Acuma™ LABS

Saturated Fat™

Mono Distortion and Cabinet Modeling with 7-Band EQ

Plug-in for Mackie Digital Mixers

MACKIE®
Digital Systems™

Iconography
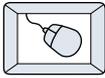
This icon identifies a description of how to perform an action with the mouse.

This icon identifies a description of how to perform an action from the console.

This icon will lead you to some further explanations of features and practical tips.

This icon marks information that is very important, so please make sure you have a read.

This icon does not appear in this guide.

Note: Any future revisions of this guide will be available for viewing and downloading from our website: www.mackie.com.
Further plug-in details and preset downloads can be obtained from www.acumalabs.com.

Contents

Introduction

Thank you for purchasing Saturated Fat from Acuma Labs. Saturated Fat is one of the 24-bit plug-ins for the D8B, specifically designed for the Mackie Universal Effects (UFX) card.

Saturated Fat is a mono distortion and cabinet modeling plug-in that employs an exciting new proprietary technology to achieve warm and natural-sounding tube saturation. Choose from over 40 preset distortion types to create your "perfect sound" or select from the array of factory presets to find a setting that suits any style of music. No more lengthy or loud "live" amplifier setups to contend with; just plug any instrument into the D8B and start playing! Saturated Fat's distinctive distortion types and cabinet models will give you killer sounds instantly.

About Acuma Labs

Acuma Labs develops real-time embedded systems for professional audio applications to create high-quality products for the music and pro-audio industries. Acuma specializes in digital audio effects using DSP, real-time operating systems, graphical user interfaces, and digital hardware design.
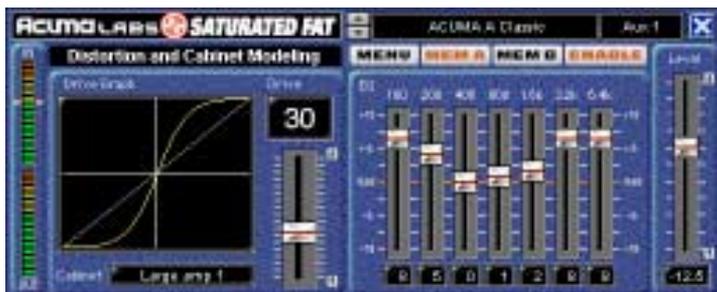
About the D8B UFX Card

The Mackie UFX card provides robust processing power for computation-heavy plug-ins. The UFX card is a 4-in/4-out architecture, which means it can support four mono, two mono and one stereo, or two stereo sends simultaneously. Up to four

UFX cards can be installed in the D8B, allowing up to sixteen simultaneous single-channel effects, eight stereo plug-ins, or combinations thereof.

Note: Earlier D8Bs were fitted with 16 MB of memory. It is recommended that you increase this to 32 MB (as fitted in newer D8Bs) if you install more than one UFX card. Memory upgrade instructions are supplied with each UFX card.

About Saturated Fat

Acuma Labs' Saturated Fat is a dedicated software plug-in for the Mackie Digital 8•Bus that utilizes 24-bit digital processing power to create high-quality distortion and cabinet modeling effects. Plug your guitar (or any instrument) directly into the Digital 8•Bus. Then choose from preset amplifier models with sounds that range from crisp solid state to rich saturated tubes. These amplifier models feature a variety of small and medium amps, larger 4x12s, as well as bass and acoustic cabinets. With a large variety of classic analog-styled presets and cabinet types, this plug-in offers an easy-to-use interface that controls master drive, output level, and cabinet types. Tweak your sound to perfection using the on-board 7-band (post-drive) EQ, save your edits as a preset, or set up a comparative reference by toggling between the Memory A and B settings. As with all Mackie plug-ins, Saturated Fat can be routed via an insert or auxiliary connection. It is an invaluable tool that enables you to create great sounds quickly and easily.

About Distortion Types

Saturated Fat is comprised of over 40 unique distortion types using a series of complex algorithms to create a wide variety of musical sounding tube and solid state drives that can be used in a variety of applications. Every factory preset is actually a specific distortion type, each with its own unique set of parameters and characteristics. Use the factory presets as convenient starting points to create your own set of personalized sounds that can be edited, saved, and recalled as user presets. Saturated Fat's sound is derived from a proprietary distortion modeling process making it the only distortion/modeler of its kind on the market as of this writing.

Let's Get Started

Requirements

- One or more Mackie UFX cards
- Mackie Real Time OS 3.0 Software
- Plug-in Software

We will assume you have successfully installed a Mackie UFX card and Mackie Real Time OS 3.0 software upgrade. If you have encountered problems with the installation of hardware or software, please see their associated user guides or contact Mackie support (www.mackie.com).

Authorizing the Plug-In

If you have Digital 8•Bus version 3.0, build 186 or higher, the Saturated Fat may already have been installed on the Digital 8•Bus hard drive via the demo kit. If not, go to www.mackie.com and download the Digital 8•Bus Plug-in Demo Kit for Macintosh or Windows. When the demo kit has been installed, the D8B's Setup Screen Licensing window displays a "locked" icon for Saturated Fat. You must enter an authorized unlock code to unlock the plug-in for normal operation.

An Unlocked Plug-in

AUTHORIZE

LICENSING

D8B Electronic Serial Number (ESN)

D8B SETUP screen's LICENSING window
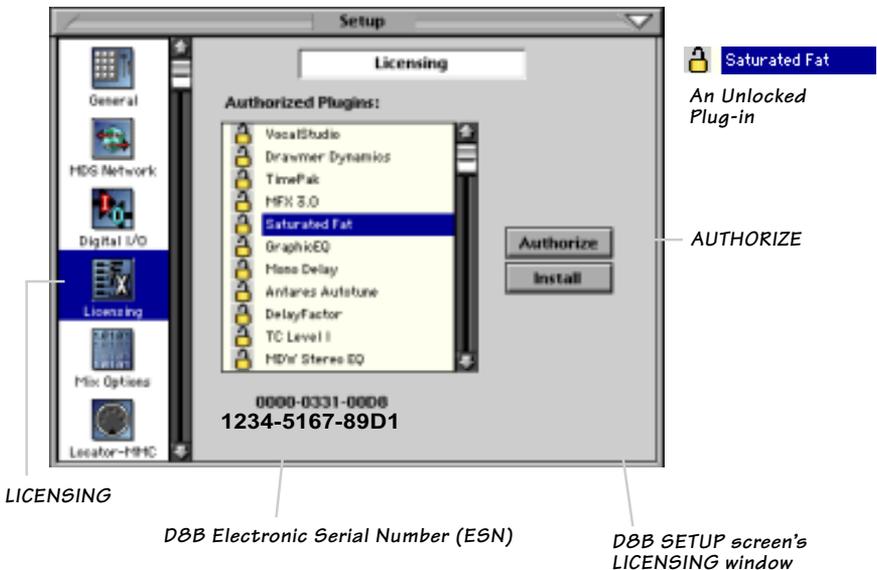
Unlock Procedure

1. Locate your D8B's Electronic Serial Number (ESN). This is displayed at the bottom of the Licensing window, which is accessed from the Setup screen. The 12-digit ESN is made from numbers 0–9 and letters A–F. It is unique to the D8B processor, and is not the same as the serial number on the rear of the control surface or CPU chassis.

2. You will also need your plug-in's serial number which is printed on the floppy disk label. If you download the plug-in, you won't have a serial number unless you purchase it (and obtain the floppy disk).

3. To obtain the unlock code, have the ESN and plug-in serial number ready. Then you have two options:
   • Log on to the Mackie plug-in authorization web page: (http://www.mackie.com/d8bauthorize.htm)
   or
   • Telephone Mackie Tech Support at 800-258-6883.

4. When you have obtained an unlock code, open the D8B Setup window, and click **Licensing**.

5. With your plug-in highlighted in the Licensing window, click **Authorize**, and enter your unlock code in the UNLOCK CODE box. Click **Enter**, and enjoy your newly expanded console.
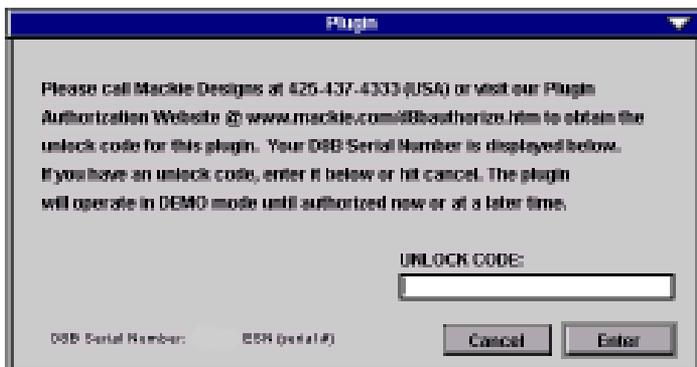
Configuring the Plug-In

After installing your UFX card, unlocking the plug-in, and booting up the D8B, all you need to do is assign the Saturated Fat to a UFX card slot.

Assigning the Mackie Saturated Fat to a UFX Card

1. Click the Plugins menu and select **Plugins**, or use the keyboard shortcut Ctrl+P.

Plugins	Windows
Plugins	Ctrl+P

2. In the Plugin Configuration menu, locate the card slot that contains the UFX card to which you want to assign the Saturated Fat.

3. In the MODE column, click the MONO/STEREO toggle button and select **MONO**.

4. In the PLUGIN column, select **Saturated Fat**.

It should look something like this:

SLOT	INPUT	PLUGIN	MODE
1	Aux 1	DelayFactor	STEREO
2	Aux 2		STEREO
3	Ch. 3 Pre	FilterMachine	STEREO
4	Ch. 4 Pre		STEREO
5	Ch. 5	TimePak	STEREO
6	Ch. 6		STEREO
7	Ch. 7 Pre	Mono Delay	MONO
8	Ch. 8 Pre	Saturated Fat	MONO
9		none	MONO
10		none	MONO
11	Mix L	GraphicEQ	MONO
12	Mix R	GraphicEQ	MONO
13	Aux 7		N/A
14	Aux 8	MFX 3.0	N/A
15			N/A
16			N/A

Plugin Configuration

Note: A plug-in can also be loaded from the Setup section on the console.

Assigning an Input Source

- Click the plug-in's **INPUT** button to select an input source. In the example below, we have chosen the **Aux 5** Bus as the input to the plug-in installed in slot 4.

- When a plug-in is fed from an aux bus, its output appears on the FX Return channels (faders in the EFFECTS bank). The return channel is determined by the slot number and whether the effect output is mono or stereo. For example, a reverb with a mono input and stereo output that is installed in Slot 5 has its outputs on FX 5 and FX 6. **Note:** The default state for all FX channels is MUTE. You won't hear the effect until you unmute its FX return channel(s).

- A plug-in can also receive its input from a channel pre- or post-DSP insert or the main stereo left and right bus. When a plug-in is inserted in this manner, its output is routed directly back into the channel. See FX Routing on page 22 for more details.

Deactivating the Plug-In

1. Select **none** from the associated Plugin pull-down assignment menu.

2. Click **OK** in the Alert dialog box.

VERY IMPORTANT
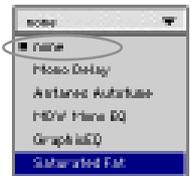
Warning: Deactivating a plug-in erases all automation data for the plug-in.

Using Saturated Fat

Front Panel Overview

You can think of Saturated Fat as being broken into four blocks: the status block, the distortion/cabinet select (graph block), the global controls block, and the graphic EQ (controls block).
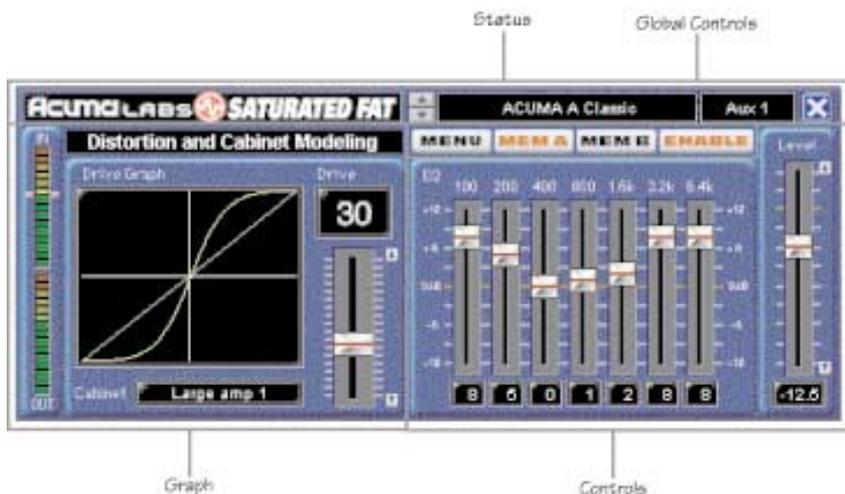
Status Block (see page 12)
The Status block includes the up/down toggle buttons, the preset title window, the input select, and the minimize buttons.

Graph Block (Distortion Drive and Level Controls - see page 13)
The Graph block includes input/output meters, the cabinet select, the drive graph, and the drive level (0-80).

Global Controls Block (see page 14)
The Global Controls include MENU, Memory A and Memory B select buttons, and the Enable button.

Controls Block (EQ and Level Controls - see page 15)
The Controls block includes the 7-Band Graphic Equalizer and the Level Slider.

Status Block

The Up/Down Toggle Buttons
The up/down arrows located to the left of the Preset Title window enable you to scroll up or down through the Factory or User Presets.

Distortion Types
Tip: Build your own customized presets by selecting a factory preset (distortion type) that is closest to a sound that you want to hear and experimenting with the settings. If you are saving a customized preset, use naming conventions that reference the original factory preset name (source). For example: factory preset = (ACUMA Crunch) might become user preset (Crunch_Crunchier).

Preset Title Window
The preset title window displays the currently selected preset. This contains drive level, cabinet type, and EQ settings. Click on the window to open a pull-down menu that selects specific factory or user presets.

Input Select
The Input Select is located directly to the right of the Preset Title window and places Saturated Fat into the Digital 8•Bus' architecture. Use your mouse to select channel pre/post insert, auxiliary, or master insert patch locataions.

Minimize Button
The (X) minimize button is located just to the right of the Input Select window. Pressing the (X) will hide the GUI (Graphical User Interface) for better viewing of the Digital 8•Bus screen.

Graph Block (Distortion Drive and Level Controls)
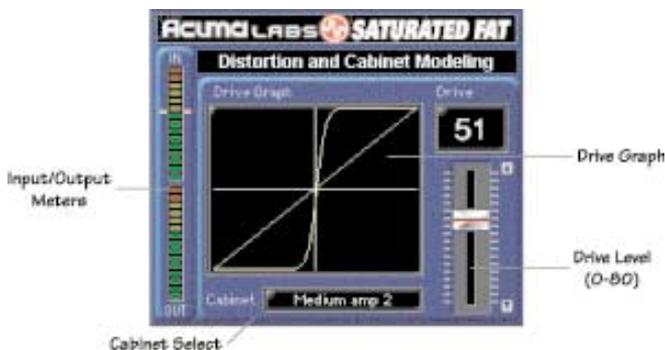
Input/Output Meters

The input and output meters located at the far left-hand side of the GUI represent the incoming signal and the output (post-effect) signal. The IN meter is determined by the amount of aux or insert level sent from the Digital 8•Bus. The OUT meter is controlled with the Drive Level slider found on the far right-hand side of the graph block. You will notice the output level may need to be adjusted using the Drive Level slider to compensate for changes made in the Drive, Cabinet, and EQ settings.

Cabinet Select

Click on the currently displayed cabinet model type window to open the Cabinet pull-down panel. Scroll through the menu to select from a list of the preset cabinet model types. Different cabinet model types will have a noticeable effect on the Drive, EQ, and Output Level. See the "Cabinet Modeling" Closer Look on Page 15 for more information.

Drive Graph

The Drive Graph is a visual representation of the drive level amount, which ranges from 0 to 80 dB. You can change the distortion drive level by clicking and dragging anywhere on the distortion drive graph.

Drive Level (0-80)

Drive Level controls how much gain is applied to the input signal through the amp model. This affects how distorted the signal becomes, i.e., more distortion drive level means more distortion.

Global Controls Block

Memory A Select Button — Enable Button

MENU Button — Memory B Select Button
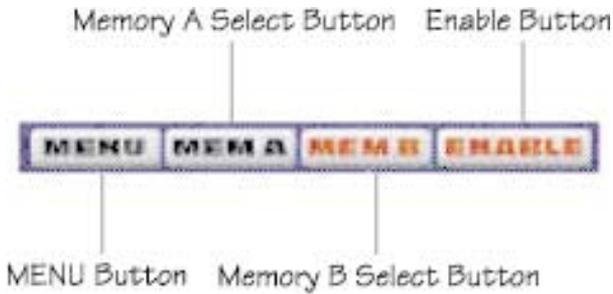
MENU
Pressing the **MENU** button opens a pull-down menu that performs familiar functions such as load, save as, cut, copy, and paste.

Memory A/Memory B
The MEM A and MEM B buttons store Saturated Fat settings to allow comparative referencing. You can also copy and paste settings from one location to another.

ENABLE
This button simply enables or disables Saturated Fat for a wet/dry comparison.

Controls Block (EQ and Level Controls)
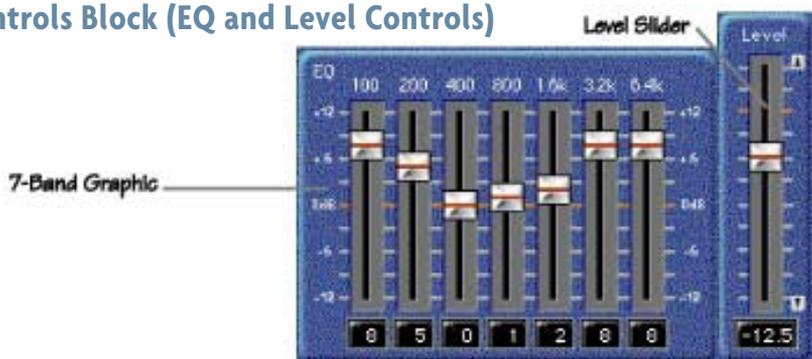
7-Band Graphic Equalizer

Saturated Fat's 7-Band Graphic Equalizer section (100Hz to 6.4kHz) has been specifically selected to be musically appropriate for use with distortion. Each of the seven sliders ranges from –12 db to +12 db. Use the Graphic EQ to tweak Saturated Fat's distortion settings to your satisfaction.

Level

Finally, the Level slider at the far right-hand side of the controls block adjusts the post-effect output level and ranges from off to +12 db. (Remember, changing Drive, Cabinet type, or EQ parameters will affect the overall output level. Use the Level slider to compensate for changes that affect the output level.)

VERY IMPORTANT

Note: Level is post distortion, pre EQ, to allow for headroom through the EQ section.

A CLOSER LOOK

Cabinet Modeling: Saturated Fat offers realistic cabinet modeling that enables you to select from a wide variety of classic amplifier types, ranging from small and medium enclosures to larger 4x12s, bass, and acoustic guitar amplifiers. The nature of the different cabinet types will have a dramatic effect on your signal. Scroll through the different cabinet types to find one that best suits your input and then customize your sound by choosing from the wide array of Factory distortion presets, adjusting the drive level and the 7-band EQ for just the right tone.

Tips and Tricks

Care and Feeding of Your Saturated Fat

Like any other exotic animal, it's critical that you feed (send) the proper amount of level into your Saturated Fat whether you are using aux sends or inserts. The input meter (found at the left-hand side of the graph block—see the illustration on page 13), represents the amount of signal that is being sent into the effect. The small yellow hash marks (about three quarters of the way up the ladder and just off to either side) represent the optimum input setting. Set your level so that the top green LED is averaging at the hash mark. Peaks should reach above the hash marks into one or two yellow bars. If you send a low input signal into Saturated Fat, you'll notice the distortion effect level will suddenly jump out at you. Conversely, if you are sending too much level into Saturated Fat, the distortion level will actually decrease. A good way to check your levels (wet/dry mix) is to simply toggle the Enable button found in the global controls block (see the illustration on page 14). The apparent output level should be approximately the same from the distorted or dry mix.

Noisy Single Coil Pickups

Get the most out of your Saturated Fat using the Digital 8•Bus Noise Gate to quiet down those noisy single coil pickups.

1. Plug your favorite old guitar with single coil pickups directly into a line input of the Digital 8•Bus. If your guitar is like an old Strat, it'll be pretty obnoxious and noisy, right?
2. Now insert your guitar channel into Saturated Fat as a post-insert.
3. Scroll through the Saturated Fat presets until you find one that is close to what you are looking for, then tweak it to your liking.
4. Hit the select button to choose the correct input strip. Next, bring up the Digital 8•Bus Fat Channel and enable the Gate (On).

5. Adjust the threshold to your muted guitar strings. Don't play yet—you just want to listen to the noise to determine the correct (Fat Channel) Gate settings for your setup. Assuming you are feeding enough signal to the effect, the threshold should be around –30/–40 dB to –16 dB (depending on your pickups).
6. Subjectively, set the attack at about 5 to 10 milliseconds and the release to 10 milliseconds (the quickest release time possible).
   Note: Short release times can cut audio, so play with the settings to maintain audio but still cut noise.
7. Set the range somewhere between 40 and 100 dB.
8. Crank up the volume and let it rip. You should notice that the noisy single coil hum is gone or at least greatly reduced when you are not playing.

The Drum-Bass

An interesting thing happens to a bass drum when you run it through Saturated Fat, whether it's a loop or an isolated kick from a multi-track session. The attack and the pitch of the drum can vary with each hit because a drummer never hits the pedal exactly the same way twice. When enough distortion is applied to this signal, the sound of the kick will change and begin to sound more like a bass line. Many Hip-Hop and Rap producers use this to create a simplistic yet ultra cool bass-line, sample it as a stand-alone part and combine it with the original dry drum tracks.

Distortion – The All-around Spice

Saturated Fat can have a cool and unpredictable effect on a variety of sound sources beyond the electric guitar. For example, when used sparingly, Saturated Fat can actually warm up an acoustic guitar, lend a bit of grit to a vocal, or even round out a full mix. Try adding a bit of Saturated Fat to almost any signal. You may be pleasantly surprised by some of the results.

VERY IMPORTANT Note: When using the 7-band graphic EQ, post-drive will deliver a richer harmonic content, while pre-drive will be less dramatic.

Saving, Loading and Resetting a Preset

Saturated Fat settings can be saved and recalled from the hard drive. You can save and load files to either Memory A or Memory B.

To Save a Preset:

1. Click and hold the **MENU** button.

2. Select **Save User Preset** to overwrite the file currently opened.

3. Select **Save User Preset As** to save to a new file name. The Save Preset File As dialog box appears.

4. A default name for the preset is automatically displayed, such as Preset#1. If you want to rename it, simply type the name you want, using up to 20 characters.
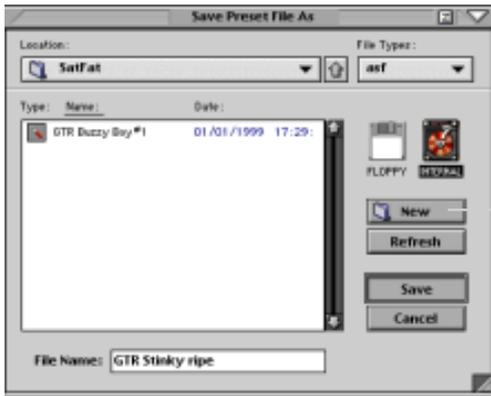
A new subfolder can be easily created to help organize custom patches.

5. Select **INTERNAL** (default hard drive) or **FLOPPY**.

6. Click **Save** to complete the operation.

To Load a Preset:

1. Click **MEM A** or **MEM B** to choose the memory location from which to load the file.

2. Click and hold the **MENU** button.

3. Select **Load Saturated Fat** to open a file. The Load Preset File dialog box appears.
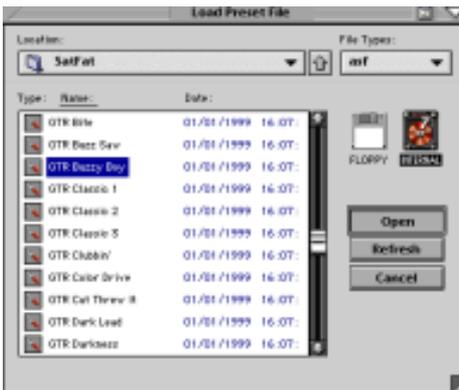
4. Click **INTERNAL** if the file is on the internal hard drive, or click **FLOPPY** if the file is on a floppy disk.

5. Select the preset you want to load.

6. Click **Open** to load the selected preset.

Click in the Preset Display to load from the pull-down menu or scroll through presets using the Up/Down buttons alternatively.

VERY IMPORTANT

Note: **Presets can also be downloaded from www.acumalabs.com, then saved to a floppy disk and loaded onto the D8B.**

To Reset the Preset:

Reset will reload the previous patch.

1. Click and hold the **MENU** button.

2. Select **Reset Saturated Fat**.

To Cut Preset Settings:

1. Click and hold the **MENU** button.

2. Select **Cut SatFat**.

The current settings are temporarily stored in the clipboard memory in case you want to paste them to a new preset. The plug-in also reverts to its default state (it is reset).

To Copy Preset Settings:

1. Click and hold the **MENU** button.

2. Select **Copy**.

The current settings are temporarily stored in the clipboard memory in case you want to paste them to a new patch.

To Paste Preset Settings:

1. Click and hold the **MENU** button.

2. Select **Paste Saturated Fat**.

The current settings are replaced with the setting in the clipboard memory.

Automation and Snapshot Control

Dynamic Real Time

To Write Automation on a Loaded Plug-In:

1. Engage AUTO TOUCH.

2. Engage ALL, disengage BYPASS, and send timecode to the console – the POSITION readout changes to show time code is being received.
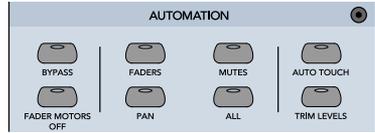
3. Move a parameter or recall a patch (user or factory preset).

Subsequent edits to any recorded automation moves may be performed in the Mix Editor. Enable the channel view by clicking the Channel View button, then choose the plug-in you wish to view from the page pull-down menu. This displays a list of available channel and plug-in parameters.

Note: Parameters can be controlled from either the GUI plug-in graphic parameters (using a mouse to modify the parameters) or via the VFD V-Pots and SELECT buttons (with the plug-in parameters called up on the VFD readout).

Dynamic Off-Line

To Write a Snapshot on a Loaded Plug-In:

• Use the Event Automation Track, available under the Window Menu as 'Event Track', to load plug-in user (previously stored) or factory preset patches at a specific time during automation playback.

General Note:
Plug-in settings are recalled as part of a console Snapshot, but may also be recalled as Presets (patches). If you are recalling snapshots and presets, be aware that one may override the other.

FX Routing

The Plugin Configuration Window

Card Slot Column

Input Source As-
signment Column

Plugin Assign-
ment Column

Close Window

Plug-in
display toggle

Input Channel
Assignment Pull-
down Menu Button

Card A

Card B

Card C

Card D

Stereo/Mono
Mode Column

Stereo/Mono
Toggle Button
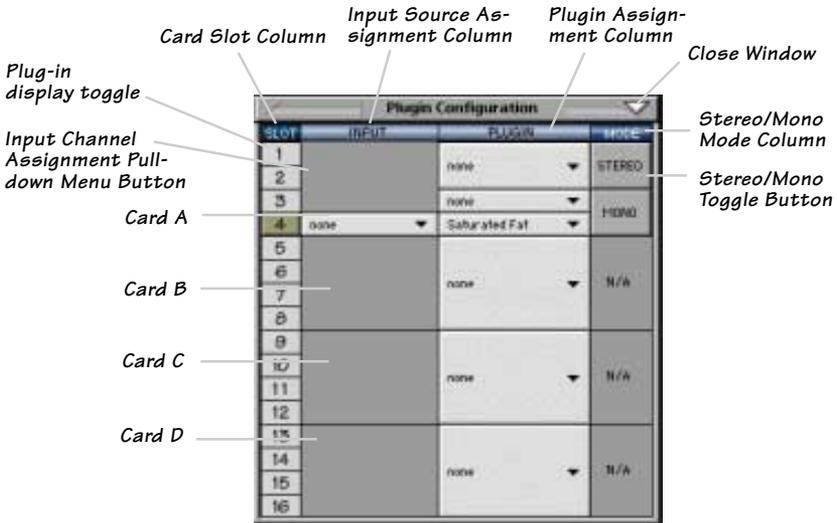
Select Saturated Fat from the Plugin configuration window in
one of two ways. You may go to the Plugin pull-down menu at
the top of the Digital 8•Bus software or press the associated hot
key to bring it back into view. You may also select Saturated Fat
from the Plugin Bar at the bottom of the Digital 8•Bus software
to bring it back into view.

Inserting a Plug-in into a Channel

A pre- or post-DSP channel insert can also be used as the input source for a plug-in. When a channel insert point is selected, the plug-in output returns to the channel. The FX return path is disconnected, although the plug-in output is still displayed on the FX return channel meter.

A plug-in channel insert assignment can be made from the Plugin Configuration window, or from a pull-down menu from the mixer screen.
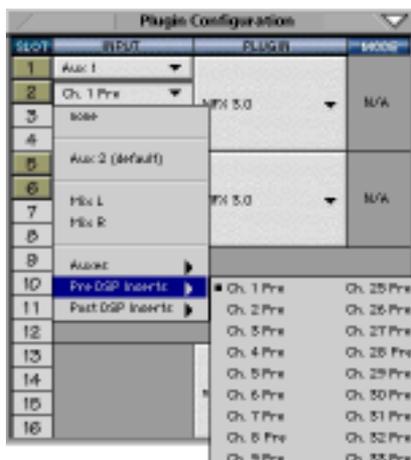
Plugin Configuration Window
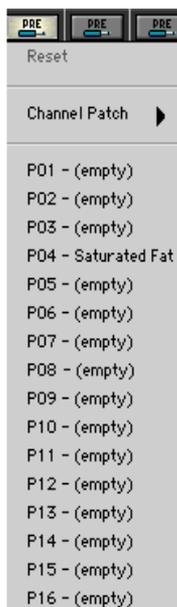
Pre-DSP Pull-down
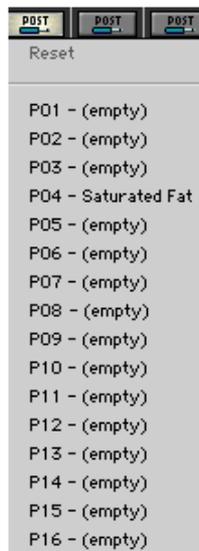
Post-DSP Pull-down

This assignment can also be made from the control surface and VFD by holding in the desired channel's SELECT button for two seconds, then paging over to Plug Pre or Plug Post, selecting the input source, then selecting the desired plug-in slot from the guided menu.

Using an Aux Send with a Plug-In

 • Click on the associated **INPUT** menu button and select an Aux input source. In the example below, we have chosen the **Aux 5** Bus.
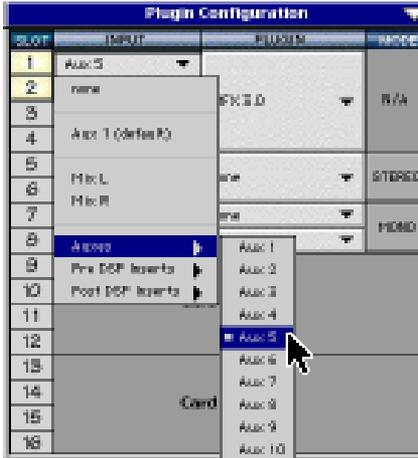
Send the Input Signal to the Aux Bus

1. Send a signal to a D8B mixer input channel (MIC/LINE or TAPE IN).

2. Assign the input channel V-Pot/GUI Control Pot to an aux send. We have chosen **AUX 5** according to the example above.

3. Use the **AUX 5** control to adjust the input level to the plug-in.

GUI Control Pot Assigned to AUX 5

Remember to select an aux send before using the V-pot or GUI Control Pot on the mixer input channel (MIC/LINE or TAPE IN).

You will see the plug-in's input meter become active as you raise the mixer input channel's aux send.

Set the plug-in input/output signal levels as you would with any effect, so the meter reaches its upper-most range every so often (always trust your ears first). This can be accomplished from the console or GUI.

Pre-Fader and Post-Fader Auxiliary Sends

Normally, effects sends are post-fader, so the signal sent to the effect follows the program level in the mix. Occasionally you may wish to feed an effect from a pre-fader source so that the signal level from the aux control is independent of the channel fader position. Aux sends are selectable pre- or post-fader globally (all Aux 1's for instance) from the Mix Options screen in the Setup window, or individually on a channel-by-channel basis from either the channel strip or the Fat Channel.

In the channel strip, Alt-click the Aux Send level indicator to toggle between pre-and post-fader operation. Post-fader is indicated by a red bar, pre-fader is indicated by a yellow bar.

Channel Strip
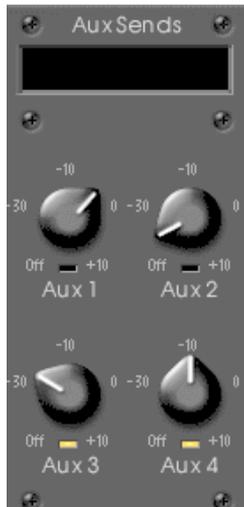
Fat Channel

In the Fat Channel, clicking on the small indicators below the Aux knobs toggles between pre- and post-fader operation. Yellow indicates pre-fader, otherwise the Aux is post-fader.

The FX Return Channel
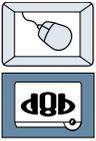
⋄ Switch the D8B Bank Select to **EFFECTS (49-72)** and bring up faders one and two (channels 49 and 50). You will also see meter activity associated with these channels.

FX Channels 1&2
(channels 49&50)

Mono plug-in
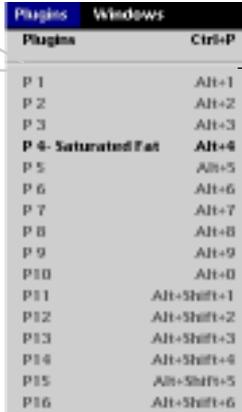
The Plug button toggles between Windows menu buttons and FX buttons (lower left on the D8B mixer screen).

Plug-ins button opens the Patch Configuration window (or `Ctrl-P` on the keyboard)

Here the Saturated Fat plug-in is selected for display.
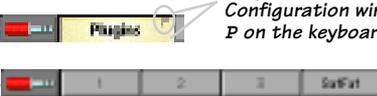
Saturated Fat Top Ten Factory Presets

The following table is a simple guide to help you understand some of the factory presets and which type of source file was used. Don't hesitate to run just about any signal through Saturated Fat to create your own user presets with custom parameters that meet your specific needs. So get creative and have fun! Please visit www.acumalabs.com periodically to download new audio examples and additional free presets.

Preset Name	Instrument	Comments
A Classic	Guitar	Blues, Jazz Rock
Buzz	Guitar	Alternative, Heavy
Crunch	Guitar	Rock, Heavy Blues
Drive	Guitar	All-around
Gritty	Guitar	Swamp, Funky
Heavy	Guitar	Metal
Nasty	Guitar	Low down blues, Rock
Over Drive	Guitar	Warm tasty drive
Screamer	Guitar	Tube Screamer like
Tube Drive	Guitar	Tube Amplifier

VERY IMPORTANT

Note: Saturated Fat has many distortion types that are designed to be used with a wide variety of sound applications. However, the Top Ten are designed for use with guitar.

A CLOSER LOOK

Note: Algorithms can change slightly from preset to preset.