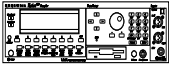


# Chapter 7

## Setup Mode and the Setup Editor

### Setup Mode

In Setup mode, the K2600 can take on the identity of eight distinct instruments and eight distinct MIDI transmitters, each of which can use the setup's physical controller assignments (or any subset of those controller assignments). For example, you can create a setup that is split into eight different keyboard regions (called zones). Each zone can play its own program, while also transmitting on its own MIDI channel.



Selecting setups in Setup mode is much like selecting programs in Program mode—just use one of the normal data entry methods to scroll through the list of setups. With the K2600R, standard program changes from your MIDI controller select the correspondingly numbered setups while the K2600 is in Setup mode (if you set the LocalKbdCh parameter on the MIDI-mode RECEIVE page to match the transmit channel of your MIDI controller).

There are some important differences between a program and a setup. A program plays on a single keyboard zone and on a single MIDI channel. A setup enables you to use up to eight keyboard (or MIDI controller) zones, each of which can have its own program, MIDI channel, and control assignments. The parameters you define for each setup affect programs *only while you are in Setup mode*. An exception to this is the control setup, which we discuss on page 7-3.

Press the Setup-mode button to enter Setup mode. You'll see a list of setups, which you can select with any data entry method.

```

SetupMode Xpose:05
-----
Key          _____
Range       _____
Info        _____
-----
221 Friday Gig
222 Bop Rock Reggae
301 MIDI Setup One
302 Jazz Trio
303 Heavy Metal
304 To Sequencer
Octav- Octav+ Panic Sample
  
```

The lines in the info box represent the approximate key range of each zone, and let you know if any zones overlap. In the preceding diagram, the setup has seven active zones (Zone 7 is turned off); Zones 1–4 are at the upper end of the keyboard. Zones 5, 6, and 8, which overlap Zones 1–4, cover the lower two thirds of the keyboard.

For setups containing three or fewer zones, the box displays the MIDI channel and program assignments for each zone, with lines under the Program names to indicate the key range of each zone (as shown in the following diagram). An **L** or an **M** next to the channel number indicates that the zone transmits only locally or via MIDI (the default is Local *and* MIDI).

## Setup Mode and the Setup Editor

### Setup Mode

**Off** indicates that the zone has been turned off completely (when a zone is turned off, no MIDI, program, or key-range information is visible for the zone).

```
SetupMode  Xpose:051
Chan/Program Info
1   36 Cool Traps
2   676 519 Acoust
3L 122 Izit Jimmy
Octav- Octav+ Panic Sample
222 Bop Rock Reggae
301 MIDI Setup One
302 Jazz Trio
303 Heavy Metal
304 To Sequencer
305 MIDI Setup Two
```

You can transpose the entire setup up or down with the two **Octav** soft buttons. Press them simultaneously to set the transposition back to zero. When you transpose a setup, the split points between zones remain in place; each program is transposed within its respective zone.

The **Panic** soft button sends All Notes Off and Reset All Controllers messages to all zones. The **Sample** soft button provides convenient access to the K2600's sampler. Refer to Chapter 14 for complete information on the sampler.

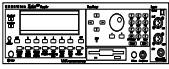
When you select a setup in Setup mode, the K2600 sends a number of MIDI messages, on each of the MIDI channels used by the setup. Some of these include: Program Change commands, MIDI Bank Select messages, Pan and Volume messages, and entry values for physical controllers (entry values are the values that take effect as soon as you select the setup; there are also controller *exit* values, which are the values of the controllers when you leave the setup—either by selecting another setup or by exiting Setup mode). The values of all these messages depend on the parameters you define in the Setup Editor.

## Loading Older Setup Versions

You can load setups created on the K2000 or K2500 into the K2600. Setups created on the K2500 are the same as those created on the K2600, so they're completely interchangeable. Since setups created on the K2000 have fewer features (like three zones instead of eight), you have two choices for using K2000 setups on the K2600. You can leave the K2000 setups as they are, and they'll work for either the K2000 or the K2600—but they won't have all the K2600 features like eight zones. Or you can edit the K2000 setups to take advantage of the K2600's expanded features. Once you do this, however, the setups will no longer work on the K2000, so if you want to keep using those setups on a K2000, be sure to keep backup copies of the original setups.

If you edit a K2000 setup to use K2600 features, you may need to reassign the programs it uses. If your K2000 setup uses a K2000 ROM program, the setup won't play the same program when you load it into the K2600, because the two instruments have different lists of ROM programs. In this case, you can either select a similar program for the K2600 setup (if one exists), or you can save the programs used by the K2000 setup into the same ROM IDs in the K2600 (this doesn't really replace the K2600 programs; they reappear when you delete the K2000 programs). If your K2000 setup uses K2000 RAM programs, you won't have any problems as long as you load dependent objects when you load the K2000 setup into the K2600.

## K2600 Rack Models Only



The K2600R offers the same splitting and layering capabilities as the keyboard model. Even if your MIDI controller can transmit on only one MIDI channel at a time, you can use the K2600R's setups by setting the Local Keyboard Channel parameter on the MIDI-mode RECEIVE page to match the channel you're using to transmit from your MIDI controller. This will enable you to play the setup's eight zones, and also send the MIDI information from your MIDI controller to the K2600R's MIDI Out port, on the channels used by the current setup.

Once you have properly set the Local Keyboard Channel, the K2600R will remap Controller messages from your MIDI controller. Some examples of these Controller messages include: Modulation (01), Foot (04), Data (06), Mono Pressure (32), Sustain (64), and Sostenuato (66). By sending preset controller numbers, you can remap them to the controllers assigned within the Setup Editor. For these preset numbers, along with more on using a MIDI controller with the K2600R, see the discussion of the Local Keyboard Channel in Chapter 10.

If you send data on a channel other than the Local Keyboard Channel, no remapping will occur. You will hear only the program assigned to the channel on which your MIDI controller is transmitting.

For the remainder of this chapter, we'll cover topics that apply to both the rack and keyboard versions of the K2600. However, any references to the sliders, ribbons, wheels, buttons, or other physical controllers are intended primarily for K2600 keyboard owners.

## The Control Setup

In addition to zone splitting and layering, Setup mode is a powerful way to take advantage of the K2600's programmable sliders, ribbon controllers, and assignable buttons. In order to provide some of the same flexibility for Program mode, we created the control setup, which defines the controller assignments for programs in Program mode.

The default control setup is **97 Control Setup**, but you can choose any control setup you want. To do this, go to the MIDI-mode TRANSMIT page and use any normal data entry method to change the CtlSetup parameter. When you reenter Program mode, all programs will now respond to many of the controller assignments defined in Zone 1 of the control setup (Zones 2–8 are not relevant in Program mode, because a program can occupy only one MIDI channel).

To edit the control setup, press the **Edit** button while the CtlSetup parameter is highlighted on the MIDI-mode TRANSMIT page. This brings you to the Setup Editor, which is described in the following sections. The following table shows which control-setup parameters affect controller assignments in Program mode.

## Setup Mode and the Setup Editor

### Setup Mode

Control Setup—Setup Editor Page, Zone 1	Parameters Affecting Program Mode	Parameters Not Affecting Program Mode
CH/PROG	ZoneArpeg, Destination, MIDIBankMode	LocalPrg, Out, Channel, MIDIBank, MIDIProg, Status, EntryProgChg
KEY/VEL	VelScale, VelOffset, VelCurve	LoKey/HiKey, Transpose, NoteMap, LoVel/HiVel
PAN/VOL	None	
BEND	All	
COMMON	Sync	
ARPEG	All	
RIBCFG	All	
Continuous Controller assignment pages (SLIDER, SLID/2, CPEDAL, RIBBON, WHEEL, PRESS)	Dest, Scale, Add, Curv	Ent and Exit
Switch Controller assignment pages (FOOTSW, SWITCH)	SwType, Dest, On, Off	Ent and Exit
KDFX, FXMOD2, FXMOD3, FXMOD4, FXLFO, FXASR, FXFUN	None	

**Table 7-1 Control Setup Parameters Affecting Program Mode**

In summary, physical controller destinations, their curves and states, and the Arpeggiator parameters all define controller assignments for programs in Program mode. The other parameters have no effect; this keeps Program mode relatively simple. Program mode lets you change values for transposition, MIDI channels, and programs independently of the control setup.

Once you save changes to the control setup, those changes will affect all programs when you are in Program mode. For example, programming the Large Ribbon in the control setup to have three sections will mean that in every program in Program mode, you will have a three-section Large Ribbon.

You may want to program several different control setups, and switch among them for different applications. Suppose, for example, that you're recording a song, but you don't want to record aftertouch. You can create a setup with pressure turned off in Zone 1 (on the PRESS page in the Setup Editor, set the value of the Press parameter to **Off** for Zone 1). Now whenever you want to record without aftertouch, just select this setup as the control setup.

## Zone-status LEDs in Setup Mode (Keyboard Models Only)

Take a minute to scroll through some of the factory setups. As you change setups, you'll notice that the LEDs in the eight buttons above the programmable sliders go on and off and change color. These LEDs indicate the status of each of the zones in the setup. You may also see the **Solo** button go on. This means that the setup is configured to have only one zone playing when you select it.

While you're in Setup mode, each of the eight zone-status LEDs will always be in one of four states:

- Off      Empty zone—that is, a zone that has no program or MIDI channel associated with it. For example, if you select a setup and only four status LEDs light up (regardless of their color), the setup contains just four zones. Whenever you're in Setup mode, the number of lines in the info box matches the number of zone-status LEDs that are lit.
- Red      Soloed zone. As you might have guessed, only one zone can be soloed at a time. When a zone is soloed, *only* that zone plays notes and generates controller information. Other zones, if they're not turned off, still generate program changes and entry/exit controller values.
- Green    Active zone. As long as no other zone is soloed, an active zone plays notes— and generates controller information, program changes, and entry/exit controller values. If another zone is soloed, an active zone is "backgrounded"—it's status LED remains green, but it doesn't play notes or generate controller information.
- Orange   Muted zone. Muted zones don't play notes or generate controller information, but they do generate program changes and entry/exit controller values.

In performance situations, the zone-status buttons provide a convenient way to temporarily change the status of one or more zones. This can be very effective for bringing voices and/or controller configurations into and out of your performance. The best way to get familiar with this technique is to play with the buttons, as the next few paragraphs describe.

Select a setup (look for one with lots of active zones that cover the whole keyboard), and play a few bars. You'll hear sounds corresponding to each of the active zones (green LEDs). If you see any muted zones (orange LEDs), press their zone-status buttons, and they'll become active. Play around a bit. Try muting all the zones, then bringing them back one by one until all the zones in the setup are active.

Now press the **Solo** button. The **Solo**-button LED lights (it's always red), and one of the zone-status LEDs (never more than one) turns red. You'll now hear only that zone as you play. All the active zones are now backgrounded—they'll still generate program changes and entry/exit controller values, but you won't hear anything from them.

Now press one of the zone-status buttons. Its LED turns red, and it becomes the soloed zone. The previously-soloed zone returns to its programmed status. Solo each zone in turn, using the info box in the display to find the range covered by the zone. Note that you can solo a zone even if it's muted.

Press the **Solo** button again, and its LED goes out. The previously-soloed zone returns to its programmed status, and you can hear all the active zones again.

Table 7-2 gives you a quick visual reminder of how zones behave depending on their status.

LED Color	Zone Status	Data Generated by Zone			
		Notes	Controllers	Program Number	Entry and Exit Values
Red	Soloed	✓	✓	✓	✓
Green (no others are red)	Active	✓	✓	✓	✓
Green (another is red)	Backgrounded			✓	✓
Orange	Muted			✓	✓
(Off)	Empty				

**Table 7-2 Zone Status in Setup Mode**

Remember that any changes you make to zone status in Setup mode are temporary; as soon as you select another setup, that setup’s programmed zone status takes over. To change a setup’s zone status permanently, use the Setup Editor (see *Status* on page 7-9).

## The Setup Editor

From Setup mode, press the **Edit** button to enter the Setup Editor, where you can make changes to the currently selected setup. Use the soft buttons to select the various Setup-editor pages. The upper line of each page displays the usual mode reminder, as well as the current Setup-editor page, and the current zone. Use the **Chan/Bank** buttons to select one of up to eight different zones, each having its own set of Setup-editor pages.

The parameters on the Setup-editor pages define what each of a setup’s zones sends—both to internal programs and to the MIDI Out port. They also determine how the K2600 responds to MIDI signals received from a MIDI controller connected to the K2600’s MIDI In port (when the Local Keyboard Channel matches the transmit channel of your MIDI controller).

The display diagrams you see in this chapter show the default values for setup **97 ControlSetup**.

## The Channel/Program (CH/PROG) Page

This is the first page you see when you enter the Setup Editor. Here, you can select programs, MIDI channels, and MIDI Bank numbers for each of the setup's eight zones. You can also solo or mute each zone, and assign zones to be controlled by the K2600's Arpeggiator.

```

edit:setup:CH/PROG          <>zone1/1
LocalPrg:1 Concert Piano 1  Out:Prog
Channel :1      Destination :Local+MIDI
MIDIBank:0     MIDIBankMode:Ctl 32
MIDIProg:1    EntryProgChg:On
Status :Active ZoneArpeg :On
<more CH/PRG KEYVEL PANVOL BEND more>
  
```

Parameter	Range of Values	Default
Local Program	Program list	1 Concert Piano 1
Channel	1-16	1
MIDI Bank	Variable, dependent on MIDI Bank Mode	0
MIDI Program	Variable, dependent on MIDI Bank Mode	1
Status	Status list	Active
Output assignment (Out)	Prog, KDFX-A to KDFX-D	Prog
Destination	Destination list	Local+midi
MIDI Bank Mode	MIDI Bank Mode list	Ctl 32
Entry Program Change	On/Off	On
Zone Arpeggiation (ZoneArpeg)	On/Off	On

### Local Program (LocalPrg)

This selects an internal program to play on each zone. As you change the value of Local Program, notice that MIDI Program and MIDI Bank match the local program and bank numbers (Program IDs 0–99 correspond to MIDI Bank 0, 100–199 are MIDI Bank 1, and so on). If you want to transmit different program and bank numbers over MIDI, highlight either MIDI Program or MIDI Bank and select a new value. Note that changing the Local Program parameter again will reset both the MIDI Program and MIDI Bank parameters to match the local program and bank numbers.

### Channel

The Channel parameter defines the MIDI transmit channel for the currently selected zone. You can set it to any of the 16 MIDI channels. Normally, you will want each zone on a separate MIDI channel. This is necessary if you want to combine different programs in the setup.

If two zones have the same MIDI channel (and destination), but they have different program settings, there will be conflicts: no MIDI device, including the K2600, can respond correctly to two different simultaneous Program Change commands on one channel. The result will be that only one Program Change will be recognized, and every note played will sound double (if Note Maps are on). This can create odd and unpredictable timing effects, and will reduce your polyphony by 50%.

Nevertheless, there will be occasions when “stacking” zones on the same MIDI channel might come in handy. Suppose you want a physical controller on the K2600 to send data for two *different* numbered MIDI Controllers on the *same channel*. In this case, you must create two zones assigned to the same channel, but with different controller assignments.

Here’s one example: if a receiving synth is using Controller #1 for modulation depth and Controller #13 for modulation speed, you can increase both the depth and the speed with Slider A. Start by assigning Slider A in Zone 1 to **MWheel** and in Zone 2 to **MIDI 13**; then assign both zones to the same MIDI channel. (You may want to make sure you aren’t sending doubled notes. Use the Note Map parameter on the KEY/VEL page to set one zone’s Note Map to **Linear** and the other zone’s Note Map to **Off**.)

Another example: create two or more zones that are identical except for their transposition settings. Now you can play parallel intervals (or chords) with single keystrokes.

## MIDI Bank

The K2600’s programs are divided into ten MIDI banks, numbered 0-9. Program 99 in Bank 1, for example, is **199 Default Program**. The MIDI Bank parameter displays which bank the current program is assigned to, and automatically changes to match the Local Program value you set.

You can send Bank Select messages to external MIDI devices as well, by setting the Destination parameter to a value of **MIDI** or **Local + MIDI**, then changing MIDI Bank. Some instruments may have more than ten banks; the MIDI Specification says a device can have up to 16,384 banks, and the K2600 gives you access to all of them. Bank switching via MIDI makes it easy for the K2600 user to select sounds on external instruments, no matter how many banks they might have.

Different MIDI banks are accessible depending on the value of the MIDIBankMode parameter:

Value of MIDIBankMode	Available MIDI Banks
Ctl 0 or Ctl 32	0–127
Ctl 0/32	0–16383
K2000 or K1000	0–9
None	None

When you change the value of the LocalPrg parameter, the value of MIDIBank automatically changes correspondingly. If you want to transmit a MIDI bank number different from the one corresponding to the local program, select the local program first, then change the MIDI bank.

If you select an empty bank (like Bank 16, 383), the zone will still produce sound on the K2600, provided that Destination is set to **Local** or **Local + MIDI**. The LocalPrg parameter will display whatever internal program you set, but the bank number transmitted over the MIDI Out port will be different from the internal program’s bank number.



## MIDI Program (MIDIProg)

MIDI Program defines which program number is transmitted out the MIDI Out port on the current zone's MIDI channel.

When you change the value of the LocalPrg parameter, the value of MIDIProg automatically changes correspondingly. If you want to transmit a MIDI program change number different from the one corresponding to the local program, select the local program first, then change the MIDI program.

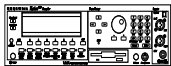
Different programs are accessible depending on the value of the MIDIBankMode parameter:

Value of MIDIBankMode	Available Programs
Ctl 0 or Ctl 32	0–127
Ctl 0/32	0–16383
K2000 or K1000	0–9
None	None

## Status

This parameter determines what the current zone does when you select the setup in Setup mode. If the value is **Active**, the zone sends and receives normally via MIDI. **Muted** means that the zone sends and receives program changes and entry/exit controller values, but doesn't play notes. **Soloed** causes only the current zone to play, "backgrounding" all other zones (backgrounded zones send and receive program changes and entry/exit controller values, but don't play notes). With a value of **Solo/M**, the current zone is both soloed and muted; when the zone isn't soloed, it won't produce sound).

See the section about zone-status LEDs (page 7-5) for more information about muting and soloing zones.

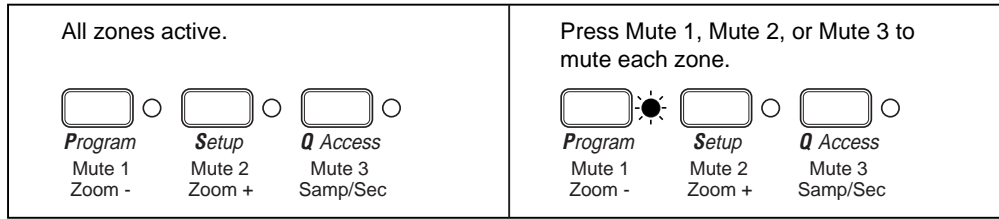


K2600R owners can mute and unmute zones by using the first three mode-selection buttons: **Program** (Mute 1), **Setup** (Mute 2), and **Q Access** (Mute 3). For setups containing up to three zones, pressing each button mutes or unmutes Zone 1, 2, or 3. This also works on the keyboard model.

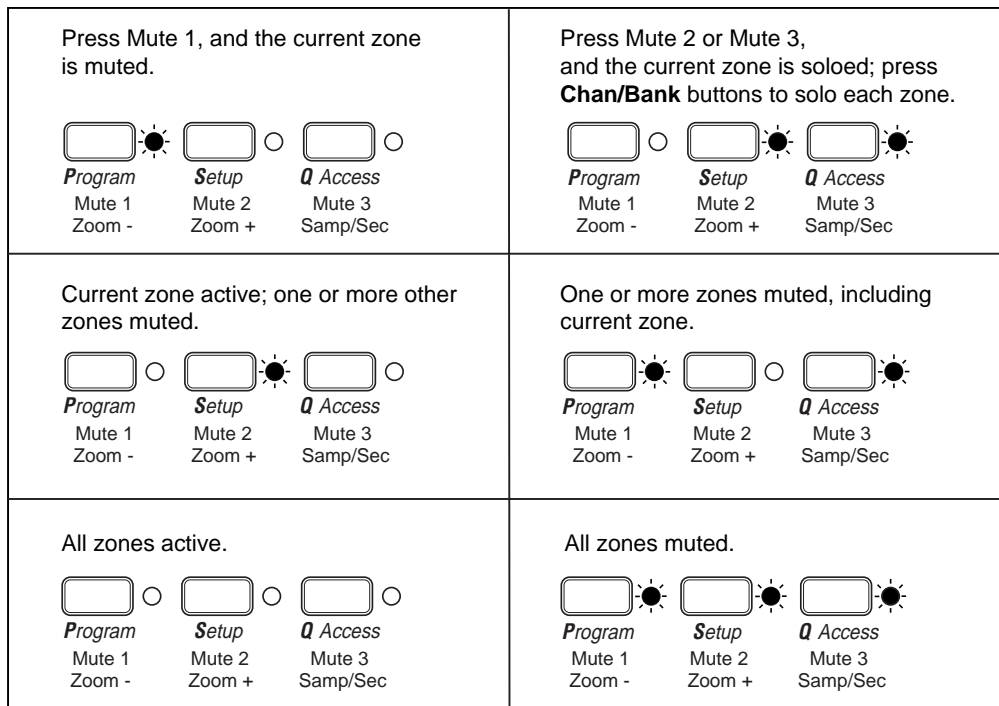
For setups containing four or more zones, pressing **Mute 1** mutes the current zone; the zone becomes unmuted when you mute another zone. Pressing **Mute 2** or **Mute 3** solos the current zone. You can then press the **Chan/Bank** buttons to solo each zone.

On the K2600R, each button turns only one color (red); a system of lighted/unlighted buttons lets you know that certain zones are soloed or muted. When you use the **Chan/Bank** buttons to scroll to other zones, the buttons will light according to each zone's status. The following illustration explains how to interpret this system.

### Setups Containing 3 or Fewer Zones



### Setups Containing 4 or More Zones



**Figure 7-1 Soling Zones With the K2600R**

The K2600 keyboard’s mode-selection buttons also light as shown above. However, buttons 1–8 are more convenient for muting, unmuting, and soloing zones.

## Output Assignment (Out)

This determines the signal routing for each zone in the setup—not the final audio output, but the KDFX input to which the zone’s signal gets sent. You can route the zone to KDFX A through D, or you can use a value of **Prog**, which uses the output assignments of the program that’s assigned to that zone.

## Destination

This parameter determines whether the currently selected zone transmits only to the K2600 (**Local**), gets sent only via MIDI (**MIDI**), controls both the K2600 and connected MIDI instruments (**Local+MIDI**), or is disabled (**Off**). Setting Destination to **Off** turns the zone off completely; no MIDI data will be sent and no local program will sound.

## MIDI Bank Mode

The MIDI Bank mode you choose determines how bank numbers will be sent over MIDI when the setup is selected, and in what format. It also affects how many MIDI banks and programs you can choose.

**None** means no bank number is sent, just the program number. **Ctl 0** means that the bank number is sent as a MIDI Controller #0 message. **Ctl 32** means it is sent as MIDI Controller #32. **Ctl 0/32** means it is sent as a dual-controller (two-byte) message, with the most-significant byte (MSB) of the bank number sent as Controller #0 and the least-significant byte (LSB) as Controller #32. Single-byte Bank Select messages (either 0 or 32) allow you to specify banks numbered 0-127. Two-byte messages allow you to specify banks numbered 0-16,383. With 128 programs per bank, this allows you to access 2,097,152 different programs on one instrument.

The MIDI Specification is a little ambiguous when it comes to Bank Select messages, as to whether they should be only Controller 0, only Controller 32, or both Controllers sent as a pair. Different manufacturers design their instruments to respond to different schemes, and if you send Bank Select in a form an instrument doesn't like, it may ignore it or interpret it incorrectly. The MIDI Bank Mode parameter is designed to allow the greatest flexibility in addressing other MIDI instruments. Usually you can look on the MIDI Implementation chart in the user's manual of an instrument to determine how it's designed to receive Bank Select messages, and then set MIDI Bank Mode for each zone to suit the instrument that is receiving data from it. The default setting, which works with the largest number of other instruments, is **Ctl 32**.

There are two other values for this parameter, which will be of special interest to owners of other Kurzweil instruments. A value of **K2000** is intended for use with the K2000, K2500, or K2600. The Bank Select message is sent as Controller 32, with a value between 0 and 9. Remember, the K2000, K2500, and K2600 support only 10 banks, with 99 programs per bank, so Program Changes 100 or higher are sent as Bank Select 1, followed by the last two digits as a Program Change. For example, if Program 124 is assigned to the zone, this will be sent out the MIDI Out port as Bank Select (Controller 32) 1, and then Program Change 24.

**K1000** is intended for use with any of the 1200-series keyboards or modules, or any of the 1000-series instruments that have version 5 software installed. Those instruments predate the adoption of standard Bank Select messages; instead, they use Program Changes 100-109 as Bank Selects. If you select Bank 5: Program 42 for a K2600 zone, for example, it will send out Program Change 105 followed by Program Change 42. K2600 program numbers over 99 are not sent.

## Entry Program Change (EntryProgChg)

This enables or disables bank and program change commands sent to internal programs or to the MIDI Out jack when you select setups. If it's set to **On**, the program numbers for the programs in the eight zones will be sent via MIDI when a setup is selected. By setting this parameter to **Off**, you can select a setup on the K2600 without changing the internal programs or those on MIDI devices receiving from the K2600. This is useful if you want to send only controller data to the K2600 or to MIDI devices, without changing program assignments.

## Zone Arpeggiation (ZoneArpeg)

Zone Arpeggiation determines whether the Arpeggiator will affect notes played in the current zone. The Arpeggiator affects only those zones that have this parameter set to a value of **On**.

For any given zone, the Arpeggiator plays notes only within that zone’s Key Range. If the Arpeggiator, for example, tries to play a C<sup>#</sup>4 in a zone, but that zone’s Key Range ends at C4, the note will not sound. However, another zone whose Key Range ends at C5 *will* be able to play the C<sup>#</sup>4 from the Arpeggiator. Therefore, setting a zone’s Key Range can be important in deciding how it will respond to the Arpeggiator. (A separate set of range parameters, found on the ARPEG page, determines whether the notes you play get arpeggiated; see *Low Key (LoKey)* and *High Key (HiKey)* on page 7-38.)

## The Key/Velocity (KEY/VEL) Page

The Key / Velocity page allows you to set key range, velocity range, transposition, and Note Maps for each zone.

```

editsetup:KEY/VEL <>zone1/1
LoKey:C -1 Transpose:0ST
HiKey:G 9 Notemap :Linear
VelScale :100%
LoVel:1 VelOffset:0
HiVel:127 VelCurve :Linear
<more> CH/PRG KEY/VEL PAN/OL BEND <more>
    
```

Parameter	Range of Values	Default
Low Key	C -1 to G9	C -1
High Key	C -1 to G9	G9
Transpose	-128 to +127 Semitones	0 semitones
Note Map	Note Map list	Linear
Low Velocity	1-127	1
High Velocity	1-127	127
Velocity Scale	±300%	100%
Velocity Offset	-128 to +127	0
Velocity Curve	Velocity Curve list	Linear

### Low Key (LoKey), High Key (HiKey)

The LoKey and HiKey parameters define the note range of the currently selected zone. The easiest way to change these values is to press the **SetRng** soft button, which you can find by pressing either of the **more** soft buttons. You’ll be prompted to trigger the notes you want to be the lowest and highest notes for the zone. When you do, you’ll return to the Setup-editor page, and the notes you triggered will be reflected in the values for LoKey and HiKey. They’ll also be represented by the lines beneath the program names in the box at the left of the Setup-mode page. You can set these values with normal data entry methods as well.

You can create “negative” ranges as well. To do this, select the HiKey parameter and set its limit *lower* than the LoKey limit. This results in the zone being active at the top and bottom of the

keyboard, but being silent in the range between the two limits. This lets you create a layer with a “hole” in the middle, which you can then fill with a different sound on another zone.

Note that using the **SetRng** soft button won’t allow you to create a negative range, since it always defines the higher keystrike as the HiKey value. If you want to set HiKey lower than LoKey (or vice versa), use a normal data entry method. Note: Intuitive Entry doesn’t work for setting values for LoKey and HiKey.

The limits of MIDI are C-1 to G9. The untransposed 88-key range is A0 to C8. The untransposed 76-key range is E1 to G7.

## Transpose

This changes the pitch of the zone, without changing its position on the keyboard. It changes the MIDI note numbers generated by the keys in the zone, without physically shifting the zone. The range is  $\pm 127$  semitones. Since there are 12 semitones (or half steps) to an octave, you can transpose up or down over ten octaves. If you transpose out of the range of the active voice, however, no notes will sound; MIDI note numbers will transmit, but notes will not.

## Note Map

Note Map lets you change the way notes are sent from the K2600. The default setting is **Linear**: all notes go out as played. Pressing the **Minus** button takes you to **Off**; no notes are sent, but controllers and other non-note data are.

Next comes **Inverse**, which turns the keyboard upside-down, with the highest key being A 0 and the lowest C 9. If you set Note Map to **Constant**, all of the keys on the keyboard will play the same note. The note defaults to C4, but you can change this with the **Transpose** parameter. This works well when you want the sound from a particular key to play with every note of another layer—for example, playing a ride cymbal with every note in a bass line.

Next are the alternating Note Maps, which let you divide the keyboard in some unique ways. If you are using two or more MIDI devices (including the K2600), you can expand polyphony by assigning each zone to a different alternating Note Map. For example, if you have two K2600s, you can assign two zones to each play the same program on a different K2600, thereby doubling polyphony.

To split a zone into one of two alternating Note Maps, set Note Map to **1 of 2**; now the zone plays on every second key, starting on C, but won’t play on any other keys. Set another zone to **2 of 2**, and this zone will play on every second key, starting on C<sup>#</sup>, thus covering the remaining keys.

Three- and four-zone alternating Note Maps work the same way, but cause each zone to play only on every third and every fourth key, respectively.

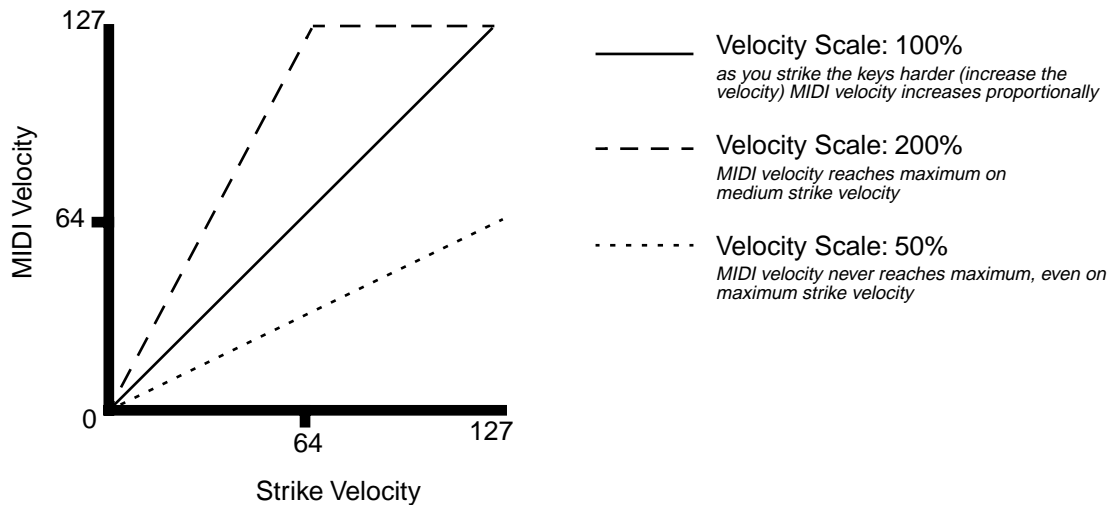
**White** and **Black** allow you to compensate for the differing velocity responses of white versus black keys on some keyboards. By choosing White for one zone and Black for another, you can modify velocity curves and limits independently for the white and black keys.

Note maps are also used to create drum patterns with the arpeggiator. Several of the ROM setups use this feature.

## Velocity Scale (VelScale)

This lets you amplify or diminish velocity response. Normal response is **100%**. Higher values make the keyboard more sensitive (you don't need to play as hard to get higher MIDI velocities) while lower values make it less sensitive (playing harder doesn't change MIDI velocity as much). You can also set the scale to a negative number, in which case the velocity response is turned upside-down: playing harder produces a softer sound and vice versa. This is useful for creating velocity-based crossfades between zones. See the following section on Velocity Offset for ideas about negative scaling.

The following illustration shows what happens when you change Velocity Scale. Note that Velocity Scale is the only parameter changed in this example; the other parameters are set to their defaults (offset = **0**, curve = **linear**, min = **1**, max = **127**).

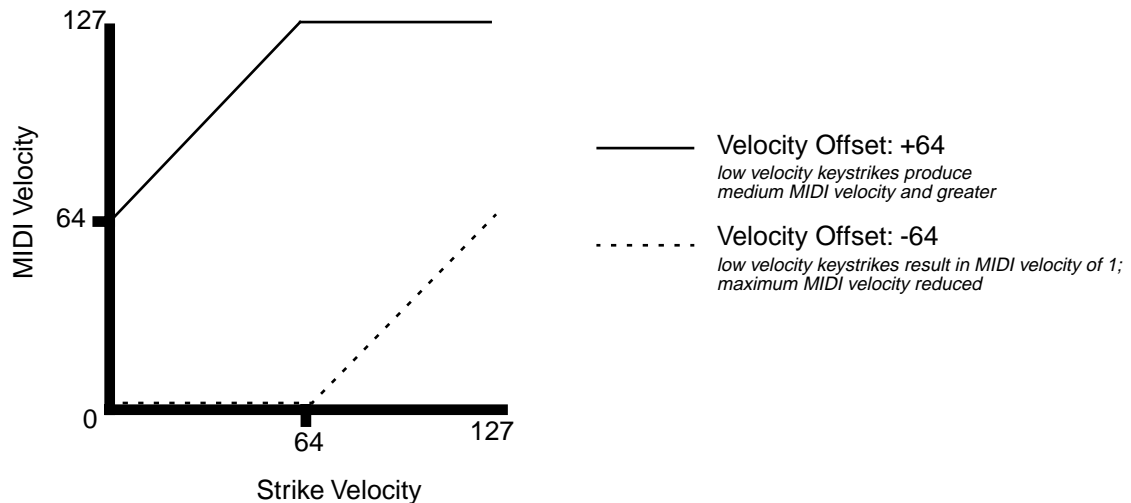


## Velocity Offset

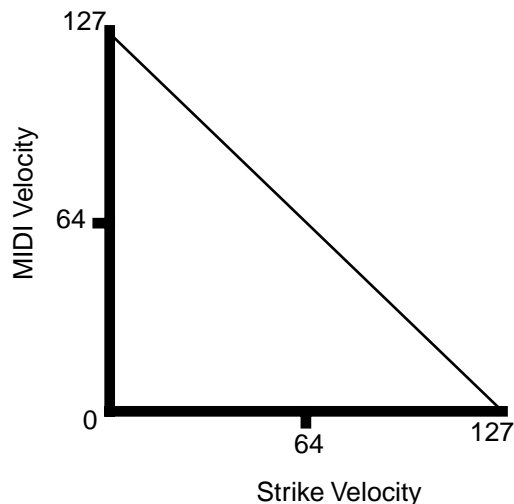
**VelOffset** also changes the response, but in a more direct way, by adding or subtracting a constant to the key velocity. For example, if this is set to **25** (assuming a scale of 100%), then 25 is added to the velocity of every keystroke, usually making the sound that much louder. The softest possible keystroke will have a value of 25, while a keystroke with velocity of 102 will produce the same sound as a note with velocity 127 ( $102+25=127$ ). Negative values diminish the response: a setting of **-25** means the loudest velocity available will be 102, while any keystroke 25 or below will produce a velocity of 1 (a velocity value of zero has a special meaning in MIDI and cannot be used for Note Ons).

You can think of Scale as being a proportional change to the velocity, while Offset is a linear change. The maximum values for Offset are  $\pm 127$ . The following illustration shows the effects of

Velocity Offset. Note that Velocity Offset is the only parameter changed in this example; the other parameters are set to their defaults (scale = **100%**, curve = **linear**, min = **1**, max = **127**).



Offset and Scale work together. If scaling takes the velocity out of the ballpark — for example, you want to set it to **300%** but that puts *all* of your notes at maximum velocity — using a negative offset, say around **-60**, can make it possible to still play at different volumes, although your curve will still be a lot steeper than normal. If you use a negative scaling, then you must use an offset: otherwise all of your velocities will end up as zeroes (well, ones actually, since a MIDI note-on with velocity zero is something else). So to get true inverse scaling (that is, minus 100%), you must set an offset of **127** to get the full range of velocities. Setting the offset to **127** and the scale to **-100%** produces a slope like this (which is the same as the reverse linear curve):



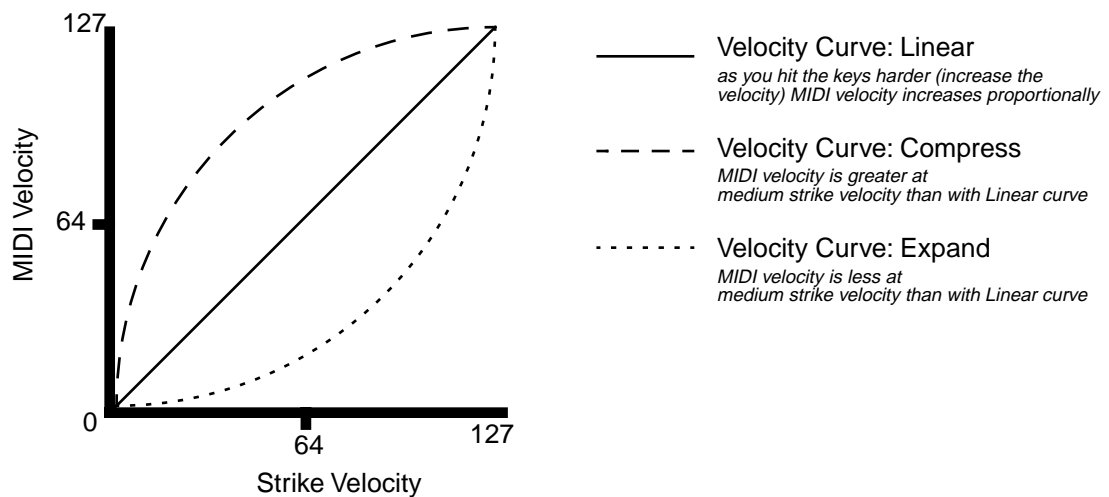
Note that Offset and Scale affect only *MIDI* velocities; that is, these parameters don't change Velocity Tracking in the programs themselves. Therefore, some programs (such as organ sounds, which often have low VelTrk values) may respond only subtly to Offset and Scale, or not at all.

## Velocity Curve (VelCurve)

VelCurve lets you taper the velocity response. The default setting is **Linear**, which means that the output velocity changes directly proportionally to the played velocity.

**Expand** produces a curve that is less steep than the linear curve at keystrike velocities below 64, and steeper than the linear curve at keystrike velocities above 64. In other words, when you're playing softly, you'll notice velocity differences less than with a linear curve, while when you're playing hard, you'll notice velocity differences more.

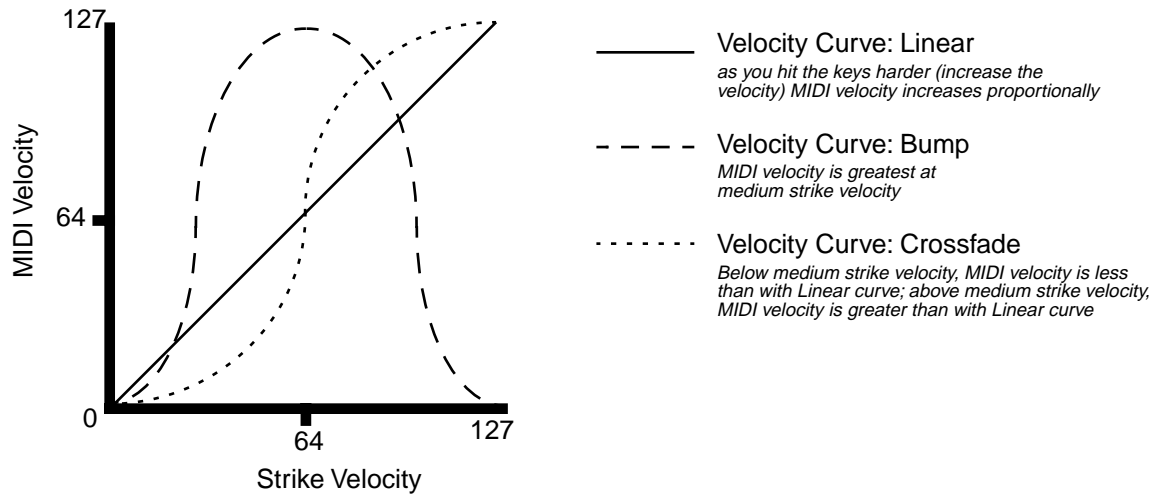
**Compress** produces a velocity curve that is the opposite of the expanded curve—that is, you'll notice velocity differences more when you're playing softly than when you're playing hard.



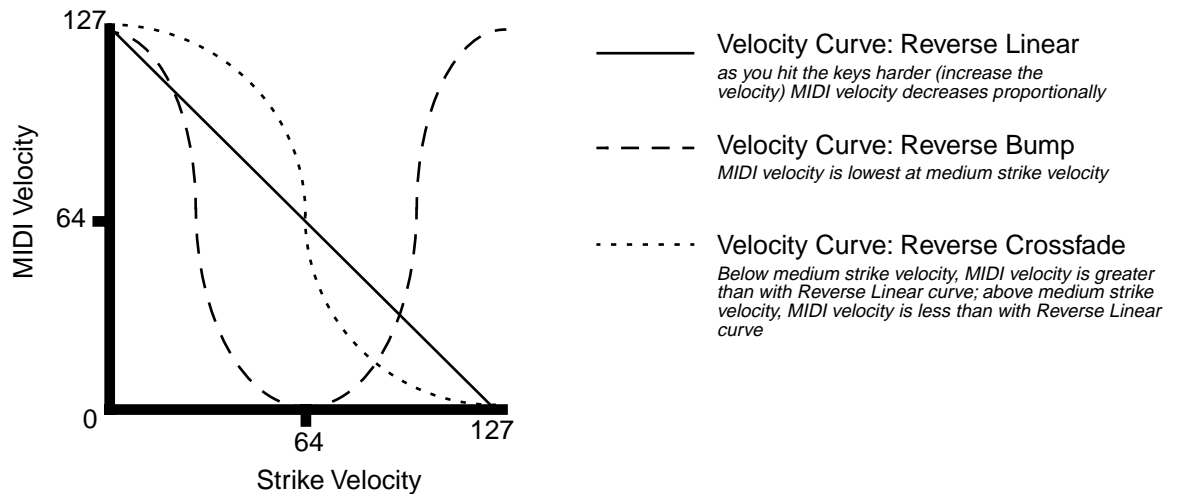
Crossfade (**Xfade**) is designed to be used in tandem with the Reverse Crossfade curve, enabling you to perform smooth crossfades between different programs.

**Bump** tapers velocity response to resemble a bell curve, so that notes are loudest when your keystrike velocity is 64. Notes get softer as the keystrike velocity approaches 0 or 127.





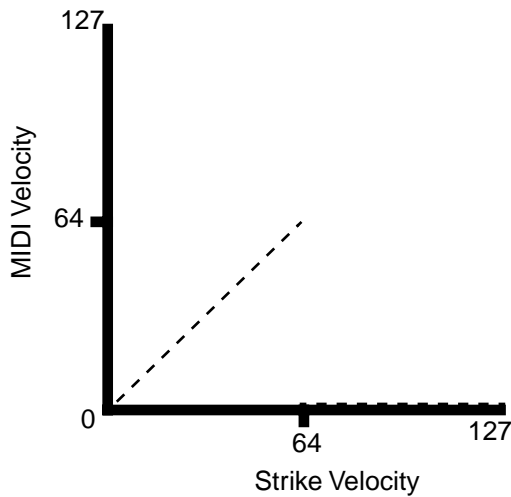
The next five velocity curves are Reverse Linear (**revrsLin**), Reverse Expand (**revrsExp**), Reverse Compress (**revrsCmp**), Reverse Crossfade (**revrsXfd**), and Reverse Bump (**revrsBmp**). These taper velocity in reverse of the five curves we just covered. For example, Reverse Linear's response is such that striking a key harder will produce a lower volume, striking it softer will produce a higher volume, and so on. This provides a convenient way to achieve negative scaling, by letting you set one parameter instead of two.



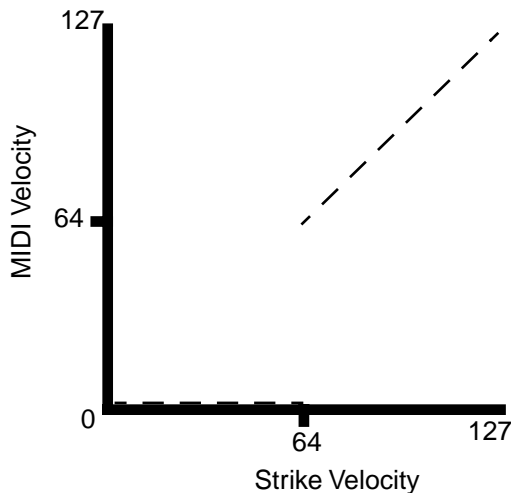
## Low Velocity (LoVel), HighVelocity (HiVel)

LoVel and HiVel set the minimum and maximum velocity limits that the current zone transmits. A keystroke in the current zone whose velocity — *after* it has been scaled and offset — is below the minimum does not generate a Note On. Neither does a keystroke whose velocity after processing is above the maximum. These parameters are useful for “velocity switching”— having a key play different sounds depending on how hard you strike it.

The values can be anywhere from 1 to 127. As with other parameters, zones can overlap or be totally discrete, or be identical. Usually, LoVel will have a smaller value than HiVel, but as with LoKey and HiKey, you may also create a gap in velocity response, by setting negative ranges for velocity.



----- Velocity Min: 1, Max: 64  
*No MIDI Note Ons are transmitted when you strike keys with medium velocity or greater*



----- Velocity Min: 64, Max: 127  
*No MIDI Note Ons are transmitted unless you strike keys with velocity of medium or greater*

## The Pan/Volume (PAN/VOL) Page

By changing the parameters on this page, you can define how each zone sends MIDI volume and pan messages.

```
edit:setup*PAN/VOL <>zone1/1
```

```
EntryVolume:None EntryPan:None
ExitVolume :None ExitPan :None
```

```
<more CH/PRE KEYVEL PANVOL BEND more>
```

Parameter	Range of Values	Default
Entry Volume	None, 0-127	None
Exit Volume	None, 0-127	None
Entry Pan	None, 0-127	None
Exit Pan	None, 0-127	None

### Entry Volume, Exit Volume

Entry Volume enables you to control the initial MIDI volume setting for each zone of the current setup. When you select a setup in Setup mode, the K2600 sends MIDI volume control (MIDI Controller 07) messages on each of the setup's MIDI channels, according to the value of the Entry Volume parameter. This sets the starting volume level for each zone, for any value other than **None**. Subsequent MIDI volume control signals sent to the setup's MIDI channels affect the volume normally.

When you exit the current setup, Exit Volume sends another MIDI Controller 07 message.

The setting of the Volume Lock parameter on the MIDI-mode CHANNELS page (see Chapter 10) determines whether this parameter has any effect.

### Entry Pan, Exit Pan

You can set entry and exit values for Pan as well. When you select a setup, the K2600 sends a MIDI pan control (MIDI Controller 10) message on each MIDI Channel in each zone; another MIDI pan control message is sent when you exit the setup. The Entry and Exit values for Pan are the same as those for Volume. There is also a Pan Lock parameter on the MIDI-mode CHANNELS page, which overrides the Setup Editor's Pan settings.

If you are trying to set the Pan and the program doesn't seem to be responding, you should check the Mode parameter on the OUTPUT page in the Program Editor. If it is set to **Fixed**, then the K2600 is ignoring the MIDI Pan message; setting Mode to **+MIDI** allows you to control the program's panning from the Setup Editor.

Most programs respond to pan messages on the next keystroke. This means that if you hold a note and change the pan, the current note will stay at its current position until you strike it again. However, a K2600 program that uses the PANNER algorithm will respond to real-time pan adjustments as well.

## The BEND Page

The parameters on the BEND page define the bend ranges for each of the three types of pitch bend messages the K2600 can respond to.

```

edit:setup BEND <>zone1/1
BendRange(ST):Prog AuxBend1Up :12ST
BendRange(ct):0ct  AuxBend1Dwn:12ST
                  AuxBend2Rng:2ST

<more CH/PRG KEYWEL PANVOL BEND more>
    
```

Parameter	Range of Values	Default
Bend Range (semitones)	Prog, 0–60 semitones	Prog
Bend Range (cents)	±100 cents	0 cents
Aux Bend 1 Up	0–60 semitones	12 semitones
Aux Bend 1 Down	0–60 semitones	12 semitones
Aux Bend 2 Range	0–60 semitones	2 semitones

### Bend Range (Semitones) and Bend Range (Cents)

Bend Range (semitones) sends a bend range message to an internal program or a MIDI device, telling it how to define subsequent pitch bend messages. Some programs may behave strangely when you change the Bend Range value, because they use FUNs (see Chapter 17) or DSP Functions (see Chapter 16) to affect the pitch wheel. In that case, you should either set the value of Bend Range to **Prog**, or edit the program itself.

Bend Range (cents) lets you fine tune the value for Bend Range (semitones). **100 cents** equals one semitone, or one half-step; you can set this parameter anywhere between **±100 cents**.

Bend Range, in both semitones and cents, affects all controllers that are set to **BendUp** (in the default control setup, the PWHL parameter on the WHEEL page is assigned to **BendUp**). Physical controllers assigned to **BendDwn** are also affected by Bend Range, but they bend notes in the opposite direction from controllers assigned to **BendUp**. Any physical controller that uses the MIDI Control Source list can be assigned to **BendUp** or **BendDwn**. To keep things simple though, you will normally want to use **BendUp** as a Pitch Wheel destination and use **Aux Bend 1** and **Aux Bend 2** for other controllers, such as the Large and Small Ribbons.

Keep in mind that not all MIDI devices respond to Bend Range messages. The K2600, the K2500, and the PC88 support these messages, but with many older MIDI instruments (like the K2000 and K1000), you must set bend ranges on the devices themselves.

Changing programs sends a Bend Range message with the current program’s values. So does pressing **Panic**, which is a quick way to reset your K2600 or MIDI slaves if you’ve used a controller to modulate the bend range.

## Aux Bend 1Up and Aux Bend 1 Down

Like Bend Range, Aux Bend 1 defines the range for Pitch Bend messages, but does so for those physical controllers assigned to **MIDI 21**. There are two parameters related to AuxBend 1: an upward value (Aux Bend 1 Up) and a downward value (Aux Bend 1 Down). This means that you can set different values for upward and downward pitch-shifting. For example, you could get the Pitch Wheel to give you both vibrato and whammy-bar effects for the guitar program in a setup. In the zone that contains the guitar program, set AuxBend1Up to **2ST** and AuxBend1Down to **-12ST** (on the BEND page), then assign the PWhl parameter on the WHEEL page to a value of **AuxBend 1**. Now moving the Pitch Wheel up gives you a whole tone of upward bend, while moving it down gives you a full octave of downward bend.

In most factory setups, **AuxBend 1** is the assignment for the Large Ribbon.

## Aux Bend 2 Range

The K2600 allows you to specify a third pitch bend range; this is called Aux Bend 2, and it defines the range for MIDI Controller 15 messages. For AuxBend 2, you can set only one range for both upward and downward pitch bending.

In most factory setups, **AuxBend 2** is the assignment for the Small Ribbon.

# Controllers

Controller editing is one of the strongest aspects of the K2600's usefulness as the main controller for a sophisticated MIDI studio. In this section, we'll talk about two different types of "controllers" as they apply to the K2600. One is the *physical* controllers: the wheels, buttons, pedals, etc. that you move with your fingers or feet. The other is *MIDI* Controllers, which are MIDI commands sent by the K2600. For our purposes, "MIDI Controllers" includes the complete set of Controllers defined by the MIDI Specification, as well as pitchbend, aftertouch, and a few other useful MIDI commands. To fend off confusion, we'll refer to the K2600's physical controllers with a lower-case *c*, and MIDI Controllers with an upper-case *C*.

Any *MIDI* Controller can be used as the assignment for any *physical* controller (and for multiple physical controllers, as well). Or in other words, any physical controller like the Mod Wheel can be programmed to send any MIDI control signal. In addition, each controller in each setup zone can be tweaked just like keyboard velocity (or any other Setup-mode parameter). Although controller editing on the K2600 can be somewhat complex, it can also be very rewarding.

To get an idea of the expressive capabilities of Setup mode, explore the factory setups that come with the K2600.

The K2600's physical controllers include the following:

- The eight sliders (A, B, C, D, E, F, G, H) in the Assignable Controllers section
- The two Continuous Control Pedal jacks (CCPedal 1 and CC Pedal 2)
- The Large Ribbon, which you can define as a one- or three-section controller
- The Small Ribbon, which responds to both finger position and pressure
- The Pitch Wheel
- The Modulation Wheel (Mod Wheel)
- Keyboard aftertouch, or Mono Pressure (MPress)
- The Breath Controller jack (which is connected to Continuous Controller Pedal 2)
- The two Panel Switches, located above the Pitch and Mod Wheels
- The four Footswitch pedal jacks (1, 2, 3, and 4)

The following tables and illustration provide an overview of the physical controllers and their parameters.

## Continuous Controllers

Physical Controller	Setup Editor Page	Parameter:Values
Sliders A, B, C, D, E, F, G, H	SLID, SLID/2	Destination: MIDI Control Source list
		Scale: -300% to 300%
		Add: -128 to 127
		Curve: Linear, Expand, Compress, Crossfade, Bump, Reverse Linear, Reverse Expand, Reverse Compress, Reverse Crossfade, Reverse Bump
		Entry Value: None, 0 - 127
		Exit Value: None, 0 - 127
CPedals 1 & 2 / Breath	CPEDAL	(same as Sliders)
Small Ribbon and Large Ribbon	RIBBON	(same as Sliders)
Pitch Wheel and Mod Wheel	WHEEL	(same as Sliders)
MPressure	PRESS	(same as Sliders)

**Table 7-3 Continuous Controllers**

## Switch Controllers

Physical Controller	Setup Editor Page	Parameter:Values
Footswitches 1, 2, 3, and 4	FOOTSW	SwType: Toggle, Momentary, Note Toggle, Note Momentary
		Destination: MIDI Control Source list
		On Value: None, 0 - 127
		Off Value: None, 0 - 127
		Entry Value: None, Off, On
Panel Switches 1 and 2	SWITCH	Exit Value: None, Off, On
		(same as Footswitches)

Table 7-4 Switch Controllers

## Keyboard Controllers

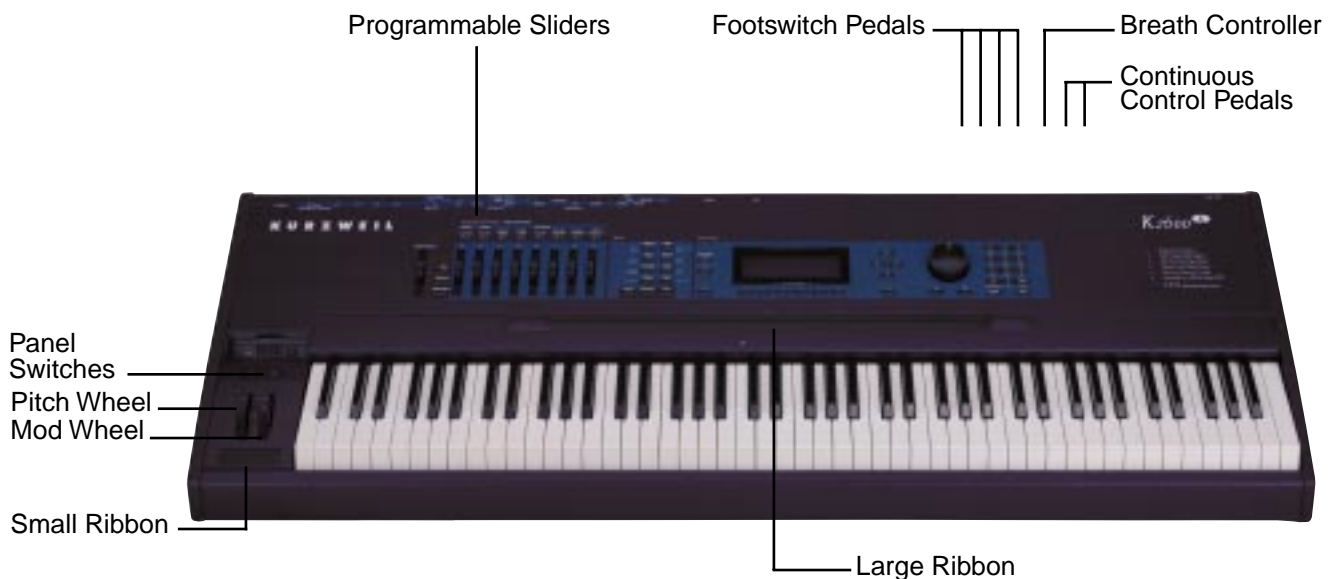


Figure 7-2 Setup-mode Controllers

After you've selected which zone and which physical controller to work with, use the Destination parameter to choose what this controller will do. Some of the controllers have default settings that are preprogrammed in all of the factory setups (of course, you can change them). You can select from the entire list of numbered MIDI controllers, as well as other MIDI commands and some "special functions." To move through the list, you can use the Alpha wheel, or Intuitive Entry with any continuous controller, or call up the Controller's number with the numeric buttonpad.

## The MIDI Control Source List

Here are the available values for the Destination parameter for each controller, in scrolling order:

MIDI Controller Number	Corresponding Destination Name	Description
0	Off	Turns physical controller off
1	MWheel	Default Assignment for Mod Wheel
2	Breath	Default Assignment for CC Pedal 2
3	MIDI 03	
4	Foot	Default Assignment for CC Pedal 1
5	PortTim	Monophonic K2600 programs respond to this controller if portamento is turned on
6	Data	Almost all K2600 programs respond to this controller with DSP sweeps and effects
7	Volume	MIDI Volume
8	Balance	MIDI Balance
9	MIDI 09	
10	Pan	MIDI Pan—programs which use the PANNER algorithm will respond to real-time pan adjustments; all other programs will respond on the next note start
11	Express	MIDI Expression—an attenuator for fading in and out. It scales between minimum (0) and the current value of Volume
12–14	MIDI 12–14	MIDI Controllers 12–14
15	Aux Bend 2	Default destination for Small Ribbon
16	Ctl A	
17	Ctl B	
18	Ctl C	
19	Ctl D	
20	MIDI 20	
21	Aux Bend 1	Default destination for Large Ribbon
22–31	MIDI 22–31	MIDI Controllers 22-31. Almost all K2600 programs respond to MIDI 22–29 in one way or another. In the default control setup (97 ControlSetup) and in most other factory setups, Sliders B–H send MIDI 22–28, and Panel Switch 2 sends MIDI 29.
<b>Special Function Controllers</b>		
When you enter numbers 32–46 on the numeric buttonpad, you select one of the K2600's Special Functions. Entering 47–63 sets a physical controller's Destination to <b>Off</b> . Note that these are not MIDI Controller numbers; they're the K2600's internal global control numbers		
32	MPress	Default destination for Press and Small Ribbon Pressure (SmPrs)
33	BendUp	Default destination for Pitch Wheel
34	BendDwn	Physical controllers bend in opposite direction of BendUp

Table 7-5 MIDI Control Source List



MIDI Controller Number	Corresponding Destination Name	Description
35	Tempo	MIDI Clock tempo
36	MuteZn	Mute current zone
37	KeyNum	Key Number—sends a MIDI note with a velocity defined by the last value for KeyVel
38	KeyVel	Key Velocity
39	TapTempo	Enables you to tap a switch controller (like FtSw1–4 or PSw1–2) to change the K2600's internal tempo setting
40	ArpOrder	Change the order of arpeggiated notes
41	ArpBeats	Change the number of arpeggiated notes per beat
42	ArpShift	Change the amount of arpeggiator shift
43	ArpLimit	Change the arpeggiator shift limit
44	ArpLmtOp	Change the arpeggiator limit option
45	ArpVel	Change the attack velocity of arpeggiated notes
46	ArpDur	Change the duration of arpeggiated notes
47–63	Off	Reserved for future use
64	Sustain	Default destination for Footswitch 1
65	PortSw	Monophonic K2600 programs respond to this controller if portamento is turned on
66	SostPd	Default destination for Footswitch 2—holds notes that are currently down, but not notes played subsequently
67	SoftPd	Default destination for Footswitch 3—lowers the volume by a preset amount and may soften the timbre as well
68	LegatoSw	Forces mono playback
69	FrezPd	Envelopes freeze at current state
70–79	MIDI 70–79	MIDI Controllers 70–79
80	Ctl E	
81	Ctl F	
82	Ctl G	
83	Ctl H	
84–90	MIDI 84–90	MIDI Controllers 84–90
91	FX Depth	Controls wet/dry mix of effects
92–95	MIDI 92–95	MIDI Controllers 92–95
96	DataInc	Data Increment
97	DataDec	Data Decrement
98–101	MIDI 98–101	MIDI Controllers 98–101
102	Play/Stp	Alternately starts and stops sequencer playback
103	Rec/Stop	Alternately starts and stops sequencer recording
104–115	MIDI 104–115	MIDI Controllers 104–115
116	ArpSw	Arpeggiator On/Off

Table 7-5 MIDI Control Source List (Continued)

MIDI Controller Number	Corresponding Destination Name	Description
117	ArpVel	Arpeggiator Velocity
118	Latch2	Arpeggiator Latch 2
119	ArpLatch	Arpeggiator Latch
120	Panic2	Sends All Notes Off message
121	MIDI 121	Resets all controllers
122	Off	Turns physical controller off
123	Panic	Sends All Notes Off message
124, 125	MIDI 124, 125	MIDI Controllers 124 and 125
126	Mono On	
127	Poly On	

Table 7-5 MIDI Control Source List (Continued)

## Continuous Controller Parameters

The continuous (physical) controllers are those that have a *range* of values: the two wheels, two ribbons, eight sliders, two Continuous Control pedals, and mono pressure (aftertouch). As the table on page 7-22 shows, all of them use the same parameters. Each parameter’s function is described below.

### Destination (Dest)

Use this parameter to select a destination from the MIDI Control Source list (see page 7-24).

### Scale

After you’ve selected a continuous physical controller, you can modify the controller’s response similarly to the ways you can modify velocity response. Refer to the graphs beginning on page 7-14 for illustrations of the velocity scaling parameters.

Scale lets you amplify or diminish the action of the controller. Full scale is 100%. Higher values will make the controller more sensitive, and lower values will make it less so. Setting the scale to a negative number makes the controller action work in reverse. As with velocity, you can use a controller to crossfade between two zones by setting the scaling for one zone positive and the other negative. Maximum scale values are +300% and -300%.

### Offset (Add)

This adds or subtracts a constant to the controller, and at the same time sets minimum or maximum values (there’s no need for separate Max and Min parameters). If the offset is 25, the minimum value of the controller will be 25. If it is -25 (and scale is 100%) the first one-fifth of the controller’s movement ( $25/127 = \text{about } 1/5$ ) will send value of 0, and the maximum value of the controller will be 102 ( $= 127-25$ ). As with velocity, Scale is a proportional change to the controller, while Offset is a linear change. The maximum values for Offset are  $\pm 127$ .

## Curve (Curv)

This lets you taper the controller response. The default setting is **Linear**, which means that the response follows a straight line as you move the controller.

**Expand** produces a curve that is less steep than the linear curve at keystroke velocities below 64, and steeper than the linear curve at keystroke velocities above 64. In other words, when you're playing softly, you'll notice velocity differences less than with a linear curve, while when you're playing hard, you'll notice velocity differences more.

**Compress** produces a velocity curve that is the opposite of the expanded curve—that is, you'll notice velocity differences more when you're playing softly than when you're playing hard.

Crossfade (**Xfade**) is designed to be used in tandem with the Reverse Crossfade curve, enabling you to perform smooth crossfades between different programs.

**Bump** tapers velocity response to resemble a bell-curve, making its response greatest at medium strike velocity, and progressively weaker as strike velocity increases or diminishes. If you start playing softly, then progressively louder, the response will increase from 1 to 64; if you keep playing harder, the sound will get softer.

The next five curves are Reverse Linear (**rLin**), Reverse Expand (**rExp**), Reverse Compress (**rCmp**), Reverse Crossfade (**rXfd**), and Reverse Bump (**rBmp**). These taper controller response in reverse of the first five curves. For example, Reverse Linear's response is such that moving the pitch wheel forward decrease pitch, moving it back will increase pitch, and so on. As with velocity, the reverse curves offer you a quick way to achieve negative scaling of physical controller response.

To get an idea of how these curves affect controller response, refer to the Velocity Curve charts, which begin on page 7-14.

## Entry (Ent) and Exit Values

Entry value allows you to specify an initial value for a controller in a setup that will be sent whenever you select that setup. For example, if you want to make sure that all of the modulation in a zone is turned off when you select a setup, assign a physical controller to a destination of MIDI 01 (MWheel) and set Entry Value to **0**.

Entry values ignore the current position of the physical controller when the setup is selected. In fact, if the physical controller is above or below the entry value when the setup is selected (which it often is), moving the controller will have no effect until it is past its entry value. In the modulation example above, moving the assigned controller won't turn on any modulation until it's pushed all the way *down*, and then up again.

An entry value of **None** is quite different from a value of **0**. **None** means that there will be no initial controller command when the setup is selected, and any subsequent movement of the physical controller will be effective.

Exit Value tells the K2600 to send a value for that controller whenever you leave the setup, either by selecting another setup or by selecting a different mode altogether. It can be very useful when a controller is doing something to the sound, and you don't want that effect to continue after you leave the setup. For example, if you want to make sure a zone's pitch returns to normal whenever you leave a setup, you would set Exit Value to **64** for any controller whose Destination parameter is set to **BendUp**. Again, **None** means no command is sent.

## The SLIDER and SLID/2 Pages

You can assign each of the K2600's eight programmable sliders to a destination on each of the eight zones. Or, you can assign any combination of sliders to the same zone, allowing you tremendous flexibility. For example, you can assign Sliders A and B to modulate pitch and volume on Zone 1, then assign Slider C to control panning on Zones 2, 3, and 4.

The **SLIDER** button gives you access to Sliders A–D. Press the **SLID/2** button to program Sliders E–H.

Take a look at the parameters. Since all the continuous controllers work in a similar manner, you'll find these same parameters on the CPEDAL, RIBBON, WHEEL, and PRESS pages.

```

Edit:setupPESLID/1 <>zone1/1
SlidA: Dest: Scale: Add: Curve: Ent: Exit:
SlidA: Data 100% 0 Lin None None
SlidB: MIDI22 100% 0 Lin None None
SlidC: MIDI23 100% 0 Lin None None
SlidD: MIDI24 100% 0 Lin None None
<more> SLIDER SLID/2 FOOTSW CPEDAL <more>
    
```

```

Edit:setupPESLID/2 <>zone1/1
SlidE: Dest: Scale: Add: Curve: Ent: Exit:
SlidE: MIDI25 100% 0 Lin None None
SlidF: MIDI26 100% 0 Lin None None
SlidG: MIDI27 100% 0 Lin None None
SlidH: MIDI28 100% 0 Lin None None
<more> SLIDER SLID/2 FOOTSW CPEDAL <more>
    
```

Parameter	Range of Values	Default
Destination (Slider A)	MIDI Control Source list	Data
Destination (Slider B)	MIDI Control Source list	MIDI 22
Destination (Slider C)	MIDI Control Source list	MIDI 23
Destination (Slider D)	MIDI Control Source list	MIDI 24
Destination (Slider E)	MIDI Control Source list	MIDI 25
Destination (Slider F)	MIDI Control Source list	MIDI 26
Destination (Slider G)	MIDI Control Source list	MIDI 27
Destination (Slider H)	MIDI Control Source list	MIDI 28
Scale	±300%	100%
Add	-128 to +127	0
Curve	Curve list (see text)	Lin
Entry Value	None, 0–127	None
Exit Value	None, 0–127	None



**NOTE:** The FOOTSW page, and all the switch-controller pages, are described following the section called Switch Controller Parameters, which begins on page 7-32.

## The Continuous Control Pedal (CPEDAL) Page

If you look at the back of the instrument, you will see that there are jacks for plugging in two CC (Continuous Control) pedals. There is also a jack labeled Breath Controller. This jack is wired in parallel with CC Pedal 2; in other words, you can send MIDI 02 Breath (or any other MIDI or global Controller) with both CC Pedal 2 and an breath controller.

```

editsetup:CPEDAL <>zone1/1
CPed1: Dest: Foot Scale: 100% Add: 0 Curv: Lin Ent: None Exit: None
CPed2: Dest: Breath Scale: 100% Add: 0 Curv: Lin Ent: None Exit: None

<more SLIDER SLID/2 FOOTSL CPEDAL more>

```

Parameter	Range of Values	Default
Destination (CPed1)	MIDI Control Source list	Foot
Destination (CPed2)	MIDI Control Source list	Breath
Scale	±300%	100%
Add	-128 to +127	0
Curve	Curve list (see text)	Lin
Entry Value	None, 0–127	None
Exit Value	None, 0–127	None

## The RIBBON Page

The RIBBON page lets you define controller assignments for the K2600's two ribbon controllers. Each ribbon senses movement when you press on it and move your finger left or right; this creates numerous possibilities for controlling pitch, volume, panning, crossfades between zones, or any other uses you might imagine.

The Large Ribbon can be used as a single long controller, or it can be divided into three separate sections, each with its own controller assignments (this is done on the RIBCFG page). The two small arrows above the strip indicate the boundaries of the three sections. The large arrow above the ribbon points to the center of the ribbon, for when the ribbon is configured in one section.

The Small Ribbon, located below the wheels, is both pressure- and motion-sensitive, so it will respond to both finger position and pressure.

To modify other ribbon parameters, go to the RIBCFG page, which is described on page 7-44.

## Setup Mode and the Setup Editor

### The RIBBON Page

The first of the following diagrams shows how the RIBBON page looks when the Large Ribbon is configured in one sections. The second shows the RIBBON page for a three-section Large Ribbon.

```

Edit: Setup**3 RIBBON <>zone1/1
Dest:      Scale: Add: Curv: Ent:  Exit:
SmRib:  AuxBend2 100% 0   Lin  None  None
SmPrs:  MPress  100% 0   Lin  None  None
LgRib:  AuxBend1 100% 0   Lin  None  None
    
```

```

<more RIBBON WHEEL SWITCH PRESS more>
    
```

```

Edit: Setup**3 RIBBON <>zone1/1
Dest:      Scale: Add: Curv: Ent:  Exit:
SmRib:  AuxBend2 100% 0   Lin  None  None
SmPrs:  MPress  100% 0   Lin  None  None
Sect1:  AuxBend1 100% 0   Lin  None  None
Sect2:  Ct1D    100% 0   Lin  None  None
Sect3:  MIDI20  100% 0   Lin  None  None
<more RIBBON WHEEL SWITCH PRESS more>
    
```

Parameter	Range of Values	Default
Destination (SmRib)	MIDI Control Source list	AuxBend2
Destination (SmPrs)	MIDI Control Source list	MPress
Destination (LgRib)	MIDI Control Source list	AuxBend1
Scale	±300%	100%
Add	-128 to +127	0
Curve	Curve list (see text)	Lin
Entry Value	None, 0–127	None
Exit Value	None, 0–127	None

## The WHEEL Page

The two wheels are typical of what is found on many keyboards. The left one is normally used for pitch bend and springs back to center, while the right wheel is normally used as a standard Mod Wheel.

```
edit:setup:WHEEL <>zone1/1
```

```

Dest:  Scale: Add: Curv: Ent: Exit:
PWhl : BendUp 100% 0   Lin  None None
MWhl : MWheel 100% 0   Lin  None None

```

```
<more RIBBON WHEEL SWITCH PRESS more>
```

Parameter	Range of Values	Default
Destination (PWhl)	MIDI Control Source list	BendUp
Destination (MWhl)	MIDI Control Source list	MWheel
Scale	±300%	100%
Add	-128 to +127	0
Curve	Curve list	Lin
Entry Value	None, 0–127	None
Exit Value	None, 0–127	None

## The Pressure (PRESS) Page

The K2600 features mono pressure, commonly called aftertouch on other keyboards.

A word about pressure: Key Range in a zone does *not* define which notes will generate pressure in that zone. If pressure is enabled in a zone, playing with aftertouch *anywhere* on the keyboard will produce data. For example, if Zone 1's Key Range is C3-C5 and you play C2 and push down on the note, pressure messages will be sent from Zone 1. As with any other physical controller, however, you can disable pressure in any zone, or scale it or offset it differently in the various zones. It might help to think of pressure as an extra wheel—wheels operate in a zone regardless of Key Range, and so does pressure.

```
edit:setup:PRESS <>zone1/1
```

```

Dest:  Scale: Add: Curv: Ent: Exit:
Press: MPress 100% 0   Lin  None None

```

```
<more RIBBON WHEEL SWITCH PRESS more>
```

Parameter	Range of Values	Default
Destination	MIDI Control Source list	MPress
Scale	±300%	100%
Add	-128 to +127	0
Curve	Curve list (see text)	Lin
Entry Value	None, 0–127	None
Exit Value	None, 0–127	None

## Switch Controller Parameters

Switch (physical) controllers have only two states: on and off. The K2600 switch controllers are:

- Panel Switches 1 and 2 (PSw1 and PSw2)
- Footswitch Pedals 1, 2, 3, and 4 (FtSw1, FtSw2, FtSw3, and FtSw4)

Note that buttons 1–8 above the sliders are dedicated to zone status and muting, as well as sequencer muting, and are *not* assignable controllers.

### Switch Type (SwType)

The parameters for Switch controllers are slightly different from those for continuous controllers. The first parameter is Switch Type (SwType). The choices available are **Momentary** in which a switch’s action lasts only as long as you are pushing it, and **Toggle**, in which the switch’s action lasts until you press it again. You can also assign the switch controller to send a note, using **Note Momentary** and **Note Toggle**.

Momentary mode is used for functions like sustain or portamento, while Toggle mode is used for functions such as arpeggiator on/off. The buttons show which mode they are in by the behavior of their lights: if a button is in Momentary mode, its light glows only as long as you are holding it, while if it is in Toggle mode, the light stays on until you press it again. Bear in mind that button assignments are independent per zone, and since there’s just a single light per button, the light shows the state of the button only for the current zone. When you press the button, however, it executes its assignments for all zones that use that button.

### Destination

Destination determines what MIDI Controller or other message will be sent when the switch is on—that is, either pressed and held or toggled from the off position. The list of available controllers on page 7-24 is the same as for the continuous controllers, and can be accessed the same way.

If you set SwType to **Note Momentary** or **Note Toggle**, the values for Destination change to display MIDI note values. This can be pretty interesting if you want to do some unusual things with the switch controllers. For example, choose a drum program for the current zone, then set the destination of Footswitch 1 to **Note Momentary**. Now set the value of Destination to a key with a kick drum or a closed hi-hat sound, and impress your drummer friends. Or, you could set SwType to **Note Toggle** and use the Footswitch to start and stop a sampled groove, freeing up your hands to play a different program.



## On Value

On Value sets the value of the Controller when the switch is on. In the case of conventionally-switched functions, such as sustain, the On Value will be **127**. (For example, the default for Switch Pedal 1 (FtSw1) is Controller 64 — **Sustain** — with an On Value of **127**.) However, you might want to use a button or pedal as a “soft” switch, in which case you might set Destination to 7 (Volume) and On Value to **50**. Destination can also be set to **Off**, so that turning on the switch has no effect at all in this zone. This can be useful when you are using one switch for multiple functions in different zones.

If Switch Type is set to **Note Momentary** or **Note Toggle**, the On Value will define the velocity of the note message that gets sent.

## Off Value

Off Value is the value of the Controller when the switch is off. The default value is **0**. You might want to change this, as in the “soft switch” example above: in order to bring the zone up to full volume when you release the pedal, set Off Value to **127**.

If Switch Type is set to **Note Momentary** or **Note Toggle**, be sure to leave the Off value at **0**; this will send a note off message when you turn the switch off, preventing stuck notes from occurring.

## Entry (Ent) and Exit States

Entry State determines whether an initial setting for the switch will be sent when the setup is selected. There are three choices: **None** (no change), **Off** (the Off value), and **On** (the On value). With a Panel Switch button, if the Entry State is **On**, the button will light as soon as you select the setup.

Exit State similarly determines whether a setting for the switch will be sent when you leave the setup, either for another setup or for Program mode. The same three choices (**On**, **Off**, and **None**) are available. This is very useful for turning off sustains when changing setups.

## The Footswitch (FOOTSW) Page

On the back of the instrument, there are four jacks for Footswitch pedals.

All the foot switches in the default control setup are set to a switch type that doesn't generate a note, and consequently the range of values for their respective Destination parameters is the

## Setup Mode and the Setup Editor

### The SWITCH Page

MIDI Control Source list. If you set a footswitch's switch type to Note Momentary or Note Toggle, the range of values for its Destination parameter is C -1-G 9.

```

editsetup*FOOTSW          <>zone1/1
FtSw1: Moment Sustain 127 0 None None
FtSw2: Moment SostPd 127 0 None None
FtSw3: Moment SoftPd 127 0 None None
FtSw4: Moment TapTempo 127 0 Off Off
<more> SLIDER SLID/2 FOOTSW CPEDAL <more>
  
```

Parameter	Range of Values	Default
Switch Type	Momentary, Toggle, Note Momentary, Note Toggle	FtSw1: Moment
		FtSw2: Moment
		FtSw3: Moment
		FtSw4: Moment
Destination	MIDI Control Source list when SwType is Momentary and Toggle); C -1 to G9 when SwType is Note Momentary or Note Toggle	FtSw1: Sustain
		FtSw2: SostPd
		FtSw3: SoftPd
		FtSw4: TapTempo
On	0-127	127
Off	0-127	0
Entry Value	None, 0-127	None
Exit Value	None, 0-127	None

## The SWITCH Page

The K2600 keyboard offers two Panel switches, located above the pitch and mod wheels. Each of these functions exactly like the Footswitches; you can choose between momentary and toggle switches, or you can use each one to trigger a note.

```

editsetup*SWITCH          <>zone1/6
PSw1 : Toggle Off 127 0 Off Off
PSw2 : Toggle Off 100% 127 0 Off Off
<more> RIBBON WHEEL SWITCH PRESS <more>
  
```

Parameter	Range of Values	Default
Switch Type	Momentary, Toggle, Note Momentary, Note Toggle	PSw1: Toggle
		PSw2: Toggle
Destination	MIDI Control Source list or C -1 to G9	PSw1: ArpSw
		PSw2: MIDI 29
On	0-127	127
Off	0-127	0
Entry Value	None, 0-127	PSw1: None
		PSw2: Off
Exit Value	None, 0-127	Off

## The KDFX and FXMOD Pages

These are the same seven effects-control pages that we discussed in Chapter 6 (beginning on page 6-44). They enable you to define the studio and FXMods for all zones in the setup. As long as the FX Mode parameter is set to **Auto** or **Setup**, the values you set on these pages apply to all zones in the setup. If FX Mode is **Master**, all programs and setups use the studio specified on the Effects-mode page.

## The COMMON Page

The COMMON page determines what song, if any, becomes current when you select a setup, and how song playback is synchronized. It also sets the operational mode for the buttons above the programmable sliders.

```
edit:setup:COMMON          HUI zones
```

```
Song : 0 None              Sync : Off
Mutes : Zone Mutes
```

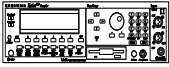
```
<more [ ] [ ] COMMON ARPEG RIBCFG more>
```

Parameter	Range of Values	Default
Song	List of existing songs	0 None
Sync:	Off, On	Off
Mutes	Zone Mutes, KB3 Control	Zone Mutes

## Song

You can link a song to the current setup, using the Song parameter. Select any existing song (or **0 None** if you don't want a song associated with the setup). The song **1 New Song** is a blank template that contains no notes (unless you've saved **1 New Song** without renaming it).

Press **Edit** while the Song parameter is highlighted to use the Song Editor. See Chapter 12 for more information on the Song Editor's functions.



When the current setup has a song linked to it, the **Stop**, **Play/Pause**, or **Record** buttons enable you to start and stop both Recording and Playback of the current song while you're in Setup mode. For rack-mount model owners, pressing the **Up/Down** cursor buttons toggles between Play and Pause, without resetting the Locate point. Pressing the **Left/Right** buttons toggles between Start and Stop, resetting Locate to 1:1. These double-button presses work in any mode.

If you are planning to use a particular song with a setup, there are some important things to keep in mind. First, every track of your song and every setup zone should be on different MIDI channels. Secondly, set the FX Mode to **Auto** and the FX Channel to **Current** on the Effects-mode page; this way, when you play a song from within Setup mode, you'll hear the effect assigned to that song.

Once you've chosen a song on the COMMON page (and worked out any MIDI conflicts), you can use Setup mode to do some pretty cool things. If you want to start the song with a Footswitch, for example, you can assign the Destination parameter of any Footswitch to **Play/Stp** (MIDI 102). Because of the nature of this special function controller, set SwType to **Momentary** rather than **Toggle**.

Here's another great feature: by linking songs with setups, you can select songs from Quick Access mode. By assigning different songs to different setups, and then assigning those setups in one Quick Access bank, you can select one of up to ten songs with a single button press.

## Sync

Setting this parameter to a value of **On** enables you to do two things during song playback:

- When you change the current song, it finishes before the newly-selected song starts
- When using Note Ons (keystrokes or MIDI input) to retrigger and transpose steps in an arrangement, you can trigger a Note On at any time during the current bar, to retrigger the step at the beginning of the next bar

When Sync is **Off**, changing a song during playback immediately starts the new song, and Note Ons immediately retrigger or transpose.

## Mutes

The Mutes parameter gives you manual control over the behavior of the buttons above the programmable sliders. There's really only one case in which you'd need to worry about this parameter: when you have a setup that contains both VAST programs and KB3 programs, and you want the buttons to control KB3 features.

By default, the K2600 uses the **Mute** buttons (the buttons above the sliders on keyboard models) to control the muting and unmuting of zones—which means you don't have real-time control over any KB3 features. Changes the Mutes parameter to KB3 Control to use the **Mute** buttons as real-time KB3 controllers. The white labeling above the buttons describes their functions.

## The Arpeggiator (ARPEG) Page

The Arpeggiator takes input from the K2600 keyboard (or via MIDI) and turns it into a constant rhythmic pattern. You can control the speed and nature of the pattern in real time. The Arpeggiator resembles what were called “sequencers” on old analog synths—playing a finite series of notes repeatedly, with changes in the series controlled by the notes you play. The Arpeggiator can affect both the K2600 and external MIDI instruments. The notes produced by the Arpeggiator in a given zone go to all of that zone’s destinations: local, MIDI, or both.

The concept behind the K2600’s Arpeggiator is fairly simple, although the options are extensive. You might think of it as a “note processor,” generating complex output from relatively modest input. You can select any number of notes for the input, and tell the Arpeggiator to recognize and remember them. This is called “latching” the notes. The Arpeggiator then processes them by playing them repeatedly, and/or transposing them up and down the keyboard. You have control over several processing parameters: tempo, velocity, order, duration, transposition, orchestration, and whether the intervals between notes are filled chromatically. You can also tell the Arpeggiator how to deal with new information coming from the keyboard. The settings you define on the ARPEG page apply to all zones for which arpeggiation is activated; you can program each zone individually to respond to or ignore the setup’s arpeggiation values.

Figure 7-3 shows the processing order the K2600 uses to create arpeggios from your input:

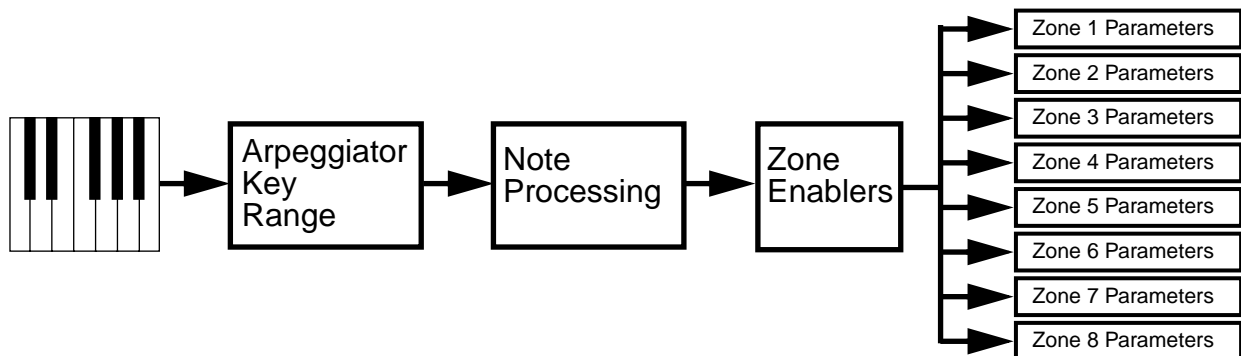


Figure 7-3 Arpeggiator Processing Sequence

```

EditSetup*ARPEG All Zones
Active:Off Sync:Off NoteShift :0ST
LoKey:C 0 HiKey:G#8 ShiftLimit:0
Latch:Auto LimitOption:Reset
Order:Played Glissando :Off
Beats:1/16 Velocity :Played
Tempo:120BPM Duration :75%
<more COMMON ARPEG RIBCFG more>
    
```

Parameter	Range of Values	Default
Active	On/Off	Off
Sync	On/Off	Off
Low Key	C -1 to G9	C0
High Key	C -1 to G9	C#8
Latch	Latch list (Auto, Keys, etc.)	Auto
Order	Order list (Played, Up, etc.)	Played
Beats	1/1 to 1/384	1/16
Tempo	1 to 255 beats/minute	120 beats/minute
Note Shift	±88 semitones	0 semitones
Shift Limit	0 to 88	0
Limit Option	Limit List	Reset
Glissando	On/Off	Off
Velocity	List	Played
Duration	1% to 100%	75%

## Active

The first parameter on the Arpeggiator menu is Active — is the Arpeggiator on or off for this setup? This can be switched from here, or for convenience in live performance, it can be switched using MIDI Controller number 116. This can either be assigned as the destination of a K2600 physical controller, or it can come from an external MIDI source.

Turning Active on affects zones whose ZoneArpeg values are also set to **On**. By setting the ZoneArpeg parameter (on the CH/PRG page) to **Off** or **On** in the individual zones of a setup, you can choose which zones will be controlled by the Arpeggiator when it is on.

## Sync

When Sync is set to **On**, the arpeggiator plays latched notes exactly on the next scheduled beat, which is a function of the Beats parameter and the Song-mode clock. For example, if Beats is 1/8, the arpeggiator plays eighth notes, exactly on each beat and half beat of the current song. When Sync is set to **Off**, latched notes still play at the same *tempo* as the song, but they don't play exactly on the beat.

## Low Key (LoKey) and High Key (HiKey)

The Arpeggiator processes notes within the range of these parameters. Notes outside the specified range play normally, and do not become part of the arpeggiation sequence. Set the LoKey and HiKey parameters using the data entry wheel or buttons.

## Latch

Latch determines how the Arpeggiator responds to notes when they are triggered.

**Keys** means that the Arpeggiator plays only while you are holding one or more keys down (or note triggers on). As you play different notes, they get added to the Arpeggiator, and as you release notes, they get taken out. If you play notes faster than the Arpeggiator's current tempo, each subsequent note will be added to the arpeggiation at the next division of a beat. This can cause a lag between the time you play the note and the time you hear it in the arpeggiation.

In the next three modes, the Arpeggiator latches notes only when MIDI Controller 119 (ArpLatch) sends a value of On (64 or higher). An easy way to experiment with these modes is to assign the Mod Wheel to send MIDI 119 (go to the WHEEL page, and set the value of MWhl to **ArpLatch** by pressing **1, 1, 9, Enter** on the alphanumeric buttonpad).

In **Overplay** mode, the Arpeggiator latches any notes that are being held when ArpLatch goes on, and continues playing them, even after you let them go, until ArpLatch off. Any notes that you play after ArpLatch is already on do not get arpeggiated, even if they're in the arpeggiation range.

**Arpeggiation** is similar: any notes held when ArpLatch goes on are latched and arpeggiated, and keep going until ArpLatch goes off. Any notes you play outside the arpeggiation range play normally. Notes that you play inside the arpeggiation range do not play normally, but if you hold them on, they become part of the arpeggiation. They drop out of the arpeggiation as soon as you release them.

Like Overplay and Arpeggiation, **Add** means that all notes being held when ArpLatch goes on get latched, and keep playing until ArpLatch goes off (even if you've released the notes). Any notes you play after ArpLatch is already on also get latched.

**Auto** is independent of ArpLatch; every note you play is automatically latched, and the Arpeggiator runs as long as you hold at least one arpeggiated note. As long as you keep holding on at least one note (it doesn't have to be the same note the whole time), every note you play in the arpeggiation range gets latched.

**Pedals** is sort of a combination of Keys, Add, and Overplay modes. It relies on both ArpLatch (MIDI 119) and Latch2 (MIDI 118). If neither latch controller is on, notes will arpeggiate only while you are holding down keys (similar to Keys mode). If you activate Controller 119, the keys currently held down will latch, and any additional keys played while Controller 119 is on will also latch (similar to Add mode). When Controller 119 is off, any keys that are not currently held down will be removed from the arpeggiation. If you activate Controller 118, keys currently held down will latch, and any additional keys played while Controller 118 is on will play normally (similar to Overplay mode). This mode is called Pedals mode because you might want to assign Switch Pedal 1 to **Controller 119** (Latch 1) and Switch Pedal 2 to **Controller 118** (Latch 2) to make the pedals function similarly to sustain and sostenuto pedals.

**Autohold** is similar to Auto. Holding at least one arpeggiated note on and playing other notes latches those notes. Unlike in Auto mode, if you stop holding at least one arpeggiated note on, the arpeggiation continues playing (although you can't latch any more notes). In this case, if you strike another key within the setup's arpeggiation range, you start a new arpeggiation sequence.

**Autohold** is useful for arpeggiating chords: when you play a chord, it gets latched, and continues arpeggiating after you release the chord. When you play another chord, the previous chord gets unlatched, and the new one gets latched.

You can use the **Panic** soft button or the **Stop** button to stop arpeggiation at any time.

### Order

This parameter determines the order in which the K2600 plays arpeggiated notes. **Played** causes them to play back in the chronological order in which you played and latched them. **Up** means that notes play in ascending pitch order, regardless of their chronological order. **Down** means descending pitch order. **Up/Down** causes notes to play from lowest pitch to highest, then from highest pitch to lowest, repeating the cycle until you stop the arpeggiation. The notes at the very top and very bottom only play once. **Up/Down Repeat** is similar to **Up/Down**, except that the notes at the top and bottom play *twice* (repeat) when the Arpeggiator reverses direction.

**Random** plays the currently-latched notes in completely random order. **Shuffle** plays them at random, but keeps track of the notes so that no note repeats until all of the others have played. **Walk** is a “random walk” order: each successive note is either the next or previous note (in chronological order). For example, suppose you’ve latched four notes—G 4, B 4, D 5, and F 5—in that order. The first note the Arpeggiator plays is the G 4. The second note will be either B 4 (the next note chronologically), or F 5 (the “previous” note chronologically—that is, the last latched note). If the second note is B 4, the third note will be either D 5 or G 4. If the second note is F 5, the third note will be either G 4 or D 5.

**Simultaneous** means that each note you play repeats in time with the Tempo value, sort of like a digital delay with no decay. If you play a C and hold it while you play an E and a G, the Arpeggiator will play all three notes at the same time and at the same tempo. This is the only Order setting that allows two or more notes to sound simultaneously as intervals or chords. Note that **Simultaneous** works well with Note Shift and Shift limit.

### Beats

The Beats parameter sets the number of notes per beat. The tempo is based on quarter notes. Therefore, if you set it to  $1/4$ , you will get one note per beat of the clock. At  $1/16$ , you will get 4 notes per beat. You can go all the way to 96 notes per beat ( $1/384$ ), but at most tempos, divisions smaller than  $1/64$  will sound pretty much the same.

### Tempo

This sets the tempo, in beats per minute (bpm), at which the Arpeggiator plays when activated. Tempo is tied to the K2600’s internal MIDI clock, as is song playback. Consequently, if a song is playing when you activate the Arpeggiator, the song’s tempo defines the Arpeggiator’s tempo, overriding the Arpeggiator’s settings. Inversely, if you activate the Arpeggiator, then start a song, the Arpeggiator’s Tempo setting defines the song’s tempo.

You can change Tempo in real time by changing the assignment of any of the K2600’s physical controllers in the setup to **Tempo**. The range is **1 to 255 bpm**.

### Note Shift

You can tell the Arpeggiator to transpose all of the currently-latched notes each time it plays through them. Note Shift determines how much transposition will occur for each cycle of notes. For example, if you have latched C4 and F4, and you assign a Note Shift of 2, the Arpeggiator will play C4, F4, D4, G4, E4, A4, and so on until it reaches the Shift Limit. The values can range from **-88 to 88**, with **0** (the default) being no transposition.

### Shift Limit

Shift Limit determines how far up or down the Arpeggiator shifts from the original note. The minimum value is **0**, and the maximum is **88**. When the Arpeggiator reaches the limit, the Arpeggiator responds according to the setting for the Limit Option parameter.



## Limit Option

This parameter determines what the Arpeggiator does when it has shifted the currently latched notes up (or down) to the shift limit. **Stop** causes the Arpeggiator to stop when it reaches the shift limit. **Reset** causes the Arpeggiator to return to its original pitch and repeat the latched cycle of notes, transposing each cycle according to the settings for Note Shift and Shift Limit. If the limit allows the notes to go out of MIDI range (for example, if you set Shift to 12, set the limit to 80, and play C4), then those “ghost” notes don’t sound, but they take up rhythmic space: the Arpeggiator waits for the cycle to play itself out before starting over.

**Unipolar** means that after playing up to the shift limit, the Arpeggiator begins shifting notes in the opposite direction, until it reaches the original pitch, where it reverses again. To determine the next note when it reaches the shift limit, the Arpeggiator calculates the interval between the shift limit and what the next note would be if the shift limit weren’t there. It then plays the note that is the calculated interval lower than the last note before the shift limit. The same thing happens in reverse when the arpeggiated notes get back down to the original pitch. The following table makes this easier to visualize by showing the result of arpeggiating one note (C4) in Unipolar mode, with Note Shift set to 3 ST and various values for Shift Limit.

Shift Limit	Resulting Arpeggiation (When LimitOption is Unipolar)			Comment
	Up	Down	Up	
6 ST (F#4)	C4, D#4, F#4,	D#4, C4	D#4, ...	Same notes play in both directions when Shift Limit is a multiple of Note Shift
7 ST (G4)	C4, D#4, F#4,	E4, C#4,	D#4, ...	Last upward note before shift limit is F#4, next upward note would be A4, which is 2 ST from shift limit (G4); therefore first downward note is E4 (2 ST below last upward note)
8 ST (G#4)	C4, D#4, F#4,	F4, D4,	D#4, ...	A4 is 1 ST from shift limit, therefore first downward note is F4 (1 ST lower than last upward note)
9 ST (A4)	C4, D#4, F#4, A4	F#4, D#4, C4,	D#4, ...	All symmetrical again; now A4 is within shift limit
10 ST (A#4)	C4, D#4, F#4, A4,	G4, E4, C#4,	D#4, ...	Next upward note would be C5, which is 2 ST from shift limit
11 ST (B4)	C4, D#4, F#4, A4,	G#4, F4, D4,	D#4, ...	C5 is 1 ST from shift limit
12 ST (C5)	C4, D#4, F#4, A4, C5,	A4, F#4, D#4, C4,	D#4, ...	Symmetrical again, including C5

**Bipolar** starts out the same way as **Unipolar**, but during downward note shifting, it continues past the original pitch until it hits the shift limit in the *opposite* direction, where it reverses again.

**Flt Reset** adds a bit of apparent randomness to the process. **Flt** stands for “Float,” and it means that when the Arpeggiator reaches the shift limit, it resets—but not to its original pitch as with plain Reset. Like Unipolar and Bipolar, it looks at the first note that would exceed the shift limit, and calculates the interval between that note and the shift limit. It then restarts the cycle of latched notes, transposing the entire cycle by the interval it just calculated, then shifting each subsequent cycle by the value of Note Shift, until it reaches the shift limit again.

Here’s a very simple example. Suppose that the only note in the Arpeggiator cycle is C4, Note Shift is 4 (a third), and Shift Limit is 7 (so notes won’t get shifted above G4). The Arpeggiator plays C4, then E4. The next note should be G#4, but that’s above the shift limit—so the K2600 calculates the difference between that G#4 and the shift limit (G4): one semitone. It adds that

difference to the original starting note (C4) and plays that note next—C<sup>#</sup>4. The next note (F4) is within the shift limit, but the next note (A4) isn't, so it gets translated into D4—and so on.

**Flt Uni** uses the same concept and applies it to Unipolar mode: when the Arpeggiator reaches the shift limit, it calculates the difference between the next note and the limit, and transposes the next cycle of notes down by that interval, then shifts each subsequent cycle down until it reaches the original pitch. **Flt Bipl** is similar to **Flt Uni**, but the downward shift limit isn't the original pitch, it's the negative of the Shift Limit value.

The Arpeggiator can be a lot of fun, even if you don't always understand exactly what it's doing. Keep in mind that the stranger the algorithm you set up, the more unlikely the notes will stay close to one key, so if you want to create something that's going to sound at all diatonic, keep it simple.

## Glissando

When the Glissando parameter is **On**, the Arpeggiator chromatically fills between latched notes. When Glissando is on, the Arpeggiator ignores the Note Shift, Shift Limit, and Limit Option parameters.

You must latch at least two notes to get a result. When Glissando is on, all notes played in the arpeggiation range get latched, although you won't necessarily get meaningful results from all latched notes. In general, try to get each subsequent note you latch to be a change in direction. For example, try latching the following sequence of notes: C4, C5, G4, G5, C5, C6, G4, G5. The "glissando" changes direction around each change in direction of the latched notes.

## Velocity

Velocity sets the attack velocity of the played notes. **Played** means each note repeats with the same velocity you played it at. **Last** means all notes play at the velocity of the most-recently played note. **Pressure** means the velocities are controlled by keyboard pressure: as you push down on any key, the velocities get higher, and as you ease up they get lower. **Ctrl 117** means the velocity is controlled by MIDI Controller number 117, which can be assigned as the destination of any K2600 physical controller or can come from an external MIDI source.

There's another element that affects arpeggiator velocity: **ArpVel**, whose global control number is 45 (not MIDI 45). Input from any physical controller assigned to send **ArpVel** (or any entry value for a controller assigned to send **ArpVel**) overrides the programmed value of the Velocity parameter, disabling it until you select a setup (or in Program mode, until you select a control setup on the MIDI-mode TRANSMIT page). The override occurs even if the Velocity parameter is set to **Ctrl117**.

There is also a range of fixed values, from **Vel 1** to **Vel 127**. Selecting one of these determines a fixed velocity setting, which you can use to set a constant volume for the arpeggiated portion of all zones. The value you choose from this range defines the velocity level for the Arpeggiator, and will take effect no matter how hard you strike a key.

## Duration

Duration determines how long each arpeggiated note plays. 100% means that a note sustains until the next one sounds—very legato. 50% means that the note fills half the space between itself and the next note. The lowest value is 1%—*staccatissimo*. This parameter has no effect on percussion sounds or other sounds whose duration is fixed.

## Real-time Control of Arpeggiator Parameters

You can have real-time control over several arpeggiator parameters, by assigning physical controllers to special arpeggiator Controller Destinations. Any input (or entry value) from a physical controller assigned to an arpeggiator Controller Destination overrides the programmed values for the parameters. The override remains in effect until you select a setup (or in Program mode, until you select a control setup on the MIDI-mode TRANSMIT page).

There are countless possibilities for configuring physical controllers for real-time control over arpeggiator parameters. The following table covers just one possible configuration: Sliders A–G controlling each of the seven parameters that allow real-time control. We've included some suggested settings for the slider parameters, to make each slider at least reasonably useful for arpeggiator control. These settings are based on an arpeggiator range from C 6 to C 8 (as set with the LoKey and HiKey parameters on the ARPEG page).

Slider	Assignment	Suggested Slider Settings
A	40 ArpOrder	
B	41 ArpBeats	Scale = <b>10%</b> ; Add = <b>5</b>
C	42 ArpShift	Scale = <b>7%</b>
D	43 ArpLimit	Scale = <b>28%</b>
E	44 ArpLmtOp	
F	45 ArpVel	
G	46 ArpDur	

## The Ribbon Configuration (RIBCFG) Page

Once you’ve selected a destination for the Large and Small Ribbons, you can use the parameters on the RIBCFG page to define how the ribbons respond to finger position and pressure.

```

EditSetup*3 RIBCFG           All Zones
LargeRibbonConfig: One Section
                        PosMode: Spring: Center:
SmallRib:  Relative  On      64
LargeRib:  Relative  On      64
    
```

```

<more COMMON ARPEG RIBCFG more>
    
```

```

EditSetup*3 RIBCFG           All Zones
LargeRibbonConfig: Three Sections
                        PosMode: Spring: Center:
SmallRib:  Relative  On      64
Section1:  Relative  On      64
Section2:  Relative  Off     0
Section3:  Relative  Off     0
<more COMMON ARPEG RIBCFG more>
    
```

Parameter	Range of Values	Default
Large Ribbon Configuration	One Section/Three Sections	One Section
Position Mode	Relative/Absolute	Relative
Spring	On/Off	On
Center	0-127	64

### Large Ribbon Configuration

You can use the Large Ribbon as one controller, or divide it up into three smaller sections, each with its own controller assignments. Choose a value of **One Section** or **Three Sections** for the LargeRibbonConfig parameter.

Notice the three white arrows directly above the Large Ribbon. The largest arrow (in the middle) points to the Large Ribbon’s center. The two smaller arrows on either side are the section boundaries for three-section configurations.

### Position Mode (PosMode)

When you touch one of the ribbons, the K2600 responds in one of two ways, depending on the setting of the PosMode parameter. **Relative** means that wherever you touch the ribbon becomes the “zero point” for whatever the ribbon is controlling; you won’t notice any change in the sound until you slide your finger. Relative mode tends to be the most natural for performance—just wiggle your finger anywhere on the Large Ribbon to get vibrato in many factory programs and setups. You get the same effect no matter where you do the wiggling.

**Absolute** means that the zero point for the ribbon is always at exactly the same physical location on the ribbon. By default this is the center of the ribbon, although you can use the Center

parameter to put the zero point elsewhere. In Absolute mode, just touching the ribbon affects the sound (unless you touch it at exactly the zero point). Every movement you make along the ribbon sends control values based on how far you are from the zero point.

## Spring

When Spring is **On**, the Controller to which you've assigned the ribbon "springs" back to its zero point automatically when you lift your finger off the ribbon. This is generally the behavior you want.

When Spring is **Off**, the Controller to which you've assigned the ribbon sticks at its current value when you lift your finger off the ribbon. While this can be useful, you should be careful with it. When Spring is **Off**, if the ribbon is doing something when you exit the setup, it'll continue doing that when you return to the setup. This can be good or bad. If you want to set Spring to **Off** in a setup, but want to be sure of the initial sound of the setup, go to the RIBBON page in the setup, and for each ribbon for which you've set Spring to **Off**, set the entry value (Ent) parameter to a value of **0** (or whatever you like).

## Center

This defines the zero point for each section on the ribbon—the point at which the Controller to which the ribbon is assigned has no effect on the sound. You can choose any point between **0** and **127**. A value of **64** puts the zero point in the physical center of the ribbon. Values of **0** and **127** place the zero point at the section's extreme left and extreme right. Note that setting the Spring parameter to **Off** disables the Center parameter for that ribbon.

The value you choose for this parameter can have considerable effect. In many factory setups, for example, the Large Ribbon affects pitch. In these setups, changing the value of the Center parameter would transpose the setup.

# The Utility Soft Buttons

In addition to the Setup Editor's pages, there are basic library and editing soft buttons. Their functions are described below.

## Name

This enables you to rename the current setup. Use any data entry method to do this, including the letters on the alphanumeric buttonpad.

## Save

Pressing **Save** calls up the standard Save Dialog. Simultaneously pressing the **Plus** and **Minus** data entry buttons toggles between saving the setup to the first available empty location, or replacing a currently existing setup.

## Delete

This erases a setup from RAM, freeing up space to store setups in other locations. (You can check the free memory in the K2600 at any time, on the top line of the Master-mode page.) Press **Delete**, and use a data entry method to choose which setup you want deleted. Press **Delete** again, and an "Are You Sure?" message will appear (unless you have set a value of **No** for the Confirm parameter on the Master-mode page). Press **Yes** to delete the setup, or **No** to cancel.

As with programs, setups can be saved to and deleted from RAM only. The names of all setups in RAM have an asterisk (\*) next to them. If you try delete a setup from ROM, the K2600 will ignore the delete command, and the setup will remain in memory.

## Dump

This sends a MIDI System Exclusive dump of the current setup's settings. There is also a function for dumping *all* setups. To dump all setups, go to Master mode. Select the OBJECT page, and press the **Dump** soft button to select which objects to dump via SysEx.

For more on Object Utilities, see Chapter 11. For more about System Exclusive messages, see the *Musician's Reference*.

## New Zone (NewZn)

Press **NewZn** to create a new zone with default parameters. The K2600 imports this zone from Zone 1 of **99 Default Setup**. If there are parameters or entire pages you use often, you can create your own Default Setup and save it to location 99; pressing **NewZn** will then import zones from your custom Default Setup.

## Duplicate Zone (DupZn)

This adds a new zone with the same parameters as the current zone.

## Import Zone (ImpZn)

You can import, or "bring in," any zone from any setup in memory. Press **ImpZn**, and use any data entry method to choose a setup to import from. Then use the **Chan/Bank** buttons to select one of that setup's zones. As you do this, you can audition each zone to hear how it will sound in the current setup. Now press **Import**, and the zone you selected will be added to the current setup.

Note: If you are using all eight zones in a setup and you try to add, duplicate, or import a zone, a "No More Zones" message appears. You must delete an existing zone before you can add, duplicate, or import any new ones.

## Delete Zone (DelZn)

This deletes the current zone from the setup. Use **DelZn** to free up zones so you can add or import new ones.

## Copy and Paste

These functions are handy if you've spent some time tweaking a page or line of parameters, and you want to copy them quickly to other zones. Start by highlighting a parameter's value and pressing the **Copy** soft button. You can copy more than one value. Then use the **Chan/Bank** buttons to select the zone to which you want to copy those values. Press the **Paste** soft button, and all the values you copied replace the corresponding values in the current zone.

You can also paste the value into any zone of any other setup. Just copy a parameter's value, press **Exit** to leave the current setup, and select a different setup. Then press **Edit**, select the same page or physical controller type as in the last setup, and paste the new value. The values you copy each remain in one of nine paste buffers, so you can keep pasting these values to different zones in any setup. When you press **Copy** on a new page or line of parameters, you replace the contents of the current paste buffer with the new values.

The table below shows where you can paste copied parameters. Note that the first seven paste buffers each store an entire page, while the last two each store only one line of parameters.

Copied Parameters	Available Destinations in Any Setup Zone
CH/PROG page	Corresponding page
KEY/VEL page	Corresponding page
PAN/VOL page	Corresponding page
BEND page	Corresponding page
COMMON page	Corresponding page
ARPEG page	Corresponding page
RIBCFG page	Corresponding page
Parameters for one continuous controller (on SLIDER, SLID/2, CPEDAL, RIBBON, WHEEL, or PRESS pages)	Assignment for any continuous controller
Parameters for one switch controller (on FOOTSW and SWITCH pages)	Assignment for any switch controller

## Clear

Pressing **Clear** resets the selected page or line of parameters to its default value, as defined in **99 Default Setup**. You can edit the Default Setup, and alter the values that are called up for each page when you press **Clear**. The only exceptions to this are on continuous and switch controller assignment pages, where pressing **Clear** resets the current line to a factory-defined set of values.

You can't undo **Clear** without exiting the setup entirely, so be sure you really want to clear the selected parameters.

## Set Range (SetRng)

As we mentioned earlier in this chapter, **SetRng** gives you a quick way to set the values for the LoKey and HiKey parameters in the currently selected zone. Press this button, and the K2600 prompts you to strike the low and high keys. When you've done so, the Setup-editor page returns, and the notes you triggered are the new values for the LoKey and HiKey parameters. Notice that the higher of the two notes you played is the HiKey value, regardless of the order in which you triggered the two notes. The ranges you set are now represented by lines in the box at the left on the Setup-mode page.

# Editing Hints and Suggestions

## Do These Parameters Always Mean Something?

Be careful not to set up parameters that do crazy things. When in doubt, leave things off, or at the factory default settings. On some of the higher-numbered MIDI controllers and Special Function controllers, the **On** and/or **Off** values don't have any meaning, because the controllers have very limited functionality. The following list shows these.  $\geq 64$  means greater than or

equal to 64, and <64 means less than 64. >0 means you can use any value that's greater than zero. x means you can use any value.

MIDI Controller Number	MIDI Controller	On Value	Off Value
102	Play/Stop	>=64	<64
103	Record/Stop	>=64	<64
120	All Sound Off	>=64	<64
121	Reset All Controllers	>=64	<64
122	Local Control Off	>=64	<64
123	All Notes Off	>=64	<64
124	Omni mode Off	>=64	<64
125	Omni mode On	>=64	<64
126	Mono mode On (the On value, in some synths, specifies the number of MIDI channels to respond to, with one voice on each)	>=64	<64
127	127 Poly mode On	>0	x

Table 7-6 Little-used MIDI Control Sources

## Do I Need All Those Pedals?

It's important to realize that you don't have to have an actual pedal plugged into every Pedal and Switch Pedal jack in order to take advantage of all of them. Entry and exit values can be assigned to a zone and to a physical controller's destination even if the controller isn't there, and they will behave as if the controller were in fact plugged in. So if you want a specific group of Controller commands to be sent out whenever you choose a setup, and you know they're not going to change while you're playing, you can assign them as the destinations of physical controllers that aren't in use.

## Multiple Controllers

Sometimes you'll want to assign the same Controller number as the destination of more than one physical controller. For example, you might want to be able to control modulation depth both with Wheel 2 and with pressure. The K2600 has no restrictions on assigning multiple physical controllers to a particular MIDI Controller.

## Editing Programs

Remember, except for control-setup parameters, everything you define in a setup affects programs *only while you are in Setup mode*. To edit the programs themselves while you are in the Setup Editor, go to the CH/PRG page and press **Edit**. This gives you access to the other editors nested within the Program Editor as well. When you have finished editing your program, press **Exit** to save it and return to the Setup Editor.