electro-harmonix

ATTACK DECAY

Tape Reverse Simulator

The original Electro-Harmonix Attack Decay is a hard-to-find gem among legendary guitar pedals. Originally called a Tape Reverse Simulator, it is known for producing volume and reverse swells, backward tape sounds, artificially short staccato notes and bowed instrument effects.

The new Electro-Harmonix Attack Decay reinterprets the vintage unit by keeping the basic functionality but adding more modern features such as Poly mode and presets. It can produce a single volume envelope like the original, or with Poly engaged, put each note you play through separate volume envelopes. The built-in Harmonix fuzz is now a fully controllable distortion with gain, tone and volume controls. The effects loop allows the musician or sound designer to place the volume envelope onto whatever signal is present at the Return jack. An Expression/CV/Clock input and three user presets give the user total control over their Attack Decay.

WARNING: Your Attack Decay comes equipped with an Electro-Harmonix 9.6DC-200BI power supply. The Attack Decay requires **140mA** at 9VDC with a center negative plug. Use of the wrong adapter or a plug with the wrong polarity may damage your Attack Decay and void the warranty. Do not exceed 10.5VDC on the power plug. Power supplies rated for less than 140mA will cause the Attack Decay to act unreliably.

- FEATURES -

- Volume envelope swells and quick stabs with adjustable Attack and Decay times: 4ms to 8s.
- Mono mode: a single volume envelope for the full signal present at the INPUT or RETURN jacks, the envelope resets when you pluck a new note.
- Poly mode: gives each note you play its own envelope, as seen on the EHX HOG2.
- Built-in, fully adjustable, Harmonix fuzz enhances the volume envelope effect and produces bowed instrument sounds.
- Built-in effects loop allows for your own pedals to be inserted before the volume envelopes.
- Expression pedal or CV control over every knob on the Attack Decay.
- Continuous Envelopes turns Attack Decay into a retriggable Tremolo.
- Save and recall up to three presets.
- High quality analog buffered bypass.
- Comes supplied with EHX 96DC-200 power supply.

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NOTES AND SPECIFICATIONS

- Audio input impedance at INPUT jack: 1MΩ
- Audio output impedance at OUTPUT jack: 500Ω
- Audio output impedance at SEND jack: 500Ω
- Audio input impedance of the RETURN jack: 2MΩ
- Current draw: 140mA
- Maximum input signal level: +4.0dBu
- Maximum gain: approximately +13dB

QUICK START GUIDE

PLUGGING IN THE ATTACK DECAY

1. Connect the supplied EHX9.6DC AC Adapter into the 9V jack at the top of the Attack Decay. 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 OUTPUT jack to your amp with another standard 1/4" instrument cable.

CREATING A VOLUME SWELL EFFECT

1. Ensure none of the PRESET or POLY buttons at the top left of the Attack Decay are lit. If any button is lit, press it once to turn it off.
2. Ensure that H LED, located above the left footswitch, is turned off. This turns on and off the Attack Decay's internal fuzz. If the H LED is lit, press the left footswitch once to turn it off.
3. Turn the BLEND knob to maximum. This ensures that only the volume envelope effect is heard and no dry signal is mixed-in.
4. Set the DECAY knob to maximum. Set ATTACK to about 10 o'clock.
5. Start with the VOL knob at 50%. Adjust after playing if needed.
6. Start with the SENS knob set to 50%. Turn up SENS if the envelope does not trigger with each note; lower SENS if it triggers too often.
7. Now engage POLY mode by pressing the POLY button. You might need to turn up the ATTACK knob as well.

USING THE HARMONIX FUZZ EFFECT

1. Follow the instructions above to get the desired envelope effect.
2. Deactivate POLY mode if POLY is currently lit.
3. Set the H.VOL knob to 9 o'clock as this fuzz can get loud!
4. Press and release the left footswitch to activate the Harmonix effect.
5. Adjust the sound of the Harmonix fuzz with the three small knobs in the upper right corner. The HARMONIX knob sets gain/saturation, TONE adjusts brightness, and H.VOL is the fuzz's volume control.

USING CONTINUOUS ENVELOPES (TREMOLO)

1. Ensure the POLY button is off.
2. Set the ATTACK and DECAY knobs to 9 o'clock.
3. Set SENS to 50% or where you normally like to set it.
4. Press on the BYPASS footswitch and hold it down.
5. Now press on the HARMONIX footswitch and release it. You don't need to hold HARMONIX.
6. Release BYPASS.
7. Play some notes, you should hear the Attack envelope restart automatically once the Decay envelope finishes its run.
8. Continuous Envelope can also be enabled for POLY mode. Repeat the same procedure but change Step 1 so that the POLY button is lit.

CREATING A CUSTOM EXPRESSION SWEEP

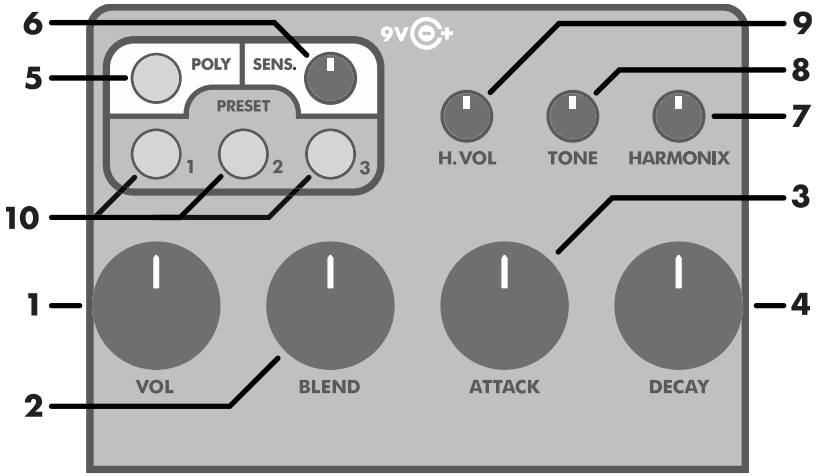
1. In this example we will create a custom expression sweep for the DECAY knob. You can follow the same procedure to make an expression sweep for any of the knobs.
2. Make sure a compatible expression pedal is connected to the EXP jack.
3. Press and hold BYPASS then press and release the PRESET 1 button.
4. Both the PRESET 1 LED and Status LED, near BYPASS, will blink at a steady pace.
5. Turn the DECAY knob to its 50% setting. This will be assigned to the expression's heel position.
6. Press and release the PRESET 1 button. Both LEDs will blink faster.
7. Turn the DECAY knob to its minimum setting. This will be assigned to the expression's toe position.
8. Press and release the PRESET 1 button. Both LEDs will blink even faster for one second and then stop blinking.
9. Play some licks and rock the expression pedal. The decay time should get shorter as the pedal is moved from heel to toe.
10. Try this same procedure with other knobs or multiple knobs at once.

SAVING A PRESET

1. Create a setting on the Attack Decay that you really like.
2. Choose one of the preset slots to save the setting. For our purposes let's choose PRESET 2.
3. Press and hold the PRESET 2 button. After one second all the Preset buttons blink. After two seconds they cease blinking.
4. Release the PRESET 2 button after LEDs stop blinking.
5. The preset is saved.
6. To **recall** a preset, press and release the corresponding Preset button. The button will light solid indicating that a preset is loaded.

CONTROLS AND LEDS

- CONTROL KNOBS AND BUTTONS -



1. VOL Knob – Sets the master output level of the Attack Decay.

2. BLEND Knob – Normally BLEND is a master wet/dry mix between the dry signal present at the INPUT jack and all of the effects produced by the Attack Decay. The output of BLEND is sent directly to the VOL knob. As BLEND is turned clockwise, the effect volume increases while the dry volume decreases.

- Optionally, BLEND can adjust the mix between dry and Harmonix signals before they enter the volume envelopes, replicating the Harmonics knob from the vintage Attack Decay. This allows for a mix of the clean and fuzz instrument tones to be manipulated by the volume envelopes. As BLEND is turned clockwise the fuzz volume increases while the clean volume decreases. See page 15 for details on adjusting Harmonix Blend.
- The BLEND knob has a third option that mixes the signal at the RETURN jack with the output of the volume envelopes. To do this, Return Blend mode must be activated and a plug must be inserted into the RETURN jack. See page 16 for details on adjusting Return Blend.

3. ATTACK Knob – Sets the swell or fade-in speed of the volume envelopes. As you turn the knob clockwise, attack time increases. Turn

the ATTACK knob to minimum to disable the attack portion of the envelope. The attack time range is 4 ms to 8 seconds in mono mode.

4. DECAY Knob – Sets the staccato or fade-out speed of the volume envelopes. As you turn DECAY clockwise the decay time increases. Turn the DECAY knob to maximum to disable the decay portion of the envelope. The decay time range is 4 ms to 8 seconds in mono mode.

5. POLY Button – Press and release to toggle between mono and poly modes. When the POLY button is lit, poly mode is engaged.

6. SENS Mini Knob

MONO (POLY OFF): While using the Attack Decay with POLY off, the SENS knob sets the threshold at which a new pluck is detected at the INPUT jack thus triggering the start or restart of the volume envelope.

- As SENS is turned clockwise, the more easily your playing will trigger an envelope reset.
- Each time the volume envelope is triggered, the attack portion of the envelope runs first and then is immediately followed by the decay portion of the envelope.

POLY ON: When POLY is enabled the SENS knob has a similar function as in Mono mode but over a limited range.

- The higher SENS is turned, the more easily a new note will trigger the Attack portion of a note's volume envelope.
- While POLY is enabled, the SENS knob is only in play when both the ATTACK and the DECAY knobs are **not** set to their off positions.
- When SENS is set to maximum—while in POLY mode—it is normal for bubbling noises to be produced by the volume envelopes.

7. HARMONIX Mini Knob – Adjusts the gain and saturation amount of the Attack Decay's internal distortion section. The H LED must be lit for the HARMONIX knob to be active.

8. TONE Mini Knob – Sets the tone of the Harmonix section. As the TONE knob is turned clockwise, the distortion's tone gets brighter. The H LED must be lit for the TONE knob to be active.

9. H.VOL Mini Knob – Sets the output volume of the Harmonix section. The H LED must be lit for the H.VOL knob to be active.

10. PRESET Buttons 1, 2, & 3 – Press and release to load and unload the first, second, or third preset. Press and hold for two seconds to save the sound you currently hear to a preset.

- FOOTSWITCHES AND LEDS -

1. BYPASS Footswitch and Status LED – Press and release the BYPASS footswitch to toggle between effect and buffered bypass. When the Status LED is lit, the Attack Decay effect is engaged. You may also use the BYPASS footswitch to manually trigger volume envelopes when the unit is in Manual Envelope Trigger mode. See page 17 for details.

When Return Bypass is enabled, while in Bypass, the RETURN jack is connected to the OUTPUT jack. See page 13 and 16 for details.

2. HARMONIX/PRESET Footswitch – By default, a press and release on this footswitch will engage and disengage the Attack Decay's Harmonix fuzz. Alternately, this footswitch can be used to cycle through the three presets and What-You-See-Is-What-You-Get (WYSIWYG), live mode. To enable preset cycle, press and hold the HARMONIX/ PRESET footswitch for 2 seconds. When the P LED lights up, release the footswitch (see page 12 for more details on how to control presets with this footswitch).

3. H LED – This LED lights when Harmonix fuzz is engaged. This LED will be off when the fuzz is not engaged.

4. P LED – In Mono mode, the P LED flashes briefly to indicate the input signal has exceeded its threshold and triggered the volume envelope or lights solid to indicate that the HARMONIX/PRESET footswitch will cycle through the presets. The P LED flash—indicating a new pluck has been detected—helps when adjusting the SENS knob. **Please note:** the P LED does not flash to indicate pluck detects while POLY mode is enabled.

CONNECTIONS

INPUT Jack – This 1/4" phone jack is the main audio input on the Attack Decay. Input impedance = 1MΩ.

OUTPUT Jack – This 1/4" phone jack is the main audio output of the Attack Decay. The volume envelope, and other effects, emanate from this jack. Output impedance = 500Ω.

SEND Jack – This 1/4" phone jack reproduces the input signal and by default, the Harmonix fuzz when enabled. Use this jack as the signal source for the Attack Decay's external FX loop. Impedance = 500Ω.

RETURN Jack – This 1/4" phone jack receives the output from an external effects loop or another instrument. The signal present at this jack is routed through the Attack Decay's internal volume envelopes. If no connection is made to this jack then the signal at the INPUT jack (or the output of the Harmonix section if activated) is routed through the volume envelopes. The input impedance is 2MΩ.

See page 13 for details and tips on using the SEND and RETURN jacks.

EXP Jack – Connect an expression pedal or control voltage (CV) to allow for external control over every knob on the Attack Decay. See page 10 for a description on how to set up and control the Attack Decay with an external expression pedal. Connect a clock pulse to EXP to trigger the volume envelopes from an external source, see page 17 for details.

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, Moog® 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. The acceptable trigger clock pulse amplitude range is 1.5Vpp to 15Vpp.

9V Power Jack – Plug the output of the Attack Decay's supplied EHX9.6DC/200mA AC adapter to the 9V power jack located at the top of the pedal. The Attack Decay requires 140mA 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 140mA.*

MONO AND POLY MODES

The Attack Decay has two main modes of operation: Mono and Poly. When the POLY button is lit, the Attack Decay is in Poly mode. When it is not, the pedal is in Mono Mode.

MONO MODE

Mono Mode produces a more traditional volume envelope working in the same fashion as the vintage Attack Decay. In this mode, each time a new pluck is detected from your instrument, the volume envelope resets to the beginning of the Attack envelope, swelling the volume of all notes currently being played from zero volume to maximum. Once the Attack portion of the envelope completes its course, the Decay envelope immediately takes over allowing for faster than normal volume reduction; producing, for example, staccato-like stabs.

This modern reinterpretation of the Attack Decay has many new features that can be used in Mono and Poly modes, but there is one special enhancement that is only available in Mono Mode:

- Three selectable attack and decay envelope shapes for fine-tuning the effect: linear, parabolic (default) and s-curve.

See page 19 for details on the volume curves.

POLY MODE

Poly Mode is a modern twist on the Attack Decay concept, in which each note you play has a separate envelope applied to it, independent of any other notes that have been played or are being sustained. Built using technology pioneered for the groundbreaking EHX HOG2, POLY mode works especially great on arpeggios and chordal playing in addition to single notes. POLY Mode is great for lush, layered soundscapes.

- For some players, POLY mode might be a more natural, easier to play Attack or Decay effect, particularly with guitar or bass.
- POLY performs best when using only one portion of the volume envelope. For example, when only using the Attack envelope.
- To obtain the same Attack effect that the HOG2 produces, set the DECAY knob to maximum (its off position) and set the ATTACK knob to taste. Conversely for the HOG2's Decay effect, set ATTACK to minimum (its off position) and set DECAY to taste.
- It is normal for POLY mode to produce bubbling, waterfall kinds of sounds, especially when both the ATTACK and DECAY knobs are activated. The Harmonix fuzz drastically exacerbates this side-effect when used with POLY mode.

EXPRESSION PEDAL USE AND SETUP

The Attack Decay accepts an expression pedal with TRS plug or control voltage (CV) or clock pulse on a TS plug at its EXP phonejack. Please see page 8 for specifications on acceptable expression pedals and voltage ranges for the Attack Decay.

The Attack Decay's expression pedal settings can be modified so that any knob or combination of knobs, in any combination of ranges and directions, is controlled by an expression pedal or CV.

- Expression settings are saved with presets.
- After a factory reset, expression controls the VOL knob.
- See page 17 for information on controlling the Attack Decay's volume envelopes from an external clock pulse.

CREATING EXPRESSION SWEEP SETTINGS

1. Press and hold the BYPASS footswitch. While holding BYPASS, press and release the PRESET 1 button.
2. Once both buttons are pressed down, the BYPASS LED and PRESET 1 button blink at a medium pace. When you see them blink, release the footswitch and the button.
3. Set any of the Attack Decay's eight knobs to the setting you want them to have when the expression pedal is in the heel position.
4. Press and release PRESET 1 to save the heel settings. The PRESET 1 button and Status LED now blink at a faster rate.
5. Set any of the eight knobs to the setting you want them to have in the expression pedal's toe position. If you do not want a knob to be swept by the expression pedal, do not turn it at this point.
6. Press and release the PRESET 1 button to save the toe settings.
7. The PRESET 1 and Status LEDs will blink rapidly for one second.
8. Your custom expression setting is now complete and ready to use. It remains even after powering down the pedal.
9. Expression sweeps are saved to presets with your other settings.

CANCELLING KNOBS FROM EXPRESSION SWEEP SETTINGS

- While a plug is inserted into the EXP jack, turning a knob that is part of the current expression setting will remove that knob from the expression sweep.
- For example if you create an expression setting that sweeps both ATTACK and DECAY, turning the ATTACK knob will remove ATTACK from the expression setting so that only DECAY is swept.
- In this example, turning DECAY next will also remove it from the expression setting after which the pedal no longer sweeps a knob.

PRESET SETUP AND USE

The Attack Decay can save and recall three presets. Each preset saves:

- All current knob settings
- Position of the expression pedal at the time of saving
- The state of Harmonix and POLY modes
- The current expression sweep setting
- Most secondary mode settings including: Mono envelope curves, Continuous Envelope (tremolo) mode, Harmonix Blend, Return Blend, Return bypass, manual BYPASS footswitch triggering, external clock triggering, and internal compressor on/off states.

SAVING PRESETS

1. To save a preset, set up the sound you want to save.
2. Press and hold the PRESET button that you want to save to.
3. After one second, all three PRESET buttons blink rapidly.
4. Continue to hold down the PRESET button until all three buttons cease blinking. Release the button, the preset is saved.

RECALLING PRESETS

1. To recall a preset, simply press and release the PRESET button corresponding to the preset you would like to recall.
2. The preset button lights solid indicating the preset is loaded.
3. Press a different PRESET button to recall a different preset.
4. You may also recall presets using the HARMONIX/PRESET footswitch. See the HARMONIX/PRESET FOOTSWITCH CONTROL section on the following page.

UNLOADING PRESETS

To unload presets and return to WYSIWYG (live) mode, press the currently-lit PRESET button. The button will turn off indicating that the preset has been unloaded.

CHANGING PARAMETERS AFTER RECALLING PRESETS

Normally a PRESET button lights solid after loading a preset. If you turn a knob or change one of the available modes, the PRESET button 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 button is blinking, press and release the blinking PRESET button to recall the last saved version of the preset.

SAVING ALTERED PRESETS
To save an altered a preset, follow the instructions above for Saving Presets. You may save to the same preset number or a different one.

EXPRESSION PEDAL POSITION RECALL
If an expression pedal is attached to the Attack Decay at the time you save a preset, the preset saves the position of the expression pedal. When you recall the preset, it also recalls the saved position of the expression pedal—whether an expression pedal is attached or not. You must move the expression pedal after loading the preset to give back control of the expression sweep settings to the expression pedal.

HARMONIX/PRESET FOOTSWITCH CONTROL OVER PRESETS
The HARMONIX/PRESET footswitch's normal function is to turn the Harmonix distortion on and off. Alternatively this footswitch can be reconfigured to load and cycle through presets instead:

TOGGLING HARMONIX/PRESET FOOTSWITCH FUNCTION:

1. Press and hold the HARMONIX/PRESET footswitch.
2. After 1 second, the P LED lights solid to indicate that the footswitch now controls presets and not Harmonix on/off.
3. Once the P LED lights up release the footswitch.
4. Repeat the same procedure to reinstate Harmonix on/off control back to the HARMONIX/PRESET footswitch.
5. The state of HARMONIX/PRESET control is saved after power down. It is not saved to presets.

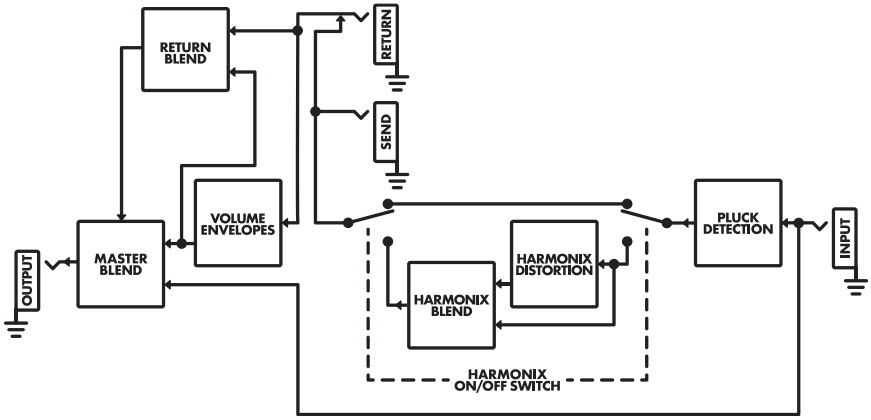
When the HARMONIX/PRESET footswitch is controlling presets, each tap of the footswitch will load the next preset. The pedal will return to WYSIWYG (live) mode in between Presets 3 & 1.

Note: The current status of the Harmonix distortion will be saved to WYSIWYG mode when the HARMONIX/PRESET footswitch is changed to control presets.

USING THE SEND AND RETURN FX LOOP

The SEND and RETURN effects loop jacks allow for inserting other sounds between the signal at the INPUT jack and the input into the volume envelopes. In Mono mode, this means your dry instrument signal can be used by the Attack Decay to detect plucks but the volume envelopes act on the signal at the RETURN jack instead of the INPUT jack's dry signal. In POLY mode, pluck detects are always generated by the actual signal going into the volume envelopes.

The Attack Decay's SEND jack sends a signal after the Harmonix effect (if activated) and pluck detection, but before the volume envelope stages. The RETURN jack routes the external signal through the volume envelopes. In Mono mode, the volume envelope is triggered by the signal at the input jack. This allows the dry guitar to trigger the volume envelope of an external effect that might otherwise be difficult to use with the Attack Decay. For example: a fuzz or reverb that obscures the guitar's attack.



TIPS ON USING THE SEND AND RETURN JACKS

1. **Default Bypass**: when the Attack Decay is set to Bypass, by default, the signal at the INPUT jack is connected to the OUTPUT jack. This bypass connection is buffered and analog. While in Bypass, the SEND jack still outputs signal and will output the Harmonix effect if it is activated.
2. **Return Bypass**: optionally, you may enable Return Bypass. In this case, while in Bypass, the signal present at the RETURN jack is connected to the OUTPUT jack. This form of bypass is digital. When

Return Bypass is active, while in Bypass, the Harmonix effect is not output on the SEND jack even if Harmonix is active.

3. If you want to use the Attack Decay solely as a distortion effect, you can use the SEND jack as the main output jack. The HARMONIX footswitch will turn the distortion on and off. The H. VOL knob will act as a master volume control. In this setup, the VOL, SENS, ATTACK, and DECAY knobs have no function.
4. In Mono mode, the Attack Decay can be set up so the instrument at the INPUT jack triggers the volume envelope for a second instrument at the RETURN jack. To achieve this, plug the instrument you want to effect into the RETURN jack and plug the instrument that will trigger the Attack Decay's envelope into the INPUT jack. When a pluck is detected at the INPUT jack, the Attack Decay runs its volume envelopes on the signal present at the RETURN jack.

RESTORING FACTORY SETTINGS

To restore the Attack Decay to its factory default settings, press and hold the BYPASS footswitch while plugging power into the Attack Decay.

1. Unplug the Attack Decay from power.
2. Press and hold the BYPASS footswitch.
3. Apply power to the Attack Decay.
4. Continue holding the BYPASS footswitch until one or more of the PRESET LEDs start flashing.
5. Once a PRESET LED flashes you may release the BYPASS footswitch.

The following factory default settings will be restored:

- All presets are erased and restored to their factory default settings.
- The custom expression pedal setting is erased and restored to the factory default: expression controls the output volume.
- Continuous Envelopes (tremolo) are set to off.
- Mono Mode's envelope shapes are set to parabolic.
- External and Manual Clock Triggering are turned off.
- The Attack Decay's internal compressor is set to on for both Poly and Mono modes.
- Harmonix is placed before the SEND jack in the FX loop.
- Return Bypass is disabled.
- Harmonix and Return Blend are both set respectively to 100% fuzz and return.

SECONDARY MODES AND OPTIONS

The Attack Decay features a number of secondary modes and options to customize the pedal for your specific use. See page 22 for a table listing the secondary modes and the button presses needed to change them.

CONTINUOUS ENVELOPES (RETRIGGERED TREMOLO)
Normally when a volume envelope is triggered, it runs through the Attack envelope then the Decay envelope and then waits for the next trigger event at which point it starts the Attack envelope over from its beginning.

Continuous Envelope (CE) mode automatically restarts the Attack envelope as soon as the Decay envelope finishes. This produces a tremolo effect where tremolo rate and waveshape are set by adjusting the ATTACK and DECAY knobs. The ATTACK knob sets the rise time of the tremolo effect; DECAY sets the fall time of the tremolo.

To Toggle CE (tremolo) mode on and off:
1. Press and hold the BYPASS footswitch.
2. While holding the BYPASS footswitch, press and release the HARMONIX/PRESET footswitch. Then release both footswitches.
3. The PRESET 1 button will blink quickly to indicate that Continuous Envelope (CE) Mode has been turned on.
4. To turn off CE Mode, repeat steps 1 & 2. The PRESET 3 button will blink slowly to indicate that CE Mode has been turned off.

- When saving presets, each preset saves its own CE Mode status.
- CE mode is activated independently for Mono and Poly modes.

HARMONIX BLEND MODE
By default, the BLEND knob controls master wet/dry mix and its output goes directly to the VOL knob. Optionally the Attack Decay can be put into Harmonix Blend mode where the BLEND knob adjusts fuzz/dry mix immediately after the Harmonix fuzz block. The Harmonix Blend mix is then output to the volume envelopes. Harmonix Blend replicates the HARMONICS knob found on the vintage Attack Decay.

Harmonix Blend mode is a temporary mode, allowing you to use the BLEND knob to set Harmonix Blend while this mode is active. Here's how to enter, use and exit Harmonix Blend mode:
1. Ensure Harmonix mode is enabled, the H LED is lit.
2. Press and hold the BYPASS footswitch.

3. While the BYPASS footswitch is held, press and release the PRESET 2 button. After releasing this button, release the BYPASS footswitch.
4. The PRESET 2 and Status LEDs will blink at different rates indicating that you are in Harmonix Blend mode.
5. Turn the BLEND knob to adjust the fuzz/dry mix.
6. You may create an expression setting where the expression pedal sweeps Harmonix Blend among other parameters at this point.
7. Once you are finished setting Harmonix Blend, press the PRESET 2 button to exit the mode -or- if you like, save the new setting to a Preset, by pressing and holding down a preset button until they stop blinking.
8. After exiting, the BLEND knob resumes adjusting master blend wet/dry mix.

RETURN BLEND MODE

A second optional Blend mode is Return Blend. It allows you to control the mix between the signal at the RETURN jack (CCW on BLEND) and the output of the volume envelopes (CW on BLEND). Master Blend then follows Return Blend.

Return Blend mode is a temporary mode, allowing you to use the BLEND knob to set Return Blend while this mode is active. Here's how to enter, use and exit Return Blend mode:

1. Ensure a plug is inserted into the RETURN jack.
2. Press and hold the BYPASS footswitch.
3. While the BYPASS footswitch is held, press and release the PRESET 3 button. After releasing this button, release the BYPASS footswitch.
4. The PRESET 3 and Status LEDs will blink at different rates indicating that you are in Return Blend mode.
5. Turn the BLEND knob to adjust the return/effect mix.
6. You may create an expression setting where the expression pedal sweeps Return Blend among other parameters.
7. Once you are finished setting Return Blend, press the PRESET 3 button to exit the mode -or- if you want to save the new setting to a Preset, save to a preset button.
8. After exiting, the BLEND knob resumes adjusting master blend wet/dry mix.

RETURN BYPASS MODE

1. Press and hold POLY and PRESET 3.
2. Press and release the BYPASS footswitch. Release all buttons.
3. The Status LED blinks rapidly to indicate Return Bypass is enabled.
4. Perform steps 1 and 2 to disable Return Bypass, Status blinks slowly.

MANUAL ENVELOPE TRIGGERING WITH THE BYPASS FSW

In normal operation, the Attack Decay triggers a new envelope with every detected pluck at the INPUT jack. As an alternative, new envelopes can instead be triggered manually by pressing and releasing the BYPASS footswitch. To activate this mode:

1. Press and hold the POLY button.
2. While the POLY button is held, press and release the BYPASS footswitch. After releasing the footswitch, release the POLY button.
3. The BYPASS LED will blink quickly to indicate that you have enabled triggering with the BYPASS footswitch.
4. To return to the default pluck detect functionality, repeat steps 1 & 2 above. The BYPASS LED will blink slowly to indicate that you have returned to the default BYPASS footswitch functionality.

- When manual triggering is enabled, the Attack Decay's automatic pluck detect is disabled. Simply tap the BYPASS footswitch to trigger the beginning of a new volume envelope.
- To bypass the Attack Decay, press and hold the BYPASS footswitch for 2 seconds.
- If in Bypass, press the BYPASS FSW once to enter effect mode.
- When saving presets, each preset saves its own manual triggering status. If manual triggering is enabled when a preset is saved, that preset will turn on envelope triggering when recalled, and vice versa.

EXTERNAL CLOCK TRIGGERING

By default, the EXP jack on the Attack Decay accepts a connection from an expression pedal or CV. The Attack Decay can also be configured to accept an external clock signal as a trigger source. The acceptable clock pulse voltage range is 1.5Vpp to 15Vpp. To enable external clock trigger:

1. Press and hold the POLY button.
2. While the POLY button is held, press and release the PRESET 1 button. After releasing PRESET 1, then release the POLY button.
3. The PRESET 2 button will blink quickly to indicate that external clock triggering has been turned on.
4. To turn off external clock triggering, repeat steps 1 & 2 above. The PRESET 2 button will blink slowly to indicate that external clock triggering has been turned off.

- When external clock is enabled and a plug is inserted into EXP jack, the Attack Decay's automatic pluck detect is disabled. If you remove the EXP plug or disable external clock then automatic pluck detect will be enabled.
- The external clock setting can be saved independently to each preset.

ENABLING/DISABLING THE INTERNAL COMPRESSOR

The original Attack Decay has a compressor hardwired to the input signal. The compressor helps bring up the volume on sustained notes so that the Attack and Decay envelopes have more signal to work with as the envelopes run. This version of the Attack Decay has an emulation of that compressor situated after the pluck detect but before the Harmonix fuzz. The compressor can be separately enabled/disabled for Poly and Mono modes and by default is enabled for both modes.

To enable or disable the internal compressor do the following:

1. To toggle the internal compressor for Mono mode, ensure that the POLY button is **not** lit.
2. To toggle the internal compressor for Poly mode, ensure POLY **is** lit.
3. Press and hold the POLY button, then press and hold PRESET 3.
4. While holding POLY and PRESET 3, press and release the PRESET 2 button. Once PRESET 2 is released, release the other two buttons.
5. The PRESET 1 button will blink slowly to indicate that the compressor has been turned off.
6. To turn on the compressor, repeat steps 1 & 2. The PRESET 1 button will blink quickly to indicate the compressor is enabled.

Each preset saves and recalls its own compressor status.

CHANGING HARMONIX FUZZ LOCATION IN FX LOOP

Normally the Attack Decay's built-in Harmonix distortion block is situated before the SEND jack so that the distortion effect is present on the Send signal. You may optionally re-locate the Harmonix block within the FX loop so that the Return signal goes through Harmonix instead.

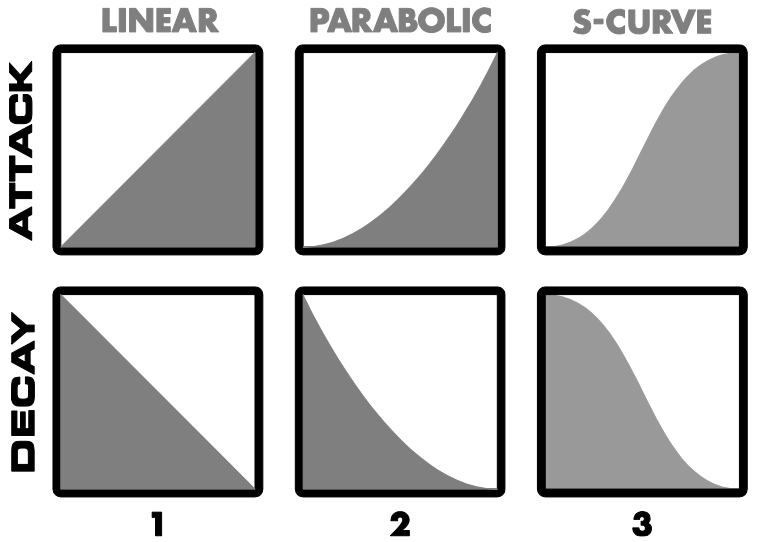
To move the location of the Harmonix block do the following:

1. Press and hold the POLY button, then press and hold PRESET 3.
2. While holding both POLY and PRESET 3, press and release the PRESET 1 button. Once PRESET 1 is released, release the other two buttons.
3. The PRESET 2 button blinks quickly to indicate that the Harmonix Distortion block has been moved to the RETURN jack input.
4. To move Harmonix back to the SEND jack, repeat steps 1 and 2. This time PRESET 2 will blink slowly to indicate that Harmonix is located before the SEND jack.

- Each preset saves and recalls the FX loop Harmonix location.
- If the Return jack is not used then the Harmonix effect will be present on the SEND signal.

ADJUSTING ENVELOPE CURVES – MONO MODE ONLY!
The Attack Decay provides a choice of three different envelope curves for the Mono mode volume envelopes. These curve choices do not apply to POLY mode. The Attack (fade-in) and Decay (fade-out) curves can be chosen independently.

The available curves are: linear, parabolic and s-curve:



To change the **Attack** envelope curve:
1. Press and hold the POLY and PRESET 2 buttons.
2. While holding both POLY and PRESET 2, press and release PRESET 1. Then release POLY and PRESET 2.
3. Two of the PRESET buttons will light solid, and one will blink. The blinking button represents the currently selected envelope curve.
4. PRESET 1 = linear, PRESET 2 = parabolic, PRESET 3 = s-curve.
5. Press and release the PRESET button corresponding to the envelope curve you want for Attack. The pressed PRESET button will blink rapidly to indicate that the envelope curve has been selected.

To change the **Decay** envelope curve:
1. Press and hold the POLY and PRESET 2 buttons.
2. While holding POLY and PRESET 2, press and release PRESET 3. Then release POLY and PRESET 2.
3. Two PRESET buttons will light solid, and one will blink. The blinking button represents the currently selected envelope curve.
4. PRESET 1 = linear, PRESET 2 = parabolic, PRESET 3 = s-curve.

5. Press and release the PRESET button corresponding to the envelope curve you want for Decay. The pressed PRESET button will blink rapidly to indicate that the envelope curve has been selected.

When saving presets, each preset saves its own envelope shapes for the Attack and Decay portions of the envelope.

ATTACK DECAY TIPS & TRICKS

In the Beginning or Near It

- We recommend you place the Attack Decay near the beginning of your pedal chain for the automatic pluck detect to work correctly. It should be fine after a compressor or pitch shifter but best to go before distortions and wahs.

It Might Get Loud or Quiet

- Due to the nature of amplitude effects such as those found in the Attack Decay, it is possible to experience a wide range of output volumes as you dial-in sounds and get a feel for the pedal. Some settings will be too quiet and others too loud. The Attack Decay's output volume control has a good deal of gain on tap to help find the right volume balance between effect and bypass.
- The extra gain of the volume control also means the Attack Decay might clip more easily than expected. If this happens, turning down the VOL knob should remove the clipping in most circumstances.
- The Harmonix fuzz can get loud. We recommend starting with lower volume settings on the H.VOL knob until you get a feel for the fuzz.

Mono Mode Playing

- In mono mode, if notes are allowed to ring out, it will have trouble consistently sensing new plucks. We recommend you don't allow old notes to ring out as you play new notes.
- The Attack Decay can handle chords while in mono mode. The entire chord will go through a single volume envelope.
- Tremolo, or Continuous Envelope mode, is a retriggable tremolo effect. Whenever a new pluck is detected, the tremolo waveform starts over, first running through the Attack envelope then Decay.
- While in tremolo mode, set the SENS knob to its minimum position for a free-running, non-retriggable tremolo effect.

Poly Mode Playing

- Poly mode excels when doing just Attack or just Decay but it also makes unique sounds when both knobs are in play.
- The Poly mode envelope times on the Attack and Decay knobs do not match the knob positions found in mono mode.
- If using the FX loop, the entire Poly mode algorithm will be located after the RETURN jack.
- Continuous Envelope mode is a unique effect in Poly mode. It sounds like cascading filters rather than tremolo.

Harmonix Distortion

- When the HARMONIX knob is maxed out, the Harmonix distortion will make a lot of noise when you're not playing. If this is undesirable dial back the HARMONIX knob to about 4 o'clock.
- When turning down HARMONIX gain from its maximum position, the signal might mute for a split second. This is normal.

SECONDARY OPERATIONS REFERENCE TABLE

Attack Decay Secondary Mode	1st Button(s) Hold/ 2nd Button Press	Operation Notes
Custom Expression Setting	**BYPASS FSW/ PRESET 1**	Create custom expression settings where any knob is swept by expression or CV.
Saving Presets (can also be used to save altered presets)	**PRESET 1**, **2**, or **3**	Hold down preset button for 2 seconds to save.
Recalling Presets	**PRESET 1**, **2**, or **3**	Press and release preset button to recall preset.
Unloading Presets	**PRESET 1**, **2**, or **3**	Press and release preset button to go back to live.
Altering Presets	--	Move any knob or change a mode while in a preset.
Reloading Presets	**PRESET 1**, **2**, or **3**	Press and release altered (blinking) preset button.
Footswitch Preset Control	**HARMONIX FSW**	Cycle through presets and WYSIWYG with each press and release of HARMONIX.
Continuous Envelopes (Tremolo)	**BYPASS FSW/ HARMONIX FSW**	Restarts volume envelopes automatically.
Envelope Curves – Attack	**POLY** + **PRESET 2/ PRESET 1**	Mono mode only: choose Attack curve taper: linear, parabolic or s-curve.
Envelope Curves – Decay	**POLY** + **PRESET 2/ PRESET 3**	Mono mode only: choose Decay curve taper: linear, parabolic or s-curve.
Harmonix Blend Mode	**BYPASS FSW/ PRESET2**	BLEND knob mixes dry and Harmonix into envelopes.
Return Blend Mode	**BYPASS FSW/ PRESET 3**	BLEND knob mixes dry return and env output.
Harmonix FX Loop Position	**POLY** + **PRESET 3/ PRESET 1**	Hold down POLY and PRESET 3 then press and release PRESET 1.
Return Bypass (FX Loop active in bypass)	**POLY** + **PRESET 3/ BYPASS FSW**	When in Bypass mode, the RETURN jack is connected to OUTPUT jack.
BYPASS FSW Manual Trigger	**POLY/ BYPASS FSW**	Press/release BYPASS to trigger volume envelopes, audio does not trigger.
External Clock Trigger	**POLY/ PRESET 1**	Clock pulse on EXP jack triggers volume envelopes, audio does not trigger.
Internal Compressor	**POLY** + **PRESET 3/ PRESET 2**	Disables or enables the internal compressor.
Factory Restore	**BYPASS** hold during power up	Restores all presets and secondary modes to factory settings.

SECONDARY OPERATIONS REFERENCE – CONT.

Visual Feedback	End Operation	Saves to Presets or Global
PRESET 1 & **Status LED** Slow blink. Blink speed increases as you cycle through expression setting	Press PRESET 1 two more times after initial mode entry to exit.	Saves to Presets
PRESET 1, **2**, or **3** Blink rapidly then blinking stops.	Release button	--
PRESET 1, **2**, or **3** Lit solid.	--	--
PRESET 1, **2**, or **3** LED unlit	--	--
PRESET 1, **2**, or **3** Currently selected preset blinks.	--	--
PRESET 1, **2**, or **3** Lit solid.	--	--
P LED LED lit solid = FSW Control Enabled LED off = FSW Control Disabled	Release FSW after P LED changes state.	Global
PRESET 1 fast blink = CE on **PRESET 3** slow blink = CE off	Release both footswitches.	Saves to Presets
All PRESET LEDs light Fast blink = Current Curve	Release all buttons then press/release button for curve choice	Saves to Presets
All PRESET LEDs light Fast blink = Current Curve	Release all buttons then press/release button for curve choice	Saves to Presets
PRESET 2 & **Status LED** Two LEDs blink at different rates.	**PRESET 2** press and release exits mode	Blend setting is saved to presets
PRESET 3 & **Status LED** Two LEDs blink at different rates.	**PRESET 3** press and release exits mode	Blend setting is saved to presets
PRESET 2 Fast blink = Return -> Harmonix Slow blink = Harmonix -> Send	Release all buttons	Saves to Presets
Status LED Fast blink = Return Bypass enabled Slow blink = Return Bypass disabled	Release all buttons	Blend setting is saved to presets
Status LED Fast blink = FSW Trigger enabled Slow blink = FSW Trigger disabled	--	Blend setting is saved to presets
PRESET 2 Fast blink = Ext. Trigger enabled Slow blink = Ext. Trigger disabled	--	Saves to Presets
PRESET 1 Fast blink = Comp On, Slo = Comp Off	Release buttons	Saves to Presets
Hold BYPASS until one or more PRESET LEDs blink	Release footswitch	All user presets and settings will be erased.

WARRANTY INFORMATION

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 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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To hear demos on all EHX pedals visit us on the web at **www.ehx.com**
Email us at **info@ehx.com**

COMPLIANCE

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.

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