensemble" effect.

PatchCords

PatchCords tie everything together by connecting modulation sources to destinations. Each PatchCord has its own *Amount* control which can be positive or negative (negative amounts invert the signal). In addition, the PatchCord amounts themselves can be controlled by any modulation source. XL-7 provides 24 patches for each layer.

There are three permanently connected control routings: volume envelope to amplifier, pitch wheel to pitch and key to pitch. All other connections must be made using the PatchCords.
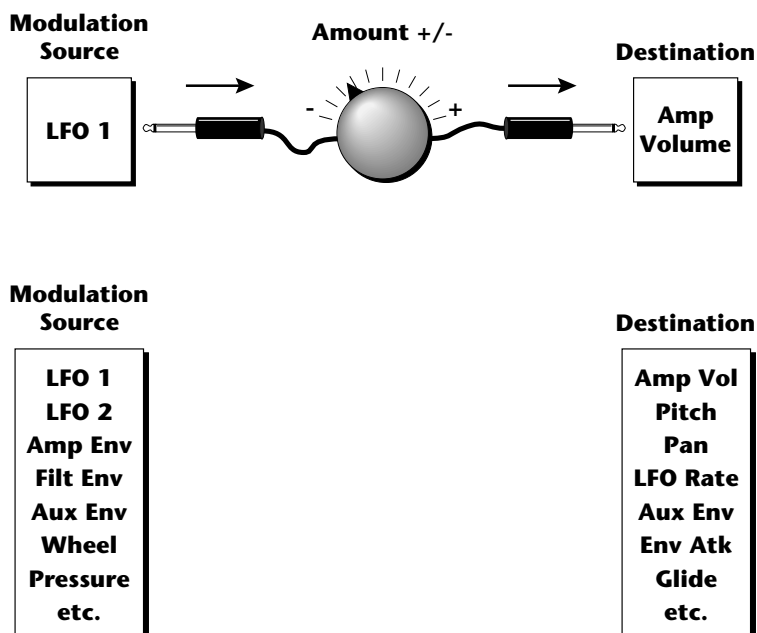
Each patch has an amount field which determines how much modulation is applied to the destination. The modulation amount can be positive or negative. Negative values invert the input. The amount value range is from -100 to +100.

Modulator Polarity

You will notice that some of the modulation sources have symbols following their names. For example, there are three Velocity modulation sources, Vel +, Vel ±, and Vel <.

Control Value

$-$ |————|————|
0   63   127

Control Value Applied

+

|————|————|
0   63   127

+ modulation ADDS to the initial value. (Normal)

±

|————|————|
-63   0   +64

± centers around Zero. (Use for LFOs, Filt. Freq.)

<

|————|————|
-127   -63   0

< modulation SUBTRACTS from the initial value
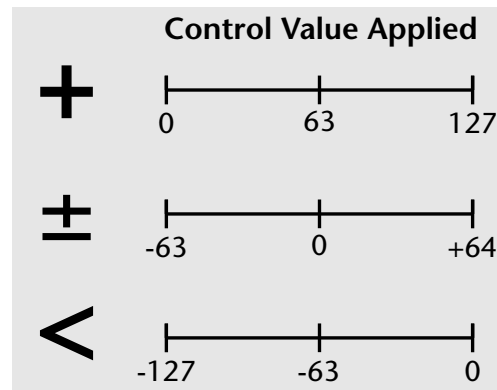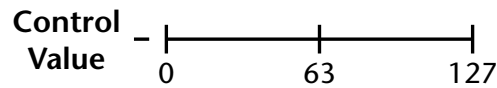
"+" Modulation: Uses only the positive half of the range, adding to the current value. For example, if the filter frequency were set to 100 and you patched Vel+ to the filter, the filter frequency would increase from 100 as velocity was applied.

"±" Modulation: Uses both sides (full) range and both adding and subtracting from the current value. For example, if the filter frequency were set to 100 and you patched Vel ± to the filter, the filter frequency would decrease from 100 with key velocities of 63 or less and increase from 100 with key velocities of 64 and above. Therefore with medium velocity, the Filter frequency is approximately where you set it at 100.

An LFO ± works the same way; on the positive half of the cycle it increases the initial amount and on the negative half of the cycle it decreases the initial amount. With a ± modulation source, a value of 64 equals 0.

"<" Modulation: Uses only the negative half of the range, subtracting from the current value. For example, if the Amplifier Volume were set to +3 dB and you patched Vel < to AmpVol, the volume would be at +3 dB only when maximum key velocity were applied. Lower key velocities would scale back the volume. In general, < modulation is the proper choice when modulating Volume.

Here is a list of all layer modulation sources and destinations in XL-7.

Modulation Sources:	**Modulation Destinations**
Off	Off
Key (+, ±)	KeySust (Key Sustain)
Velocity (+, ±, <)	FinePtch (Fine Pitch)
RlsVel (Release Velocity)	Pitch
Gate	Glide
Pressure (Aftertouch)	ChrsAmt (Chorus Amount)
PitchWhl (Pitch Wheel, TouchStrip)	'SStart (Sample Start) -note-on)
ModWhl (Modulation Wheel)	SLoop (Sample Loop)
Pedal	SRetrig (Sample Retrigger)
MIDI Volume (Controller 7)	FiltFreq (Filter Frequency)
MIDI Pan (Controller 10)	'FiltRes (Filter Resonance -note-on)
MIDI Expression (Controller 11)	AmpVol (Amplifier Volume)
MIDI A-P	AmpPan (Amplifier Pan)
PLagOut (Preset Lag Out)	RTXfade (Real-time Crossfade)
PRampOut (Preset Ramp Out)	VEnvRts (Volume Envelope Rates -all)
FootSw1 - 3 (Foot Switch 1-3)	VEnvAtk (Volume Envelope Attack)
FootFF (Flip-Flop Foot Switch 1 -3)	VEnvDcy (Volume Envelope Decay)
Key Glide	VEnvSus (Volume Envelope Sustain)
VolEnv +, ±, < (Volume Envelope)	VEnvRls (Volume Envelope Release)
FilEnv +, ±, < (Filter Envelope)	FEnvRts (Filter Envelope Rates -all)
AuxEnv +, ±, < (Auxiliary Envelope)	FEnvAtk (Filter Envelope Attack)
LFO 1 & 2 (+, ±)	FEnvDcy (Filter Envelope Decay)
White (White Noise)	FEnvSus (Filter Envelope Sustain)
Pink (Pink Noise)	FEnvRls (Filter Envelope Release)
XfdRand (Crossfade Random)	FEnvTrig (Filter Envelope Trigger)
KeyRand 1 & 2 (Key Random)	AEnvRts (Auxiliary Envelope Rates -all)
Lag 0 sum (summing amp out)	AEnvAtk (Auxiliary Envelope Attack)
Lag 1 sum (summing amp out)	AEnvDcy (Auxiliary Envelope Decay)
Lag 0 & 1 (Lag Processor)	AEnvSus (Auxiliary Envelope Sustain)
Clk Divisors (Octal, Quad, Double Whole, Whole, Half, Qtr, 8th,16th)	AEnvRls (Auxiliary Envelope Release)
DC (DC Offset)	AEnvTrig (Auxiliary Envelope Trigger)
Summing Amp	LFO 1 & 2 Rate
Switch	LFO 1 & 2 Trigger
Absolute Value	Lag Processor In 0 & 1
Diode	Sum (Summing Amp)
Flip-Flop	Switch
Quantizer	Abs (Absolute Value)
4x Gain	Diode
	Quantize
	Flip-Flop
	Gain 4x
	Cord 1-24 Amount

Important! *The Touchstrip is programmed from the PitchWhl modulation source.*

Note: *Flip-Flop Footswitches 1 & 2 remain in their last condition when a new preset is selected.*

Flip-Flop Footswitch 3 resets to the Off condition whenever a new preset is selected.

Note: *The Envelope Sustain parameter controls the Decay 2 Level segment of the envelope generator.*

Pitch Bend Range

Specifies the Pitch Wheel range in semitones for the current layer. Pitch Wheel is a standard synthesizer control which is transmitted as a MIDI continuous controller message used (normally) to bend the pitch up and down.

The PitchBend range is from 0 to +12 semitones or "Master." A setting of "0" turns the pitch wheel Off for the current layer. The Master setting uses the Pitch Bend range defined in the *Global menu*.

```
┌─────────────────────────────────┐
│ L1  PITCHBEND RANGE             │
│     +/-  12 semitones           │
└─────────────────────────────────┘
```

Mix Output

This feature allows you to program the Effect Send as a part of the preset. Note that for this feature to work, the Mix Output setting in the Global menu MUST be set to "Preset" on the selected MIDI channel. If you want to define output routing by MIDI channel, set it up using the Mix Output page in the Global menu. *See "Mix Output" on page 134 for more information.*

```
┌─────────────────────────────────┐
│ L1 MIX OUTPUT                   │
│ Send2->main                     │
└─────────────────────────────────┘
```

FX Send
Routing
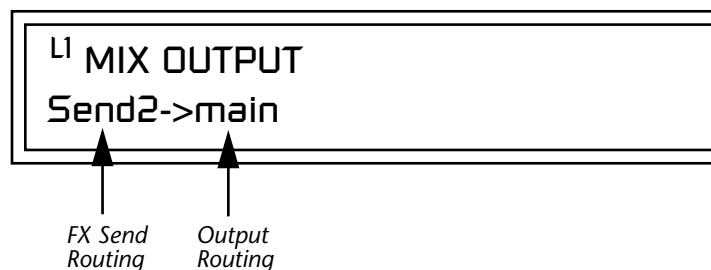
Output
Routing

The Sends function as effect processor inputs (effect sends). The Output Routing field shows the true routing of the Sends to the Main output.

▶ **To Control the Mix Output from the Preset:**
1. Move the cursor until it is underneath the Layer field and change the Layer using the data entry control.
2. Move the cursor until it is underneath the FX Send Routing field and change the Send (1-4) using the data entry control.
3. Locate the MIX OUTPUT screen in the Global menu.
4. Set the MIDI channel you are using to "use preset".

Common Preset Parameters

This section of the Preset Edit menu chapter describes parameters that affect all layers in the preset.

Preset Effects

XL-7 has two stereo effects processors. When playing presets one at a time, the two processors can be programmed as part of the preset. The diagram below shows how the effects are integrated into the signal path using a parallel effects send/return model, similar to a mixing console.
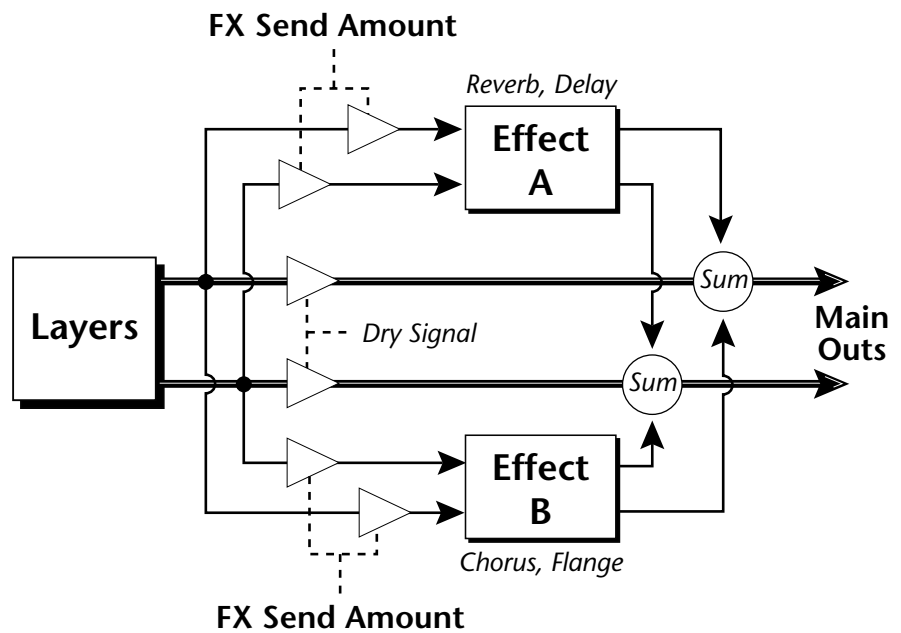
Refer to the Effects chapter for additional information and instructions for setting up both the Preset Effects and the Master Effects.

OUTPUT SECTION
& EFFECTS PROCESSORS

**PRESET
EDIT MENU**

**Mix
Output**
Send 1

FX Sends | Hall 1
Send 1 15%
Send 2 10% **Effect
Send 3 0%   A**
Send 4 0%

B➠A

FX Sends | Chorus
Send 1 0%
Send 2 0%   **Effect
Send 3 20%   B**
Send 4 15%

S E N D 1

S E N D 2

S E N D 3

S E N D 4

M A I N

Jack Detect

S U B 1

Jack Detect

S U B 2

Mix Output

Ch 1A | PRESET

Ch 2A | SEND 2

Ch 3A | SEND 3

Ch 16B | SEND 4
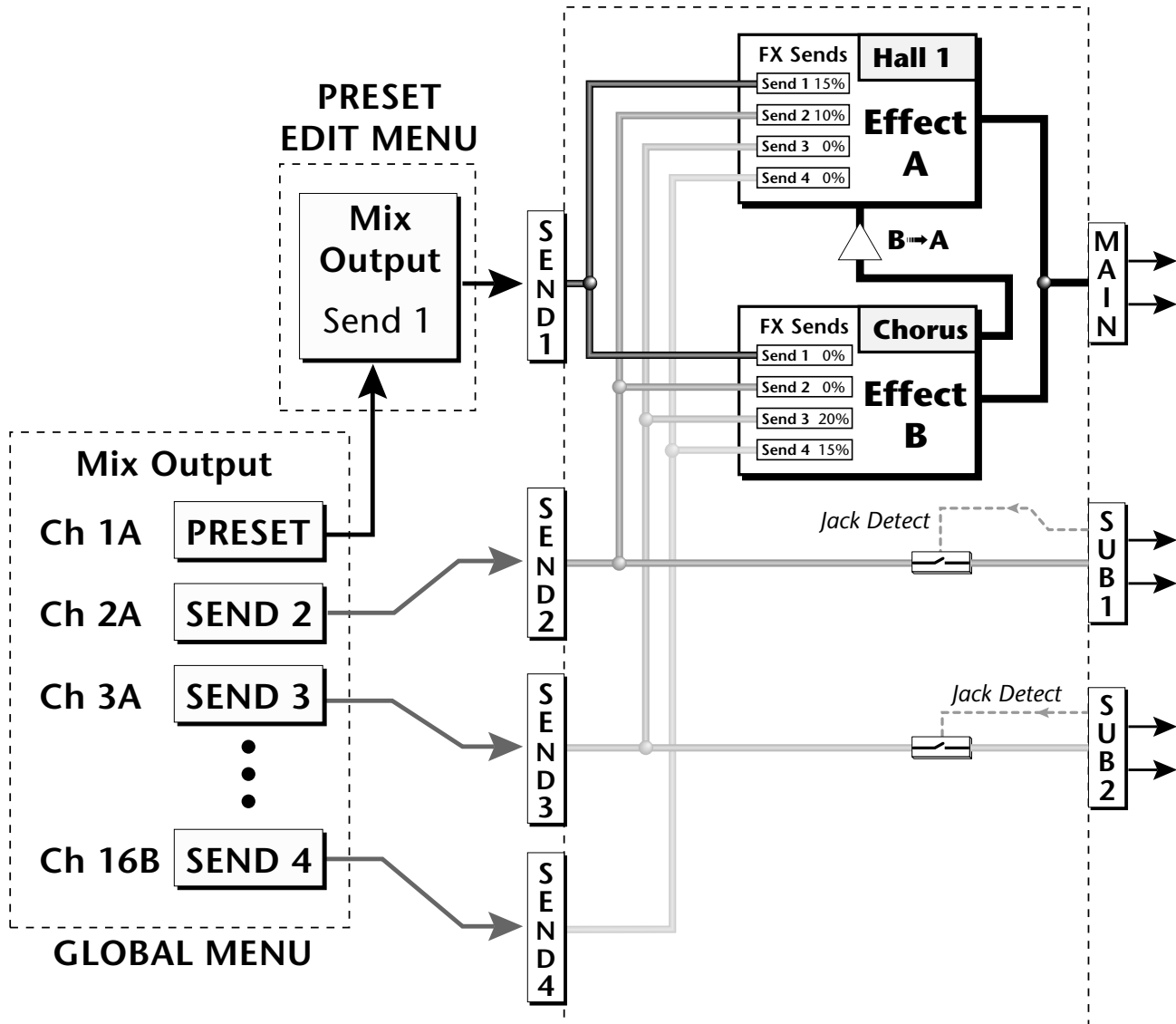
GLOBAL MENU

The Mix Output setting in the Global Menu determines if the Preset's Mix
Output routing will be used. This allows the Sends to be programmed by
either **MIDI Channel** or by **Preset**, whichever you prefer.

FXA Algorithm

This screen selects the effect type for Effect Processor A. The "A" effects consist of different reverb types and digital delays. Move the cursor to the lower line of the display and select the effect you want.

```
┌─────────────────────────────────────┐
│                                      │
│  FXA ALGORITHM                       │
│  Lg Concert Pan                      │
│                                      │
└─────────────────────────────────────┘
```

A Effect Types

1. Room 1	**23.** BBall Court
2. Room 2	**24.** Gymnasium
3. Room 3	**25.** Cavern
4. Hall 1	**26.** Concert 9
5. Hall 2	**27.** Concert 10 Pan
6. Plate	**28.** Reverse Gate
7. Delay	**29.** Gate 2
8. Panning Delay	**30.** Gate Pan
9. Multitap 1	**31.** Concert 11
10. Multitap Pan	**32.** Medium Concert
11. 3 Tap	**33.** Large Concert
12. 3 Tap Pan	**34.** Large Concert Pan
13. Soft Room	**35.** Canyon
14. Warm Room	**36.** DelayVerb 1
15. Perfect Room	**37.** DelayVerb 2
16. Tiled Room	**38.** DelayVerb 3
17. Hard Plate	**39.** DelayVerb 4 Pan
18. Warm Hall	**40.** DelayVerb 5 Pan
19. Spacious Hall	**41.** DelayVerb 6
20. Bright Hall	**42.** DelayVerb 7
21. Bright Hall Pan	**43.** DelayVerb 8
22. Bright Plate	**44.** DelayVerb 9

FXA Parameters

The FXA parameters are Decay, High Frequency Damping, and the FxB to FxA send. **Decay** sets the length of time it takes an effect to fade out. **HF Damping** causes the high frequency energy to fade away more quickly during the reverb decay. **FxB to FxA** controls the amount of the "B" effect sent through effect "A". This allows you to place the two effects in series and create setups such as "distortion through reverb" among others. Please refer to the Effects chapter for more information about the effects.

```
┌──────────────────────────────────┐
│  FXA   DECAY   HFDAMP   FxB>FxA   │
│        048      064        000    │
└──────────────────────────────────┘
```

FXA Send Amounts

These parameters set the effects amounts for each of the four stereo effects busses.

```
┌──────────────────────────────────┐
│  FXA SEND AMOUNTS      1:100%     │
│  2: 50%        3: 10%    4:  0%   │
└──────────────────────────────────┘
```

FXB Algorithm

This screen selects the effect type for Effect Processor A. Move the cursor to the lower line of the display and select the effect you want.

```
┌──────────────────────────────────┐
│  FXB ALGORITHM                    │
│  Panning Delay                    │
└──────────────────────────────────┘
```

B Effect Types

1. Chorus 1	12. Flange 5	23. PanDelay Chorus 1
2. Chorus 2	13. Flange 6	24. PanDelay Chorus 2
3. Chorus 3	14. Flange 7	25. Dual Tap 1/3
4. Chorus 4	15. Big Chorus	26. Dual Tap 1/4
5. Chorus 5	16. Symphonic	27. Vibrato
6. Doubling	17. Ensemble	28. Distortion 1
7. Slapback	18. Delay	29. Distortion 2
8. Flange 1	19. Delay Stereo	30. Distorted Flange
9. Flange 2	20. Delay Stereo 2	31. Distorted Chorus
10. Flange 3	21. Panning Delay	32. Distorted Double
11. Flange 4	22. Delay Chorus	

FXB Parameters

The FXB parameters are Feedback, LFO Rate and Delay. **Feedback** sends the output of the effect back into the input. This creates multiple echoes on a delay effect and intensifies a chorus or flange effect. **LFO Rate** allows you to change the speed of the modulation oscillator for flange and chorus effects. **Delay** sets the length of the delay line. This affects the time between echoes, or the tone of flange effects.

```
┌─────────────────────────────────────────┐
│                                           │
│   FXB    FEEDBK    LFORATE    DELAY       │
│          032       003        200ms       │
│                                           │
└─────────────────────────────────────────┘
```

FXB Send Amounts

These parameters set the effects amounts for the four stereo effects busses.

```
┌─────────────────────────────────────────┐
│                                           │
│   FXB SEND AMOUNTS         1:100%         │
│   2: 50%        3: 10%      4:  0%        │
│                                           │
└─────────────────────────────────────────┘
```

Preset Patchcords

Preset PatchCords give you real-time control of global parameters. The effect processors are a powerful synthesis tool and this feature lets you control and use them in exciting new ways. For example, you can dynamically adjust the effects mix during a sequence or live performance.

There are many exciting performance possibilities using Preset PatchCords to control Arpeggiator parameters and Effects Sends. The front panel knobs 15 & 16 are usually connected to Arp parameters in factory presets marked "arp:" Be sure to try out these controls

There are 12 Preset PatchCords per preset with a source, a destination and an amount control. The amount can be set from -100 to +100. The Preset PatchCord controls are *added* to the FX Send Amounts set in the Global or Preset Edit menus. In other words, multiple sources connected to destinations are *summed*.

To crossfade between effects.

1) Set FXA Send 1 to 100%.
2) Set FXB Send 1 to 0%.
3) Set FX Cord #1 to FXA Send 1 at -100.
4) Set FX Cord #2 to FXB Send 1 at +100.

Increasing the controller amount will crossfade from FXA to FXB.

```
┌─────────────────────────────────────────┐
│                                           │
│   PRESET CORDS               #01          │
│   Pedal     -> FXBSend2      +100         │
│                                           │
└─────────────────────────────────────────┘
```

Modulation Sources:	**Modulation Destinations**
Off	Off
PitchWhl (Pitch Wheel)	Effect A Send 1
ModWhl (Modulation Wheel)	Effect A Send 2
Pedal	Effect A Send 3
MIDI Volume (Controller 7)	Effect A Send 4
MIDI Pan (Controller 10)	Effect B Send 1
MIDI A-L	Effect B Send 2
Footswitch 1	Effect B Send 3
Flip-Flop Footswitch 1	Effect B Send 4
Footswitch 2	Preset Lag In
Flip-Flop Footswitch 2	Preset Lag Amount
Footswitch 3	Preset Lag Rate
Flip-Flop Footswitch 3	Preset Ramp Rate
DC	Arp Resolution
	Arp Extension
	Arp Velocity
	Arp Gate
	Arp Interval
	Beats Velocity, Group 1-4
	Beats Transpose (Xps) Group 1-4
	Beats Busy
	Beats Variation

*Initial Controller
Amount*

This parameter sets the initial value of MIDI controllers A-P when the preset is first selected. The front panel Control Knobs can be thought of as front panel MIDI controllers because in the XL-7, they are treated just as if they originated from an external MIDI device. Refer to the following diagram. There are 4 Initial Controller Amount screens (A-D, E-H, I-L, M-P).
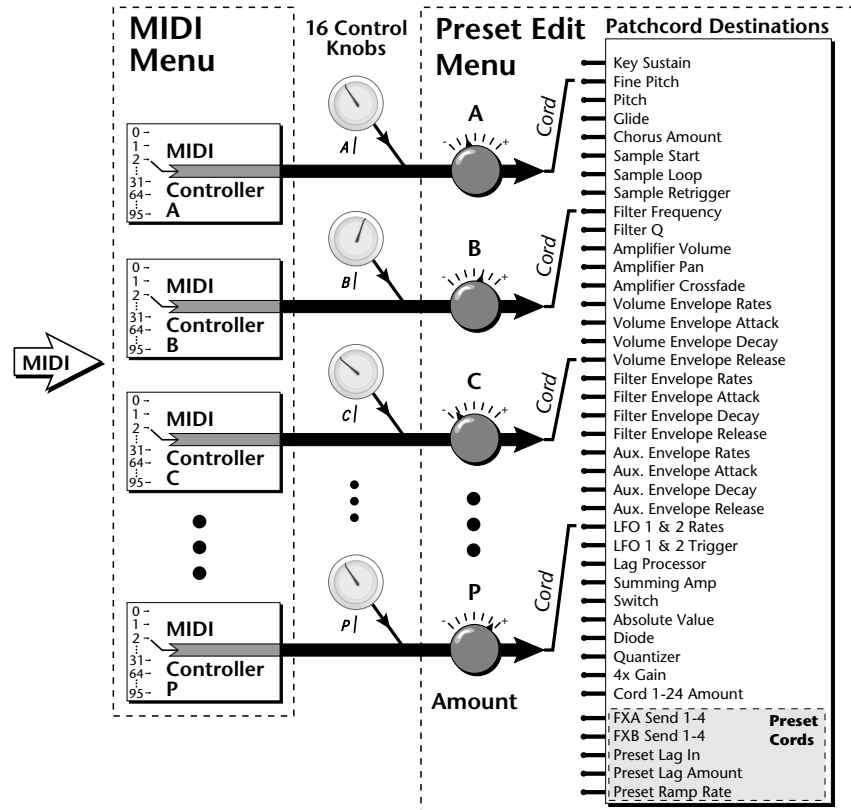
External MIDI controller numbers are assigned to the Letters A-P in the MIDI menu. The Initial Controller Amount value is sent to the PatchCord destination when the Preset is first selected. If you move the Control Knob, then that value replaces the initial value. If MIDI controller data is received it will similarly replace the knob or initial setting.

```
INITIAL  CONTROLLER  AMT
A:017      B:112      C:127      D: off
```
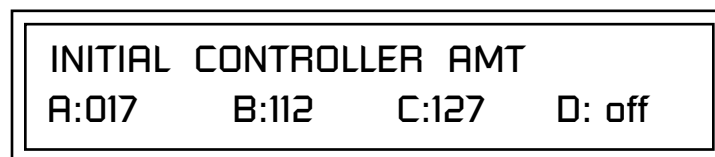
The Initial controller amounts can be set from 000-127 or they can be turned Off. If set to Off, the current controller value is used when the preset is first selected. Setting the Initial Amount to "off" uses the values from the previously selected preset.

Keyboard Tuning

In addition to the standard equally divided octave tuning, XL-7 contains twelve factory programmed tunings and 12 user-definable tunings. The Keyboard Tuning parameter selects which tuning is used by the current preset. The User Tuning tables are defined in the Global menu.

The factory Keyboard Tuning tables are described in the following table.

Tuning Tables	Description
Equal Temperament	Standard Western tuning (12 equally spaced notes per octave)
Just C	Just intonation. (Based on small interval ratios. Sweet and pure, non-beating intervals.)
Vallotti	Valotti & Young non-equal temperament. (Similar to 12 tone equal temperament. Each key has a different character for a given scale.)
19-Tone	19 tone equal temperament. (19 notes per octave. Difficult to play, but works well with a sequencer.)
Gamelan	5 tone Slendro and 7 tone Pelog. (Javanese. Pelog are white keys, Slendro are black keys. Exotic tunings of Gamelan flavor.
Just C2	Allows you to play the following chords in the key of C: C, E, F, G, A, B, C#m, D#m, Em, F#m, G#m, Am, Bm
Just C-minor	Allows you to play the following chords in the key of C: C, E, F, G, A, B, Em, Am, Bm, C#m, D#m, G#m
Just C3	Allows you to play the following chords in the key of C: C, D, F, Bb, C#m, Dm, Em, F#m, G#m, Am
Werkmeister III	A "well" temperament developed in the 17th century. Although you can play in all keys, each key sounds slightly different.
Kirnberger	Another well temperament developed by Johann Philipp Kirnberger where no pitch is more than 12 cents off from equal temperament.
Scarlatti	A variant of Meantone tuning which was used from the 15th to 18th centuries.
Repeating Octave	Middle C octave is repeated up and down the keyboard. Link with a preset in equal temperament to form unusual inversion up and down the keyboard.
User 1-12	Define your own tuning tables *(Global menu)*.

Refer to "User Key Tuning" on page 140 in the Global Menu chapter for instructions on how to define your own Keyboard Tunings.

The Just C Tuning Tables

Well Tempered and Just were standard keyboard tunings up until the 20th-century when the current "equal tempered" scale became prevalent. In an equal tempered scale, the octave is equally divided into 12 parts. In Just or Well Tempered scales, the 12 notes are separately tuned to produce pure chords. However, in Just tunings you are limited to playing certain chords and if you play the wrong chord it may sound very BAD!

XL-7 allows you to modulate between keys by providing you 12 user tuning tables. Tuning tables can be changed as you play using a program change (create several presets with the same sound and different tuning tables), by MIDI SysEx command (using a programmable MIDI footswitch or other device), or using a continuous controller (link 2 presets and crossfade between them using a controller).

XL-7 implements the MIDI Tuning Dump protocol which allows you to create tuning tables on your personal computer and download them via MIDI. There are several computer applications available on the internet which let you create and download tuning tables via MIDI.

The Just C2, Just C min, Just C3 Tuning Tables

These new tuning tables take the concept of just intonation a step beyond previous E-MU products. Fully explaining the mysteries of just intonation is beyond the scope of this manual, but the subject is covered exhaustively in Hermann Helmholtz's On the Sensations of Tone, available at most libraries and bookstores.

The new tables are called Just C2, Just C3, and Just C Minor. Try playing in the key of C/Cm using each table. You'll quickly discover both the wonders and the frustrations of just intonation! In Just C, for example, you'll find that the chords C, Em, F, G, and Am sound beautiful. If you hold one of these chords, you'll hear no "beating". After playing for a few minutes, switch back to Equal Temperament for a rude awakening!

At this point you might wonder why anyone would use Equal Temperament to begin with. For the answer to that question, play a D, Dmi, or Bb chord!.The intervallic ratios that make the C & G chords sound so pure make the D chord sound horribly out of tune. That's why we had to include Just C3. In this tuning, D, Dmi and Bb sound in tune, but the G chord will sound wrong.

Each of the 4 tables allows you to play a different group of common chords in just intonation. Sadly, there is no single 12 note tuning that will allow all of the common chords to be in tune, and of course that's why they invented the equal temperament tuning system that we use today.

Just C
Play these chords: **C, E, F, G, A, Cm, C#m, Em, F#m, Gm, Am**

Just C2
Play these chords: **C, E, F, G, A, B, C#m, D#m, Em, G#m, Am, Bm**

Just C2 minor
Play these chords: **C, D^b, D, E^b, G, A^b, Cm, Em, Fm, Gm**

Just C3
Play these chords: **C, D, F, B^b, C#m, Dm, Em, F#m, G#m, Am**

Preset Links

You can link presets to other presets to create layering or keyboard splits. The current preset can be linked with up to two other presets (Links 1 & 2). Each linked preset can be assigned to a specific range in order to create keyboard splits or can be assigned a velocity range to switch links according to key velocity. In addition, you can specify Volume, Pan, Transpose and Delay settings for each Link. The modulation parameters specified in each preset remain in effect for each preset in the link.

```
┌─────────────────────────────────────────┐
│  LINK 1 Preset              XL-7          │
│  000² Preset Name                         │
└─────────────────────────────────────────┘
```

```
┌─────────────────────────────────────────┐
│    LINK 1          KEY          VEL       │
│    RANGE    C-2    G8     000-127         │
└─────────────────────────────────────────┘
```

```
┌─────────────────────────────────────────┐
│    LINK 1         VOLUME        PAN       │
│                    +0dB         00        │
└─────────────────────────────────────────┘
```

```
┌─────────────────────────────────────────┐
│    LINK 1     TRANSPOSE      DELAY        │
│                 +00            0          │
└─────────────────────────────────────────┘
```

Links provide an easy way to create new sounds by combining the existing presets. Or, you can create your own custom stacked presets with up to 12 layers! We're talking LARGE sounds here. Of course Links can also be used when you just want to stack up two sounds.

As an example, let's stack two presets to create a big sound. Start with a preset you like, then go into the Links screen and start scrolling through the preset list while you play to hear both presets together. When you find a winner, simply Save the preset and you're finished!

- You can "Split" the keyboard up to 12 ways by using combinations of the Layers and Links.
- By adjusting the Velocity for the link, you can bring in the link by playing hard.
- Transposing the Link can radically change the sound.
- The delay parameter lets you create surprise effects, echoes or cascades of sound as you continue to hold the keys.

Preset Tempo Offset

This function allows you to double or halve the Master Tempo as it applies to this preset. When playing or sequencing several presets in Multimode, the Master Tempo may be too fast or slow for one preset. Using this feature, you can adjust the tempo for the misbehaving preset. The Tempo Offset can use the **current tempo** or be set to **half** or **twice** the current tempo.

```
TEMPO OFFSET
use current tempo x 2
```

Audition Riff Selection

✎ *Listening to the Riffs is a quick way to learn the sounds in XL-7. If a preset has hidden tricks or controllers, these will be shown off in the Riff.*

A Riff is a short pre-recorded musical phrase which can be anything from a single note to a full 16-track sequence. This function allows you to assign a Riff to a Preset. The Preset Riff will be used when the front panel Audition button is pressed.

The Riffs themselves cannot be modified.

```
AUDITION SELECTION
Plays:KEY-MiddleC
```

Play Solo Layers

When constructing multilayer sounds it is often useful to turn off one or more of the layers so you can hear what you're doing! This feature allows you to temporarily solo individual layers or listen to them in any combination. This screen differs from the other Preset Edit screens in that it is NOT saved with the preset. The values reset each time you exit the Preset Edit menu.

Solo is activated by setting any layer to On (On = the layer is being Soloed). Any layers set to **On will play** and any layers set to **Off will be muted**. If all layers are set to Off, then Solo mode ends and all layers play normally. When you exit the Preset Edit menu, all layers play normally.

```
PLAY SOLO LAYERS
1: off    2: off    3: off    4: off
```

Arpeggiator/Beats Menu

XL-7 can run up to 32 simultaneously synced arpeggiators, each with a different preset sound. The arpeggiators can either play one of 7 chord arpeggios or can be set to play a pattern, which is a stored sequence of notes. Combined with sequencer, the number of musical permutations is staggering!

Beats mode allows you to trigger, latch and unlatch synced loops and grooves from separate keys on your keyboard. Simply select a bts: preset and play the 16 trigger keys to bring specific *Parts* in and out. This is *Macro-Music!*

▶ To enable the Arpeggiator/Beats menu

Press the Arp button, lighting the LED. The Arp screen displays the menu page most recently selected since powering up XL-7. The cursor appears below the first character of the screen heading on line one.

▶ To select a new screen

Press the Home/Enter button or press the Cursor button repeatedly until the cursor is below the screen title heading on the top line of the display. Rotate the data entry control to select another screen.

▶ To modify a parameter

Press either Cursor button repeatedly (or hold down the right cursor button while turning the data entry control) until the cursor is below the desired parameter value. Rotate the data entry control to change the value.

▶ To access a submenu

The Master Arpeggiator screens have submenus which are accessed by pressing the cursor buttons to move the cursor to the lower left corner of the display. Select the submenu function using the data entry control.

▶ To save Arpeggiator parameters

Press the Save/Copy button and scroll to "Save Setup To". Select a Setup number and press Enter. *See "Saving Multisetups" on page 131.*

▶ To return to the previously selected Mode/View screen

Press the Arp button, turning off the LED.

✎ *Arp parameters are automatically saved to the current multisetup when you exit the menu, but you may wish to save to another location.*

If another Multisetup is "Restored" any unsaved changes will be lost if you haven't saved the Multisetup.

Arpeggiators

An arpeggiator moves a pattern of notes sequentially over a range of the keyboard. XL-7 has the unique ability to play a different arpeggiator on each MIDI channel!

Arpeggiator settings can be defined as part of the preset (using the Arp parameters in the Preset Edit menu), or globally in the Arpeggiator menu. The preset and master arpeggiators have the same parameters which we define in this chapter.

The Arp field in the main screen defines which arpeggiator settings will be used. "M" uses the master Arpeggiator settings and on/off status (as defined in the Arpeggiator menu). "P" uses the preset's arpeggiator settings and on/off status (as defined in the Edit menu). Choosing "On" uses the preset's arpeggiator settings regardless of whether or not it is turned on in the Edit menu and Off turns off the arpeggiator regardless of the settings and status specified in either menu.

SAVE your Arp setups and name them using the "Save Setup To" function located in the Global menu. See "Saving Multisetups" on page 131.

Arp Settings in the Preset are Used

```
C01A    V127    P00    A:P    USER
047³    arp: Sine Drum
```
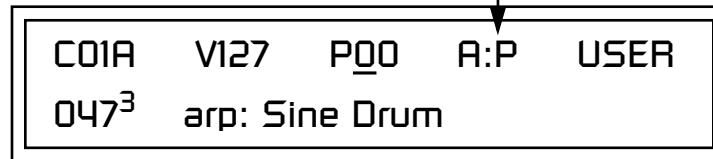
All arpeggiators share XL-7's master clock and its current setting. The master clock can be XL-7's internal clock or an external MIDI clock (page 144). Although the arpeggiators use the master clock setting, the tempo divisor can be unique for each arpeggiator setup.

Arpeggiator modes include up, up/down, forward assign, backward assign, forward/backward assign and random as well as play *Patterns*. Patterns are pre-recorded sequences of notes and rests. All key-on notes play the pattern. For example, if you play a chord, all the notes in the chord play the pattern in harmony. XL-7 contains 200 factory patterns and 100 user definable patterns.

Arp Controllers

The Arpeggiators can be controlled using the front panel real-time controllers or external MIDI continuous controllers. Controllers are patched to Arps via the Preset PatchCords located in the Preset Edit menu. *See "Preset Patchcords" on page 219.* The following Preset PatchCord destinations control the Arpeggiators.

Arpeggiator Resolution (ArpRes)
This control changes the Arpeggiator Note Value, which defines the length of the notes when playing arpeggiated chords. It *adds* to the note value set in the Arpeggiator Note Value screen. *See "Note Value" on page 231.*

Arpeggiator Extension (ArpExt)
This control changes the Arpeggiator Extension Count. It *adds* to the extension count programmed in the Arpeggiator Note Value screen. *See "Extension Count" on page 233.*

Arpeggiator Velocity (ArpVel)
This control changes the Arpeggiator Velocity Value. It *scales* the velocity value set in the Arpeggiator Note Value screen. *See "Velocity" on page 232.*

Arpeggiator Gate (ArpGate)
This control changes the Arpeggiator Gate Time. It *adds* to the gate time set in the Arpeggiator Gate Time screen. *See "Gate Time" on page 232.*

Arpeggiator Interval (ArpIntvl)
This control modulates the Arpeggiator Extension Interval. It *adds* to the extension programmed in the Arpeggiator Extension Interval screen. *See "Extension Interval" on page 233.*

Master Arpeggiator Parameters

The Master Arpeggiator is defined in the Arp menu. The Arpeggiator mode selected on the Main Screen determines whether the Master arpeggiator or the Preset menu arpeggiator settings are used.

▶ **To Access the Master Arpeggiator Parameters**

1. Press the **Arp** menu button lighting the LED. The Arpeggiator menu screen displays the menu page most recently selected since powering up XL-7. The cursor appears below the first character of the screen heading on line one.

2. Use the right **cursor** button to advance the cursor to the first field in the bottom line of the screen.

3. Now, use the **data entry control** to access the various Master Arpeggiator parameters.

4. **Save** your Arpeggiator settings using the "Save Setup" function on the Save/Copy menu.

Status

The Status parameter turns the Master Arpeggiator on and off. The Channel Arpeggiator setting in the main screen overrides this setting. For example, if you set the Arpeggiator in the main screen to "off," and turn it "on" here, it still will not play.

```
┌─────────────────────────────────────────┐
│ ┌─────────────────────────────────────┐ │
│ │ MASTER ARPEGGIATOR                  │ │
│ │ Status                         off  │ │
│ └─────────────────────────────────────┘ │
└─────────────────────────────────────────┘
```

Mode

The Mode parameter determines the direction or pattern mode of the arpeggiated notes.

```
┌─────────────────────────────────────────┐
│ ┌─────────────────────────────────────┐ │
│ │ MASTER ARPEGGIATOR                  │ │
│ │ Mode                           up   │ │
│ └─────────────────────────────────────┘ │
└─────────────────────────────────────────┘
```
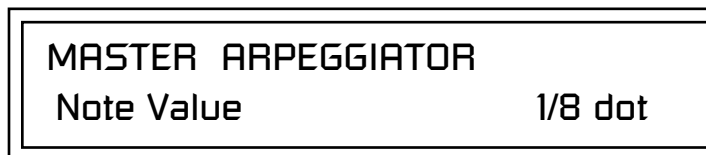
The eight arpeggiator modes are:

- **Up**   Held notes arpeggiate continuously from lowest to highest pitch.

- **Down**   Held notes arpeggiate continuously from highest to lowest pitch.

- **Up/Down**   Held notes arpeggiate continuously from lowest to highest pitch, then from highest to lowest, then repeat this cycle.

- **Fwd Assign**   Held notes arpeggiate continuously in the order in which the keys were pressed.

- **Bkwd Assign**   Held notes arpeggiate continuously in the reverse order in which the keys were pressed.

- **Fwd/Bkwd**   Held notes arpeggiate continuously in the order in which the keys were pressed, then arpeggiate in the reverse order that they were pressed. The cycle is then repeated.

- **Random**   Held notes arpeggiate continuously in a random fashion.

- **Pattern**   Held notes play the selected pattern (see "Pattern" on page 231 for details).

Note Value

The Note Value determines the duration of each note played. This parameter is used in non-pattern mode only.

```
┌─────────────────────────────────────────────┐
│  MASTER ARPEGGIATOR                          │
│  Note Value                        1/8 dot   │
└─────────────────────────────────────────────┘
```

Following is a list of possible Note Values and the relative number of clocks used for each.

✎ *Note value has no effect when the mode is set to "pattern."*

Note Value	MIDI Clock
Double Whole Note	**192**
Dotted Whole Note	144
Double Note Triplet	128
Whole Note	**96**
Dotted Half Note	72
Whole Note Triplet	64
Half Note	**48**
Dotted Quarter Note	36
Half Note Triplet	32
Quarter Note	**24**
Dotted Eighth Note	18
Quarter Note Triplet	16
8th Note	**12**
Dotted 16th Note	9
8th Note Triplet	8
16th Note	**6**
Dotted 32nd Note	4.5
16th Note Triplet	4
32nd Note	**3**

Arpeggiator Pattern Speed

The Arpeggiator Pattern Speed parameter lets you change the playback rate of Patterns by 1/4x, 1/2x, 1x (normal), 2x or 4x normal speed.

Pattern

This field lets you choose the pattern used when the arpeggiator Mode is set to "Pattern." There are 200 factory programmed patterns and you can create an additional 100 user definable patterns (see "Editing a User Arpeggiator Pattern" on page 238).

```
┌─────────────────────────────────────────────┐
│  MASTER ARPEGGIATOR                          │
│  Pattern    99[1]  Pattern Name              │
└─────────────────────────────────────────────┘
```
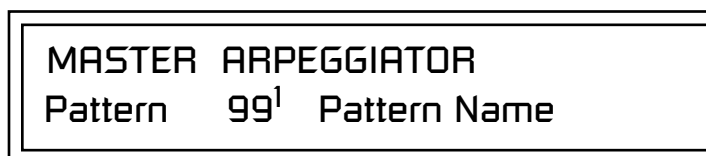
Velocity

The Velocity parameter determines the velocity at which each note arpeggiates. Velocity can be defined by the velocity value specified (from 1 through 127), or by the actual velocity of the played note (played). Bear in mind that velocity values do not have an effect on the sound unless the preset is programmed to respond to velocity.
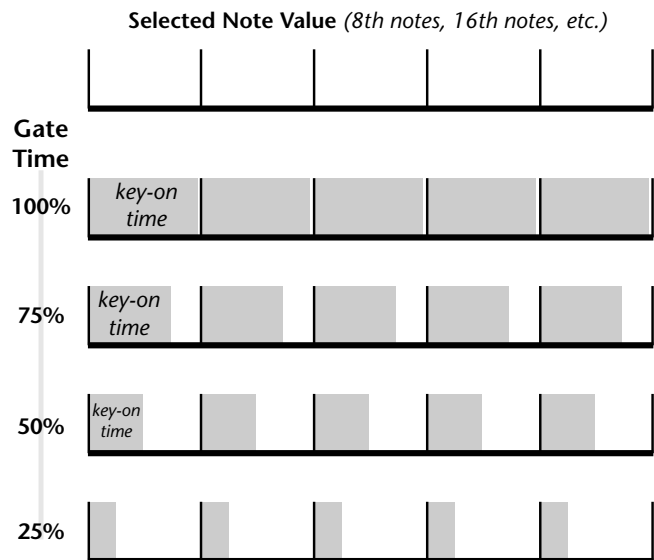
```
┌─────────────────────────────────────┐
│  MASTER  ARPEGGIATOR                 │
│  Velocity                    played  │
└─────────────────────────────────────┘
```
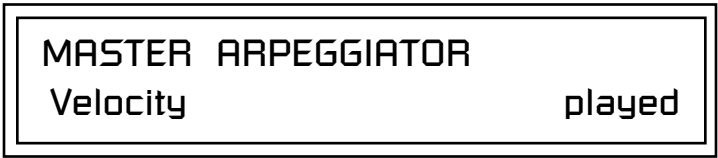
Gate Time

The Gate Time parameter works together with the Note Value parameter. Just as Note Value defines the length of a note, the Gate Time sets the percentage of the Note Value time played. This can have a dramatic effect on the sound depending on how the envelope generators are programmed.

```
┌─────────────────────────────────────┐
│  MASTER  ARPEGGIATOR                 │
│  Gate                          100%  │
└─────────────────────────────────────┘
```

✎ *The **note-on** time is used for the start-of-time when calculating note durations. See "Duration" on page 235.*

With a Gate Time setting of 100% the note is held on until the next note starts. The envelope generators never advance to the Release stages. With a Gate Time setting of 50%, the note is released halfway through the note cycle and the envelope generators proceed to their release stages until the next note occurs. Refer to the following illustration.

Selected Note Value *(8th notes, 16th notes, etc.)*

Gate Time

100%   key-on time

75%   key-on time

50%   key-on time

25%

Extension Count

The Extension Count parameter specifies how many times the Extension Interval is carried out. With an Extension Count of 0, the arpeggio plays only the notes pressed. With an Extension Count of 1, the arpeggio plays the notes pressed, then plays the same notes (in the same order), transposed by the Extension Interval amount. The cycle is then repeated.

```
MASTER ARPEGGIATOR
Extension Count              4
```
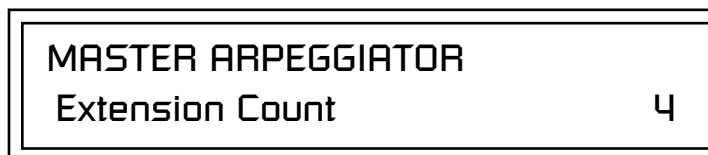
For example, with the Extension Interval set to 12 (an octave) and an Extension Count of 2, and with the Arpeggiator Mode set to Fwd Assign, if you played E2, then C2, then G2, the arpeggiated sequence would consist of: E2, C2, G2, then E3, C3, G3, and then E4, C4, G4. The Extension Count values range from 0 through 15. Refer to the following illustration.
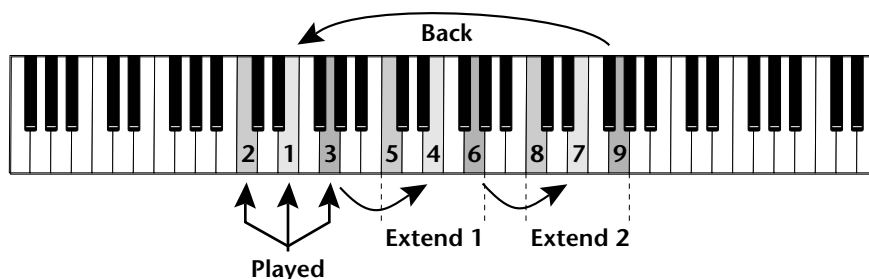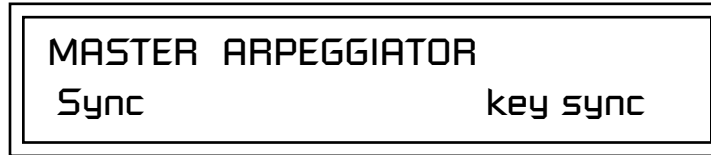

Extension Interval

The Extension Interval specifies the additional intervals played when you press a key. For example, suppose you played C2 with an Interval of 7 (a Major 5th), Up mode, and an Extension Count of 2. The arpeggio alternates between C2 and G2.

The Extension Interval values range from 1 through 16.

```
MASTER  ARPEGGIATOR
Extension Interval           7
```

Sync

The Sync parameter defines when a note is played in relation to when the key is pressed. When set to "Key Sync", the note sounds the instant a key is pressed. When set to "Quantized", the note does not sound until the next occurrence of the selected note value.
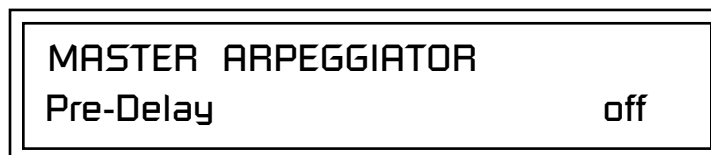
```
┌─────────────────────────────────────┐
│                                     │
│   MASTER ARPEGGIATOR                │
│   Sync                   key sync   │
│                                     │
└─────────────────────────────────────┘
```

The following diagram illustrates how Key Sync and Quantize work.
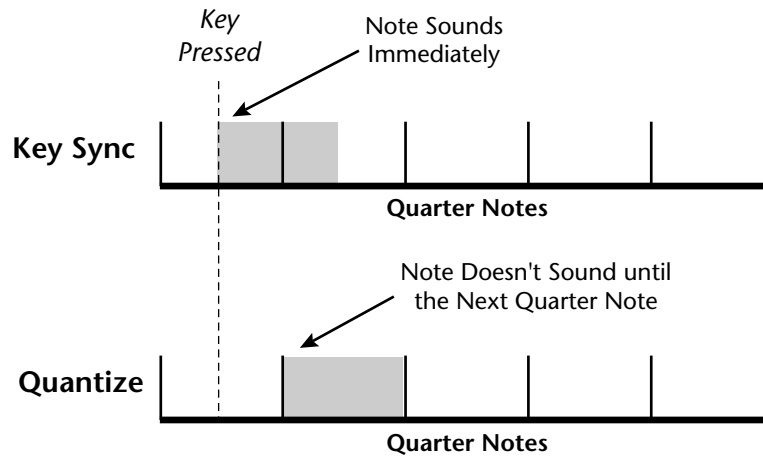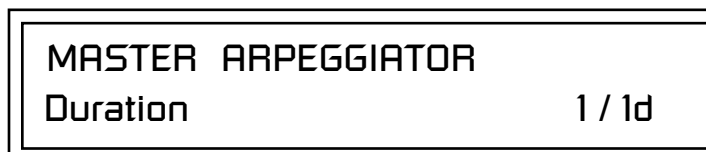

Pre-Delay

The Pre-Delay value determines how long the arpeggiator is delayed before becoming active after the first "note-on." During the pre-delay period, notes are played normally (as if the arpeggiator was off). After the pre-delay period has elapsed, the arpeggiator kicks in. Once you release all the keys on the controller, the pre-delay starts over with the next note-on. In combination with the Duration parameter, Pre-Delay lets you create many more variations in the arpeggio patterns. *Please refer to the diagram on page 236.*

You can play the preset normally as long as you don't hold the notes longer than the Pre-Delay. If you do, the arpeggiator starts in. When used in conjunction with multiple arpeggiators, Pre-Delay allows you to offset the time between the different patterns.

```
┌─────────────────────────────────────┐
│┌───────────────────────────────────┐│
││  MASTER ARPEGGIATOR               ││
││  Pre-Delay                   off  ││
│└───────────────────────────────────┘│
└─────────────────────────────────────┘
```

Duration

This parameter defines how long the arpeggiator plays before stopping. The Duration is specified in note values. Therefore if an arpeggio were running at a 16th *Note Value* and the Duration were set to a whole note, the arpeggiator would play 16 steps before stopping. After the duration has elapsed, the arpeggiator remains inactive until the key is released. If Duration is set to Off, the arpeggio repeats as long as the notes are held (Infinite Duration).

```
┌─────────────────────────────────────┐
│ ┌─────────────────────────────────┐ │
│ │  MASTER  ARPEGGIATOR            │ │
│ │  Duration                1 / 1d │ │
│ └─────────────────────────────────┘ │
└─────────────────────────────────────┘
```
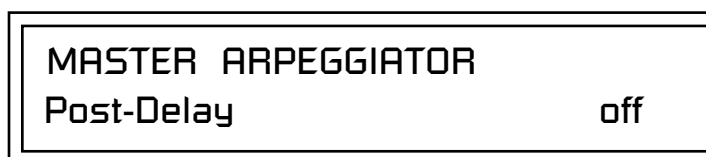
Duration can be used to modify the patterns and increase the possible pattern combinations and variations. Because this parameter limits the length of arpeggiator play time, it can change the arpeggio pattern when the Duration is less than the length of the arpeggio. You can set the arpeggio to repeat continuously using the *Recycle* function described below.
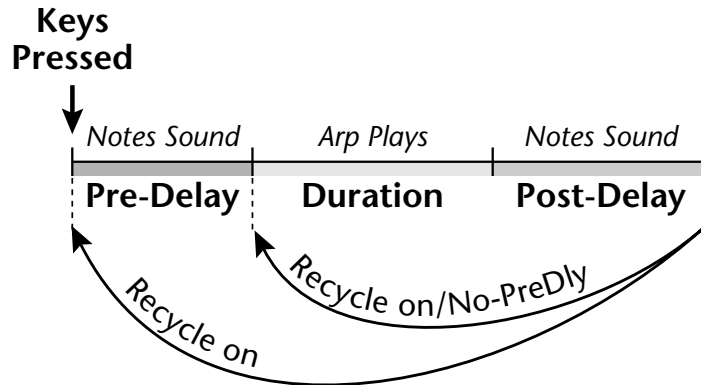
Post-Delay

This parameter is only relevant when both the "Duration" and "Recycle" parameters are not in the "Off" state. The Post-Delay value determines how long the arpeggiator is delayed after the Duration period. *Please refer to the diagram on page 236*. During the post-delay period, notes are played normally (as if the arpeggiator was off). After the post-delay period has elapsed, the arpeggiator either jumps to the beginning of the Pre-Delay period or to the beginning of the Duration period depending on the Recycle setting.

If the arpeggiator is playing an extension when the Duration expires, the notes in the extension will continue to sound during the Post-Delay *(and Pre-Delay if on)*. On the next pass through the Duration period, the extension continues where it left off.

Post-Delay increases the number of possible variations in the beat and allows the recycle loop to be set to an exact measure of time.

```
┌─────────────────────────────────────┐
│ ┌─────────────────────────────────┐ │
│ │  MASTER  ARPEGGIATOR            │ │
│ │  Post-Delay               off   │ │
│ └─────────────────────────────────┘ │
└─────────────────────────────────────┘
```

**Keys
Pressed**

Notes Sound *Arp Plays* *Notes Sound*

Pre-Delay **Duration** **Post-Delay**

Recycle on/No-PreDly

Recycle on

Recycle

Recycle enables the pattern or arpeggio to repeat. This parameter works together with the *Duration* and *Pre/Post Delay* parameters to allow the loop to be set to an exact measure of time. The "on/No-PreDelay" option bypasses the predelay period. With Recycle turned Off, the pattern or arpeggio stops at the end of the Post-Delay period.

```
┌─────────────────────────────────────┐
│  MASTER ARPEGGIATOR                  │
│  Recycle              on/No-PreDly   │
└─────────────────────────────────────┘
```

Keyboard Thru

When enabled, Keyboard Thru merges the notes not arpeggiated with the notes being produced by the arpeggiator. This gives the effect of two parts playing at once.

```
┌─────────────────────────────────────┐
│  MASTER ARPEGGIATOR                  │
│  Keyboard Thru                 off   │
└─────────────────────────────────────┘
```

Latch

With Latch mode On, any notes you play remain on until you press them again. Latched notes can also be halted by turning Latch off in this screen, or by turning off the Arpeggiator for the channel in the main screen.

```
┌─────────────────────────────────────┐
│  MASTER ARPEGGIATOR                  │
│  Latch                          on   │
└─────────────────────────────────────┘
```

Use the Key Range parameter to set the keyboard range for the arpeggiator. Notes inside the range will arpeggiate while notes outside the specified range will not arpeggiate. Use the Extensions parameters to exceed the upper boundary of the Key Range (see the information about Extensions beginning on page 233).

```
┌────────────────────────────────────┐
│  MASTER  ARPEGGIATOR                │
│  Key Range                 C-2->G8  │
└────────────────────────────────────┘
```

Move the cursor under the first key and use the data entry control to define the lowest key to be arpeggiated. Move the cursor under the second key value and use the data entry control to define the highest key to be arpeggiated.

Send MIDI System Exclusive Data

Transmits the Arpeggiator Patterns via the MIDI out port as MIDI System Exclusive data to another XL-7 or to a computer/sequencer for backup. Using the cursor key and the data entry control, select the MIDI data you want to transmit. See *Send MIDI System Exclusive Data* in the Master chapter for additional details about recording SysEx.

User Patterns
Transmits all the User patterns.

00^0 to 99^0
Transmits only the individual pattern you have selected.

Send data as you would a regular sequence. Sending data in one huge chunk may clog the MIDI input buffer on XL-7.

```
┌────────────────────────────────────┐
│  SEND  MIDI  SYSEX  DATA            │
│  All User Arp Patterns              │
└────────────────────────────────────┘
```
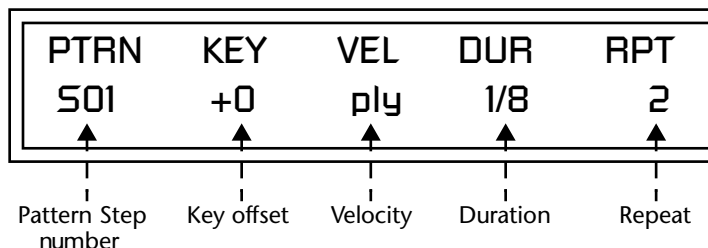
Editing a User Arpeggiator Pattern

XL-7 lets you create and edit your own arpeggiator patterns. Using the Edit User Pattern menu, you can create up to 100 user patterns and each pattern can be up to 32 steps in length.

When you edit a pattern, you are writing directly into memory—no Save command is required (however you must exit the Arp module). This is different from the Edit menu where you must Save a preset before it will be overwritten. If you want to modify an existing pattern and keep the original, you must first COPY the pattern you want to edit to another location using the function in the Save/Copy menu (See page 274). Refer to the instructions below and the following parameter descriptions to create your own patterns.

Bank 0 = User Patterns
Bank 1 = Factory Patterns
Bank 2 = Factory Patterns

```
EDIT  USER  PATTERN
01¹   DRUMnBASS 1
```

✎ *Before editing a Pattern, select Master Arpeggiator (M) in the main screen and set the Arpeggiator to the Pattern you are editing. This lets you hear the Pattern as you edit it.*
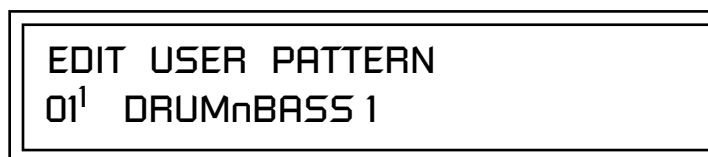
▶ **To Select the Pattern to Edit**

1. From the Edit User Pattern screen shown above, move the cursor to the bottom line and **select the pattern** you want to edit. The Enter LED begins flashing. Press **Enter** to move back to the Home position.

2. Select the **next screen** in the list, "User Pattern Edit". This is where you edit the currently selected pattern.

```
PTRN    KEY    VEL    DUR    RPT
S01     +0     ply    1/8     2
 ▲       ▲      ▲      ▲       ▲
 ┊       ┊      ┊      ┊       ┊
Pattern Step  Key offset  Velocity  Duration  Repeat
number
```

3. Move the cursor to the **lower line** of the display. For each step, you can select: key, velocity, duration, and number of repeats.

Pattern Step Number

You can set up to 32 steps for each arpeggiator pattern. This field selects which step you will be editing from 1 to 32.

Key

This parameter defines what happens during the current step. The Key parameter can do one of five different operations. Following is a description of each of the key functions and how to use them.

Key Offset

This parameter defines not the actual note of the arpeggiator playback, but instead specifies the amount of offset, in semitones, from the original note played. You can set a Key Offset from -48 to +48 for each step. For example, if you play a "C" on the keyboard with the Key Offset amount for the first step set to "+1," the first step in the pattern will be "C#."

| -48 | -36 | -24 | -12 | 0 | +12 | +24 | +36 | +48 |

← – Offset   Played   + Offset →
                     Note
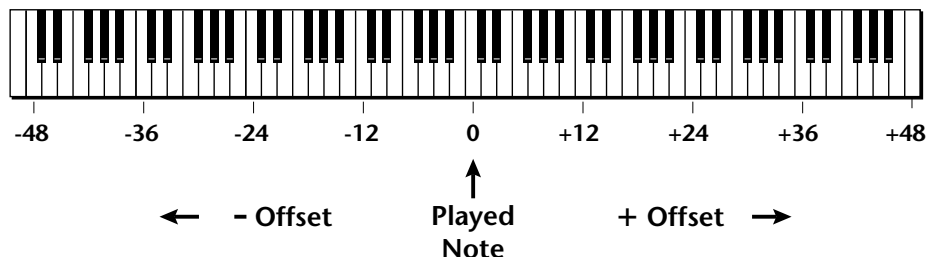
Tie

This function *extends* the duration of notes beyond the values given in the duration field by "tying" notes together. You can tie together any number of consecutive steps.
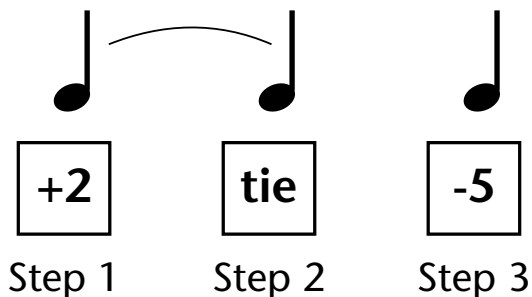
🐦 **IMPORTANT:** *The Gate function in the arpeggiator MUST be set to 100% when using the tie function, otherwise the tied note is retriggered instead of extended.*

| +2 | tie | -5 |
| Step 1 | Step 2 | Step 3 |

Rest

Instead of playing a note, you can define the step as a Rest. The Duration parameter specifies the length of the rest. Rests can be tied together to form longer rests.

Skip

This command simply removes the step from the pattern. The Skip feature makes it easy to remove an unwanted step without rearranging the entire pattern. You'll be happy to know that the velocity, duration and repeat parameters are remembered if you decide to put the step back later.

End

This command signals the end of the pattern. Any steps programmed after the step containing the End command are ignored.

Velocity

Each note in the pattern plays using either a preset velocity value (from 1 through 127), or using the actual velocity of the played note (ply).

Note: Velocity values will not have an effect on the sound unless velocity is programmed to do something in the preset.

Duration

This parameter sets the length of time for the current step, defined as a note value, based on the Master Tempo. The selectable note durations are described below.

1/32	32nd Note	**1/2t**	Half Note Triplet
1/16t	16th Note Triplet	**1/4d**	Dotted Quarter Note
1/32d	Dotted 32nd Note	**1/2**	Half Note
1/16	16th Note	**1/1d**	Dotted Whole Note
1/8t	8th Note Triplet	**1/1t**	Whole Note Triplet
1/16d	Dotted 16th Note	**1/2d**	Dotted Half Note
1/8	8th Note	**1/1**	Whole Note
1/4t	Quarter Note Triplet	**2/1t**	Double Whole Note Triplet
1/8d	Dotted Eighth Note		
1/4	Quarter Note	**2/1**	Double Whole Note

Repeat

Each step can be played from 1 to 32 times. A repeat setting of "1" indicates the step will be played one time (not repeated one time or played twice).

▶ **To Edit a User Pattern**

1. The first field in the Edit User Pattern field defines the pattern's step number. Start with the pattern Step 01.
2. Define the Key Offset, Velocity, Duration and Repeat values.
3. Repeat steps 1 and 2 until you have setup the desired number of steps in the pattern.
4. Set the Key Offset to "End" on the last step in the pattern.

User Pattern Name

The User Pattern Name page lets you enter a name for any User Arpeggiator Pattern.

```
┌─────────────────────────────────────────┐
│  PTRN    KEY    VEL    DUR    RPT         │
│  S01     +0     ply    1/8      2         │
└─────────────────────────────────────────┘
```

▶ To Name a User Pattern

1. From the Pattern Edit screen shown above, position the cursor under the **PTRN** field.
2. Turn the **data entry control** clockwise. The following screen appears.

```
┌─────────────────────────────────────────┐
│  USER PATTERN NAME                        │
│  00⁰  Mod Sycle                           │
└─────────────────────────────────────────┘
```

3. Move the cursor to the bottom line and **edit the Pattern** name using the data entry control and Cursor keys.
4. Move the cursor to the "**Home**" position (shown above) by pressing the **Home/Enter** button.
5. Turn the **data entry control** counter-clockwise one click to return to the Pattern Edit screen.
6. Turn the **data entry control** counterclockwise multiple clicks to jump back to the main Arpeggiator menu screen.

Multichannel Arpeggiating

Presets with the arpeggiator assigned will play when they receive MIDI note-on data from the keypad, internal sequencer or external MIDI source.

Please refer to the instructions on page 28 to learn one way to perform using multiple arpeggiators.

Beats

a 16-track play-only sequencer optimized for live performance and groove creation. **BTS riffs, which are permanently stored in sound ROM, are special multi-part Audition Riffs.** By playing keyboard or trigger keys you trigger, latch and unlatch different parts of these synced loops and grooves. Any preset can be selected and used by assigning a BTS riff *(or KIT riff)* in the Preset Edit menu.

> ▶ **Here's how it works:**

1. **Select a bts: preset**, …or **assign a BTS riff** to one of the percussion presets in the Preset Edit Menu. KIT riffs also have several tracks.
2. Set the "Trigger Buttons Function" in the Controllers menu to **Play Beats Parts**.
3. **Select Triggers** in the Command Functions section.
4. Each of the Beats Parts is assigned to a trigger key. Bring each part in or out by pressing that key. Keys can also be Latched *(press the key once to turn the part on, press it again to turn the part off)*. Other control keys allow you to Mute All Parts, Clear All Parts, and Start & Stop the beat. For BTS Riffs the 16 parts are arranged in the following manner:

Main Groove	Alt. Groove	Perc / Fills	Instr/Wild
1. Kick1	5. Kick2	9. Perc3/Fill1	13. Inst1/Wild1
2. Snare1	6. Snare2	10. Perc4/Fill2	14. Inst2/Wild2
3. Hihat1	7. Hihat2	11. Perc5/Fill3	15. Inst3/Wild3
4. Perc1	8. Perc2	12. Perc6/Fill4	16. Inst4/Wild4

For each Beats Riff, you have 2 Grooves, 4 Fills which correspond to the four parts of the Main and Alternate groove, and 4 Instrument parts. By adding and removing parts, you control the complexity of the groove.

Each part can also be scaled by *Key Velocity*, allowing you to fade parts in and out (if velocity is routed to volume) as you play, or can be *Transposed* over a six octave range. Each part can be assigned to any one of four *Groups,* which allow multiple parts to be triggered from a single key. You can only access Groups using the keyboard trigger keys. See the Factory Setup diagram on the next page.

The factory **BTS** riffs range from 4-16 bars long, using 4 to 16 tracks each. Normally you'll use the Command Function buttons to bring parts in and out. Beat Parts can also be assigned to groups so that multiple parts can be triggered from a single key press. The Group Triggers, Clear Parts, Trigger Hold and Mute keys are only accessible via MIDI or the keypads.

Trigger layouts are saved with the Multisetup. The Factory Multisetup (63) has all the Beats controls assigned to the keyboard as shown in the diagram on the following page. These MIDI note numbers have been placed below the lowest key on the keyboard so as not to interfere with normal playing. Setting the Beats Keys Offset function *(page 250)* to +48 will allow you to access these hidden control keys.

Remember to SAVE your preset once you assign a BTS or KIT riff.

Beats (bts:) Riffs are special 16-part riffs made especially for use with Beats mode. KIT riffs may have four or five parts.

Other riffs usually have only one part recorded.

By assigning Trigger Buttons to the keyboard Beats Layout Keys, you can trigger Beats and MIDI notes using the Trigger buttons.

Factory Setup
Multisetup 63

The chart above shows the Factory Multisetup assignment of each Part, the 4 Groups and the Control Keys. These assignments can be modified to suit your personal preference, then saved in one of the Multisetup locations.

✎ Starting Beats mode with the Start/Stop key allows you to start the sequencer rolling silently. Then you can bring Parts in and out using the "Busy" control.

• **Start/Stop Trigger**	Starts the beat sequencer from the beginning of the sequence. When latched, pressing once starts and pressing again stops. When unlatched, the sequence runs as long as the key is held. Once the Beats sequencer is started, it continues to run even if no triggers are active.
	Start/Stop doesn't clear latched parts when it stops the sequencer. Any trigger played after stopping will not only start the sequencer and play that trigger's part, but also play all previously latched parts.
• **Clear Parts**	Clears any enabled parts. This control provides a quick and easy way to shut off all latched Parts. Latch mode has no effect on this key.
• **Mute**	Mutes all Parts while held, but the Beats sequencer continues running.
• **Trig Hold**	When this key is held, all other Trigger Keys behave as if they were in Latch mode.

✎ If Mute is set to 1-bar, the Part mutes for 1 bar then un-mutes.

The Beats sequencer plays as long as any Beats triggers are active. Beats riffs can also be **Restarted** using a MIDI Song Start command even if the Beats channel is not currently selected. The Audition LED illuminates whenever the Beats sequencer is running (even if no Parts are playing).

Pressing the Audition button plays the riff assigned to the preset. BTS and KIT riffs have multiple parts. Other riffs usually have one part. Pressing the Audition button or starting a Demo causes the Beats sequencer to stop.

All Arp/Beats parameters are saved with the Multisetup.

Beats Mode

This screen turns Beats mode on and has several other features which allow flexible control over Beats mode. There are several status modes that determine when Beats will be turned on and which Riff will be used.

Beats and BEAT Triggers can be set to different MIDI channels. This allows you to perform on two MIDI channels at once with a keyboard that only transmits on a single MIDI channel.

```
BEATS MODE          Status: P
BtsCh: Basic        TrigCh:Basic
```
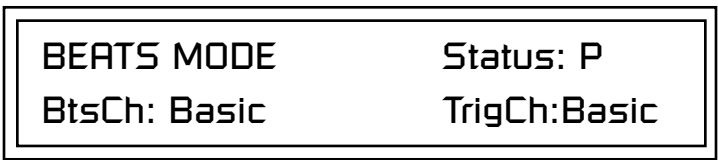
The Basic Channel is the MIDI channel currently displayed in the Main Screen.

Status
- **Off** . . . . Beats mode off.
- **On** . . . . Beats mode on. The Riff assigned in the preset is used.
- **P** . . . . Beats mode is turned on *ONLY* if the Riff assigned in the preset is a "bts:" riff. The Riff assigned in the preset is used. *(Default setting)*
- **M** . . . . Beats mode on. The Master Riff is used (Arp/Beats menu).

```
BEATS MODE          Status: P
BtsCh: Basic        TrigCh:Basic
```
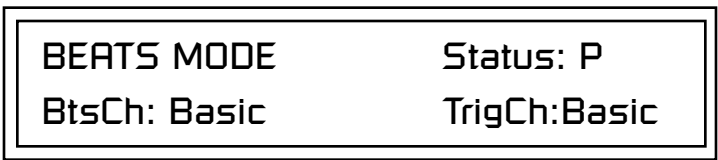
Beats Channel (BtsCh)
- **01-16** . . . . . Selects the MIDI channel on which Beats play.
- **Basic** . . . . . . Beats play on the MIDI channel displayed in the Main Screen.

Trigger Channel (TrigCh)
- **01-16** . . . . Selects the MIDI channel on which Trigger Keys will be active.
- **Basic** . . . . Sets the Trigger Keys to the MIDI channel displayed on the Main Screen.

▶ **Beats Setup:**

Set the Trigger Buttons to Beats Mode

1. Press the **Controllers** button on the front panel.
2. Turn the **data entry control** clockwise until you find the "TRIGGER BUTTONS FUNCTION" screen.
3. Set the lower line of the display to read, "Play Beats Parts".
4. Press the **Controllers** button on the front panel again to exit the menu.

Set the Trigger Buttons to be Triggers

5. Press the **Triggers** button in the Command Functions section of the front panel. OK, now you're ready to start playing Beats.

👀 *The TRIGGER BUTTONS FUNCTION is a new screen which changes the 16 trigger buttons into "Beats Part Mute" buttons.*

▶ **Playing Beats:**

Selecting Beats Presets (see sidebar)

1. Press the **right cursor button twice** so that the cursor is located beneath the **Category** field.
2. Turn the **data entry control** until **bts:** is shown in the Category field.
3. Press the **right cursor button** so that the cursor is underneath the **Preset Name** field.
4. Now turning the **data entry control** selects ONLY **bts:** presets!

Play Beats

5. Press any of the sixteen front panel **Trigger Buttons**. Notice that each button brings in a specific part. The chart below shows which buttons control which part in **bts:** presets.

👀 *You can create your own Beats presets by assigning a BTS riff in the Preset Edit menu.*

• *If you don't select a preset with a BTS or KIT riff assigned, only the first trigger key may work.*

• *Riffs marked "BTS" have 16 parts. KIT riffs usually have 4 parts.*

Main Groove	Alt. Groove	Perc / Fills	Instr/Wild
1. Kick1	5. Kick2	9. Perc3/Fill1	13. Inst1/Wild1
2. Snare1	6. Snare2	10. Perc4/Fill2	14. Inst2/Wild2
3. Hihat1	7. Hihat2	11. Perc5/Fill3	15. Inst3/Wild3
4. Perc1	8. Perc2	12. Perc6/Fill4	16. Inst4/Wild4

6. Also notice that the Audition LED comes on when Beats begin playing. Beats are simply multitrack Audition Riffs. You can use the **Audition** button to turn Beats on and off.
7. Try out a few different **bts:** presets.

Get Busy!

The Controller knobs can be programmed to control Beats. Check it out!

8. Scroll to the **Preset PatchCords** screen in the **Preset Edit** menu. The screen below appears.

```
┌─────────────────────────────────────┐
│  PRESET PATCHCORDS          #01      │
│                                      │
│  Midi 0        -> ArpVel    +100     │
└─────────────────────────────────────┘
```

9. Move the cursor under the Cord destination and change it to **BtsVari**.
   Exit the Preset Edit menu.

10. Turn controller **Knob 15 /O** with a Beats Riff playing. This knob now
    controls the *Beats Variation* parameter. Beats Variation changes which
    parts are playing without changing the number of parts. This makes it
    easy to try out different combinations of Beat Parts.

11. Try hooking controller knobs up to other Beats controls such as ***Beats
    Busy***. See "Beats Controllers" on page 247 for more information.

▶ **To Play Beats on a different MIDI channel:**

Beats can be assigned to a certain MIDI channel while you play the
keyboard on another channel. *(Make sure you have Beats mode set up correctly
as described in "Beats Setup" on page 245.)*

1. Press the **Arp** button and turn the data entry control until the screen
   shown below appears.

```
┌─────────────────────────────────────┐
│  BEATS MODE          Status: P       │
│                                      │
│  BtsCh: Basic        TrigCh:Basic    │
└─────────────────────────────────────┘
```

2. Set the Beats Channel (BtsCh) to **01**.

3. Select any **bts:** preset on channel **1** *(main screen)*.

4. Press any of the sixteen **Beats buttons** to start your Beat playing. *(Do
   NOT start Beats by pressing the Audition button.)*

5. Press the **+ Channel** button to the left of the LCD to select **channel 2**.

6. Select a preset to jam along with the Beat.

7. The Trigger Keys now play Beats and the other keys play the preset on
   channel **2**.

8. The Audition button can be used to turn the Beat off. *(If you try to use it
   to turn Beats on while on channel 2, the Riff on channel 2 will play.)*

Wrong FX? *In Omni
mode, the FX assigned to
channel 2 will be used. In Multi
mode, the Master FX settings
will be used.*

Beats Controllers

Beats can be controlled using the front panel real-time controllers or external MIDI continuous controllers. **Controllers are patched to Beats via the Preset PatchCords located in the Edit menu.** The following Preset PatchCord destinations control Beats.

Beat Velocity Group 1-4 (BtsVelG1 -> BtsVelG4)

Parts assigned to one of the four Beats groups can have their velocity scaled by the controller input. Since most "bts" presets have velocity controlling volume, this control can be used to mix the relative levels of the Groups.

Beats velocity works as a percent *addition*. An input value of 0 (or no Cord) means change the velocity by 0%. A full scale modulation setting of 100% in the PatchCord adds 100% to the velocity value 100% + 100% = 200%. A PatchCord setting of -100% *subtracts* 100% from the velocity (making it 0). Beat velocity scalings are reset with a preset change.

Beat Xpose Group 1-4 (BtsXpsG1 -> BtsXpsG4)

Parts assigned to one of the four Beats groups are transposed by the controller input. Transpose works by shifting the keyboard position and not by changing the tuning of individual notes. Therefore, on a Beats presets (bts), where different instruments are assigned to each key, Transpose has the effect of changing the instrument used by a particular part. This control ADDS to the Part Transpose set in the Beats Transpose screen (page 251). Beat transpose offsets are reset with a preset change.
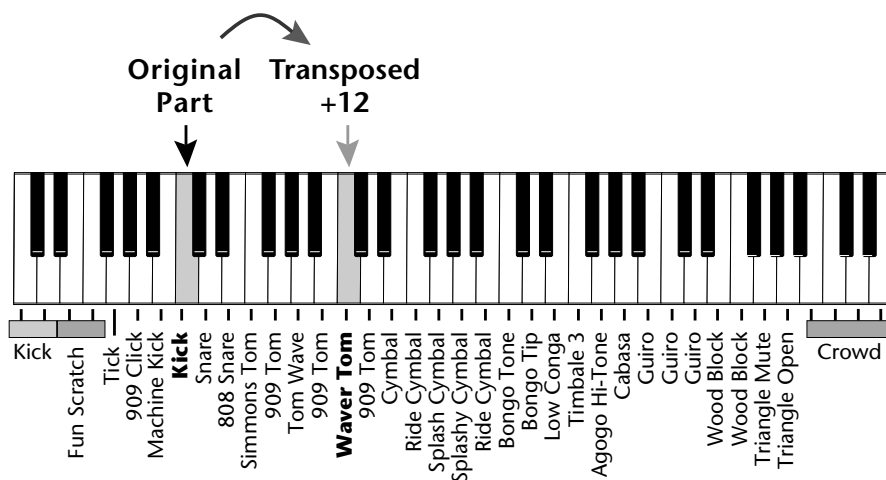
Beat Busy (BtsBusy)

This destination determines which parts are enabled. Beat Busy will accept either positive or negative values.

- **Positive values *Add* parts to whatever parts are triggered**
- **Negative values *Remove* parts that are triggered.**

Hot Tip!
Bidirectional Mod Knob:
Set Controller M to BtsBusy with a Cord amount of +100, then add a DC bias to BtsBusy with a Cord amount of -50. The controller knob now adds or subtracts "Busyness".

Cool Tip! Connecting Key Pressure to Beat Busy at 50% increases BEAT complexity the harder you press.

Suppose the pitch wheel *(which can output both positive and negative values)* were connected to Beat Busy and four Key Triggers are down. As the pitch wheel is moved from center to fully up, the remaining parts will be enabled until the pitch wheel is fully up and all parts are playing. Moving the pitch wheel from center to fully down, the four triggered parts are sequentially removed until at the most negative position of the wheel, no parts are playing.

The Busy control acts on the Beats condition whenever the control is changed. Playing more triggers without changing the Busy control simply adds them until the Busy control is changed again, at which point it will possibly add or subtract parts as needed.

The interaction between the Busy control, Triggers, Part Velocity and Group Velocity can get complicated, but works according to this simple rule:

WHICHEVER CONTROL WAS LAST CHANGED TAKES OVER

When interacting with the Group Velocity scale control, the Busy control ignores group velocity even when it is set to zero, enabling and disabling parts as necessary. If the Group Velocity is changed *after* the Busy control, it takes control, scaling parts as it deems necessary.

The Busy control *does* take the Part velocity into account when adding and subtracting parts. If a part has a velocity of 0%, it is removed from the list of parts that the Busy control adds or subtracts. Therefore, you can use the Part Velocity control to remove parts you don't want to hear.
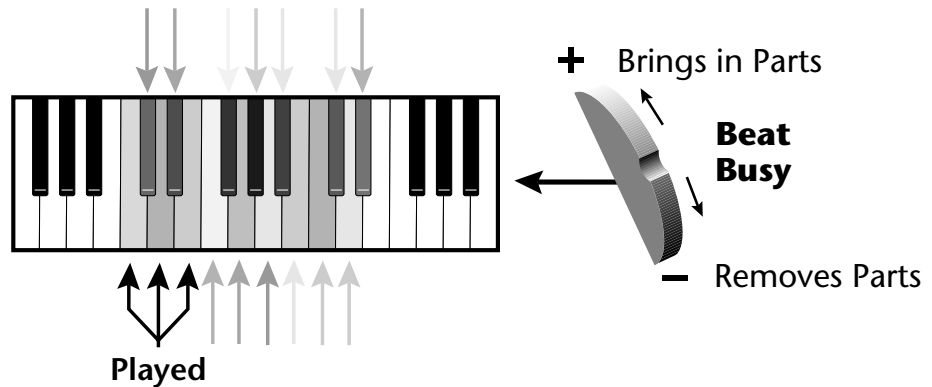
Positive controller values bring in new Parts and negative controller values remove Parts that are latched or held. In this example, the Pitch Wheel is connected to Beat Busy since it outputs negative as well as positive values.

Beat Variation (BtsVari)
Beat Variation varies which Parts are brought in and out using the Beat Busy control. Increasing this control mixes up the order in which Parts are brought in and out, thus providing even more permutations to the Beat.

Beats Keys/Trigger Layout

👓 *Save your Beats Keys Layouts and all other Arp/Beats parameters using "Save Setup" function in the Global menu.*

This screen assigns the 16 Beats Triggers to keyboard notes on the Beats channel. For each Part, Group and Control Key you can select the following options:

• **Key** . . . . Selects which keyboard key triggers the Part
• **Latch** . . . . The first key press turns the Part on, the next turns it off.
• **Unlatch** . . . . . . The Part plays only while the key is held.
• **1-bar** . . . . The Part plays for one bar then stops.

```
BEATS KEYS LAYOUT
Part 1     Key: C1      unlatch
```
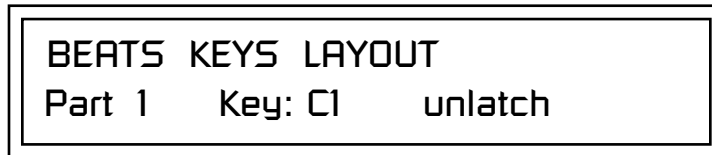
1-Bar Trigger Option

The 1-bar option requires a bit of explanation. When a trigger key is pressed before the last beat of the measure, the part will continue playing until the end of the measure. If the Trigger Key is pressed after the last beat of the measure, the part waits until the next measure before playing. Then it plays for the entire measure and stops. The time signature and the measure bounds are determined by the particular Beats Riff you are playing.
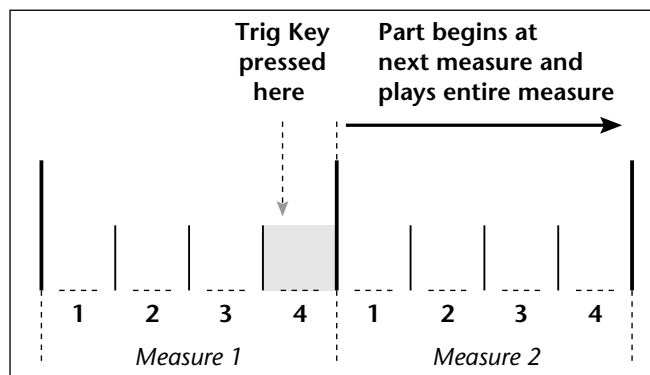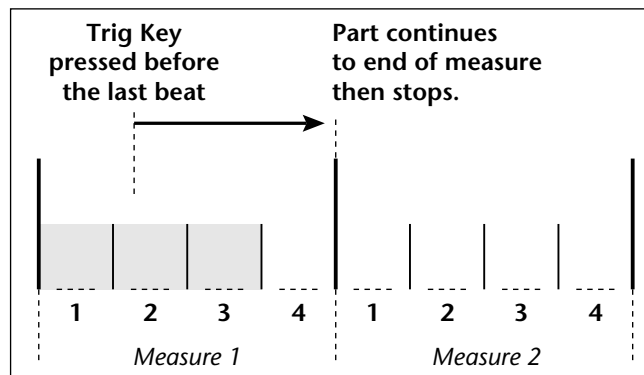
Beats Keys Offset

This function slides the Beats Trigger keys *(assigned in the previous screen)* up and down the keyboard. This makes it easy to change the keyboard location of the trigger keys without having to re-assign each key. A positive offset moves the group of triggers up the keyboard by the designated number of keys. Negative offsets move the trigger group lower on the keyboard.

```
┌─────────────────────────────────┐
│                                 │
│   BEATS KEYS OFFSET             │
│   +000 keys                     │
│                                 │
└─────────────────────────────────┘
```

Negative Offset ←— —→ *Positive Offset*
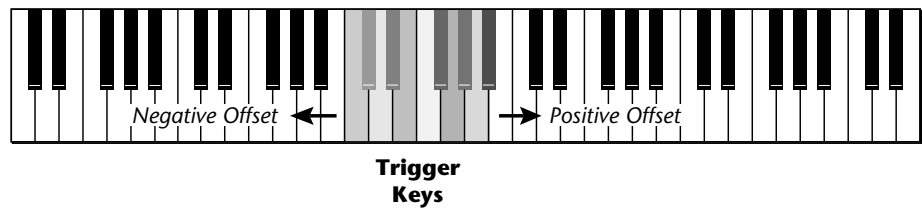
**Trigger
Keys**

Beats Keys Offset slides the entire group of beats triggers up or down the keyboard.

Beats Part Velocity

Each note of a Beats Riff can have its recorded velocity scaled by a value (from 0 to 120%) of the recorded velocity or the actual played velocity of the trigger key can be used (trigger vel). For example, if a note's velocity is 80, scaling by 110% will increase the note's velocity to 88. This feature allows you to control the mix of the different parts in advance or "on-the-fly" as you play. If a part's velocity is set to 0%, that part will be removed from the mix.

✎ *Use Beats Part Velocity to adjust the volume of Beats relative to volume of the Pattern or Song.*

Select Part

```
┌─────────────────────────────────┐
│ P1 BEATS PART VELOCITY          │
│    Scaled by: trigger vel       │
└─────────────────────────────────┘
```
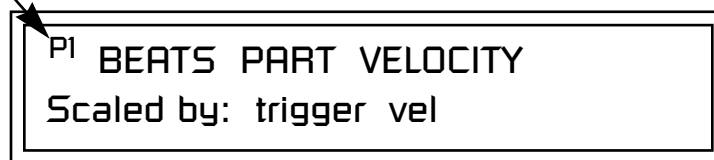
▶ To Set the Velocity for each Part:

1. Press the left cursor button to move the cursor under the Part field.
2. Select the Part number using the Data Entry Control. Parts 1-16 can be selected. *(All parts, shown as an "A", can be edited at once if "Edit All Layers" is enabled in the Master menu.)*
3. Move the cursor to the bottom line using the cursor keys and adjust the Velocity Scaling percentage using the Data Entry Control.
4. Repeat steps 1 through 3 for all the Parts you wish to adjust.
5. Press the Enter/Home button or use the cursor keys to move the cursor back to the screen heading.

Beats Part Transpose

Each Part of a Beat Riff can be transposed up to 36 semitones up or down. Transpose works by shifting the keyboard position and not by changing the tuning of individual notes. Therefore, on a Beats preset (bts:), where different instruments are assigned to each key, **Transpose has the effect of changing the instrument used by a particular part.** On a preset where a single sound covers the entire keyboard, Transpose will actually transpose the sound.

Select Part

```
P1   BEATS PART TRANSPOSE
+00 semitones
```

▶ **To set the Transposition for each Part:**

1. Press the left cursor button to move the cursor under the Part field.

2. Select the Part number using the Data Entry Control. Parts 1-16 can be selected. *(All parts, shown as an "A", can be edited at once if "Edit All Layers" is enabled in the Master menu.)*

3. Move the cursor to the bottom line using the cursor keys and adjust the Transposition in semitones using the Data Entry Control.

4. Repeat steps 1 through 3 for all the Parts you wish to adjust.

5. Press the Enter/Home button or use the cursor keys to move the cursor back to the screen heading.

Original Part   Transposed +12

Kick   Fun Scratch   Tick   909 Click   Machine Kick   **Kick**   Snare   808 Snare   Simmons Tom   909 Tom   Tom Wave   909 Tom   **Waver Tom**   909 Tom   Cymbal   Ride Cymbal   Splash Cymbal   Splashy Cymbal   Ride Cymbal   Bongo Tone   Bongo Tip   Low Conga   Timbale 3   Agogo Hi-Tone   Cabasa   Guiro   Guiro   Guiro   Wood Block   Wood Block   Triangle Mute   Triangle Open   Crowd
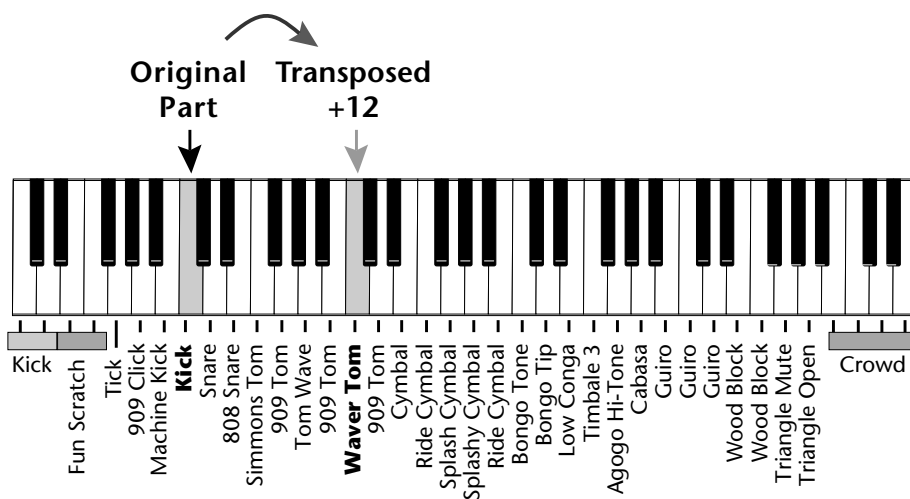
Beats Part Group

This screen is where you assign Parts to one of the four Groups. By grouping, you can play multiple parts with a single key. A part can be in one and only one group, or in no groups.

Select Part

```
┌────────────────────────────────────────┐
│ ┌──────────────────────────────────┐   │
│ │ P1  BEATS  PART  GROUP           │   │
│ │ Group:   2                       │   │
│ └──────────────────────────────────┘   │
└────────────────────────────────────────┘
```
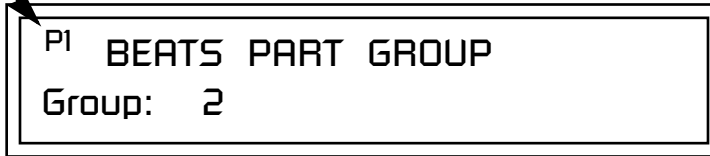
👀 *All Parts assigned to a Group will stop playing when the Group key is triggered, then untriggered even if the individual Parts in the Group are latched.*

▶ **To Assign a Part to a Group:**

1. Press the left cursor button to move the cursor under the Part field.

2. Select the Part number using the Data Entry Control. Parts 1-16 can be selected. *(All parts, shown as an "A", can be edited at once if "Edit All Layers" is enabled in the Master menu.)*

3. Move the cursor to the bottom line using the cursor keys and select the Group (1-4 or none) using the Data Entry Control.

4. Repeat steps 1 through 3 for all the Parts you wish to assign.

5. Press the Enter/Home button or use the cursor keys to move the cursor back to the screen heading.

Master Riff

The Master Riff is selected from this screen. The Master Riff is used when Master (M) is selected for Beats in Beats mode enable screen.

▶ **To Assign the Master Riff:**

1. Use the cursor buttons to move the cursor to the lower line of the display.

2. Select the desired Riff using the Data Entry Control. (Beats Riffs are identified by the **bts:** prefix.)

3. If there is more than one ROM in you can select Riffs from any ROM set. Move the cursor under the ROM ID and select using the Data Entry Control.

4. Press the Enter/Home button or use the cursor keys to move the cursor back to the screen heading.

Riff Tempo

This setting determines whether **Riff Tempo** (the tempo stored with each Riff) or the **Current Tempo** (the Base Tempo from the Master Clock) will be used for Beats. Use "Current Tempo" if you want to synchronize Beats with the Pattern/Song sequencer.

To control the Riff Tempo from MIDI clock, set Riff Tempo to "use current tempo" and Base Tempo to "use MIDI".

```
 RIFF TEMPO
 use riff tempo
```

▶ **To Set the Riff Tempo Mode:**

1. Use the cursor buttons to move the cursor to the lower line of the display.
2. Select "use riff tempo" or "use current tempo" using the Data Entry Control.
3. Press the Enter/Home button or use the cursor keys to move the cursor back to the screen heading.

Riff Controllers

Riffs contain preprogrammed real-time control information. This function allows you to turn these controllers On or Off for the Riffs. This control affects Audition Riffs as well as Beats Riffs.

```
 RIFF CONTROLLERS
 use riff controllers
```

▶ **To Turn Riff Controllers On or Off:**

1. Use the cursor buttons to move the cursor to the lower line of the display.
2. Select "use riff controllers" or "ignore riff controllers" using the Data Entry Control.
3. Press the Enter/Home button or use the cursor keys to move the cursor back to the screen heading.

Effects

Effects Overview

XL-7 has two stereo effects processors. When playing presets one at a time, the two processors can be programmed as part of the preset. When the MIDI Mode is set to "multi," the XL-7 uses a global effects assignment (Master Effects). The diagram below shows how the effects are integrated into the signal path using a parallel effects send/return model, similar to a mixing console.

FX Send Amount

Reverb, Delay

Effect A

Preset

Dry Signal

Sum

Sum

Main Outs

Effect B

Chorus, Flange

FX Send Amount
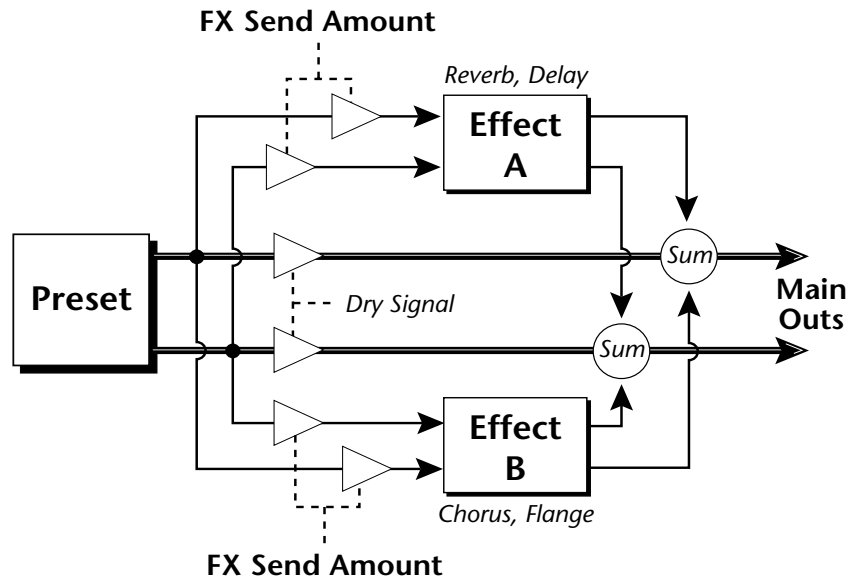
The Effects Sends

On a mixing console you can control the amount of signal each channel Sends to the effect bus. This allows each channel to be placed in a slightly different "sonic space" which creates an airy, open sound.

XL-7 uses this basic concept, but works in a slightly different manner. There are four effects busses: Send1-Send4. Each preset or each MIDI channel (you determine which), can be directed to one of the four busses. Each effect processor has four Send Amounts which allow you to set the wet/dry mix on each of the four busses going into the effect. A setting of 0% is completely dry (no effect). A setting of 50% contains an equal mix of affected and normal (dry) signal.

Send 2 and Send 3 are also used to route sounds to the Sub 1 and 2 outputs on the back panel. When a plug is inserted into the associated Submix jack on the back panel, the Dry portion of the Send is disconnected from the effects processor and the Dry signal is routed directly to the output jack. **The Arrow (->) in the display points to the actual output routing**. *The Dry Send is disconnected from the Effects Processors even if only one plug is inserted into a Submix pair.*

The Effects Send is programmed for each layer in the Preset Edit menu. These routings can be overruled in the Global menu *Mix Output* screen by changing the submix setting from "preset", which uses the preset routing, to Send1-Send4. In the diagram below, MIDI channel 1A is programmed to obey the preset routing which in this case is Send 1.
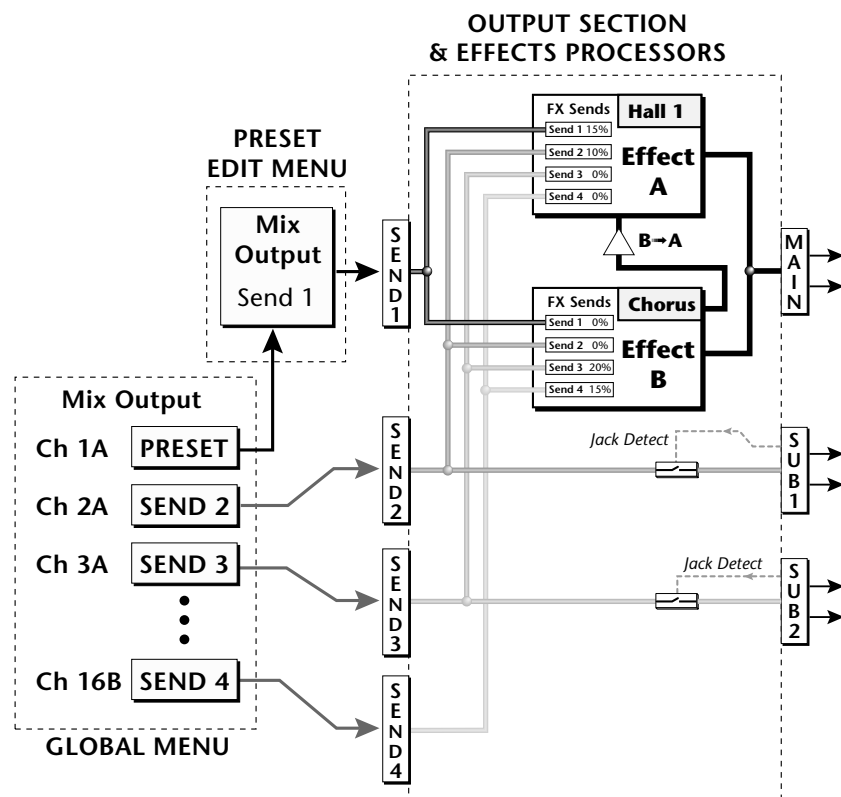
Individual layers or entire MIDI channels can be routed to any of the four busses.

The four Effect Sends allow you to get the most out of the two effect processors. For example, with Effect B set to an echo algorithm, you could route one MIDI channel to Send 3 and set the effect amount to 80%. Another MIDI channel could be routed to Send 4 with an effect amount of only 5%. This is almost like having two different effects!

The Mix Output function is also useful when sequencing since it lets you route specific MIDI channels (and thus sequencer tracks) to specific Sub outputs (on the back panel) where there they can be processed with EQ or other outboard effects.

Effect Types

A Effect Types
Room 1-3
Hall 1 & 2
Plate
Delay
Panning Delay
Multitap 1
Multitap Pan
3 Tap
3 Tap Pan
Soft Room
Warm Room
Perfect Room
Tiled Room
Hard Plate
Warm Hall
Spacious Hall
Bright Hall
Bright Hall Pan
Bright Plate
BBall Court
Gymnasium
Cavern
Concert 9
Concert 10 Pan
Reverse Gate
Gate 2
Gate Pan
Concert 11

Medium Concert
Large Concert
Large Concert Pan
Canyon
DelayVerb 1-3
DelayVerb 4-5 Pan
DelayVerb 6-9

B Effect Types
Chorus 1-5
Doubling
Slapback
Flange 1-7
Big Chorus
Symphonic
Ensemble
Delay
Delay Stereo
Delay Stereo 2
Panning Delay
Delay Chorus
Pan Delay Chorus 1 & 2
Dual Tap 1/3
Dual Tap 1/4
Vibrato
Distortion 1 & 2
Distorted Flange
Distorted Chorus
Distorted Double

Effect Parameters

"A" Effect types contain Reverb and Delay effects. "B" Effect types contain Chorus, Flange and Distortion effects. There are 44 "A" effects and 32 "B" effects. In addition to the effect type, there are user adjustable parameters for each effect. The "A" effects have programmable Decay and High Frequency Damping. The "B" effects have user programmable Feedback, LFO Rate, and Delay Time.

Decay

The Decay parameter is used when setting "A" type effects. Decay sets the length of time it takes an effect to fade out. When setting up reverb effects, Decay controls the room size and the reflectivity of the room. For larger room sizes and greater reflectivity, set the Decay value higher. When setting up delay effects, the Decay parameter controls how many echoes are produced or how long the echoes last. The greater the value, the more echoes and longer lengths of time.

The Decay value range is from 0 through 90.

High Frequency Damping

The HF Damping parameter is used when setting "A" type effects. High Frequency energy tends to fade away first as a sound is dissipated in a room. the HF Damping parameter adjusts the amount of damping applied to the signal's high frequency elements which, in turn, changes the characteristics of the room. Rooms with smooth, hard surfaces are more reflective and have less high frequency damping. Rooms filled with sound absorbing materials, such as curtains or people, have more high frequency damping.

The value range for High Frequency Damping is from 0 through 127.

Feedback

The Feedback parameter is used when setting "B" type effects. The Chorus and Flange effects have a controllable feedback loop after the delay element. Feeding back a small amount of the signal intensifies the effect by creating multiple cancellations or images. Higher feedback values increase the amount of the Feedback loop.

The Feedback value range is from 0 to 127.

LFO Rate

The LFO Rate parameter is used when setting "B" type effects. Both Chorus and Flange effects use a Low Frequency Oscillator (LFO) to animate the effect. LFO applied to a chorus effect creates the slight changes necessary for a realistic choral effect. Applied to a flanger effect, the LFO moves the comb filter notches and adds animation to the sound.

The LFO Rate value range is from 0 to 127.

Delay

Flanging, chorus and echoes are all based on a delay line where the signal is delayed by some time period and then mixed back with the unaltered signal. This parameter specifies the how much time passes before you hear the delayed signal. On some effects, this value cannot be changed. In this case, the field contains a dash.

The Delay value range is from 0ms to 635ms.

Effects Programmed in the Preset

Effects are normally programmed as part of the preset allowing you to have a different effect for each. This section describes how to program and modify XL-7's preset effects.

▶ **To Program the Effects as Part of the Preset:**

1. Press the Preset Edit button. The LED illuminates and the Preset Edit screen appears.
2. Use the data entry control to select the FXA Algorithm screen.

```
┌─────────────────────────────────────┐
│  FXA ALGORITHM                       │
│   Lg Concert Pan                     │
└─────────────────────────────────────┘
```

3. Select an Effect. Do not select the "Master Effect" setting or the global effects set up in the Global menu will be used instead of the Preset Effect settings.
4. Use the data entry control to select the FXA parameter screen.

```
┌─────────────────────────────────────┐
│  FXA   DECAY    HFDAMP    FxB>FxA    │
│          90       127        127     │
└─────────────────────────────────────┘
```

The FxB -> FxA parameter lets you route the B effect through the A effect. See "Effect B Into Effect A" on page 264.

5. Set the other effect parameters to your preference. Refer to the information in the last section for detailed descriptions of these parameters.
6. Use the data entry control to select the FXB Algorithm screen.

```
┌─────────────────────────────────────┐
│  FXB ALGORITHM                       │
│   Distorted Flange                   │
└─────────────────────────────────────┘
```

7. Select an Effect. Do not select the "Master Effect" setting or the global effects set up in the Global menu will be used instead of the Preset Effect settings.
8. Use the data entry control to select the FXB parameter screen.

```
┌─────────────────────────────────────┐
│                                      │
│  FXB    FEEDBK   LFORATE    DELAY     │
│           127       127    635ms     │
│                                      │
└─────────────────────────────────────┘
```

9. Set the other effect parameters to your preference. Refer to the information in the last section for detailed descriptions of these parameters.

10. Save the preset. The programmed effects setting will be saved along with the preset.

Master Effects

When playing single presets, the effects are normally programmed as part of the preset. In Multimode, and when selecting effects via the sequencer, the Master effects are used, since there are only two effect processors to serve 32 MIDI channels.

You might also want the effects to be programmed on a global basis when in Omni or Poly modes. You could choose your favorite reverb, for example, and have it applied to any preset you select.

▶ **To Program the Master Effects**

1. Press the Global menu button. The LED illuminates and the Global screen appears.

2. Use the data entry control to select the FXA Algorithm screen.

```
┌─────────────────────────────────────┐
│                                      │
│  FXA ALGORITHM                       │
│  Lg Concert Pan                      │
│                                      │
└─────────────────────────────────────┘
```

3. Select an Effect.

4. Use the data entry control to select the FXA parameter screen.

```
┌─────────────────────────────────────┐
│                                      │
│  FXA    DECAY    HFDAMP    FxB>FxA    │
│           90       127       127     │
│                                      │
└─────────────────────────────────────┘
```

The FxB -> FxA parameter lets you route the B effect through the A effect. See "Effect B Into Effect A" on page 264.

5. Set the other effect parameters to your preference. Refer to the information in the last section for detailed descriptions of these parameters.
6. Use the data entry control to select the FXB Algorithm screen.

```
FXB ALGORITHM
Distorted Flange
```

7. Select an Effect.
8. Use the data entry control to select the FXB parameter screen.
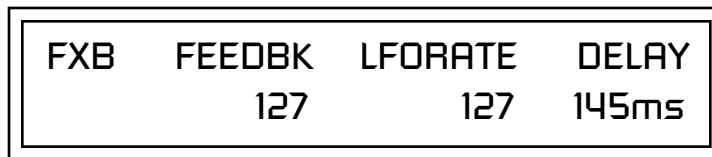
```
FXB     FEEDBK    LFORATE      DELAY
          127        127       145ms
```

9. Set the other effect parameters to your preference. Refer to the information in the last section for detailed descriptions of these parameters.
10. Press the Preset Edit menu button. The LED illuminates and the Preset Edit menu displays the last screen used.
11. Use the data entry control to access the FXA Algorithm page and select "Master Effect A."

🐛 *The MIDI mode (MIDI Menu) must be set to Omni or Poly mode in order to select the effects in the preset.*

```
FXA ALGORITHM
Master Effect A
```

12. Repeat step 11 for the FXB Algorithm
13. Save the preset. The Master effects routing will be saved along with the preset.

Effects Mode

This control provides a true bypass of the effects engine. Bypass is a useful feature if you are using external effects at the mixing console and want to turn the effects off for all presets.

▶ **To Bypass the Effects:**

1. Press the Global menu button. The LED lights and the last Global parameter screen used is displayed.
2. Use the data entry control to select the Effects Mode screen.

```
FX MODE
enabled
```
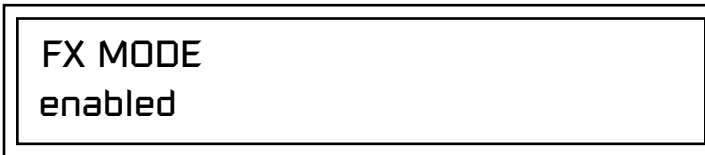
3. Use the cursor button to advance the cursor to the bottom line in the screen.
4. Use the data entry control to change the value.
5. Press the Enter key to save the settings.

The Effects Mode values are "enabled" and "bypassed." Enabling the Effects Mode turns on effects. Selecting "bypassed" turns off the effects.

Flexible Effects Control

The effects processor controls are very flexible. The effects can be controlled in three different ways to suit your personal preference and to adapt to different situations.

When in Omni or Poly mode, effects are normally programmed as part of the preset. In Multi mode, the two effects processors can be controlled using the Master settings or by using the effects settings of a preset on a specific MIDI channel. Effects can be programmed in the following ways:

✎ *You can create special "Effects Presets" which are assigned to the FX Multi mode Control channel, then use standard MIDI Program Change commands to switch effects during sequence playback.*

1. **Programmed as part of the preset when playing single presets (Omni or Poly Modes).**

2. **Programmed from the Master Effects Section when playing either single presets (preset Effect Type set to "Master") or when in Multi Mode. This is the typical mode when using the sequencer because the master effects settings are saved with each pattern.**

3. **Programmed from the designated control preset when in Multi Mode.**

Refer to the following diagram for a look at how effects are programmed.

1

Master

Preset
FX

(Omni or Poly Mode)

**Effects are part
of the Preset**

2

Master
FX

Preset
Ch 1A

Preset
Ch 16B

*Selected by Sequencer
(Multi mode)*

Master Effects

3

Master

Preset
Ch 1A

Preset
Ch 16B   FX

(Multi mode)

Selected FX Control Channel ⟶ Ch 16B

**One Channel's
Preset determines
the Effect Settings**
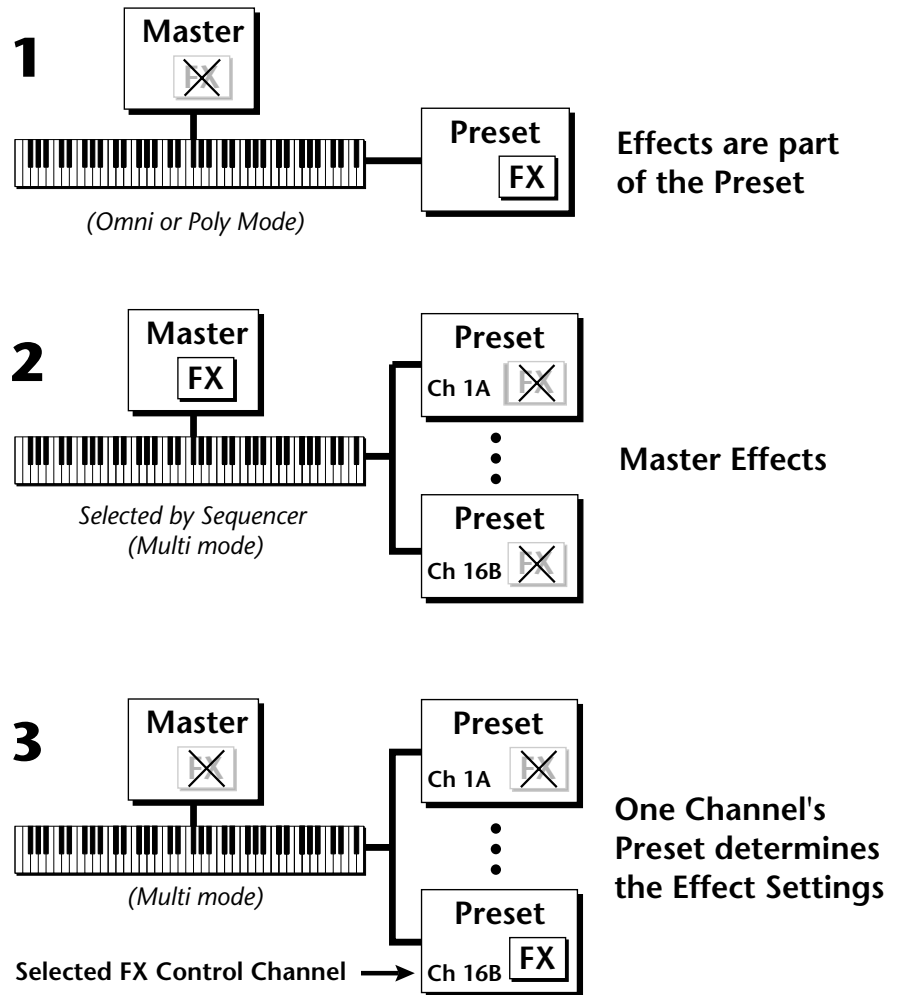
▶ **To Program the Effects Globally for all Presets in Multi Mode:**

1. Press the MIDI menu button. The LED illuminates and the MIDI menu screen appears.

2. Use the data entry control to select the MIDI mode page. Choose "multi" for the mode.

```
MIDI MODE               CHANGE
multi                   accepted
```
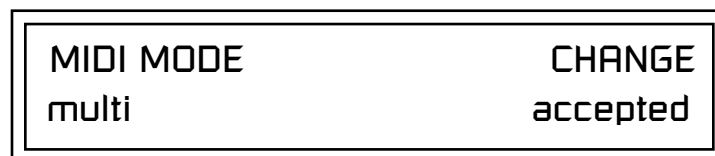
3. Move the cursor to the Multi mode Effects Control page using the data entry control.

```
┌─────────────────────────────────┐
│                                 │
│  FX MULTIMODE CONTROL           │
│  use master settings            │
│                                 │
└─────────────────────────────────┘
```

4. Set the Effect Control channel to *use master settings* using the data entry control.

5. Press the Enter key to save the settings and return to the main screen.

Using the Effects Channel Settings in Multi Mode

In Multi mode, the two effects processors can be controlled from the Master Effects settings or they can follow the effects settings of the preset on a special MIDI channel. The effect settings on this special channel will be applied to all the other MIDI channels. This allows the effects to be changed during a sequence simply by changing the preset on a specified MIDI channel.

▶ **To Program the Effects by Channel Number in Multi Mode**

1. Press the MIDI menu button. The LED illuminates and the MIDI menu screen appears.

2. Use the data entry control to select the MIDI mode page. Choose "multi" for the mode.

3. Move the cursor to the Multi mode Effects Control field using the data entry control

4. Set the Effect Control to "preset on Channel #" (where # is replaced by the actual channel number from 1A through 16B) using the data entry control.

5. Press Enter to save the settings and return to the main screen.

Effect B Into Effect A

The output of effects processor B can be routed into effects processor A. This connects the effects in series instead of their normal parallel configuration. Two effects connected in series sound very different than the same two effects in parallel. For example, a chorus patched through reverb can turn a bland string section into a lush wall of sound. The B –>A amount can also be controlled for even more flexibility.

▶ **To Send the Output of Effect B through Effect A:**

In this example, 100% of Effect B will be sent into Effect A.

1. Access the FXA parameter screen (in either the Global or Preset Edit menus) that contains the FXB –>FXA parameter.

```
┌─────────────────────────────────────────┐
│  ┌───────────────────────────────────┐  │
│  │                                   │  │
│  │  FXA   DECAY   HFDAMP   FxB>FxA    │  │
│  │          127     127       127    │  │
│  │                                   │  │
│  └───────────────────────────────────┘  │
└─────────────────────────────────────────┘
```

2. Set this amount to 127. Press the cursor button to return the cursor to the top line in the display.

3. Use the data entry control to select the FXA submix routing parameter screen.

```
┌─────────────────────────────────────────┐
│  ┌───────────────────────────────────┐  │
│  │                                   │  │
│  │  FXA  SEND AMOUNTS      1: 10%     │  │
│  │  2: 20%       3: 30%    4: 40%     │  │
│  │                                   │  │
│  └───────────────────────────────────┘  │
└─────────────────────────────────────────┘
```

4. Press the cursor buttons to advance the cursor to the Main field.

5. Set the Main send amount to any amount other than zero.

6. Press the cursor button again to return the cursor to the FXA title. Use the data entry control to advance to the FXB Algorithm page.

7. Select an effect.

8. Advance to the FXB submix routing page and set the Main FXB send percentage to zero.

9. Play the keyboard and you should hear the B Effect running through Effect A. This patch is shown below.
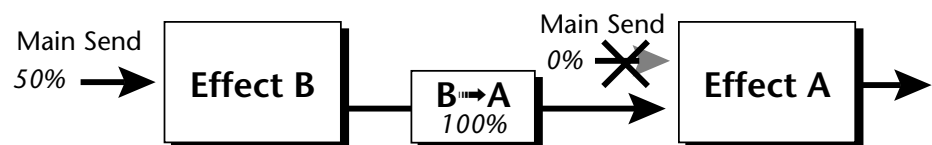
General Effect Descriptions

Reverb

Reverberation is a simulation of a natural space such as a room or hall. The reverb algorithms in XL-7 simulate various halls, rooms and reverberation plates. In addition, there are several other reverb effects such as Gated Reverbs, Multi Tap (early reflections), Delay and Panning effects. There are two adjustable parameters on the reverb effects - Decay Time and High Frequency Damping.

Decay time defines the time it takes for the reflected sound from the room to decay or die away. The diagram below shows a generalized reverberation envelope.
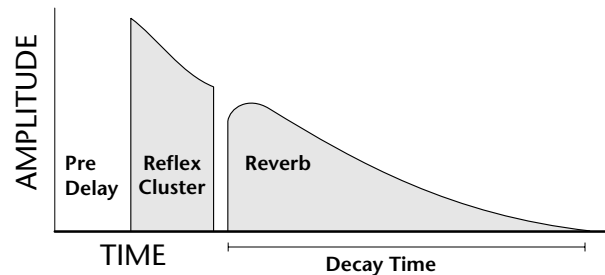
After an initial pre-delay period, the echoes from the closest walls or ceiling are heard. These first echoes, or the early reflection cluster, vary greatly depending on the type of room. Roughly 20 milliseconds after the early reflection cluster, the actual reverberation begins and decays according to the time set by the Decay Time parameter.

High frequency energy tends to fade away first as a sound is dissipated in a room. The High Frequency Damping parameter allows you adjust the amount of high frequency damping and thus change the characteristics of the room. Rooms with smooth, hard surfaces are more reflective and have less high frequency damping. Rooms filled with sound absorbing materials such as curtains or people have more high frequency damping.

General Descriptions of the Reverb Types

Room: Programs simulate small rooms with high frequency absorption caused by drapes and furniture.

Plates: Simulates plate type reverbs with their tight, dense, early reflections and sharp reverb buildup.

Hall: Presets recreate the open, spacious ambience of large concert halls.

Gated Reverbs: Add ambience only while the original signal is still sounding. As soon as the signal falls below a threshold, reverb is cut off.

Delay: Programs can be used to create echo and doubling effects.

Multi Tap: Programs consist of the reflection cluster only without the reverb decay.

Chorus

The function of a chorus device is to thicken the sound or to make one voice sound like many. This effect is usually created by mixing one or more delayed versions of the signal with the original. The delay times used are too short to be perceived as an echo, but long enough so that comb filtering does not occur. In addition, the delay time is varied via a low frequency oscillator to simulate the random differences which occur when multiple instruments are playing together. A slight amount of feedback improves the effect by creating multiple images of the sound as it recirculates again and again.

All the choruses are true stereo using two separate delay lines controlled by a single set of controls. The delay times are slightly different for each channel and the LFO phase is inverted on one channel to help contribute to the overall chorus effect. The LFO Rate and Depth settings are critical to achieving a realistic effect, with faster LFO rates generally requiring less LFO amount and vice-versa.

Doubling

When a copy of a sound delayed by about 26 milliseconds is added back to the original, two audio images are perceived by your brain. When the delayed image is slightly varied or modulated, the illusion of two voices is created.

Slapback

Slapback is a single short echo in the range of 50-60 milliseconds. A sound delayed by this length of time is perceived as a discrete and separate image which is useful for a thickening effect or as a pre-delay for reverb simulating a hard, reflective surface such a gymnasium wall.

Stereo Flanger

A flanger consists of a short audio delay line whose output is mixed together with the original signal. Mixing the delayed and original signals results in multiple frequency cancellations called a comb filter. Since the flanger is a type of filter, it works best with harmonically rich sounds.
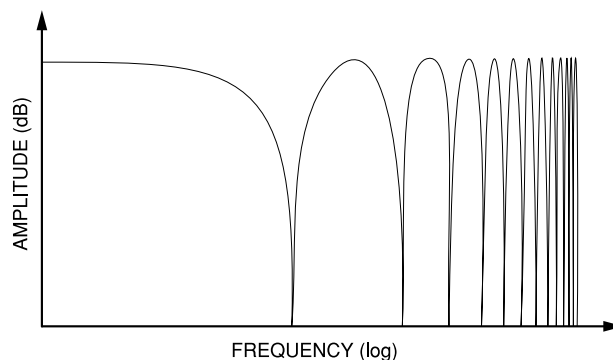
This is the frequency response of a Comb Filter.

Flanging was originally created using two tape recorders playing identical recordings. By exactly synchronizing the two decks and then slowing the speed of one by grasping the tape reel flanges, the flanging effect was born.

The XL-7 flanger is a stereo device consisting of two separate delay lines controlled by a single set of controls. A Low Frequency Oscillator (LFO) varies this initial delay setting, changing the frequency of the notches and adding animation to the sound. LFO Rate controls the rate of change and LFO Depth controls how much the LFO changes the delay.

The Feedback control sends some of the delayed signal through the delay line again. When feedback is used the comb filter notches are deepened.

Delay

Delay is an effect which can be used for doubling, reverb pre-delay, or echoes.

Delay Time is variable from 0-635 mS and controls the time between echoes. Feedback and determines how long the echoes continue sounding. "Infinite" delay effects are also possible without the risk of runaway.

Stereo Delay

Similar to delay except that the delay line outputs a stereo signal from the mono input. The two output signals are a few milliseconds apart to create a stereo image. The delay times are variable from 0-635 mS.

Panning Delay

A panning delay is similar to the normal delay lines except that the echoes bounce back and forth between the two stereo speakers.

Dual Tap

These are delay lines where the signal is "tapped off" at two unevenly spaced locations. When feedback is used, multiple complex echoes are produced. The fraction in some of the algorithm names (i.e. 1/3, 1/4) refers to the time ratio between the taps.

Vibrato

Basically, this a delay line modulated by an LFO, but with none of the original signal added in. The LFO modulation creates a Doppler shift and a resultant cyclical pitch shift. The vibrato created in this manner sounds very different than vibrato created by frequency modulating the sample.

Distortion

Distortion uses a technique called "soft-clipping" to create additional harmonics in the signal. As the level increases, the top of the waveform becomes somewhat squared. As the level increases further, it transforms into a true square wave.

Soft clipping gradually squares the edges of the waveform as the amplitude is increased.
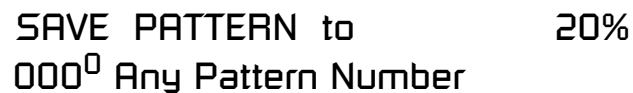
Save/Copy Menu

The Save/Copy button is used to save changes to a pattern, song, preset, copy data between presets, randomize presets and to move other types of data. The menu is context-sensitive and will start at the appropriate save screen. If multiple items need to be saved, then the screens have the following priority: pattern, song, preset. Use the data entry control to navigate to other pages that support copying information.

Save Pattern

Changes made to the current pattern are not made permanent until the pattern is saved. The upper right corner of the display shows the percent of memory available for saving patterns. When the display reads 0%, you are out of memory and will not be able to save until you have erased other data from the sequencer.

When a pattern (or song) has been edited and needs to be saved, an asterisk (*****) appears in the display. The asterisk and your edits remain on the edited pattern even if you change patterns. Edits are only erased by saving the pattern, editing another pattern, invoking the "Revert To Saved" feature (page 93), or turning the unit off.

```
SAVE  PATTERN  to           20%
000⁰ Any Pattern Number
```

▶ **To Save a Sequencer Pattern**

Examine interesting presets to learn how they work using the Edit menu.

1. With the Mode/View selector in "pattern" mode, **select the pattern** you want to save.
2. Press the **Save/Copy** menu button.
3. Move the cursor to the bottom line on the display and select a **destination pattern location.**
4. Press **Enter** when you have made your selection. *The Enter LED is flashing indicating that XL-7 is waiting for your response.*
5. The Sequencer Pattern is now saved into the chosen location.

Saving a Preset

Any time you make a change to a preset, either using the Preset Edit menu or by changing the Controller Knobs in Quick Edit mode, you must save the preset in order for the change to become permanent. When you save a preset it erases any existing preset information in that location. Make sure that the destination location does not contain preset information you want to keep.

✎ *Each time you change a preset parameter, an asterisk appears in the preset name and the Save/Copy button LED illuminates reminding you to save your work.*

```
SAVE PRESET  to          User
020¹  Destination Preset
```
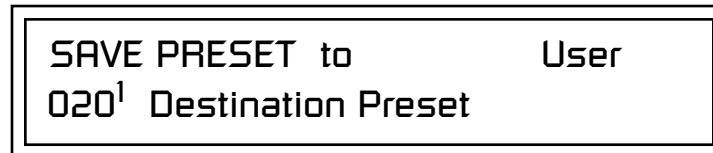
▶ **To Save a Preset**

1. Press the **Save/Copy** menu button.
2. **Move the cursor** to the bottom line on the display.
3. **Select** the new preset location using the data entry control.
4. Press the **Home/Enter** button.

Copying Information

The Copy operations let you copy information from any preset or layer to any other preset or layer. To use the copy command, first select the preset or layer to which you want to copy (the destination location). Then, from the copy screen, select the preset or layer you want to copy to the currently selected location (the source location). Using the copy commands you can copy preset, layer, PatchCord and arpeggiator information.

Copy Preset

The Copy Preset command lets you copy all of the preset information from one location into the preset of the current location. The preset information in the source location (the preset location from which you want to copy) is not deleted from the original location, just copied to the destination location.

```
COPY  PRESET  from          XL-7
009³   pad: Dreamer
```

✎ *All the Sound Navigator features work when using the Copy functions.*

▶ **To Copy a Preset**
1. **Select the Preset** you want to copy information *into*.
2. Press the **Save/Copy** menu button.
3. Select **"Copy Preset from"** using the data entry control.
4. **Select the preset** you want to copy using the data entry control. The ROM Bank, Preset Number, Bank Number, Category and Preset Name fields are all selectable.
5. Press the **Home/Enter** button.
6. A warning appears asking you to confirm once more. Press the **Home/Enter** button to copy the selected preset into the current location.

Copy Layer

The Copy Layer command lets you copy any layer information from one preset into any layer of the current preset location. The layer information in the source location (the layer location from which you want to copy) is not deleted from the original location, just copied to the destination location.

```
COPY  LAYER     User    L1 -> L4
020¹ Source Preset
```

▶ **To Copy a Layer**

1. **Select the Preset and Layer** you want to copy information *into*.
2. Press the **Save/Copy** menu button.
3. Move the cursor to the bottom line on the display.
4. **Select the preset location** using the data entry control, of the preset containing the information you want to copy into the current preset.
5. Move the cursor to the top line in the display.
6. **Select the layer** of the source preset in the first field on the right.
7. **Select the destination layer** in the second field.
8. Press the **Home/Ent**er button.

Copy PatchCords

The Copy Patch Cord command lets you copy the PatchCord settings from one layer of the preset location into the current layer of the current preset location. The preset information in the source location (the preset location from which you want to copy) is not deleted from the original location, just copied to the destination location.

```
COPY CORDS     User     L1 -> L4
020¹ Source Preset
```

▶ **To Copy a PatchCord**

1. **Select the Preset and Layer** you want to copy information *into*.
2. Press the **Save/Copy** menu button.
3. Move the cursor to the bottom line on the display.
4. **Select the preset location** using the data entry control, of the preset containing the information you want to copy into the current preset.
5. Move the cursor to the top line in the display.
6. **Select the layer** of the source preset in the first field on the right.
7. Select the **destination layer** in the second field.
8. Press the **Home/Enter** button.

Copy Preset PatchCords

The Copy Preset PatchCord command lets you copy the preset patchcord settings from one preset location into the current preset location. The preset information in the source location (the preset location from which you want to copy) is not deleted from the original location, just copied to the destination location.

```
COPY  PRESET CORDS            User
020¹ Source Preset
```

▶ **To Copy a Preset PatchCord**

1. **Select the Prese**t you want to copy information *into*.
2. Press the **Save/Cop**y menu button.
3. Move the cursor to the bottom line on the display.
4. **Select the prese**t containing the information you want to copy.
5. Press the **Home/Enter** button.

Copy Arpeggiator Settings

This function lets you copy the Arpeggiator settings from any ROM or RAM preset location into the current RAM (User) preset.
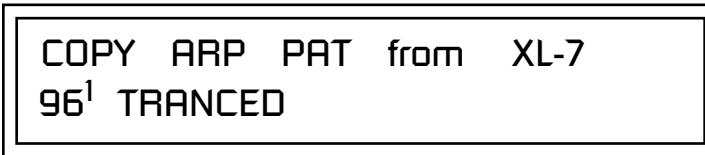
```
COPY  ARP  SET  from    XL-7
052⁰ syn: Syn  Chaos
```

▶ **To Copy the Arpeggiator Settings**

1. From the Preset View display, **select the User Preset** you want to copy the Arp setting *into*.
2. Press the **Save/Cop**y menu button.
3. Move the cursor to any of the fields on the bottom line on the display.
4. Use the data entry control to **select the preset** you want to copy *from*.
5. Press **Enter** when you have made your selection. *The Enter LED is flashing indicating that XL-7 is waiting for your response.*
6. The Arp Settings are copied into the current preset.

Copy Arpeggiator Pattern
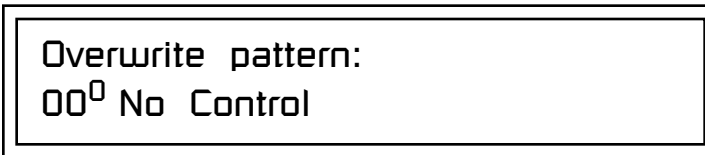
This function lets you copy the Arpeggiator pattern from any ROM or RAM preset to any RAM (user) pattern.

```
COPY  ARP  PAT  from   XL-7
96¹ TRANCED
```

▶ **To Copy the Arpeggiator Pattern**
1. Press the **Save/Copy** menu button.
2. Move the cursor to any of the fields on the bottom line on the display.
3. Use the data entry control to **select the preset** you want to copy *from*.
4. Press **Enter** when you have made your selection.
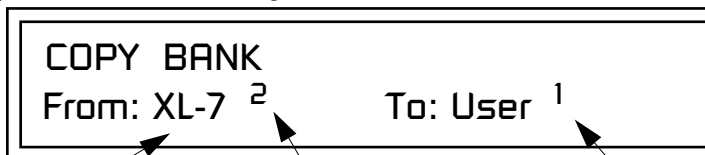
```
Overwrite  pattern:
00⁰ No  Control
```

5. Press **Enter**. The Arp Pattern is copied into the selected User Pattern.

Copy Preset Bank

The Copy Preset Bank command lets you copy an entire bank from any ROM or RAM bank location to any RAM (user) bank. This function can be especially useful after installing a new sound SIMM.

```
COPY  BANK
From: XL-7 ²        To: User ¹
```

ROM or RAM Preset Location *Bank No.* *Destination Bank No.*

▶ **To Copy a Preset Bank**
1. Press the **Save/Copy** menu button.
2. Move the cursor to the "**From**" field on the bottom line on the display.
3. Use the data entry control to **select the preset bank** you want to copy *from*.
4. Move the cursor to the "**To**" field on the bottom line on the display.
5. Use the data entry control to **select the User preset** bank you want to copy *into*.
6. Press the **Home/Enter** button to overwrite the bank.

Copy Sequencer Pattern

This function lets you copy a sequencer pattern from any location into the current pattern location.

```
COPY  PATTERN  from      30%
96¹ TRANCED
```

▶ **To Copy the Sequencer Pattern**

1. Press the **Save/Copy** menu button.
2. Move the cursor to any of the fields on the bottom line on the display.
3. Use the data entry control to select the **pattern** you want to copy *from*.
4. Press **Enter** when you have made your selection.
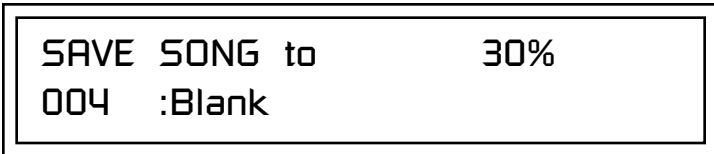
```
press  ENTER  to  overwrite
063⁰ No Control
```

5. Press **Enter**. The pattern is copied into the current Pattern location.

Save Song

Changes made to the current song are not made permanent until the song is saved.

When a song (or pattern) has been edited and needs to be saved, an asterisk (*) appears in the display. The asterisk and your edits remain on the edited song even if you change songs. Edits are only erased by saving the song, editing another song, invoking the "Revert To Saved" feature (page 114), or turning the unit off.

```
SAVE  SONG  to        30%
004   :Blank
```

▶ **To Save a Song**

1. Press the Save/Copy menu button.
2. Move the cursor to the bottom line of the display.
3. Use the data entry control to select the new location for the song. The Enter LED will be flashing.
4. Press Enter when you have made your selection. The display will momentarily flash "Saving Song", and the song will be saved.

Copy Song
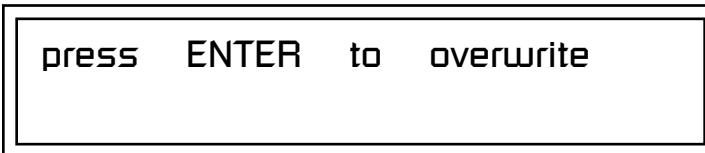
This function lets you copy a song from any location into the current song location.

```
COPY  SONG  from          30%
002 ENTRANCED
```

▶ **To Copy the Song**

1. Press the **Save/Copy** menu button.
2. Move the cursor to any of the fields on the bottom line on the display.
3. Use the data entry control to select the song you want to copy *from*.
4. Press **Enter** when you have made your selection.

```
press   ENTER   to   overwrite
```

5. Press **Enter**. The song is copied into the current song location.

Sound Authoring

Copy User Bank to Flash

This is a special purpose function to be used with the Flash sound authoring feature. Flash Sound SIMMs created on an EOS Ultra sampler can be used as a custom XL-7 bank. Presets are then created in a User bank. When the bank of presets is finished, it can be copied, using this function, to the Flash SIMM. Flash SIMMs contain two separate memory locations. One of these memories contains the sound samples and the other memory can hold four banks of 128 presets.

WARNING: dangerous voltages are exposed inside XL-7! Make sure power is completely disconnected from XL-7 before removing the top panel. Replace the top panel before restoring power to the unit. The two sound SIMM sockets inXL-7, marked 0 and 1, are located behind the controller knobs on the circuit board.**The destination Flash SIMM must be placed in SIMM socket 1.**

```
COPY USER BANK TO FLASH
From: User⁰      To: Flash²
```

▶ **To Copy a User Bank to Flash**

1. Make sure a Flash SIMM is inserted into the extra SIMM socket.
2. Press the **Save/Copy** menu button.
3. Rotate the data entry control to select the **"Copy User Bank"** function shown above.
4. Move the cursor to the **"From"** field and select the User bank that you want to copy to the Flash SIMM.
5. Move the cursor to the **"To"** field and select the Flash bank that you want to contain the User bank.
6. Press **Enter**. The Enter LED will flash and the screen below appears.

```
Press  ENTER  to  Overwrite
Flash SIMM Presets
```

7. Press **Enter** again to confirm. The following screen appears:

```
COPYING USER BANK TO FLASH
Done. Please Reboot Now.
```

8. The Flash presets cannot be used until XL-7 is rebooted (power off then on). **Reboot** the XL-7 and verify that the new Flash bank has been properly copied.

If there is no Flash SIMM in the unit, the error message, "Requires Flash SIMM" will be displayed.

Rename Flash SIMM

This utility allows you to rename the Flash SIMM and change its ID number. Flash SIMMs can have any five letter name you choose. Each Flash SIMM in a XL-7 unit must have a unique ID number (106-119).

The field in the upper right corner selects between multiple Flash SIMMs. If only one Flash SIMM is installed, the field cannot be modified.

✎ *The Flash ID is the MSB of the MIDI Bank Select command used to select the Sound Bank.*

```
┌─────────────────────────────────────────┐
│ RENAME FLASH SIMM          Flash         │
│ New Name: Drums            ID: 110       │
└─────────────────────────────────────────┘
```

👀 *If there is no Flash SIMM in the unit, the error message, "Requires Flash SIMM" will be displayed.*

1. Make sure a Flash SIMM is inserted in a XL-7 SIMM socket.
2. Press the **Save/Copy** menu button.
3. Rotate the data entry control to select the "Rename Flash SIMM" function shown above.
4. Move the cursor to the **"New Name"** field and rename the SIMM using the data entry control to select the letter and the cursor keys to select the position.
5. **Set the Sound ID number** for the SIMM. It doesn't matter which number you choose as long as the same number isn't used in another SIMM.
6. Press **Enter**. The following screen appears and the Enter LED will be flashing.

```
┌─────────────────────────────────────────┐
│ Press  ENTER  to  Update                 │
│ Flash  SIMM  data                        │
└─────────────────────────────────────────┘
```

7. Press **Enter** again to confirm or any other button to abort. The following screen appears:

```
┌─────────────────────────────────────────┐
│ CHANGING  SIMM  NAME  &  ID              │
│ (takes  about  2  minutes)               │
└─────────────────────────────────────────┘
```

8. The Flash presets cannot be used until XL-7 is rebooted (power off then on). **Reboot** the XL-7 and verify that the new Flash bank has been properly renamed.

Duplicate Flash

This utility allows you to duplicate Flash SIMMs using XL-7. Both Sound and Preset data is copied when a Flash SIMM is duplicated. A factory sound SIMM cannot be copied using this utility.

WARNING: dangerous voltages are exposed inside XL-7! Make sure power is completely disconnected from XL-7 before removing the top panel. **Replace the top panel before restoring power to the unit.**

The two sound SIMM sockets in XL-7 are marked 0 and 1. These are located behind the controller knobs on the circuit board. The Flash SIMM you want to copy MUST be placed into SIMM Socket 0. The destination Flash SIMM must be placed in SIMM socket 1.

```
DUPLICATE SLOT 0 FLASH
Start
```

1. Make sure the two Flash SIMM are located in the required XL-7 SIMM sockets.
2. Press the **Save/Copy** menu button.
3. Rotate the data entry control to select the **"Duplicate Flash SIMM"** screen shown above.
4. **Move the cursor** to the bottom line and press **Enter**. The following screen appears and the Enter LED will be flashing.

☙☙ *If there are no Flash SIMMs in the unit, or if the SIMMs are in the wrong slots, an error message will be displayed.*

```
Press  ENTER  to overwrite
the Flash SIMM in Slot 1
```

5. Press **Enter** again to confirm or any other button to abort. The following screen appears and the SIMM is copied.

```
DUPLICATING SLOT 0 -> SLOT 1
(Takes about 5 minutes)
```

6. When XL-7 has finished duplicating the SIMM, turn power off, remove the copied SIMM, then **reboot**. That's it!

Create Random Preset

This is a great feature which creates a new preset using portions of the ROM presets as source material. By merging random presets, really great sounding presets can be generated with ease. Use this feature to generate wild new sounds, get new programming ideas or just for fun.

```
RANDOMIZE  PRESET        User
000⁰ Any User Preset
```

Examine interesting presets to learn how they work using the Edit menu.

▶ **To Create a Random Preset**
1. Press the **Save/Copy** menu button.
2. Move the cursor to the bottom line on the display and press **Enter**.
3. A new random preset will be created.
4. Don't like the sound? Press **Enter** again and a new random sound will be generated.

Preset Programming

There is so much you can do with the XL-7 it's impossible to describe it all. This chapter is will give you a few ideas for programming your own custom sounds and contains step-by-step instructions to help you get started. In order to get the most from this chapter, we recommend you actually try each example.

Editing Presets

One of the easiest ways to make a new preset is to edit an existing preset. This is also an excellent way of becoming familiar with XL-7. If you don't like what you hear, simply select a new preset, then XL-7 reverts to the original sound. Changes are not permanent until you Save them (see "Saving a Preset" on page 270).

Let's experiment and modify a few parameters of an existing preset. We'll start with functions that have an obvious effect on the sound: Instrument Select, Tuning, and Chorus.

Changing the Instrument

Changing the instrument is the easiest and most dramatic way to modify an existing preset.

▶ **To Change the Instrument for the Current Layer**

1. Choose any cool preset, then press the **Preset Edit** button.
2. Press the **#1 Jump button** twice to jump directly to the Instrument page. *See "Preset Menu Jump Keys" on page 41.*

✎ *The **Preset Edit Jump Buttons** are located in the "Command Functions" section of the front panel.*

```
┌─────────────────────────────────────────┐
│ L1  INSTRUMENT          ROM:XL-7         │
│ 0099  wal:Audity 1                       │
└─────────────────────────────────────────┘
```
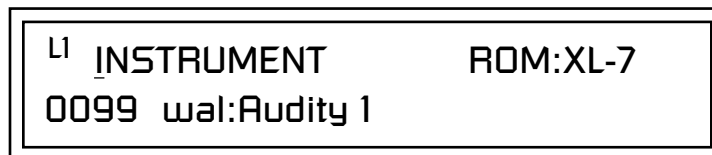
3. Move the **cursor** down to the bottom line (using a Cursor button).
4. Use the **data entry control** to change the instrument. This changes the instrument for the current layer (in this case it's L1).
5. **Play the keyboard** as you scroll through the various instruments.

▶ **To Change the Instrument for any Layer in the Preset**

6. Move the **cursor** back up to the first field in the first line (the layer).

7. Use the **data entry control** to select the layer you want.

```
 L2  INSTRUMENT          ROM:XL-7
 0513  vox:Orch
```

8. Repeat steps 3 and 4 for each selected layer. Find an instrument that sounds good when combined with the previous instruments selected.

With all these great instruments to work with, you really can't go wrong. Now let's play with the tuning.

Changing the Tuning of an Instrument

Tuning the selected layer of the preset changes the pitch of the key on the controller. If the numbers are "00," it means that the instruments are tuned to concert pitch (A=440 Hz). The Coarse tuning value represents whole semitone intervals. The Fine tuning value shifts the pitch in 1/64 semitones (or 1.56 cents).

▶ **To Tune the Instrument of the Current Layer**

1. Press the **#3 Jump button** twice to jump directly to **Tuning** page.

```
 L1  TUNING
     Coarse:  +36        Fine:   +6
```
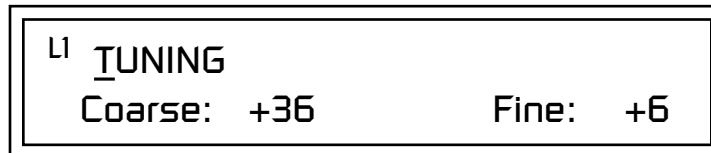
2. Move the cursor to the **Coarse** field (using the cursor button).

3. **Set the value to +12** to shift the pitch up a whole octave. To shift the pitch in smaller units than a semitone, **use the Fine field**.

Try tuning one of the instruments to a perfect fifth above the other by setting the Coarse value to +7.

Tuning an instrument far out of its normal range completely changes the character of the sound. For example, if you tune a bass guitar up 2 octaves, it's going to sound rather petite. On the other hand, if you tune it down 2 octaves, you can probably rattle plaster off the walls! Experiment with radical pitch shifting. You'll be surprised at the results.

Chorus

This is an easy one. Chorus works by doubling the instruments and detuning them slightly. The larger the chorus value, the more detuning occurs. The Width parameter controls the stereo spread. A Width value of 0% reduces the chorus to mono, a value of 100% provides the most stereo separation. Chorus is useful when you want to "fatten up" a part quickly and easily.

👀 *WARNING: Since it works by doubling the instruments, Chorusing halves the number of notes you can play on XL-7.*

▶ **To Chorus a Layer**

1. Press the **#5 Jump button** to jump directly to the Chorus page.
2. Use the **cursor buttons** to advance the cursor to the Chorus field (the first field in the bottom line of the display). Use the **data entry control** to turn on chorus.

```
 L1  CHORUS                    WIDTH
     off                        100%
```
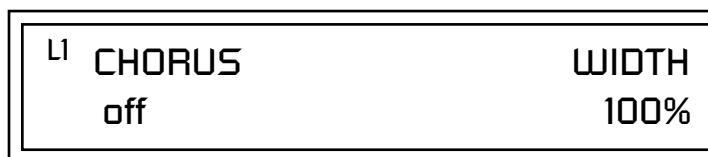
3. **Select a Width value** based on the amount of detuning you want. Smaller numbers mean less detuning, larger ones more.

You can select various amounts of chorusing for each of the instruments, just play around with the Chorus and Width parameter until you like what you hear.

Volume Envelope

Every sound you hear, whether it's a piano note, a drum, or a bell, has a characteristic volume curve or envelope. This Volume Envelope shapes the volume of the sound which grows louder or softer in various ways during the course of the sound. The volume envelope of a sound is one of the clues our brain uses to determine what type of sound is being produced.

An envelope shapes the sound or volume of the sound over time. The envelope generators in XL-7 all have six stages to the contour: Attack 1, Attack 2, Decay 1, Decay 2, Release 1 and Release 2. When you press a key on the keyboard, the envelope goes through each of the first four stages, advancing to the next stage when the defined Level for each is reached. As long as you continue to hold the key down, the envelope continues through the first four stages holding at the end of the Decay 2 level until the key is released. When you release the key, the envelope jumps to the Release stages (no matter where the envelope is when you release the key) ending at the Release 2 level.
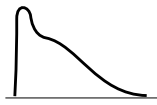
Piano
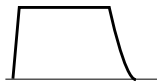
Organ

Strings

Percussion

Key Down   **Key Released**
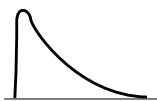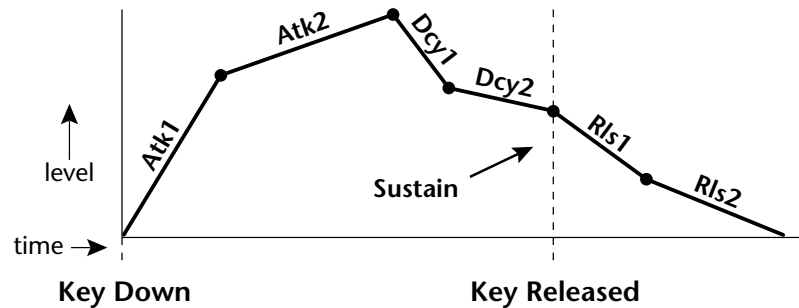
Every instrument in XL-7 has it's own predetermined volume envelope which is used when the Volume Envelope parameter is set to "factory." By setting the Volume Envelope to "time-based" or "tempo-based," we can reshape the instrument's natural volume envelope any way we want. By reshaping the volume envelope of a instrument, you can dramatically change the way the sound is perceived. For example, you can make "bowed" pianos or backward gongs. The diagrams to the left show the characteristic volume envelopes of a few common sounds.

In preparation for this experiment choose almost any of the standard organ presets which continues to sustain when the key is held down. Go to the Instrument page and set it to "None" on all layers except Layer 1. Now you're ready to play with the Volume Envelope.

▶ **To Setup the Volume Envelope**

1. Go to the **Volume Envelope** mode screen, by pressing the "Amp" jump button, and set the Volume Envelope mode to "time-based."

```
L1  VOLUME ENVELOPE
Mode:  time-based
```
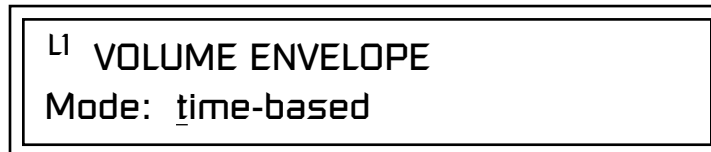
2. Now move on to the next screen to set the Volume Envelope parameters.

✎ *Front panel knobs 5-8 are routed to the volume envelope parameters and thus affect the settings. You may want to disconnect the PatchCords to gain total control of the envelope parameters. (Alternately, you can create a completely blank preset and start from there.)*

```
L1  VOL ENV       TIME          LEVEL
Attack 1           50           100%
```
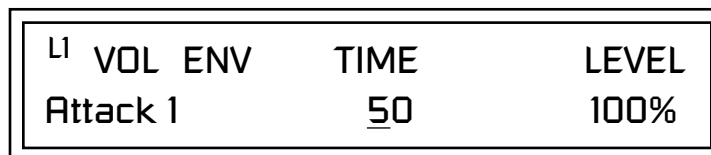
3. Increase the Attack 1 time value and play a note. The attack controls the time it takes for the sound to reach the Attack level when a key is pressed and held.

4. Move the cursor to the first field in the bottom line and use the cursor buttons to advance to the Release pages.

5. Increase the Release 1 and 2 times. Note the effect as you release the key on the controller. The Release stages controls the time it takes for the sound to die away when a note is released.

▶ **To Setup the Volume Envelope as an ADSR**

The classic synthesizer ADSR (Attack-Decay-Sustain-Release) envelope is easy to create using the XL-7 six segment envelope generators. The trick is to only use segments: Attack1, Decay2, and Release1.

1. Set Atk1, Atk2 & Dcy1 levels to 100.

2. Set Rls1 & Rls2 levels to 0.

3. Set Atk2, Dcy1 and Rls2 rates to 0.

4. Program the Atk1, Dcy2 and Rls1 segments as you wish. Decay 2 level is your Sustain level.
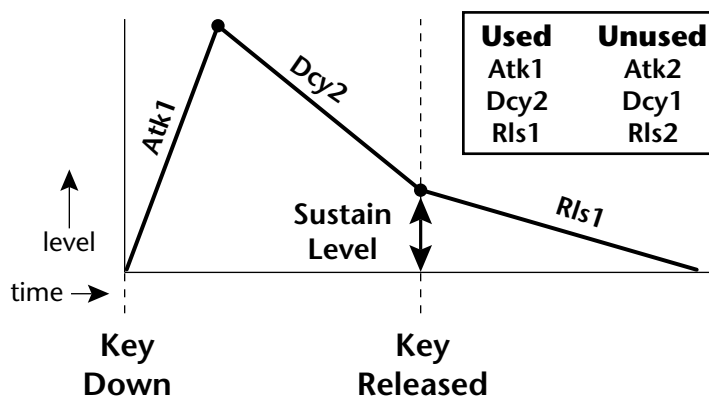
Working with Filters

The filters make it possible to remove certain components of the sound. A low pass filter removes the high frequency components or put another way, it "lets the low frequencies pass." A high-pass filter removes the low frequency components from the sound letting only the high frequencies pass. See "XL-7 Filter Types" on page 202 for a complete list of XL-7's filters and their descriptions.

In preparation for the next tutorial, select the Blank Preset. (Select the Preset Category and spin the data entry control all the way to the left).

1. Go to the Instrument screen (Preset Edit menu) and select Instrument #124 - Interference. This is a harmonically rich sound. Since filters work by removing or accentuating certain frequencies, we want to make sure that we have a lot of frequencies to start with.

1. Advance to the Filter Type screen using the data entry control. Select the Classic 4th order filter.

```
 L1  FILTER          Ord        Type
    Classic           4         LPF
```

2. Go to the Filter Frequency and Q screen. Position the cursor in the Freq: field as shown in the following illustration.

```
 L1  FILTER
    Freq:   255               Q: 000
```

The Frequency parameter determines the filter cutoff frequency or the frequency the filter uses as the highest frequency allowed to pass.

If you play the keyboard now, you should hear the raw sound. Slowly decrease the filter cutoff frequency value as you play the keyboard. The sound gets more and more dull as you remove more and more high frequencies from the sound. At some point, the sound completely disappears. (You have filtered out everything.) The chart on the following page illustrates what you just did.
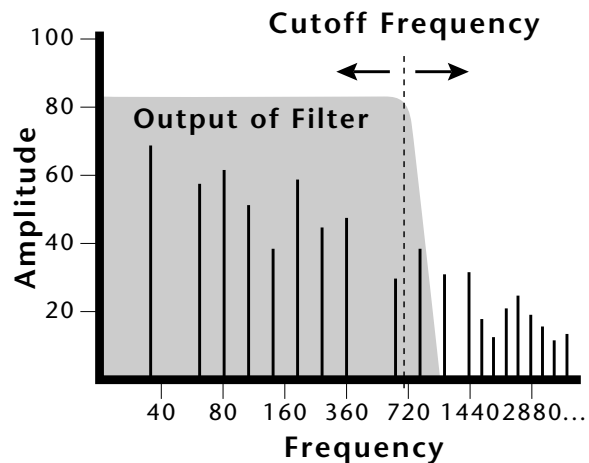
3. Open the filter back up to 255, then move the cursor to the Q field.

4. Set the Q to 10, then move the cursor back under the Freq value. As you change the frequency, notice that the sound now has a sharp, nasal quality. A high Q boosts or amplifies the frequencies at the cutoff frequency (Fc).

5. Reset the cutoff frequency to the lowest setting and the Q to 00.

Adding the Filter Envelope

Now let's modulate the Filter Frequency with the Filter Envelope. The Filter Envelope is a device that can automatically change the filter frequency during the course of the note. Before we define the Filter Envelope, we need to patch the Filter Envelope to the Filter Frequency.

▶ To Setup the Filter Envelope

1. Go to the **PatchCord** screen by pressing the **Cords** Jump Key.

```
L1  PATCHCORD                    #01
RlsVel    ->      AmpVol         +100
```

2. Move the **cursor** below the first field in the bottom line of the display. This is the **Source** field. Use the **data entry control** to change the Source to "FiltEnv" as shown in the following illustration.

3. Advance the **cursor** to the next field. This is the **Destination** field. Use the data entry control to change the destination to "FiltFreq."

4. Move the **cursor** to the last field in the line. This is the **Amount** field. The Amount field determines the amount of modulation applied. Set this value to "+100."

```
L1  PATCHCORD                    #01
FiltEnv+    ->     FiltFreq      +100
```

This setup connects the Filter Envelope Generator to the Filter Cutoff as shown in the following diagram.
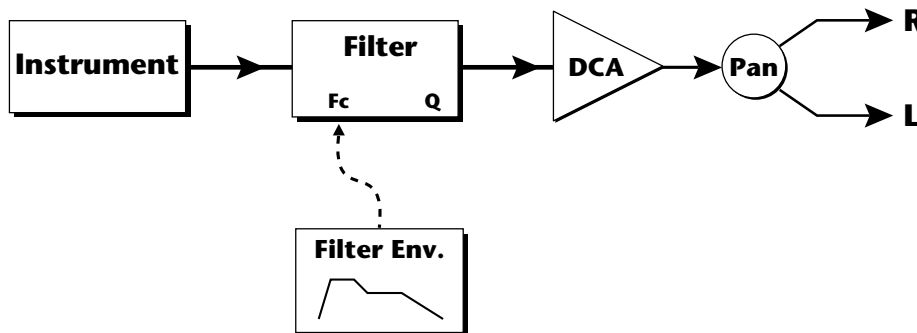
5. Now, return to the **Filter Envelope Mode** screen. Set the Mode to "time-based."

```
ᴸ¹ FILTER ENVELOPE
Mode:   time-based
```

6. Advance to the **Filter Envelope** parameter page.

```
ᴸ¹ FILT ENV        RATE            LEVEL
Attack1             50              100%
```
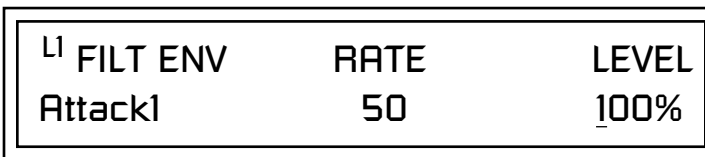
7. Move the cursor underneath the **time field** and change the value to about +50. Now when you press a key the filter slowly sweeps up.

```
ᴸ¹ FILT ENV        RATE            LEVEL
Attack1             50              +88%
```
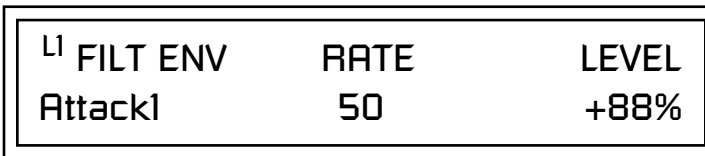
8. Change the **attack rate** and note the change in the sound.
9. Set the envelope parameters as shown in the following table.

Envelope Phase	Time	Level %
Attack 1	40	65
Attack 2	65	100
Decay 1	80	85
Decay 2	25	50
Release 1	97	20
Release 2	73	0

With the above setup, the filter sweeps up, then Decays back down to the Decay 2 Level until you release the key. Then it sweeps down at the Release rates. Play with the envelope parameters for awhile to get a feel for their function. (If you're having trouble understanding the Envelope Generators, please refer to the Programming Basics section in this manual.)

Changing Filter Types

Go back to the Filter Type screen shown below and move the cursor down the lower line of the display. Change the filter type while playing the keyboard. There are 50 different filter types.

```
L1 FILTER          Ord     Type
Aah-Ay-Eeh          6      VOW
```
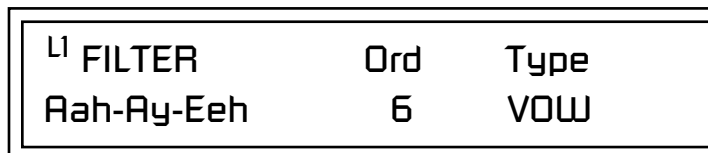
These filters are extremely powerful and have been carefully crafted to offer maximum flexibility and musical control. You may want to change the Envelope (PatchCord) Amount, Q and/or the Filter Frequency to get the right sound for each filter and instrument. These three controls, coupled with the Filter Envelope, are perhaps the most important controls on any synthesizer. Take the time to learn how they interact with each other and you will be able to create sounds beyond imagination.

Envelope Repeat

The Envelope Generator can also be made to repeat. When the envelope repeat function is On, the Attack (1&2) and Decay (1&2) stages will continue to repeat as long as the key is held.

▶ **To Make the Filter Envelope Repeat:**

1. Go to the Filter Envelope **Mode** screen shown below.
2. Move the **cursor** to the Mode field.

```
L1 FILTER  ENVELOPE
Mode:      time-based
```

3. Turn the **data entry control** clockwise. The Mode field will change to Repeat as shown below.

```
L1 FILTER  ENVELOPE
Repeat: on
```
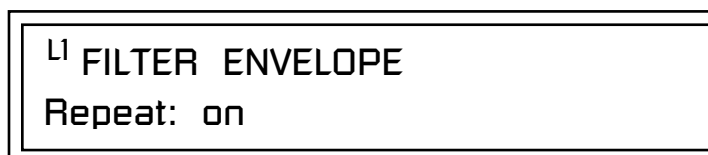
4. Move the **cursor** to the on/off field and turn **Envelope Repeat On**.
5. **Play a key** on the keyboard. You should now hear the envelope repeating.

6. Go back to the envelope parameter page and **adjust the Attack 1&2**, and Decay 1&2 parameters. The repeating envelope cycles through these four stages as long as the key is held.

Practice Modulating

- Try modulating the pitch with the Filter Envelope generator.
- Use Velocity to modulate the Filter Envelope PatchCord or the Filter Frequency. This brightens the sound as you play harder.
- Program the LFO to modulate Filter Frequency and Volume (Patch-Cord screen).
- Modulate the LFO with the other LFO, with Velocity, and with the Touchstrip or Pitch Wheel.
- Examine the Factory presets to learn how they're constructed. There are lots of cool synthesis tricks you can use in your own presets.
- We've programmed the front panel knobs our way, but since they're completely programmable there's no reason why you can't create your own custom controls.
- Think of ten exotic modulation routings, then try them out. Experimentation is the key to learning how to control XL-7.

Troubleshooting

A common source of confusion when working with the filter envelope is that the Attack or Release parameters might not seem to be working correctly. If you are not getting the expected result, try to analyze the situation. There will be many times when you will have to stop for a minute and think, "What am I trying to do and why isn't it working?" When this happens (and it will), don't panic. Troubleshooting is a normal part of the synthesis process. Simply examine the various parameters and try to be as analytical as possible as you solve the problem. The solution is usually simple. ("The filter is already wide open and can't open any more." or "Another PatchCord is connecting something to the parameter and affecting it.") Learning to play any instrument takes a little patience and practice.

Referring to the diagram below which shows the XL-7 signal flow, notice that the DCA comes after the Filter. The DCA controls the final volume of the sound, so if the filter's release is longer than the release for the DCA, you won't hear it, because the DCA has already shut off the sound.
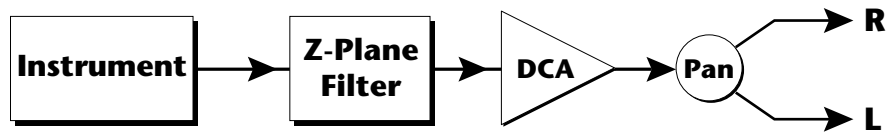
You're getting the general idea by now. Remember not to select a new preset before saving the current one or all your changes will be lost (the preset reverts to the last saved version). If you want to save your creation, select the Save/Copy menu and select a destination preset location for your masterpiece, then press Enter.

Because you can save your work, it's worth spending time to get the sound just right. When designing sounds you become an instrument builder as well as a musician. With XL-7 you can design the custom radical instruments you've always wanted!

Linking Presets

Using the Link pages in the Edit menu is a quick and easy way to create new sounds. Use the Links to "layer" presets and to "split" a keyboard into sections containing different sounds.

▶ **To Layer Two Presets**

1. Select the first preset you want to layer.

2. Press the **Preset Edit** button.

3. Go to the **Link** screen by pressing the **Links** Jump Key.

See "Preset Links" on page 224 for more information.

```
┌──────────────────────────────────────┐
│                                        │
│  LINK 1   PRESET              XL-7     │
│  off                                   │
│                                        │
└──────────────────────────────────────┘
```

4. Move the cursor to the second line of the display. Select the preset you want to link with the preset you selected in step 1. Play the keyboard as you scroll through the various presets to hear the results.

5. If you want the link to be a permanent part of the preset, be sure to save the preset. Otherwise, simply change the preset to erase your work.

▶ **To Create a Split Keyboard Using Links**

1. Follow steps 1 through 4 above.

2. Press **Enter** and use the **Jump Key** to advance to the next page.

```
┌──────────────────────────────────────┐
│                                        │
│  LINK 1           KEY          VEL     │
│  RANGE     C-2   B4      000 127       │
│                                        │
└──────────────────────────────────────┘
```

3. Set the keyboard range of the linked preset as desired.

4. Press **Enter** and use the **data entry control** to go to the Key Range page using the **Ranges** jump key.

```
┌──────────────────────────────────────┐
│                                        │
│  L1 KEY:LO    FADE    HIGH    FADE     │
│          C5    000     G8     000      │
│                                        │
└──────────────────────────────────────┘
```

5. Set the range of the original preset so it fills the remaining keyboard area. **Save the preset.**

Appendix

This section provides some of the more technical information about XL-7. In this appendix, you will find information about velocity curves, MIDI commands and PatchCord charts.

Front Panel Knob Functions

The front panel knob functions are standardized for most of the factory presets. The typical functions of the controller knobs are described below. Match the controller knobs on an external MIDI controller to the Realtime Controller Assignments in the MIDI menu if you want to externally control these functions.
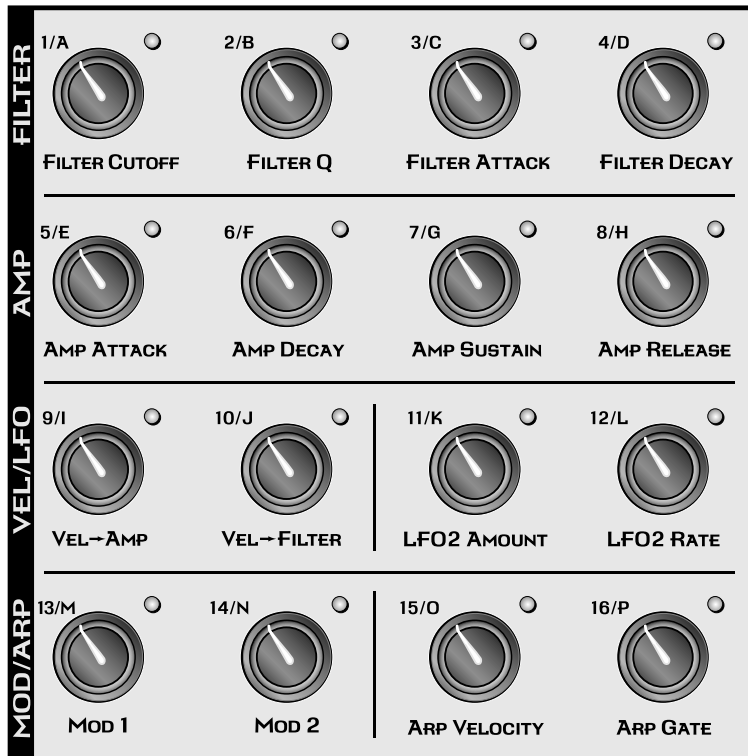
Knob Controller Descriptions

Filter Cutoff .... Filter Frequency

Filter Q .... Filter Resonance

Filter Attack............... Filter Envelope Attack Rate

Filter Decay .... Filter Envelope Decay and Release Rate

Amp Attack .... Volume Envelope Attack Rate

Amp Decay................. Volume Envelope Decay Rate

Amp Sustain.............. Volume Envelope Sustain Level

Amp Release.............. Volume Envelope Release Rate

Velocity -> Amp.......... Key Velocity to Volume

Velocity -> Filter .... Key Velocity to Filter Frequency

LFO 2 Amount........... LFO 2 Amount

LFO 2 Rate................. LFO 2 Frequency

Mod 1........................ Alternate Modulation Parameter 1

Mod 2........................ Alternate Modulation Parameter 2

✎ *The Front Panel Knobs can be reprogrammed for each preset and stored in any of the User Presets. The functions shown here are the factory programmed settings.*

Presets

XL-7 Preset Categories

The XL-7 presets are organized in categories according to the types of sound. Listed below are the categories and their three letter prefixes:

arp:	Arpeggiated	**air**:	Wind noise instrument
bas:	Basses	**bel**:	Bells
bpm:	Synchro-sonic, clocks	**bts**:	BEATS presets
edg:	Edgy, cutting	**gtr**:	Guitar
hit:	Shorter	**key**:	Keyboard instrument, organ
kit:	Drum kit	**led**:	Leads
pad:	Sustained, pad-like	**nse**:	Noises
raw:	Playable, vanilla	**prc**:	Percussion
syn:	Complex, harmonically rich	**sfx**:	Sound Effects
wal:	Dense, harmonically complex	**vox**:	Vocals

Preset Listing

User Bank 0, XL-7 Bank 0

0. kit:K-0	**43.** kit:K-13 QP-Dly	**86.** hit:Nice 1
1. kit:K-1	**44.** kit:K-14 D-Down	**87.** hit:Nice 2
2. kit:K-2	**45.** kit:K-15 D-D2	**88.** hit:Nice 3
3. kit:K-3	**46.** kit:K-16 Tremor	**89.** hit:Logger
4. kit:K-4	**47.** kit:808 Delay	**90.** hit:Dance 1
5. kit:K-5	**48.** kit:Envelope	**91.** hit:Dance 2
6. kit:K-6	**49.** prc:Kicks 1	**92.** hit:Dance 3
7. kit:K-7	**50.** prc:Kicks 2	**93.** hit:Dance 4
8. kit:K-8	**51.** prc:Solo Kick 1	**94.** hit:Dance 8
9. kit:K-9	**52.** prc:Solo Kick 2	**95.** hit:Dance 11
10. kit:K-10	**53.** prc:Snares 1	**96.** hit:Dance 12
11. kit:K-11	**54.** prc:Snares 2	**97.** hit:Dance 14
12. kit:K-12	**55.** prc:Snares 1 +7	**98.** hit:Dance 16
13. kit:K-13	**56.** prc:Snares 2 Eff	**99.** hit:Dance 20
14. kit:K-14	**57.** prc:Snares 2 Rev	**100.** hit:Dance 21
15. kit:K-15	**58.** prc:Snare Fill 1	**101.** hit:Dance 22
16. kit:K-16	**59.** prc:Snare Fill 2	**102.** hit:Dance 23
17. kit:K-17	**60.** prc:Ambi Snare	**103.** hit:Dance 24
18. kit:K-808	**61.** prc:Toms & Stuff	**104.** hit:Dance 25
19. kit:K-909	**62.** prc:Congas etc 1	**105.** hit:Dance 26
20. kit:Acoustic 1	**63.** prc:Congas etc 2	**106.** hit:Organ 3
21. kit:Acoustic 2	**64.** prc:Hats 1	**107.** hit:Organ 4
22. kit:Hybrid	**65.** prc:Hats 2	**108.** hit:Organ 5
23. kit:Hard 1	**66.** prc:Solo Hat 1	**109.** hit:Organ 6
24. kit:Hard 2	**67.** prc:Solo Hat 2	**110.** hit:UnisonString
25. kit:K-1 HPF	**68.** prc:Tambs	**111.** hit:Unison Brass
26. kit:K-1 up 9	**69.** prc:Cymbals	**112.** hit:Brass 6
27. kit:K-2 millini	**70.** prc:Shakers etc.	**113.** hit:Brass 7
28. kit:K-3 LFO~LPF	**71.** prc:Bells	**114.** hit:Brass 9
29. kit:K-4 LFO~AMP	**72.** prc:Blocks	**115.** hit:Brass 18
30. kit:K-5 Octave	**73.** prc:Claps/Snaps	**116.** hit:Trumpet FX 1
31. kit:K-5 up 7	**74.** prc:Misc	**117.** hit:Trumpet FX 2
32. kit:K-5 Klub	**75.** prc:Warehouse	**118.** hit:Sax FX
33. kit:K-6 Chorus	**76.** prc:Scratches 1	**119.** hit:Blipp
34. kit:K-7 LFO~REZ	**77.** prc:Scratches 2	**120.** hit:Buzz Blip
35. kit:K-8 16tsPan	**78.** prc:Tic a Tak	**121.** hit:Game
36. kit:K-8~8 go	**79.** prc:Ubu Delay FX	**122.** hit:Bell
37. kit:K-9 D-Pan	**80.** hit:Enrezzle	**123.** hit:CMI
38. kit:K-9 up 12	**81.** hit:PLATINUM	**124.** hit:Bass Stab
39. kit:K-10 D-Up	**82.** hit:Voxy	**125.** hit:H G
40. kit:K-10 High Q	**83.** hit:Krunchy	**126.** hit:H G Dive
41. kit:K-11 T-Dly	**84.** hit:Dreamer Tags	**127.** hit:Drum Stab
42. kit:K-12 Q-Dly	**85.** hit:Boink-King	

Preset Listing

User Bank 1, XL-7 Bank 1

0.	syn:Basic Saw	**43.**	syn:Electric
1.	syn:ORiON	**44.**	syn:CZ BIG
2.	syn:Spiders	**45.**	syn:SinEnsemble
3.	syn:Nordica	**46.**	syn:BigDandyBoy
4.	syn:Sync4Sequenc	**47.**	syn:Willy 4
5.	syn:Tink Or Toy	**48.**	syn:R&B Stegas
6.	syn:Kyng Doam	**49.**	syn:60-30
7.	syn:70-64	**50.**	syn:SweetDream
8.	syn:12-30	**51.**	led:Wet
9.	syn:Trancer	**52.**	led:Cyber 1
10.	syn:MortalSynth	**53.**	led:Cyber 5
11.	syn:The Grid	**54.**	led:Cyber 6
12.	syn:Calmer	**55.**	led:Cyber 7
13.	syn:Cyborg	**56.**	led:Saturn
14.	syn:South Euro 1	**57.**	led:More Senses
15.	syn:South Euro 2	**58.**	led:Wormy 2
16.	syn:Big E	**59.**	led:Wormy 3
17.	syn:Riverdancing	**60.**	led:Zeaxy 2
18.	syn:Air Age	**61.**	led:Brixx 2
19.	syn:Trem String	**62.**	led:Apoly 1
20.	syn:OBX	**63.**	led:Fat S12
21.	syn:40-10	**64.**	led:Fat CL1
22.	syn:12-20	**65.**	led:Fat INT
23.	syn:3 O 3	**66.**	led:Groove Wow
24.	syn:Geaxoils	**67.**	led:Alter 4
25.	syn:XtoZ	**68.**	led:Alter 6
26.	syn:Munster	**69.**	led:Synrg 7
27.	syn:Booty Qooty	**70.**	led:Synrg 9
28.	syn:Uborator	**71.**	led:Fat Saw
29.	syn:Prophety	**72.**	led:Scizy 2
30.	syn:Raved Pass	**73.**	led:Scizy 4
31.	syn:D Pee	**74.**	led:Jungle X
32.	syn:Jesuasynth	**75.**	led:Hypass Ditty
33.	syn:Wavetable	**76.**	led:Heavy
34.	syn:Minor Evil	**77.**	led:Dreamlead
35.	syn:Profit Brass	**78.**	led:Duzbe 2
36.	syn:Sweepy	**79.**	led:Fuzzer
37.	syn:Glider	**80.**	led:Weezel
38.	syn:Grumpy	**81.**	led:Noise F
39.	syn:Gothica	**82.**	led:P Mod 1
40.	syn:Too Big	**83.**	led:DesertTrance
41.	syn:Echoing	**84.**	led:TB 2
42.	syn:Screamer	**85.**	led:Metallic

86.	led:PureSaw
87.	led:Wormsine
88.	led:Technoval
89.	led:Falling
90.	led:Scizy 2
91.	pad:Rumble Pad
92.	pad:Super Pad
93.	pad:ARK Covet
94.	pad:E P I C
95.	pad:Sleepy
96.	pad:Tecnorise
97.	pad:Cvox
98.	pad:Soft Trace
99.	pad:Ice Dreams
100.	pad:Big Chief
101.	pad:Slow Dance
102.	pad:Warm&Lush
103.	pad:Art Deko
104.	pad:Daddy's Girl
105.	pad:Strings Box
106.	pad:Hi&LowLight
107.	pad:Vespers
108.	pad:Ambi Pad
109.	pad:Pure Synth
110.	pad:HarmonicLift
111.	pad:Lunar Trail
112.	pad:Cryo Stasus
113.	pad:Genesis
114.	pad:Dark City
115.	pad:SlogritStrng
116.	pad:SaturnRings
117.	pad:Smoovie
118.	pad:Aki's World
119.	pad:Low Back
120.	pad:www.f mono
121.	pad:Spelunkers
122.	pad:Lifedream
123.	pad:Perception
124.	pad:Involved
125.	pad:Lo Fi String
126.	pad:AmbString 1
127.	pad:AmbString 2

Preset Listing

User Bank 2, XL-7 Bank 2

0. bas:Top Tri	43. edg:Boxt	86. wal:Luscious
1. bas:UK shoota	44. edg:Matrix	87. nse:Interfear
2. bas:Love Bee	45. edg:Honker	88. nse:Diffuser
3. bas:Jump Up	46. edg:Analog Beast	89. nse:Radon Shield
4. bas:Sub Duh	47. edg:Zorkon	90. nse:That'sCreepy
5. bas:Hybrid Phase	48. edg:AudKlav	91. nse:Future Steps
6. bas:A.D. 3033	49. edg:Scrape	92. nse:LittleWeasel
7. bas:Vortex	50. edg:Hlywd Native	93. nse:Martians
8. bas:Saws Normal	51. edg:Ringer	94. nse:Cast
9. bas:1 Shot	52. edg:Bare Edge	95. nse:SpottedWhite
10. bas:Hard X	53. edg:Spawn	96. nse:Heavy Mental
11. bas:Pinhead	54. edg:Rez Zip	97. nse:Hadrian's
12. bas:Go Long	55. edg:FuzzGrinder	98. nse:Machined
13. bas:Square V	56. edg:Love All	99. nse:Rezawrect
14. bas:H20	57. edg:Squeake	100. nse:Massive
15. bas:Interference	58. edg:2 Flange	101. nse:Soline 7x
16. bas:B-Acer	59. edg:Teeth	102. nse:Quiet Wall
17. bas:P-dg	60. edg:Slicer	103. nse:Bottom Floor
18. bas:Fatso	61. edg:Skreecher	104. nse:Distructor
19. bas:F16	62. edg:Love Hurts	105. nse:Undertaker
20. bas:Acid 7	63. wal:Strangled	106. nse:Coyote
21. bas:Sonic	64. wal:The Macheen	107. nse:Turbonic
22. bas:Bullit	65. wal:Duckfuzz	108. nse:GrainyPixel
23. bas:Dance II	66. wal:C-Ride	109. nse:Faucet Drip
24. bas:Rippedbass	67. wal:HoverCraft	110. nse:Psychic Sea
25. bas:Depth	68. wal:Clavonate	111. nse:Aarno Ldt
26. bas:Arplikebass	69. wal:DailyBread	112. key:Smarm Organ
27. bas:Fat Arc	70. wal:I made it	113. key:Disca Queen
28. bas:PPX 1	71. wal:Backdraft	114. key:Rave Organ
29. bas:PPX 2	72. wal:Mammoth	115. key:Organik
30. bas:Jungle Sub	73. wal:Maryland	116. key:SynhissOrgan
31. bas:Fat Juno	74. wal:Thickets	117. key:Deep Organ
32. bas:Smooth	75. wal:Ice Ring	118. key:P-soul
33. bas:Heavy B	76. wal:Silkness	119. key:TechnoGrand
34. bas:Sub E	77. wal:Byzantine	120. key:Ocean
35. bas:S-Bass	78. wal:Raverotic	121. key:HybridTine
36. bas:Thwip	79. wal:Ripped	122. key:EP Roll 1
37. bas:Log Bass	80. wal:Balls2The..	123. key:EP Roll 2
38. bas:Disser	81. wal:W6 3sEvEn	124. key:EP Fog
39. bas:Sunny	82. wal:Abyss	125. gtr:Guit Hits
40. bas:HardHouse	83. wal:GoSpeedRacer	126. gtr:Univibe
41. bas:Garage Sub	84. wal:Tension	127. gtr:Clicky Picky
42. bas:Planet X	85. wal:Big Wall	

Preset Listing

User Bank 3, XL-7 Bank 3

0. arp:Deeper Love	**43.** bpm:Underclass	**86.** vox:Lushorch Vox
1. arp:Glider	**44.** bpm:Tempo LFOs	**87.** vox:Toxic Vox
2. arp:Alloy M	**45.** bpm:Carpe Diem	**88.** vox:Zephyr
3. arp:JUNOsis	**46.** bpm:L Room	**89.** vox:Air Voices
4. arp:A Trip	**47.** bpm:Reepeter	**90.** vox:SIRRUS
5. arp:Dreamer	**48.** bpm:Solace	**91.** vox:Future Vox
6. arp:Palomar	**49.** bpm:GRITS	**92.** vox:Bliss
7. arp:Raving	**50.** bpm:TRIPPER	**93.** vox:ARMAGEDDON
8. arp:Robo Trace	**51.** bpm:Higher Power	**94.** vox:ANGELIKA
9. arp:Glory II	**52.** bpm:Trashy	**95.** vox:Galaxal
10. arp:Hollographic	**53.** bpm:Vision	**96.** vox:Bandvoxxe
11. arp:Pele	**54.** bpm:Wading	**97.** vox:Exploration
12. arp:Lust II	**55.** bpm:Grinded	**98.** vox:AfterShock
13. arp:Bottom Perc	**56.** bpm:Electon	**99.** vox:Surfacing
14. arp:You Know It	**57.** bpm:Bubbler	**100.** vox:Ethereal
15. arp:X-light II	**58.** bpm:End	**101.** vox:Suffocating
16. arp:OrbisTabula	**59.** bpm:Wicked Low	**102.** vox:Space Voxxal
17. arp:OrbisPitcher	**60.** bpm:RadioDaze	**103.** sfx:Moby's Trip
18. arp:The Grind	**61.** bpm:Panhandel	**104.** sfx:Odd Quasar
19. arp:Tron X	**62.** bpm:Minator	**105.** sfx:S-METAL
20. arp:Dry Wastland	**63.** bpm:Lucy-Q	**106.** sfx:Zoned
21. arp:Axis One	**64.** air:Bat Pann	**107.** sfx:OverTheEdge
22. arp:Bouchete	**65.** air:GhostStories	**108.** sfx:Granules
23. arp:Saw Standard	**66.** air:Breath Stack	**109.** sfx:Glassers
24. arp:Phrophetics	**67.** air:Tibet	**110.** sfx:Alienator
25. arp:Sine Drum	**68.** air:Futura	**111.** sfx:Ripped Lazer
26. arp:Gutter Punk	**69.** air:Air Surf	**112.** sfx:FoldingSpace
27. arp:MooGie-D	**70.** air:Eastern Mist	**113.** sfx:Uncertainty
28. arp:No Lo	**71.** air:Vampirella	**114.** sfx:CosmicCompny
29. arp:Sanctuary	**72.** air:Floater	**115.** sfx:REZA'S LaB
30. arp:Pissto Hi	**73.** air:Warm Chill	**116.** sfx:TerrorZoNE
31. arp:T-2000	**74.** air:Digital Noiz	**117.** sfx:LupeDeKool
32. bpm:Bouncerette	**75.** air:Scary Noise	**118.** sfx:CyberSience
33. bpm:Traveler	**76.** air:StickyFinger	**119.** bel:Modular Ring
34. bpm:Boogy Synth	**77.** air:LeaveMeAlone	**120.** bel:Efemm Bellsa
35. bpm:Lighter	**78.** air:Breathless	**121.** bel:Mult-A-Metal
36. bpm:End	**79.** air:FluteState	**122.** bel:Mystery Bell
37. bpm:E Room	**80.** vox:LuciferDom	**123.** bel:NordicCalm
38. bpm:Monster	**81.** vox:Upper Bottom	**124.** bel:Rainbellz
39. bpm:Peak 7	**82.** vox:QVoxDelay	**125.** bel:Agualla Bell
40. bpm:Cult-feel	**83.** vox:Aah Eeh	**126.** bel:Capsulate
41. bpm:Love II	**84.** vox:Choirish	**127.** :XL-7 default
42. bpm:Synthex 90'	**85.** vox:Ooh,Voices!	

XL-7 Pattern Layout

The XL-7 factory patterns range from 4-16 bars long using 8 to 16 tracks each. Use the Track Enable/Mute buttons to bring parts in and out.All instrument tracks are in the key of C.

Pattern Track List

Kick 1	Snare 1	Hi-Hat 1	Perc 1 or Fill 1	Kick 2	Snare 2	Hi-Hat 2	Perc 2 or Fill 2
1	2	3	4	5	6	7	8

Instr or Perc 1	Instr or Perc 2	Instr or Perc 3	Instr or Perc 4	Instr or Perc 5	Instr or Perc 6	Instr or Perc 7	Instr or Perc 8
9	10	11	12	13	14	15	16
Main Bass	Main Lead	Main Comp					
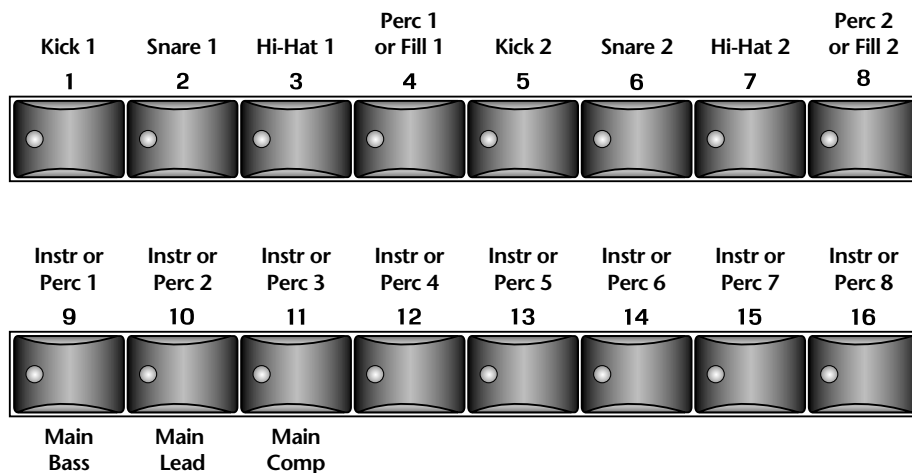
	MAIN GROOVE
Track 1 / Channel 1	Kick Pattern 1
Track 2 / Channel 2	Snare Pattern 1
Track 3 / Channel 3	Hat Pattern 1
Track 4 / Channel 4	Percussion 1 or Fill 1
	ALTERNATE GROOVE
Track 5 / Channel 5	Kick Pattern 2
Track 6 / Channel 6	Snare Pattern 2
Track 7 / Channel 7	Hat Pattern 2
Track 8 / Channel 8	Percussion 2 or Fill 2
	WILD - Instruments or Percussion
Track 9 / Channel 9	Instr or Percussion 1 (Main Bass)
Track 10 / Channel 10	Instr or Percussion 2 (Main Lead)
Track 11 / Channel 11	Instr or Percussion 3 (Main Comp)
Track 12 / Channel 12	Instrument or Percussion 4
Track 13 / Channel 13	Instrument or Percussion 5
Track 14 / Channel 14	Instrument or Percussion 6
Track 15 / Channel 16	Instrument or Percussion 7
Track 16 / Channel 16	Instrument or Percussion 8

Pattern Listing

The number after the pattern name is the tempo in beats per minute.

0. Arctic Drift 140
1. Beat Pusher 138
2. Lily's Love 140
3. Body Groove 134
4. Cool Down 135
5. Dream Punk 130
6. Es Paradis 160
7. Future Man 137
8. Hard In Motion 145
9. K E M 160
10. Joya 129
11. Big Brother 138
12. Ambideep 140
13. Ibiza's Strobe 140
14. In The Air 135
15. Club Luv 139
16. Millennium 138
17. Flyer 140
18. You Want It 140
19. Over Ground 139
20. Home Free 145
21. Metallic 134
22. Lo Fi 145
23. Commandment 135
24. Bee Hive 140
25. Side By Side 140
26. Tantra 125
27. Trance Date 140
28. Trancer 139
29. Traveler 138
30. Two Tales 140
31. Her Glory 140
32. Rafters 140
33. Organ Donor 138
34. X Mox 132
35. Four AM 130
36. Peak 132
37. Magic Blue 133
38. My Hero 140
39. Mood One 125
40. Perception 135
41. Pod Racer 140
42. Smooth 135
43. Storm Bringer 150

44. The E Room 125
45. Underground 138
46. Amsterdam 130
47. Basshead 125
48. Beat Freak 125
49. Clap and Stop 123
50. Diamond Hip 132
51. House Of Tec 135
52. Insane One 134
53. Insane Two 134
54. Beautify 134
55. Lola 128
56. Phatt Boy E 122
57. Sunset Flight 134
58. Midnight 160
59. Living Free 156
60. Bass Scape 166
61. Outer Body 148
62. Particle Beam 180
63. Trip Steppin One 168
64. Trip Steppin Two 168
65. UK Limited 160
66. Zodiac 150
67. Fire Fly 158
68. Soot 158
69. Chill Bee 160
70. Dark Flower 158
71. Seasoning 153
72. Serene 85
73. New World 150
74. Deep Space One 160
75. Deep Space Two 160
76. Doggy Style 140
77. Electro Dream 160
78. Hard House One 146
79. Hard House Two 146
80. Zolo 145
81. East Tenth 145
82. Elevate 132
83. Big Break 130
84. Break Beat 137
85. Encore 142
86. Exciter 140
87. Germania 140

88. Heaven 140
89. Humana 135
90. Light R 137
91. Lily's Rose 135
92. Organic Cube 136
93. Outer Wall 139
94. Rocket 134
95. Voice Farm 135
96. My Goodness 129
97. Hurt 125
98. Oh Yea 122
99. Deep Sleep 120
100. Mood Two 117
101. Closer 115
102. Mind Game 115
103. Dark Dream 110
104. Floppy 107
105. Euro One 105
106. Lost Joy 105
107. Mood Three 105
108. Slow Trip 94
109. Decoder 90
110. Vodo Lounge 133
111. Crow Bar 126
112. Level Twenty 126
113. Luv Parade 126
114. Krave 129
115. Good Life 130
116. Opium Gardens 125
117. PLUR 132
118. Garage One 130
119. Garage Two 130
120. Tequila Mix 125
121. Industry Jump125
122. Front Line 125
123. Red Corner 136
124. Tekno Tribe 135
125. Unhooked 130
126. Total Chaos 145
127. Stepper 94

Riff Listing

0. KEY-C3.mid	44. BTS-Dark Hero 1	88. HIT-Enrezzle
1. AIR-Bat Pann	45. BTS-Dist Treo 1	89. HIT-Guit Hits
2. AIR-Breathless	46. BTS-DoFi 1	90. HIT-Orgy Hitts
3. AIR-Futura	47. BTS-Drumatic 1.mid	91. HIT-Tite
4. BAS-1 Shot	48. BTS-Elbowroom 1	92. KEY-C Triad.mid
5. BAS-2600x	49. BTS-Europiavis1	93. KEY-C2 (2 Bars)
6. BAS-3O3x	50. BTS-Frantikk 1.mid	94. KEY-C2 (4 Bars)
7. BAS-Acid Mono	51. BTS-Ginger 1	95. KEY-C3 (2 Bars).mid
8. BAS-BadTubex	52. BTS-Groove II 1	96. KEY-C3 (4 Bars).mid
9. BAS-Bullit	53. BTS-Groove IT 1	97. KEY-C4.mid
10. BAS-Dist TB1	54. BTS-HBtoo 3	98. KEY-Cm7.mid
11. BAS-DistortoTBx	55. BTS-Heaven 3	99. KEY-Cm9.mid
12. BAS-DoFi	56. BTS-HiHo 1	100. KEY-Cmaj7.mid
13. BAS-Filter 1	57. BTS-Indy-T 1	101. KEY-CUp-Down.mid
14. BAS-Filter 2	58. BTS-Jump Hard 1	102. KEY-Cs Up.mid
15. BAS-Filter 3	59. BTS-Kraftwork 1	103. KEY-DxJx
16. BAS-Heavy M	60. BTS-L-101 1	104. KEY-Groove
17. BAS-Interfear	61. BTS-Light-R 1.smf	105. KEY-Organik
18. BAS-Lo-Za	62. BTS-Lo-Z 1	106. KEY-Synhiss
19. BAS-Metal Heartx	63. BTS-LoFi 1	107. KIT-80's 4track
20. BAS-Mini Morex	64. BTS-Logic1	108. KIT-Boom 4track
21. BAS-Pdg	65. BTS-Mind Game 2	109. KIT-Compre 4track
22. BAS-Q Bassx	66. BTS-Mind Game 3	110. KIT-Dirt 5track
23. BAS-SE Microx	67. BTS-Peak777 1	111. KIT-G 4track
24. BAS-Say Whatx	68. BTS-Perception 1	112. KIT-Hide 4track
25. BAS-Shiftx	69. BTS-RollerGirl 1.mid	113. KIT-K'werk 4track
26. BAS-Sub Corex	70. BTS-Rush 1	114. KIT-Mant 4track
27. BEL-Bellsa	71. BTS-Semi-Time 2	115. LED-Boxt mono
28. BEL-Modular	72. BTS-System X 1	116. LED-Krane
29. BEL-Mystery	73. BTS-TeknoTribe 1	117. LED-More S
30. BPM-Boogy	74. BTS-The Beast 1.mid	118. LED-Tunnel
31. BPM-Bounce	75. BTS-Trancer 1	119. LED-Wet
32. BPM-UnderC	76. BTS-TranzAmbient	120. NSE-LucyF
33. BTS-007 1	77. BTS-Unhooked 1	121. PAD-BP Strings
34. BTS-4am flyin 1	78. BTS-X-Mox 1.smf	122. PAD-Danube
35. BTS-808 Street 1	79. BTS-Xie-racy 1	123. PAD-Dark City
36. BTS-Acid 1	80. BTS-HI-NRG	124. PRC-Construct
37. BTS-Big Body 1	81. BTS-Trance Date 1	125. PRC-Crash Head
38. BTS-Big Shaker 1	82. BTS-Club it 1	126. RAW-Drama
39. BTS-BlackHouse1	83. BTS-Lily's Rage	127. SYN- 7064
40. BTS-D&B Smooth 2	84. BTS-Rocket	128. SYN-4 track a
41. BTS-D&B Tight 1	85. EDG-Boxt filter	129. SYN-4 track b
42. BTS-D-House 1	86. EDG-FilterQ	130. SYN-Basic
43. BTS-DJ-A.mid	87. GTR-Chuckinx	131. SYN-Compu X

Riff Listing

132. SYN-Enviroment

133. SYN-Grind Me

134. SYN-Nordica

135. SYN-Octivate

136. SYN-Orion

137. SYN-Quadra

138. SYN-Saint

139. SYN-Sinner

140. SYN-South E2

141. SYN-Tran 3track

142. SYN-Tripper

143. VOX-Bliss

144. VOX-Zephr

145. WAL-Abyss

146. WAL-CRide

147. WAL-Love 2bee

148. WAL-Mammoth

149. WAL-Raverot

150. XTR-Booty Q

151. BTS-C-Man

152. BTS-Humana

153. BTS--Indy-T 1

154. BTS-Jump Hard 1

155. BTS-Kraftwork 1

156. BTS-L-101 1

157. BTS-Light-R 2

158. BTS-Lily's Rage

159. BTS-Lo-Z 1

160. BTS-LoFi 1

161. BTS-Logic1

162. BTS-Metallic

163. BTS-Mind Game 2

164. BTS-Mind Game 3

165. BTS-Organic Cube

166. BTS-Peak777 1

167. BTS-Perception 1

168. BTS-placeholder

169. BTS-Rocket

170. BTS-RollerGirl 1

171. BTS-Rush 1

172. BTS-Semi-Time 2

173. BTS-System X 1

174. BTS-TeknoTribe 1

175. BTS-The Beast 1

176. BTS-Trance Date

177. BTS-Trancer 1

178. BTS-TranzAmbient

179. BTS-Unhooked 1

180. BTS-X-Mox 3

181. BTS-Xie-racy 1

Instrument Listing

This section lists the raw instruments in the XL-7 ROM set.
Instruments consist of either multisamples or single samples.

0. None	**42.** Audity Synth 3	**85.** Audity Bell 3
1. Sine Wave	**43.** Audity Synth 4	**86.** Audity Bell 4
2. Saw Wave	**44.** Audity Synth 5	**87.** Audity Bell 5
3. Square Wave	**45.** Audity Synth 6	**88.** Vox Humana
4. Triangle Wave	**46.** Audity Synth 7	**89.** Vapor Vox
5. Audity Saw	**47.** Audity Synth 8	**90.** Chronic Vox
6. Audity Square	**48.** Audity Synth 9	**91.** Vox Wave 1
7. Audity Blend	**49.** Audity Synth 10	**92.** Vox Wave 2
8. Audity Sync	**50.** Audity Synth 11	**93.** Vox Wave 3
9. Audity Sync	**51.** Audity Synth 12	**94.** Vox Wave 4
10. Audity Sync 1	**52.** Audity Synth 13	**95.** Vox Wave 5
11. Audity Sync 2	**53.** Audity Synth 14	**96.** Vox Wave 6
12. Audity Sync 3	**54.** Audity Bass 1	**97.** White Noise
13. Audity PWM 1	**55.** Audity Bass 2	**98.** Pink Noise
14. Audity PWM 2	**56.** Audity Bass 3	**99.** Audity Wall 1
15. Audity PWM 3	**57.** Acid Bass 1	**100.** Audity Wall 2
16. Ring Mod 1	**58.** Acid Bass 2	**101.** Audity Wall 3
17. Ring Mod 2	**59.** Acid Bass 3	**102.** Audity Wall 4
18. Ring Mod 3	**60.** Acid Bass 4	**103.** Audity Wall 5
19. Metal Wave	**61.** Acid Bass 5	**104.** Audity Wall 6
20. Jungle Lead	**62.** Acid Bass 6	**105.** Audity Wall 7
21. Metalik	**63.** Acid Bass 7	**106.** Noise Tunnel
22. Brass Lead 1	**64.** Acid Bass 8	**107.** Air Pipe
23. Brass Lead 2	**65.** Acid Bass 9	**108.** Crystal Cavern
24. Audity Lead 1	**66.** Acid Bass 10	**109.** Sonar
25. Audity Lead 2	**67.** Hybrid Bass 1	**110.** Audity Edge 1
26. Audity Lead 3	**68.** Hybrid Bass 2	**111.** Audity Edge 1b
27. Audity Lead 4	**69.** Hybrid Bass 2b	**112.** Audity Edge 1c
28. Audity Lead 5	**70.** Dance Bass 1	**113.** Audity Edge 2
29. Audity Lead 6	**71.** Dance Bass 2	**114.** Audity Edge 3
30. Audity Lead 7	**72.** Mikro Bass	**115.** Future World
31. Audity Lead 8	**73.** Shush Bass	**116.** Grinder
32. Audity Lead 9	**74.** Fuzz Bass	**117.** Growly
33. Audity Lead 10	**75.** Flange Bass	**118.** Cricket
34. Audity Lead 11	**76.** Buzz Bass	**119.** Fuzz Ball
35. Classic Lead 1	**77.** Booty Q Bass 1	**120.** Droid Scrape
36. Classic Lead 2	**78.** Booty Q Bass 2	
37. Classic Lead 3	**79.** Zodiac Bass 1	
38. Classic Lead 4	**80.** Zodiac Bass 2	
39. Digi Lead	**81.** Prodigal Bass	
40. Audity Synth 1	**82.** Zeek Bass	
41. Audity Synth 2	**83.** Audity Bell 1	
	84. Audity Bell 2	

Instrument Listing

121. Rez Honk	**166.** Looped Perc 27	**211.** 1 Shot Perc 20
122. Krunchy Hit	**167.** Looped Perc 28	**212.** 1 Shot Perc 21
123. Turbo	**168.** Looped Perc 29	**213.** 1 Shot Perc 22
124. Interference	**169.** Looped Perc 30	**214.** 1 Shot Perc 23
125. 1 Shot Bass	**170.** Looped Perc 31	**215.** 1 Shot Perc 24
126. 1 Shot Dis Bass 1	**171.** Looped Perc 32	**216.** 1 Shot Perc 25
127. 1 Shot Dis Bass 2	**172.** Looped Perc 33	**217.** 1 Shot Perc 26
128. 1 Shot Dis Bass 3	**173.** Looped Perc 34	**218.** 1 Shot Perc 27
129. 1 Shot Perc Bass	**174.** Looped Perc 35	**219.** 1 Shot Perc 28
130. 1 Shot Grind	**175.** Looped Perc 36	**220.** 1 Shot Perc 29
131. 1 Shot Siren	**176.** Looped Perc 37	**221.** 1 Shot Perc 30
132. 1 Shot Turbine	**177.** Looped Perc 38	**222.** 1 Shot Perc 31
133. 1 Shot Alien	**178.** Looped Perc 39	**223.** 1 Shot Perc 32
134. 1 Shot Laser Rip	**179.** Looped Perc 40	**224.** 1 Shot Perc 33
135. 1 Shot Aud Vox	**180.** Looped Perc 41	**225.** 1 Shot Perc 34
136. 1 Shot Scratch 1	**181.** Looped Perc 42	**226.** 1 Shot Perc 35
137. 1 Shot Scratch 2	**182.** Looped Perc 43	**227.** 1 Shot Perc 36
138. 1 Shot Scratch 3	**183.** Looped Perc 44	**228.** 1 Shot Perc 37
139. 1 Shot Scratch 4	**184.** Looped Perc 45	**229.** 1 Shot Perc 38
140. Looped Perc 1	**185.** Looped Perc 46	**230.** 1 Shot Perc 39
141. Looped Perc 2	**186.** Looped Perc 47	**231.** 1 Shot Perc 40
142. Looped Perc 3	**187.** Looped Perc 48	**232.** 1 Shot Perc 41
143. Looped Perc 4	**188.** Looped Perc 49	**233.** 1 Shot Perc 42
144. Looped Perc 5	**189.** Looped Perc 50	**234.** 1 Shot Perc 43
145. Looped Perc 6	**190.** Looped Perc 51	**235.** 1 Shot Perc 44
146. Looped Perc 7	**191.** Looped Perc 52	**236.** 1 Shot Perc 45
147. Looped Perc 8	**192.** 1 Shot Perc 1	**237.** 1 Shot Perc 46
148. Looped Perc 9	**193.** 1 Shot Perc 2	**238.** 1 Shot Perc 47
149. Looped Perc 10	**194.** 1 Shot Perc 3	**239.** 1 Shot Perc 48
150. Looped Perc 11	**195.** 1 Shot Perc 4	**240.** 1 Shot Perc 49
151. Looped Perc 12	**196.** 1 Shot Perc 5	**241.** 1 Shot Perc 50
152. Looped Perc 13	**197.** 1 Shot Perc 6	**242.** 1 Shot Perc 51
153. Looped Perc 14	**198.** 1 Shot Perc 7	**243.** 1 Shot Perc 52
154. Looped Perc 15	**199.** 1 Shot Perc 8	**244.** 1 Shot Perc 53
155. Looped Perc 16	**200.** 1 Shot Perc 9	**245.** 1 Shot Perc 54
156. Looped Perc 17	**201.** 1 Shot Perc 10	**246.** 1 Shot Perc 55
157. Looped Perc 18	**202.** 1 Shot Perc 11	**247.** 1 Shot Perc 56
158. Looped Perc 19	**203.** 1 Shot Perc 12	**248.** 1 Shot Perc 57
159. Looped Perc 20	**204.** 1 Shot Perc 13	**249.** 1 Shot Perc 58
160. Looped Perc 21	**205.** 1 Shot Perc14	**250.** 1 Shot Perc 59
161. Looped Perc 22	**206.** 1 Shot Perc 15	**251.** 1 Shot Perc 60
162. Looped Perc 23	**207.** 1 Shot Perc 16	**252.** 1 Shot Perc 61
163. Looped Perc 24	**208.** 1 Shot Perc 17	**253.** 1 Shot Perc 62
164. Looped Perc 25	**209.** 1 Shot Perc 18	**254.** 1 Shot Perc 63
165. Looped Perc 26	**210.** 1 Shot Perc 19	**255.** 1 Shot Perc 64

Instrument Listing

256.	1 Shot Perc 65	**301.**	Lowness	**346.**	Q Attack Sub
257.	1 Shot Perc 66	**302.**	Ice	**347.**	Sonics
258.	1 Shot Perc 67	**303.**	Analow	**348.**	Perco
259.	1 Shot Perc 68	**304.**	Moog Tri	**349.**	Not So Mini
260.	1 Shot Perc 69	**305.**	Moog Sub	**350.**	Spitt
261.	1 Shot Perc 70	**306.**	Moogy	**351.**	Tap
262.	1 Shot Perc 71	**307.**	Fat Sun	**352.**	Juno Sub
263.	1 Shot Perc 72	**308.**	Analog	**353.**	Complex Sub
264.	1 Shot Perc 73	**309.**	Q 1	**354.**	Full Octave
265.	1 Shot Perc 74	**310.**	Q 2	**355.**	Deep Pocket
266.	1 Shot Perc 75	**311.**	Q 3	**356.**	JP4
267.	1 Shot Perc 76	**312.**	Planet	**357.**	Synth Hits
268.	1 Shot Perc 77	**313.**	2600	**358.**	DX 1
269.	1 Shot Perc 78	**314.**	Synth 1	**359.**	DX 2
270.	1 Shot Perc 79	**315.**	Synth 2	**360.**	DX 3
271.	1 Shot Perc 80	**316.**	Synth 3	**361.**	EP 1
272.	1 Shot Perc 81	**317.**	Synth 4	**362.**	EP 2
273.	Audity Scratches	**318.**	Synth 5	**363.**	EP 3
274.	El Perc Kit 1	**319.**	Synth 6	**364.**	Home 1
275.	El Kit 1 Looped	**320.**	Synth 7	**365.**	Home 2
276.	Kit 1 Env Loops	**321.**	Synth 8	**366.**	Street
277.	El Perc Kit 2	**322.**	Synth 9	**367.**	Pure
278.	El Kit 2 Looped	**323.**	Synth 10	**368.**	Fing&Harms 1
279.	Kit 2 Env Loops	**324.**	TB 1	**369.**	Fing&Harms 2
280.	Hybrid Perc	**325.**	TB 2	**370.**	All Purpose
281.	Warehouse Perc	**326.**	TB 3	**371.**	Standard
282.	Acoustic Perc A	**327.**	TB 4	**372.**	Fretless 1
283.	Ac Kick+Snare B	**328.**	CZ101	**373.**	Fretless 2
284.	Acoustic Kit A+B	**329.**	PPG	**374.**	Fretless 3
285.	Hardcore Kit 1	**330.**	Mini 1	**375.**	Fretless 4
286.	Hardcore Kit 2	**331.**	Mini 2	**376.**	Upright 1
287.	Hardcore Kit 3	**332.**	Mini 3	**377.**	Upright 2
288.	Hum	**333.**	Mini 4	**378.**	Slap 1
289.	Below Sub	**334.**	Saw	**379.**	Slap 2
290.	Super Sub	**335.**	Ultimate 1	**380.**	Gruzzy Pop
291.	SE Sub 1	**336.**	Ultimate 2	**381.**	Pop Slide 1
292.	SE Sub 2	**337.**	Micro Moog	**382.**	Pop Slide 2
293.	SE Sub 3	**338.**	DB9 1	**383.**	Pop Slide 3
294.	SE Sub 4	**339.**	DB9 2	**384.**	Pop Slide 4
295.	SE Sub 5	**340.**	Phlappy	**385.**	Funk Hits
296.	SE Sub 6	**341.**	Power Q	**386.**	Organ 1
297.	SE Sub 7	**342.**	Big Sync	**387.**	Organ 2
298.	Hit	**343.**	Buzzer	**388.**	Mutes
299.	Subtle	**344.**	Saw Sync	**389.**	Power 1
300.	Mem Moog	**345.**	Pocket	**390.**	Power 2

Instrument Listing

391. Power Hit	**435.** Wild Synth	**479.** CZ Synstring
392. Synth Axe	**436.** Spacey Keys	**480.** Ensemble
393. Hits	**437.** Digi Buzz	**481.** Rezzy Wave
394. Pipe Organ	**438.** Rast Keys	**482.** Heavy
395. DrawbarOrgan	**439.** ARP Sync	**483.** Rezzy
396. Perc Organ	**440.** Narrow Synth	**484.** Hi Octaves
397. Org Day	**441.** Fat Attack	**485.** Dreemy
398. Disco Organ	**442.** ARP Lead	**486.** Phat
399. DX Organ	**443.** Synthetic	**487.** Tekno
400. JX Organ	**444.** Overtone	**488.** Life
401. Tone Organ	**445.** Buzz Saw	**489.** Classic
402. Simple Organ	**446.** Blipper	**490.** Dreamer
403. Org Lite	**447.** Full Synth	**491.** Paddy
404. Org Nod	**448.** Bass Synth	**492.** Dance Chord
405. Full Organ	**449.** Mini Lead	**493.** Zoom
406. Synth Organ	**450.** Sawtooth	**494.** Keyngdom
407. BreathyOrgan	**451.** M12 Lead	**495.** Oddd Organ
408. Dance Organ	**452.** Sync Wave 1	**496.** Mood Strings
409. Farfisa 1	**453.** Sync Wave 2	**497.** Brazz
410. Farfisa 2	**454.** Sync Wave 3	**498.** Synthy
411. Vox Organ	**455.** Sync Wave 4	**499.** P5
412. Synth Cheeze	**456.** Sync Wave 5	**500.** Bari Wave
413. Organ Hits 1	**457.** Sync Wave 6	**501.** Sax Wave
414. Organ Hits 2	**458.** Pop Square	**502.** Mute Trumpet
415. Tine EP	**459.** Juno Square	**503.** Trumpet FX 1
416. Pretty EP	**460.** SquareAttack	**504.** Trumpet FX 2
417. Classic EP	**461.** Square Lead	**505.** Cool Loops
418. FM EP 1	**462.** SquareChorus	**506.** Sax Riff
419. FM EP 2	**463.** Sinusoid	**507.** Boink
420. EP Hits	**464.** Worm Lead 1	**508.** Classic Hit
421. Clavinet	**465.** Worm Lead 2	**509.** Hits 1
422. Piano Wave	**466.** Worm Lead 3	**510.** Hits 2
423. Xylo Pad	**467.** Worm Lead 4	**511.** Jax Breath
424. Pure H20	**468.** Worm Lead 5	**512.** Synth
425. Log Hit	**469.** Worm Lead 6	**513.** Orch
426. Pluck Tone	**470.** Harmonica	**514.** Soul Oohs
427. Hollow Deep	**471.** Synth Flute	**515.** CMI Breath
428. Bell Synth	**472.** Soft Synth	**516.** Breathy
429. Syn Tone	**473.** Hi String	**517.** Tarzana
430. Perc Axe	**474.** OBX Saws	**518.** Gothic
431. Whine	**475.** Big Planet	**519.** Oow
432. CZ101 Digi	**476.** JP6 Pad	**520.** Vox 1
433. CZ Lead	**477.** Saw Sweep	**521.** Vox 2
434. CZ Echo Lead	**478.** Juno Pulse	**522.** Strings

Instrument Listing

526. Music Crowd	**570.** Vibraslap	**614.** Dance 22
527. Lawn Mower	**571.** Guiro	**615.** Dance 23
528. Riff Trip	**572.** Cowbell	**616.** Dance 24
529. Cyber Pan	**573.** Agogos	**617.** Dance 25
530. Groove Thing	**574.** Misc 1	**618.** Dance 26
531. Science	**575.** Misc 2	**619.** Dance 27
532. Under Pad FM	**576.** kit:1	**620.** Organ 1
533. Sci Fi	**577.** kit:2	**621.** Organ 2
534. Synth Siren	**578.** kit:3	**622.** Organ 3
535. Metal	**579.** kit:4	**623.** Organ 4
536. Vinyl 1	**580.** kit:5	**624.** Organ 5
537. Vinyl 2	**581.** kit:6	**625.** Organ 6
538. Vinyl 3	**582.** kit:7	**626.** UnisonString
539. Vinyl 4	**583.** kit:8	**627.** Unison Brass
540. Pink	**584.** kit:9	**628.** Brass 1
541. White	**585.** kit:10	**629.** Brass 2
542. Scratches 1	**586.** kit:11	**630.** Brass 3
543. Scratches 2	**587.** kit:12	**631.** Brass 4
544. Kicks 1	**588.** kit:13	**632.** Brass 5
545. Kicks 2	**589.** kit:14	**633.** Brass 6
546. Snares 1	**590.** kit:15	**634.** Brass 7
547. Snares 2	**591.** kit:16	**635.** Brass 8
548. Toms 1	**592.** GM Dance	**636.** Brass 9
549. Toms 2	**593.** Dance 1	**637.** Brass 10
550. Timbales 1	**594.** Dance 2	**638.** Brass 11
551. Timbales 2	**595.** Dance 3	**639.** Brass 12
552. Congas etc 1	**596.** Dance 4	**640.** Brass 13
553. Congas etc 2	**597.** Dance 5	**641.** Brass 14
554. Hats 1	**598.** Dance 6	**642.** Brass 15
555. Hats 2	**599.** Dance 7	**643.** Brass 16
556. Cymbals 1	**600.** Dance 8	**644.** Brass 17
557. Cymbals 2	**601.** Dance 9	**645.** Brass 18
558. Shakers	**602.** Dance 10	**646.** Brass 19
559. Maracas	**603.** Dance 11	**647.** Brass 20
560. Bells 1	**604.** Dance 12	**648.** Trumpet FX 1
561. Bells 2	**605.** Dance 13	**649.** Trumpet FX 2
562. Blocks 1	**606.** Dance 14	**650.** Trumpet FX 3
563. Blocks 2	**607.** Dance 15	**651.** Trumpet FX 4
564. Tams 1	**608.** Dance 16	**652.** Trumpet FX 5
565. Tams 2	**609.** Dance 17	**653.** Sax FX 1
566. Claps 1	**610.** Dance 18	**654.** Sax FX 2
567. Claps 2	**611.** Dance 19	**655.** Sax FX 3
568. Snaps	**612.** Dance 20	**656.** Blipp
569. Clave	**613.** Dance 21	**657.** Buzz Blip

Instrument Listing

658. Game	**703.** Gtr Wawa 1	**748.** Snare
659. Disssss	**704.** Gtr Wawa 2	**749.** Tite
660. Siren Loop	**705.** Gtr Wawa 3	**750.** Wazzup?
661. Bell	**706.** Gtr Wawa 4	**751.** Barker
662. Klank	**707.** Gtr Wawa 5	**752.** Plunger
663. Metal	**708.** Gtr Wawa 6	**753.** Skipper
664. Slinky Q	**709.** Heavy Guitar	**754.** Fast
665. Space Whip	**710.** HeavyGtrDive	**755.** Kick 1
666. Short Quack	**711.** Drum Stab	**756.** Kick 2
667. Quack Ahhh	**712.** Guit On It	**757.** Kick 3
668. Bowser Bark	**713.** Jazz Short	**758.** Kick 4
669. Chiffin	**714.** Blamp	**759.** Kick 5
670. CMI Hot Air	**715.** Bass Slide	**760.** Kick 6
671. L9000 Noise	**716.** Hip Hop	**761.** Kick 7
672. Comon Vox	**717.** Drum Stall	**762.** Kick 8
673. Odd Vox	**718.** Stalled	**763.** Kick 9
674. Mmm Hmm	**719.** Wind Down 1	**764.** Kick 10
675. Ah Hah	**720.** Wind Down 2	**765.** Kick 11
676. EP Roll 1	**721.** Ripped	**766.** Kick 12
677. EP Roll 2	**722.** Space Wiggle	**767.** Kick 13
678. EP Roll 3	**723.** Sqweal Rev	**768.** Kick 14
679. EP Fog	**724.** Draggit	**769.** Kick 15
680. Fat Low Syn	**725.** MC	**770.** Kick 16
681. Bass Stab 1	**726.** Fun	**771.** Kick 17
682. Bass Stab 2	**727.** SSSSystem 1	**772.** Kick 18
683. Gtr Hi Chuck	**728.** SSSSystem 2	**773.** Kick 19
684. Gtr UpStroke	**729.** Here	**774.** Kick 20
685. Gtr Scratch1	**730.** On It	**775.** Kick 21
686. Gtr Scratch2	**731.** Diss	**776.** Kick 22
687. KleanGtrChuk	**732.** Bow Wow	**777.** Kick 23
688. Gtr Jangle	**733.** Diva Scratch	**778.** Kick 24
689. Gtr Riff 1	**734.** Organ Blip	**779.** Kick 25
690. Gtr Riff 2	**735.** Classic Tape	**780.** Kick 26
691. Gtr Riff 3	**736.** Out!	**781.** Kick 27
692. Gtr FunkyHit	**737.** Punch It	**782.** Kick 28
693. Another Gtr	**738.** Ork	**783.** Kick 29
694. Jazz Riff 1	**739.** Tape Stop	**784.** Kick 30
695. Jazz Riff 2	**740.** Zip	**785.** Kick 31
696. Jazz Riff 3	**741.** Tape Pull	**786.** Kick 32
697. GtrSlideRiff	**742.** Wild	**787.** Kick 33
698. Gtr PopSlide	**743.** Up	**788.** Kick 34
699. Guitar Pop	**744.** Away	**789.** Kick 35
700. Chord Chuck	**745.** Frenzy	**790.** Kick 36
701. Guitar Slide	**746.** Kick 1	**791.** Kick 37
702. Sad Guitar	**747.** Kick 2	**792.** Kick 38

Instrument Listing

793.	Kick 39	**837.**	Snare 26	**881.**	Snare 70
794.	Kick 40	**838.**	Snare 27	**882.**	Snare 71
795.	Kick 41	**839.**	Snare 28	**883.**	Snare 72
796.	Kick 42	**840.**	Snare 29	**884.**	Snare 73
797.	Kick 43	**841.**	Snare 30	**885.**	Snare 74
798.	Kick 44	**842.**	Snare 31	**886.**	Snare 75
799.	Kick 45	**843.**	Snare 32	**887.**	Snare 76
800.	Kick 46	**844.**	Snare 33	**888.**	Snare 77
801.	Kick 47	**845.**	Snare 34	**889.**	Snare 78
802.	Kick 48	**846.**	Snare 35	**890.**	Snare 79
803.	Kick 49	**847.**	Snare 36	**891.**	Snare 80
804.	Kick 50	**848.**	Snare 37	**892.**	Snare 81
805.	Kick 51	**849.**	Snare 38	**893.**	Snare 82
806.	Kick 52	**850.**	Snare 39	**894.**	Snare 83
807.	Kick 53	**851.**	Snare 40	**895.**	Snare 84
808.	Kick 54	**852.**	Snare 41	**896.**	Snare 85
809.	Kick 55	**853.**	Snare 42	**897.**	Snare 86
810.	Kick 56	**854.**	Snare 43	**898.**	Snare 87
811.	Kick 57	**855.**	Snare 44	**899.**	Snare 88
812.	Snare 1	**856.**	Snare 45	**900.**	Snare 89
813.	Snare 2	**857.**	Snare 46	**901.**	Snare 90
814.	Snare 3	**858.**	Snare 47	**902.**	Snare 91
815.	Snare 4	**859.**	Snare 48	**903.**	Snare 92
816.	Snare 5	**860.**	Snare 49	**904.**	Snare 93
817.	Snare 6	**861.**	Snare 50	**905.**	Snare 94
818.	Snare 7	**862.**	Snare 51	**906.**	Snare 95
819.	Snare 8	**863.**	Snare 52	**907.**	Snare 96
820.	Snare 9	**864.**	Snare 53	**908.**	Snare 97
821.	Snare 10	**865.**	Snare 54	**909.**	Snare 98
822.	Snare 11	**866.**	Snare 55	**910.**	Snare 99
823.	Snare 12	**867.**	Snare 56	**911.**	Snare 100
824.	Snare 13	**868.**	Snare 57	**912.**	Snare 101
825.	Snare 14	**869.**	Snare 58	**913.**	Snare 102
826.	Snare 15	**870.**	Snare 59	**914.**	Snare 103
827.	Snare 16	**871.**	Snare 60	**915.**	Snare 104
828.	Snare 17	**872.**	Snare 61	**916.**	Snare 105
829.	Snare 18	**873.**	Snare 62	**917.**	Snare 106
830.	Snare 19	**874.**	Snare 63	**918.**	Tom 1
831.	Snare 20	**875.**	Snare 64	**919.**	Tom 2
832.	Snare 21	**876.**	Snare 65	**920.**	Tom 3
833.	Snare 22	**877.**	Snare 66	**921.**	Tom 4
834.	Snare 23	**878.**	Snare 67	**922.**	Tom 5
835.	Snare 24	**879.**	Snare 68	**923.**	Tom 6
836.	Snare 25	**880.**	Snare 69	**924.**	Tom 7

Instrument Listing

925. Tom 8	**969.** Hat 3	**1013.** Hat 47
926. Tom 9	**970.** Hat 4	**1014.** Hat 48
927. Tom 10	**971.** Hat 5	**1015.** Hat 49
928. Tom 11	**972.** Hat 6	**1016.** Hat 50
929. Tom 12	**973.** Hat 7	**1017.** Hat 51
930. Tom 13	**974.** Hat 8	**1018.** Hat 52
931. Tom 14	**975.** Hat 9	**1019.** Hat 53
932. Tom 15	**976.** Hat 10	**1020.** Hat 54
933. Tom 16	**977.** Hat 11	**1021.** Hat 55
934. Tom 17	**978.** Hat 12	**1022.** Hat 56
935. Tom 18	**979.** Hat 13	**1023.** Hat 57
936. Tom 19	**980.** Hat 14	**1024.** Hat 58
937. Tom 20	**981.** Hat 15	**1025.** Hat 59
938. Tom 21	**982.** Hat 16	**1026.** Hat 60
939. Tom 22	**983.** Hat 17	**1027.** Hat 61
940. Tom 23	**984.** Hat 18	**1028.** Hat 62
941. Tom 24	**985.** Hat 19	**1029.** Hat 63
942. Tom 25	**986.** Hat 20	**1030.** Hat 64
943. Tom 26	**987.** Hat 21	**1031.** Hat 65
944. Timbale 1	**988.** Hat 22	**1032.** Hat 66
945. Timbale 2	**989.** Hat 23	**1033.** Hat 67
946. Timbale 3	**990.** Hat 24	**1034.** Hat 68
947. Timbale 4	**991.** Hat 25	**1035.** Hat 69
948. Timbale 5	**992.** Hat 26	**1036.** Hat 70
949. Timbale 6	**993.** Hat 27	**1037.** Hat 71
950. Conga 1	**994.** Hat 28	**1038.** Hat 72
951. Conga 2	**995.** Hat 29	**1039.** Hat 73
952. Conga 3	**996.** Hat 30	**1040.** Hat 74
953. Conga 4	**997.** Hat 31	**1041.** Hat 75
954. Conga 5	**998.** Hat 32	**1042.** Hat 76
955. Conga 6	**999.** Hat 33	**1043.** Hat 77
956. Conga 7	**1000.** Hat 34	**1044.** Hat 78
957. Conga 8	**1001.** Hat 35	**1045.** Cymbal 1
958. Conga 9	**1002.** Hat 36	**1046.** Cymbal 2
959. Conga 10	**1003.** Hat 37	**1047.** Cymbal 3
960. Bongo 1	**1004.** Hat 38	**1048.** Cymbal 4
961. Bongo 2	**1005.** Hat 39	**1049.** Cymbal 5
962. Bongo 3	**1006.** Hat 40	**1050.** Cymbal 6
963. Bongo 4	**1007.** Hat 41	**1051.** Cymbal 7
964. Bongo 5	**1008.** Hat 42	**1052.** Cymbal 8
965. Bongo 6	**1009.** Hat 43	**1053.** Cymbal 9
966. Bongo 7	**1010.** Hat 44	**1054.** Cymbal 10
967. Hat 1	**1011.** Hat 45	**1055.** Cymbal 11
968. Hat 2	**1012.** Hat 46	**1056.** Cymbal 12

Instrument Listing

1057. Cymbal 13	**1102.** Bell 9	**1147.** Clap 3
1058. Cymbal 14	**1103.** Bell 10	**1148.** Clap 4
1059. Cymbal 15	**1104.** Bell 11	**1149.** Clap 5
1060. Cymbal 16	**1105.** Bell 12	**1150.** Clap 6
1061. Cymbal 17	**1106.** Bell 13	**1151.** Clap 7
1062. Cymbal 18	**1107.** Bell 14	**1152.** Clap 8
1063. Shaker 1	**1108.** Bell 15	**1153.** Clap 9
1064. Shaker 2	**1109.** Bell 16	**1154.** Clap 10
1065. Shaker 3	**1110.** Bell 17	**1155.** Clap 11
1066. Shaker 4	**1111.** Bell 18	**1156.** Clap 12
1067. Shaker 5	**1112.** Bell 19	**1157.** Clap 13
1068. Shaker 6	**1113.** Bell 20	**1158.** Clap 14
1069. Shaker 7	**1114.** Bell 21	**1159.** Clap 15
1070. Shaker 8	**1115.** Bell 22	**1160.** Clap 16
1071. Shaker 9	**1116.** Bell 23	**1161.** Clap 17
1072. Shaker 10	**1117.** Bell 24	**1162.** Snap 1
1073. Shaker 11	**1118.** Bell 25	**1163.** Snap 2
1074. Shaker 12	**1119.** Bell 26	**1164.** Snap 3
1075. Shaker 13	**1120.** Bell 27	**1165.** Snap 4
1076. Shaker 14	**1121.** Bell 28	**1166.** Snap 5
1077. Shaker 15	**1122.** Bell 29	**1167.** Snap 6
1078. Shaker 16	**1123.** Bell 30	**1168.** Misc 1
1079. Shaker 17	**1124.** Bell 31	**1169.** Misc 2
1080. Shaker 18	**1125.** Block 1	**1170.** Misc 3
1081. Shaker 19	**1126.** Block 2	**1171.** Misc 4
1082. Shaker 20	**1127.** Block 3	**1172.** Misc 5
1083. Shaker 21	**1128.** Block 4	**1173.** Misc 6
1084. Shaker 22	**1129.** Block 5	**1174.** Misc 7
1085. Shaker 23	**1130.** Block 6	**1175.** Misc 8
1086. Shaker 24	**1131.** Block 7	**1176.** Misc 9
1087. Shaker 25	**1132.** Block 8	**1177.** Misc 10
1088. Shaker 26	**1133.** Block 9	**1178.** Misc 11
1089. Shaker 27	**1134.** Block 10	**1179.** Misc 12
1090. Vibraslap	**1135.** Block 11	**1180.** Misc 13
1091. Flexitone	**1136.** Block 12	**1181.** Misc 14
1092. Bell Tree	**1137.** Tam 1	**1182.** Misc 15
1093. Slay Bells	**1138.** Tam 2	**1183.** Misc 16
1094. Bell 1	**1139.** Tam 3	**1184.** Misc 17
1095. Bell 2	**1140.** Tam 4	**1185.** Misc 18
1096. Bell 3	**1141.** Tam 5	**1186.** Misc 19
1097. Bell 4	**1142.** Tam 6	**1187.** Misc 20
1098. Bell 5	**1143.** Tam 7	**1188.** Misc 21
1099. Bell 6	**1144.** Tam 8	**1189.** Misc 22
1100. Bell 7	**1145.** Clap 1	**1190.** Misc 23
1101. Bell 8	**1146.** Clap 2	**1191.** Misc 24

Instrument Listing

1192. Misc 25	**1199.** Misc 32	**1206.** Misc 39
1193. Misc 26	**1200.** Misc 33	**1207.** Misc 40
1194. Misc 27	**1201.** Misc 34	**1208.** Misc 41
1195. Misc 28	**1202.** Misc 35	**1209.** Misc 42
1196. Misc 29	**1203.** Misc 36	**1210.** Misc 43
1197. Misc 30	**1204.** Misc 37	
1198. Misc 31	**1205.** Misc 38	

Velocity Curves

This section provides diagrams and descriptions of the XL-7 velocity curves.

Linear

Result Velocity / Played Velocity
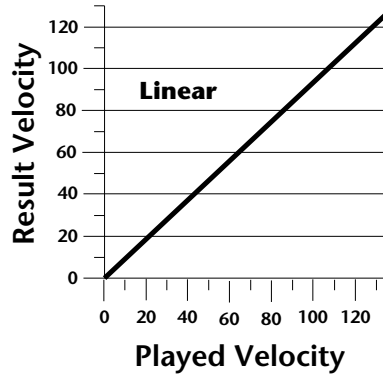
Linear, no change to velocity.

Curve 1

Result Velocity / Played Velocity
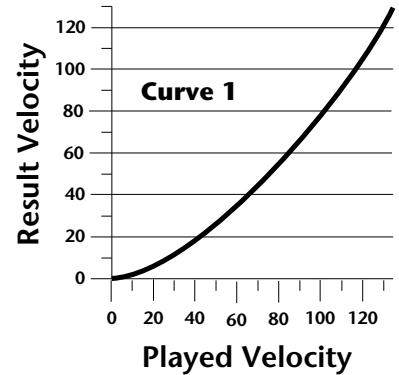
Compresses velocity range.

Curve 2

Result Velocity / Played Velocity
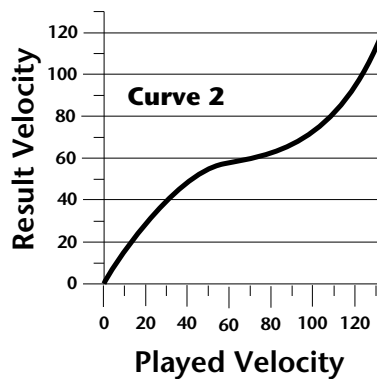
Expands dynamics in low range,
emphasizing medium velocity values
and compressing high velocity values.

Curve 3

Result Velocity / Played Velocity
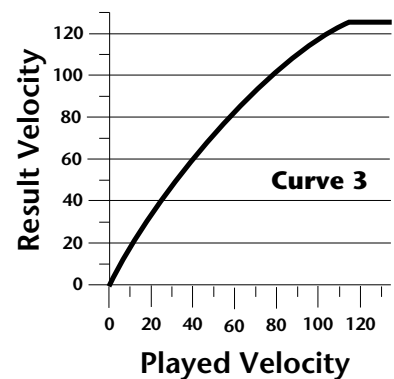
Expands velocity range.
Soft -> Loud

Curve 4

Result Velocity / Played Velocity
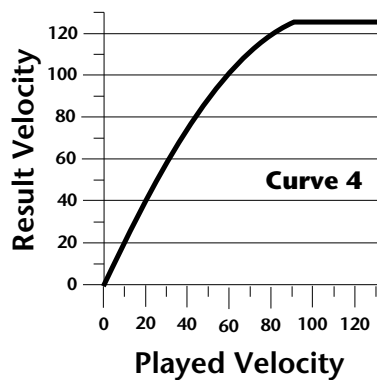
Expands velocity range.
Outputs high values.

Curve 5

Result Velocity / Played Velocity
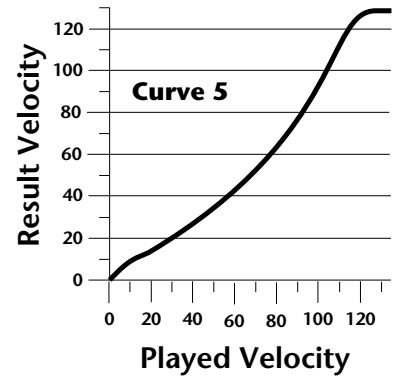
Shifts velocity values upward.
Good dynamic range.

Velocity Curves

Played Velocity
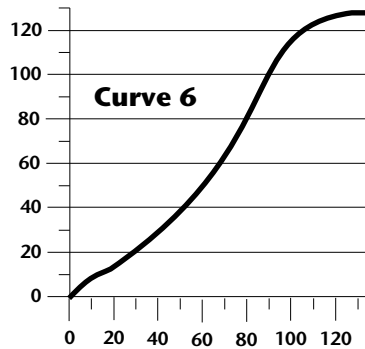
Curve 6

Shifts velocity values up while
compressing the midde range.

Played Velocity

Result Velocity
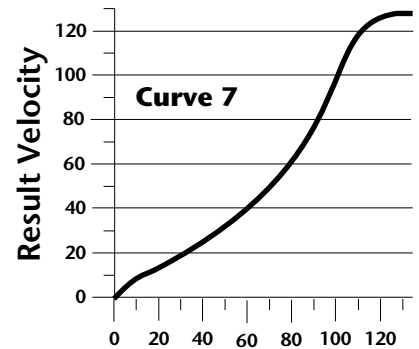
Curve 7

Similar to Curve 6.

Played Velocity
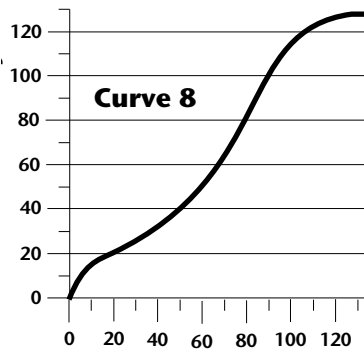
Curve 8

Similar to Curve 6 with more
emphasis on the middle range.

Result Velocity

Played Velocity
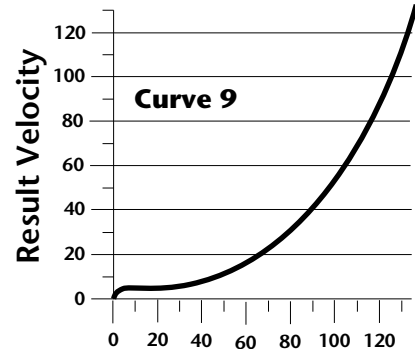
Curve 9

Extreme dynamic range
compression.

Played Velocity
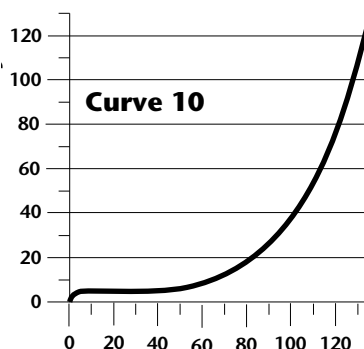
Curve 10

Extreme dynamic range
compression. Outputs low values.

Result Velocity

Played Velocity
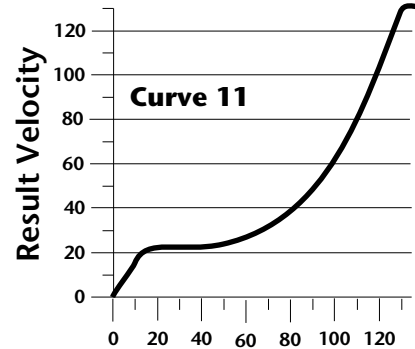
Curve 11

Extreme dynamic range compres:
but doesn't output low values

Curve 12

Played Velocity
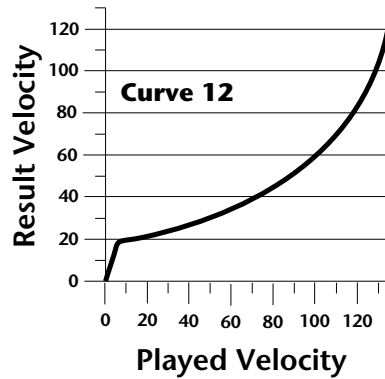
Less severe version of Curve 11.

Curve 13

Played Velocity
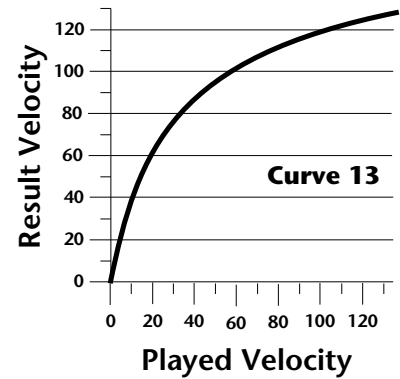
Extreme expansion of velocity range.

PatchCord Amount Chart

The following chart shows the PatchCord "Amount" settings in order to get semitone intervals when modulation sources are connected to pitch.

Semitone	PatchCord Amount	Semitone	PatchCord Amount
1	3	21	66
2	6	22	69
3	approx. 9	23	approx. 72.5
4	approx. 12	24	approx. 76
5	16	25	79
6	19	26	82
7	22	27	88
8	25	28	91
9	28	29	approx. 95
10	approx. 31	30	98
11	35	31	
12	38	32	
13	41	33	
14	44	34	
15	47	35	
16	50	36	
17	approx. 53	37	
18	57	38	
19	60	39	
20	63	40	

Rhythmic Notation

This extremely brief overview is intended solely as a refresher and memory jogger; for a detailed description of rhythmic notation, see any good book on music theory.

Measures

A piece of music is divided into measures, and each measure is divided into notes. The number of notes, and rhythmic value of the notes, depends both on the composition and the time signature (see Appendix C).

Note values

With a measure written in 4/4, there are four beats per measure, with each beat representing a quarter note. Thus, there are four quarter notes per measure of 4/4 music.

There are two eighth notes per quarter note. Thus, there are eight eighth notes per measure of 4/4 music.

There are four sixteenth notes per quarter note. Thus, there are sixteen sixteenth notes per measure of 4/4 music.

There are eight thirty-second notes per quarter note. Thus, there are thirty-two thirty second notes per measure of 4/4 music.

There are also notes which span a greater number of beats than quarter notes. A half-note equals two quarter notes. Therefore, there are two half-notes per measure of 4/4 music. A whole note equals four quarter notes. Therefore, there is one whole note per measure of 4/4 music.

Triplets

The above notes divide measures by factors of 2. However, there are some cases where you want to divide a beat into thirds, giving three notes per beat. Dividing a quarter note by three results in eighth note triplets. The reason why we use the term "eighth note triplets" is because the eighth note is closest to the rhythmic value which we want. Dividing an eighth note by three results in sixteenth note triplets. Dividing a sixteenth note by three results in thirty-second note triplets.

Time Signatures

A time signature (also called metric signature) describes the meter of a piece of music. It consists of two numbers arranged like a fraction, such as 3/4, 4/4, etc. The top number (numerator) indicates the number of beats in each measure, while the bottom number (denominator) indicates the rhythmic value of each beat. For example, with a 3/4 time signature the numerator indicates that there are three notes per measure, while the denominator indicates that each of these notes is a quarter note. 4/4 indicates that each measure includes 4 quarter notes. Usually the downbeat (1st beat) of each measure is emphasized by a metronome to help you get a feel for the meter.

3/4 and 4/4 are the most common time signatures, but they are by no means the only ones. In jazz, both 5/4 (where each measure has five 1/4 notes) and 7/4 (where each measure has seven 1/4 notes) are often used. In practice, complex time signatures are played like a combination of simpler time signatures; for example, some 7/4 compositions would have you count each measure not as "1, 2, 3, 4, 5, 6, 7" but as "1, 2, 3, 4, 1, 2, 3". It's often easier for musicians to think of 7/4 as one bar of 4/4 and one bar of 3/4, since as we mentioned, 4/4 and 3/4 are extremely common time signatures.

Block Diagrams

Volume & Pan

These block diagrams show the internal signal routings and the functions of the various screens. They should prove highly useful when programming complex setups or for troubleshooting.

A - **KNOBS OUTPUT MIDI** *(MIDI menu)*
B - **LOCAL CONTROL** *(Controllers menu)*
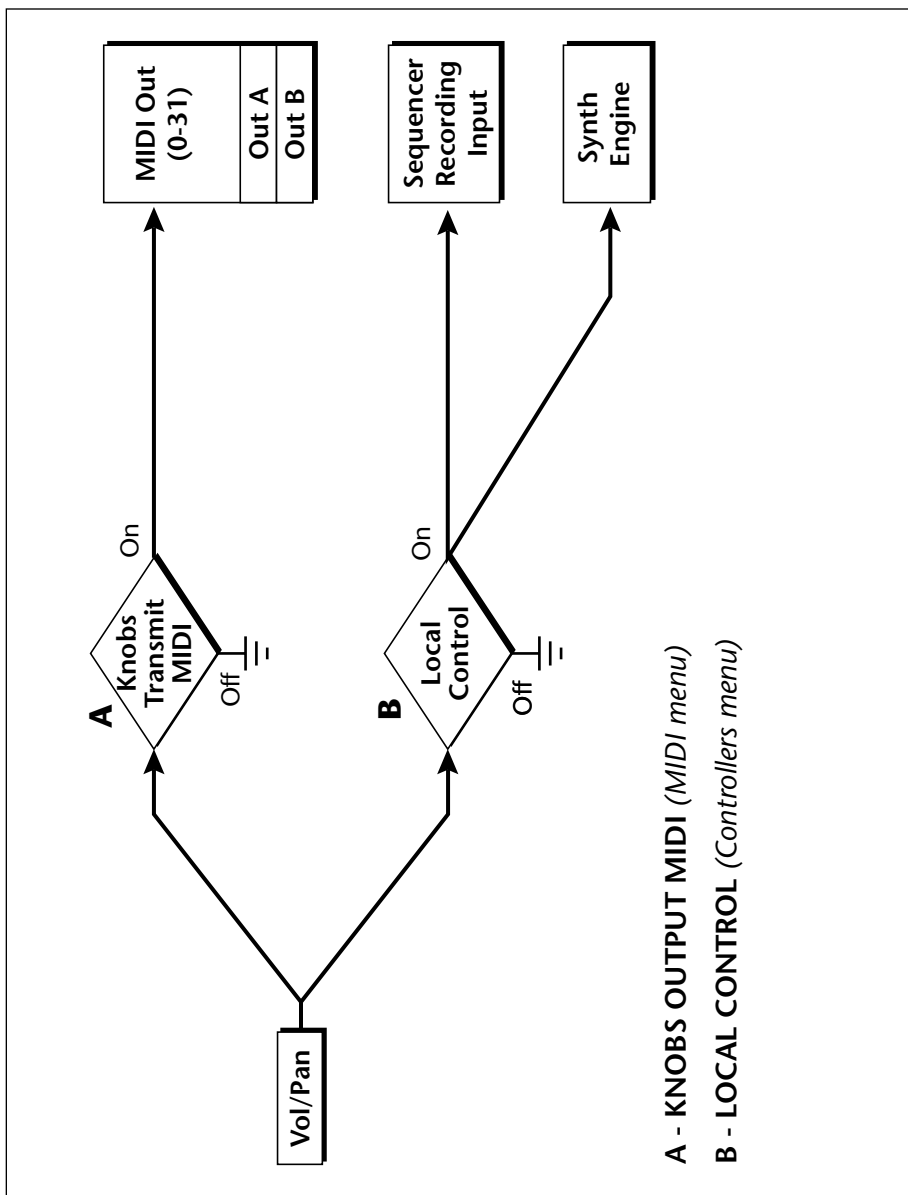
Block Diagrams

Pads Routing

A - **KEYBOARD CHANNEL** *(Controllers menu)*
B - **KEYBOARD OUTPUTS MIDI** *(MIDI menu)*
C - **LOCAL CONTROL** *(Controllers menu)*
D - **RECHANNELIZE INPUT** *(MIDI menu)*
E - **CHANNEL ASSIGN** *(Pattern/Song Edit menu)*

Block Diagrams

MIDI In

A - **RECHANNELIZE INPUT** *(MIDI menu)*
B - **MERGE MIDI IN TO OUT** *(MIDI menu)*
C - **MIDI IN CHANNELS** *(MIDI menu)*
D - **CHANNEL ASSIGN** *(Pattern/Song Edit menu)*
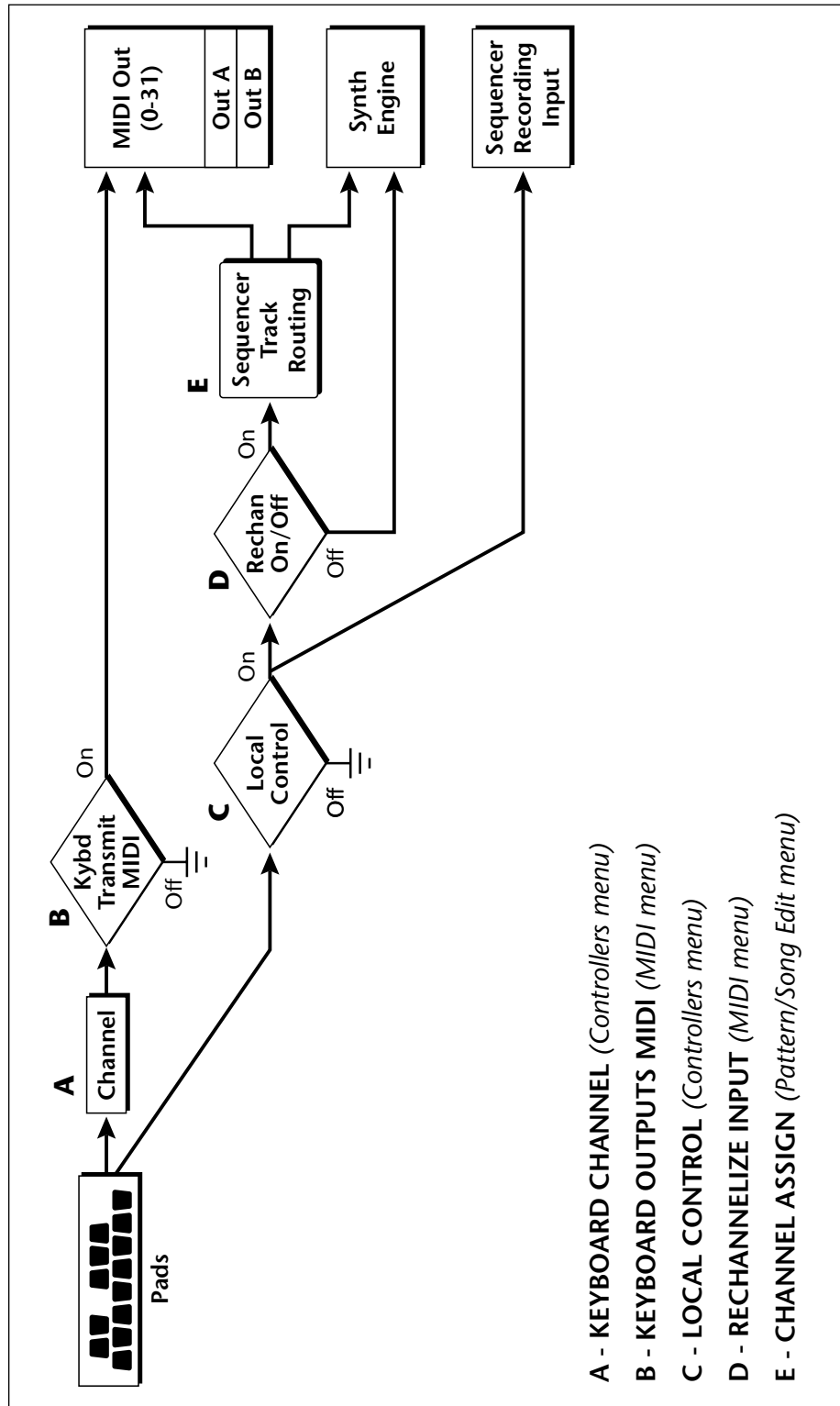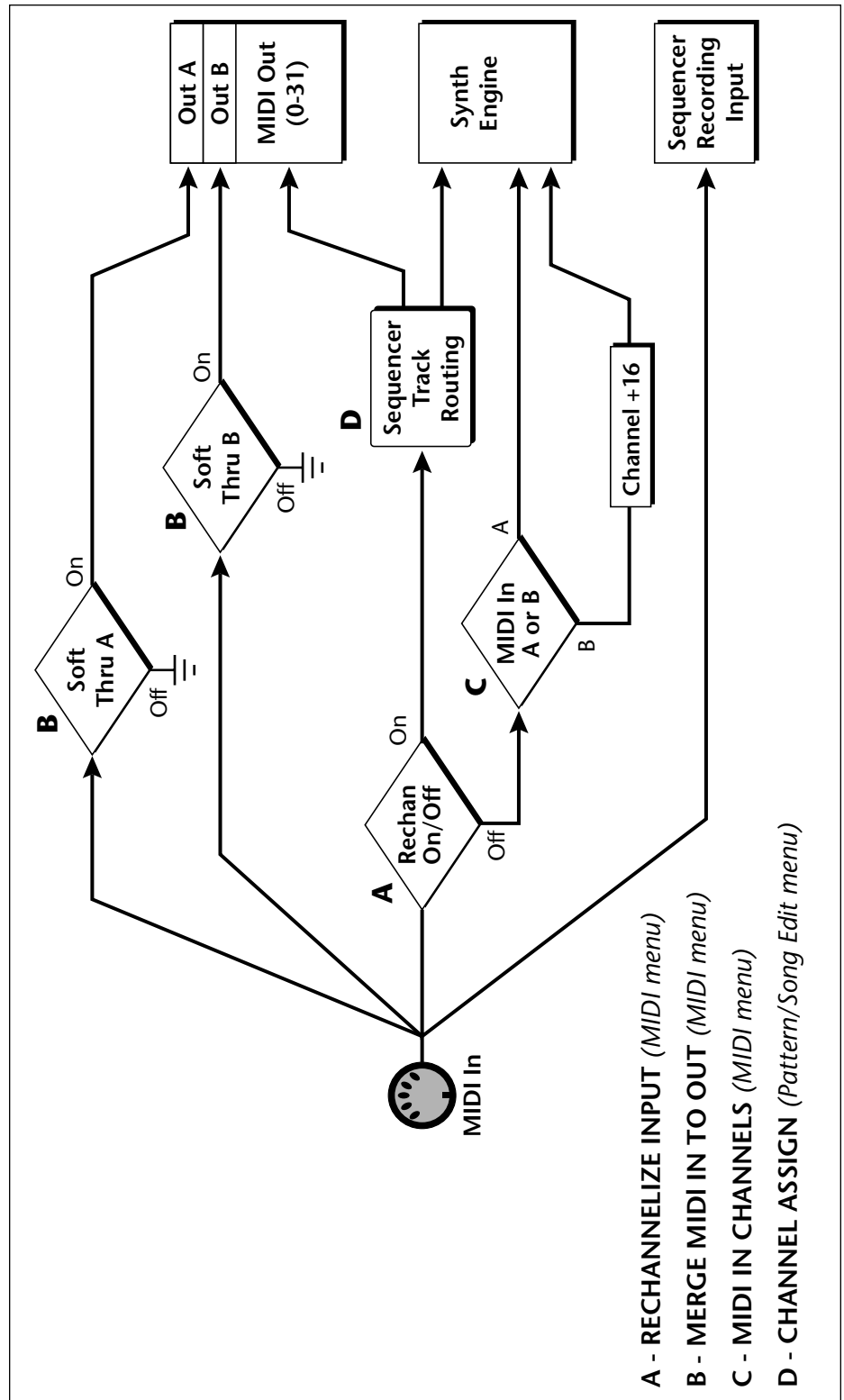
Block Diagrams

*Triggers &
Programmable
Knobs*
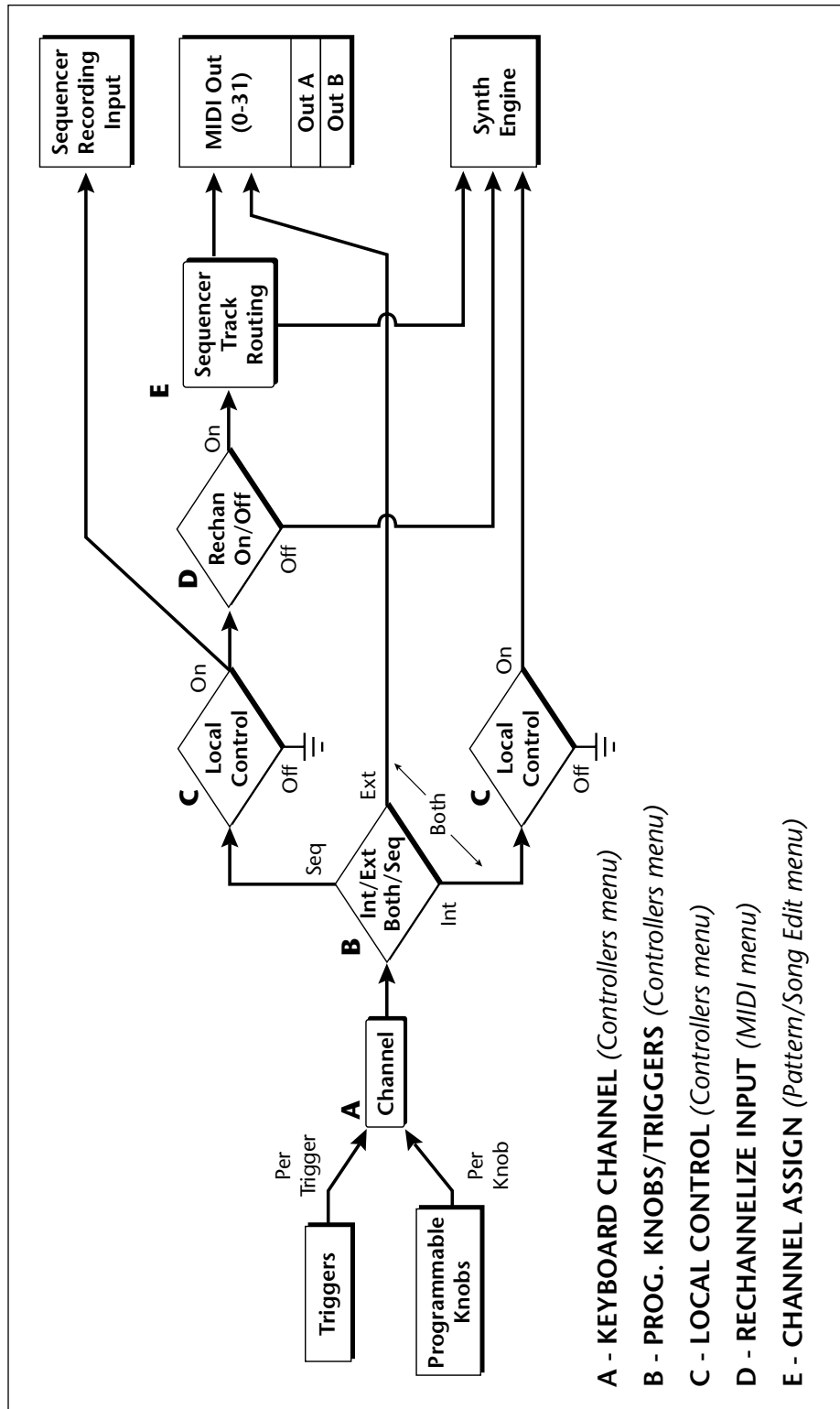
A - **KEYBOARD CHANNEL** *(Controllers menu)*

B - **PROG. KNOBS/TRIGGERS** *(Controllers menu)*

C - **LOCAL CONTROL** *(Controllers menu)*

D - **RECHANNELIZE INPUT** *(MIDI menu)*

E - **CHANNEL ASSIGN** *(Pattern/Song Edit menu)*

Block Diagrams

Quick Edit

A - **KNOBS OUTPUT MIDI** *(MIDI menu)*
B - **LOCAL CONTROL** *(Controllers menu)*
C - **RECHANNELIZE INPUT** *(MIDI menu)*
D - **CHANNEL ASSIGN** *(Pattern/Song Edit menu)*
E - **KNOBS PRESET QUICK EDIT** *(Controllers menu)*
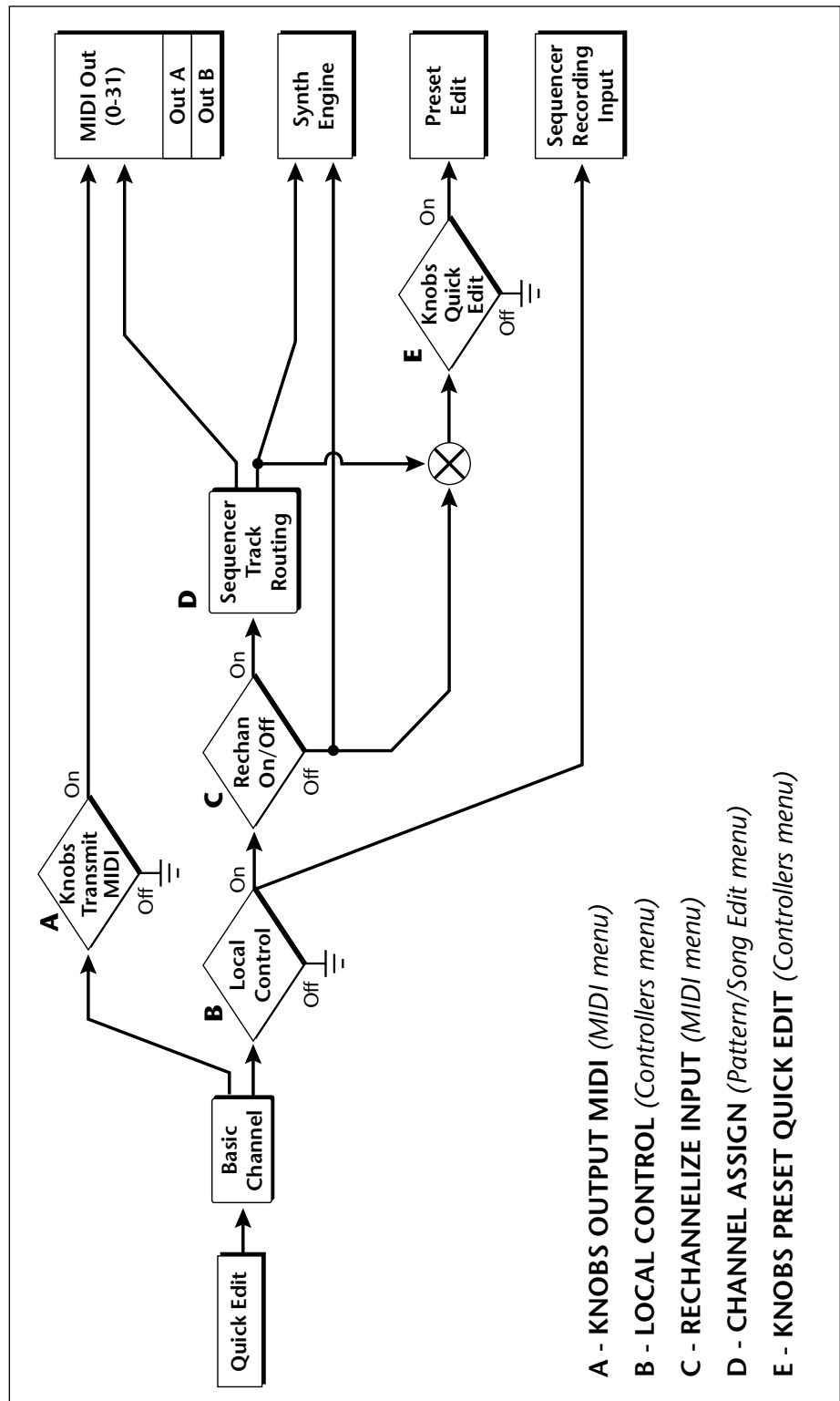
E-MU Expansion Sound Sets

Eleven different ROM expansions are currently available, with more being developed every day. ROM expansions typically add 32MB of sound data and 512 additional presets. Adding new sounds is like getting a new instrument and a sure way to spark your creativity. ROM Expansions are available from your E-MU dealer. Also check out the official E-MU website: **www.emu.com** for the latest sounds.

Orchestral Sessions VOLUME 1
The Orchestral Sessions Vol. 1 expansion 32 MB ROM offers you the most realistic and comprehensive collection of section strings available, complete with legato, spiccato, pizzicato and tremolande samples, and includes special presets for 4 speaker applications.

Orchestral Sessions VOLUME 2
The Orchestral Sessions Vol. 2 expansion 32 MB ROM offers you the most realistic and comprehensive collection of woodwinds, brass, percussion, and solo strings available, complete with velocity switching between p/mf/ff samples, special presets for 4 speaker applications and a percussion battery with over 20 instruments.

Siedlaczek Orchestra Special Edition
The Peter Siedlaczek Advanced Orchestra Special Edition puts 32 MB of his finest ensembles onto a single expansion ROM. String, brass, woodwind and percussion ensembles are included in a variety of styles (i.e. vibrato, tremolo, pizzicato, sordino, etc.), to give you a diverse collection of samples.

Protozoa
E-MU presents the 16 MB Protozoa expansion ROM—the ultimate sound compilation containing presets from the ground breaking Proteus sound modules, all optimized for your 's advanced synthesis and filter architecture.

Sounds of the ZR
The Sounds of the ZR Expansion ROM faithfully reproduces the diverse sounds of ENSONIQ's popular ZR-76 keyboard, including William Coakley's Perfect Piano. You'll find everything from synths and orchestral instruments to one of the finest pianos ever sampled in one soundset.

Definitive B-3
John Novello and E-MU present the 32 MB Definitive B-3 expansion ROM, a diverse collection of tone wheel organ drawbar settings sampled direct and with rotary speakers (chorale and tremolo) to give you the most versatile and playable B-3 available!

X-Lead

The X-Lead soundset consists primarily of analog, noise and modern synthesizer waveforms. These sounds are rich in harmonic texture and are a perfect match with the Z-plane filters in your Proteus® family sound module. With the included software upgrade, you now have access to dynamic and rhythmic features not found on any other instrument.

PURE PHATT

The 32 MB Pure Phatt is E-MU's latest Hip-Hop soundset that produces the freshest and newest sounds and grooves from top notch producers from the East, Southeast and West coasts. Pumping leads and basses, silky pads and those unique hits, scratches and drones that your mix needs to bring it to the next level are ready to provide the love.

World Expedition

An amazing collection of traditional instruments from the four corners of the globe including exotic stringed instruments, winds, percussion, and chromatic percussion. World Expedition provides you with the most realistic ethnic soundset in the world. Discover a world of sounds to bring to your music.

Techno Synth

Rob Papen and E-MU introduce the 32 MB Techno Synth Construction Yard Expansion ROM, a compilation of synth, techno, and ambient sounds from one of Europe's finest programmers. From atmospheric pads to punchy sub-basses and crunch drum loops, these sounds will help you tear up the dance floor!

Beat Garden

Dutch sound designer Rob Papen and E-MU introduce the 32 MB Beat Garden expansion ROM, a diverse palette of all-new Electronica/Dance beats, synths, basses, drumkits, acoustic and electronic percussion. Experience the Beat Garden for yourself and add a unique dimension to your tracks.

Proteus Pop Collection

The 32 MB Proteus Pop Collection offers you all of the bread and butter sounds of E-MU's Proteus 2500 Module and PK-6 keyboard with 640 diverse presets covering everything from traditional keyboards and orchestral instruments to electric guitars, world percussion and drum kits.

ENSONIQ Project

The 32 MB ENSONIQ Project Expansion ROM delivers the sounds of ENSONIQ's acclaimed Urban Dance Project and Real World collections with the Hip-Hop and World sounds heard on countless hits, all optimized for E-MU's powerful synthesis and filter architecture.

Installing Sound SIMMs

XL-7 can be easily expanded to contain up to 128 MB of sound data (4 SIMMs). The sound SIMM sockets are located inside the unit.

▶ Open the Unit

1. IMPORTANT: Unplug power from the unit before opening!

2. Carefully turn the unit keypad-side down on a soft, padded surface.

3. The bottom panel is secured by eight phillips head screws — four along the rear edge and four along the front edge. Remove the eight screws and place them where they won't roll away or get lost.

4. Holding the bottom panel and the top piece together, carefully turn the entire unit right-side up again.

5. Carefully lift the rear of the top panel, tilting it upward. Do this slowly so as not to stress the ribbon cables.

6. Continue to open the unit as if you were opening a book, so that the top piece is resting on the buttons and knobs as shown below. Take care not to stress or damage the fragile ribbon cables.
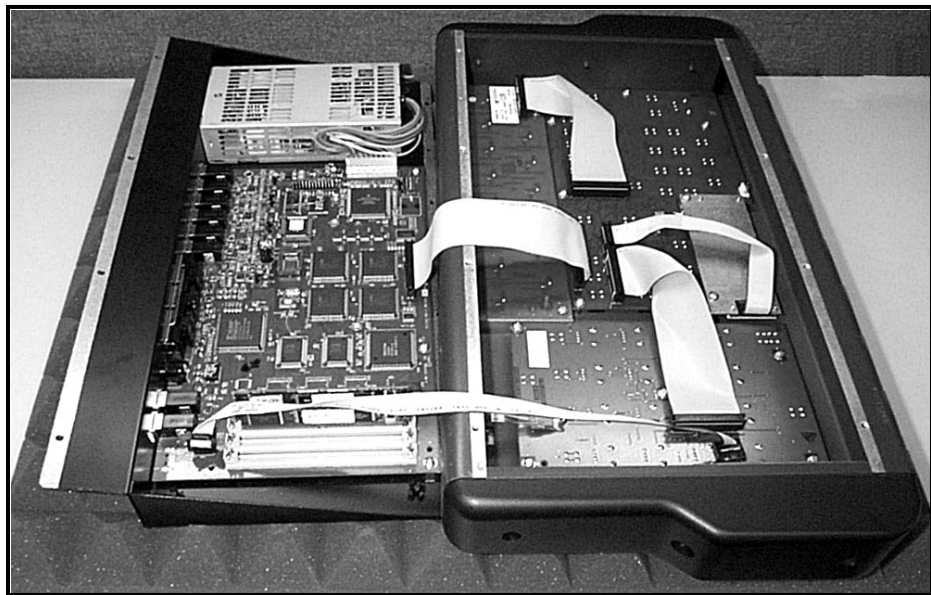
The service position for XL-7. The Sound ROM sockets can be seen at lower left.

▶ To Remove ROM SIMMs (if necessary):

1. Orient the unit so that the rear panel is facing you. Ground yourself by touching a grounded object. *(Such as the chassis of another piece of equipment connected to the wall socket with a three-prong power plug.)*

2. On each end of the SIMM socket there is a silver or plastic tab. Use a screwdriver or a ball point pen to squeeze the tabs toward the outside of the socket while gently nudging the SIMM toward the right side of the unit. The old SIMM should "hinge" to the right and can now be removed.

▶ **Install a New ROM SIMM**

ROMs can be installed in any available SIMM location. The physical position of the sound set does not affect the order that they appear in the LCD.

1. Ground yourself by touching a grounded object, then remove the memory SIMM modules from the static protected packaging.

2. Notice that one end of the SIMM connector is notched. This notch should be oriented towards the rear panel of the unit. When installing multiple SIMMS, install the SIMM into the lowest numbered socket first (i.e. first CN-5, then CN-6, then CN-7, then CN-8).

Notch

1. Set SIMM into socket with the notch toward rear of unit.

rear of unit
CN8
CN7
CN6
CN5

2. Tilt the SIMM up so that both tabs click and lock the SIMM into place.

front of unit
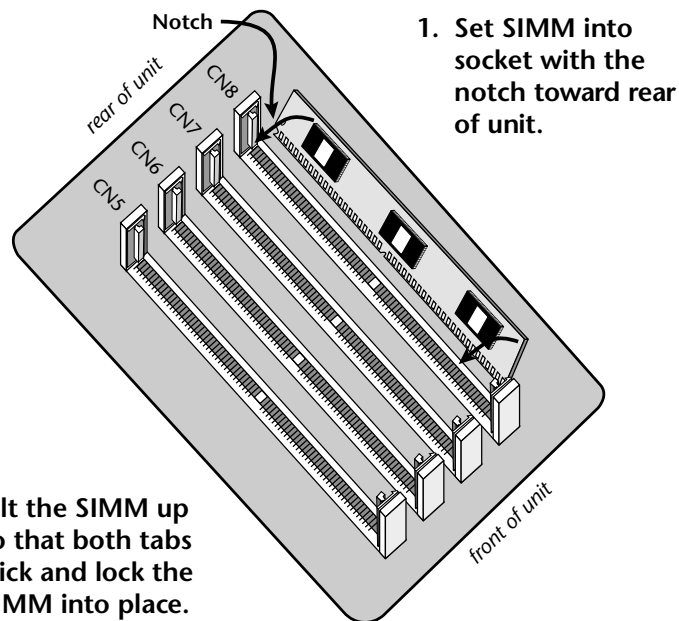
3. Gently set the SIMM deep into the SIMM socket at a 45º angle with the notch toward the rear of the unit. Without forcing the insertion, let the board rest in the socket as deep as it will go. It should rest naturally in place at this 45° angle. Refer to the diagram on the previous page.

4. While applying a slight downward pressure on the top of the SIMM to keep it from popping out of the socket, tilt the SIMM board into a vertical position. You should hear an audible click. Make sure both sides of the silver tabs have latched.

▶ **Reassemble the Unit**

1. Lift the top panel into a vertical position so you have some slack on the ribbon cables.

2. Press on the ribbon cable connectors to ensure they are properly seated before closing the unit.

3. Replace the top panel and all eight screws. The screws are all identical. Make sure to replace all eight screws or grounding problems could result.

▶ **Test It**

The installation is almost finished.

1. Turn the unit right-side up and plug in the power cord.

2. Turn on power.

3. Press the Preset View button.

4. Move the cursor under the ROM field and turn the data entry control to verify that your new sound ROM has been recognized.

5. Play the presets on the new ROM banks and verify that they sound OK.

Problems?

1. Disconnect power immediately.

2. Open the unit, and try re-seating the ROM SIMMs. If you're still having problems, return the unit to its original configuration and call EMU Systems Customer Service at (831) 438-1921. Telephone support hours are 8:00-5:00 PST, Monday through Friday.

MIDI

MIDI Implementation Chart (part 1)

MIDI Information	Transmitted	Recognized	Remarks
MIDI Channels	1-16A, 1-16B	1-16	32 MIDI Chan.
Note Numbers	0-127	0-127	
Program Change	0-127	0-127	
Bank Select Response?	No	Yes	MSB + LSB
Modes: Omni *(Mode 1)*	No	Yes	
Mono *(Mode 2)*	No	Yes	
Poly *(Mode 3)*	No	Yes	
Mode 4 *(Y/N)*	No	No	
Multi *(Mode 5)*	No	Yes	
Note On Velocity	Yes	Yes	
Note Off Velocity	No	Yes	
Channel Aftertouch	Yes	Yes	
Poly (Key) Aftertouch	Yes	No	
Pitch Bend	Yes	Yes	
Active Sensing	No	No	
System Reset	No	No	
Tune Request	No	No	
System Exclusive	Yes	Yes	
Sample Dump Standard	No	No	
File Dump	Yes	Yes	
MIDI Tuning	Yes	Yes	
Master Volume	No	Yes	
Master Balance	No	No	
Notation Information	No	No	
Turn GM1 System On	No	No	
Turn GM2 System On	No	No	
Turn GM1 System Off	No	No	
Other *(See Remarks)*	No	No	
NRPNs	No	No	
RPN 00 *(Pitch Bend Sensi.)*	No	No	
RPN 01 *(Chan. Fine Tune)*	No	No	
RPN 02 *(Chan Coar. Tune)*	No	No	
RPN 03 *(Tuning Prog Sel.)*	No	No	
RPN 04 *(Tuning Bank Sel.)*	No	No	
RPN 05 *(Mod Depth Rang)*	No	No	
MIDI Timing & Sync			
MIDI Clock	Yes	Yes	
Song Position Pointer	Yes	Yes	*Received only when synced to MIDI clock*
Song Select	No	No	

MIDI Information	Transmitted	Recognized	Remarks
Start Continue Stop	Yes Yes Yes	Yes Yes Yes	*Start/Continue response only from the stopped transport state.*
MIDI Time Code	No	No	
MIDI Machine Control	No	No	
MIDI Show Control	No	No	
Extension Capability			
General MIDI Compat? Is GM default mode?	No No	No No	
DLS compatible? Import DLS Files? Export DLS Files?	No No No	No No No	
Import Std MIDI files Export Std MIDI files	Yes Yes	Yes Yes	

MIDI Implementation Chart (part 2 - Controllers)

Control #	Function	Transmitted	Recognized	Remarks
0	Bank Select MSB	Yes	Yes	
1	Mod Wheel MSB	Yes	Yes	
2	Breath Cntrl MSB	No	No	* see note
3		Yes		*
4	Foot Cntrl MSB	Yes	No	*
5	Portamento MSB	No	No	*
6	Data Entry MSB	No	No	*
7	Chan Volume MSB	Yes	Yes	*
8	Balance MSB	No	No	*
9				*
10	Pan MSB	Yes	Yes	*
11	Expression MSB	No	Yes	*
12	Effect Cntrl 1 MSB	No	No	*
13	Effect Cntrl 2 MSB	No	No	*
14				*
15				*
16	GenPur Ctrl 1 MSB			*
17	GenPur Ctrl 2 MSB			*
18	GenPur Ctrl 3 MSB			*
19	GenPur Ctrl 4 MSB			*
20				*
21				*
22				*
23				* see note
24				*
25	↦	Yes	Yes	* Filt Attck
26	↦	Yes	Yes	* Filt Decy
27				*
28				*
29				*
30				*
31				*
32	Bank Select LSB			*
33	Mod Wheel LSB			*
34	Breath Cntrl LSB			*
35				*
36	Foot Cntrlr LSB			*

Control #	Function	Transmitted	Recognized	Remarks
37	Portamento LSB			*
38	Data Entry LSB			*
39	Chan Volume LSB			*
40	Balance LSB			*
41				*
42	Pan LSB			*
43	Expression LSB			*
44	Effect Cntrl 1 LSB			*
45	Effect Cntrl 2 LSB			*
46				*
47				*
48	Gen Pur Ctrl 1 LSB			*
49	Gen Pur Ctrl 2 LSB			*
50	Gen Pur Ctrl 3 LSB			*
51	Gen Pur Ctrl 4 LSB			*
52				*
53				*
54				*
55				*
56				*
57				*
58				*
59				*
60				*
61				* *see note*
62				*
63				*
64	Sustain Pedal	Yes	Yes	*
65	Portamento on/off	No	No	*
66	Sostenuto	No	No	*
67	Soft Pedal			*
68	Legato Footswitch			*
69	Hold 2			*
70	Variation			*
71	Timbre/Har Inten	Yes	Yes	*
72	Release Time	Yes		*
73	Attack Time	Yes		*
74	Brightness	Yes		*

Control #	Function	Transmitted	Recognized	Remarks
75	Sound Cntrlr 6 ↦	Yes	Yes	* Decay
76	Sound Cntrlr 7			*
77	Sound Cntrlr 8 ↦	Yes	Yes	* Vel->Filt
78	Sound Cntrlr 9 ↦	Yes	Yes	* Vel->amp
79	Sound Cntrlr 10	Yes	Yes	↥ See note
80	Gen Purp Cntrlr 5	Yes	Yes	♓ See note
81	Gen Purp Cntrlr 6			*
82	Gen Pur Ctrlr 7 ↦	Yes	Yes	* Arp Vel
83	Gen Pur Ctrlr 8 ↦	Yes	Yes	* Arp Gate
84	Portamento Cntrl			*
85	↦	Yes	Yes	* Sustain
86				*
87				*
88				*
89				*
90				*
91	Effects 1 Depth			*
92	Effects 2 Depth			*
93	Effects 3 Depth			*
94	Effects 4 Depth			*
95	Effects 5 Depth			*
96	Data Increment			
97	Data Decrement			
98	NRPN (LSB)			
99	NRPN (MSB)			
100	RPN (LSB)			
101	RPN (MSB)			
102				
103				
104				
105				
106				
107				
108				
109				
110				
111				
112				

Control #	Function	Transmitted	Recognized	Remarks
113				
114				
115				
116				
117				
118				
119				
120	All Sound Off	No	Yes	↻ *See note*
121	Reset All Contlrs	No	Yes	
122	Local Cntrl on/off	No	No	
123	All Notes Off	No	Yes	
124	Omni Mode Off	No	Yes ★	★ *if enabled*
125	Omni Mode On	No	Yes ★	★ *if enabled*
126	Poly Mode Off	No	Yes ★	★ *if enabled*
127	Poly Mode On	No	Yes ★	★ *if enabled*

NOTES:

* XL-7 can transmit and receive ANY continuous controller number from 1 to 95. Because of XL-7's powerful synth engine, many of the standard MIDI controllers can be user programmed to provide the desired function. A "Yes" response in this chart means that a controller is programmed by default in XL-7.

⚓ Controller 79 is hard-coded to the Mix Output parameter.
0=Use Preset, 1=Send 1, 2=Send 2, 3=Send 3, 4=Send 4

♎ Controller 80 is hard-coded to the Arp Status parameter.
0=Off, 1=On, 2=P (preset), 3=M (master)

↻ Value of 0 = reset all except vol & pan; value of 127 = reset all.

Other: Pan: -64 = hard left, +63 = hard right

Product ID for XL-7 = 0F (15)

MIDI Device Inquiry Responses

Family

MSB   0x04 (Musical Instruments)

LSB   0x04 (ROM Players)

Members

MSB   0x00 (Proteus 2000 series)

LSB   0x02 Audity 2000
0x03 Proteus 2000
0x04 B-3
0x05 XL-1
0x06 Virtuoso 2000
0x07 Mo'Phatt
0x08 B-3 Turbo
0x09 XL-1 Turbo
0x0A Mo'Phatt Turbo
0x0B Planet Earth
0x0C Planet Earth Turbo
0x0D XL-7
0x0E MP-7
0x0F Proteus 2500
0x10 Orbit 3
0x11 PK-6
0x12 XK-6
0x13 MK-6
0x14 Halo
0x15 Proteus 1000
0x16 Vintage Pro

There is only one edit buffer which is used by the current preset (the preset shown in the display). You can edit only one preset at a time via SysEx commands, although these presets can be edited independently of the current preset edited using the Front Panel. Remote Preset selection is independent of the edit buffer. Changing the current preset erases the edit buffer.

Received Channel Commands

Channels number (n) = 0-15. Message bytes are represented in hex. All other numbers are decimal. Running Status is supported.

Command	Message	Comments
Note Off	8n kk vv	
Note On	9n kk vv	velocity 0 = note off
Key Aftertouch	An kk vv	kk = 0-127 vv = 0-127
Program Change	Cn vv	0-127
Channel Aftertouch	Dn vv	0-127
Pitch Bend	En ll mm	l = lsb, m = msb
Real-time Controller	Bn cc vv	cc = 00-31, 64-95
Footswitch	Bn cc vv	cc = 64-79, vv ≥ 64 = on
Volume	Bn 07 vv	0-127
Pan	Bn 0A vv	0=left, 127=right, 64=center
All Sound Off	Bn 78 00	turns all sound off
Reset All Controllers	Bn 79 00	ignored in omni mode
All Notes Off	Bn 7B 00	ignored in omni mode
Omni Mode Off*	Bn 7C 00	forces all notes & controls off
Omni Mode On*	Bn 7D 00	forces all notes & controls off
Mono Mode On (Poly Off)*	Bn 7E 00	forces all notes & controls off
Poly Mode On (Mono Off)*	Bn 7F 00	forces all notes & controls off
Bank Select MSB	Bn 00 bb	bb = bank MSB (see page 180)
Bank Select LSB	Bn 20 bb	bb = bank LSB (see page 180)

Special Notes:

- **From Omni Mode** .... Omni Off turns Poly On.
- **From Poly Mode**............. Omni On turns Omni On; Mono On turns Mono On.
- **From Mono Mode** .... Mono Off turns Poly On; Omni On turns Omni On.
- **From Multi Mode**........... Omni On turns Omni On; Omni Off or Mono Off turns Poly On; Mono On turns Mono On.
- All other changes have no effect.

SysEx Specification

XL-7 contains an extensive set of MIDI SysEx commands. *(Virtually every parameter is controllable via SysEx.)* Because of the size and technical nature of the System Exclusive specification, it is beyond the scope of this manual. The complete SysEx specification for XL-7 is available on the official E-mu Systems, Inc. web site: www.emu.com

Technical Specifications

Audio Channels:	128
MIDI:	MIDI In, (2) MIDI Out
MIDI Channels:	32
Presets:	512 user presets. *(The number of ROM presets is determined by the sound SIMMs installed.)*

Sequencer

Timing Resolution:	1/384 quarter note
Tracks:	16 tracks +1 song track *(16 channels/track)*
Patterns:	1024 pattern locations
Songs:	512 song locations
Filters:	2nd order to 12th order filters (50 different types)
Audio Outputs:	6 polyphonic analog outputs
Submix Inputs:	4 analog inputs (sum to main outs)
Digital Output:	S/PDIF stereo (AES-pro compatible)
Max. Output Level:	+4 dB
Output Impedance:	1000 Ohms
Sound Memory:	32 MB (expandable to 128 MB)
Data Encoding:	16-bit linear data
Effects Engine:	24-bit internal processing
Sample Playback Rate:	44.1 kHz
Signal to Noise:	>92 dB
Dynamic Range:	>90 dB
Frequency Response:	20 Hz - 20 kHz (+2/-1 dB)
THD + Noise:	< 0.02% (1kHz sine wave, A-weighting)
IMD	< 0.05%
Stereo Phase	Phase Coherent +/- 1º at 1 kHz
Power Consumption:	20 Watts
Voltage Input:	90VAC-260VAC at 50Hz-60Hz

Warranty

Please read this warranty, as it gives you specific legal rights.

Limited Warranty

This product is warranted, to the original consumer purchaser, to be free of all defects in workmanship and materials for a period of one (1) year (warranty period is two (2) years in the European Union, effective Jan-1-2002), from the date of such purchase from an authorized E-MU Systems dealer, provided that: (a) the Warranty Registration Card is filled out and returned to E-MU Systems within 14 days of the purchase date; (b) the E-MU Systems service center is provided a copy of the consumer purchaser's sales receipt; and (c) E-MU Systems has confirmed the validity of the subject unit's serial number.

Warranty Restrictions

Specifically, but without limitation, E-MU Systems does not provide warranty service for:

- Damages due to improper or inadequate maintenance, accident, abuse, misuse, alteration, unauthorized repairs, tampering, or failure to follow normal operating procedures as outlined in the owner's manual;
- Deterioration or damage of the cabinet;
- Damages occurring during any shipment of the unit;
- Any unit which has been modified by anyone other than E-MU Systems.
- Any unit with an invalid or wholly or partially obliterated serial number.

NO OTHER EXPRESS OR IMPLIED WARRANTY IS MADE, AND E-MU SYSTEMS SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY, SATISFACTORY QUALITY, AND FITNESS FOR A PARTICULAR PURPOSE. E-MU SYSTEMS'S LIABILITY UNDER WARRANTY IS LIMITED TO REPAIR OR REPLACEMENT OF THE UNIT, OR REFUND, AT EMU'S OPTION. IN NO EVENT WILL E-MU SYSTEMS BE LIABLE FOR LOSS OF REVENUE OR SAVINGS, LOSS OF TIME, INTERRUPTION OF USE, OR ANY OTHER CONSEQUENTIAL, INDIRECT, INCIDENTAL, SPECIAL OR EXEMPLARY DAMAGES.

The foregoing will apply notwithstanding the failure of essential purpose of any remedy provided herein. Some jurisdictions do not allow the exclusion of implied warranties or conditions, or limitations on how long an implied warranty or condition may last, so the above limitations may not apply. This warranty gives you specific legal rights. You may have other rights which vary from jurisdiction to jurisdiction.

How To Obtain Warranty Service

All E-MU Systems products are manufactured with the highest standards of quality. If you find that your unit does require service, it may be done by any authorized E-MU Systems service center. If you are unable to locate a service center in your area, please contact EMU's Service Department at (831) 438-1921. They will either refer you to an authorized service center in your area or ask that you return your unit to the E-MU Systems factory.

When returning your unit to the E-MU Systems factory, you will be issued a Return Merchandise Authorization (RMA) number. Please label all cartons, shipping documents and correspondence with this number.
E-MU Systems suggests you carefully and securely pack your unit for return to the factory. (Do not send the power cord or operation manual.) Send the unit to E-MU Systems, Inc., 1600 Green Hills Road, Scotts Valley, CA 95066. You must pre-pay shipping charges to E-MU Systems.
E-MU Systems will pay return shipping charges. You will be responsible for any damage or loss sustained during shipment in any direction.

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