

# The Soul-o™ 50

A 50 watt Class A/B Dual EL34/6CA7 tube amp with PREBIAS™ control and tube reverb



S50-15C 15" Combo

**Thank you** for choosing a Groove Tubes amplifier, and welcome to the growing list of artists and friends who share our lust for true tube tone.

We've spent 25 years acquiring the knowledge to design and build your S50 amp....so please take a few minutes to read this guide and learn about it's operation and the theory behind the S50.

## Construction Details

- 1 - All components are hand soldered, with over 100 hand soldered connections on the tubes sockets alone.
- 2 - All transformers are custom designed and made exclusively for Groove Tubes.
- 3 - GT S50 amps are all tube, Class A/B circuitry designed specifically for use with the EL34/6CA7 family of power tubes. They come with either our exclusive GTE4Ls or the new GT6CA7GE tubes unless otherwise specified.
- 4 - We use only double sided, double thick PC boards with double thick traces. We use chassis mount type power tube sockets hand bolted, hand soldered, and then hand wired to the PCB. PCB and point to point construction, the best of both worlds!
- 5 - Each amp is hand built to order. There are more than 18 hours of skilled hand labor in each S50 amp we build!
- 6 - There is no particle board in any of our cabinets, only solid core USA plywood.

Of course all these details cost more, but you can really **hear the difference!**

## The Preamp Stage

The S50 preamp stage design uses five dual triodes in Class A, each performing multiple functions in the circuitry. The preamp controls are PREBIAS, Gain, Pull-Gain +10dB boost, Bass, Middle, Treble, Presence, Reverb and Volume.

Our exclusive and innovative **PREBIAS** control is located *before* the first Gain control, and allows you to literally modify the bias voltage for both the V1 and V2 preamp tube stages. These are the most influential stages to the overall tone and feel of your amp. In all other amps, this voltage is fixed by the designer.

Players have been paying 100's of dollars to "mod" their preamp stage voltages. Now, this "mod" feature is built-in to the S50 preamp. A lower PREBIAS voltage setting will give the preamp stage less output for the same given input signal. Hence, more dynamic headroom for a cleaner tone. The LO PREBIAS setting can also be used to compensate for hotter guitar pickups, making the amp less "touch sensitive" which is better suited for pounding rhythm guitar where "overloading" is not usually desirable.

Likewise, for lower output single coil pickups, switching to a MED or HI PREBIAS position increases gain, expands the frequency bandwidth (more lows and highs) as well as making it more touch sensitive so as to produce a "hotter" lead tone with noticeably more gain. YOU can shape the preamp from the guitar pickups and style of playing as the need arises.. an instant "hot-rod mod!"



S50-15 Top + EX212 Cab

## PREBIAS control options:

**LO** offers the most clean headroom, a flatter, more accurate tone and response. Great for calming down those high output Humbucker type pickups.

**MED** increases the voltage, adding gain, fattening tone, and softening attack dynamics. It provides more compression as the the player picks harder.

**HIGH** gives the most voltage for the V1 and V2 preamp gain stages and really makes the overdrive character take off. Thus, more touch, gain and compression. Great for most lead applications or a heavily distorted, yet tight, Metal rhythm tone. Usually this setting will be desired for the lower output, single coil pickups.

These 3 very different PREBIAS settings are actually doubled by the possibility to "pull boost" regardless of which PREBIAS setting you are in. This +10dB boost can be achieved by simply pulling the Gain knob or with the optional footswitch.

*NOTE: Your S50 has a 9 pin straightener attached to the side of your cab, which can hold an extra tube and should also be used when changing preamp tubes. This keeps your pins straight and clean and your sockets tight! See tube layout for exact location of V1 thru V5 preamp tubes.*

*NOTE: there is also a "secret" gain trim pot located underneath the chassis near the transformer. This screwdriver adjusted internal pot sets the preamp gain for the S50 in the non-boost mode (will not change the Boost position).*

*This can balance the preamp gain to your guitar pickup (more gain for the single coils and less for the humbuckers). We usually set this control in the middle from the factory. If you choose to adjust it further, please turn off the amp and also use an insulated screwdriver for safe operation.*

## "Passive" Tone Controls

The S50 tone controls are the *Passive* type, similar to those used in the Blackface era Fender amps.

Many amps made today use *Active* type tone controls, which have a separate gain section for each tone band which literally "suck tone" from the preamp. That's why we don't use them. Passive controls use a common tube gain stage to boost the entire frequency range, then divide the Bass, Middle, and Treble with passive filters to shape your tone. Passive tone controls are more musical, but are also interactive with one another.

To get the most out of passive tone controls, start listening with all controls at the 12 o'clock position, where we "pretune" your amp here at the factory. If you want more bass, either: a) Crank up the Bass control; or b) Lower the Treble control then compensate the volume loss (or gain) by increasing (or decreasing) Gain and/or Volume controls. Passive controls share a common gain stage, so turning any

one of them fully up (or down!) diminishes the effect of the others. Should you want more "push" or "drive" from the preamp, try setting all 3 tone controls at the 3 o'clock position and adjust the EQ from there. This adds more touch sensitivity to the preamp. Find a drier tone and feel by setting the tone section to 9 o'clock and adding back tone as needed.

*NOTE: The S50 preamp design is much like the Fender Blackface era amps; more linear than the Marshall or earlier Fender Tweed designs. We added some gain options including a second high gain preamp stage typical of the "Metal" amps via the Pull-Boost feature (footswitchable) and also the innovative PREBIAS control which changes the overall gain structure of the preamps stage by increasing the supply voltages. The power amp stage is a unique output design we "borrowed" from Aspen's famous Black Plexi paneled Red Park 50 amp made in the mid 60's during Marshall experimental period. The Park's unique output transformer is a complex design with many interleafings and similar to Hi Fi designs...very interactive to the players touch. To our knowledge, this is the first time these designs have been combined in one amp.*

**The Presence Control**

This control interacts with the S50 power amp stage, changing the high frequency response. It alters the feedback loop of the power tubes. It adds highs to the power stage, making it noticeably brighter. Use more Presence for an acoustically dead room, and less for live rooms.

**The Reverb Control**

Our tube driven long spring Accutronics Reverb is deep and harmonically rich and runs in parallel to the signal path so it doesn't sap highs as you crank it up.

**Rear Panel Features**

**The Power Amp Stage**

Your Soul-o 50 Class A/B design can use any one of nine different matched Duets from our EL34/6CA7 and 6550/KT88 family of Power Pentode (or Tetrode) tube types currently available from our GT catalog, and in any of the 1 to 10 power ratings. Changing power tubes will require a new bias adjustment unless you are replacing tubes of the same tube type with the same rating. A change in the type

and/or rating of your power tube can make a dramatic difference in your tone and power.

For example, the S50 output power can range from about 50 watts RMS with a low number EL34R up to almost 80 watts RMS with our KT88sv! Rebiasing is required with all tube changes unless you are using the same type and rating in the GT system. Unless ordered otherwise, your S50 amp will come equipped with a Duet of our very best, the GT34Ls @ 60+ RMS.

**Speaker Impedance Selector and Speaker Output Jacks**

The S50 custom wound output transformer has 3 secondary windings for selection between 4, 8, and 16 ohms speaker loads. Always try to exactly match the speaker load with the impedance selector for maximum power. Use the #1 speaker jack for just one speaker (or as a combo amp). The #2 jack is for adding a second speaker.

*NOTE: The #1 jack has shorting circuitry which turns the amp off if there is no speaker connected so you will hear NO sound from jack #2 if #1 is not in use.*

**GT's Parallel FX Loop w/ Mix**

This is the most tonally transparent FX loop possible. When properly set, our loop allows you to use any digital or analog FX unit mixed in parallel with your original preamp signal with no sacrifice of tone! Most loops are the Series type, so the FX unit is placed is between the preamp and power stage...so the sweet, fat, tube preamp signal is changed into a thin, wimpy transistor signal. We call this **"the tone sucking transistor FX loop syndrome"**, and the GT's parallel loop with Mix control is the cure!

**To Operate:**

**Set the FX unit 100% Wet and 0% Dry.** Now, you can use the Mix control on the S50 rear panel to adjust the desired level of the FX box. Usually, best results happen with a Dry:Wet ratio of 98%:2%. Another cool trick is to insert an ordinary foot controlled volume pedal in the signal path returning from the FX to the "INPUT"

of your S50 FX loop. This allows you to gradually increase or decrease the FX level without changing the amps volume!

**Soul-o Speaker Cabinets**

GT cabinets are "tuned" for guitar playing. They are fundamentally different than most other guitar cabinets on the market today. We use 3/4" solid core plywood for the top, bottom, back and sides but a lightweight 5/8" plywood speaker baffle board. We slant the baffle board upwards for better projection, and "tune" it's resonance to optimize the tone for guitar. This design produces tighter bass notes avoiding the common "Big E String Mush" syndrome.

GT guitar cabs come with our exclusive "Classic Clone", USA made speakers. These are made to our specifications, inspired by our favorite 60's era speakers.

**S50 Technical Specs:**

**Input(s):** 1/4 " phone jack front and rear  
**Input Level:** -10 dB nominally  
**FX Input level:** +4dB dB nominally

**Preamp Tube Section**

- V1 - 12AX7
- V2 - 12AX7
- V3 - 12AU7
- V4 - 12AT7
- V5 - 12AX7 or 12AT7
- V6 & V7 - EL34/6CA7 or 6550/KT88

**Power Section:**

50 watts RMS Class A/B type @ 4, 8, 16 Ohms  
**Optional EL34 Family types:**  
 GT6CA7GE, GTE34Ls, GTEL34R, GTE34R2, GT6550C, GT6550R, GT6550R2, GTKT88SV, GTKT88C and GTKT88C2

**AC requirement:** 117 VAC Standard  
 100 VAC (special order), 230 VAC (special order)

**H.T Fuse:** 1 Amp Slo-Blo

**AC Fuse:** 100-120VAC@3A Slo-Blo  
 230 VAC = 1.5A Slo-Blo

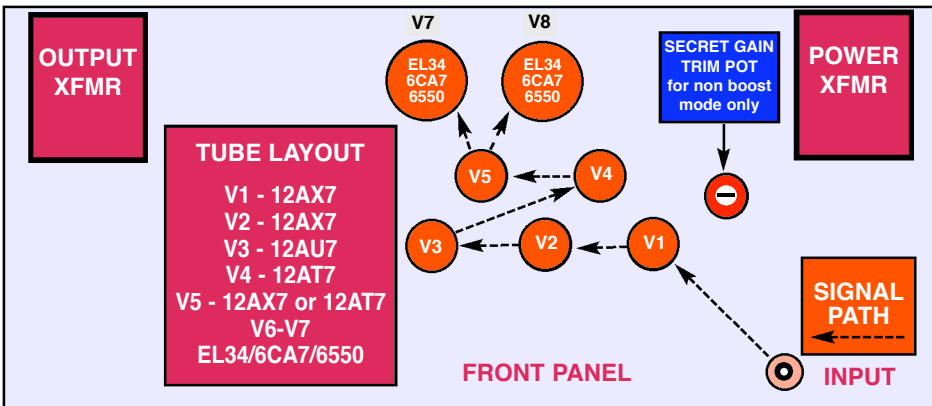
**Weight:** S50-12C Combo 42 lbs.  
 S50-15C Combo 44 lbs.  
 S50 Top 32 lbs.

**Options:**

Footswitch (Boost & Reverb) with 25' cord  
 Slip Cover with pocket for footswitch and cables

**Speaker Cabinet Options**

- S50-12C - 1 x 12" speaker
- S50-15C - 1 x 15" speaker
- EX112 - 1 x 12" speaker
- EX210 - 2 x 10" speakers
- EX212 - 2 x 12" speakers
- EX410 - 4 x 10" speakers
- EX115 - 1 x 15" speaker



**Groove Tubes LLC Custom Shop Products**

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