

# electro-harmonix

## GRAND CANYON Multifunction Delay & Looper

Congratulations on your purchase of the Grand Canyon, a superior sounding, massively powerful Delay and Looper pedal. Within the Grand Canyon are a vast array of awe-inspiring effects. Explore a wide range of delays and textures, including pristine or bitcrushed digital, exquisite Deluxe Memory Man, rhythmic drum, warm tape, plate reverb, polyphonic pitch shift, and ethereal shimmer. The Grand Canyon even has a full-featured looper which can be used simultaneously with any of the delay effects to conjure lush, layered soundscapes. Fine tune the effects with a broad array of intuitive controls, and you're in for a truly inspiring and grand experience.

**WARNING:** Your Grand Canyon comes equipped with an Electro-Harmonix 9.6DC-200BI power supply. The Grand Canyon requires **150mA** at 9VDC with a center negative plug. Use of the wrong adapter or a plug with the wrong polarity may damage your Grand Canyon and void the warranty. Do not exceed 10.5VDC on the power plug. Power supplies rated for less than 150mA will cause the Grand Canyon to act unreliably.

### - FEATURES -

- 12 Delay Types yield a wide range of delay and echo effects
- Up to 3 seconds of delay time
- TAP footswitch with 9 Tap Divide settings for precise delay times
- Stereo output produces stereo delay and ping pong effects
- Up to 16 minutes of recording time on the full-featured looper which includes unlimited overdubs, undo/redo, a dedicated stop button, loop fade-out, reverse, and speed adjustment
- The Looper can record and overdub the internal stereo delay effects
- Loop audio remains in the Grand Canyon until you erase it, even after removing power from the unit
- Easy pushbutton access to extra features like delay tails, momentary effect mode, and ping-pong output
- 13 Presets may be saved and recalled: one preset for each delay type and one for the looper
- Programmable expression pedal settings allow you to control any combination of the Grand Canyon's knobs with an external expression pedal
- Connector for external 1-, 2- or 3-button footswitch allows for added control
- High quality buffered analog bypass and soft switching

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## NOTES AND SPECIFICATIONS

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- Audio input impedance: 2M $\Omega$
- Audio output impedance for each output: 550 $\Omega$
- Current draw: 150mA
- Maximum input signal level: +11 dBu
- Bypass: high quality analog buffered bypass when TAILS mode is disabled. DSP bypass when TAILS is enabled.

## DELAY TYPES AND DESCRIPTIONS

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DELAY TYPE	DESCRIPTION
<b>ECHO</b>	Pristine 24-bit digital delay with available high or low pass filtering and bit crush/sample rate reduction.
<b>MOD</b>	Digital delay with modulated delay time yielding flanger, chorus, vibrato, warble and more.
<b>MULTI</b>	Multi-tap delay where you can set the exact number of echo repeats (up to 31). Includes adjustable swell or decay volume envelopes on repeats.
<b>REVERSE</b>	An easy-to-use reverse delay with an intelligent pluck detector algorithm for great sounding reverse echoes.
<b>DMM</b>	Faithful emulation of the classic Electro-Harmonix Deluxe Memory Man analog delay with available modulation.
<b>TAPE</b>	Faithful emulation of classic tape-based delays. Includes tape distortion and Wow & Flutter warble modulation.
<b>REVERB</b>	Lush plate reverb plus echo. Together they create reverberant echoes and smooth spacious reverbs.
<b>PITCH</b>	EHX's heralded polyphonic pitch shifting + digital delay create pitch-shifted echoes and cascading echo repeats.
<b>SHIM</b>	A mixture of octaves and modulated delay plus compression creates shimmering cascaded soundscapes.
<b>SAMPLE/ HOLD</b>	Play a note or strike a chord; the Grand Canyon repeats the echoes indefinitely until your next note or chord.
<b>DRUM</b>	Faithful emulation of a magnetic drum echo with a host of playback head configurations for creating musical rhythmic echo patterns.
<b>DOUBLER</b>	A short digital delay that thickens up a mono signal or creates a stereo spread. Includes detune and delay time offset of the left and right outputs.

# QUICK START GUIDE

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## **PLUGGING IN THE GRAND CANYON**

1. Connect the supplied EHX9.6DC AC Adapter into the 9V jack at the top of the Grand Canyon. Plug the AC Adapter into an AC outlet.
2. Connect your guitar or other instrument into the INPUT jack using a standard 1/4" instrument cable. Connect the L OUT jack to your amp with another standard 1/4" instrument cable.
3. For stereo operation, connect R OUT to another amp.

## **DIALING IN A STANDARD DIGITAL DELAY EFFECT**

1. Ensure none of the buttons at the top left of the Grand Canyon, like TAILS, are lit. If any button is lit, press the button once to disable it.
2. Ensure that only the DELAY mode LED is lit. This LED is located in the center of the unit, just to the right of the DELAY knob. If the LOOPER LED is lit, press the small white Mode button located near the DELAY and LOOPER LEDs until only DELAY is lit.
3. Rotate the DELAY TYPE knob clockwise to the ECHO setting for a standard digital delay.
4. Set the two smaller knobs to the right of the DELAY TYPE knob to their middle positions.
5. Set the number of repeats with the FEEDBACK knob, the delay time with the DELAY knob, and the delay volume with the DELAY LVL knob.

## **TAPPING IN THE DELAY TIME**

1. Check that the TAP DIV setting is set to quarter note. If it is not, press the TAP DIV button until only the quarter note LED is lit.
2. Ensure that you are in Delay-only mode, and the LOOPER LED is off.
3. Press and release the TAP/LOOP footswitch two or more times. The delay time will now be equal to the time difference between your last two presses of the TAP/LOOP footswitch.
4. TAP DIV can now be pressed to choose different Tap Divisions.

## **CHOOSING A DELAY TYPE**

1. Rotate the DELAY TYPE knob in either direction until the desired DELAY TYPE LED is lit.
2. Check the parameter table on the Grand Canyon to see the parameters that can be adjusted by the two Mini Knobs for the chosen DELAY TYPE. Try turning the Mini Knobs to experiment with different delay effects.

## **CREATING A LOOP**

1. To create a loop, the LOOPER LED in the center of the Grand Canyon must be lit.
2. To cycle through the three modes – Delay, Delay+Looper and Looper – press the small white Mode button within the DELAY/LOOPER group.
3. If you want to record a loop with the Grand Canyon’s internal delay effects, make sure both the DELAY and LOOPER LEDs are lit.
4. If you want to record a loop without the Grand Canyon’s effects, only the LOOPER LED should be lit.
5. To record your loop, press and release the TAP/LOOP FSW. The Grand Canyon begins recording immediately.
6. When you are ready to end loop recording, press the TAP/LOOP FSW again. The loop will begin playing back. The MEM and PLAY LEDs will now be lit.
7. To overdub over the loop, press the TAP/LOOP FSW while it is playing; the REC LED will light.
8. To stop loop playback double-tap the TAP/LOOP FSW. You may also stop by pressing the BYPASS/STOP FSW while in LOOPER only mode.

## **ADJUSTING LOOP PARAMETERS**

1. Once a loop is recorded you can change loop parameters. Make sure you are in Looper mode; the DELAY LED should be off.
2. While in Looper mode, the white knob functions are detailed by the second row of orange lettering. The following controls are active:
  - DRY CUT - sets the volume of your dry signal
  - LOOP LVL - sets the volume of loop playback
  - DUB LVL - sets how much of previously recorded loop audio is preserved when overdubbing
  - FADEOUT - sets how long it takes for a loop to fade out when playback is stopped
3. The mini knobs on the right side of the Grand Canyon control the direction and speed of the looper’s playback. You may overdub in any speed or direction.

## **USING AN EXPRESSION PEDAL**

1. Connect your expression pedal to the EXP jack.
2. While the EXP MODE button is off, the expression pedal acts like a volume control for your dry signal before it enters the Grand Canyon.
3. While the EXP MODE button is enabled, the expression pedal sweeps all parameters that are assigned to it for the currently selected Delay Type or Looper mode.
4. You may assign any knobs you like to be swept by the expression pedal. Additionally each knob may have a custom range and direction. See page 29 of the manual to learn how to create an Expression Setting for each Delay Type and for the looper.

## **SAVING A PRESET**

1. Once you have created a sound that you would like to save, press and hold the DELAY TYPE knob.
2. After about half a second, the PRESET LED will begin blinking rapidly. Continue holding down the DELAY TYPE knob.
3. After two seconds of holding down the DELAY TYPE knob, the PRESET LED will stop blinking and light up solid. You can now release the DELAY TYPE knob.
4. Your preset is saved in the currently selected Delay Type. You may save one preset for each of the 12 Delay Types and one preset for Looper mode.

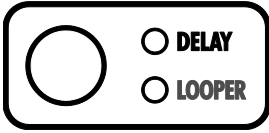
## **RECALLING A PRESET**

1. Turn the DELAY TYPE knob to the Delay Type you want to recall.
2. Press and release the DELAY TYPE knob. The preset sound loads and the PRESET LED lights solid.
3. If you turn a knob or change a button setting, the PRESET LED will blink rapidly to indicate a preset is loaded but the setting has been altered.

# CONTROLS AND LEDS

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## - DELAY / LOOPER MODES, BUTTON, AND LEDS -



The Grand Canyon has three functional modes: **Delay**, **Delay+Looper**, and **Looper**. To the right of the DELAY knob there is a small white Mode button and two LEDs labeled DELAY and LOOPER. Pressing the Mode button cycles you

through the three modes, allowing you to seamlessly integrate delay effects into your looping. You can also use an external footswitch to move between modes; see page 27 for more details on external footswitches.

*Tip: double tap the Mode switch to continue overdubbing when switching from Looper mode to Delay+Looper mode.*

**DELAY Mode:** Active when DELAY LED is lit / LOOPER LED is unlit

- All controls modify the delay effects according to the red labels.
- The LOOP LVL knob sets loop volume if a loop is playing back.
- The TAP/LOOP footswitch works as a tap tempo button. Press and hold the TAP/LOOP footswitch to ramp up to maximum feedback.
- The BYPASS/STOP footswitch toggles between effect and bypass.

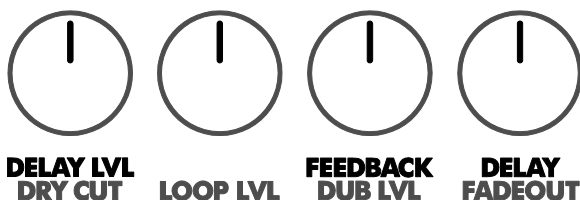
**DELAY+LOOPER Mode:** Active when DELAY and LOOPER LEDs are lit

- The delay effects are still active in Delay+Looper mode but you can now access the looper function using the TAP/LOOP footswitch which no longer performs the tap tempo function.
- The TAP/LOOP footswitch handles the following Looper functions: Play, Record, Overdub, Undo, Redo, Stop and Erase. See page 13.
- Play along with your loop while using the internal delay effects, and the looper can record and overdub all stereo delay effects.
- The delay controls labeled in red remain active; the LOOP LVL knob sets loop playback volume.
- The BYPASS/STOP footswitch toggles between effect and bypass modes for the delay effect and can function as a tap tempo switch.

**LOOPER Mode:** Active when LOOPER LED is lit / DELAY LED is unlit

- The Grand Canyon's delay effects are deactivated in this mode.
- The four white knobs control the looper, with their functions listed in the second level of orange text beneath the knobs.
- The TAP/LOOP footswitch handles the following looper functions: Play, Record, Overdub, Undo, Redo, Stop and Erase. See page 13.
- The BYPASS/STOP footswitch stops the loop with one press.

## - CONTROL KNOBS -



The four knobs on the left side of the Grand Canyon control the main parameters of the delay effects and the looper. These knobs have different functions depending on the current mode. The top row of red labels specifies the delay-specific functions of the knobs, while the bottom row of orange labels specifies the looper-specific functions of the knobs. The chart below lists which functions are active in each mode:

Mode	Knob Functions			
<b>Delay Mode</b>	DELAY LVL	LOOP LVL*	FEEDBACK	DELAY
<b>Delay+Looper</b>	DELAY LVL	LOOP LVL	FEEDBACK	DELAY
<b>Looper Mode</b>	DRY CUT	LOOP LVL	DUB LVL	FADEOUT

**\*Note:** In Delay Mode, the LOOP LVL control is only active if a loop was playing before entering Delay Mode.

### Delay parameters

**DELAY LVL** – Wet/dry control that sets the balance between your dry signal and the delay effects produced by the Grand Canyon. When this knob is at the minimum position, the output is only your dry signal. As the knob is turned up, the delay output increases in volume. As the knob is turned past 2 o'clock, the dry signal decreases in volume. When the knob is at the maximum position, the output is only the delay output.  
*Note: in Sample/Hold, the dry signal remains at unity volume even as DELAY LVL is turned to maximum.*

**FEEDBACK** – Controls the number of repeats of the delayed signal. As this knob is turned clockwise, the number of repeats increases.

**DELAY** – Controls the delay time of the Grand Canyon for all Delay Types. Turn this knob clockwise to increase the delay time. Most Delay Types range from 5 milliseconds to 3 seconds but some Delay Types have different ranges.



## Looper parameters

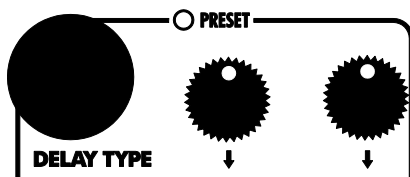
**DRY CUT** – Works as a reverse volume control for your dry signal. Your dry signal is loudest when the knob is turned down to its minimum or counter-clockwise position. The DRY volume decreases as the knob is turned clockwise.

**LOOP LVL** – Controls the output volume of the looper's playback. *Note: In Delay mode, this knob is only active if a loop was already playing before switching to Delay mode.*

**DUB LVL** – While overdubbing in LOOP mode, this knob acts like a feedback control for the looper. While overdubbing, older layers of loop audio may lose volume each cycle based on the setting of the DUB LVL knob. Rotating the knob counter-clockwise progressively lowers the volume of the previously recorded audio with each loop cycle. At the maximum knob position, previous loop audio levels remains constant during overdub. Upon exiting Looper mode, the DUB LVL knob setting remains fixed until you return to Looper mode and move the knob again.

**FADEOUT** – When a loop is stopped, this knob sets the loop's fadeout time from the current volume level to silent. As you turn FADEOUT clockwise, the fadeout time increases, ranging from instantaneous in the fully counter-clockwise position to 60 seconds in the fully clockwise setting. Upon exiting Looper mode, the FADEOUT knob setting remains fixed until you return to Looper mode and move the knob again.

## - DELAY TYPE KNOB, PRESET LED, AND MINI KNOBS -



### DELAY TYPE Knob

This knob is a rotary encoder that selects which of the Grand Canyon's Delay Types is active. The list ranges from ECHO at the top to DOUBLER at the bottom.

One preset can be saved for each Delay Type and for the looper using the DELAY TYPE knob. Press and hold DELAY TYPE to save a preset in the currently selected Delay Type, or for the looper while in Looper mode. Press and release DELAY TYPE to recall the preset for the selected Delay Type or for Looper mode. The PRESET LED provides a visual indication for the current preset state:

**PRESET LED Off:** You are in What You See Is What You Get (WYSIWYG). All current knob positions represent the effect being generated.

**PRESET LED On:** The preset is loaded for the currently selected Delay Type, or if LOOPER mode is selected, then the looper preset is loaded.

**PRESET LED Blinking:** There are two situations where the PRESET LED blinks: 1) while saving a preset or 2) changing a knob or button setting after loading a preset. If you load a preset and then move a knob, the new knob position takes over for only that particular parameter and the PRESET LED blinks. If you return the recently moved knob to the position that is saved in the preset, the PRESET LED lights solid again.

### Miniature Parameter Knobs

To the right of the DELAY TYPE knob are two Mini Knobs whose functions change depending on the selected Delay Type. On the face of the Grand Canyon, below the Mini Knobs, there is a table listing the available Mini Knob functions for each Delay Type. Detailed descriptions of each function start on page 16 of this manual. Looper mode also has two parameters assigned to the Mini Knobs. Upon exiting Looper mode, the loop's Mini Knob positions remain fixed until you return to Looper mode.

## - ILLUMINATED BUTTONS -



**EXP MODE Button** – When this button is lit, EXP MODE is enabled. When an external expression pedal or control voltage is connected to the EXP jack on the rear of the Grand Canyon, you can control any combination of knob parameters with your foot. When the EXP MODE button is disabled (button is not lit), the external expression pedal acts as a volume pedal for the dry signal and the signal into the delay effect. This button is also used to set up Expression Settings (see page 29 for this procedure).

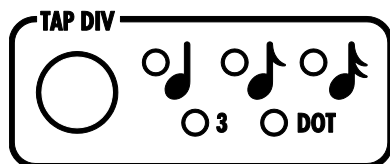
**MOMENT Button** – While in Delay or Delay+Looper modes, enabling MOMENT changes the function of the BYPASS/STOP footswitch to only allow the delay effects while the footswitch is pressed down. The delay effects are bypassed when the footswitch is released. When MOMENT is disabled, the BYPASS/STOP footswitch works like a normal latching footswitch, toggling between bypass and effect modes with each press and release of the footswitch. The MOMENT button has no function in Looper mode. *TIP: Use the MOMENT button in conjunction with tails to pinpoint exactly which notes or segments of a phrase receive delay effects.*

**TAILS Button** – When TAILS is enabled, the echoes continue to repeat after the pedal switches to bypass or to Looper mode, with the number of repeats set by the FEEDBACK knob. Anything you play after entering bypass will not go through the delay effect. If the pedal is set for infinite feedback (i.e. the FEEDBACK knob is set to maximum), the repeats continue until you turn down the FEEDBACK knob or switch to a different Delay Type. When TAILS is disabled, all repeats stop as soon as the bypass switch is pressed or the pedal enters Looper mode.

*Note: In Sample/Hold, repeats will not continue indefinitely when Tails are ON. The repeats will fade out over half a second upon entering Bypass.*

**PING PONG Button** – The PING PONG function bounces each delay repeat back and forth between the left and right outputs. When PING PONG is disabled, each repeat is sent to both the left and right outputs. The PING PONG button has no function in Looper mode.

## - TAP DIVIDE BUTTON AND LEDS -



The TAP DIV function sub-divides the tempo tapped in via the TAP/LOOP footswitch to create shorter or longer delay times in sync with your tap time. It assumes that what is tapped is a quarter note. TAP DIV then divides the quarter note to produce delay times rhythmically in time with the tap tempo.

The current DELAY knob setting can also be divided by the TAP DIV button. When you turn the DELAY knob, the range is always based on a quarter note length. After you set the DELAY knob, pressing the TAP DIV button selects the divide ratio of the delay time for each TAP DIV setting.

The TAP DIV button cycles through the nine available Tap Divide settings. There are three main divisions: quarter note - ♩, eighth note - ♪, and sixteenth note - ♫. Each division can be further broken down into its triplet and dotted versions. The TAP DIV LEDs will light to show the current tap divide setting, and once set will blink at the current delay time.

The following table provides an example of how each Tap Divide changes your delay time whether the delay time is set by the TAP/LOOP footswitch or DELAY knob. The tapped time in this example is 600ms.

TAP DIV Mode	Graphic	Divide Ratio	Delay Time (for 600 ms TAP time)
Quarter Note	♩	1 / 1	600 ms
Quarter Note Triplet	♩ + 3	2 / 3	400 ms
Dotted Quarter Note	♩ + DOT	3 / 2	900 ms
Eighth Note	♪	1 / 2	300 ms
Eighth Note Triplet	♪ + 3	1 / 3	200 ms
Dotted Eighth Note	♪ + DOT	3 / 4	450 ms
Sixteenth Note	♫	1 / 4	150 ms
Sixteenth Note Triplet	♫ + 3	1 / 6	100 ms
Dotted Sixteenth Note	♫ + DOT	3 / 8	225 ms

## - FOOTSWITCHES AND LEDS -

The Grand Canyon's two footswitches have different functions depending on the current mode. The red labels describe the Delay-specific functions of the footswitches, while the orange labels describe the looper-specific functions. The chart below lists which functions are active in each mode:

Mode	TAP/LOOP	BYPASS/STOP
<b>Delay Mode</b>	Tap Tempo + Feedback ramp	Bypass
<b>Delay+Looper</b>	Looping	Bypass + Tap Tempo
<b>Looper Mode</b>	Looping	Stop looping

### Delay Mode Footswitch Functions

**TAP/LOOP** – While in Delay mode, press and release the TAP/LOOP footswitch two or more times to set the delay time with your foot. The tap time and the current TAP DIV setting determine the actual delay time. After tapping in a delay time, you may cycle through the TAP DIV settings to find the desired delay timing.

Press and Hold TAP/LOOP to ramp up to the maximum feedback setting. Release TAP/LOOP to ramp back down to the current feedback setting.

**BYPASS/STOP** – The BYPASS footswitch works like a standard latching footswitch when the MOMENT button is not lit: press and release to toggle between bypass and effect modes. When the orange LED in Grand Canyon graphic is lit, the unit is in effect mode.

If the MOMENT button is lit, then the Grand Canyon is normally in bypass mode unless you press and hold the BYPASS footswitch, at which point it goes into effect mode. Release the BYPASS footswitch and it returns to bypass mode.

### Delay+Looper Mode Footswitch Functions

**TAP/LOOP** – The TAP/LOOP footswitch controls many of the looper's basic functions such as record, play, overdub, undo, redo, stop and erase. See the chart on page 14 describing how to control the looper.

**Bypass/Stop** – In Delay+Looper mode, the BYPASS/STOP footswitch can also be used for tap tempo, in addition to the bypass functions listed above. Tap the BYPASS/STOP footswitch to set the tempo in Delay+Looper mode. This feature can also be disabled if desired. See page 30 for more details on tap tempo with this footswitch.

## Looper Mode Footswitch Functions

**TAP/LOOP** – In Looper mode, the TAP/LOOP footswitch works the same as in Delay+Looper mode.

**Bypass/Stop** – In Looper mode only, press and release the BYPASS/STOP footswitch to stop the loop or begin loop fadeout. If you press the STOP footswitch while in the middle of loop fadeout, the looper immediately ends fadeout and stops the loop.

Starting with an empty loop, the following chart describes what happens with each press of the TAP/LOOP footswitch (and some cases the BYPASS/STOP footswitch when set to LOOPER-only mode):

Looper State →	TAP/LOOP Footswitch Action →	New Looper State
Empty loop	Press/Release	Recording initial loop
Recording initial loop	Press/Release (or BYPASS/STOP FSW Press/Release)	Loop Playback, and loop length is set (or Stops loop and sets loop length)
Loop Playback	Press/Release	Loop Overdub
Loop Overdub	Press/Release	Loop Playback
Loop Playback	Press and Hold for one second	Undo last Overdub layer or Redo last Overdub layer
Loop Playback or Overdub	Double-Tap, or BYPASS/STOP FSW Press/Release	Stop loop or begin Fade-Out
Loop Fade-Out	Press/Release (or Double-Tap TAP/LOOP FSW or single BYPASS/STOP FSW Press/Release)	Cancel loop Fade-Out and restore Loop Playback at full volume (cancel loop Fade-Out and immediately Stop Loop)
Loop Stopped	Press/Release	Loop Playback
Loop Stopped	Press and Hold for 2.5 seconds	Erase loop

## LOOP LEDs: MEM, PLAY and REC:

Three LEDs display the current state of the looper:

**MEM LED:** lights to indicate that a loop is currently in memory.

**PLAY LED:** lights whenever a loop is playing or overdubbing. The PLAY LED blinks once when the loop cycles, blinks twice to indicate undo or redo and blinks continuously during a fadeout, shutting off once the loop has finished the fade-out and stopped.

**REC LED:** lights whenever a loop is recording or overdubbing. The REC LED blinks rapidly for half a second just prior to erasing a loop.

# CONNECTIONS

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**INPUT Jack** – This ¼" jack is the audio input to the Grand Canyon. The input impedance is 2MΩ.

**L OUT Jack** – Use this output for a mono setup. In a stereo setup this is your left output. The output impedance is 550Ω.

**R OUT Jack** – This is the right output jack in a stereo setup. The output impedance is 550Ω.

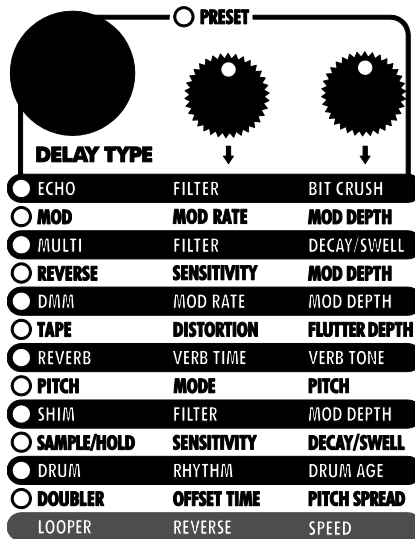
**FSW Jack** – Connect an external momentary footswitch to this ¼" jack. The external footswitch may be either a single footswitch (TS plug), a dual footswitch (TRS plug), or a triple footswitch (TRS plug) such as the DigiTech® FS3X. The external footswitches must be momentary and normally open so that when the switch is pressed down a connection is made between the sleeve and either the tip, ring or both. See page 27 for a description of all functions available on the external footswitches.

**EXP Jack and Expression/CV Specifications** – Connect an expression pedal with a TRS plug to this jack to allow external control over any of the Grand Canyon's knobs, or use it like a volume pedal on the dry signal before it hits the delay effects. See page 28 for a description on how to set up and control the Grand Canyon with an external expression pedal.

The polarity of the expression pedal's plug must have the Sleeve connected to the heel position (usually GND), Ring connected to the toe position and the Tip connected to the wiper. The nominal expression pedal impedance is 10kΩ though most other values will work fine. Please do not go below 6kΩ on your expression pedal's potentiometer impedance. Some suggested Expression Pedals: EHX Expression Pedal, M-Audio® EX-P, Moog® EP-2 and EP-3, Roland® EV-5 or Boss® FV-500L. Additionally, the EXP IN jack can be connected to a CV source using a TS plug; the acceptable control voltage range is 0V to 5V.

**9V Power Jack** – Plug the output of the Grand Canyon's supplied EHX9.6DC 200mA AC adapter to the 9V power jack located at the top of the pedal. The Grand Canyon requires 150mA at 9VDC with a center-negative plug. Do not exceed 10.5VDC on the power jack. *Note: Expect unreliable behavior if the power supply rating is less than 150mA.*

# DELAY TYPE AND MINI KNOB DETAILS



## ECHO – Digital Delay

Accurate 24-bit digital delay that offers either lowpass or highpass filters in the feedback loop and a bit crusher effect prior to the delay line.

**FILTER:** Turn this knob counter-clockwise from noon for a lowpass filter and clockwise from noon for a highpass filter. The lowpass filter attenuates high end while the highpass filter attenuates low end. Starting from the noon position, as you turn counter-clockwise, the cutoff frequency goes down. Turn clockwise and the cutoff frequency rises. Both filters are bypassed in the noon position.

**BIT CRUSH:** Turning this knob counter-clockwise from noon produces sample rate reduction down to 220Hz at 24-bit resolution. Turn clockwise from noon for 2-bit resolution with sample rate reduction down to 220Hz. The Bit Crusher effect is bypassed at the noon position.



### **MOD** – Modulated delay

Same digital delay as in ECHO mode but Filter and Bit Crush have been replaced by modulation parameters.

**MOD RATE:** As you turn clockwise, the modulation rate increases. The modulation rate ranges from 0.1Hz to 163Hz.

**MOD DEPTH:** As you turn clockwise, modulation depth increases. At fully counter-clockwise, mod depth is 0.

### **MULTI** – Multi-tap delay

A multi-tap delay where the FEEDBACK knob sets the exact number of echo repeats from 1 to up to 31. As the delay time increases the maximum number of repeats decreases. Shorter delay times allow for a maximum of 31 repeats. Very long delay times (>2s) may have only two repeats.

**FILTER:** Turn this knob counter-clockwise from noon for a lowpass filter and clockwise from noon for a highpass filter. The lowpass filter attenuates high end while the highpass filter attenuates low end. The further you turn counter-clockwise, the lower the frequency. The further you turn clockwise, the higher the frequency. Both filters are bypassed at the noon position.

**DECAY/SWELL:** Controls the volume envelope of the echoes. At the noon position each echo repeat is at the same volume. As the knob is turned counter-clockwise from noon, the decay envelope engages where each subsequent repeat is quieter than the previous repeat. As the knob is turned clockwise from noon, the swell envelope engages so that each repeat is louder than the previous repeat. The farther you move from the noon position the more intense the volume envelopes become.

### **REVERSE** – Reverse delay

An intelligent reverse delay that studies your playing to produce reverse echoes that best suit your delay time setting.

**SENSITIVITY:** This knob adjusts the threshold for an intelligent pluck detection algorithm. As you turn clockwise your plucks are detected more readily. In the minimum position only loud notes will be detected. The REVERSE LED blinks each time a valid pluck is detected.

**MOD DEPTH:** Use this knob to add modulation to the reverse delay. As you turn clockwise, the modulation gets wider. Set to fully counter-clockwise for no modulation.

## **DMM** – Deluxe Memory Man

A faithful emulation of the EHX Deluxe Memory Man, expertly reproducing the beloved tone of the classic bucket brigade analog delay. Organic echoes transform as they repeat while lush modulation—ranging from subtle to oceanic—massages each note. The Grand Canyon also recreates the DMM’s renowned FEEDBACK control, which provides a musical runaway effect when maxed and the ability to bend the pitch of echoes as you turn the DELAY knob.

**MOD RATE:** As you turn clockwise, the DMM’s modulation rate increases. The noon setting is equivalent to a DMM’s chorus setting. Range: 0.1Hz to 50Hz.

**MOD DEPTH:** As you turn clockwise, the DMM modulation depth increases. At fully CCW, modulation is off.

## **TAPE** – Tape delay

Simulates the prized analog tape echo units of the 1970s. Echoes degrade and distort as they repeat. Tape Wow and Flutter provide the characteristic warble that tape delay is known for.

**DISTORTION:** Sets the amount of tape distortion. As you turn clockwise, you get more tape distortion.

**FLUTTER DEPTH:** Sets the wow & flutter depth. Turning clockwise increases the amount of modulation.

## **REVERB** – Reverb plus delay

A reverberant echo where each repeat is followed by a wash of smooth Plate reverb. For a pure reverb setting, turn down FEEDBACK to its minimum position and DELAY below 9 o’clock. *TIP: use both the VERB TIME and DELAY knobs to adjust the size of the reverb. A longer delay time yields a larger reverberant space.*

**VERB TIME:** Sets the length of the reverb tail. As you turn clockwise, the reverb tail length increases in time. Depending on your settings, the maximum reverb time can exceed 5 minutes.

**VERB TONE:** Sets the tone of the plate reverb from warm and dark to bright and metallic.

## PITCH – Pitch-shifted harmonic delay

Pitch shifts your signal before it is delayed. See the charts below for the available intervals. By default, the pitch shift block is located outside the delay's feedback loop, which means each note you play is pitch shifted once and then delayed. The Grand Canyon includes a secondary mode where the pitch shift block can be moved to within the feedback loop for cascading pitch-shifted delays. See page 34 for more information on secondary modes.

**MODE:** This knob selects one of five modes. From counter-clockwise to clockwise on the knob, delayed repeats will be the following voices:

1. Downward pitch shift + Dry unshifted signal
2. Downward pitch shift
3. Dual Pitch Shift (2 pitch shifted intervals at once)
4. Upward pitch shift
5. Upward pitch shift + Dry unshifted signal

Modes 1 and 5 connect the direct dry signal to the delay block's input.

**PITCH:** Selects the pitch shift interval. For upward and downward pitch shifts (Modes 1, 2, 4 & 5): the following table lists the shift intervals from counter-clockwise to clockwise on the PITCH knob:

1	2	3	4	5	6	7	8	9	10	11	12
No Shift	De-tune	Minor 2nd	Major 2nd	Major 3rd	Perfect 4th	Perfect 5th	Major 6th	Minor 7th	1 Oct	2 Oct	3 Oct

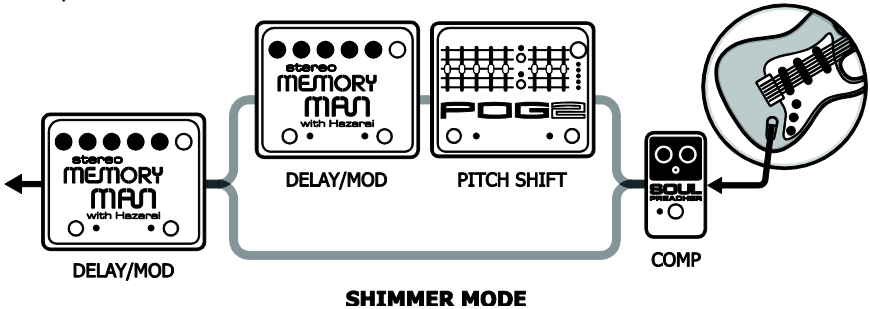
Dual pitch shift (Mode 3): The following table lists the pitch shift intervals for Dual mode from counter-clockwise to clockwise on the PITCH knob:

1	2	3	4	5	6	7	8	9	10	11	12
No Shift	De-tune	Deep De-tune	M2 up + M6 up	M3 up + P5 up	P4 up + P5 down	P5 up + 1 Oct down	M6 up + P5 down	m7 up + M6 up	1 Oct up + 1 Oct down	2 Oct up + 1 Oct down	3 Oct up + 1 Oct down

When using an expression pedal to control the PITCH knob, you can sweep between any of the pitches available in the selected mode, in either direction. The Grand Canyon will pitch bend smoothly between the two pitches. See page 29 for details on how to create custom Expression Settings.

## SHIM – Shimmer

This mode creates a shimmer effect, generating a rich octave-shifted wash of harmony with your guitar. The maximum delay time is 1.5 seconds. The Grand Canyon achieves the Shimmer effect by modeling a chain of four EHX pedals:



**FILTER:** Controls a low pass filter in the feedback path after the Shimmer effect. As you turn the knob counter-clockwise, the tone of Shimmer first warms up and then becomes muted.

**MOD DEPTH:** As you turn clockwise, the Shimmer's modulation depth increases yielding a more pronounced effect. The Shimmer effect is present over the full range of this knob.

## SAMPLE/HOLD – Indefinitely repeating delay

This mode senses a note or chord and repeats their echoes indefinitely until a new note or chord is sensed.

**SENSITIVITY:** Adjusts the threshold for an intelligent pluck detection algorithm. As you turn clockwise, new notes are detected more easily. In the minimum position only loud notes are detected. The SAMPLE/HOLD LED blinks each time a pluck exceeds the threshold. Use the LED's blink to help set the SENSITIVITY knob.

**DECAY/SWELL:** Adjusts the volume envelope of the echo repeats. In the noon position, all repeats are at the same volume. As you turn the knob counter-clockwise from noon, a decay envelope is engaged where the repeats decrease in volume over time. As you turn the knob clockwise from noon, a swell envelope is engaged where the repeats grow in volume over time. The further you turn the knob from noon the more intense the volume envelopes become.

## DRUM – Drum Echo

Emulates the classic effect of a 60s era magnetic drum echo, complete with a drum age control and equally spaced playback heads to create unique echo rhythms. The delay time is divided by total number of drum playheads. For example: if the delay time is 1200ms in 4-Playhead mode, each playhead is spaced 300ms apart. In the secondary 3-Playhead mode they are 400ms apart.

**RHYTHM:** In standard mode, this knob selects between up to 13 available drum rhythms, all based on a grouping of 4 playback heads. Change to secondary mode (see page 34) to access 8 more rhythms, all of which are based on 3 playback heads, except the last rhythm, which has 4 play heads. The table below details all of the available rhythms. *TIP: Typically, 4-head rhythms match up with 4/4 time, and the 3-head rhythms match up with 3/4 or 6/8 time. However, switching to the other set of playback heads can help you explore different polyrhythms that might liven up the feel of a song.*

RHYTHM Mini Knob Position	4 Playheads (standard mode)				3 Playheads mostly (secondary mode)			
	1	2	3	4	1	2	3	4
1	1				1			
2		2				2		
3			3					3
4				4	1	2		
5	1	2				2		3
6		2	3		1			3
7			3	4	1	2		3
8	1		3		1	2	3	4
9	1			4				
10	1	2	3					
11		2	3	4				
12	1	2		4				
13	1		3	4				

*TIP: Use position 4 in standard mode for a straight-forward delay with no special rhythm.*

**DRUM AGE:** Simulates the aging of the magnetic drum. As you turn the knob clockwise, the magnetics age more which simultaneously filters high end, distorts the signal and adds warble.

## **DOUBLER** – Doubletracking effect

Doubler is a short delay, a detuner, and a stereo spread effect that is great for thickening up a mono signal or widening it to stereo. The maximum delay time is 150ms. The delay times of each stereo output may be offset from each other and up to +/-50 cents pitch shift can be applied to the signal. The delay time range of the DELAY knob is 0 to 50ms. TAP tempo and TAP DIV functions are not available for DOUBLER. This mode works differently with PING PONG engaged versus disabled, please read below on using the OFFSET TIME knob. *TIP: To take full advantage of mono to stereo conversion, the PING PONG button must be enabled and you must use both outputs.*

**OFFSET TIME:** Adds an offset delay time to the left or right outputs. At the 12 o'clock position no offset time is added so the left and right outputs have the exact same delay time.

**PING PONG ON:** As OFFSET TIME is turned counter-clockwise from noon, the left output's delay time increases up to three times the delay time set by the DELAY knob. In this case, the right output's delay time is equal to the DELAY knob. As OFFSET TIME is turned clockwise from noon, the right output's delay time increases instead, while the left output's delay time is set by the DELAY knob.

**PING PONG OFF:** Both outputs have the same delay time and pitch detune amount. At the noon position no delay offset time is added but both positive and negative detuned pitch shifting can be heard. As the OFFSET TIME knob is turned counter-clockwise, detuning goes positive while the delay time increases up to three times the delay time set by the DELAY knob. As OFFSET TIME is turned clockwise from noon, the detuner goes negative while delay time increases by up to 3 times the DELAY knob setting. *Note: in this setup, the echo set by the DELAY knob does not go through the detuned pitch shifter nor does it have feedback applied to it. Only the delay set by the OFFSET TIME knob goes through the detuner and the feedback loop. This allows for an effect where the first repeat differs from the repeats that follow.*

**PITCH SPREAD:** Sets the amount of micro-tonal, detuned pitch shift for each output, from no detune in the counter-clockwise position to full detune (+/- 50 cents) at the fully clockwise setting.

**PING PONG ON:** The left output's detune always goes positive while the right output's detune always goes negative.

**PING PONG OFF:** Both outputs have the same detune setting. The OFFSET TIME knob sets the direction of the detuner.

## LOOPER

When the Grand Canyon is in Looper-only mode, the four white knobs change their function to the labels in the second row of text under them. See the CONTROLS section for details on the white knobs in Looper mode. The two mini knobs also provide looper functions:

**REVERSE:** This knob acts like a switch that changes the direction of loop playback. Turning the knob down, fully counter-clockwise, reverses the loop's direction. Turn the knob up above 9 o'clock and the loop plays back in the forward direction. The looper can overdub and play back in either direction, and the direction can be changed during overdubbing.

**SPEED:** Adjusts the playback speed of the loop from half speed at its counter-clockwise position to normal speed at noon to double-speed at its maximum position. The speed of the loop does not change until you turn this knob. The looper can overdub and play back at any speed, and during overdubbing the speed can be changed.

Upon exiting Looper mode, the REVERSE and SPEED knob settings remain fixed until you return to Looper mode and move the knobs again.

# USING THE LOOPER MODE

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- The LOOPER LED must be lit for all loop functionality.
- To record or overdub your loop with delay effects, ensure both the DELAY and LOOPER LEDs are lit. This is Delay+Looper mode.
- Cycle between DELAY and LOOPER modes by pressing the small white Mode button.
- Jump directly from Looper to Delay+Looper mode by double-tapping the Mode button. Doing so does not stop loop playback or overdub.

## RECORDING A LOOP

1. Ensure no loop is in memory — The MEM LED is off.
2. Press the TAP/LOOP footswitch once. Recording begins immediately and the REC LED lights.
3. To stop recording and set the loop length, press the TAP/LOOP footswitch again. The MEM and PLAY LEDs will light up, and the loop begins playing immediately. Alternatively, if you are in Looper-only mode, you can press the BYPASS/STOP footswitch to end loop recording and set loop length, but the loop will not play back.
4. The LOOP LVL knob controls the output level of loop playback. The dry and delay effects levels are set by the DELAY LVL/DRY CUT knob.
5. While playing, the PLAY LED blinks each time the loop cycles.
6. **Note:** If the full 16 minutes of loop recording time is reached, recording stops automatically.

## STARTING LOOP PLAYBACK

1. Ensure a loop is in memory and that playback is stopped — The MEM LED is lit and the PLAY LED is off.
2. Press and release the TAP/LOOP footswitch once to start loop playback. The PLAY LED lights up to indicate that the loop is playing.

## STOPPING LOOP PLAYBACK / LOOP FADEOUT

1. To stop loop playback, tap the TAP/LOOP footswitch two times quickly (double-tap). Alternatively, if you are in Looper-only mode, press and release the BYPASS/STOP footswitch once.
2. Loop playback will either stop immediately or fade out depending on the current setting of the FADEOUT knob. Turn FADEOUT clockwise to obtain longer fadeout times.
3. During fadeout the PLAY LED blinks rapidly until fadeout has run its course and the loop stops.
4. If you press the TAP/LOOP footswitch once during fadeout, the fadeout cancels and the loop continues playing at full volume.



5. Double-tap the TAP/LOOP footswitch during fadeout and the loop stops playback immediately.
6. In Looper-only mode, pressing the BYPASS/STOP footswitch during fadeout immediately stops the loop.

## **RECORDING AN OVERDUB**

1. To record an overdub, the loop must first be playing. See the STARTING LOOP PLAYBACK section above.
2. While a loop is playing, press the TAP/LOOP footswitch once. Both the REC and PLAY LEDs light to indicate you are in Overdub mode. A new audio layer is recorded on top of the previous loop layers.
3. The DUB LVL knob acts like a feedback control for the looper while overdubbing only. When this knob is at the maximum position, no volume loss will occur to the previously recorded portion of the loop. When the DUB LVL knob is set below maximum, each time the loop cycles during overdub the previous loop volume will be lower than the newly recorded overdub.
4. To stop overdubbing, press the TAP/LOOP footswitch again, once. The REC LED turns off and the loop continues playing with the newly added layer of overdubbed audio.
5. Overdubbing will never change the length of the loop.
6. The Grand Canyon can overdub indefinitely, allowing you to continuously add new audio to your loop for as long as you like.
7. After finishing an overdub, the Undo/Redo function is enabled. You may undo, then redo the last overdub layer as many times as you like.

## **UNDO-REDO FUNCTION**

1. To undo an overdub layer (remove the last take) during loop playback, press and hold the TAP/LOOP footswitch for 1 second. The PLAY LED will blink twice and the previous overdub layer is removed.
2. To redo an overdub (restore the last removed take) during loop playback, press and hold the TAP/LOOP footswitch for 1 second. The PLAY LED blinks twice and the previous overdub layer is restored.
3. The Undo/Redo function can only be initiated while a loop is playing. Undo/Redo cannot be performed during overdub, record, or stop modes.
4. **Note:** Undo/Redo is always available on the last recorded overdub layer, even after power cycling the Grand Canyon.

## **ERASING A LOOP**

1. To erase a loop, playback must be completely stopped. See STOPPING LOOP PLAYBACK on page 24.
2. Press and hold the TAP/LOOP footswitch for 2.5 seconds to erase the current loop. The REC LED blinks rapidly for half a second just prior to completing loop erase.
3. The MEM LED shuts off, indicating that the loop is erased.
4. **Note:** the Erase function is final and cannot be undone. Erase is only available when a loop is in memory, as indicated by a lit MEM LED.

## **SWITCHING BETWEEN LOOPER AND DELAY+LOOPER**

1. Loop playback continues even when the Mode switch is pressed to switch the Grand Canyon into Delay mode or Delay+Looper mode.
2. If you are overdubbing in Delay+Looper mode, overdubbing will continue after switching to Looper mode.
3. If you are overdubbing in Looper mode, switching to Delay mode will stop overdubbing, but loop playback will continue.
4. If you are overdubbing in Looper mode and want to continue overdubbing in Delay+Looper, quickly double-click the Mode button to switch to Delay+Looper mode.

## **LOOP MEMORY**

1. Any recorded audio is stored automatically to the Grand Canyon's internal memory. A lit MEM LED indicates a loop is in memory.
2. The recorded loop will remain in memory until it is erased. Power cycling does not erase the saved loop unless power is cut while recording the loop. Any loop or overdub that was being recorded at the time of power loss will not be saved by the Grand Canyon.

## **LOOP SPEED AND REVERSE FUNCTIONS**

1. To adjust the loop playback speed or direction, a loop must first be recorded. See the RECORDING A LOOP section on page 24.
2. Loops will always be recorded at normal speed, in the forward direction. If the REVERSE and/or SPEED knobs are moved before or during loop recording, the loop will play back according to the position of these knobs once recording is finished.
3. The LOOPER LED will blink when the loop knobs have been moved from normal speed and forward direction. If the knobs are turned back to the normal position, the LED will stop blinking.
4. The REVERSE and SPEED knobs may be turned during playback or overdubbing in order to create time-bending loop effects.

## EXTERNAL FOOTSWITCH FUNCTIONALITY

The Grand Canyon accepts a single momentary footswitch (with TS plug), or a double or triple footswitch (with TRS plug) at its FSW jack. The following chart describes the functions for each footswitch depending on the current mode of the Grand Canyon. When using a single momentary footswitch, the "TIP SWITCH" functions are available.

<b>GRAND CANYON MODE</b>	<b>TIP SWITCH / SINGLE FSW</b>	<b>RING SWITCH</b>	<b>TIP+RING SWITCH</b>
<b>DELAY</b>	Tap Tempo (S/H only: press and hold to stop repeats)	Scroll thru Delay Types: press and release to go down, press and hold to go up	Cycle modes: Switch to Delay + Looper mode
<b>DELAY+LOOPER</b>	Tap Tempo (S/H only: press and hold to stop repeats)	Scroll thru Delay Types: press and release to go down, press and hold to go up	Cycle modes: Switch to Looper mode
<b>LOOPER</b>	Undo/Redo	Toggle between normal play and the current REVERSE and SPEED Mini Knob settings	Cycle modes: Switch to Delay mode

# EXPRESSION PEDAL USE AND SETUP

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The Grand Canyon accepts an expression pedal with TRS plug or control voltage (CV) on a TS plug at its EXP phonejack. Please see page 15 for specifications on acceptable expression pedals and voltage range for the Grand Canyon. An expression pedal has one function when the EXP MODE Button is off, and a different one when the button is on.

**EXP MODE Button Off** – When the EXP MODE button is not lit, the expression pedal works like a volume pedal placed before the Grand Canyon. The expression pedal controls the level of both the signal going into the delay effects block and the level of the dry signal, generating expressive, swelling delay effects. When the EXP MODE button is not lit, any Expression Settings (see below) are disabled.

**EXP MODE Button On** When the EXP MODE button is lit, the Grand Canyon's Expression Settings are enabled. You can create an Expression Setting for each Delay Type where you assign the knobs you want to sweep and customize each knob's range and direction. Any parameters that are assigned to the expression pedal will be taken over and the current knob positions will be ignored. After you create an Expression Setting for a particular Delay Type it remains in memory until you change it again, even if you remove power. In addition, when you save a preset, the current Expression Setting for that Delay Type is also saved.

*Note: if the EXP MODE button is turned on while no expression pedal is connected, any parameters controlled by the expression pedal will be set to the saved toe position of the Expression Setting.*

## Factory Default Expression Settings

Delay Type	Default Expression Pedal Control (EXP MODE = On)
<b>Echo</b>	Filter
<b>Mod</b>	Modulation rate
<b>Multi</b>	Filter
<b>Reverse</b>	Modulation depth
<b>DMM</b>	Delay time
<b>Tape</b>	Tape distortion
<b>Reverb</b>	Reverb time
<b>Pitch</b>	Pitch bend to the pitch selected by the right mini knob
<b>Shim</b>	Feedback
<b>Sample/Hold</b>	Delay Level
<b>Drum</b>	Delay Time
<b>Doubler</b>	Offset time
<b>Looper</b>	Reverse on/off

## **CREATING CUSTOM EXPRESSION SETTINGS**

Your Grand Canyon comes set up from the factory with some useful Expression Settings for each Delay Type, but you might want to create your own. Here's how to create custom Expression Settings:

1. Turn the DELAY TYPE knob to select the delay mode for which you want to create a custom Expression Setting.
2. Press and hold the EXP MODE button. After one second, the other illuminated buttons (such as TAILS) will blink.
3. Once the other buttons stop blinking, release the EXP MODE button. EXP MODE will now be blinking at a medium rate.
4. Set any of the Grand Canyon's six knobs to the position you want them to have at the expression pedal's heel position. If you do not want a knob to be swept by the expression pedal, do not move it at this point.  
*Note: the only knob that cannot be controlled by an expression pedal is DELAY TYPE.*
5. Press and release the EXP MODE button to save the heel settings. EXP MODE blinks rapidly now.
6. Set the six knobs to the positions you want them to have at the expression pedal's toe down setting. Again, if you do not want a knob to be swept by the expression pedal, do not turn it.
7. While setting the knobs for toe-down position, you can move the expression pedal to hear how the Expression Setting will sound.
8. You can go backwards to set the heel-down position again by pressing & holding EXP MODE for 2 seconds.
9. Once you have set the knobs for the toe-down position, press and release the EXP MODE button to save the toe settings.
10. The EXP MODE button will light solid and your custom Expression Setting for the currently selected Delay Type is now saved and ready to use. It will remain saved even after powering down the pedal.
11. Repeat these steps if you want to update the Expression Setting.
12. Press and release the DELAY TYPE knob at any time to cancel out of Expression Setting setup without saving.

## **ERASING CUSTOM EXPRESSION SETTINGS**

1. Turn the DELAY TYPE knob to select the delay mode for which you want to restore the factory default Expression Setting.
2. Press and hold the EXP MODE button. After one second, the other illuminated buttons (such as TAILS) will blink.
3. While the other buttons are still blinking, tap the BYPASS/STOP footswitch.
4. The other illuminated buttons will stop blinking. The Expression Setting is now restored to the factory default. You can now release the EXP MODE button.

# **TAP TEMPO ON THE GRAND CANYON**

The Grand Canyon's delay time can be set with tap tempo using a built-in footswitch or by using an external momentary switch. With either method, you can achieve nine different delay times all in time with your tap tempo using the TAP DIV button. Pressing TAP DIV cycles through the nine subdivision options, each indicated by a combination of LEDs. When TAP DIV is in use, the currently selected TAP DIV LED(s) blink at a rate equal to the current delay time.

## **USING THE INTERNAL TAP/LOOP FOOTSWITCH**

1. The Grand Canyon must be set to DELAY mode for the TAP/LOOP footswitch to act as a tap tempo button.
2. Press and release the Grand Canyon's TAP/LOOP footswitch at least two times at a steady tempo.
3. The delay time will be set to your tapping speed, divided by the current tap divide setting.
4. The TAP DIV setting can be changed after tapping in the delay time to access different delay times.
5. The currently selected TAP DIV LED(s) blink at the rate of the current delay time.

## **USING THE BYPASS/STOP FOOTSWITCH**

1. When the Grand Canyon is set to Delay+Looper mode, the BYPASS/STOP footswitch can act as a tap tempo button, in addition to its normal bypass switching function.
2. Press and release the BYPASS/STOP footswitch at least two times at a steady tempo. *Tip: When you tap the internal footswitch, the Grand Canyon will enter/exit bypass. If you don't want echoes to stop while setting tap tempo, make sure the TAILS button is set to ON, or use an external footswitch.*
3. The delay time will be set to your tapping speed, divided by the current tap divide setting.
4. The currently selected TAP DIV LED(s) blink at the rate of the current delay time.

You can also disable the BYPASS/STOP footswitch's tap tempo function in Delay+Looper mode. To disable/enable this function:

1. Unplug the Grand Canyon from power.
2. Press and hold the BYPASS/STOP footswitch while plugging power back in to the Grand Canyon.
3. The BYPASS LED will flash 7 times if tap tempo is disabled. The LED will flash 2 times if tap tempo is enabled.
4. If the Grand Canyon is reset to factory defaults (see page 35), the BYPASS/STOP footswitch's tap tempo functionality will be enabled in Delay+Looper mode.

### **USING AN EXTERNAL FOOTSWITCH FOR TAP TEMPO**

When the Grand Canyon is set to Delay or Delay+Looper modes, an external momentary footswitch may be used to set tap tempo. The external switch may be either a single button with a TS plug, or a double or triple button unit with TRS plug. The external switch needs to be normally open. Upon engaging the switch, it should create a short circuit between the Tip and Sleeve of the plug to be used for tap tempo. Follow these instructions to tap in the delay time with an external footswitch:

1. While powered down, connect an external momentary footswitch to the Grand Canyon's FSW jack.
2. Power up the Grand Canyon. Set to Delay or Delay+Looper modes.
3. Tap the external footswitch at least two times at a steady tempo. The delay time will be set to your tapping speed, divided by the Tap Divide setting.
4. The currently selected TAP DIV LED(s) blink at the rate of the current delay time.

# PRESET USE AND SETUP

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The Grand Canyon can save and recall one preset per Delay Type plus a preset for Looper mode. Each preset saves all current knob settings, the current Expression Settings, Tap Tempo, Tap Divide, all illuminated button settings, and secondary mode status if you are in Pitch or Drum modes (see page 34). Presets do not save loop audio.

## **SAVING PRESETS TO A DELAY TYPE**

The Grand Canyon must be in either Delay or Delay+Looper mode to save a Delay Type preset.

1. Turn the DELAY TYPE knob to the specific Delay Type that you want to save to.
2. Set up the sound you want to save.
3. Press and hold the DELAY TYPE knob for two seconds.
4. You will soon see the PRESET LED blink rapidly. Continue to hold down DELAY TYPE until the PRESET LED stops blinking.
5. The preset is now saved. You can release the DELAY TYPE knob.

## **SAVING A PRESET FOR LOOPER MODE**

1. Press the mode button so that only the LOOPER LED is lit.
2. Adjust the knobs and buttons to your preferred settings.
3. Press and hold the DELAY TYPE knob for two seconds.
4. You will soon see the PRESET LED blink rapidly. Continue to hold down DELAY TYPE until the PRESET LED stops blinking.
5. The Looper preset is now saved. Release the DELAY TYPE knob.

## **RECALLING PRESETS USING THE DELAY TYPE KNOB**

The Grand Canyon must be in either Delay or Delay+Looper mode to recall a Delay Type preset. It must be in Looper mode to load the looper preset.

1. Turn the DELAY TYPE knob to the Delay Type that you want to recall. If you want to recall a Looper preset, press the small Mode button so that only the LOOPER LED is lit.
2. Press and release the DELAY TYPE knob. The PRESET LED lights indicating the preset has been loaded.
3. Once a preset is loaded and the PRESET LED is lit, changing to other Delay Types or to Looper mode automatically recalls their presets. To disable presets, see the section on the following page entitled UNLOADING PRESETS.



## **CHANGING PARAMETERS AFTER RECALLING PRESETS**

Normally the PRESET LED lights solid after loading a preset. If you turn a knob, press a button in the top row, or tap in a new delay time, the PRESET LED blinks to indicate that a preset is loaded but has been altered.

## **RELOADING ALTERED PRESETS**

In the situation where a preset has been altered and therefore the PRESET LED is blinking, press and release the DELAY TYPE knob to recall the preset for the current Delay Type or the Looper mode.

## **SAVING ALTERED PRESETS**

If you would like to save an altered preset to the current Delay Type, press and hold the DELAY TYPE knob for about 2.5 seconds. Release once the PRESET LED stops blinking and is lit solid. *Note: altered Expression Settings are automatically saved to presets. See below.*

## **UNLOADING PRESETS**

To unload a preset and return to What You See Is What You Get mode (WYSIWYG):

1. Ensure the PRESET LED is lit solid
2. Press and release the DELAY TYPE knob.
3. The PRESET LED shuts off and you are in WYSIWYG mode.

## **SAVING EXPRESSION PEDAL SETTINGS TO PRESETS**

If the EXP MODE button is on when a preset is saved, the current Expression Setting will be saved to that Delay Type's or Looper's preset. The EXP MODE button will be saved in the on state.

If a new custom Expression Setting is created while a preset has been loaded (the PRESET LED is lit), the new setting will be automatically saved to the preset. The PRESET LED will blink at the end of the Expression Setting creation procedure to indicate that the new setting has been saved to the preset. *Note: if an expression pedal setting is created and saved while the preset is loaded, any other unsaved control alterations will be lost. Make sure to save any desired knob alterations to the preset before updating the preset's Expression Setting.*

# **SECONDARY MODE FUNCTIONALITY**

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The Grand Canyon contains an additional secondary mode for the PITCH and DRUM Delay Types that can be accessed through a “hidden” Secondary Mode function.

## **PITCH SECONDARY MODE**

By default, the Grand Canyon is in Standard Pitch mode, where the pitch shift block is before the delay block in the signal chain. In this mode, the pitch shift is outside of the feedback loop, yielding an effect where the delay’s repeats are always the same pitch.

When Secondary mode is enabled, the pitch shift block is placed within the feedback loop so that each echo repeat is pitch shifted. This signal chain produces a cascading pitch shift effect where each echo repeat is pitch shifted further along than the previous echo.

## **DRUM SECONDARY MODE**

By default, the Drum delay contains four playback heads, which yields echo rhythms with four echo beats per pattern. Each pattern has different playback heads muted or unmuted. When the Drum’s Secondary mode is enabled, the playback heads are rearranged so that only three heads are available. The echo rhythms now have three beats per pattern, which works great for 3/4 or 6/8 time signatures or for producing polyrhythms when played against 4/4 time signatures. See page 21 for a table of all available Drum delay rhythms.

## **USING SECONDARY KNOB MODE**

1. Ensure either the PITCH or DRUM Delay Type LEDs are selected.
2. Press and hold the PING PONG button.
3. After one second, the currently selected Delay Type LED shuts off. Continue to hold down PING PONG.
4. After one more additional second, the selected Delay Type LED blinks.
5. Once the associated Delay Type LED begins blinking, primary mode has changed to secondary mode.
6. When you enter Secondary mode, the Delay Type LED does not stop blinking until you release the PING PONG button. You can release PING PONG at any point after the LED begins blinking.
7. To return to Standard mode, perform steps 1 and 2 again. The associated LED will blink after 1 second and stops after 2 seconds.

# RESTORING FACTORY SETTINGS

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To restore the Grand Canyon to factory default settings, press and hold the DELAY TYPE knob while plugging power into the Grand Canyon.

1. Unplug the Grand Canyon from power.
2. Press and hold the DELAY TYPE knob while plugging power back in to the Grand Canyon.
3. The PRESET LED will flash 7 times. You can release the DELAY TYPE knob once you see this LED flashing.
4. When the knob is released, the following factory default settings will be restored:
  - All presets will be erased and restored to their factory default settings.
  - All custom Expression Mode settings will be erased and restored to the factory default Expression Mode settings.
  - The BYPASS/STOP footswitch's tap tempo functionality will be enabled in Delay+Looper mode.
  - PITCH and DRUM delay types will be restored to their primary modes.
  - The Grand Canyon will start up in Delay+Looper mode, with the ECHO delay type selected, and the Tap Division set to a quarter note.

**Note:** Looper audio data will not be erased when restoring the Grand Canyon to factory default settings.

## WARRANTY INFORMATION

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Please register online at <http://www.ehx.com/product-registration> or complete and return the enclosed warranty card within 10 days of purchase. Electro-Harmonix will repair or replace, at its discretion, a product that fails to operate due to defects in materials or workmanship for a period of one year from date of purchase. This applies only to original purchasers who have bought their product from an authorized Electro-Harmonix retailer. Repaired or replaced units will then be warranted for the unexpired portion of the original warranty term.

If you should need to return your unit for service within the warranty period, please contact the appropriate office listed below. Customers outside the regions listed below, please contact EHX Customer Service for information on warranty repairs at [info@ehx.com](mailto:info@ehx.com) or +1-718-937-8300. USA and Canadian customers: please obtain a **Return Authorization Number (RA#)** from EHX Customer Service before returning your product. Include—with your returned unit—a written description of the problem as well as your name, address, telephone number, e-mail address, RA# and a copy of your receipt clearly showing the purchase date.

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Email us at [info@ehx.com](mailto:info@ehx.com)

## COMPLIANCE

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*Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, 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 to which the receiver is connected.*
- *Consult the dealer or an experienced radio/TV technician for help.*

*Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment under FCC rules.*



*The CE logo indicates that this product has been tested and shown to conform with all applicable European Conformity directives.*