SWITCHBLADE *SMART INSERT™* UPGRADE KIT
USER GUIDE

For models:
Switchblade GL
Switchblade 8B
Switchblade 8

Document OMSIU-2

Limited Warranty

Sound Sculpture Musical Instrument Products (Sound Sculpture) warrants this upgrade kit to the original purchaser to be electrically operational in normal use for a period of 2 years from the date of purchase.

Sound Sculpture's liability under this portion of the warranty is limited to replacing the defective component that shows evidence of electrical defect, and only if the product is returned to Sound Sculpture with it's original documentation. This warranty does not apply to the firmware portion of the upgrade kit.

Sound Sculpture further warrants the operational (firmware) design of this product for a period of 30 days from date of purchase.

Sound Sculpture's liability under the firmware portion of the warranty is limited to refunding the purchase price paid to Sound Sculpture for the upgrade kit and only if the upgrade kit is returned to Sound Sculpture with it's original documentation. Under no circumstances will Sound Sculpture be required to make changes to the design of the product even if the product design fails to operate as expected.

Sound Sculpture reserves the right to make changes in the design of this product or make additions or improvements on the product without incurring any obligation to replace previously purchased upgrade kits.

Sound Sculpture shall not be liable for any consequential damage or loss of profits as a result of the use of this product even if Sound Sculpture is advised of the possibility of such damages or loss. In no event will Sound Sculpture's liability exceed the price paid for the product.

No other warranties are expressed or implied and Sound Sculpture neither assumes nor authorizes any person to assume for it any obligation or liability in connection with the sale of this product. In no event shall Sound Sculpture or its dealers be liable for special or consequential damages due to the use of this product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusions or limitations may not apply to you.

In Case of Difficulty

In the unlikely event that you experience problems with your upgrade kit, please refer to the section in this manual pertaining to the operation you are having difficulty with. Very often the difficulty is simply a result of improper setup or programming and can be resolved by studying this manual.

If, after reading this manual, you are unable to resolve the problem call Sound Sculpture at the number listed below during normal business hours. We will make every effort to resolve the issue.

Precautions and safety notes

Hazardous voltages exist inside your Switchblade unit. **Remove the AC power cord before removing the cover to install the upgrade.**

Adhere to the installation notes and be aware this component can be **damaged by static electricity**. Do not remove the component from its protective package until you have read and understood the procedure required to install the upgrade.

OVERVIEW

Congratulations on your purchase of the Switchblade *Smart Insert* upgrade kit. With this new firmware you now have fully intelligent insert/remove loop control capability.

WHAT IS LOOP CONTROL?

Loop control, simply put, is the ability to insert or remove an effect device (a "loop") when several effects are connected together. This can be useful if you wish immediate control over inserting or removing individual effect devices within a given arrangement of effects as the number of combinations can be quite large. This gives you instant control over experimenting with how effects sound together.

Loops are controlled using a type of MIDI message called a Control Change message. The most common method of transmitting these messages are MIDI foot controllers that have the ability to transmit Control Change messages when certain footswitches are pressed. Sometimes these switches are called "Instant Access" switches or "Loop Control" switches. Each switch will control one and only one loop. Press the switch once to insert the loop and press it again to remove the loop.

With the Switchblade Switching system, you can use MIDI Program Change messages (Programs) to select networks of effects connected together as you see fit, with effects arranged in parallel, or series (in any order), or combinations of the two, all programmed by the user and saved as a preset. And now with Control Change messages you have full control over removing and inserting individual effects within that particular preset. This is the most powerful system available anywhere for integrating your effects.

WHAT IS SO SMART ABOUT *SMART INSERT*?

Traditional switching systems require you to pre arrange your effects either in parallel or in series in a particular order. From that point you would use loop control to insert or remove effects from that fixed arrangement. Since you have no control over how your effects are connected together once everything is wired up, loop control was the only way to switch your effects in and out of circuit.

With the Switchblade Switching system you have full control over how your effects are wired up, limited only by your imagination, and savable as presets. You also have full control over gains everywhere in the effect network. This brings up special issues when you now add loop control. For example, if you have a preset where all your effects are in series, then removing an effect could potentially break a connection leaving you without audio. *Smart Insert* insures that effects wired in series are bridged so you don't loose audio. When effects are wired in parallel you don't want to bridge a removed effect as this will add a "clean" bypass where the effect was removed. *Smart Insert* insures that when effects are wired in parallel, removed effects are not bypassed unless the very last effect is also removed so you don't lose audio.

You may also have effects in parallel or series where the gains are set to different levels to achieve different effect ratios. *Smart Insert* insures that when effects are removed, that the mixes don't change giving you predictable sounds when you remove effects.

Smart Insert goes way beyond these simple examples to insure that no-matter what kind of network of effects you have created, your sound will always stay predictable and sensible for the most musically transparent control when using your loops.

ACTIVATING LOOP CONTROL IN THE SWITCHBLADE

Once your upgrade kit is installed in the Switchblade using it is very easy. All you need to do is go to the new Loop Control Menu in the Setup menu group. Program it as outlined below and you are done! All the presets you currently have programmed into the Switchblade can now be used instantly and without modifications.

FEATURE DETAILS

With loop control you can:

- Assign any MIDI Control Change number between 0-112 to an input/output "loop".
- Define a "loop" as any one input and any one output connected to an effect.
- Assign up to 16 loops that can be controlled in an insert/remove fashion.
- Assign the same controller number to several loops for controlling stereo devices or multiple effects with one switch.
- Define a loop as "Echo", "Reverb", or "Other" to determine how a device will be handled when removed or inserted from a preset for the most musical and natural operation.
- Perform loop control in any preset regardless of how you have a preset programmed.
- Expect optimum operation with intelligent handling of bypasses and gains.

Loop capability using *Smart Insert* allows the Switchblade to be controlled by the loop control functions available on many popular foot controllers. This gives you direct control of up to 16 loops (or 8 loops on the SB-8 or SB-8B). The loop control is transparent of how you have a preset programmed. Parallel, series, or complex parallel/series networks with various gains and continuous control are no problem.

The firmware takes into account the gain settings of connections and adjusts gains where necessary to preserve the mix programmed into the preset, keeping your sound balanced when inserting/removing loops. It also handles all issues associated with the 2 continuous controller pedals when they are used in a preset. How these issues are handled will be explained later in this document.

The loop control capability is global. This means that once the MIDI Control Change Numbers are assigned to a loop in the setup menu, there is no additional programming to do in the presets. The Switchblade automatically handles all loop control functionality without having to program anything new into a preset.

The loop control will only remove effects that are programmed into a particular preset and will insert the effect back into the preset the same way it was programmed. In other words, if you have 3 effects in series in a particular order, any of these 3 effects can be removed, and reinserted without modifying the order in which they were programmed into the preset. You cannot insert effects using the loop control into presets that do not already have the effect programmed into the preset.

The Switchblade always keeps track of the current state of your foot controller switches even when going from preset to preset. This means that when going to a preset that uses different effects, there is no need to retransmit the controller information from the footswitch (although if your foot controller already does this, that's fine). Any devices that are off or on, stay off or on when going from preset to preset.

Please note: The loop function is only used to turn on (insert) or turn off (remove) an effect loop and cannot be used to continuously control the gain of a particular loop. You still have full control over continuous control using the 2 continuous controllers that are already available in the Switchblade, and of course you still have full control over the gain settings of connections as applied in the Patching menu. You can still use the Switchblade in Remote Mode if you need to control the gain of individual connections with individual controllers.

LOOP ASSIGNMENT MENU OVERVIEW

To use the new firmware, first go to the Loop Assignment menu. This is located in the SETUP group right after the Continuous Controller Assignment (CONTROLLER →) menu. The new menu typically looks like this:

```
CTRL=000  TYPE=OTHER
OVERDRIV   OVERDRIV
```

Note the cursor can be in 5 different positions on the menu and is moved around as always using the SELECT button. The 5 positions can be described as follows:

REVIEW (upper left)   Scroll through loops and display their controller, type, and in/out names
CONTROLLER ASSIGN (upper mid)   Assign a controller number to currently displayed loop
TYPE ASSIGN (upper right)   Assign a type (reverb, echo, or other) to the currently displayed loop
INPUT SELECT (lower left)   Select the loop input by name
OUTPUT SELECT (lower right)   Select the loop output by name

REVIEW

When the cursor is under **CTRL=** then you can use the UP or DOWN button to scroll through all of the loops that you have currently assigned to a controller. As you scroll the controller numbers will show up in numerical order. Only loops that have been assigned a controller number will show up in the review function. If no loops are assigned, then only dashes (---) show when the UP or DOWN button is pressed.

CONTROLLER ASSIGN

When the cursor is under the controller number itself, you can use the UP or DOWN button to scroll through all of the available controller numbers (0-112) or no controller number which is represented by 3 dashes in the display (---). This number (or dashes) represents the controller number that is assigned only to the input and output shown in the bottom row.   To change the controller number of a pair that is already assigned, you can first select the pair using the REVIEW function then move the cursor to the CONTROLLER ASSIGN area and change the number. **NOTE: You will not be allowed to assign a controller number that has already been assigned to either of the two continuous controllers.** Therefore it's a good idea to assign your continuous controller numbers first (like 111 and 112) using the CONTINUOUS CONTROLLER ASSIGNMENT menu before assigning controller numbers to your loops.

TYPE ASSIGN

When the cursor is under the **TYPE=** section of the screen, you can use the UP or DOWN button to select which of 3 types of effects to assign to the loop currently shown. The 3 types available are ECHO, REVRB (reverb), and OTHER. Each of these types is handled differently by the Switchblade when they are inserted or removed from a preset. The function of the different types will be explained shortly. You can change the type of a pair by first scrolling to the pair using the REVIEW function , then move the cursor to the TYPE ASSIGN to change the type.   Refer to the section THE DIFFERENT LOOP TYPES for an explanation of what how the types are used in loop control.

INPUT SELECT AND OUTPUT SELECT

When the cursor is in the lower left corner (this is the effect output, or Switchblade input) or when the cursor is in the lower right corner (this is the effect input, or the Switchblade output) you can use the UP or DOWN button to scroll through the different effects that you have connected to the Switchblade.   These two names define the "loop" that you want to control. Typically a loop might be "OVERDRIV" on the input side and "OVERDRIV" on the output side which identify the actual input and output on the Switchblade that is connected to your overdrive pedal.

USING THE LOOP ASSIGNMENT MENU

As you might expect a "loop" is simply a single input and a single output on the Switchblade which are connected to a single effect device. Each "loop" is assigned its own unique controller number so that each loop can be controlled by it's own switch on your foot controller.

The whole idea behind the Loop Assignment Menu is to select the input and output that makes a loop, assign a MIDI Control Change number (Controller number) to that loop, and to select a "type" which that loop represents. You will use this menu to make this kind of assignment to all the loops you are going to define.

You can control a stereo device by treating it as 2 loops (a left loop and a right loop) and assigning both loops to the same controller number. In this way, you can remove the whole stereo effect using a single footswitch.

When you first use the Loop Assignment Menu, only dashes (---) will show up in the CONTROLLER ASSIGN area. You can verify this by placing the cursor under the REVIEW area (upper left of the display) and pressing the UP or DOWN button. If any numbers are assigned, they will show up in the "CTRL=" field.

To assign a number to a loop, first select the loop. To do this, move the cursor to the lower left corner and the lower right corner under the effect names and scroll to the desired input and output names that you wish to identify as a "loop".

Now that you have the loop chosen, move the cursor to the **CONTROLLER ASSIGN** area (the 3 dashes or 3 digit number) and use the UP or DOWN number to assign a controller number to the loop you have selected. If a number is assigned to a loop, and you want to remove the assignment, simply select the loop using the REVIEW function, move the cursor to the CONTROLLER ASSIGN area, and scroll the controller number until dashes (---) appear in the control number area.

Continue to assign controller numbers to all loops until you have assigned a unique controller number to every loop in the Switchblade. Do not assign controller numbers to inputs or outputs that are not connected to anything or to instrument inputs (guitars) or final outputs (amplifiers) as explained in the important note below.

If you wish to control a stereo device with a single loop control, then simply assign the left loop and the right loop to the same controller number.

If you want to control 2 or more loops (group of effects) with a single loop control, you can do this by assigning as many loops as you want to the same controller number. You should only do this if you want to always insert or remove this group of effects from a preset as a whole. You will not have individual control over the loops in a group if you assign them to the same controller number. They will always work as a group.

You can always monitor which controller numbers are assigned to the loop control by placing the cursor in the REVIEW area and using the UP or DOWN switches. Only those loops that are assigned to a controller number will show up when you scroll from this cursor position.

IMPORTANT NOTE #1: It is imperative that every loop in the Switchblade gets assigned a controller number except as stated below. Even loops that you do not plan on controlling. The reason you must do this is so the Switchblade can intelligently seek out alternate audio paths when figuring out how to reconnect effects in a preset when you remove or restore effects using the loop control. If you plan on adding an effect to an unused input and output at a future time, be sure to remember to assign a controller to that effect loop.

IMPORTANT NOTE #2: You must NOT assign a controller number to the instrument input (guitar for example) or main outputs (amp outputs for example) or any other connection that is not a real "loop" (effect device). Failure to comply with this rule will result in unpredictable operation of the loop control. There is an exception to this rule that you can use to mute your amp using loop control, which will be explained below in the section "Muting Amps".

THE DIFFERENT LOOP TYPES

You can select one of 3 different loop types when the cursor is under the TYPE section of the display. To use this feature effectively you should read this section.

NOTE: If you don't wish to dive into this particular feature and would rather just get the loop control up and running, then simply set all loops to the type OTHER and this will cover all situations quite nicely without any further action on your part. If you want the most effective control over how echos and reverbs respond during loop control or for special effects and most musical operation then you should chose the appropriate type for the loop.

FOR LOOPS ASSIGNED TYPE "OTHER"

If a loop is assigned the type "OTHER" then if an effect is in series with other effects, then the effect is removed (both it's input and output are removed) from the network and is replaced by a bypass between the device(s) immediately before the effect and the device(s) immediately after the effect so that the audio chain is not broken.

EFFECT INSERTED   EFFECT REMOVED
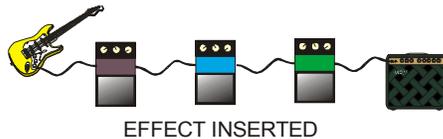
If an effect is in parallel with other effects, when the effect is removed, both it's input and output are removed from the network, but no bypass is created across the effect. A bypass is not necessary, nor is it desirable, as is the case when in series, since the audio has alternate pathways across the removed device. One exception to this is if the effect being removed is the last effect to be removed in which case a bypass pathway is created between the devices before the parallel effects and the devices after the parallel effects so the audio path is not broken.

EFFECT INSERTED   EFFECT REMOVED
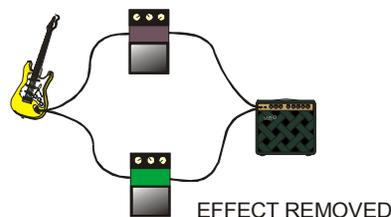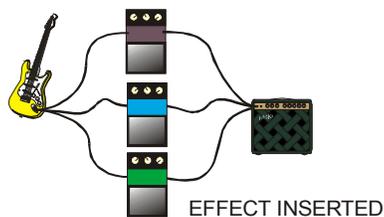
FOR LOOPS ASSIGNED TYPE "REVRB" (REVERB)

If a loop is assigned type "REVRB" it will be treated the same way as type OTHER except the output from the reverb is left connected to the audio network so that the trailing end of the audio can be heard even after the device is removed. The input to the effect is removed in all cases, and a bypass across the effect is created when the device is in series just as in type OTHER. An example of how a reverb type effect in series is handled is shown here:


EFFECT INSERTED

EFFECT REMOVED

An example of a reverb type effect in parallel is shown here:


EFFECT INSERTED

EFFECT REMOVED

Select type REVRB if you have a reverb device connected to a loop and if you always wish to hear the trailing edge of the reverb audio when the loop is turned off. You may also find this type useful if you use a multi-effect device which sometimes has reverb used as part of the effects. This type may also be useful if you use an echo in the loop and you have the echo "wet/dry" mix set for something other than full "wet".

FOR LOOPS ASSIGNED TYPE "ECHO"

If an echo is used as a loop and especially when an echo is used in full "wet" mode (an echo is in full "wet" mode when it's "wet/dry" mix setting is set to full "wet") then it is not desirable to bypass the audio across the echo when the effect is removed when it is in series. The reason for this is because quite often, an echo will be used to support the main audio path, which would be in parallel with it, rather than be a main part of the mix. Any devices that are in series with the echo after the echo should not be heard if the echo is removed except for the trailing edge of the echo. Therefore, when a loop is assigned type ECHO, then only it's audio input is removed, leaving the trailing edge of the echo audible. In this respect it is the same as type REVRB. The difference is that if an echo is in series with any other device, and it is removed, no bypass is made between the devices that feed the echo, and the devices that follow the echo. An example of an echo scenario is shown here. Here we have two parallel paths of series devices. The upper path is the direct audio signal (no echo) and the bottom is the echo pathway where only echoes are heard mixed in with the direct signal.

EFFECTS INSERTED
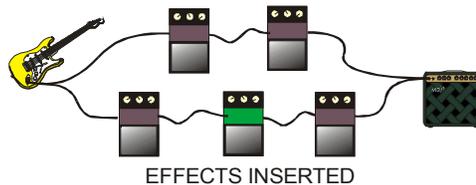
If the echo (center lower device) is removed, then the audio path is broken as expected except for the trailing echo. The result is shown here:

"ECHO" TYPE EFFECT REMOVED
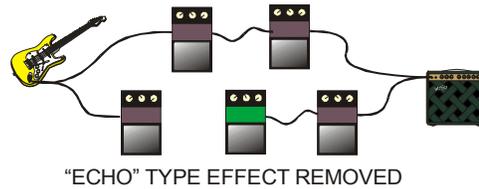
It is important to note that if any OTHER or REVRB type device in the echo pathway is removed, then the echo path continues to operate as expected since the users intent is only to alter the sound of the echo path and not actually remove the echo path. An example of removing an OTHER type device from the echo path is shown here:

"OTHER" TYPE EFFECT REMOVED
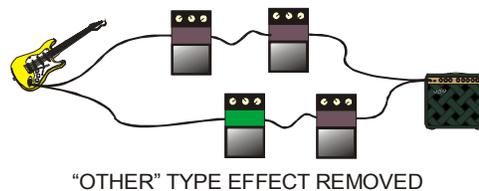
An echo used in parallel with other devices is treated exactly the same as type REVRB in that no bypass is made across the removed device. The one exception to this is if the echo is the last device to be removed in which case there is no bypass made across the echo whereas if a reverb type device is the last to be removed, then a bypass is inserted to avoid audio loss.

If an effect or series of effects is placed in parallel across an echo device, a bypass is created in parallel across the echo if the effect or series of effects are all removed. This is to continue to support a direct signal when in parallel across an echo, which is necessary in order to hear the first strike of the instrument. Again, this is different than what happens when two OTHER or REVRB type effects are in parallel. As described above, as long as there is at least one non-echo path for a signal to go through, then no bypass is created as effects are removed.

MUTING AMPS

It is possible to assign a controller to your amp output(s) and use a loop control switch to mute your amp or amps regardless of the preset you are in. This is a special case of Important Note #2 outlined above. To perform this function assign a Control Change number to a loop where the input is your GUITAR or other instrument and the output is the AMP you wish to mute. Select TYPE=ECHO for the loop type. **IMPORTANT: YOU MUST ASSIGN TYPE=ECHO TO THIS LOOP OR YOU WILL GET UNPREDICTABLE RESULTS.** If you have several amps connected and wish to mute them all with a single switch then create several loops with GUITAR as the input name (or whatever instrument you have connected and the names of each of your amps as the output. For example make a loop GUITAR AMP1, TYPE=ECHO and assign it to controller 0 and make another loop GUITAR AMP2, TYPE=ECHO and assign it to controller 0 as well. Then use controller 0 to mute the amps.

GENERAL OPERATING INSTRUCTIONS

Once the loops are assigned controller numbers in the setup menu the only thing left to do is program the foot controller to transmit loop control messages (Control Change messages). Refer to the section "PROGRAMMING YOUR MIDI FOOT CONTROLLER for tips on how to do this.

Be sure your Switchblade is in PLAY mode (greed LED lit), initialize the Switchblade once after power up with the current loop control switch states (refer to the UNIT POWER UP section), select a preset, and use your loop control by stepping on your loop control switches.

THE SWITCHBLADE PRESET PROGRAMMING MENU

When you are in the preset programming menu all loop states are temporarily ignored and set to ON. This is so you can hear all your connections and effects as you program them into the Switchblade regardless of the state of your foot controller. When you exit "programming mode" and return to "play mode" then the current state of the switches automatically takes effect.

UNIT POWER UP

When the Switchblade is first powered up, it's image of the controller states (on or off) from you footpedal is all "on". This is normally what you would expect since there may be cases where you are not using your foot controller at all and you don't want the Switchblade to randomly remove effects from your presets.

After you power up your Switchblade and your footpedal, be sure to transmit the states of all the footpedal loop control switches to the Switchblade. Some foot controllers do this automatically when you select a preset from the foot controller. If your foot controller does not do this automatically, then simply step on each loop control switch one at a time so the Switchblade can learn the state of the switch.

UNDERSTANDING CONTROL CHANGE MESSAGES

The loop control is controlled by a MIDI message called a Control Change message. This message contains 3 bytes of data. The first is the command itself mixed with the MIDI channel number, the second is the Control Change Number and the third byte is the Control Change Value. The Control Change Number is used to identify which of the loops is to be controlled as each loop is assigned it's own unique number. The Control Change Value in the message is used to insert or remove the device that is selected by the Control Change Number. Each time a switch that is set up for loop control is pressed the message sends out alternate Control Change Values. When the switch is pressed once a Control Change Value of 127 (or insert) is transmitted and when pressed again a value of 0 (or remove) is transmitted. Each footswitch will control one and only one loop and several switches are used to control several loops in real time.

CHOOSING A FOOT CONTROLLER

When selecting a foot controller for use with a Switchblade with *Smart Insert* be sure to choose one that allows you to program some of the footswitches for Control Change messages and that you have as many switches used for this function as you need. Your controller should also have the ability to accommodate at least 2 movable pedals so you can use the dual continuous controller feature of the Switchblade. Also be sure that *all* MIDI messages transmitted by the foot controller can be transmitted over the same MIDI channel. This includes Program messages, Control Change messages from the switches and Control Change messages from the 2 movable controllers.

PROGRAMMING YOUR FOOT CONTROLLER

When programming your foot controller for loop control be sure to program the switches you wish to use for loop control to transmit Control Change messages and not Program messages. In addition you will need to program the Control Change Number for that switch (the second byte in the MIDI message). Set this number to the number that you programmed into the LOOP ASSIGN MENU in the CONTROLLER ASSIGN area. Each switch will have a unique number.

For the Control Change Value you need to program "off" state to a value of 0 (the lowest number you can set the value to) and the "on" state to a value of 127 (the highest number you can set the value to).

Be sure the MIDI channel number you are transmitting on matches the MIDI channel number of the Switchblade. The factory setting of the Switchblade is MIDI channel 1. You can change the MIDI channel of the Switchblade by following the instructions in your user manual under "INPUT/OUTPUT DEFINITION MENU".

Note: Be aware that some foot controllers use a number range of 1-128 rather than 0-127 which is what the Switchblade uses. If your controller number only goes down as low as 1 and won't go to 0 then this means your controller uses the 1-128 range. In this case always remember to set the foot controller number 1 higher than the loop number you programmed into the Switchblade. In other words, if you assigned a loop a controller number of 5, then set your footswitch controller number to 6 if your foot controller uses a range of 1-128. If it uses a range of 0-127 then you will not need to adjust the number.

GENERAL OPERATING THEORY

Refer to this section to see the ways in which *Smart Insert* handles different conditions

**EFFECTS IN MULTIPLE PATHWAYS**

If the device to be removed has several sources or several destinations, then the Switchblade keeps these pathways and adjusts the gains as expected. An example of an effect with two destinations is shown here. After the effect (type OTHER) is removed the guitar is connected directly to the two amplifiers.

EFFECT INSERTED   EFFECT REMOVED

Here is an example of an effect with two sources and two destinations. When the effect is removed, the expected pathways are created.

EFFECT INSERTED   EFFECT REMOVED

For effects of type REVRB the same rules apply with the trailing edge of the reverb being heard when it is removed as shown here:
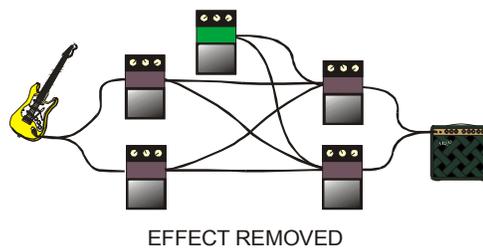
EFFECT REMOVED

WHEN MULTIPLE LOOPS ARE ASSIGNED TO A SINGLE CONTROLLER

If you are using stereo effects (stereo in /stereo out or mono in stereo out) you may wish to have the entire effects removed or inserted as a single effect. By assigning a single controller number to 2 or more loops as described in the programming section, you can do this. An example of what to expect when removing a stereo device is shown here. In this example the upper signal goes through one side of the stereo effect and the lower signal goes through other side of the stereo effect. When the effect is removed, both paths remain independent as expected.

EFFECT INSERTED   EFFECT REMOVED

THE HANDLING OF GAIN

The intelligent nature of the loop control automatically and fully takes care of all issues regarding gain between connections and issues concerning the use of the continuous controller functions. It compensates for gain as you would want it to.

If an effect is wired in series it's input and output signal gains are set by the user to some arbitrary value. If the effect is then removed using the loop control, then the bypass signal that is automatically created across the effect is set to a gain that reflects the signal gain through the effect when it was connected. This prevents any drastic change in volume that might occur if an effect is removed and simply bypassed with no regard to its gain. An example of this is shown here. The input to the effect is set to –3dB and the effect output is set to –6dB. This is an overall gain of –9dB through the effect. When the effect is removed the connection that replaces the effect is set to –9dB to keep the volume the same as it was when the effect was inserted.

-3dB   -6dB   -9dB
EFFECT INSERTED   EFFECT REMOVED

IMPORTANT NOTE: The Switchblade does not compensate for additional gains introduced by the effect itself. If an effect has an overall gain of +6dB for example as determined by the settings of it's input and output gain controls, then when the effect is removed the signal will sound 6dB quieter. To minimize this effect, all signal processors should be initially set up for as close to unity gain as is practical so that they neither boost nor cut the overall signal going through the effect. As a rule, this is something that should be done anyway even if not using *Smart Insert* to simplify programming presets and to keep gains uniform when going from preset to preset.

If an effect is wired in parallel, no adjustment is made to other pathways as no adjustment is needed. The only exception is if the last effect in several parallel effects is removed, the bypass that is created to continue the audio path is set to the gain of the last device to be removed, again avoiding any drastic changes in volume.

Interestingly, if you have two effects in parallel (called A and B for this example) with different gain settings through each effect, if A is first removed, then B is removed, the created bypass will be set to the gain of the B effect pathway. If the B effect is removed first, followed by A, then the gain of the created bypass reflects the gain of the A pathway instead. In other words, any time all of the effects are removed from a group of effects in parallel, the bypass that is created when the last effect is removed is always set to the gain of the last removed effect pathway.

If an effect already has a bypass programmed across it, then when the effect is removed, no additional bypass is created just as if the bypass were an actual effect. This is important to know, as whatever gain the bypass is set to is retained when the effect is removed. Take the example shown here. Three effects are in series, but the center effect also has a bypass programmed across it. If this bypass is set to let's say –9dB, then when the effect is removed, the bypass gain is retained at –9dB just as if it were an effect in parallel with the removed effect.

GAIN AND CONTINUOUS CONTROLLERS

If a continuous controller is assigned to the input or output (or both) of a device to be removed, and the device is in series, the bypassing signal across the removed signal is assigned to the controller instead and it's gain becomes the value of the gain settings of the removed effect in combination with the current pedal position. In other words, you will still have full pedal control of the signal even when the device that the pedal is assigned to is removed, keeping the volume of the pathway with the desired volume as dictated by the pedal position and avoiding any unexpected changes in volume.

In the event that the two different controllers available are used, one on the input and the other one on the output, the DOWN controllers current position is memorized and converted to a fixed gain, then combined with the UP controller as is shown in the above diagram.

This intelligence is carried over to any other type of continuous controller arrangements. For example with a 2 destination effect, set up for panning, the panning ability is retained when the effect is removed as shown here.

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ADDITIONAL ENHANCEMENTS TO THE UPGRADE

Smart insert is not the only feature added to the upgrade kit. This section describes the additional features.

RE-TRANSMIT PCC MENU

There is another new menu after the LOOP ASSIGNEMENT menu. This is the RE-TRANSMIT PCC menu and looks like this:

RETRANSMIT PCC-->YES

This menu gives the user the option of always transmitting the burst of Program Change Commands whenever a new preset is selected even if the same Program was transmitted by the preset you just came from. The Program Change Command burst is programmed by the user in the Preset Menu Tree in the MIDI OUT menu.

For example when set to YES, and you are coming from a preset that has just transmitted programs 5 and 10 and you go to a preset that transmits program 5 and 20, then both 5 and 20 are transmitted. In other words preset 5 was transmitted again even though you came from a preset that had already transmitted preset 5.

If this menu is set to NO, then in this same example, when the new preset is selected only Program 20 is transmitted and Program 5 is not transmitted since it had already been transmitted by the preset you came from.

Set this menu to YES if all of your MIDI effects have the ability to load their programs instantly and transmitting the same Program over again is of no consequence. If you have a signal processor that takes some time to load when a preset is selected, then set this menu to NO to avoid the delays in re-loading the same Program.

If you have no MIDI devices in your setup or if you do not use the Program transmit feature, then the setting of this menu is irrelevant.

REMOTE MODE ENHANCEMENTS

The System-Exclusive operation of the Switchblade has been enhanced to recover more gracefully when receiving an illegal Sys-Ex string and is more capable of receiving rapid transmissions of sequences of Sys-Ex strings and Control Change information without error. These enhancements will simplify the task of creating third party editors to communicate with the Switchblade. In addition error reporting has been added when an illegal sequence is received so an editor can intelligently retransmit information if necessary.

NEW SYS-EX COMMANDS ADDED

Two new Sys-Ex commands have been added. These are Write Preset and Read Preset. These two commands greatly increase the speed with which whole presets can be read, or written, to the Switchblade over the currently used method. These new commands greatly simplify the task for third party editors to be able to read and write presets to the Switchblade. In addition, future versions of Sound Sculpture's WinBlade program will use these commands to vastly increase the speed of the Upload, Download, and Compare functions in WinBlade. These new commands are described in detail in a separate document written for Sys-Ex developers.

NEW HIGHER SPEED PROCESSOR

A new double speed processor is used in the upgrade kit to enhance the overall operation of the Switchblade.

FAQ

Q: Is the upgrade kit easy to install?

A: Yes. After you remove the cover of your Switchblade using the included tool, remove the processor from the socket, and replace it with the new processor from the upgrade kit. Close up the cover and you are ready to start using *Smart Insert*. An installation guide is included in the upgrade kit.

Q: Do I need to make any modifications to my presets once I install the *Smart Insert* upgrade?

A: No. You will only need to properly program the new LOOP ASSIGN menu. Once that is done and you have properly programmed your foot controller to send out the correct Control Change messages, you are ready to go.

Q: Will *Smart Insert* work with any kind of preset programming?

A: Yes. You can still be as creative as you like when you program your presets and *Smart Insert* will work flawlessly with any preset you create.

Q: Were there any other enhancements made to the upgrade?

Y: Yes. See "ADDITIONAL ENHANCEMENTS TO THE UPGRADE" section for detailed descriptions of these enhancements.

Q: Will you be offering this upgrade to Studio Switchblade or Switchblade 16 owners?

A: At this point in time there are no plans to offer an upgrade for these models.

Q: Has the Switchblade interface changed in any way?

A: No. Other than the addition of the new Loop Control Menu and the new Re-Transmit menu, the menu interface has remained unchanged.

Q: Will *Smart Insert* work with stereo effects or with mono in/stereo out effects?

A: Yes. You can assign the two pairs of a stereo or mono/stereo device the same loop number and the device will be treated as a single device in all looping operations.

Q: Can I group several effects together to a use a single loop control on the group?

A: Yes. You can assign as many loops as you like to a single controller number. However, you will not have individual control over effects that are part of the group. This is a useful thing to do if you have a limited number of loop control switches.

Q: Will *Smart Insert* work with the two continuous controllers already available in the Switchblade?

A: Yes. *Smart Insert* works seamlessly with connections that are assigned to continuous controllers and re-assigns the controllers to the appropriate pathways when effects are removed.

Q: Is WinBlade compatible with the upgrade.

A: Yes, you can continue to use WinBlade as you always have with no changes to your files. Future versions of WinBlade will take advantage of the additional Sys-Ex command set to speed up certain operations.

Q: Am I going to be able to control my excitement after installing *Smart Insert*?

A: Probably not, but re-direct it toward your playing and you will be fine.