Specifications

- Input impedance: Greater than 1MOhm
- Output impedance: Less than 40KOhm
- Controls: Fuzz and Volume
- Features: Plate starvation switch
- All tube: Based on NOS space-grade mil-spec subminiature triode vacuum tube
- Audiophile: Fully discrete, class A signal path - 100% thermionic design!
- True bypass: With ‘anti-pop’ or ‘thump’ foot-switching circuitry
- Power requirements: 12VDC @ 350mA - Centre positive 2.1mm barrel connector
- Dimensions: Width 4.75"; Depth 3.75"
- Weight: 12oz (on Earth); 4½oz (Mercury)
- Construction: Solid die-cast aluminum box
- Finish: Primrose yellow powder coat

Warning: High D.C. voltages of over 250 volts are present in the circuit: disconnect power before opening the unit. There are no user serviceable parts inside this pedal. Contact Effectrode regarding warranty or servicing issues.

Serial # TF-2A

MERCURY

VACUUM TUBE FUZZ

Owner’s Manual

effectrode audiophile pedals

12 Broughton Crescent, Barlaston,
Staffs, UK. ST12 9DB
www.effectrode.com

Introduction

The ***MERCURY*** fuzz pushes vacuum tubes to their absolute limits for some devastatingly full-bodied and warm fuzz sounds. This beautiful little pedal is built on a hand selected space-grade pencil tube and N.O.S. germanium point-contact crystal diodes — there's a lot of glass in this pedal! At full throttle this little pedal can generate outrageous 'blocking-distortion' which sounds like a tube amp being pushed beyond it's limits. Rolling back the 'Fuzz' knob creates rich fuzz tones with endless amounts of smooth liquid sustain that stretches notes into infinity. At lower fuzz settings the ***MERCURY*** fuzz cleans up for some beautiful and natural sounding (real!) tube dirt and overdrive.

Audiophile grade components and silver solder are used throughout the circuit. Instrumentation grade metal-film resistors are utilised for their low-noise and stability, polyester coupling capacitors for their ability to resolve fine signal detail and ground-plane construction for lowest possible noise and hum.

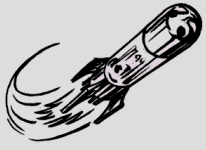
Thank you for supporting *Effectrode* pedals. I wish you many years of musical enjoyment from this limited edition hand-built, all-tube fuzz pedal.

Phil Taylor — Designer

TRIODE CLASS-A

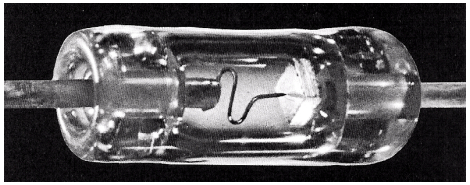
Tubes

The ***MERCURY*** fuzz signal path is based on a NOS mil-spec subminiature twin triode tube. Raytheon (meaning, "light of the Gods") developed subminiature (pencil) tubes for military applications in the 1950s. The subminiature tube is manufactured to meet stringent Mil-E-1 specification for reliability and designed for long service life under conditions of severe shock, vibration (20,000G!), high temperature and high altitude. Subminiature tubes represent the pinnacle of tube technology and offer more consistent musical performance than silicon germanium transistors.



To extend tube life, it is recommended that the unit be allowed to warm-up for at least one minute after being switched on. This is to allow the heater filament in the tube to heat the cathode, which is coated with a layer of barium and strontium oxide. This oxide layer gets torn off the cathode, a process known as cathode stripping, if the cathode has not reached its correct operating temperature. If operated well within their ratings, good quality signal tubes can last 100,000 hours or more: that's well over 11 years of continuous use. If you use your pedal for only 4 hours a day, they should last over 25 years. (We can't warranty tubes for this period, however experience shows that such lifetimes are probable).

Within a few years germanium/galena 'cat-whiskers' were being used by amateur radio enthusiasts and in early commercial radios. The development of radar systems during WWII then led to a demand for a more reliable high frequency, low-noise detector/mixer — the diode.



Millions of silicon crystal diodes, such as the 1N21, were manufactured in the 1940s for military radar use. Sylvania pioneered the use of germanium for diodes, with the introduction in 1946 of the 1N34 — the first commercial germanium crystal diode.

AUTOMATIC TRUE BYPASS MANUFACTURED IN THE U.K. SILENT SWITCHING™

All *Effectrode* pedals feature our innovative **Silent-Switching™** true bypass system, where an active audio circuit minimises the 'pop' or 'thump' when the effect is engaged. Additionally, as a failsafe, the circuitry will always default to bypass if power is interrupted to the pedal ensuring that you can continue to perform. Signals are switched using a precision audio relay with gold-plated contacts for superior tone and performance over multi-pole footswitches, which were not originally designed for constant use or audio signals. The relay also shortens the signal path so that signal is not routed through any internal wiring thus preventing noise contamination.

Controls

Fuzz knob controls the amount of signal from the tube gain stages feeding the crystal diode clipping circuitry. This is a logarithmic control with excellent range from a balanced, rich, robust overdrive/distortion to super-saturated sustaining, fuzzed tones. The tube circuitry inside the ***MERCURY*** fuzz makes it an extremely touch sensitive and expressive pedal. Setting the fuzz knob a little higher than you might normally use makes it possible to take advantage of pedal's dynamic response. Rolling back the volume on your guitar and picking lighter will produce a range of clean and smooth bluesy drive tones, however you can still dig in to push the ***MERCURY*** into heavier distortion sounds.

Volume knob is used to match the bypassed and engaged levels of the ***MERCURY*** fuzz or set the engaged level higher so that the pedal can provide additional boost or push the input of a tube amp for further drive and distortion.

Heat toggle switch allows the second tube stage to operate at reduced plate voltage to 'starve' the plate of electrons. This reduces both its gain and linearity. In starvation less germanium diode clipping occurs and more distortion occurs within the tube itself. The effect is to create warm, natural bluesy tones rather than just full-on fuzzed tones.

The first triode tube gain stage in the ***MERCURY*** is biased hot and this is followed by a second triode gain stage, which is biased cooler. The plate H.T. voltage of the second tube is fully adjustable using the internal 'STARVE' trimpot. This simple and unique tube circuitry means the ***MERCURY*** can seamlessly blend tube overdrive and germanium diode clipping to produce some exceptionally smooth and full-bodied guitar sounds. The pedal interacts very well with guitar pickups and amplifiers to compliment their character and enhance your tone.

A second 'BRIGHT' trimpot allows tailoring of higher frequency components above the 2KHz region. This is a first order filter with a very gentle roll-off rate and natural shelve characteristic. It can be used to create fuzz sounds with more 'oomph' or open out and add 'air' for solo work.

To sum up, the ***MERCURY*** fuzz is a pedal with two completely distinct characters. On one hand it can generate rich, musical, fuzzed guitar sounds with endless amounts liquid sustain, and on the other, it can create a cheap, sputtering distortion with absolutely no sustain at all. Between these two extremes, lies a spectrum of classic and totally unique undiscovered fuzz sounds.

Footswitch allows selection between effectified (fuzzed) and non-effectified (dry) signal. Silent true bypass switching ensures there are no 'pops' or 'thump' when engaging the effect and that there is absolutely no loss of tone from your guitar to your amp when the effect is disengaged. Additionally, the tube signal path in this pedal is built to demanding audiophile specification to ensure hi-fidelity and signal integrity at all times - the benefit that your guitar tone always remains pure and intact.

History of the Crystal Diode

Crystal diode technology began its development in the early 1900s, where wireless receivers utilised a thin wire that made mechanical contact against the face a crystal. The wire had to be manually adjusted to find the 'hot-spot' on the crystal for best radio wave detection. This device allowed current to pass in one direction only, and so rectified the received carrier signal to provide a D.C. voltage that could drive headphones.