Cyber-Twin™

INSTRUCTION MANUAL

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www.fender.com

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CORONA, CA USA

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Important Safety Instructions

This symbol warns the user of dangerous voltage levels localized within the enclosure.

This symbol advises the user to read all accompanying literature for safe operation of the unit.

WARNINGS:

- ✦ TO PREVENT DAMAGE, FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.
- ✦ THIS UNIT MUST BE EARTH GROUNDED.
- ✦ CONNECT TO AN AC POWER SUPPLY IN ACCORDANCE WITH THE VOLTAGE AND FREQUENCY RATINGS AS SHOWN ON THE REAR PANEL OF THE UNIT.
- ✦ SWITCH OFF POWER TO THE UNIT AND UNPLUG THE AC POWER LINE CORD BEFORE CLEANING THE UNIT'S EXTERIOR. CLEAN WITH ONLY A DAMP CLOTH. ALLOW THE UNIT TO COMPLETELY DRY BEFORE RECONNECTING IT TO THE AC POWER SUPPLY.
- ✦ DO NOT ALTER THE AC POWER LINE CORD.

- ✦ KEEP 6 INCHES (15.3 cm) OF UNOBSTRUCTED AIR SPACE BEHIND THE UNIT TO ALLOW FOR PROPER COOLING BY VENTILATION.
- ✦ FENDER AMPLIFIERS AND LOUDSPEAKERS ARE CAPABLE OF PRODUCING VERY HIGH SOUND PRESSURE LEVELS WHICH MAY CAUSE TEMPORARY OR PERMANENT HEARING DAMAGE. USE CARE WHEN SETTING AND ADJUSTING VOLUME LEVELS DURING USE.
- ✦ NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

FCC COMPLIANCE NOTICE

This equipment has been tested and found to comply within the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide a reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not used in accordance with the instructions, may cause harmful interference to radio communications and there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: reorient or relocate the receiving antenna, increase the separation between the equipment and receiver, connect the equipment into an outlet on a circuit different from that of the receiver. Consult the dealer or an experienced radio/TV technician if help is needed.

Foreword

“Any sufficiently advanced technology is indistinguishable from magic.”

—Arthur C. Clark

It’s a funny thing; the better stuff gets, the more unimpressive the act of creating it appears to the casual viewer. For example: Have you ever watched Jimi Hendrix play live? Whether on video or in person, the most striking thing about Jimi was the apparent ease with which he created that glorious cacophony. No scrunched up faces; bent over gas-pained stances; little if any sweating... Nothing except that sublime peaceful look of total contact with his soul.

Well, technology has finally caught up with us antiquarian guitar players. Initially scoffed at by the masses, digitized effects and amplification have found their way into the tonal mainstream where just a few years ago only tubes dared to tread. But, there is a price to pay. Putting aside for a moment the requisite stack of manuals, their lack of elegance and simplicity, modern digital technology has been used to “model” or “mirror” the most sought after guitar tones - and in some cases it comes pretty close. But more often than not, following the initial exciting experience, fatigue quickly sets in. For after all, these products are merely mimicking a one-dimensional snapshot of specific parameters or a particular moment in time. A far cry from the wonderful chaos that is at the heart of great tone.

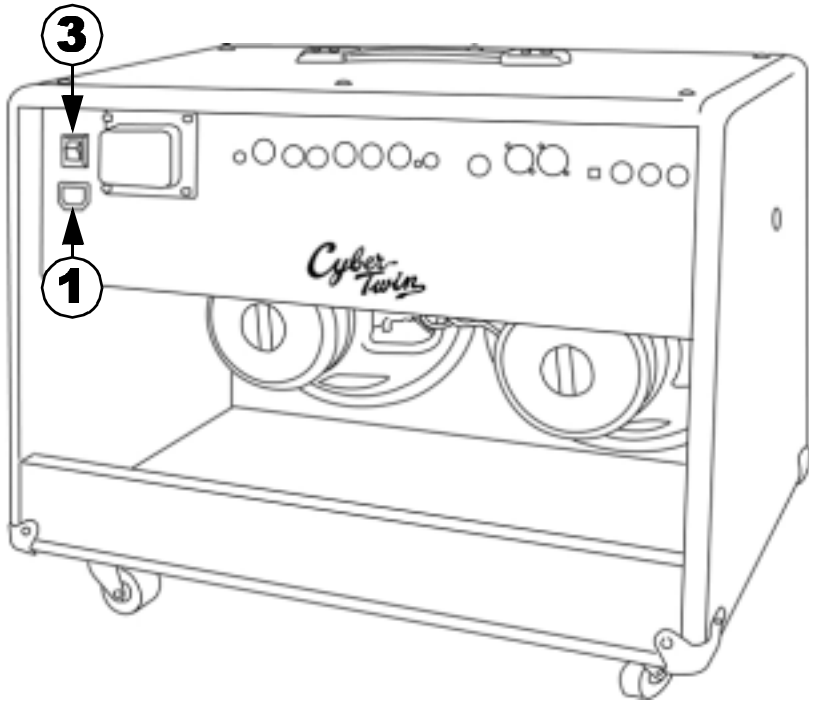
Enter the Cyber-Twin project. Since day one, Fender has been about finding one’s own path - the invention of the original Telecaster in an era of arched top jazz guitars is the ultimate example of Leo Fender’s self expression and free thinking. Originally derided as a “plank,” theTelecaster went on to spawn an entire industry of solid body guitars and the amps they require. The Cyber-Twin team got together under the same rallying cry - “Innovate… Don’t Emulate” was the rule of the day.

Not even remotely like any other “digital” amp or processor on the market today, the Cyber-Twin is a robotic “shape shifter” which reconfigures itself to literally *become* different amps, changing topology and component values in the blink of an eye. The result is nothing short of stunning. Unlike the “snapshot” amps, each master program or “Source Amp” on the Cyber-Twin is a different amplifier, each one with its own complete palette of tones and feel waiting for you to explore.

The Cyber-Twin is a complete collection of Fender amps and their medley of voices. It is a marriage of patented, cutting edge technology and fifty-year old vacuum tube circuits working together to create the entire experience. The only drawback that I can see is like Jimi, the Cyber-Twin’s familiar look and simple interface also makes it all look a little too easy. Maybe it really is just magic.

Ritchie Fliegler

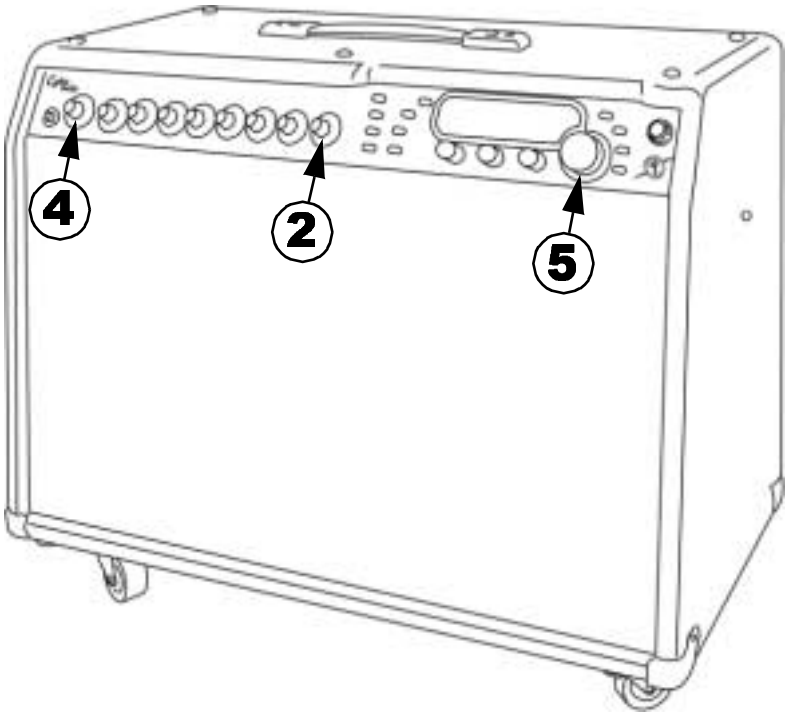
QUICK START



1 Plug in the supplied power cord after reading, *"Important Safety Instructions" on page 1*.

2 Turn MASTER down and plug in your guitar.

3 Switch the POWER ON.



4 Adjust TRIM so that most of the Green LEDs stay on and the Red LED flashes occasionally while playing guitar. Turn MASTER to desired level.

5 Rotate the large DATA WHEEL to try different Amp Design Pre-sets. Experiment and play guitar!

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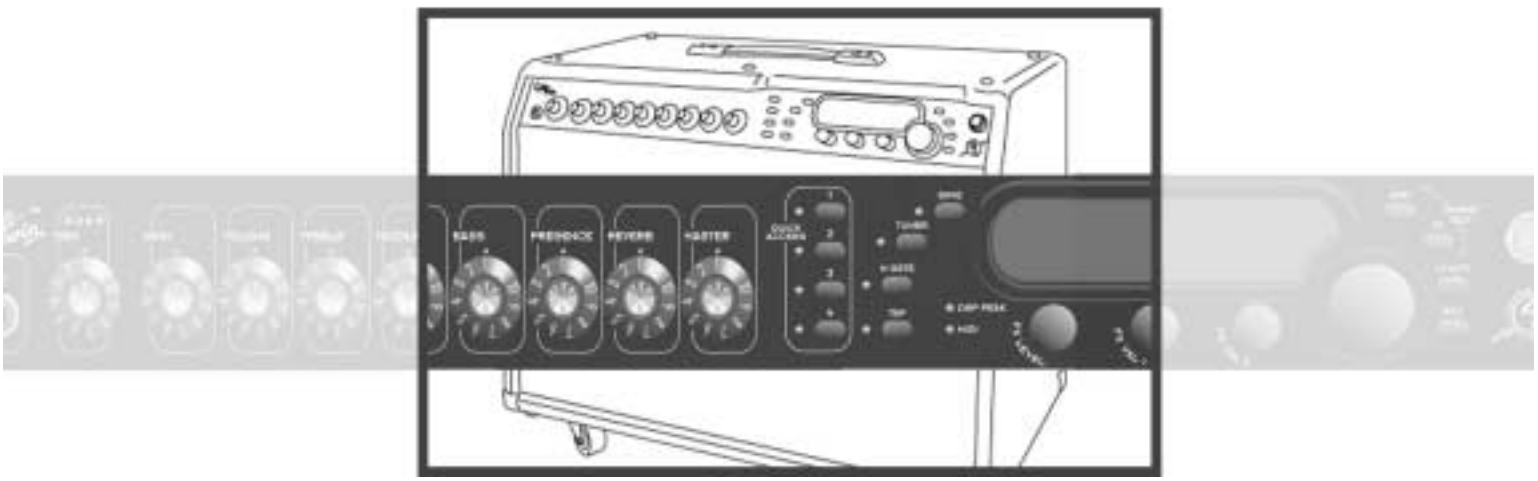
1 ✧ INTRODUCTION

The **Cyber-Twin**™ is the flagship in a new class of amplifiers at Fender®. Exclusive Fender technology, ***Virtual Tone Interpolation***™ (*patent pending*) enables the Cyber-Twin to "*become*" different amplifiers according to their circuit designs. Starting with a *virtual* circuit board and components, the Cyber-Twin "rewires" its internal architecture to become the greatest *amp circuit designs* of all time including, Fender's 59 Bassman®, Twin Reverb®, Dyna-Touch™, Hot Rod™, Pro Amp™ and "Her Majesty's Bassman," to name just a few.

The Cyber-Twin allows *you* to be the *amp designer*. You'll truly appreciate the ability to pull the drive circuitry off of a Hot Rod™ for instance, and put it with the tone stack from a British amp—and even though *they* say the tone stack should come *after the* drive circuit in the signal path, you put it *before.* Add Gated Reverb—and just for kicks—dial up the Speaker Polarity menu to reverse the phase of the *right* side speaker. Test drive that setup and if it sounds good, *save it*. If not, choose from the 120 built-in amp designs and start by modifying one of them. On-board there's room for 85 of your own amp designs in THE PLAYER'S LOUNGE. MIDI implementation on the Cyber-Twin enables you to transfer presets to and from the Cyber-Twin for backup or exchange with other Cyber-Twin players.



The Cyber-Twin puts a warehouse of studio quality FX at your command. All the stereo delay and modulation FX that you'd expect, plus special FX like a virtual analog tape echo, and a backwards delay. A catalog of Reverbs from spring to plate is also included in the Cyber-Twin's arsenal.

The list of features is extensive, and the number of possibilities is unlimited. For immediate satisfaction, plug in, and use the large DATA WHEEL to pick from 85 ready-to-go Amp/FX setups in the FENDER CUSTOM SHOP, or choose from 35 classic amp designs in YOUR AMP COLLECTION. Then spend some time swapping components, and adding FX to create your own *Cyber-rig*.

Thank you for choosing Fender—Tone, Tradition, and Innovation—since 1946.

Features of the Cyber-Twin

40 **Character Display** gives menu driven options, prompts for input and basic amp design information

1 **Dynamic DATA WHEEL** controls the major parameter in most operations to keep your input simple and focused on the messages appearing in the Display screens.

6 **Modes:** ✦ Play Guitar ✦ Amp Preset Edit ✦ FX Edit ✦ Utility/MIDI ✦ Tuner ✦ Demo

8 **Motorized Knobs** automatically reposition themselves as each Preset is selected, and in response to MIDI continuous controller data or input coming from the pedals or footswitches

205 **Amplifier Design Presets**:

- ✦ 85 **"FENDER CUSTOM SHOP"** – permanent – Custom Amp Designs setup with FX
- ✦ 85 **"PLAYER'S LOUNGE"** – *rewritable* – Amps Designed by You
- ✦ 35 **"YOUR AMP COLLECTION"** – permanent – Classic Amp Designs as originally manufactured

♫ **MIDI Implementation**:[1]

- ✦ 23 **Continuous Controllers** for auto-control by external MIDI equipment (sequencer/computer)
- ✦ 1 **Assignable Continuous Controller** for remote control of a *dynamic* parameter
- ✦ 4 **System Exclusive** functions for transferring Presets and updating Systems

16 **Drive Circuitry** selections**:** ✦ 12 Tube types, ✦ 4 Solid State types

2 **Vacuum Tubes** are used in the tube drive circuitry and in the analog circuitry, (12AX7WA's)

4 **Tone Stacks**, each with ✧ 2 location parameters (before/after the Drive Circuitry)

28 **FX** (effects) selections, each with ✧ 4 or 5 adjustable parameters:

✦ 10 Delay effects, ✦ 11 Modulation effects, ✦ 3 Special effects, ✦ 4 Paired effects

11 **Reverb** types, each with ✧ 4 adjustable parameters

4 **Compression** Level settings

3 **Noise Gate** Level settings with ✧ 1 adjustable Depth parameter

4 **Timbre** types give instant tone boosts for accent or balance

4 **Line/Speaker Phase,** select standard or reverse polarity for each speaker independently.

8 **Bypass Reverb/Effects** combinations; toggle by footswitch, one combination programmable per preset or ✧ toggle 'rotor speeds' when using the Vibratone effect.

4 **Quick Access Keys** assign favorite Amp Design Presets for convenient, one key access

4 **Button Footswitch**, offers *remote* access to the 4 Quick Access Keys

1 **Expression Pedal Jack** facilitates control of any Preset controllable parameter from an analog expression pedal (optional)

130 **Watts of Stereo Output Power**, (65 watts per channel)

2 **Celestion Speakers**, G12T-100 (12"**/**8Ω)

1 **Stereo Digital Line Output**, RCA S/PDIF jack for connection to digital sound equipment

2 **Stereo XLR Line Output**, impedance balanced jacks, with ✧ 2 position switch (mono/stereo)

3 **Effects Loop** jacks, mono out, mono or stereo in, with ✧ 2 position switch (-10dBv/+4dBu)

1. Cyber-Twin MIDI functions require connection to other MIDI equipment using MIDI cables (optional).

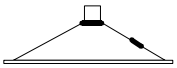
Basic Setup

This section guides you from the first power-up through to normal Play Mode access.

Making Connections

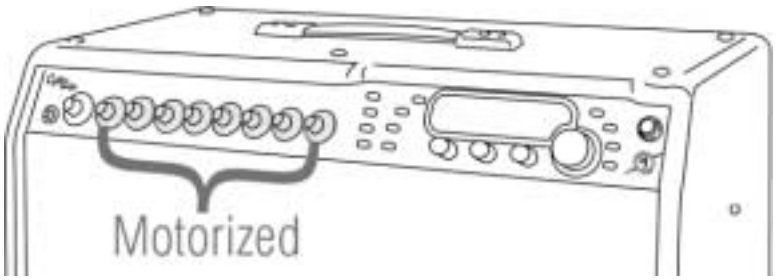
- With the POWER switch in the OFF position, plug the supplied IEC power cord into the rear panel socket of the Cyber-Twin, and the other end into a grounded, AC electrical power outlet in accordance with the frequency and voltage ratings as listed on the rear panel of the unit, (See “Important Safety Instructions” on page 1).
- Turn the TRIM and MASTER VOLUME knobs down to 1.

- Plug in the four-button footswitch (included) into the FOOTSWITCH jack on the rear panel of the Cyber-Twin using the supplied cord.



- Plug in the one-button footswitch (included) into the REVERB/FX BYPASS jack on the rear panel.
- Plug in your guitar to the INPUT jack on the front panel of the Cyber-Twin.
- Switch ON the POWER to the Cyber-Twin and the red jewel on the front panel will illuminate.
- Set the TRIM and MASTER knobs to desired levels.

♫ There may be automatic movement of the 8 motorized knobs anytime the POWER is switched ON.



It is O.K. to interrupt the motorized rotation of any knob in motion. Upon sensing resistance, the knob will yield control to allow for manual knob positioning.

♫ You will instantly hear adjustments made before the motorized knobs “catch up.”

The motorized knobs are put into motion by sources such as preset selections made “locally” from the amp and sources such as expression pedal actions and MIDI commands made by remote. The MASTER VOLUME knob is the exception; although motorized, automatic control is restricted to remote sources, and then only to a maximum level set by you. This gives you manual control over the global level’s upper limit.

The TRIM knob is the single non-motorized knob from the group on the front panel’s left side. It uses four LED’s to indicate it’s level setting.

♫ The first screen at power-up shows the Cyber-Twin's software version followed by a scrolling message.

♫ After several seconds of control panel inactivity, the display comes to rest at the screen below.

The Demonstration Mode

The first-time the Cyber-Twin is set up or after a factory preset restore, the DEMO Mode will display a screen prompting you to try the demonstration, as in the example screen (left).

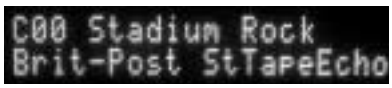
Press the SAVE key and play along with the demonstration or Switch the DEMO Mode OFF by following the instructions below. (The DEMO Mode disables the normal save function of the SAVE key.)

DEMO Mode - Switching it OFF

1) Press the UTILITY key once. The screen will indicate that the DEMO Mode is ON.

2) Rotate the DATA WHEEL counterclockwise to select OFF.

3) Press the EXIT key to return to the PLAY Mode.



With DEMO Mode set to OFF, the second line of the default screen will display information about the current amp design preset: tone stack type, tone stack location and the active effect.

To get the intended results from this manual, begin new operations in the PLAY Mode with DEMO Mode switched OFF.

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✧ **www.fender.com**

✧ **www.mrgearhead.net**

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2 ✧ FRONT PANEL

A) **INPUT** - Plug in connection for your electric guitar.

B) **TRIM** - Adjusts the signal input level for proper analog-to-digital conversion. Set the TRIM so that most of the GREEN LED's stay on while playing at normal volume levels. The RED LED should flash occasionally with your guitar set for maximum output, while playing at peak levels.

C) **GAIN** - Adjusts the distortion level and signal level. Use the VOLUME knob to compensate for any unwanted volume differences between presets created by GAIN level changes.

D) **VOLUME** - Adjusts the post-distortion signal level. Use in conjunction with GAIN to normalize differences in preset levels.

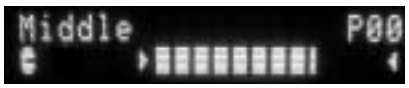
♬ Several knobs play a role in volume level control:

"Level" knobs and their controllers

"Level" Knob	Purpose	Preset Changes	MIDI Commands	Expression Pedal
TRIM	**Sets input level for digital conversion**	**NO**	**NO**	**NO**
GAIN	**Adjusts distortion level**	**YES**	**YES**	**YES**
VOLUME	**Equalizes differences in preset levels**	**YES**	**YES**	**YES**
MASTER	**Controls volume globally**	**NO**	**YES[a]**	**YES[a]**

a). The upper limit for *motorized* control is set to whatever position the MASTER VOLUME is set to by hand.

E) **TREBLE** - Adjusts the signal level in the high-frequency range.



F) **MIDDLE** - Adjusts the signal level in the mid-frequency range.

G) **BASS** - Adjusts the signal level in the low-frequency range.

♬ For amp designs using the Blackface tone stack, TREBLE, MIDDLE and BASS affect *level* as well as tone, a characteristic of Blackface Amps.

H) **PRESENCE** - Adjusts the signal level in the ultra-high frequency range. Located after the distortion circuitry in the signal path.

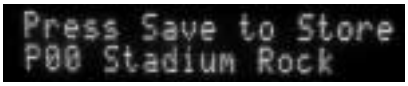
I) **REVERB** - Adjusts the out level of the active REVERB type to be mixed with the dry signal. Select from 11 REVERB types, each with 4 adjustable parameters. Turn this knob to 1 to turn Reverb OFF, (see "Reverb—Defined" on page25).

J) **MASTER VOLUME** - Controls the overall volume output from the amplifier. MASTER VOLUME level is not preset programmable. This knob is motorized to enable control from an expression pedal or MIDI commands but has an upper limit for motorized control by manually positioning the MASTER VOLUME knob to the desired maximum level.

K) **QUICK ACCESS** - Assign four favorite amp design presets to these keys for quick access anytime. The LED next to each key will light up while the preset linked to that key is active *and also* when a Quick Access key assignment is newly completed.

- **To Assign:** Select a favorite preset with the DATA WHEEL, then press *and hold* a QUICK ACCESS key until the adjacent LED lights up.
- **To Recall:** Press the QUICK ACCESS key where a favorite preset was assigned or use the corresponding footswitch button.

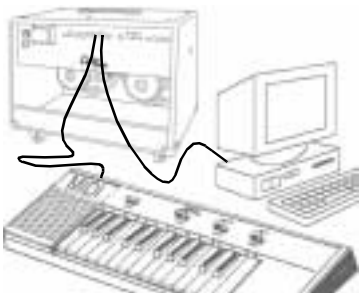
L) **SAVE** - Save a new amp design, or copy an existing preset to a PLAYER'S LOUNGE preset of your choice. The SAVE LED blinks with any change to the active preset to remind you that the current configuration is new. (LED continues blinking until a SAVE is completed or a different preset is selected).



- **To SAVE:**

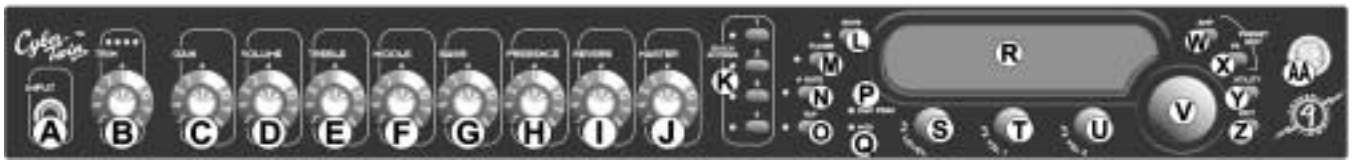
1) Press the SAVE key once and a prompt displays the PLAYER'S LOUNGE preset about to be replaced, (example prompt shown).
2) Rotate the DATA WHEEL to select a PLAYER'S LOUNGE preset to overwrite with the currently active amp design (last chance to press EXIT, cancelling the save).
3) Press the SAVE key a second time to complete the save.

♬ You can save current modifications made to a *permanent* preset (FENDER CUSTOM SHOP, or YOUR AMP COLLECTION banks) only while the preset and your changes are still active (selecting a different preset will erase unsaved changes). Changes are saved as a new PLAYER'S LOUNGE preset.



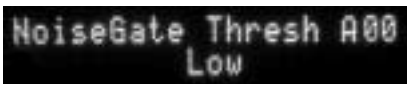
♬ You can use the Cyber-Twin's MIDI dump functions to copy PLAYER'S LOUNGE presets to a storage device such as a MIDI equipped computer. Transferring presets back to the Cyber-Twin is done in the same fashion.

♬ Memory Protection: Prevent accidental saves or tampering by engaging Memory Protection. Access the Memory Protection menu through the UTILITY Mode, (see page 44).



M) **TUNER** - Press this key to use the Cyber-Twin's built-in guitar tuner. Audio is automatically muted and a tuner scale is displayed. Strike a single string and the tuner will show the letter of the nearest note with a needle indicating cents flat or sharp if not in-tune. When a string is in tune, two arrows are displayed. Press the TUNER or EXIT key to return to PLAY Mode. LED blinks while the TUNER Mode is active.

♬ The tuner is highly accurate, therefore the needle may wander on screen while the string centers its pitch.



N) **NOISE GATE** - Press this key to switch ON/ OFF the Noise Gate. The Noise Gate reduces the background static or noise that guitar pickups, cables, etc. receive from fluorescent light fixtures and other electronic equipment. The adjustable Depth and Threshold parameters of the Noise Gate are accessed using the AMP Edit Mode, (s ee page24). LED lights up while the Noise Gate is active.

O) **TAP** - Press this key rhythmically to set the time/rate interval of the active effect (Wah, and Pitch Shift effects excluded). This is useful for setting the time-based parameter of an effect by feel. The designated parameter for TAP key adjustment is usually controlled by the FX VAL1 knob, (see the FX menu map for a complete listing, on pages 28 and 29). A temporary screen showing the parameter and the latest time/rate interval appears after the TAP key is used.
LED blinks at the rate of the applicable time-based parameter of the active effect, if one exists.

TAP key in PLAY Mode:

- TAP ***once*** and time values are set at the maximum limit (left), and rate values are set at the minimum limit (lower left). Although these *look like* opposites in the example screens, *maximum time* (longest delay) and *minimum rate* (slowest speed) have similar effects.
- TAP ***twice*** and the value will be equal to the interval between the two taps.
- TAP ***repeatedly*** and the Cyber-Twin will average the last 5 intervals.

♬ If the TAP key is inactive for 2 seconds or more, the following tap will be counted as the first tap in the series of taps used to determine the interval.

TAP key in UTILITY Mode:

The TAP key is used for system and MIDI functions in the UTILITY Mode, (see page44).

P) **DSP PEAK** - This LED flashes when the DSP circuit is clipping (distorting). Reduce VOLUME level if undesirable distortion is heard while this LED flashes (If external effects are being used, lower their output send level to the Cyber-Twin). Recover lost output level with MASTER VOLUME.

Q) **MIDI LED** - This LED flashes while the Cyber-Twin is transmitting, receiving, or passing MIDI information.

R) **DISPLAY SCREEN** - The Cyber-Twin uses the tinted window on the front panel of Cyber-Twin to communicate options and information to you, (see “Cyber-Twin Interface” on page 18).

S) **FX LEVEL** - Adjusts the level of the active effect (FX) from 0-50% or 0-100% depending on the effect, (see individual FX definitions starting on page30 for details).

T) **FX VALUE 1** - Adjusts the primary parameter of the active effect. Refer to the FX menu map for a list of all FX parameters, (see page 28).

U) **FX VALUE 2** - Adjusts the secondary parameter of the active effect. Refer to the FX menu map for a list of all FX parameters, (see page 28).

V) **DATA WHEEL** - Dynamic input control for a wide range of instructions dependent upon the current Mode of the Cyber-Twin.

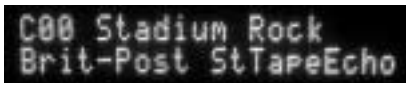
- PLAY Mode - Selects the active amp design preset.
- AMP Edit Mode - Selects parameter values for each amp design component.
- FX Edit Mode - Selects the active effect or parameter values for each effect.
- UTILITY Mode - Selects parameter values for most of the system or MIDI menus.
- TUNER Mode - Unused.

♫ The Cyber-Twin remembers the previous menu item you edited and returns you there if you jump between Edit Modes.

W) **PRESET EDIT AMP** - Activates the AMP Edit Mode for selecting amp components and their parameters, (see page 21).

X) **PRESET EDIT FX** - Activates the FX Edit Mode for selecting effects and their parameters, (see page 27).

Y) **UTILITY** - Activates the UTILITY Mode for system management and MIDI implementation, (see page 44).



Z) **EXIT** - Activates the default PLAY Mode except during a factory preset restore or while transferring MIDI data.

While in the PLAY Mode, the EXIT key toggles between the default screen (left, upper) and alternate screen (left).

AA) **RED JEWEL** - It’s a Fender.

REAR PANEL

BB) POWER - Switches the POWER ON or OFF to the Cyber-Twin.

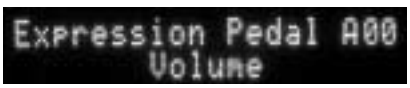
CC) IEC AC POWER LINE CONNECTOR - The power line cord must be connected to a grounded AC receptacle in accordance with the voltage and frequency ratings as listed on the rear panel of the unit.

DD) FOOTSWITCH - Connect the included four-button footswitch at this jack using the MIDI type cable provided. The footswitch offers the same *recall* function as the front panel QUICK ACCESS keys. The *assign* function is disabled from the footswitch. Although it uses a MIDI type cable, this is an analog device and should be connected only to the FOOTSWITCH jack.

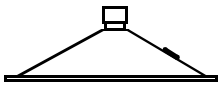
EE) EXPRESSION PEDAL - Connect the OUT jack of any standard expression pedal (optional) at this jack. An expression pedal can be assigned to control one of the following parameters *per preset*:

✧ GAIN ✧ VOLUME ✧ TREBLE ✧ MIDDLE ✧ BASS ✧ PRESENCE ✧ REVERB ✧ MASTER VOLUME ✧ any REVERB parameter ✧any EFFECT parameter.

Expression pedal assignment is saved as part of a preset. This offers you the flexibility to change expression pedal assignment with each preset change automatically.



Expression Pedal assignment is done from the AMP Edit Mode, (see "**EXPRESSION PEDAL ASSIGNMENT**" on page 24 for details).

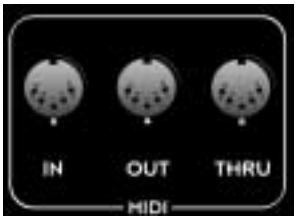


Fender P/N
099-4055-000 or
00-57122-000

FF) REVERB / EFFECTS BYPASS - Connect the included one button ON/OFF toggling footswitch at this jack to enable remote switching of one of the following:

1) Bypass Reverb and/or effects in any of 8 possible input/output combinations. Saved as part of each preset. Access the REVERB/FX BYPASS using the AMP Edit Mode, (see REVERB/FX BYPASS on page 24).

2) Switch between rotor speeds while VIBRATONE is the active effect and the Vibro Fast/Slow value is selected for the Reverb/FX's Bypass parameter, (see "Vibratone" on page 38).



GG) MIDI IN - Input MIDI jack for connection to the output of a MIDI device.

HH) MIDI OUT - Output MIDI jack for connection to the input of a MIDI device.

I I) MIDI THRU - Any MIDI signal received at the MIDI IN jack is immediately sent out the THRU jack.

♫ S/PDIF =Sony/Phillips Digital Interface Format

JJ) SPDIF OUTPUT - Output jack for connection to equipment such as a digital recorder.

Uses a standard RCA jack. This output is a digital stereo source not compatible with equipment normally associated with RCA jacks.

KK) HEADPHONES - Output jack for connection to headphones using a standard 1/4" stereo phone plug. Output to the speakers is automatically muted when this jack is in use. Line out signals are not muted.

LL) STEREO / MONO - While this switch is IN, right and left line outputs (MM) are mixed together for *dual* MONO output from the impedance balanced, XLR jacks.

MM) RIGHT and LEFT XLR LINES OUT - Impedance balanced jacks for stereo or dual mono output to sound reinforcement and recording equipment. Output signals are frequency compensated to simulate a miked speaker.

NN) EFFECTS LEVEL - Push this switch IN for -10dBv (footpedal FX compatible), Switch OUT for +4dBu, (rack mount FX compatible).

OO) RIGHT and LEFT / MONO RETURN - Impedance balanced input jacks for connection to the output of either a stereo or mono FX device. These jacks will accept input from either balanced or unbalanced sources.

PP) MONO SEND - Impedance balanced output jack (post-distortion send) for connection to the input of an FX device.

3 ✧ CYBER-TWIN INTERFACE

The Cyber-Twin appears and acts like a traditional guitar amp on the left side. On the right side, more advanced functions are accessed. Now, take a look at how the Cyber-Twin communicates with you to become the most flexible guitar amp on the planet.

Overview

The Display screen

The Display screen shows menu items with options, prompts for your input, or information about the current amp design.

The DATA WHEEL

The DATA WHEEL is closely linked to what appears on the display, and usually controls the current screen. The DATA WHEEL selects things such as amp design presets and their parameters.

The Modes

The Cyber-Twin is organized into 6 Modes of operation.
Here's an overview of what you can do in each Mode:

Example Screens

- **PLAY Mode** – ✧Play guitar ✧Activate any preset ✧Adjust parameter settings ✧Save new amp designs ✧Play on a MIDI network
  - ♬ PLAY Mode is the default Mode after power-up.
  - ♬ The EXIT key always returns the amp to PLAY Mode.

- **Preset Edit AMP Mode** – ✧Select and Edit AMP components, including Reverb.

- **Preset Edit FX Mode** – ✧Select and Edit FX.

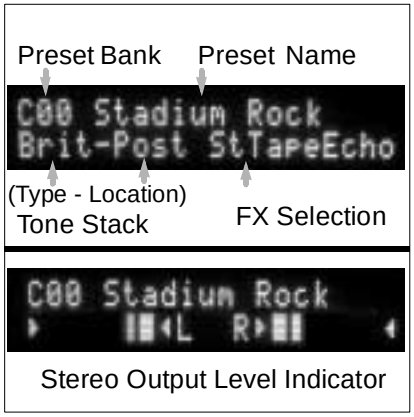
- **UTILITY Mode** – ✧Manage global system ✧Implement MIDI.

- **TUNER Mode** – ✧Tune-up your guitar.

- **DEMO Mode** – ✧Play along with an interactive demonstration with automated amp design changes.

PLAY Mode Interface

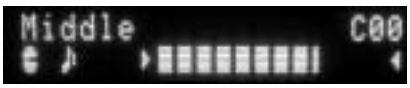
Display Screen's Appearance



PLAY Mode can display two types of information:
1) major preset components (default) or 2) a stereo output level meter (alternate). These displays can be toggled with the EXIT key.

✧ **Default screen -** Preset bank, name, and major preset components (tone stack type and location and the current effect) are shown.

✧ **Alternate screen -** A stereo output level meter on the second line is an alternate choice for the PLAY Mode screens.



Motorized knobs: GAIN, VOLUME, TREBLE, MIDDLE, BASS, PRESENCE, REVERB, MASTER

✧ **Temporary screen -** Rotate any of the 8 motorized knobs on the Cyber-Twin and a temporary display will appear with a bar graph indicating its setting. The eighth note ♪ icon indicates that the value displayed is the stored value for current preset. The knob icon approximates the position of the actual knob.

DATA WHEEL Function

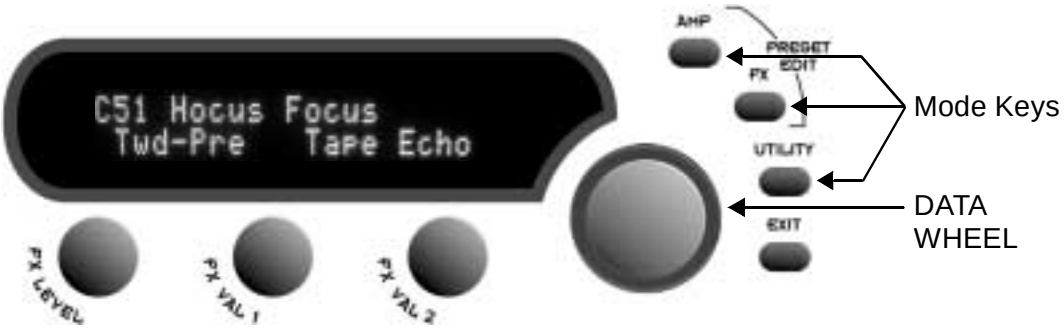
In the PLAY Mode, the DATA WHEEL selects from the 205 amp design presets available. The presets are organized into 3 banks:

✦ C00-C84 - **FENDER CUSTOM SHOP:** 85 Premium amp *and effects* combinations stored in permanent memory.

✦ P00-P84 - **PLAYER'S LOUNGE:** 85 rewritable presets for your original Amp designs. FENDER CUSTOM SHOP presets are saved in these locations as place holders until you want to change them. These presets can be reset to factory default in the UTILITY Mode.

✦ A00-A34 - **YOUR AMP COLLECTION:** 35 of the greatest amp circuits of all time, the way they left the factory, stock-equipped.

Menu Navigation



Three Modes have menus that you can edit. The **AMP** Edit and the **FX** Edit keys activate Modes that enable you to set preset parameters. The **UTILITY** Mode is for global system functions. These 3 Modes are organized in menus starting on the pages listed below.

(1) **AMP** Edit Mode page 21

(2) **FX** Edit Mode page 27

(3) **UTILITY** Mode page 44

ENTER Modes

Press a Mode key to **ENTER** the corresponding Mode.

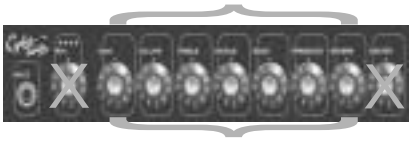
Each press increments the display screen forward, one parameter, in a continuous loop.

EDIT parameters

Rotate the DATA WHEEL to **EDIT** the parameter selected above.

EXIT Modes

Press the EXIT key to **EXIT** a Mode and return to the PLAY Mode.



Preset Parameters editable from the PLAY Mode; (TRIM and MASTER are excluded from preset saves and offer *global* control).

Preset Parameters of PLAY Mode

The stored settings of many parameters define each amp design preset. You can edit the most needed parameters directly on the front panel in PLAY Mode as well as other Modes. These are included in preset saves:

✧GAIN ✧VOLUME ✧TREBLE ✧MIDDLE ✧BASS ✧PRESENCE ✧REVERB

✧NOISE GATE ✧FX LEVEL ✧FX VALUE 1 ✧FX VALUE 2
(The 3 FX parameters change dynamically with preset selection.)

4 ✧ PRESET EDIT AMP MODE

♫ Remember to SAVE your modifications to a PLAYER'S LOUNGE preset or they will be erased when a *new* a preset is selected.

The AMP Edit Mode contains 18 menu items that are core components of an amp' sdesign. Navigational instructions are below and a map of the AMP Edit Mode starts on page 22. The chapter ends with "Reverb– Defined," on pages 25 and 26.

Menu Navigation—AMP Edit

☞ **Select a parameter to edit** -
- Press the AMP key repeatedly to increment through 18 menu items or
- Press *and hold* the AMP key while rotating the DATA WHEEL in either direction.

☞ **Adjustment** -
- Rotate the DATA WHEEL to adjust the parameter selected in the step above.

The **AMP menu map** on the next three pages is your guide to the Preset Edit AMP Mode. Each item is represented by a pair of rows (unshaded and shaded) as shown below.

PARAMETER NAME	Description and instructions.
Sample Screen	List or range of values. ↻Value1 ⓑ Value2 ⓑ Value3 ⓑ (*continuous menu loop)* ↻

⇳ **Column 1 —** lists 18 AMP design parameters, (see "Select a parameter to edit" above).

⇔ **Unshaded Row —** lists the parameter name with parameter information to the right.

⇔ **Shaded Row** — lists the range of parameter values for the menu item to the left, (see "Adjustment" above).

() denotes a *column* with menu items in a continuous loop.

↻ denotes a *row* with menu items in a continuous loop.

AMP Menu Map

NAME CHANGE **FIRST MENU ITEM**	Use the FX Val2 knob to move the blinking cursor and the DATA WHEEL to select characters.
	Alphanumeric Characters in a sequential list.
TONE STACK TYPE	Tone Stack refers to the circuitry of the TREBLE, MIDDLE and BASS controls. British – typical UK style; Tweed - Fender Tweed amps; Blackface – Fender Blackface amps; Modern - A broad spectrum tone stack with capabilities not ordinarily available on guitar amps.
	British ‘ Tweed ‘ Blackface ‘ Modern ‘ (continuous menu loop)
TONE STACK LOCATION	Select a location either before- or after- the distortion circuitry.
	Pre-Distortion ⊙ Post-Distortion
DRIVE CIRCUITRY	The Blackface Tube and Tweed Tube drive types are used for clean sounds, while others are used for high gain sounds. As the drive type number (1 ⊙ 2 ⊙ 3 ⊙ [4]) increases, so does the gain within each drive type. Blackface – Fender Blackface amps; Tweed – Fender Tweed amps; Hot Rod - Fender Hot Rod amps, HMB – typical UK style; Dyna-Touch - Fender Dyna-Touch amps.
	Blackface Tube 1 ⊙ 2 ⊙ 3 ⊙ Tweed Tube1 ⊙ 2 ⊙ 3 ⊙ Hot Rod™ Tube 1 ⊙ 2 ⊙ 3 ⊙ HMB Tube 1 ⊙ 2 ⊙ 3 ⊙ Dyna-Touch™ 1 ⊙ 2 ⊙ 3 ⊙ 4 ⊙ (continuous menu loop)
REVERB TYPE	See “Reverb–Defined” starting on page 25.
	Small Room ⊙ Large Room ⊙ Small Hall ⊙ Large Hall ⊙ Arena ⊙ Small Plate⊙ Large Plate ⊙ Blackface Reverb ⊙ Gated ⊙ Small Ambien t⊙ Fender Reverb ⊙ (continuous menu loop)
REVERB IN LEVEL **[DWELL]**	Adjusts the IN level to the Reverb circuit rather than the OUT level which is controlled by the front panel REVERB knob. Select between 1.0 for minimum IN level [*Dwell*] and 10.0 for the maximum IN level [*Dwell*].
	1.0–10.0

REVERB - TONE [SHAPE]	Adjusts the amount of high-frequency tone in the Reverb. Select between 1.0 for minimum high-frequency tone levels, and 10.0 for maximum high-frequency tone levels. *[Shape] for Gated Reverb* allows radical decay characteristics such as *rectangular*, *linear* and *reverse tails*.
	1.0–10.0
REVERB TIME	Adjusts the Reverb sustain time. Select between 1.0 for the shortest sustain time and 10.0 for the longest sustain time.
	1.0–10.0
REVERB DIFFUSION	Controls how dense or sparse the Reverb sound is. Select between 1.0 for an irregular Reverb diffusion with a non-uniform decay and 10.0 for the smoothest high density Reverb.
	1.0–10.0
TIMBRE	Shifts the equalization of the Cyber-Twin to provide tone shaping in a particular area of the spectrum. This can be useful as an instant correction for poor room acoustics. Select one of four Timbre types.
	None ◦ Full Body ◦ Razor Edge ◦ Bright & Light ◦ Bass Booster ◦ (continuous menu loop)
SPEAKER PHASE POLARITY	Phase Polarity determines the "push / pull" order of a speaker for each cycle of frequency response. Switch the phase polarity of the Cyber-Twin's left and right speakers in all possible combinations. ♫ Fender Amps with Reverb have traditionally had the speakers operating in reverse polarity. This is due to the extra tube gain stage necessary to operate the Reverb.
	Standard Polarity ◦ Both Reverse Polarity ◦ Left Reverse Polarity ◦ Right Reverse Polarity ◦ (continuous menu loop)
COMPRESSION	Use compression to moderate differences between high and low volume output due to guitar playing intensities. Select between Low for minimum compression and Even Higher for maximum compression. Compression is often used to give the guitar extra volume sustain time. It is also a fundamental component of many amplifiers.
	OFF ◦ Low ◦ Medium ◦ High ◦ Even Higher ◦ (continuous menu loop)

NOISEGATE DEPTH	Use the Noise Gate to reduce any hum or buzz sounds from the amp at rest. Select between 1.0 for and 10.0 for the necessary depth.
NoiseGate Depth A00 5.0	**1.0–10.0**
NOISEGATE THRESHOLD	Set the sensitivity of the Noise Gate with the Threshold parameter. Select between Low for minimum noise gating and High for maximum noise gating.
NoiseGate Thresh A00 Low	**Low ⊙ Medium ⊙ High ⊙ (continuous menu loop)**
EXPRESSION PEDAL ASSIGNMENT	Assign an expression pedal (optional) to control any one of the parameters below. Effects and Reverb each have a number of dynamic values listed in [braces] below. For a listing of effects parameters, (see the "FX menu map" on page28). For a listing of Reverb parameters, (see "Reverb—Defined" on pag e25).
Expression Pedal A00 Volume	**Volume ⊙ Gain ⊙ Treble ⊙ Middle ⊙ Bass ⊙ Presence ⊙ Reverb ⊙ [FX Level] ⊙ [FX value 1] ⊙ [FX value 2] ⊙ [FX value 3] ⊙ [FX value 4] ⊙ Master Volume ⊙ Reverb In Level/[Dwell] ⊙ Reverb Tone/[Shape]⊙ Reverb Time ⊙ Reverb Diffusion ⊙ (continuous menu loop)**
CONTINUOUS CONTROLLER ASSIGNMENT	Assign a continuous controller pedal (optional) to control any one of the parameters below. Effects and Reverb each have a number of dynamic values listed in [braces] below. For a listing of effects parameters, (see the "FX menu map" on page28). For a listing of Reverb parameters, (see "Reverb—Defined" on pag e25).
Cont Controller A00 Volume	**Volume ⊙ Gain ⊙ Treble ⊙ Middle ⊙ Bass ⊙ Presence ⊙ Reverb ⊙ [FX Level] ⊙ [FX value 1] ⊙ [FX value 2] ⊙ [FX value 3] ⊙ [FX value 4] ⊙ Master Volume ⊙ Reverb In Level [Dwell] ⊙ Reverb Tone [Shape]⊙ Reverb Time ⊙ Reverb Diffusion ⊙ (continuous menu loop)**
REVERB / FX BYPASS	Bypass the in or out signals for the internal Reverb and/or effects in any combination (see Reverb/FX bypass on page 16). Also, a 9th parameter, [Rotor Speed Fast/Slow] appears only when Vibratone is the active effect. The footswitch shifts between two adjustable Rotor Speed settings (see "Vibratone" on page38).
Reverb/FX Bypass A00 FX Input Only The second line on screen indicates the *bypassed* portion of the signal. For example, "Input Only" means input is *bypassed*,.	**FX Input Only ⊙ Reverb Input Only ⊙ FX Output Only ⊙ Reverb Output Only ⊙ FX & Reverb Input ⊙ FX In & Reverb Out ⊙ FX Out & Reverb In ⊙ FX & Reverb Output ⊙ [Rotor Speed Fast/Slow] ⊙ (continuous menu loop)**
Column continues with the Name Change menu, on page 22 (press AMP)	

Reverb—Defined

There are 11 REVERB types on the Cyber-Twin, each with a **L**evel parameter (the front panel REVERB knob) and **4** other parameters (**L, 1, 2, 3, 4**). The REVERB knob is the essential Reverb parameter and can be adjusted in the PLAY Mode as well as most other Modes. All other Reverb operations are accessed using the AMP Edit Mode, (see "Preset Edit AMP Mode" on page 21). Reverb type and all Reverb parameters are saved as part of a preset.

Reverb is grouped with amp design components rather than with FX to provide more flexibility in using Reverb and effects simultaneously. All Reverb types use the same group of adjustable parameters; **L)** Out Level, **1)** In Level, **2)** Tone, **3)** Time, **4)** Diffusion, with two exceptions. Fender Reverb and the Gated Reverb each have a special parameter:

- **Fender Reverb** features *dwell* as its **2)** parameter
- **Gated Reverb** features *shape* as its **3)** parameter

These two Reverb types and their unique parameters are described below. Their remaining parameters are shared with the other 9 Reverb types described on the next page.

Fender Reverb

Description

Based on the much sought-after, tube-driven, Brown Tolex '63 Fender Reverb unit. This is an outboard unit used primarily by players who use amps without Reverb (such as the'59 Bassman). In the Cyber-Twin, the Fender Reverb is placed before any of the Drive Circuitry or tone controls, just like an original '63 Fender Reverb. This allows the amp to drive the guitar sound into the distortion circuitry *with Reverb*. This is a real difference from post-distortion Reverb (like on a master-volume amp with an effects loop, e.g., Fender Hot Rod Deluxe/DeVille).

Adjustable parameter

2) Reverb Dwell - Adjusts the level of your guitar signal *into* the Reverb (as opposed to the **REVERB** knob, which adjusts the level *out* of the Reverb).

Gated Reverb

Description

A Reverb with a different structure than the other Reverb types provided by its unique "Reverb Shape parameter which allows for rectangular, linear, and reverse Reverb tails (decays).

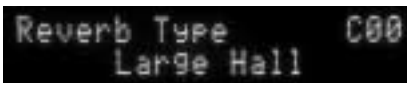
Adjustable parameter

3) Reverb Shape - Changes the shape of the Reverb tail from rectangular to linear decay to reverse.

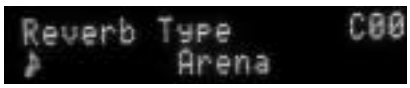
Small Ambience

Small/Large Room

Small/Large Hall



Small/Large Plate



Arena

Blackface Reverb

Group Description

Small Ambience has the sound of a very small acoustic space. Small and Large Room are differing sizes of relatively small spaces. The Hall Reverbs give the sound of spaces the size of auditoriums and concert halls. Plate Reverb, originally found only in recording studios, generates bright timbres yet retains warmth. Arena gives the sound of a very large sized space. And finally, Blackface Reverb is the classic Fender spring Reverb sound found on Blackface-era amps (e.g.,'65 Twin Reverb, '65 Deluxe Reverb).

Adjustable parameters

L) **Reverb -** This is the motorized front-panel **REVERB** knob. Adjusts the amount of post-Reverb level heard in your overall amp sound. This knob's setting can be saved in a preset with all of the other amp settings, but does not have a default value when a Reverb is selected from the Preset Edit **AMP** menu. If you don't hear any Reverb sound, make sure this knob is higher than 1.0, and check the **Reverb In Level** (below).

1) **Reverb In Level -** Adjusts the level of your guitar signal *into* the Reverb (as opposed to the **REVERB** knob, which adjusts the level *out of* the Reverb).

2) **Reverb Tone -** Adjusts the amount of high frequencies in the Reverb. Turn to 1.0 for maximally dark sounds, and to 10.0 for the brightest quality.

3) **Reverb Time -** Adjusts the length of time for which the Reverb sustains. 1.0 is the shortest time possible for the selected Reverb, and 10.0 gives the longest time.

4) **Reverb Diffusion -** Controls how dense or sparse the Reverb sound is. At 1.0, the Reverb will sound "sputtery" and will have a non-uniform decay. At 10.0, the sound will be the smoothest and most dense possible.

5 ✧ PRESET EDIT FX MODE

There are 28 FX (*effect*) types available on the Cyber-Twin, each with a **L**evel parameter and **4** or **5** other parameters (**L**, **1**, **2**, **3**, **4**, [**5**]). FX type and all FX parameters are saved as part of a preset.

The major parameters for each FX (**L**, **1** and **2**),can be adjusted using the front panel **FX Level**, **FX Value 1** and **FX Value 2** knobs from the PLAY Mode as well as most other Modes. A designated time-based parameter (for most FX) can be adjusted in a special way—with the TAP key you can *tap in* the time interval by feel, (see item "O. TAP key" on page 14).

♫ Remember to SAVE your modifications to a PLAYER'S LOUNGE preset or they will be erased when the current a preset change is changed.

The FX Edit Mode can be used to adjust all FX parameters and *must* be used to access the minor parameters **(3**, **4** and **5)** for each FX. Navigational instructions for the FX Mode below are followed by a map of the FX Mode on pages 30 and 31. Find individual FX definitions on pages 32 through 45.

Menu Navigation—FX Edit

☞ **Select a parameter to edit** -
- Press the FX key repeatedly to increment through the menu items of the active FX or
- Press *and hold* the FX key while rotating the DATA WHEEL in either direction.

☞ **Adjustment** -
Rotate the DATA WHEEL to adjust the parameter selected in the step above.

The **FX menu map** on pages 30-31 is your guide to the FX Edit Mode. Each FX is represented by a pair of rows (unshaded and shaded) as shown below.

FX Selection	parameter **L)**	parameter **1)**	parameter **2)**	parameter **3)**	parameter **4)**	parameter **5)**
	range **L)**	range **1)**	range **2)**	range **3)**	range **4)**	range **5)**

⇳ **Column 1 —** lists the 29 FX type selections available, (28 effects types and 1 "none" selection).

⇔ **Unshaded Row —** lists effects parameters for selection, (see "Select a parameter" above).

⇔ **Shaded Row —** lists the range of values for adjustment, (see "Adjust the value" above).

⇳ icon denotes a *column* with menu items in continuous loop.

⇔ icon denotes a *row* with menu items in a continuous menu loop.

FX Menu Map indicates a TAP key enabled parameter, (see page 14 for TAP usage).

Mono Delay	Delay Out Level	Delay Time	Delay Feedback	Delay Brightness	Delay In Level	Delay Time Change
	1.0-10.0	30-1450 ms	1.0-10.0	1.0-10.0	1.0-10.0	Ramp or Step
Dotted 8/16 Delay	Delay Out Level	Delay Time	Delay Feedback	Delay Brightness	Delay Stereo	Delay Time Change
	1.0-10.0	30-1450 ms	1.0-10.0	1.0-10.0	1.0-10.0	Ramp or Step
One-E-Da-Delay	Delay Out Level	Delay Time	Delay Feedback	Delay Brightness	Delay Stereo	Delay Time Change
	1.0-10.0	30-1450 ms	1.0-10.0	1.0-10.0	1.0-10.0	Ramp or Step
Ping-Pong Delay	Delay Out Level	Delay Time	Delay Feedback	Delay Brightness	Delay Stereo	Delay Time Change
	1.0-10.0	30-1450 ms	1.0-10.0	1.0-10.0	1.0-10.0	Ramp or Step
Swing Tap Delay	Delay Out Level	Delay Time	Delay Feedback	Delay Brightness	Delay Stereo	Delay Time Change
	1.0-10.0	30-1450 ms	1.0-10.0	1.0-10.0	1.0-10.0	Ramp or Step
Tape Echo	Echo Out Level	Echo Time	Echo Feedback	Echo Brightness	Echo Wow&Flutter	Echo Time Change
	1.0-10.0	30-1450 ms	1.0-10.0	1.0-10.0	1.0-10.0	Ramp or Step
Stereo Tape Echo	Echo Out Level	Echo Time	Echo Feedback	Echo Brightness	Echo Wow&Flutter	Echo Time Change
	1.0-10.0	30-1450 ms	1.0-10.0	1.0-10.0	1.0-10.0	Ramp or Step
Stereo Flam Delay	Delay Out Level	Delay Time	Delay Feedback	Delay Brightness	Delay Stereo	Delay Time Change
	1.0-10.0	30-1450 ms	1.0-10.0	1.0-10.0	1.0-10.0	Ramp or Step
Ducking Delay	Delay Out Level	Delay Time	Delay Feedback	Delay Release	Delay Ducking Sensitivity	Delay Time Change
	1.0-10.0	30-1450 ms	1.0-10.0	1.0-10.0	1.0-10.0	Ramp or Step
Backwards Delay	Delay Out Level	Delay Time	Delay Forward Feedback	Delay Reverse Feedback	Delay Brightness	Delay Time Change
	1.0-10.0	30-1450 ms	1.0-10.0	1.0-10.0	1.0-10.0	Ramp or Step
Tremolo	Tremolo Out Level	Tremolo Rate	Tremolo Depth	Tremolo Duty Cycle	Tremolo Shape	
	1.0-10.0	0.08-10.0Hz	1.0-10.0	1.0-10.0	1.0-10.0	
AmpTremolo	Tremolo Out Level	Tremolo Rate	Tremolo Depth	Tremolo Duty Cycle	Tremolo Shape	
	1.0-10.0	0.08-10.0Hz	1.0-10.0	1.0-10.0	1.0-10.0	
Auto Pan	Pan Out Level	Pan Rate	Pan Depth	Pan Shape	Pan Phase	
	1.0-10.0	0.08-10.0Hz	1.0-10.0	1.0-10.0	1.0-10.0	
Phaser	Phaser Out Level	Phaser Rate	Phaser Depth	Phaser Feedback	Phaser Stereo	
	1.0-10.0	0.08-10.0Hz	1.0-10.0	1.0-10.0	0.08-10.0Hz	
Vibratone	Vibratone Out Level	Rotor Speed	Vibratone Doppler	Rotor Frequency Speed1	Rotor Frequency Speed2	
	1.0-10.00	0.08-10.0Hz	1.0-10.0	0.08-10.0Hz	0.08-10.0Hz	

Pedal Wah	Wah Out Level	Wah	Wah Heel Frequency	Wah Toe Frequency	Wah Sweep Type	
	1.0-10.0	1.0-10.0	1.0-10.0	1.0-10.0	The Baby's Cryin' or The Real McCoy	
Touch Wah	Wah Out Level	Wah Sensitivity	Wah Minimum Frequency	Wah Maximum Frequency	Wah Sweep Type	
	1.0-10.0	1.0-10.0	1.0-10.0	1.0-10.0	LowQ or HighQ	
Sine Chorus	Chorus Out Level	Chorus Rate	Chorus Depth	Chorus Average Delay	Sine Chorus Phase	
	1.0-10.0	0.08-10.0Hz	1.0-10.0	1.0-10.0	1.0-10.0	
Triangle Chorus	Chorus Out Level	Chorus Rate	Chorus Depth	Chorus Average Delay	Tri-Chorus Phase	
	1.0-10.0	0.08-10.0Hz	1.0-10.0	1.0-10.0	1.0-10.0	
Sine Flange	Flange Out Level	Flange Rate	Flange Depth	Flange Feedback	Sine Flange Phase	
	1.0-10.0	0.08-10.0Hz	1.0-10.0	1.0-10.0	1.0-10.0	
Triangle Flange	Flange Out Level	Flange Rate	Flange Depth	Flange Feedback	Tri-Flange Phase	
	1.0-10.0	0.08-10.0Hz	1.0-10.0	1.0-10.0	1.0-10.0	
Delay+Chorus	FX Wet Out Level	Delay Time	Chorus Depth	Delay Feedback	Chorus Rate	Delay Time Change
	1.0-10.0	30-1450 ms	1.0-10.0	1.0-10.0	1.0-10.0	Ramp or Step
Delay+Flange	FX Wet Out Level	Delay Time	Flange Depth	Delay Feedback	Flange Rate	Delay Time Change
	1.0-10.0	30-1450 ms	1.0-10.0	1.0-10.0	1.0-10.0	Ramp or Step
Delay+Phaser	FX Wet Out Level	Delay Time	Phaser Depth	Delay Feedback	Phaser Rate	Delay Time Change
	1.0-10.0	30-1450 ms	1.0-10.0	1.0-10.0	1.0-10.0	Ramp or Step
AutoSwell +Chorus	FX Wet Out Level	AutoSwell Attack Time	Chorus Depth	AutoSwell Sensitivity	Chorus Rate	
	1.0-10.0	1.0-10.0	1.0-10.0	1.0-10.0	0.8-10.0 Hz	
Ultra-Clean +Chorus	FX Wet Out Level	Chorus Rate	Chorus Depth	Body	Brilliance	
	1.0-10.0	30-1450 ms	1.0-10.0	1.0-10.0	1.0-10.0	
Pitch Shift	Pitch Shift Out Level	Pitch	Pitch Detune	Pitch Feedback	Pitch PreDelay	
	1.0-10.0	1.0-10.0	1.0-10.0	1.0-10.0	1.0-10.0	
Ring Modulate +Delay	FX Wet Out Level	Modulator Frequency	Delay Out Level	Delay Time	Delay Feedback	Delay Time Change
	1.0-10.0	0.08-10.0Hz	1.0-10.0	1.0-10.0	1.0-10.0	Ramp or Step
None	None					
	The FX knobs are disabled when no FX are selected					

Column 1 continues with the Mono Delay Menu on the previous page.

Delay Effects Types

Mono Delay

Description

The most basic digital delay effect. Use this when you want a straightforward, single-tap delay.

Adjustable parameters

L) **Delay Out Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for a 50% mix.

1) **Delay Time (ms).** Range: 30 to 1450 milliseconds. Adjusts the time interval between the delayed repeats. The increment of change gradually increases from 1 millisecond at the shortest delay time to 10 milliseconds at the longest delay time. Remember that the **TAP** button can always be used to key in delay times by feel.

2) **Delay Feedback.** Adjusts the number of delay repeats. Select between 1.0 for a single delay repeat and 10.0 for many repeats.

3) **Delay Brightness.** Adjusts the amount of high frequencies that are removed each time the delay is repeated. Select between 1.0 to make each subsequent repeat darker and 10.0 to allow the high frequencies to repeat. Use this control to simulate the high-frequency absorption of acoustically dull rooms or analog echo units. Note that because this control removes highs from the signal, that it will also affect the number of delayed repeats.

4) **Delay In Level.** Adjusts the input level to the delay effect. Mono Delay is the only effect with this control. By attaching this control to a pedal, you can swell the *input* to the delay, and allow the repeats to ring out, even when you turn the control to the minimum setting.

♫ To use MIDI continuous controller messages to instantly change the delay time, set **Delay Time Change** to the **Step** setting.

5) **Delay Time Change -** Select **Ramp** or **Step** to change the way the effect responds to changes in the **Delay Time** parameter. With the **Ramp** setting, the delay time change will be gradual with an analog sounding pitch warble until the delay time stabilizes. With the **Step** setting, the delay time change will be instant with a “digital zip” sound audible for a moment.

Dotted 8/16 Delay

One-E-Da Delay

Ping Pong Delay

Swing Tap Delay

Stereo Flam Delay

Description

Multi-tap (i.e., multi-output) digital delay effects with various tap timings and stereo capability.

Adjustable parameters

L) **Delay Out Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for a 50% mix.

1) **Delay Time (ms).** Range: 30 to 1450 milliseconds. Adjusts the time interval between the delayed repeats. The increment of change gradually increases from 1 millisecond at the shortest delay time to 10 milliseconds at the longest delay time. Remember that the **TAP** button can always be used to key in delay times by feel.

2) **Delay Feedback.** Adjusts the number of delay repeats. Select between 1.0 for a single delay repeat and 10.0 for many repeats.

3) **Delay Brightness.** Adjusts the amount of high frequencies that are removed each time the delay is repeated. Select between 1.0 to make each subsequent repeat darker and 10.0 to allow the high frequencies to repeat. Use this control to simulate the high-frequency absorption of acoustically dull rooms or analog echo units. Note that because this control removes highs from the signal, that it will also affect the number of delayed repeats.

4) **Delay Stereo.** Adjusts the amount of stereo spread in the panning (left / right channel shifting) of the delay taps. Select between 1.0 for center-panned repeats, (no left / right channel shifting) and 10.0 for maximum panning, (creates a stereo effect).

♫ To use MIDI continuous controller messages to instantly change the delay time, set **Delay Time Change** to the **Step** setting.

5) **Delay Time Change.** Select **Ramp** or **Step** to change the way the effect responds to changes in the **Delay Time** parameter. With the **Ramp** setting, the delay time change will be gradual with an analog sounding pitch warble until the delay time stabilizes. With the **Step** setting, the delay time change will be instant with a “digital zip” sound audible for a moment.

Ducking Delay

Description

A mono delay with the added feature that while you are playing, the delay stays out of the way, and when you stop playing, the delay tail comes to the forefront. In other words, the wet delayed signal “ducks” when your dry guitar signal comes through. This effect will allow you to use more delay than with other delay effects, since it doesn’t muddy up your signal even with a high FX level setting.

Adjustable parameters

L) **Delay Out Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for a 50% mix.

1) **Delay Time (ms).** Range: 30 to 1450 milliseconds. Adjusts the time interval between the delayed repeats. The increment of change gradually increases from 1 millisecond at the shortest delay time to 10 milliseconds at the longest delay time. Remember that the **TAP** button can always be used to key in delay times by feel.

2) **Delay Feedback.** Adjusts the number of delay repeats. Select between 1.0 for a single delay repeat and 10.0 for many repeats.

3) **Delay Release.** Adjusts the release time of the ducking action. Select 1.0 for the shortest release time so the delay tail comes up in volume quickly. Select 10.0 for the longest release time, giving the delay signal a slower recovery after ducking.

4) **Delay Ducking Sensitivity.** Adjusts the sensitivity of the ducking action to your playing. Select between 1.0 for no ducking action and 10.0 for maximum ducking action with the highest degree of sensitivity to any input from your guitar. Note that **TRIM**, **GAIN**, **VOLUME**, **TONE** controls and Drive Circuitry selection all affect the volumes of the dry signal, the delayed signal AND the ducker sensitivity.

♫ To use MIDI continuous controller messages to instantly change the delay time, set **Delay Time Change** to the **Step** setting.

5) **Delay Time Change.** Select **Ramp** or **Step** to change the way the effect responds to changes in the **Delay Time** parameter. With the **Ramp** setting, the delay time change will be gradual with an analog sounding pitch warble, (audible until the delay time stabilizes). With the **Step** setting, the delay time change will be instant with a “digital zip” sound audible for a moment.

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Backwards Delay

Description

A bizarre effect that repeats the input signal *in reverse* time frames.

Adjustable parameters

L) **Delay Out Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for 100% wet (all effect).

1) **Delay Time (ms).** Range: 30 to 1450 milliseconds. Adjusts the time interval between the delayed repeats. The increment of change gradually increases from 1 millisecond at the shortest delay time to 10 milliseconds at the longest delay time. Remember that the **TAP** button can always be used to key in delay times by feel.

2) **Delay Forward Feedback.** Adjusts the number of delay repeats. Select between 1.0 for a single delay repeat and 10.0 for many repeats. Note that this control allows all delay repeats to be just like the first delay repeat, i.e., reversed.
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3) **Delay Rev Feedback.** Adjusts the number of delay repeats. Select between 1.0 for a single delay repeat and 10.0 for many repeats. Note that this control will alternately reverse and unreverse delay repeats. Because there are two feedback controls for this effect, use each one with regard for the other to avoid uncontrolled feedback.

4) **Delay Brightness.** Adjusts the amount of high frequencies that are removed each time the delay is repeated. Select between 1.0 to make each subsequent repeat darker and 10.0 to allow the high frequencies to repeat. Use this control to simulate the high-frequency absorption of acoustically dull rooms or analog echo units. Note that because this control removes highs from the signal, that it will also affect the number of delayed repeats.

♫ To use MIDI continuous controller messages to instantly change the delay time, set **Delay Time Change** to the **Step** setting.

5) **Delay Time Change.** Select **Ramp** or **Step** to change the way the effect responds to changes in the **Delay Time** parameter. With the **Ramp** setting, the delay time change will be gradual with an analog sounding pitch warble, (audible until the delay time stabilizes). With the **Step** setting, the delay time change will be instant with a "digital zip" sound audible for a moment.

Tape Echo

Stereo Tape Echo

Description

Delay effects with added features to get a tape echo sound. Tape Echo is pure mono, and Stereo Tape Echo is a two-tap, ping-pong effect. Unlike a vintage tape echo machine, however, there's no tape hiss nor is there the possibility of breaking a tape loop! These are two of our favorites. Fair warning—if you try these, you might never go back to any other delays!

Adjustable parameters

L) **Echo Output Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for a 50% mix.

1) **Echo Time (ms).** Range: 30 to 1450 milliseconds. Adjusts the time interval between the echoed repeats. The increment of change gradually increases from 1 millisecond for the shortest echo time to 10 milliseconds for the longest echo time. Remember that the **TAP** button can always be used to key in echo times by feel.

2) **Echo Feedback.** Adjusts the number of echo repeats. Select between 1.0 for a single echo repeat and 10.0 for an almost infinite number of repeats.

3) **Echo Brightness.** Adjusts the amount of high frequencies that are removed each time the delay is repeated. Select between 1.0 to make each subsequent repeat darker and 10.0 to allow the high frequencies to repeat. Use this control to simulate the high-frequency absorption of acoustically dull rooms or analog echo units. Note that because this control removes highs from the signal, that it will also affect the number of delayed repeats.

♪ For "*tape echo madness,*" use the default **Ramp** setting, set the echo time and feedback to near maximum, and then - rotate the **Echo Time (ms)** (**FX VAL 1**) knob and listen. You will be able to get the swirly, warble, drunken pitch change to feed back through the echo the way countless tone masters have used the sliding tape head on vintage tape echo units in real time. You can also use a **MIDI continuous controller** pedal or expression pedal to control the echo time for the same effect.

4) **Wow & Flutter.** Adjusts the amount of wow (random frequency response modulation) and flutter (random pitch change) present in the echo signal. Select between 1.0 for minimum levels and 10.0 for maximum levels of this effect. Note that by having this control in the higher part of its range, the wow and flutter will continue to operate over the repeats of the echo, causing compounded randomness.

5) **Echo Time Change**. Select **Ramp** or **Step** to change the way the effect responds to changes in the **Echo Time** parameter. With the **Ramp** setting, the echo time change will be gradual with an analog sounding pitch warble, (audible until the delay time stabilizes). With the **Step** setting, the echo time change will be instant with a "digital zip" sound audible for a moment.

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Chorus Effects

Sine Chorus

Triangle Chorus

Description

Stereo chorus effects with sine-wave or triangle-wave delay modulation. The sine-wave version tends to sound more swirly, while the triangle-wave variety is subjectively more even-sounding.

Adjustable parameters

L) **Chorus Output Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for a 50% mix.

1) **Chorus Rate (Hz).** Range: from 0.08 Hz to 10 Hz. Adjusts the rate of the chorus effect. The increment of change gradually increases from 0.01 Hz for the slowest rate to 0.08 Hz for the fastest rate. Remember that the **TAP** button can always be used to key in the chorus rate by feel– two **TAP**s set the time it takes for the chorus LFOs (Low Frequency Oscillators) to go through one cycle. Note: Although this is a stereo chorus, both of the chorus voices move at the same rate.

2) **Chorus Depth.** Adjusts the amount of Doppler shift and how apparent the effect sounds. Select between 1.0 for no apparent effect and 10.0 for maximum effect.

♪ Try turning the **Chorus Depth** control to 1.0 and actively adjusting **Chorus Average Delay** to achieve a *comb-filter* effect.

3) **Chorus Avg Delay.** Adjusts the average delay time of the moving chorus taps. Select 1.0 for a transparent natural sound and 10.0 for a synthesized sound with a noticeable delay between the original and chorus signals. Use higher settings for a doubling effect.

4) **Sine Chorus/Tri Chorus Phase.** Adjusts the phase relationship between the two chorus Low Frequency Oscillators. Select 1.0 and the two voices of the chorus are in phase and the effect is minimal. Select 10.0 and the LFOs are out-of-phase and the maximum stereo effect is achieved. For Sine Chorus, this control is usually set at 5.5 for the ideal sound. For Triangle Chorus, this control is often set 10.0 for the best sound.
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Flange Effects

Sine Flange

Triangle Flange

Description

Stereo flange effects with sine-wave or triangle-wave delay modulation. Just as in the chorus effects, the sine-wave flange tends to have more "swirl," while the triangle-wave version is more transparent.

Adjustable parameters

L) **Flange Output Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for a 50% mix.

1) **Flange Rate (Hz).** Range: from 0.08 Hz to 10 Hz. Adjusts the rate of the flange effect. The increment of change gradually increases from 0.01 Hz for the slowest rate to 0.08 Hz for the fastest rate. Remember that the **TAP** button can always be used to key in the flange rate by feel– two **TAP**s set the time it takes for the flange LFOs to go through one cycle. Remember that although this is a stereo flange, both of the flange voices move at the same rate.

2) **Flange Depth.** Adjusts the amount of Doppler shift and how apparent the effect sounds. Select between 1.0 for no apparent effect and 10.0 for maximum effect.

3) **Flange Feedback.** Adjusts how much signal from the flange taps is recycled back to the input. Select between 1.0 for minimum levels that result in chorus-like sounds and 10.0 for maximum flanging.

4) **SineFlange/Tri Flange Phase.** Adjusts the phase relationship between the two flange Low Frequency Oscillators. Select 1.0 and the two voices of the flange are in phase, which creates the deepest flange. Select 10.0 and the LFOs are out-of-phase and the maximum stereo effect is achieved.

Tremolo Effects

Amp Tremolo

Description

A tremolo with the sound of a vintage Blackface amp.

Adjustable parameters

L) **Tremolo Output Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for 100% wet (all effect).

1) **Tremolo Rate (Hz).** Range: 0.08 Hz to 10 Hz. Adjusts the rate of the tremolo effect. Select between 0.08 for a slow sweeping rate and 10 for a fast rate. The *increment* of change gradually increases from 0.01 Hz for the slowest rate to 0.08 Hz for the fastest rate. Remember that the **TAP** button can always be used to key in the tremolo rate by feel– two **TAP**s set the time it takes for the LFO to go through one cycle.

2) **Tremolo Depth.** Adjusts how deeply the tremolo drops the volume. Select 1.0 for minimum depth and 10.0 for maximum depth.

3) **Tremolo Duty Cycle.** Adjusts the Low Frequency Occilator maximum volume / minimum volume interval ratio. Select between 1.0 for short high volume intervals and 10.0 for long high volume intervals.

4) **Tremolo Shape.** Continuously adjusts the smoothness of the tremolo waveform. Select between 1.0 for a subtle and natural effect and 10.0 for a choppy effect.

Tremolo

Description

A sine-wave tremolo effect that can be used to approximate grid-bias tremolo or repeat percussion as found in a Tweed Tremolux.

Adjustable parameters

L) **Tremolo Output Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for 100% wet (all effect).

1) **Tremolo Rate (Hz).** Range: from 0.08 Hz to 10 Hz. Adjusts the rate of the tremolo effect. The increment of change gradually increases from 0.01 Hz for the slowest rate to 0.08 Hz for the fastest rate. Remember that the **TAP** button can always be used to key in the tremolo rate by feel– two **TAP**s set the time it takes for the tremolo LFOs (Low Frequency Oscillators) to go through one cycle.

2) **Tremolo Depth.** Adjusts the amount of volume drop and how apparent the effect sounds. Select between 1.0 for no apparent effect and 10.0 for maximum effect.

3) **Tremolo Offset.** Adjusts the center of the LFO waveform. Select 1.0 and the LFO will modulate the guitar signal so much that the phase is flipped, giving a more extreme character. Select 10.0 and the LFO is limited to just modulating the volume.

4) **Tremolo Shape.** Continuously adjusts the smoothness of the tremolo waveform. Select between 1.0 for a subtle and natural effect and 10.0 for a choppy effect. Turn **Tremolo Shape**, the **Trem Output Level**, and **Tremolo Depth** all to their maximum values to get very deep, choppy, repeat percussion sounds.

AutoPan

Description

A sine-wave panning effect. An LFO sweeps the signal back and forth in the stereo field.

Adjustable parameters

L) **Pan Output Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for 100% wet (all effect).

1) **Pan Rate (Hz).** Range: from 0.08 Hz to 10 Hz. Adjusts the rate of the AutoPan effect. The increment of change gradually increases from 0.01 Hz for the slowest rate to 0.08 Hz for the fastest rate. Remember that the **TAP** button can always be used to key in the AutoPan rate by feel– two **TAP**s set the time it takes for the AutoPan LFOs (Low Frequency Oscillators) to go through one cycle.

2) **Pan Depth.** Adjusts how deeply the panner moves your guitar sound between the left and right channels and how apparent the effect sounds. Select between 1.0 for no apparent effect and 10.0 for maximum effect.

3) **Pan Shape.** Continuously adjusts the smoothness of the AutoPan waveform. Select between 1.0 for a subtle and natural effect and 10.0 for a choppy effect.

4) **Pan Phase.** Adjusts the relative phase of the two LFO waveforms which modulate the left and right channels' volumes. Select 1.0 and the LFOs are perfectly in phase, giving a mono tremolo effect. Select 10.0 and the LFOs are completely out-of-phase, creating the greatest stereo ambience.

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Wah Effects

Pedal Wah

Description

Foot-operated wah.

Adjustable parameters

L) **Wah Output Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for 100% wet (all effect).

♫ Optimal expression pedal specifications: passive 10k to 250k ohms

1) **Wah.** Adjusts the wah filter center frequency. Select between 1.0 for the lowest frequency and 10.0 for the highest frequency. This effect is best suited for connection to an expression pedal or a MIDI continuous controller pedal to enable foot control of the effect.

♫ Because there is some *dead space* at the bottom end of the pedal travel, you can use this control to adjust how wide the wah *sweet spot* is.

2) **Wah Heel Frequency.** Adjusts the frequency that the wah pedal sweeps to in the heel down position. Select between 1.0 for the lowest frequency and 10.0 for the highest frequency. Note that **Wah Heel Frequency** and **Wah Toe Frequency** can reverse positions so that the typical setup – low frequency with the Heel down–becomes low frequency with the *Toe* down.

3) **Wah Toe Frequency.** Adjusts the frequency that the wah pedal sweeps to in the toe down position. Select between 1.0 for the lowest frequency and 10.0 for the highest frequency.

4) **Wah Sweep Type.** Select between two wah types: **The Baby's Cryin'** or **The Real McQ**. The first selection is based on a popular, modern-day wah, and the second choice is based on a vintage wah.

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Touch Wah

Description

Dynamic, volume-controlled wah. The wah filter sweeps up and down in response to your playing strength.

Adjustable parameters

L) **Wah Output Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for 100% wet (all effect).

1) **Wah Sensitivity.** Adjusts how sensitive the effect is to your playing volume. Select between 1.0 for minimum sensitivity and 10.0 for the highest sensitivity.

2) **Wah Minimum Frequency.** Adjusts the frequency the wah relaxes to when your playing volume is at a minimum. Select between 1.0 for the lowest frequency and 10.0 for the highest frequency. Note that **Wah**

Minimum Frequency and **Wah Maximum Frequency** can "cross" one another, such that the direction of drive for the wah can be reversed (i.e., idle state is high frequency, playing louder drives the sweep to lower frequency).

3) **Wah Maximum Frequency.** Adjusts the frequency the wah sweeps to when your playing volume is at a maximum. Select between 1.0 for the lowest frequency and 10.0 for the highest frequency.

4) **Wah Sweep Type.** Select between two wah types: **Low Q** and **High Q**. The first selection is smoother and the second more extreme.

Modulation Effects Types

Vibratone

Description

Rotating speaker effect. Based on the CBS-era[1] Fender Vibratone, which was a cabinet equipped with a single speaker and a two-speed rotating baffle.

Adjustable parameters

L) **Vibro Out Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for 100% wet (all effect).

1) **Rotor Speed (Hz).** Range: 0.08 Hz to 10 Hz. Adjusts the rate of the Vibratone effect. The increment of change gradually increases from 0.01 Hz for the slowest rate to 0.08 Hz for the fastest rate. Remember that the **TAP** button can always be used to key in the rotor speed by feel– two **TAP**s set the time it takes for the LFOs to go through one cycle. Remember that although this is a stereo effect, both of the voices move at the same rate.

2) **Vibro Doppler.** Adjusts the amount of Doppler shift and how apparent the effect sounds. Select between 1.0 for no apparent effect and 10.0 for maximum effect. **Rotor Speed 1 (Hz) &**

3) **Rotor Speed 2 (Hz).**
Range: 0.08 Hz to 10 Hz. Select the two rotor speeds to alternate between when using a footswitch (optional) connected at the **REV/**FX **BYPASS** jack, (see item "FF) REVERB / EFFECTS BYPASS" on page 16 for details on connecting a footswitch).
Other requirements: First, select Vibratone as the active FX. Then use the AMP key to access the **Reverb/FX Bypass** menu item. Select the **Vibro Fast/Slow** value with the DATA WHEEL.
Now pressing the footswitch will alternate between the settings of **Rotor Speed 1** and **Rotor Speed 2**. The shift between rotor speeds is gradual, as it takes a moment for the virtual baffles to gain (or lose) momentum.

1. CBS ® is a registered trademark of CBS Inc.

Phaser

Description

Twelve-stage, stereo phaser effect.

Adjustable parameters

L) **Phaser Out Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for 100% wet (all effect).

1) **Phaser Rate (Hz).** Range: from 0.08 Hz to 10 Hz. Adjusts the rate of the Phaser effect. The increment of change gradually increases from 0.01 Hz for the slowest rate to 0.08 Hz for the fastest rate. Remember that the **TAP** button can always be used to key in the Phaser rate by feel– two **TAP**s set the time it takes for the Phaser LFOs (Low Frequency Oscillators) to go through one cycle.

2) **Phaser Depth.** Adjusts the width of the Phaser sweep and how apparent the effect sounds. Select between 1.0 for no apparent effect and 10.0 for maximum effect.

3) **Phaser Feedback.** Adjusts how much signal from the Phaser effect is recycled back to the input. Select between 1.0 for minimum levels and 10.0 for maximum levels.

4) **Phaser Stereo.** Adjusts the amount of stereo spread in the effect. Select between 1.0 for mono and 10.0 for maximum stereo spread.

Combination Effects Types

Delay + Chorus

Description

Mono Delay plus stereo Triangle Chorus.

Adjustable parameters

L) **FX Wet Out Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for a 50% mix.

1) **Delay Time (ms).** Range: 30 to 1450 milliseconds. Adjusts the time interval between the delayed repeats. The increment of change gradually increases from 1 millisecond at the shortest delay time to 10 milliseconds at the longest delay time. Remember that the **TAP** button can always be used to key in delay times by feel.

2) **Chorus Depth.** Adjusts the amount of Doppler shift and how apparent the Chorus effect sounds. Select between 1.0 for no apparent effect and 10.0 for maximum effect.

3) **Delay Feedback.** Adjusts the number of delay repeats. Select between 1.0 for a single delay repeat and 10.0 for many repeats.

4) **Chorus Rate (Hz).** Range: from 0.08 Hz to 10 Hz. Adjusts the rate of the chorus effect. The increment of change gradually increases from 0.01 Hz for the slowest rate to 0.08 Hz for the fastest rate.

♫ To use MIDI continuous controller messages to instantly change the delay time, set **Delay Time Change** to the **Step** setting.

5) **Delay Time Change.** Select **Ramp** or **Step** to change the way the effect responds to changes in the **Delay Time** parameter. With the **Ramp** setting, the delay time change will be gradual with an analog sounding pitch warble, (audible until the delay time stabilizes). With the **Step** setting, the delay time change will be instant with a “digital zip” sound audible for a moment.

Delay + Flange

Description

Mono Delay plus stereo Triangle Flange.

Adjustable parameters

L) **FX Wet Out Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for a 50% mix.

1) **Delay Time (ms).** Range: 30 to 1450 milliseconds. Adjusts the time interval between the delayed repeats. The increment of change gradually increases from 1 millisecond at the shortest delay time to 10 milliseconds at the longest delay time. Remember that the **TAP** button can always be used to key in delay times by feel.

2) **Flange Depth.** Adjusts the amount of Doppler shift and how apparent the Flange effect sounds. Select between 1.0 for no apparent effect and 10.0 for maximum effect.

3) **Delay Feedback.** Adjusts the number of delay repeats. Select between 1.0 for a single delay repeat and 10.0 for many repeats.

4) **Flange Rate (Hz).** Range: from 0.08 Hz to 10 Hz. Adjusts the rate of the flange effect. The increment of change gradually increases from 0.01 Hz for the slowest rate to 0.08 Hz for the fastest rate.

♫ To use MIDI continuous controller messages to instantly change the delay time, set **Delay Time Change** to the **Step** setting.

5) **Delay Time Change.** Select **Ramp** or **Step** to change the way the effect responds to changes in the **Delay Time** parameter. With the **Ramp** setting, the delay time change will be gradual with an analog sounding pitch warble, (audible until the delay time stabilizes). With the **Step** setting, the delay time change will be instant with a “digital zip” sound audible for a moment.

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Delay + Phaser

Description

Mono Delay plus stereo Phaser.

Adjustable parameters

L) **FX Wet Out Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for a 50% mix.

1) **Delay Time (ms).** Range: 30 to 1450 milliseconds. Adjusts the time interval between the delayed repeats. The increment of change gradually increases from 1 millisecond at the shortest delay time to 10 milliseconds at the longest delay time. Remember that the **TAP** button can always be used to key in delay times by feel.

2) **Phaser Depth.** Adjusts the width of the phaser sweep and how apparent the Phaser effect sounds. Select between 1.0 for no apparent effect and 10.0 for maximum effect.

3) **Delay Feedback.** Adjusts the number of delay repeats. Select between 1.0 for a single delay repeat and 10.0 for many repeats.

4) **Phaser Rate (Hz).** Range: from 0.08 Hz to 10 Hz. Adjusts the rate of the Phaser effect. The increment of change gradually increases from 0.01 Hz for the slowest rate to 0.08 Hz for the fastest rate.
~~~~~~

♪ To use MIDI continuous controller messages to instantly change the delay time, set **Delay Time Change** to the **Step** setting.

5) **Delay Time Change.** Select **Ramp** or **Step** to change the way the effect responds to changes in the **Delay Time** parameter. With the **Ramp** setting, the delay time change will be gradual with an analog sounding pitch warble, (audible until the delay time stabilizes). With the **Step** setting, the delay time change will be instant with a "digital zip" sound audible for a moment.

AutoSwell + Chorus

Description

Automatically-triggered volume swell effect with chorus. The AutoSwell is triggered when you play at a reasonable volume. Note that in order for the trigger to reset, you must not play for a short time before you wish the effect to swell a new note or chord.

Adjustable parameters

L) **FX Wet Out Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for 100% wet (all effect). Note that because the AutoSwell ideally raises the volume level from inaudible to the maximum for the given preset, having this control at anything less than 10.0 will cause there to be some dry signal present at all times, including at the beginning of the swell. For the maximum swelling action, keep this control set at 10.0.

1) **Autoswell Attack Time.** Adjusts the amount of time it takes for the AutoSwell to come up to full volume.

2) **Chorus Depth.** Adjusts the amount of Doppler shift and how apparent the Chorus effect sounds. Select between 1.0 for no apparent effect and 10.0 for maximum effect.

3) **Autoswell Sensitivity.** Adjusts the sensitivity of the AutoSwell triggering mechanism to your playing. Select between 1.0 for no swell action and 10.0 for maximum swell action with the highest degree of sensitivity to any input from your guitar. Note that your guitar volume and the **TRIM**, **GAIN**, and **VOLUME** controls must be set at reasonable levels in order for the effect to respond properly.

4) **Chorus Rate (Hz).** Range: from 0.08 Hz to 10 Hz. Adjusts the rate of the chorus effect. The increment of change gradually increases from 0.01 Hz for the slowest rate to 0.08 Hz for the fastest rate.

Ultra-Clean + Chorus

Description

Ultra-clean guitar tone with Triangle Chorus. For best results, use with clean amp settings and your guitar's neck (rhythm) pickup.

Adjustable parameters

L) **FX Wet Out Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for 100% wet (all effect).

1) **Chorus Rate (Hz).** Range: from 0.08 Hz to 10 Hz. Adjusts the rate of the chorus effect. The increment of change gradually increases from 0.01 Hz for the slowest rate to 0.08 Hz for the fastest rate.

2) **Chorus Depth.** Adjusts the amount of Doppler shift and how apparent the Chorus effect sounds. Select between 1.0 for no apparent Chorus effect and 10.0 for maximum effect.

3) **Body.** Adjusts the amount of low frequencies in this effect. Select between 1.0 for reduced bass and 10.0 for boosted bass.

4) **Brilliance.** Adjusts the amount of high frequencies in this effect. Select between 1.0 for reduced treble and 10.0 for boosted treble.

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Pitch Shift

Description

Semitone-variable pitch shifter and detuner.

Adjustable parameters

L) **Pitch Shift Out Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for 100% wet (all effect).

1) **Pitch.** Adjusts the semi-tone shift value of this effect within a four octave range. Select between 1.0 for a shift two octaves down and 10.0 for a shift two octaves up from the dry, input pitch. Adjustment increments are made in semi-tones intervals with 5.5 being in unison with the input signal (no shift). Note that the farther from center (5.5) that you turn the knob, the more apparent the effect will be.

♫ Semi-tone = Half-step

2) **Pitch Detune.** Adjusts the offset from a nominal semi-tone within one tone. Select between 1.0 for a detune one semi-tone flat and 10.0 for a detune one semi-tone sharp. Adjustment increments are made in micro-tone intervals with 5.5 (default) being in unison with the input signal (no detuning).

3) **Pitch Feedback.** Adjusts how much signal from the Pitch Shifter effect is recycled back to the input. Select between 1.0 for minimum levels and 10.0 for maximum levels. High feedback levels allow a portion of the signal to repeat the cycle many times thereby compounding the pitch shifts.

4) **Pitch Pre-Delay.** Adjusts the amount of delay before the pitch-shifted signal is heard. Can be used with the **Pitch Feedback** control to get continuously rising or falling pitch cascades with a fixed time change interval. For the most transparent pitch shifting, turn this control to 1.0.
~~~~~~

Ring Mod + Delay

Description

Ring Modulator+Mono Delay. The Ring Modulator creates tones above and below your original guitar signal.

Adjustable parameters

L) **FX Wet Out Level.** Adjusts the wet/dry signal ratio. Select between 1.0 for 0% wet (no effect) and 10.0 for 100% wet (all effect).

♫ Alternately, you could use an external MIDI continuous controller for the same purpose. The continuous controller menus are one additional push of the AMP key after the expression pedal menus and the value selection is the same.

1) **Mod Frequency.** Adjusts the Ring Modulator frequency. Select between 1.0 for the lowest frequency and 10.0 for the highest frequency. For radical results from this effect, try using an expression pedal (optional) to control this parameter, (see item "**EE—EXPRESSION PEDAL**" on page 16 for details on connecting an expression pedal). Other conditions: **Mod Frequency** must be selected for the expression pedal parameter of the active preset (Use the AMP key to access the expression pedal menu and the DATA WHEEL to select **Mod Frequency** parameter). You must have an analog expression pedal plugged into the **EXP PEDAL** jack and **Ring Mod+Delay** must be selected as the active effect.

2) **Delay Out Level.** Adjusts the wet/dry ratio of the delay effect. Select between 1.0 for 0% wet (no effect) and 10.0 for a 50% mix.

3) **Delay Time (ms).** Range: 30 to 1450 milliseconds. Adjusts the time interval between the delayed repeats. The increment of change gradually increases from 1 millisecond at the shortest delay time to 10 milliseconds at the longest delay time. Remember that the **TAP** button can always be used to key in delay times by feel.

4) **Delay Feedback.** Adjusts the number of delay repeats. Select between 1.0 for a single delay repeat and 10.0 for many repeats.

♫ To use MIDI continuous controller messages to instantly change the delay time, set **Delay Time Change** to the **Step** setting.

5) **Delay Time Change.** Select **Ramp** or **Step** to change the way the effect responds to changes in the **Delay Time** parameter. With the **Ramp** setting, the delay time change will be gradual with an analog sounding pitch warble, (audible until the delay time stabilizes). With the **Step** setting, the delay time change will be instant with a "digital zip" sound audible for a moment.

6 ✧ THE UTILITY MODE

There are 13 UTILITY parameters, all accessed through the The UTILITY Mode. Nine of these parameters are used for MIDI functions and the remaining 4 are used for Cyber-Twin system management. UTILITY functions are global in scope and are not affected by presets. Below are navigational instructions for the UTILITY Mode, followed by a map of the UTILITY Mode on pages 46 and 47. For more information on the MIDI items in this Mode, see chapter 7, "MIDI Implementation," starting on page 54).

Menu Navigation—UTILITY

☞ **Select a parameter to edit** -

- Press the UTILITY key repeatedly to increment through the 13 menu items or
- Press *and hold* the FX key while rotating the DATA WHEEL in either direction.

☞ **Adjustment** -

- Rotate the DATA WHEEL to adjust the parameter selected in the step above.

The UTILITY menu map below is your guide to the UTILITY Mode. Each menu item is represented by a pair of rows (unshaded and shaded) as shown in the example below.

PARAMETER NAME	Description, operational instructions,
example screen SPDIF Patching C00 Guitar Direct Out	**Listing or Range of values**

⇳ **Column 1 —** lists the 13 UTILITY parameters, (see "Select a parameter to edit" above).

⇔ **Unshaded Row —** lists the parameter name with a description to the right.

⇔ **Shaded Row** — lists the range of parameter values, (see "Adjustment" above).

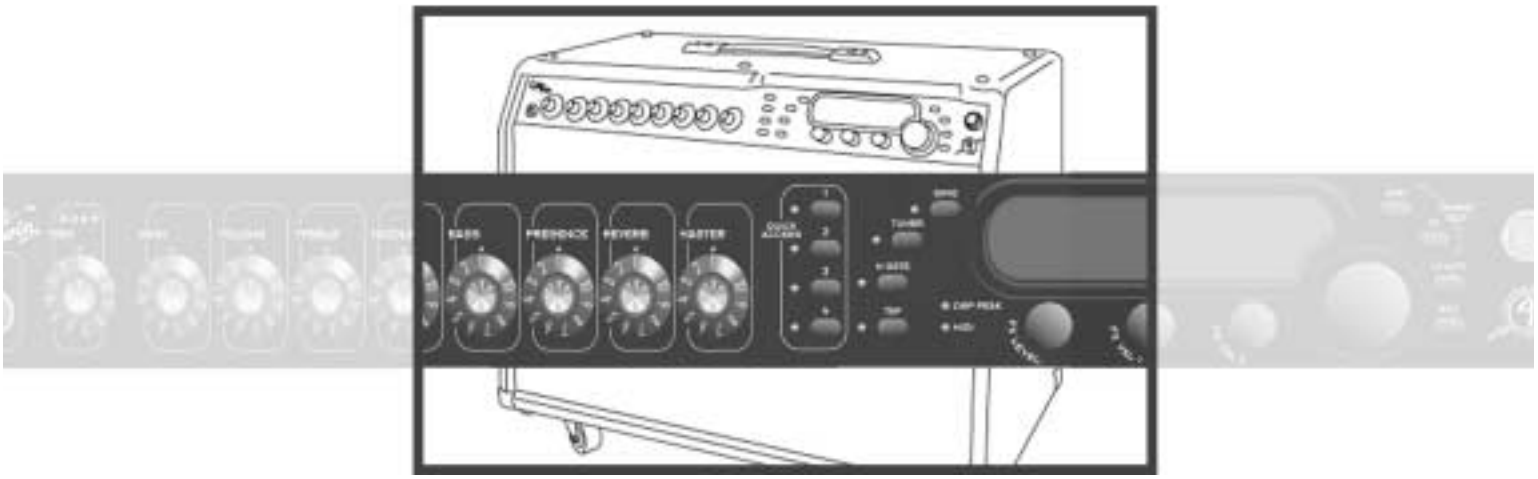
DEMO MODE **FIRST MENU ITEM** Demo Mode C00 On	ON (default) – The SAVE key starts the demonstration in PLAY Mode. OFF – normal SAVE key functionality, see next parameter. **ON ⇕ OFF**
MEMORY PROTECT Memory Protect C00 Off	OFF (default) – Normal SAVE key functionality. ON – Disables the SAVE key. **OFF ⇕ ON**
SPDIF PATCHING SPDIF Patching C00 Amp Line Out	Amp Line Out – Digital signal with all effects and processing. Guitar Direct Out – Digital signal without processing. **Amp Line Out ⇕ Guitar Direct Out**
MIDI CONTINUOUS **CONTROLLER NUMBER** Cont Controller C00 11	11 (default) – Many CC MIDI expression pedals use 11 as a default. 1-100 (range) – Select number matching the CC pedal. **1–100**

MIDI RECEIVE CHANNEL	Omni (default) – Responds to all 16 channels. 1-16 (range) – Responds to a single channel. OFF – Disables receive channel.
MIDI Receive Ch C00 Omni	**Omni ⊛ 1–16 ⊛ OFF**
MIDI TRANSMIT CHANNEL	OFF (default) **–** Disables transmit channel. 1-16 (range) – Transmits on a single channel.
MIDI Transmit Ch C00 Off	**1–16 ⊛ OFF**
MIDI SYSTEM EXCLUSIVE ID NUMBER	Omni (default) – Responds to all Sys Ex commands. 17-32 (range) – Responds only to Sys Ex commands for one ID.
SysEx Device ID C00 Omni	**Omni ⊛ 17– 32**
MIDI PRESET MAPPING	Any MIDI #___ = Any Preset #___— Redirect each MIDI program change number to any preset number. Use the FX LEVEL the FX VAL2 knobs to select values (down arrows on screen point to the FX knobs).
MIDI#:127 Preset:C42 Map ↓ ↓	**MIDI# 1 – 127 redirected to preset# P00-P84, C00-C84, A00-A34**
MIDI CONTINUOUS CONTROLLER ECHO	OFF (default) – Stops the echo loop of incoming continuous controller data from mixing with the outgoing data. ON – Allows continuous controller data to repeatedly echo.
CC Echo In → Out C00 Off	**OFF ⊛ ON**
FACTORY PRESET RESTORE	**WARNING: *ALL of your presets are erased with this function. (*PLAYER'S LOUNGE presets) *are overwritten with* FENDER CUSTOM SHOP presets.**
Press TAP key to Restore Fact Presets	**☞ Press the TAP key once to initiate this operation. (Press the EXIT key to cancel.)**
Press TAP to Verify Fact Preset Restore	**☞ Press the TAP key a *second* time to reset all presets to factory.** Restoring Factory Presets ...
MIDI DUMP – UTILITY SETTINGS	This function will dump all UTILITY parameter settings.
Press TAP key to MIDI Dump Utilities	**Press the TAP key once.**
MIDI DUMP – ANY PRESET	This function will dump the selected preset from the Cyber-Twin to a MIDI device. The items sent in the dump include all the parameter values for this preset.
Press TAP key to MIDI Dump Preset C00	**Select a preset with the DATA WHEEL to dump. Press the TAP once to dump.**
MIDI DUMP – ALL PRESETS	This function will dump ALL presets from the Cyber-Twin to a MIDI device. The items sent in the dump include all the parameter values for every preset.
Press TAP key to MIDI Dump All Preset	**Press TAP key once.**
Column continues with the DEMO Mode menu, on page 44.	

7 ✧ CYBER-TWIN INSIGHTS

Engineer-speak

A dedicated team of individuals made the Cyber-Twin a reality including people who contributed skills in drafting, graphic arts, assembly, purchasing, marketing, beta testing and manufacturing to name a few. But it is the engineers that are the heart of the Cyber-Twin. They know intimately what those endless strings of 0's and 1's racing through the Cyber-Twin represent - because they put them there. Several of the principal engineers have offered insights as only they would have, starting on the next page. Following *Cyber-Twin Insights* is a technical discourse on "*How the Cyber-Twin Becomes an Amplifier.*" Thanks go out to all the members of the Cyber-Twin team, each one essential to this great success.



On the "robotic shape-shifting" abilities of the Cyber-Twin...

"It's like taking out your soldering iron,
grabbing components off the shelf,
and building each one of the amps in the Cyber-Twin."

Ritchie Fliegler
Fender, 2000

What I found to be most challenging in the software development of the Cyber-Twin was adding complex functionality behind the scenes while maintaining simplicity of use up front. Well, that and fighting the urge to hold my own cubicle guitar concert - ever see Dilbert jam out to "Ain't Talkin' 'Bout Love"? Not pretty. A lot of my software tasks revolved around comments like: "You know, it'd be even cooler if it did this..." Those ideas led to many improved functions in the Cyber-Twin. In fact, this is how the ability to fully sequence the Cyber-Twin was born. When a new must-have idea arose, the design team pulled together, figured out what it would take, and made it happen. That was cool. But my true pride and joy is seeing people's reactions to some of the presets I created, like "Stadium Rock" and "Lizard Crawl". And matching classic amplifiers from the 40's, 50's, and 60's. When we dialed those in, we knew we had created something special. It became obvious this was an amp and not a computer that triggers amp sounds when we plugged in several different guitars and got completely different tones. The Cyber-Twin seems complimentary to your guitar and almost transparent at times - Strats, Teles, Les Pauls,[1] they all display their full character through the Cyber-Twin. Try that with a modeling amp. This amp really allows one to define their own tone... something every guitarist strives for and something that eludes many. This is the tool for tone. Hope you find it as essential as I do.

Keith Chapman, Ph.D.

Sr. Software Engineer

When I was brought onto this project, I auditioned the competition. After getting past the "fun factor," I turned off all of the effects and listened. Then, I turned it up and listened. These auditions made the goal simple and clear: Create a guitar amplifier.

This amplifier would use digital signal processing and control to its advantage, instead of attaching an amplifier to digital signal processing and control and then calling it a guitar amp. When we got all of the pieces together, we had many, many guitar amplifiers that did not rely on effects for tone. Now add the effects, and oh my...

Matt Wilkens

Principal Engineer

1. Les Paul® is a registered trademark of Gibson Musical Instruments.

MIDI on a Fender guitar amp!? That was the first question that came to my mind when this project was introduced to me. At first, we kept the MIDI implementation simple. With the basic implementation in place, a few of us at R&D brought the Cyber Twin into a studio to really find out its capabilities. Well after a few studio sessions, more MIDI ideas came streaming in. The phrase "Wouldn't it be great if …" was being repeated over and over again. We realized that controlling the Cyber Twin through MIDI needed to be more extensive. After numerous discussions with other R&D engineers, the MIDI implementation on the Cyber Twin has grown. I get great joy now seeing the reaction from people when they realize what they can do with MIDI and the Cyber Twin.

Paul Rooney,

Software Engineer

The goal of the Cyber-Twin was to produce a digital amp that worked as if it were the best analog amp money could buy. Job number one for me was to recreate the action of the best tone controls in the world, not just ordinary digital controls. We managed to find ways in digital to nail the response characteristics of any tone stack we wanted. Next job was to build a DSP operating system that was so great that no one noticed it, after all this is an amp not a video game. Finally, I know you will also like the noise gate. I listened to other noise gates and was never satisfied. The Cyber-Twin's noise gate is very special—smooth, and especially guitar friendly. It was really fun showing the noise gate to people for the first time. Their reaction was usually a confused, "this must be some sort of trick..." Then they would realize that it was no trick, just the best noise gate they had ever heard.

Chuck Adams,

Principal Engineer

I first experienced the humble beginnings of the Cyber-Twin amp when I interviewed for the job at Fender R&D. The department was in the process of building a core of DSP products, with the flagship DSP amp (the Cyber-Twin) at the center of attention. Before the visit to Fender, it was hard to imagine the traditional, classic Fender tube amplifier and the DSP products together... although it seemed like a necessary evolution. Having been a guitar "hobbyist" and growing up in an era of Rock and Rhythm & Blues the whole idea seemed exciting, yet sad somehow.

But when I spoke with the people at Fender and viewed the first Cyber-Twin prototypes, I was quickly reassured that the evolution of DSP audio does not have to throw aside the traditional aesthetics and sound of the early Fender tube amps. In fact, the priorities were Tone, Tone and Tradition,... and in that order. The advantages of DSP architecture were only used to enhance the amplifier and make it more versatile. No trade-offs for tone or tradition were acceptable. When I saw the first artists' renderings of the amp and the motorized-pot scheme, I thought to myself,... "the best of both worlds,... the look, feel, and tone of (several) analog amps of days past,...AND the automation, versatility, and effects that digital electronics offer!" Which is precisely what they were trying to tell me....

Now that I have witnessed a good deal of the Cyber-Twin development, and as it nears production, I am amazed more and more by the range of this amplifier. The contributions by the team members that conceptualized and designed the Cyber-Twin have been remarkable. This product has evoked the kind of passion in their work that I hope to continue enjoying as I work here. I will always be proud to have been involved with this product, having provided engineering support on an intensive project. I am thrilled to witness this new revolution in the digital audio and music industry.

Mike Oney,

Software Engineer

This whole thing just started as a sparkle in my boss' eye. I remember some conceptual drawings that he, Dale Curtis, put together to define how the Cyber-Twin was going to look and how the user was likely to interact with it. It was hard to see how those line drawings were ever going to become a product (no offense to Dale's drafting skills), but it was very exciting when we first put together a prototype unit with all the graphics, knobs, switches, and buttons.

It was one thing for us to have a product that looked vintage Fender and state-of-the-art at the same time, but it was another thing entirely for us to have an amp that sounded and felt right. In all other products that we've produced, the sound of the amp has been defined early on, way before the mechanical design is dealt with. The Cyber-Twin was a different story. Because of the fact that the digital section of the amp is necessary for tone controls, voicing, and the like– I'm talking about amp tone here, not effects– we couldn't actually hear what the thing was going to sound like until we built a working prototype. The mechanical stuff was mostly done by the time that we had that first prototype.

To be honest, it was all pretty scary. We had an amp that looked killer, but we didn't know if it would be able to generate great tone. There was a lot at stake; with all that we had invested thus far in the project, we just had to make this thing sound great. I look back in hindsight, and I regret that I ever doubted my able co-workers. There were times when I heard sounds coming from the Cyber-Twin that were not exactly pretty, but then again, I guess people could have walked by my cube and heard some disturbing sounds when I was trying to debug my effects software. I wanted to put up a sign that said "I'M NOT DONE YET!" so that people would know that these sounds wouldn't end up in the final product.

All my fears were unfounded. A master painter sometimes makes broad strokes that look as if they've ruined the canvas, yet as the artist continues his work with the end in mind, those same strokes take shape and form and become beautiful as they are refined and defined. The same has been true of the Cyber-Twin. As the tone painting has developed, it has sounded rough at times, but has ended up being an incredible-sounding guitar tone creation tool. The difference between the Cyber-Twin's beauty and that of, say, a one-trick pony like the inimitable Vibro-King– it does that one trick very well indeed– is that while the Vibro-King may be the Mona Lisa of Tone, the Cyber-Twin can become a da Vinci, a Monet, or even a Rothko or Pollock. The tone colors that you can achieve with the Cyber-Twin are well nigh limitless.

The whole point of having a reconfigurable amplifier is to have access to a plethora of guitar tones. However, having 100 varieties of one-dimensional sounds does one no better; it would be preferable in that case just to have one great "go-to" tone. Further, it isn't enough to start with one of those 100 and hope to beef it up by slathering on gobs of effects. That's all icing, no cake. Now while I like effects (especially since they have been my responsibility on this project), I am also a guitar player who realizes that what matters at the core of it is that feeling of power, control, and grace that happens when you plug your Strat (or insert your axe here) into an amp, tweak the controls at your whims, and make music. We're all about that. We have set out to create an amplifier that generates great sounds, but just as important, responsive feel. You know what I mean if you've heard someone else play an amp that sounded great, but when you played it yourself, there was something missing– that's the feel factor.

All in all, I am very proud of what we've accomplished as a design team. I do put the emphasis on team, because we all have depended on one another, and I personally do not care much for praise and accolades for my individual efforts. My colleagues and superiors know how much I have depended on them, and I want to publicly thank all of them for their patience and help. I hope that we have properly exercised our weighty responsibility to continue the Fender tradition of innovation and excellence.

See if your ears (and eyes) do not agree with mine that the Cyber-Twin is the best-sounding, best-looking do-it-all guitar amplifier on the market.

Joe Brackman,

Design Engineer– Digital Effects

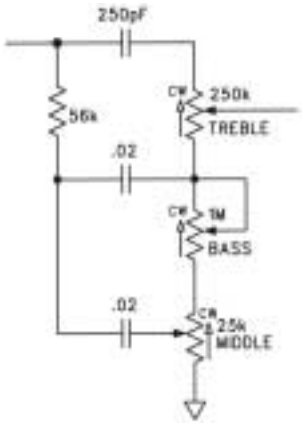
How Cyber-Twin Becomes an Amplifier

The Cyber-Twin is made up of interchangeable pieces from different amplifiers. One very important piece from these amplifiers are the different sets of tone controls, or “tone stacks”, so-called because the diagrams of these tone controls show the components stacked on top of one another.

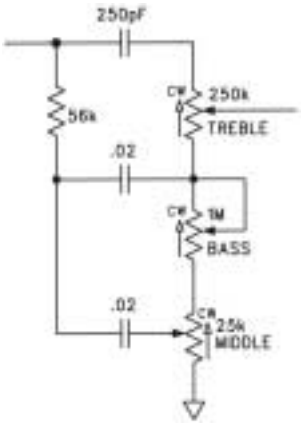
The Cyber-Twin uses four different sets of tone controls from four different eras of Fender amplifiers. The first is from the early Fender narrow-panel tweed era (1956-58 or so), which first made its appearance in the Bassman, model 5F6. We call this tone stack “British” (more on this later). The next one is from the late tweed era (1959), which we call “Tweed”. Next is one that originated in 1964 that we call “Blackface” (so-called because the Fender amps of this era had black dial plates). Last, we have a brand new set of tone controls we call “Modern”, which originate in the 2000-2001 era.

The British, Tweed, and Blackface tone stacks, though similar in appearance and function, sound quite different from each other. Each justifies its own existence. The British tone stack, which came from an early production Fender 5F6-A Bassman, was a starting point that evolved into the Tweed tone stack, which came about as a re-optimization for bass guitar, and was first used in the 5F6-A Bassman of 1959. The Blackface tone stack came about in an effort to make a guitar amplifier sound as clean and loud as possible with a given amount of power. All three tone stacks, and many variations, are used in guitar amplifiers to this day. Having these different sets of tone controls is one of the things that helps the Cyber-Twin “become” many different amplifiers.

OK, what about this “British” business? The story goes something like this. Fender amplifiers weren’t readily available in Europe before the late 1960’s. They were special ordered, modified to run on 220V or 240V 50Hz, and then shipped in very low quantities. The result was amplifiers that were expensive *and* hard to get. Enter some British gentlemen (who needn’t be named) who nabbed an early Fender Bassman model 5F6-A, which still had the 5F6 tone controls. The resulting “direct adaptation” (and a good one at that) became the first, uh, major well-known British-made guitar amplifier. Below are diagrams of the early Fender Bassman model 5F6-A and British tone stacks. Note the “*similarities*”:



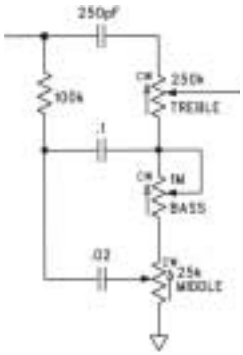
Early Production Bassman 5F6-A Tone Stack

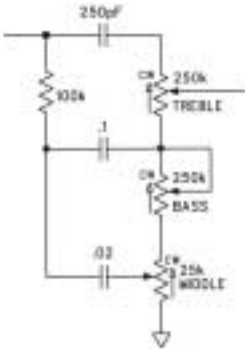


British Tone Stack

We took the liberty of slightly modifying the Tweed tone stack. The original's bass control "came up" very quickly. Once turned higher than about 6 out of 12, there was no apparent difference in the bass response, but the increase of inaudible low bass robbed the amp of audible power. The modification spreads out the useful range of the bass control, but changes nothing else. This is similar to what we did in the Fender HR series (1996):

Later Production
1959 Fender Bassman
5F6-A Tone Stack

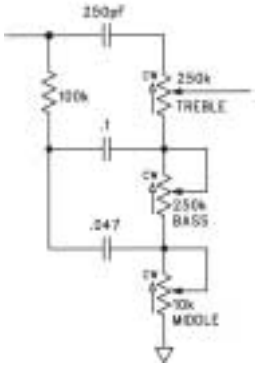




Tweed Tone Stack used
in the Cyber-Twin

Blackface tone controls, unlike the British and Tweed controls, go silent when they are all turned all the way down. This is because the mid control is wired differently. When translated into Virtual Tone Interpolation™ (VTI), the Blackface tone controls in the Cyber-Twin do the same:

Blackface Tone Controls



What are the "Modern" tone controls? There is no diagram, because they're brand new along with VTI. They're like Baxandall tone controls with a mid control, but not really. They're optimized for guitar, yet they can go where traditional tone stacks can't. They're capable of everything from settings like an extreme mid-scooped sound (or a mid mountain!) to hi-fi flat.

There's more to tone, however, than tone stacks. The location of a tone stack in the circuit makes an astounding difference in the sound of an amplifier, even when the amp is played "clean". You can demonstrate this by switching the Cyber-Twin's tone stack location from pre-distortion to post-distortion without changing anything else.

Also, there are many drive (distortion) types that have been used. The Cyber-Twin has 12 tube and 4 solid-state drive types, ranging from the clean Blackface Tube 1 (which uses tubes!) to the super-sustain Dyna-Touch 4 (solid-state). The vacuum tube drive types "Blackface" and "Hot Rod" use a common cathode gain stage to set the dominant distortion characteristic. The "Tweed" and "HMB" vacuum tube drive types use a common plate cathode follower to set the dominant distortion characteristic. Both types of tube distortion are widely used to this day. By the way, in case you're wondering, the drive type "HMB" stands for "Her Majesty's Bassman".

Because of tone stack types, tone stack location, drive types, and a Dyna-Touch guitar power amplifier section, the Cyber-Twin has the ability to "become" just about any amplifier, not just model it. This is one reason why we say "Innovate… Don't Emulate"™

Matt Wilkens, Principal Engineer

8 ✦ MIDI IMPLEMENTATION

Use the UTILITY key to access the menus used in the operations below, (*except for the first operation which uses the AMP key*). Use the DATA WHEEL to select values within menus, (see “Menu Navigation” on page 20 for help).

MIDI Continuous Controller Device

Continuous Controller assignment

Assign one Cyber-Twin parameter to be controlled by a MIDI device such as, a digital expression pedal or MIDI software on a computer. The parameter assignment is saved as part of a preset so that parameter assignments can be changed with amp design preset changes.

♫ The range of values for continuous controllers data on the Cyber-Twin is 0-127.

Assignable parameters[1] — (Access using the AMP • Volume, key)

• Gain, • Treble, • Middle, • Bass, • Presence, • Reverb, • Master Volume, • *FX Level, • FX value 1, • FX value 2, • FX value 3, • FX value 4*, • *Reverb In/Dwell, • Reverb Tone/Shape* • Reverb Time, and • Reverb Diffusion.

Continuous Controller device number setting

Set the Cyber-Twin to match the continuous controller device number. The default setting on the Cyber-Twin, is 11, the number used by many MIDI pedal manufacturers.

♫ The continuous controller device number is stored globally on the Cyber-Twin.

If the numbers are not equal, use the continuous controller number menu on the Cyber-Twin to select the number of the MIDI device.
Range 1 - 100.

MIDI Channels

MIDI Receive Channel

Set the MIDI receive channel that the Cyber-Twin uses to respond to program changes and continuous controller changes. The MIDI receive channel range is: (1 - 16, Omni, OFF) default is Omni.

MIDI Transmit Channel

Set the MIDI channel that the Cyber-Twin uses to transmit program changes and continuous controller changes. The MIDI transmit channel choices are: (1 through 16, OFF) default is OFF.

1. Parameters in *italics* change dynamically with the active effect or Reverb type.

Continuous Controllers and Program changes

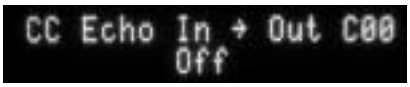
Knob movements can be recorded (as continuous controller data), then replayed for performance sequences. When the you select a MIDI Transmit channel (1-16), the following parameters will be transmitted (range 0 - 127):

parameter	CC#	parameter	CC#
Gain	102	FX Level	110
Volume	103	FX Val 1	111
Treble	104	FX Val 2	112
Middle	105	FX Val 3	113
Bass	106	FX Val 4	114
Presence	107	Reverb In [Dwell]	115
Reverb	108	Reverb Tone [Shape]	116
Master	109	Reverb Time	117
		Reverb Diffusion	118

The Cyber-Twin also will transmit program changes. The following table shows the bank associated with each group of presets.

- ✦ FENDER CUSTOM SHOP Bank #01: C00 – C84
- ✦ PLAYER'S LOUNGE Bank #02: P00 – P84
- ✦ YOUR AMP COLLECTION Bank #03: A00 – A34

♫ Example screens show default Values



Continuous Controller Echo

When set to ON, the continuous controller information received will be redirected (echoed) back out the MIDI Out Jack. If OFF is selected, the only continuous controller information sent out will be new data transmitted from the turning of a knob or operation the analog expression pedal. This feature will aid in recording continuous controller sequences.

MIDI Preset Mapping

Any MIDI program changes contained in bank #00 can be mapped to any preset on the Cyber-Twin. Two of the FX knobs are used to select the values in this menu. The FX LEVEL knob selects MIDI program change numbers 0 - 127 and FX VAL2 selects the target preset for control. *Only MIDI program changes in bank #00 will access the MIDI Preset map.*

System Exclusive Functions

♫ Refer to Appendix 3 on page58 for System Exclusive Message Format

FOR ALL OPERATIONS ON THIS PAGE: ***To receive System Exclusive information, the Device ID MUST be set on each Cyber-Twin to* Omni*, or the* same ID number used when a particular message was transmitted. *The System Exclusive Device ID choices are: (17 - 32, Omni), default is Omni.***

System Exclusive Device ID

Links System Exclusive Device ID with System Exclusive Messages (Utilities Load, Preset Load and All PLAYER'S LOUNGE Load messages sent from external devices). This enables transfers to exclusive subsets of Cyber-Twins on a network, regardless of MIDI Channel settings.

Dump[1] Utilities

Dumps the Cyber-Twin Utilities settings: DEMO Mode, Memory Protect, SPDIF Patching, continuous controller Number, MIDI Receive/Transmit Channels, System Exclusive ID and MIDI Map.

Dump Any Preset

Dumps a selected preset. The default choice is the current preset. Choose any other preset with the DATA WHEEL while the Any Preset Dump menu (left) is active. The items sent in this dump include all the parameter values for the one selected preset.

♫ Audio from the amp will not change with any preset selection in this menu.

When the "Any Preset" information is sent back to the amp, you can select any location in THE PLAYER'S LOUNGE to save.

Dump All Presets

Dumps ALL Presets on the Cyber-Twin. The items sent in the Dump are all the parameter values for every preset.

Only THE PLAYER'S LOUNGE presets are loaded back into the Cyber-Twin. They are loaded into their original locations.

1. *Dump* is to "Transfer to an appropriate MIDI storage device."

APPENDICES

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Appendix 1

MIDI IMPLEMENTATION CHART

Function		Transmitted	Recognized	Remarks
Basic Channel	Default Channel	X 1-16	1-16 1-16	Memorized
Mode	Default Messages Altered	X X	Mode 2, Mode 4 Mode 2, Mode 4 X	Memorized
Note Number	True Voice	X	X	
Velocity	Note ON Note OFF	X	X	
After Touch	Key's Channel	X X	X X	
Pitch Bender		X	X	
Control Change		O	O	Assignable Continuous Controller# are: 1-100
Prog Change	True #	O	O	Internally Mapped
System Exclusive		O	O	See Appendix
System Common	Song Pos Song Sel Tune	X X X	X X X	
System Real Time	Clock Commands	X X	X X	
Aux OFF Messages	Local ON / All Notes OFF Active Sense Reset GM ON	X X X X X	X X X X X	

Notes:	O: Yes X: No	Mode 1: *OMNI ON, POLY* Mode 2: *OMNI ON, MONO* Mode 3: *OMNI OFF, POLY* Mode 4: *OMNI OFF, MONO*

Appendix 2

MIDI PROGRAM CHANGES

The Cyber-Twin will respond to MIDI program changes if the MIDI channel is either set to Omni or set to the same MIDI channel as the MIDI controller. The MIDI program changes, enable the selection of any preset from these banks:

G MIDI MAP, G FENDER CUSTOM SHOP, G PLAYER'S LOUNGE, G YOUR AMP COLLECTION

Note that the Cyber-Twin follows the MIDI convention of numbering, starting with zero (0) for example, "MIDI bank # 1, MIDI program # 6 equals FENDER CUSTOM SHOP preset C06 *rather than C07*.

Bank changes use this format: B**n** 00 00 32 **bb** C**n** **pp**

n = MIDI Channel, **bb** = bank Number, **pp** = MIDI preset #

- ✧ Bank #00 MIDI Map
- ✧ Bank #01 FENDER CUSTOM SHOP presets
- ✧ Bank #02 PLAYER'S LOUNGE presets
- ✧ Bank #03 YOUR AMP COLLECTION presets

The Cyber-Twin saves the current bank number, requiring only one bank change message to be sent when changing preset banks.

The **Tuner** is accessed using MIDI program change number 127 within banks 01-03.

MIDI Continuous Controllers

The table below lists continuous controlle rnumbers that each parameter will automatically respond to:

CC#	Parameter	Value Range[1]
07	Master Volume	(0 - 127)
32	LSB for Bank Changes	(0 - 127)
85	Effects/Reverb Bypass	OFF (0=63), ON (64-127)
96	Data Increment[2]	(Linked to the DATA WHEEL)
97	Data Decrement[2]	(Linked to the DATA WHEEL)
102	Gain	(0 - 127)
103	Volume	(0 - 127)
104	Treble	(0 - 127)
105	Middle	(0 - 127)
106	Bass	(0 - 127)
107	Presence	(0 - 127)
108	Reverb	(0 - 127)
109	Master Volume	(0 - 127)
110	FX Level	(0 - 127)
111	FX Val 1	(0 - 127)
112	FX Val 2	(0 - 127)
113	FX Val 3	(0 - 127)
114	FX Val 4	(0 - 127)
115	Reverb In [Dwell]	(0 - 127)
116	Reverb Tone [Shape]	(0 - 127)
117	Reverb Time	(0 - 127)
118	Reverb Diffusion	(0 - 127)
119	Tap	

Table Notes:

[1] Cyber-Twin continuous controller resolution: 0 – 127, (it will not accept 16,384 step sizes).

[2] Data Increment/Decrement models the DATA WHEEL by 1/-1 increments

Appendix 3

SYSTEM EXCLUSIVE MESSAGES

Note: *All System Exclusive data values are displayed in hexadecimal with H for clarification.*

System Exclusive Header

Value	Description
F0H	Start of System Exclusive Message
08H	Fender's Manufacturer ID
nnH	nn = Device ID (minus one)
11H	Amp ID number 11H. The upper nibble identifies the Cyber-Twin and the lower nibble is the software version
ffH	Function ID number. *See table to the right for values.>*
F7H	End of System Exclusive Message

Function ID Numbers	Description
01H	Utilities Message
02H	One Preset Message
03H	All Presets Message

System Exclusive Data Packet

Value	Description
F0H	Start of System Exclusive Message
08H	Fender's Manufacturer ID
nnH	nn = Device ID (minus one)
11H	Amp ID number 11H. The upper nibble identifies the Cyber-Twin and the lower nibble is the software version
ffH	Function ID number. See list for values.
PnH	Packet Number
Data	Data bytes: The data bytes have been formatted following the MIDI Specification 1.0
CBH	Checksum byte used for error checking
F7H	End of System Exclusive Message

System Exclusive End of File Message

Value	Description
F0H	Start of System Exclusive Message
08H	Fender's Manufacturer ID
nnH	nn = Device ID (minus one)
11H	Amp ID number 11H: The upper nibble identifies the Cyber-Twin and the lower nibble is the software version
ffH	Function ID number. See list for values
7BH	End of System Exclusive File Byte
F7H	End of System Exclusive Message

Appendix 4

DATA TRANSMISSION FORMAT

Following the guide lines of the MIDI Specification, data is transmitted as follows: First, the System Exclusive Header is sent. The amp will wait 200ms to look for a hand shake. If no hand shake is received then the amp will transmit the first data packet. The transmission continues until all the information has been sent. After the last packet, the End of File message is sent. In order for hand shaking to work the Device ID must be set to the same ID as the amp. The hand shake messages that the amp will respond to are:

Value	Description
F0H	Start of System Exclusive Message
7EH	Universal Message
nnH	nn = Device ID (minus one)
hdH	Hand Shake ID
ppH	Packet Number
F7H	End of System Exclusive Message

Hand Shake ID	Description
7CH	Wait
7DH	Cancel
7EH	Not Acknowledge
7FH	Acknowledge

Use the following System Exclusive messages to edit other Preset parameters.

Parameter Edit ID	Description
F0H	Start of System Exclusive Message
08H	Fender's Manufacturer ID
nnH	nn = Device ID (minus one)
11H	Amp ID number 11H. The upper nibble identifies the Cyber-Twin and the lower nibble is the software version
05H	Message ID number for additional parameter controls
ddH	Parameter ID Number. (See list below)
vvH	Value for the parameter you wish to edit (See list below)
7BH	End of System Exclusive File Byte
F7H	End of System Exclusive Message

Parameter ID	Parameter ID Number (ddH)	Value (HEX) (vvH)
Tone Stack Type	00H	00H = Tweed
		01H = Blackface
		02H = British
		03H = Modern
Tone Stack Position	01H	00H = Pre-Distortion
		01H = Post-Distortion
Drive Circuitry	02H	00H = Blackface Tube1
		01H = Blackface Tube2
		02H = Blackface Tube3
		03H = Tweed Tube1
		04H = Tweed Tube2
		05H = Tweed Tube3
		06H = Hot Rod Tube1
		07H = Hot Rod Tube2
		08H = Hot Rod Tube3
		09H = HMB Tube1
		0AH = HMB Tube2

		0BH = HMB Tube3
		0CH = Dyna Touch 1
		0DH = Dyna Touch 2
		0EH = Dyna Touch 3
		0FH = Dyna Touch 4
Effects Type Selection	03H	00H = None
		01H = Mono Delay
		02H = Dotted 8/16 Delay
		03H = One-E-Da Delay
		04H = Ping Pong Delay
		05H = Swing Tap Delay
		06H = Tape Echo
		07H = Stereo Tape Echo
		08H = Stereo Flam Delay
		09H = Ducking Delay
		0AH = Backwards Delay
		0BH = Tremolo
		0CH = Amp Tremolo
		0DH = Auto Pan
		0EH = Phaser
		0FH = Vibratone
		10H = Pedal Wah
		11H = Touch Wah
		12H = Sine Chorus
		13H = Triangle Chorus
		14H = Sine Flange
		15H = Triangle Flange
		16H = Delay+Chorus
		17H = Delay+Flange
		18H = Delay+Phaser
		19H = Auto Swell +Chorus
		1AH = Ultra-Clean+Chorus
		1BH = Pitch Shift
		1CH = Ring Mod+Delay
Reverb Type Selection	04H	00H = Small Room
		01H = Large Room
		02H = Small Hall
		03H = Large Hall
		04H = Arena
		05H = Small Plate
		06H = Large Plate
		07H = Blackface Reverb
		08H = Gated Reverb
		09H = Small Ambience
		0AH = Fender Reverb
Timbre Selection	05H	00H = None
		01H = Full Body
		02H = Razor’s Edge
		03H = Bright & Light
		04H = Bass Booster
Speaker Phase Selection	06H	00H = Standard Polarity
		01H = Reverse Polarity
		02H = Left Rev Polarity
		03H = Right Rev Polarity
Compressor Selection	07H	00H = OFF
		01H = Low
		02H = Medium

		03H = High
		04H = Even Higher
Noise Gate Depth Selection	08H	0 – 127(00H-7FH)
Noise Gate Threshold Selection	09H	00H = Low
		01H = Medium
		02H = High
Expression Pedal Assignment Selection	0AH	00H = Volume
		01H = Gain
		02H = Treble
		03H = Middle
		04H = Bass
		05H = Presence
		06H = Reverb
		07H = Effects Level
		08H = Effects Val 1
		09H = Effects Val 2
		0AH = Effects Val 3
		0BH = Effects Val 4
		0CH = Master Volume
		0DH = Reverb Input
		0EH = Reverb Tone
		0FH = Reverb Time
		10H = Reverb Diffusion
Continuous Controller Assignment Selection	0BH	Same As Expression Pedal
Effects/Reverb Bypass Selection	0CH	00H = FX Input
		01H = Reverb Input
		02H = FX Output
		03H = Reverb Output
		04H = FX & Reverb Input
		05H = FX In & Reverb Out
		06H = FX Out & Reverb In
		07H = FX & Reverb Out
		08H = Vibro Fast/Slow

The next group of messages is used to initiate MIDI dumps.

Parameter Edit ID	**Description**
F0H	Start of System Exclusive Message
08H	Fender's Manufacturer ID
nnH	nn = Device ID (minus one)
11H	Amp ID number 11H. The upper nibble identifies the Cyber-Twin and the lower nibble is the software version
04H	Message ID number for additional parameter controls
22H	ID number indicating requesting a MIDI Dump
00H	Unused data byte
00H	Unused data byte
00H	Unused data byte
ddH	Dump ID byte. *See table below for values.* \/
7BH	End of System Exclusive File Byte
F7H	End of System Exclusive Message

Dump ID	**Description**
01H	Transmit the Utilities
02H	Transmit the Selected Preset
03H	Transmit all the Presets

Appendix 5

TROUBLESHOOTING

No sound coming from the unit...

Turn MASTER VOLUME, TRIM, GAIN, VOLUME, *TREBLE*, *MIDDLE*, *BASS* and Guitar Volume *ALL* above minimum.

Is there anything plugged into the HEADPHONE jack? Remove it.

Is the TUNER Mode engaged? Press EXIT.

Cannot SAVE a preset...

Is Memory Protection ON (Access w/ UTILITY key)? Switch OFF

Is the DEMO Mode ON (Access w/ UTILITY key)? Switch OFF

Clean tone sounds distorted...

Is the red LED constantly on while playing? Turn Trim down.

Is a device in an effects loop ovedriving? Adjust

The 3 FX knobs do nothing...

Does “None” appear on Screen when you press the FX key? Rotate the DATA WHEEL at the “None” Screen to select an FX.

Is the FX/Reverb Bypass switch (one button footswitch) enabled?

The 4-Button footswitch does not work...

Make sure it is plugged into the footswitch jack and not a MIDI jack.

An Error message appears on Screen...

Write down the message *exactly* as it appears on Screen, and contact your local Fender repair center with this information.

The unit is not responding to any MIDI program change Messages from external devices...

Make sure the MIDI Receive channel is set properly.

Make sure the MIDI Cables are connected properly.

The unit is not responding to any MIDI continuous controller messages from external devices...

Make sure the MIDI Receive channel is set properly.

Make sure the continuous controller numbers matches the value in the UTILITY menu or is one of the predefined numbers listed in the appendices.

Make sure the MIDI Cables are connected properly.

The unit is not responding to any System Exclusive Information from external devices...

Make sure the System Exclusive Device ID is set properly.

Make sure the MIDI Cables are connected properly.

♫ To locate MIDI resources online, visit www.midi.org

♫ If a problem persists after trying these solutions, consult an authorized *Fender Service Center* or visit

www.fender.com
and www.mrgearhead.net

Appendix 6

CYBER-TWIN SPECIFICATIONS

TYPE:	PR 393	
PART NUMBERS:	022-9000-000 (120V, 60Hz) USA 022-9040-000 (230V, 50Hz) UK 022-9070-000 (100V, 50/60Hz) Japan	022-9030-000 (240V, 50Hz) Aust 022-9060-000 (230V, 50Hz) Europe
POWER REQUIREMENTS:	360W	
POWER OUTPUT:	65W per channel (130W total) @ 5% THD	
RATED LOAD IMPEDANCE:	8 ohms per channel	
SENSITIVITY:	adjustable using TRIM control	
PREAMP INPUT IMPEDANCE:	900k ohm	
EFFECTS LOOP	(mono send, stereo return)	
NOMINAL LEVEL:	-10dBv / +4dBu switchable	
OUTPUT IMPEDANCE:	220 ohm, impedance balanced	
INPUT IMPEDANCE:	20k ohm minimum, balanced	
SPDIF LINE OUT JACK:	RCA jack, digital stereo	
XLR OUTPUT JACKS	(stereo / mono switchable)	
NOMINAL LEVEL:	0dBv	
OUTPUT IMPEDANCE:	300 ohm, impedance balanced	
TUBE COMPLEMENT:	Groove Tubes, two (2) x 12AX7WA	
SPEAKER COMPLEMENT:	Celestion, Two (2) x G12T-100 (12-inch, 8 ohm)	
FUSES **PRIMARY:**	F4A 125V for 100V and 120V units, F2A 250V for 230V and 240V units	
SECONDARY:	digital supply: F2A analog supply: Two (2) x T1A	
FOOTSWITCH **FOUR BUTTON**:	Quick-access key recall functions, 5-pin DIN (MIDI-type) cord	
ONE BUTTON:	Reverb/Effects Bypass and Vibratone rotor speed select standard one-button toggle type P/N 099-4055-000 or 00-57172-000	
EXPRESSION PEDAL JACK:	1/4-inch (Tip, Sleeve) analog, compatible with any passive volume pedal, 10k to 250k ohm, (ideal audio taper is 20k 25%)	
REVERB/FX BYPASS JACK:	1/4-inch for connection to the included one-button footswitch	
MIDI JACKS:	IN, OUT, THRU	
HEADPHONES JACK:	1/4-inch stereo	
DIMENSIONS **HEIGHT:**	18 9/32 in	(46.4 cm)
WIDTH:	26 1/8 in	(66.4 cm)
DEPTH:	12 1/8 in	(30.8 cm)
WEIGHT:	55 lb	(25 kg)

Product specifications are subject to change without notice.

Instruction Manual P/N: USA 056487revA, (Europe 057077, Japan 057078)

NOTES: