

BP90 Modeling Bass Processor



DigiTech
by HARMAN

Professional audio equipment

Owner's Manual



The symbols shown above are internationally accepted symbols that warn of potential hazards with electrical products. The lightning flash with arrowpoint in an equilateral triangle means that there are dangerous voltages present within the unit. The exclamation point in an equilateral triangle indicates that it is necessary for the user to refer to the owner's manual.

These symbols warn that there are no user serviceable parts inside the unit. Do not open the unit. Do not attempt to service the unit yourself. Refer all servicing to qualified personnel. Opening the chassis for any reason will void the manufacturer's warranty. Do not get the unit wet. If liquid is spilled on the unit, shut it off immediately and take it to a dealer for service. Disconnect the unit during storms to prevent damage.

ELECTROMAGNETIC COMPATIBILITY

This device complies with part 15 of the FCC Rules and the Product Specifications noted on the

Declaration of Conformity. Operation is subject to the following two conditions:

- this device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation.

Operation of this unit within significant electromagnetic fields should be avoided.

- use only shielded interconnecting cables.



If you want to dispose this product, do not mix it with general household waste. There is a separate collection system for used electronic products in accordance with legislation that requires proper treatment, recovery and recycling.

Private household in the 25 member states of the EU, in Switzerland and Norway may return their used electronic products free of charge to designated collection facilities or to a retailer (if you purchase a similar new one).

For Countries not mentioned above, please contact your local authorities for a correct method of disposal.

By doing so you will ensure that your disposed product undergoes the necessary treatment, recovery and recycling and thus prevent potential negative effects on the environment and human health.

WARNING FOR YOUR PROTECTION PLEASE READ THE FOLLOWING:

KEEP THESE INSTRUCTIONS

HEED ALL WARNINGS

FOLLOW ALL INSTRUCTIONS

THE APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING LIQUID AND NO OBJECT FILLED WITH LIQUID, SUCH AS VASES, SHALL BE PLACED ON THE APPARATUS.

CLEAN ONLY WITH A DRY CLOTH.

DO NOT BLOCK ANY OF THE VENTILATION OPENINGS. INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

DO NOT INSTALL NEAR ANY HEAT SOURCES SUCH AS RADIATORS, HEAT REGISTERS, STOVES, OR OTHER APPARATUS (INCLUDING AMPLIFIERS) THAT PRODUCE HEAT.

ONLY USE ATTACHMENTS/ACCESSORIES SPECIFIED BY THE MANUFACTURER.

UNPLUG THIS APPARATUS DURING LIGHTNING STORMS OR WHEN UNUSED FOR LONG PERIODS OF TIME.

Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or third prong are provided for your safety. If the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.

Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

Use only with the cart stand, tripod bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.



Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

POWER ON/OFF SWITCH: The Power switch used in this piece of equipment DOES NOT break the connection from the mains.

MAINS DISCONNECT: The plug shall remain readily operable. For rack-mount or installation where plug is not accessible, an all-pole mains switch with a contact separation of at least 3 mm in each pole shall be incorporated into the electrical installation of the rack or building.

DECLARATION OF CONFORMITY

Manufacturer's Name: DigiTech
Manufacturer's Address: 8760 S. Sandy Parkway
Sandy, Utah 84070, USA

declares that the product:

Product name: BP 90

Product option: all (requires Class II power adapter that conforms to the requirements of EN60065, EN60742, or equivalent.)

conforms to the following Product Specifications:

Safety: IEC 60065 -01+Amd I

EMC: EN 55022:2006
EN 55024:1998
FCC Part 15

Supplementary Information:

The product herewith complies with the requirements of the:
Low Voltage Directive 2006/95/EC
EMC Directive 2004/108/EC.
RoHS Directive 2002/95/EC
WEEE Directive 2002/96/EC
EC Regulation 278/2009

With regard to Directive 2005/32/EC and EC Regulation 1275/2008 of 17 December 2008, this product is designed, produced, and classified as Professional Audio Equipment and thus is exempt from this Directive.

Director, Engineering
Signal Processing
8760 S. Sandy Parkway
Sandy, Utah 84070, USA
Date: April 28, 2011

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Warranty

We at DigiTech® are very proud of our products and back up each one we sell with the following warranty:

1. The warranty registration card must be mailed within ten days after purchase date to validate this warranty, or you can register via our website (www.digitech.com).
2. DigiTech warrants this product, when used solely within the U.S., to be free from defects in materials and workmanship under normal use and service.
3. DigiTech liability under this warranty is limited to repairing or replacing defective materials that show evidence of defect, provided the product is returned to DigiTech WITH RETURN AUTHORIZATION, where all parts and labor will be covered up to a period of one year. A Return Authorization number may be obtained from DigiTech by telephone. The company shall not be liable for any consequential damage as a result of the product's use in any circuit or assembly.
4. Proof-of-purchase is considered to be the burden of the consumer.
5. DigiTech reserves the right to make changes in design, or make additions to, or improvements upon this product without incurring any obligation to install the same on products previously manufactured.
6. The consumer forfeits the benefits of this warranty if the product's main assembly is opened and tampered with by anyone other than a certified DigiTech technician or, if the product is used with AC voltages outside of the range suggested by the manufacturer.
7. The foregoing is in lieu of all other warranties, expressed or implied, and DigiTech neither assumes nor authorizes any person to assume any obligation or liability in connection with the sale of this product. In no event shall DigiTech or its dealers be liable for special or consequential damages or from any delay in the performance of this warranty due to causes beyond their control.

NOTE: The information contained in this manual is subject to change at any time without notification. Some information contained in this manual may also be inaccurate due to undocumented changes in the product or operating system since this version of the manual was completed. The information contained in this version of the owner's manual supersedes all previous versions.

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Section I - Introduction

Getting Acquainted

Congratulations on your purchase of the BP90. You now have an incredibly advanced modeling bass processor that can keep up with your creative impulses and even increase them. Armed with DigiTech®'s patented AudioDNA2® custom audio DSP chip, the BP90 gives you a huge selection of tones and effects, right at your fingertips. When you easily select an amp or distortion tone and an effects chain from the Tone Library or the Effects Library, you'll appreciate the accuracy in each model, and the dynamic interaction in each tone. Add a built-in drum machine, and you have the BP90: the key to unlock your creative potential.

Included Items

Before you get started, please make sure that the following items have been included:

- **BP90**
- **Power Supply**
- **Warranty Card**

The utmost care was taken while your BP90 was being manufactured. Everything should be included and in perfect working order. If anything is missing, contact the factory at once. Please help us become acquainted with you and your needs by completing your warranty card or registering online at www.digitech.com. It is your safeguard should a problem arise with your BP90.

About the BP90

Performance Mode

When you first apply power to the BP90, it powers up in Performance mode. Performance mode provides access to all of the presets within the BP90 via the **Up** and **Down Footswitches**. The **Edit Up/Down** buttons cycle through the effects in the matrix.

Edit Mode

When you select an Effect with the **Edit Up/Down** buttons, you can adjust the Effect with the **Value Up/Down** buttons. (For descriptions of the Effects and their parameters, see page 20.) When you make changes to a preset's Effects, you must store the changes or they will be lost when you select a different preset or disconnect power to the BP90. See page 17 for a description of the Store procedure.

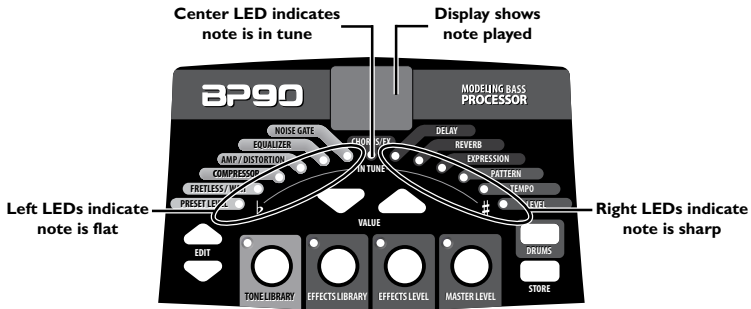
The BP90 presets can be bypassed for a clean, unprocessed bass signal. To bypass the BP90, press and release both **Footswitches** simultaneously. The Display reads $b\text{Y}$ indicating the preset is bypassed. In Bypass mode, all buttons are disabled. Press either **Footswitch** to exit Bypass mode and return the BP90 to the last preset used.

Tuner Mode

The Tuner in the BP90 allows you to quickly tune or check the tuning on your bass. Enter Tuner mode by pressing and holding both **Footswitches** simultaneously. The Display briefly shows $t\text{U}$ indicating that you are in Tuner mode. To begin tuning, play a note on your bass (a harmonic at the 12th fret usually works best). The Display shows the note being played. The Matrix LEDs indicate whether you are sharp or flat. The left 6 red LEDs indicate the note is flat and should be tuned

BP90

up. The right 6 red LEDs indicate the note is sharp and should be tuned down. The center LED indicates the note is in tune. The output is muted in Tuner mode; rock the Expression Pedal to regain volume.



In Tuner mode, you can change your tuning reference with the **Value Up/Down** buttons. The default factory setting is A=440 Hz (displayed as 4A). Other tuning references are A=A flat (displayed as $A\flat$), A=G (displayed as G), and A=G flat (displayed as $G\flat$). The display window will briefly flash the currently selected tuning preference.

Exit Tuner mode by pressing either **Footswitch**.

Tone Library Button

You can press this button at any time (except in Bypass or Tuner mode) to access the Tone Library, and then use the **Value Up/Down** buttons to select from a variety of genre-based amp tone defaults ranging from Blues to Metal to Country. Behind the scenes, the Fretless/Wah, Compressor, Amp/Distortion, and EQ are configured to create a specified tone. You can further refine the sound by editing the preset (see *Editing/Creating Presets* on page 16). Changing between different Tone Library defaults does not change the Chorus/FX, Delay or Reverb, letting you experiment with different amp styles quickly in the context of the current effect chain.

Effects Library Button

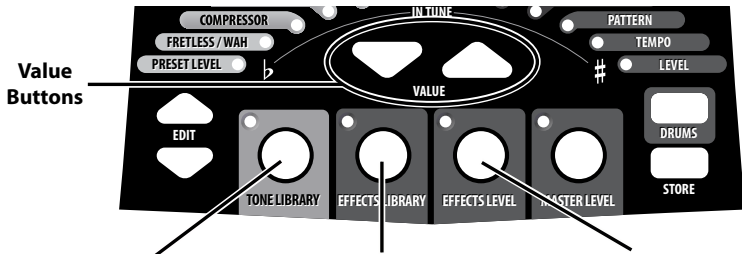
You can press this button at any time (except in Bypass or Tuner mode) to access the Effects Library and then use the **Value Up/Down** buttons to select from a variety of post-amplifier model effect chains (Chorus, Chorus + Delay, Delay + Reverb, etc.). You can further refine the sound by editing the preset (see *Editing/Creating Presets* on page 16). Changing between different Effects Library defaults does not change the Compressor, Distortion, Amp/Cabinet model, and EQ settings, letting you experiment with different effect chains quickly in the context of the current amp tone.

Effects Level Button

You can press this button at any time (except in Bypass or Tuner mode) to access the Effects Level. This button changes the relative level of the post-amp effects (Chorus/FX, Delay, and Reverb). This can be thought of as an effects mix control, where increasing this button's value increases the level of these effects and decreasing its value decreases the level of these effects.

Master Level Button

Press this button and use the **Value Up/Down** buttons to set the overall output level of the BP90.



1. Access the Tone Library with this button and select a tone with the Value buttons.

2. Access the Effects Library with this button and select a tone with the Value buttons.

3. Access the effects level with this button and adjust the level with the Value buttons.

The Tone Library button, Effects Library button, and Effects Level button make it easy to quickly load preset tones, effects, and effects chains.

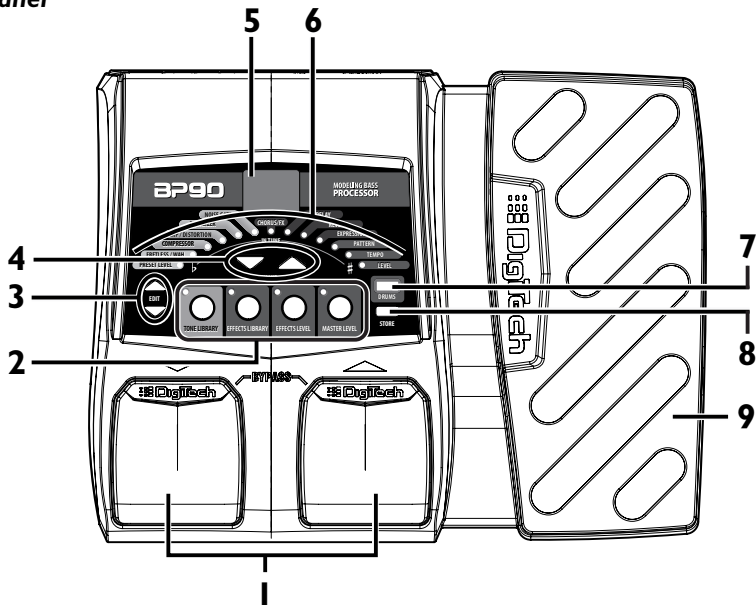
To learn about storing changes to presets, see page 17.

Presets

Presets are numbered locations of programmed sounds which reside in the BP90. Presets are recalled with the Footswitches. The active effects in each preset are indicated by lighted LEDs in the Effect Matrix. The BP90 comes with 50 User presets (1-50) and 50 Factory presets (51-00). The User presets are locations where your creations may be stored. The Factory presets do not allow you to store any changes to them. From the factory, the 50 User presets are exact duplicates of the 50 Factory presets. This allows you to create your own presets without losing the sounds that came with the BP90.

A Guided Tour of the BP90

Front Panel



1. Footswitches

These two Footswitches select presets, access the Tuner, or bypass the BP90. The Footswitch on the right will select the next preset up, and the Footswitch on the left will select the next preset down. Pressing both Footswitches together will bypass the currently selected preset. Pressing and holding both Footswitches for 2 seconds will access the Tuner. Press either Footswitch to exit Bypass or Tuner mode.

2. Tone Library, Effects Library, Effects Level, and Master Level Buttons

At the heart of creating presets in the BP90 are the Tone Library, Effects Library, and Effects Level buttons. By pressing one of these buttons and using the **Value Up/Down** buttons, you can select from 20 amp/distortion tones, 20 effects chains, or the overall post amp/distortion effects level respectively. The Master Level button accesses the master output volume parameter for the BP90. Each button is described in detail below.

Tone Library Button

The Tone Library button accesses a library of preset amp tones. Press this button and then use the **Value Up/Down** buttons to select from a variety of genre-based amp tones ranging from Blues to Metal to Country (see page 37 for a list of available tones). Behind the scenes, the Fretless/Wah, Compressor, Amp/Distortion, and EQ are configured to create a specified tone. You can further refine the sound by editing the preset (see *Editing/Creating Presets* on page 16). Changing between different Tone Library selections does not change the Chorus/FX, Delay, or Reverb settings, allowing you to experiment with different amp styles quickly in the context of the current effect chain. The Display will read $\square\square$ (for “custom”) when any of the associated effects have been changed from a default library setting.

Effects Library Button

The Effects Library button accesses a library of preset effect configurations. Press this button and use the **Value Up/Down** buttons to select a variety of post-amplifier model effect chains (Chorus, Chorus + Delay, Delay + Reverb, etc...). You can further refine the sound by editing the preset (see *Editing/Creating Presets* on page 16). Changing between different Effects Library selections does not change the Fretless/Wah, Compressor, Amp/Distortion and EQ settings, allowing you to experiment with different effect chains quickly in the context of the current amp tone. The Display will read $\square\square$ (for “custom”) when any of the associated effects have been changed from a default library setting.

Effects Level Button

The Effects Level button lets you adjust the levels of post-amp model effects (Chorus/FX, Delay, and Reverb). Press this button and use the **Value Up/Down** buttons to change the relative level of the post-amp effects (Chorus/FX, Delay, and Reverb). Think of it as an effects mix control where increasing this setting increases the level of these effects, while decreasing this setting decreases the level of these effects.

Master Level Button

The Master Level button lets you adjust the output level of the BP90. Press this button and use the **Value Up/Down** buttons to change the output level of the BP90.

3. Edit Up/Down

The **Edit Up/Down** buttons select which effect is to be edited. As each effect is selected, the Display shows the effect setting. A decimal in the bottom right corner of the Display turns on when a preset has been modified. The **Edit Up/Down** buttons are also used to change the BP90 Drum Machine parameters (Note that Drum Machine settings are global for all presets and are not saved with the preset).

4. **Value Up/Down**

The Value Up/Down buttons are used for editing effects, navigating Tone/Effects Libraries, adjusting Effects and Master Levels, and adjusting Drum Machine settings.

5. **Display**

The Display provides information for different functions depending on the mode that has been selected. In Performance mode, the Display shows the currently selected preset number. In Edit mode, the Display shows the value of the effect being adjusted. A decimal in the bottom right corner of the Display turns on when a preset has been modified. In Tuner mode, the Display shows the note being played.

6. **Matrix**

The matrix provides information regarding the current preset and Effect edit functions. In Performance mode, the LEDs next to each Effect provide a visual indication of which Effects are in use for the currently selected preset. While editing a preset, the LEDs indicate the Effect currently selected for editing. In Tuner mode, the LEDs indicate whether the note played is sharp, flat, or in tune.

7. **Drums**

The Drums button is used to turn on and off the BP90's built-in drum machine. When the Drums button is turned on, the Drums button LED lights and the selected drum pattern plays continuously. Use the **Value Up/Down** buttons to change the pattern of the drum machine. See page 33 for more information about the drum machine.

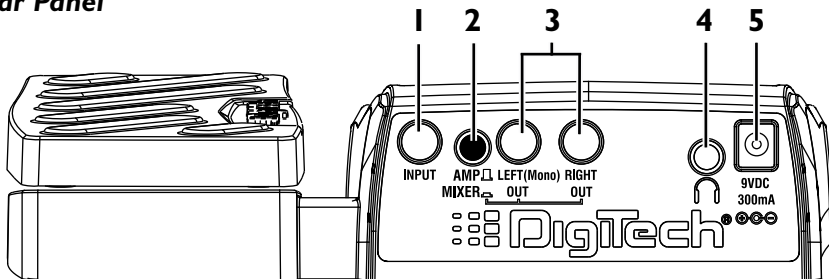
8. **Store**

The Store button is used to save your changes to the User presets. See page 17 for more information about storing presets.

9. **Expression Pedal**

The Expression Pedal provides real-time control of the BP90's Volume, Wah, or the assigned effect parameter.

Rear Panel



1. **Input**

Connect your instrument to this high-impedance TS input.

2. **Amp / Mixer**

This button optimizes the BP90's outputs for use when plugged into a bass amp or a mixer/recording device. When set to Mixer ("In" position), the outputs are optimized for connecting to a mixer, recording device or headphones. When set to Amp ("Out" position), the outputs are optimized for running directly in to the input of a bass amp.

3. **Left (Mono) and Right Outputs**

Connect the Left (Mono) output to the input of a single amplifier (or mixer input) for mono operation. Connect the Left and Right outputs to the inputs of 2 amplifiers (or 2 mixer channels) for stereo operation.

4. **Headphones**

Connect a pair of stereo headphones to this 1/8" jack. For proper frequency response, the Amp/Mixer switch should be set to Mixer ("in" position) when using headphones. Headphones with an impedance of 100 Ohms or less are recommended.

Note: The Headphones output can have either a mono or stereo signal, depending on what 1/4" outputs are connected. If neither (or both) 1/4" outputs are connected, the Headphones output will be in stereo. If a cable is connected to the Left (Mono) 1/4" output only, the Headphones output will be in mono.

5. **Power Input**

Connect only the DigiTech® approved power supply to this jack (see table in Specifications).

Getting Started

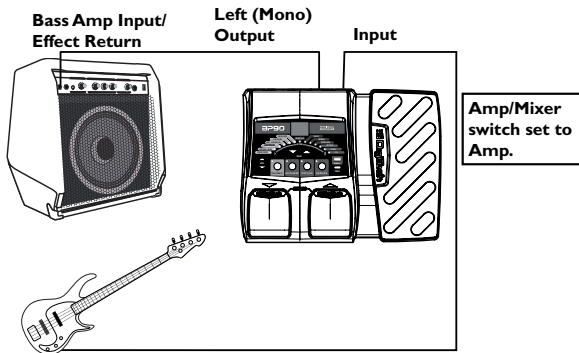
Making Connections

There are several different connection options available with the BP90. Before connecting the BP90, make sure that the power to your amplifier and the BP90 is turned off. There is no power switch on the BP90. To turn the BP90 on or off, connect or disconnect the included power supply from the **Power Input** jack.

Mono Operation - Amplifier

Connect your bass to the **Input** of the BP90. Connect a single mono instrument cable from the **Left (Mono) Output** of the BP90 to the instrument input or effect return on your amplifier. Set the **Amp/Mixer** switch to Amp.

NOTE: When using a bass amp, it may be best to connect the Output of the BP90 to the effect return of the amplifier.

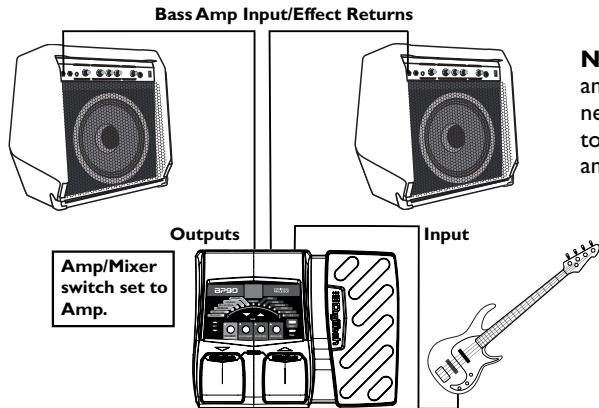


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Stereo Operation

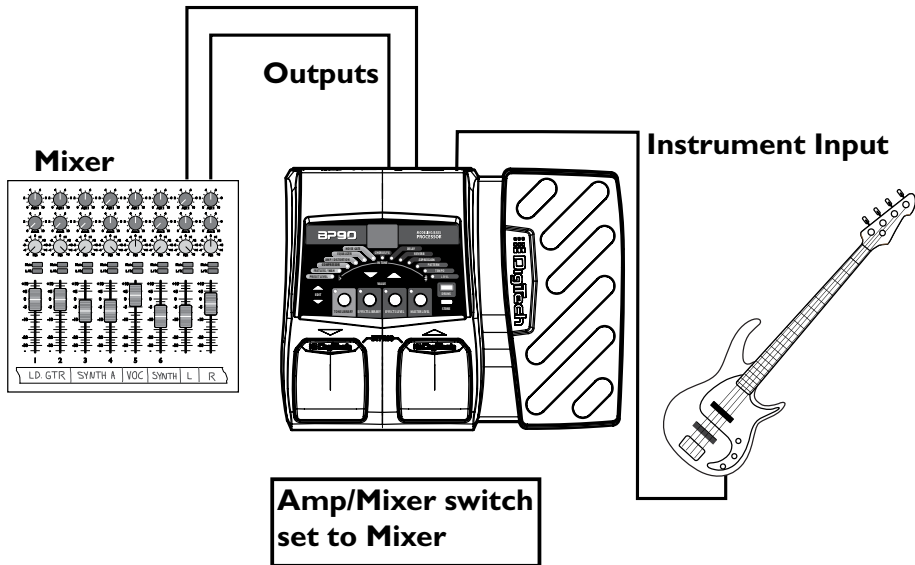
For stereo operation connect the bass to the **Input** of the BP90. Connect one cable to the BP90's **Left (Mono)** output, and another cable to the BP90's **Right** output. Connect one cable to the input of one amplifier, channel of a mixer, or power amp. Connect the second cable to a second amplifier, second channel of a mixer, or power amp. If connecting to a mixing console, set the pan controls of the mixer channels hard left and right in order to retain stereo separation. If connecting to a mixer, set the **Amp/Mixer** switch to Mixer. If connecting to two amplifiers, set the **Amp/Mixer** switch to Amp.

Stereo Amp Setup



NOTE: When using a bass amp, it may be best to connect the Output of the BP90 to the effect return of the amplifier.

Stereo Mixer Setup

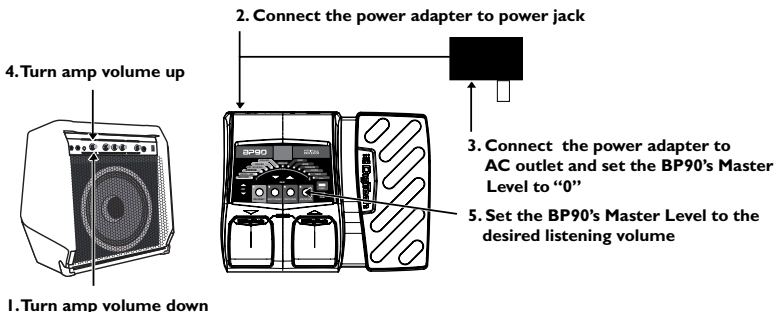


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Applying Power

Before applying power to anything, set your amp(s) to a clean tone and set the tone controls to a flat EQ response (on most amps, this would be 0 or 5 on the tone controls). Then follow the steps listed below.

1. Turn the amp volume all the way down.
2. Connect the plug of the power supply to the power jack on the rear panel of the BP90.
3. Connect the other end of the power supply to an AC outlet. Use the **Master Level** button and the **Value Up/Down** buttons to set the BP90's Master Level to "0".
4. Turn the power of your amplifier(s) to the on position and adjust the volume(s) to a normal playing level.
5. Use the **Master Level** button and the **Value Up/Down** buttons to gradually increase the BP90's Master Level to achieve the desired volume.



Section Two - Editing Functions

Editing/Creating Presets

The BP90 is designed to make preset editing and creation easy and intuitive. When creating your own sound, you must first start with an existing preset. Note that the preset you begin with doesn't have to be in the memory location you intend to have it reside, since you can store it to any User preset location during the store procedure.

The easiest way to start is by using the **Tone Library** and **Effects Library** buttons. The **Tone Library** button gives you access to a variety of pre-programmed amp/distortion tones (see page 37) based on different musical styles. The **Effects Library** button then lets you select from a palette of effects chains (see page 38), from simple delays to full multi-effect signals with modulation, delay and reverb. Use the **Effects Level Button** to easily increase or decrease the Chorus/FX, Delay and Reverb levels if desired. Using these three controls should get you close to a sound you are after. From there you can then use the **Edit** buttons to select individual Effects, and the **Value Up/Down** buttons to adjust their settings.

To edit and create a custom preset:

1. Use the **Footswitches** to select the preset you wish to edit. If you are trying to find something different from the existing presets, begin by using the **Tone Library**, **Effects Library**, **Effects Level** and **Value Up/Down** buttons to get close to a sound you want.
2. Once you have a sound close to what you are after, begin editing the Effects by pressing the **Edit Up/Down** buttons and selecting the Effect you want to adjust.
3. To turn an Effect on, select it with the **Edit Up/Down** buttons. Each Effect has multiple settings to select from. Use the **Value Up/Down** buttons to change the values for the selected Effect. To turn an Effect off, press and hold the **Value Down** button until **0F** appears in the Display. (For EQs, *b5*, *d5*, and *l5* are the settings with no boost or cut.)

Anytime a stored value within a preset is changed, you need to store the changes (with the **Store** button), or the changes will be lost. Changing presets, or turning the power off before storing any changes erases any edits made and the BP90 will revert to the stored values for the preset.

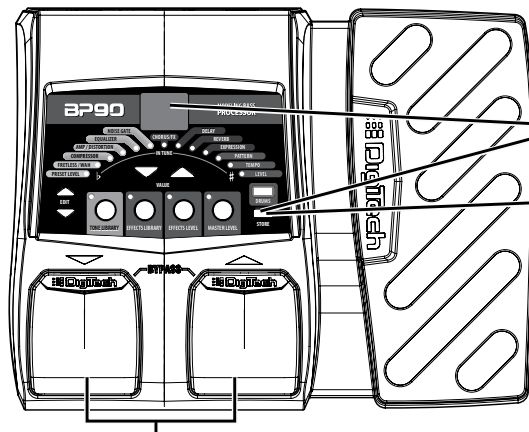
Storing/Copying a Preset

Once the preset has been modified to your liking, you may store your settings to any of the 50 User preset locations (presets 1-50). The following steps outline the procedure for storing changes to a preset or copying a preset to a different location:

1. Press the **Store** button once and the current Preset location will flash in the **Display**. This is asking you to select a new User Preset location where your new sound will reside.
2. If desired, select a new User Preset location using the **Footswitches**.
3. Press the **Store** button again to save the changes.

The procedure for copying one Preset to another Preset location is the same. Simply use the **Footswitches** to select the Preset that you want to copy, then follow the steps listed above.

Storing/Copying a Preset



**1. Press the Store button;
the Preset number flashes.**

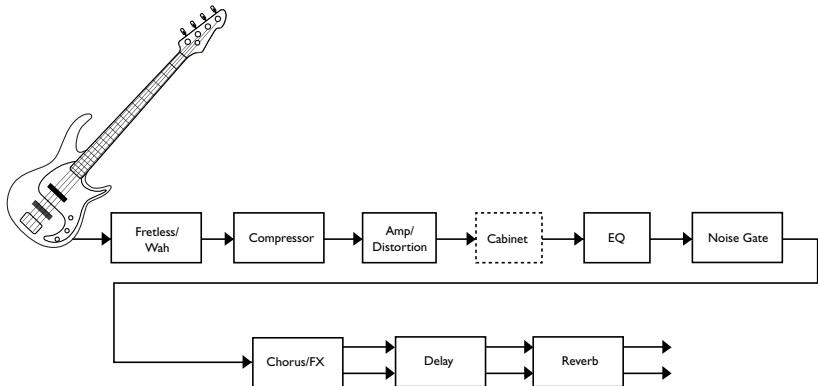
**3. Press the Store button
again to save your changes.**

**2. Select a destination
with the Footswitches.**

Section Three - Models and Effects

About the Models

The BP90 can be thought of as several different “virtual” amplifiers and individual, high-tech stompboxes in a single programmable package. With stompboxes, the order in which they are connected affects the overall sound. The BP90 has placed the Amp and Effect models in an order for optimum results. The following diagram shows the order in which they are connected.



Model Definitions

Each Amp and Effect model within the BP90 has multiple settings to select from. Use the **Value Up/Down** buttons to change the values for the selected Effect. The following overview of the BP90's Effects outlines the settings each Effect contains.

Fretless/Wah

The **Fretless** simulator creates a fretless bass sound when using a fretted bass. **Wah** is an effect controlled by the expression pedal making the bass sound as if it's saying "Wah." The Value buttons select the Fretless or Wah type that is simulated.

The Fretless effect has 30 types (10-39). The first digit (1-3) shows the fretless type, the second digit (0-9) selects the fretless variation. When $\overline{1}$, $\overline{2}$, or $\overline{3}$ are displayed, the Wah effect has been selected and is controlled with the Expression Pedal. See page 31 on how to link the Wah effect to the Expression Pedal.

The Fretless/Wah settings are:

$\overline{0}$	Fretless/Wah is turned off.
$\overline{10-39}$	Fretless settings
$\overline{1}$	Dunlop® Cry Baby™ wah
$\overline{2}$	Vox® Clyde McCoy™ wah
$\overline{3}$	Full range wah

Compressor

A **Compressor** is used to automatically limit the dynamic level of the bass signal. The Compressor effect has 110 different settings (00-99; F0-F9). The first digit represents the crossover frequency. Any signal below this frequency is compressed. The second digit (0-9) increases the amount of compression. (Example: A compressor setting of 62 would be a crossover frequency of 400 Hz with a compression amount of 2.)

The settings for the compressor effect are:

0F	Compressor is turned off	50-59	250Hz
00-09	50Hz	60-69	400Hz
10-19	63Hz	70-79	630Hz
20-29	80Hz	80-89	1kHz
30-39	100Hz	90-99	1.6kHz
40-49	160Hz	F0-F9	Full Range

Amp/Distortion Models

The BP90 has 11 amp and 5 distortion models to choose from. Each model is identified by a single letter and has nine settings (for example, *b 1* through *b 9*). As the setting increases, the amp/distortion gain increases. Each amp model has a cabinet model assigned to it as shown in the following list.

0F Amp/Distortion is turned off.

Amp Models

- r 1 - r 9* Based on an Ampeg® SVT with an Ampeg SVT 8x10 cabinet
- A 1 - A 9* Based on an Ashdown Bass Magnifier with an Eden D4x10XLT cabinet
- b 1 - b 9* Based on a Fender® Bassman® with a Fender Bassman 4x10 cabinet
- S 1 - S 9* Based on a Sunn® 200S with a Sunn 2x15 cabinet
- 0 1 - 0 9* Based on an SWR® Interstellar Overdrive™ with an Eden D4x10XLT cabinet
- t 1 - t 9* Based on a Trace-Elliott® Commando™ with a Sunn 2x15 cabinet
- a 1 - a 9* Based on an Ampeg B15 with an Ampeg Portaflex™ 1x15 cabinet
- H 1 - H 9* Based on a Hiwatt® Custom 50 with a Fender Bassman 4x10 cabinet
- Y 1 - Y 9* Based on a Mesa Boogie® 400+ with an Ampeg SVT 8x10 cabinet
- c 1 - c 9* Based on a SWR® Basic Black with an Ampeg Portaflex 1x15 cabinet
- d 1 - d 9* Based on a Fender Dual Showman™ with a Sunn 2x15 cabinet

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Distortion Models

- F 1-F9 DigiFuzz Fuzz distortion
- G 1-G9 Based on a Guyatone® OD-1
- P 1-P9 Based on an EH® Big Muff® Pi
- L 1-L9 Based on a Voodoo Labs SparkleDrive
- n 1-n9 Based on a Boss® DS-1™

Noise Gate

The Noise Gate effect includes two models: a Silencer gate and an Auto Swell (pluck detector gate), each with nine settings.

A silencer gate is designed to eliminate noise while you are not playing. The Silencer gate's nine settings (G 1-G9) determine the threshold, which determines how loud a signal must be before it can be heard. The higher the setting, the louder a signal must be in order to be heard.

The Auto Swell provides an automatic volume swell effect. The auto swell's nine settings (S 1-S9) determine the attack time (how quickly the swell grows from the note you play). The higher the setting, the faster the swell grows.

The noise gate settings are:

- 0F Noise gate effect is turned off
- G 1-G9 Silencer gate. G 1 is the lowest threshold, G 9 is the highest threshold.
- S 1-S9 Auto Swell gate. S 1 is the fastest attack time, S 9 is the slowest attack time.

EQ

The BP90's EQ helps further shape your tone with Bass, Midrange, and Treble controls. The EQ settings are:

- b 1-b9* Bass tone control. *b 1-b4* cut bass frequencies by -12dB, -9dB, -6dB, and -3dB respectively. *b5* has no boost or cut. *b6-b9* boost bass frequencies by 3dB, 6dB, 9dB, and 12dB respectively.
- d 1-d9* Midrange tone control. *d 1-d4* cut midrange frequencies by -12dB, -9dB, -6dB, and -3dB respectively. *d5* has no boost or cut. *b6-b9* boost midrange frequencies by 3dB, 6dB, 9dB, and 12dB respectively.
- t 1-t9* Treble tone control. *t 1-t4* cut treble frequencies by -12dB, -9dB, -6dB, and -3dB respectively. *t5* has no boost or cut. *t6-t9* boost treble frequencies by 3dB, 6dB, 9dB, and 12dB respectively.

Chorus/FX

The Chorus/FX model actually contains ten different modulation and pitch effects (described on the following pages). Each effect includes nine settings which include a variety of configurations that generally range from more subtle (lower settings) to more extreme (higher settings). The Chorus/FX settings are:

<i>0F</i>	Chorus/FX effect is turned off	<i>E 1-E9</i>	Envelope Filter
<i>C 1-C9</i>	Dual Chorus	<i>Y 1-Y9</i>	YaYa™
<i>F 1-F9</i>	Flanger	<i>A 1-A9</i>	AutoYa
<i>P 1-P9</i>	Phaser	<i>L 1-L9</i>	Step Filter
<i>t 1-t9</i>	Tremolo	<i>S 1-S9</i>	SynthTalk™
<i>n 1-n9</i>	Panner	<i>d 1-d9</i>	Detune
<i>b 1-b9</i>	Vibrato	<i>H 1-H9</i>	Pitch Shift
<i>o 1-o9</i>	Octavider	<i>h 1-h9</i>	Whammy™

Chorus

A Chorus adds a short delay to your signal. The delayed signal is modulated in and out of tune and then mixed back with the original signal to create a thicker sound. The BP90 Chorus effect is based on the Dual Chorus. Chorus settings are $C \ 1-C9$.

Flanger

A Flanger uses the same principle as a Chorus but uses a shorter delay time and adds regeneration (or repeats) to the modulating delay. This results in an exaggerated up and down sweeping motion to the effect. Settings are $F \ 1-F9$.

Phaser

A phaser splits the incoming signal, and then changes the phasing of the signal. This signal is then taken in and out of phase and mixed back in with the original signal. As the phasing changes, different frequencies get canceled resulting in a warm sort of twisting sound. Settings are $P \ 1-P9$.

Tremolo

A Tremolo effect modulates the volume of the signal at an even rate. Settings are $T \ 1-T9$.

Panner

A Panner modulates the sound from left to right at an even rate. Settings are $n \ 1-n9$.

Vibrato

A Vibrato effect modulates the pitch of the incoming signal at an even rate. Settings are $b \ 1-b9$.

Octavider

Based on the Boss® OC-2 Octaver™, this adds two signals to your original bass signal. The first is one octave below your bass, and the second is two octaves below your bass. Each additional signal has its own volume control. Settings are **0 1-09**.

Envelope Filter

The Envelope Filter is a dynamic Wah effect that alters your sound based upon how hard you play. Settings are **E 1-E9**.

YaYa™

AutoYa combines the characteristics of a Wah and a Flanger, creating an almost human vowel characteristic as if the bass were saying “Yah.” Control the effect with the Expression Pedal. Settings are **Y 1-Y9**.

AutoYa™

Similar to the YaYa effect described above, AutoYa™ automatically provides this animation to the sound at an even rate. Settings are **A 1-A9**.

Step Filter

The Step Filter is like an automatic “random wah” with a square waveform. Settings are **L 1-L9**.

SynthTalk™

SynthTalk is another effect exclusive to DigiTech®. It makes your bass appear to speak based upon the dynamics of your playing style. Settings are **S 1-S9**.

Detune

A Detuner makes a copy of your incoming signal, takes the copied signal slightly out of tune from the original, then mixes the two signals together. The result is a doubling type of effect as if two bass guitars were playing the same part together. Settings are *d 1-d9*.

Pitch Shift

A Pitch Shifter copies the incoming signal, then shifts the pitch of the copy to a different note. The shifted note is then mixed back with the original signal, sounding as if two bass guitars were playing different notes. Settings are *H 1-H9*.

DigiTech® Whammy™

The DigiTech® Whammy™ is an effect that uses the Expression Pedal to bend the pitch of the incoming signal, or add a bendable harmony with the original signal. As the Pedal is moved, the note bends either up or down. When DigiTech Whammy is selected, it is automatically placed before the Amp modeling. Settings are *h 1-h9*.

Delay

Delay is an effect that will record a portion of the incoming signal, and then play it back a short time later. The recording can repeat just once or several times.

The BP90 offers four different delay models (Analog Delay, Digital Delay, Pong Delay, and Tape Delay), each with 5 seconds of delay time available. There are two different parameters used to program the delay: Delay Variation and Delay Time. The first parameter of the delay effect is Delay Model type and Variation, which varies the amount of feedback (number of repeats) and level. The second delay parameter is Delay Time. This is indicated by a value 1-99 (10ms-990ms), 1.0 - 5.0 (1 - 5 seconds respectively in 100ms increments) in the Preset Number display when the Delay LED is lit. Delay settings are listed on the following page.

Delay Variation

DF Delay effect is turned off

Analog Delay

A1	feedback=5%	level=15
A2	feedback=5%	level=30
A3	feedback=5%	level=50
A4	feedback=20%	level=15
A5	feedback=20%	level=30
A6	feedback=20%	level=50
A7	feedback=45%	level=15
A8	feedback=45%	level=30
A9	feedback=45%	level=50

Digital Delay

d1	feedback=5%	level=15
d2	feedback=5%	level=30
d3	feedback=5%	level=50
d4	feedback=20%	level=15
d5	feedback=20%	level=30
d6	feedback=20%	level=50
d7	feedback=45%	level=15
d8	feedback=45%	level=30
d9	feedback=45%	level=50

Delay Time

1-99 10ms-990ms in 10ms increments
1.0-5.0 1-5 seconds in 100ms increments

Pong Delay

P1	feedback=5%	level=15
P2	feedback=5%	level=30
P3	feedback=5%	level=50
P4	feedback=20%	level=15
P5	feedback=20%	level=30
P6	feedback=20%	level=50
P7	feedback=45%	level=15
P8	feedback=45%	level=30
P9	feedback=45%	level=50

Tape Delay

t1	feedback=5%	level=15
t2	feedback=5%	level=30
t3	feedback=5%	level=50
t4	feedback=20%	level=15
t5	feedback=20%	level=30
t6	feedback=20%	level=50
t7	feedback=45%	level=15
t8	feedback=45%	level=30
t9	feedback=45%	level=50

Reverb

Using reverb in recorded program material gives the listener a sense that the material is being performed in an actual room or hall. It is this similarity to actual acoustic spaces that makes reverb a useful tool in recorded music. Settings are:

- 0F* Reverb effect is turned off.
- r 1-r9* Room reverb
- H 1-H9* Hall reverb
- P 1-P9* Plate reverb
- S 1-S9* Studio reverb

Section Four - Other Functions

Expression Pedal Assign

The Expression Pedal on the BP90 can be assigned in each preset to control the Volume, Wah, DigiTech® Whammy™, or one of several other parameters in real time with your foot. The procedure for assigning a parameter to the Expression Pedal is as follows:

1. Press the **Edit Up** button until the Expression LED lights up. An effect LED will also light indicating which effect the Expression Pedal is currently assigned to and the currently linked parameter will be shown in the display.
2. Press the **Value Up/Down** buttons until the desired effect LED is lit (NOTE: the effect must be turned on in the preset before it can be selected). The Expression LED will stay lit during your selection and the Display will show a two-digit character value to describe the effect parameter that the Expression Pedal is assigned to (see page 32).
3. Once you have assigned a parameter, you can set the control range of that parameter. Press the **Edit Up** button again. The number value shown is the minimum parameter value – this is the value that will be reached when the Expression Pedal is rocked back (heel down).
4. Press the **Edit Up** button again. The number value shown is the maximum parameter value – this is the value that will be reached when the Expression Pedal is rocked forward (toe down).
5. Use the Store procedure (see page 17) to save your changes to the preset.

Expression assignments available are as follows:

No Assignment	$\square F$
Volume	P_r (Output Level Pre Delay)
Volume	P_s (Output Level Post Delay)
Wah	AH (Expression Pedal acts as a Wah pedal)
Amp	$\square A$ (Expression Pedal controls the Amp Gain)
Chorus	SP (Speed) LE (Level)
Flanger	SP (Speed) LE (Level)
Phaser	SP (Speed) LE (Level)
Tremolo	SP (Speed) dP (Depth)
Panner	SP (Speed) dP (Depth)
Vibrato	SP (Speed) dP (Depth)
Octavider	$\square L$ (Octavider level)
Envelope Filter	ES (Sensitivity)
YaYa	Pd (Expression Pedal acts as a YaYa™ Effect when engaged)
AutoYa	SP (Speed) dP (Depth)
Detune	LE (Level of the Detuned signal)
Pitch Shift	LE (Level of the Pitch Shifted signal)
Whammy	HY (Expression Pedal acts as a DigiTech® Whammy™ pedal)
Delay	dL (Delay Level) dF (Delay Feedback)
Reverb	rL (Reverb Level)

Drum Machine

The BP90 features a built-in drum machine, which is enabled by pressing the **Drums** button. Select patterns, tempo, and level with the **Edit Up/Down** buttons. Change their values with the **Value Up/Down** buttons. The drum machine has the following parameters

Drum Patterns	1-40
Drum Tempo	1-99 (equivalent of 40 – 240BPM)
Drum Level	0-99

Drum machine settings are globally set and not individually stored with each of the BP90's user presets.

Factory Reset

This function resets the BP90 to its original factory settings. This procedure erases all custom User presets.

ATTENTION: Performing this function will erase all user-programmed data. All such data will be lost forever! Be sure you want to erase the memory and return the BP90 to its factory default state before continuing with this procedure.

The procedure for performing a Factory Reset is as follows:

1. Press and hold the **Store** button while powering up the BP90.
2. When the display prompts you with F_r , release the **Store** button.
3. Press and hold the **Store** button for 3 seconds until r_5 appears in the display and release. **The Factory Reset procedure takes approximately 10 seconds.**
4. Once the factory reset has finished you will need to calibrate the Expression Pedal. Follow steps 2-4 on the next page to complete calibration.

Expression Pedal Calibration

The Expression Pedal on the BP90 needs to be recalibrated for use after a factory reset has been performed. This calibration procedure is automatically entered after a factory reset procedure. (You can also initiate the calibration procedure by pressing and holding both **Footswitches** for approximately 7 seconds.) In the event the Pedal's calibration fails, or if the Pedal does not function properly, it can be re-calibrated using the Pedal Calibration procedure. This will not erase the User presets. The procedure for Calibrating the Expression Pedal is as follows:

1. Press and hold the **Up/Down Footswitches** until $P\bar{C}$ appears in the display ($b\bar{y}$ then $\bar{t}u$ then $--$ will be displayed before $P\bar{C}$ is shown). Release the **Footswitches** at this time.
2. When the Display prompts you with $\bar{t}d$, rock the **Expression Pedal** forward (toe down) and press either **Footswitch**.
3. When the Display prompts you with hd , rock the **Expression Pedal** back (heel down) and press either **Footswitch**.
4. If calibration is successful, $\bar{C}5$ will appear briefly in the Display and the BP90 will return to Performance mode. If the calibration procedure fails, $\bar{E}r$ will appear in the Display followed by $\bar{t}d$. Steps 2 and 3 should be repeated until calibration is successful.

Section 5 - Appendix

Specifications

General Specifications

A/D/A Converter:	24-bit high performance audio
Sampling Frequency:	44.1 kHz
DSP Section:	AudioDNA2™ DSP Processor
Simultaneous Effects:	9
Preset Memory:	50 User Presets (1-50) / 50 Factory Presets (51-00)
Drum Machine:	40 Patterns
Dimensions:	6.5" Length x 8.5" Width x 2" Height
Unit Weight:	1.52 lbs.

Analog Input Connections

Bass Input:	1/4" Unbalanced (TS)
Input Impedance:	500k Ohms

Analog Output Connections

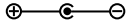
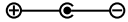
Left/Right Outputs:	1/4" Unbalanced
Left/Right Output Impedance:	500 Ohms per side
Maximum Output:	+7.0 dBu
Headphones:	1/8" Stereo (TRS) – 17.4mW per channel @ 50 Ohms

Power Requirements

Power Adapter:

***IMPORTANT NOTE:** Use only the correct power supply according to the Voltage in your Country (see below table).

Country (Voltage)	Compatible PSU Model		
Japan (100 VAC, 50/60 Hz):	PS200R-100*	or	PS0913DC-01*
US and Canada (120 VAC, 60 Hz):	PS200R-120*	or	PS0913DC-01*
Europe (230 VAC, 50 Hz):	PS200R-230*	or	PS0913DC-01*
UK (240 VAC, 50 Hz):	PS200R-240*	or	PS0913DC-02*
Australia (240 VAC, 50 Hz):	PS200R-240-AU*	or	PS0913DC-02*

Power Supply Specs		
Model	Output	Polarity
PS200R:	9 VDC 300 mA	
PS0913DC:	9 VDC 1.3 A	

Tone Library

Display	Name	Display	Name
1	Rock 1	11	Fingerstyle
2	Rock 2	12	Pick Style
3	Slap 1	13	Groove
4	Slap 2	14	Solo Bass
5	Funk	15	Honky
6	Clean	16	Sustain
7	Drive	17	Grind
8	Warm	18	Smooth
9	Bright	19	Motown
10	Heavy	20	Vintage

Effects Library

Display	Name	Display	Name
1	Chorus	11	Tape Delay
2	Flanger	12	Hall Reverb
3	Phaser	13	Room Reverb
4	Pitch	14	Studio Reverb
5	Fretless	15	Chorus + Digital Delay
6	Octaver	16	Chorus + Hall Reverb
7	Envelope Filter	17	Chorus + Delay + Reverb
8	Digital Delay	18	Flanger + Analog Delay
9	Analog Delay	19	Phaser + Tape Delay
10	Pong Delay	20	Vibrato + Analog Delay

BP90

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