

# Specifications

- Input impedance: Greater than  $1M\Omega$
- Output impedance: Less than  $1K\Omega + 10dBu$
- Controls: Dedicated Bass, Mid, Treble, Volume controls for each channel (Gain on drive channel)
- Features: Separate clean and overdrive channels
- All tube: Hot-rodded overdrive channel based on 4 class-A tube stages. 'Blackfaced' clean channel
- Direct out:  $600\Omega$  balanced transformer isolated +16dBu output via  $\frac{1}{4}$ " TRS (stereo) jack socket
- True bypass: With 'anti-pop' foot-switching circuitry
- Power requirements: 12VDC @ 1A centre positive
- Dimensions: width 7.5"; depth 4.8"; height 1.3"
- Weight: 2lb (on Earth);  $2 \times 10^9$ lb (a neutron star)
- Construction: Solid die-cast aluminum alloy case
- Finish: Tough graphite black powder coat

*Blackbird*  
TUBE TONE ENGINE



**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 #

SR-71

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Owner's Manual



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# Introduction

The SR-71 *Blackbird* vacuum tube preamp takes its name from the fastest and coolest plane ever built — the SR-71 which could fly at Mach3+, fast enough to outrun missiles! Like its counterpart the *Blackbird* preamp puts you way ahead of the pack and in full control of your core drive sound. The drive channel is 100% analogue, class-A and is based on **exactly** the same 4-stage circuitry found in top of the range boutique tube amps. These amps are in a class of their own when it comes to tone, being exceptionally expressive and touch sensitive giving artists access to a huge tonal palette from mild bluesy breakup to complex, harmonically rich, saturated drive sounds — an incredibly responsive and musical tone.

Additionally, the fundamental tone of the *Blackbird* can be tailored by adjusting tube bias points and swapping out tubes. As with all our pedals, audiophile grade components are used throughout the circuit with low-noise, precision resistors and polyester coupling capacitors mounted on a custom-designed circuit board with silver-plated tracks.

Thank you for supporting *Effectrode* pedals. We wish you many years of musical enjoyment from this very special hand-built, all-tube pedal.



*Phil Taylor — Designer*

# Tubes

The 12AX7 tubes in the *Blackbird* can be swapped with equivalent miniature 9-pin double triode tubes from other manufacturers - Mil-Spec N.O.S. tubes are recommended! The tube in the center position is the first two gain stages of the overdrive channel and replacing this with types 12AV7, 12AY7, etc will yield lower gain and shift the bias point to create different breakup characteristics, tonal differences and widen the sweet spot for mild bluesy tones.



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).

# Pots

This pedal is fitted with custom British manufactured *Omeg* sealed-for-life potentiometers. These sealed pots prevent dust and dirt from getting inside them so they never require cleaning or lubrication.

Shifting the bias point will reduce the gain and increase the sensitivity of a 12AX7 tube so that it performs more like a lower gain 12AY7 giving a wider sweet-spot for breakup and blues sounds.

## Biasing Preamp Tubes

The *RCA Receiving Tube Manual* (the same book Leo Fender used when he designed his amplifiers in the early 1950s) contains charts with values for bias resistors used in resistance coupled amplifier test circuits — the same type of circuitry as used in tube preamps. These circuits utilise a test 100K $\Omega$  anode resistor and the cathode bias resistor is chosen to set the anode current for different types of tubes according to the table below.

Tube Type	m $\mu$	Resistor ( $\Omega$ )
12AX7	100	1K8
5751	70	1K6
12AT7	60	3K
12AY7	45	1K6
12AU7	20	4K7
6189	20	2K7

A meter can be used to confirm the resistance of the bias resistor or the bias voltage if necessary. When measuring resistance of the cathode resistor make sure the pedal is disconnected from the power outlet. Place test probes between ground and wiper of the trim-pot.

## Controls

**Classic/Creamy** toggle switch selects between classic rock/blues drive tones (switch 'up') and more modern creamy distortion (switch 'down') on the hot-rodded drive channel. In 'Classic' mode the *Blackbird* clips the signal asymmetrically producing strong even order harmonics. This creates a robust and musical sounding overdrive that seriously thickens and enriches the tone of low output single coil pickups and is amazing with Humbuckers for creating authentic 70s rock distortion. In this mode it is easy to transition from mellow breakup into a singing drive by simply digging in or easing off with the pick. 'Creamy' mode produces more symmetrical clipping distortion, which is rich in both even and odd order harmonics for a saturated, sustaining distortion. In this mode the *Blackbird* can effortlessly climb the gain curve to produce a huge spectrum of powerful heavy rock sounds. The response always remains focused and tight for excellent string-to-string definition and ensures each pickup retains its own character, no matter how much gain you pile on.

**Gain** knob adjusts signal level and the amount of clipping across four tube stages on the drive channel. It has a wide sweep for fine control over lower gain settings. With the control turned down below 12 o'clock you'll discover some beautiful warm and musical bluesy tones. Turning the knob clockwise causes clipping in more stages so that the

overdrive increases until at the *Blackbird* is producing a balanced and robust distortion. As the Gain is further wound-up the pedal will begin to produce progressively more saturated singing lead tones and effortless pinch harmonics.

**Classic Tone Stack** Each channel has its own dedicated Bass, Middle and Treble tone controls. These tone controls are based on the passive tone stacks found on the 'Blackface' *Fender Twin Reverb Amp*. These tone controls are interactive and allow for a great deal of tone shaping flexibility.

**Bypass Footswitch** enables selection between effectified and non-effectified (dry) signal. Silent true bypass switching ensures that 'pops' or 'thumps' are kept to a minimum when engaging the effect and there is absolutely no loss of tone from your guitar to your amp when the effect is disengaged.

**Channel Select Footswitch** enables selection of the clean or overdrive channel.

**Balanced Direct Out** ¼" TRS (stereo) jack socket allows connection of the *Blackbird* to mixing desk, computer soundcard or external audio capture device. This output is balanced and transformer isolated, eliminating earth loops and reducing hum to an absolute minimum. The *Triad Magnetics* audio transformer also imparts its own character, further enhancing and sweetening the tone. This output is driven by a discrete class AB amplifier circuit —

essentially a miniaturised power amp output stage. There's no substitute for the sound of a real tube amp moving some air, however the direct output is useful for recording in venues with poor room acoustics or excessive background noise. Reverb, eq or cabinet impulse responses can be added post recording to obtain a very realistic approximation of a miked guitar amp in an ideal acoustic space.

**External Select** ¼" TRS (stereo) jack socket. This enables an external footswitch (such as the *Fender Twin Reverb Amp* tremolo/reverb dual latching footswitch) to be utilised for remote switching of clean/overdrive channel and 'Classic'/'Creamy' modes.

**Presence** toggle switch introduces some treble pre-emphasis on the *Blackbird's* 'Gain' channel when in the 'down' position. This not only adds a little top-end sparkle to the overdriven tone but also alters the clipping characteristic for a finer-grained distortion and more energised drive sound.

**Internal Bias Trim-pot** allows bias adjustment of the first tube amplifier section in the 'Gain' channel. Unscrewing the six screws on the base panel of the pedal accesses the trim-pot. Rotating the trim-pot clockwise increases the bias voltage, 'hot' biasing the tube stage and rotating anti-clockwise 'cold' biases the tube. This affects the pre-amp gain, sensitivity and the tonal response.