

# **APHEX<sup>®</sup>**

MAKING YOUR WORLD SOUND BETTER

## **PUNCH FACTORY<sup>®</sup>** OPTICAL COMPRESSOR



**STUDIO QUALITY OPTICAL COMPRESSION**

**OWNER'S MANUAL**



a DWV ENTERTAINMENT company

# Owner's Manual

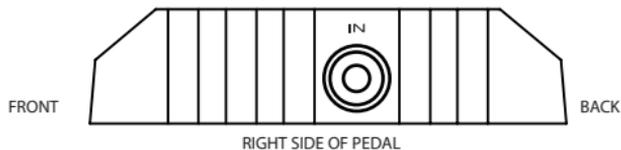
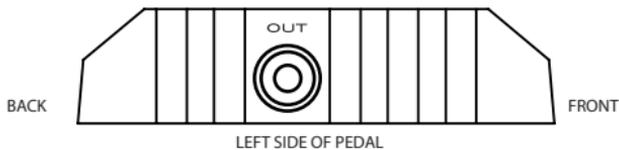
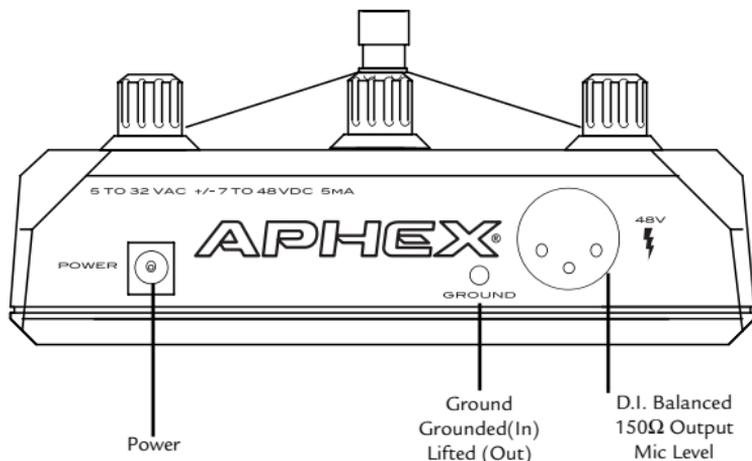
## Punch Factory™

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# Connections, Battery. Velcro



### **Input**

Connect your instrument here. The power is automatically switched on or off by inserting or removing the plug from the input jack. Only removing the plug from your instrument does not turn off the Aphex unit.

### **Output**

Connect this output to your amp's input jack using a good quality guitar cable. Use the same settings on your amplifier as you would use if plugging the instrument directly into the amp to get normal volume and tone when you switch the effect off, and your instrument passes directly through the pedal to your amp's input.

### **D.I. Output**

This pedal comes with a high quality balanced D.I. output. Pin 2 of the XLR is hot while pin 3 carries a balancing impedance to set up a true balanced line. Pin 1 is grounded through the ground-lift switch. The D.I. output can be connected to the microphone input of any preamp or sound mixer and runs a level of typically -50 to -60 dBu depending on your instrument's volume setting. The D.I. output should normally be grounded. Don't lift the ground unless it actually eliminates hum or buzz.

## **External Power**

When external power is used, the internal battery becomes disconnected and will not experience a power drain. A wide range of both a.c. and d.c. supply voltages is acceptable for power (5VAC to 32 VAC or +/-7VDC to +/-48VDC) and it does not matter whether the center pin is positive or negative. The power jack fits a standard 6MM x 2MM power plug as used by most popular stomp boxes.

## **Phantom Power**

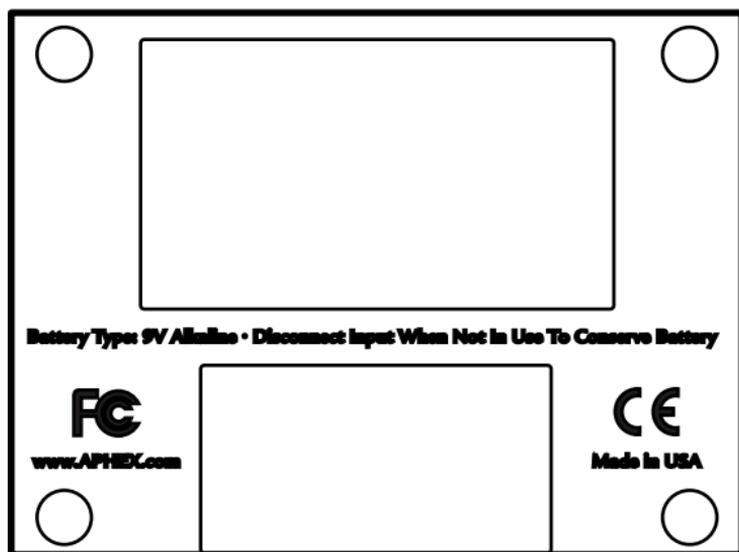
Phantom power applied to the D.I. from a mixer or preamp will supply power to the pedal. Do NOT operate the ground lift switch when running on phantom power. It makes a very loud pop that could damage speakers.

## **9V Battery**

You can use any type of 9V battery. However we recommend using long life alkalines. You can use rechargables, but the pedal unit does not supply a charging circuit. You must remove the discharged battery to recharge it with an external charger. You can expect from 100 to 150 hours of continuous use from a fresh alkaline battery. Useful life is ended when the battery voltage drops below 5.5 volts.

To extend battery life, always unplug the input when the unit is not in use.

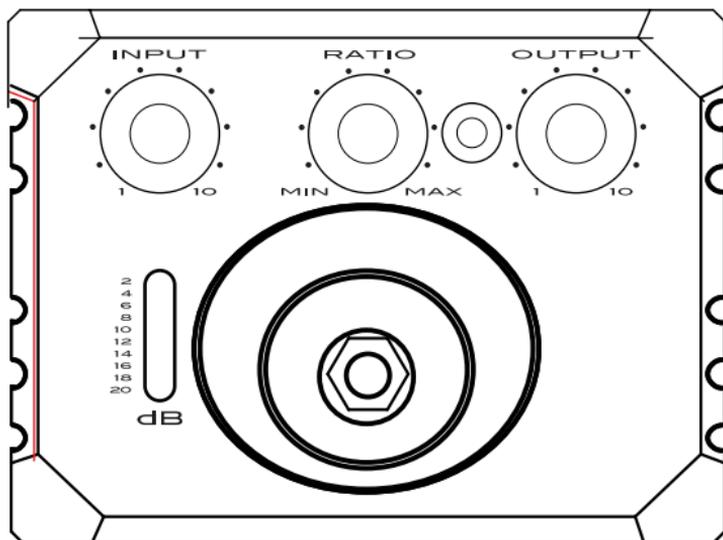
## Battery Location



The battery compartment is located on the bottom of the pedal and can be opened with a thumbnail, heavy pick or flathead screwdriver. The battery presses into the compartment directly. Observe the markings showing correct +/- alignment.

The large indented area is there for the included Velcro strip. This allows the Velcro to remain in place whether attached to a pedal board or using the included rubber feet.

## Controls



### Foot Switch

Turns the pedal on or off. When the pedal is off, your instrument is patched directly through to the output jack. In other words, it's a straight bypass. No electronics are in the line at that point.

### LED

Glowes when the pedal is on and dark when the effect is off. If the LED does not glow, the battery is dead or no plug has been inserted into the input jack or there is no external power present.

### **Input**

Adjusts the compression input level. As you increase the input, the compression increases. The output volume will also increase as the input is increased.

### **Ratio**

The decibel relationship between the amount of increase in input signal vs. the amount of increase in output signal is controlled by the Ratio knob. All the way to the left, the output will increase approximately 1dB for every 1.5dB increase in input, providing a very light and smooth compression. All the way to the right, the output will increase approximately 1dB for every 10dB increase in input, providing a more heavily compressed sound. Adjust this control to suite your own taste and playing style. The 12 o'clock position is a good starting point.

### **Output**

Adjusts the output volume when the foot switch is on so you can match the volume compared to when the foot switch is off. You may need to adjust the volume a little whenever you increase or decrease the Input.

### **dB Bar Graph Meter**

Displays the amount of gain reduction occurring. Use this display along with your ears to find settings that provide consistency when you play and from instrument to instrument.

## Tune-Up

### **The Rule**

Trust your ears!

### **Getting It Going**

While in bypass, adjust your instrument's volume and tone controls as you normally would. Set all the knobs on the Punch Factory to 12 o'clock. Then, switch the Punch Factory on and adjust the Input control to get some amount of compression as indicated on the dB Bar Graph Meter. Adjust the Punch Factory's Output so the sound is where you want it with the pedal on compared to off. Finally, adjust the Ratio control to suit your taste and playing style.

## Compression

It you are reading this, congratulations! Learning more about what compression is and how it benefits your tone will ensure you get the most enjoyment from your Punch Factory.

### **Compressors - What They Do**

The basic idea is that a wide range of input levels is automatically “compressed” into a smaller range of output levels. After compression, sounds that were low in volume are higher in volume and sounds that were high in volume are made lower in volume. This results in more consistent volume levels that sit “just right” in a mix without some parts being too loud with other parts too soft.

### **Punch and Sustain**

When a compressor reduces the volume of a loud sound, it does so in way that is unique to each type of compressor. The time it takes for this volume reduction to occur is called “attack”. An attack that is too fast can change the natural character of an instrument while too slow can lose the benefits of compression. The Punch Factory’s interactive attack adapts to your playing, controlling volume without changing character and enhancing punch while retaining articulation.

Typically, compression creates more sustain by raising the level as a note decays. This is more or less apparent, depending on the style of playing.

## **Optical Compression**

There are many ways to create a circuit that controls the gain reduction of a compressor. Each method has its own characteristics and all have produced popular compressors over the years. One of the most popular types is the optical compressor.

An optical compressor is created from the combination of a light sensitive resistor called a photocell, and a light source such as a small bulb or LED. Devices called optocouplers combine a photocell and light source inside a light-proof package. The photocell increases its resistance when input level increases the intensity of the light - that increased resistance provides the compression.

While attack is the time it takes for compression to occur, "release" is the time it takes for the signal to return to normal. Photocells have a characteristic called "memory" that makes such a compressor interactive. When just a few brief attacks have been experienced, the photocell recovers quite fast, bringing back the level more quickly. However, after repeated and constant attacking, the photocell builds up a memory of the light pulses and recovers more gradually. This helps to smooth out the compression and preserve the character of the sound.

The optocoupler used in the Punch Factory is designed especially for audio and is produced exclusively for Aphex. It has special characteristics unusually well suited to musical instrument compression, making the Punch Factory unique in the world of compression.

## Specifications

Punch Factory	
Input Z	10Meg $\Omega$
Output Z	Instrument: 1K $\Omega$ D.I.: 150 $\Omega$
Maximum Input Level	1.5V RMS
Frequency Response	10Hz - 30kHz +/- 1dB
SNR (Typical)	70dB
Compression Ratio	Variable: Approx 1.5:1 to 10:1
Maximum Gain	30dB
Max Compression Range	>30dB
Power Drain	5mA
Battery Type	9V (Alkaline recommended)
External Power Must be CE certified	5-32VAC 7-48 VDC +48V Phantom

Aphex reserves the right to continually improve our products. All specifications are subject to change without notice.

## Limited Warranty

### PERIOD

One year from date of purchase

### SCOPE

All defects in workmanship and materials. The following are not covered:

- a. Voltage conversions
- b. Units on which the serial number has been defaced, modified, or removed
- c. Damage or deterioration:
  1. Resulting from installation and/or removal of the unit.
  2. Resulting from accident, misuse, abuse, neglect, unauthorized product modification or failure to follow instructions contained in the User's Manual.
  3. Resulting from repair or attempted repair by anyone not authorized by Aphex.
  4. Occurring from shipping (claims must be presented to shipper).

### WHO IS PROTECTED

This warranty will be enforceable by the original purchaser and by any subsequent owner(s) during the warranty period, so long as a copy of the original Bill of Sale is submitted whenever warranty service is required.

### WHAT WE WILL PAY FOR

We will pay for all labor and material expenses for covered items. We will pay return shipping charges if the repairs are covered by the warranty.

### LIMITATION OF WARRANTY

No warranty is made, either expressed or implied, as to the merchantability and fitness for any particular purpose. Any and all warranties are limited to the duration of the warranty stated above.

### EXCLUSION OF CERTAIN DAMAGES

Aphex liability for any defective unit is limited to the repair or replacement of said unit, at our option, and shall not include damages of any other kind, whether incidental, consequential, or otherwise.

Some States do not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from State to State.

## Service Information

1. If it becomes necessary to return this unit for repair, you must first contact Aphex at the phone number or email address below for a Return Authorization (RMA number).
2. Pack the equipment in a strong carton containing at least 2 inches of padding on all sides. Be sure the unit cannot shift around inside the carton. Include a letter explaining the symptoms and/or defect(s). Be sure to reference the RMA number in your letter and mark the RMA number on the outside of the carton.
3. If you believe the problem should be covered under the terms of the warranty, you must also include proof of purchase.
4. Insure your shipment and send it to:

Aphex  
11068 Randall Street  
Sun Valley, CA. 91352  
PH: (818) 767-2929  
techsupport@aphex.com



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## About Aphex

Aphex is a leading manufacturer of products for recording, broadcast, and sound reinforcement. Be sure to ask your dealer about other Aphex products or visit our website.

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Aphex is a wholly owned subsidiary of DWV Entertainment, a spin-off of David Wiener Ventures. DWV Entertainment’s Aphex and DW Collection brands exhibit the total commitment to performance, quality and style that have been the hallmark of all DWV companies.

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