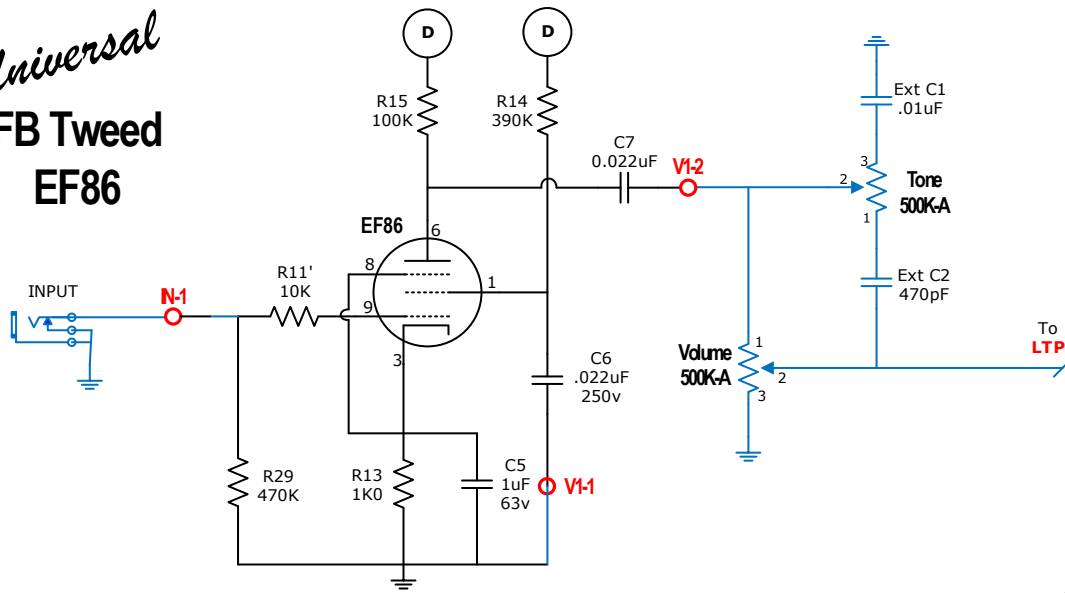


Universal FB Tweed EF86



EF86 Tweaks

EF86 data sheets quote recommended component values that give very high voltage gain (around 200x). These were primarily intended for sensitive circuits such as hifi phono-stages, not guitar amps. Such circuits were copied most famously by Vox, and have a reputation for being noisy, unless using a very well-performing EF86. As such this stage is biased for lower gain of around 120x being more appropriate to guitar signal:noise levels. This will considerably reduce microphonics and frustration in the long run!

Output Transformer

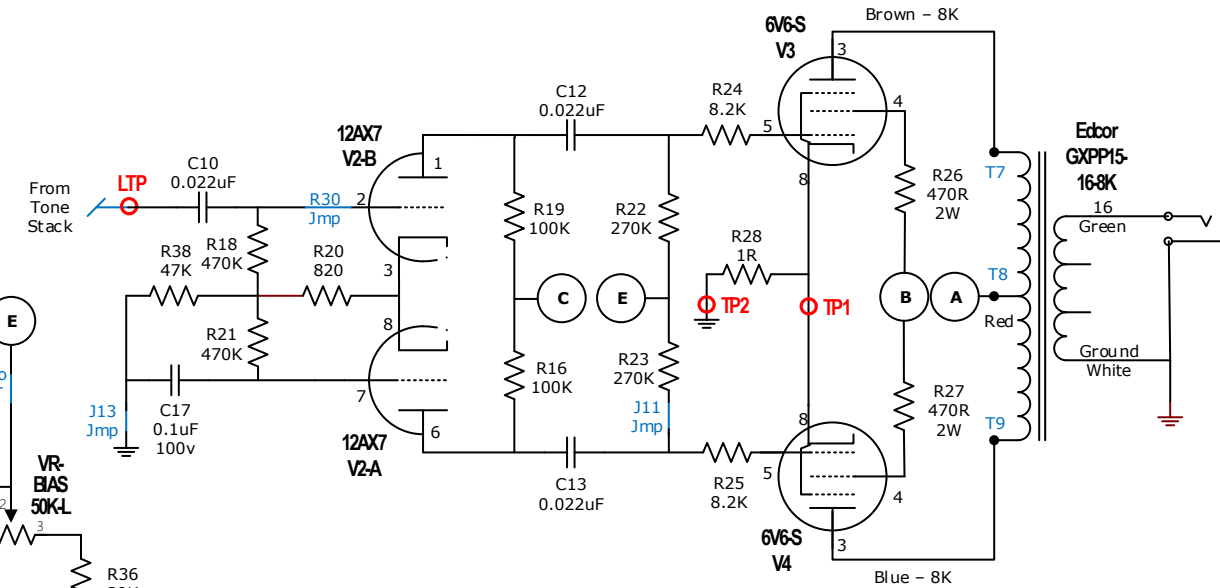
Heyboer & ClassicTone "18watt" OTs provide great tone with 16, 8 & 4 Ohms taps. An Ecor GXPP15-n-8K works well as a moderate cost high quality option. Get a 16, 8 or 4 ohm version to suit your speaker cab as there is no multi-tap option. A "Tweed Deluxe" OT will provide a 'Vintage Fender' vibe.

Bias Adjustment

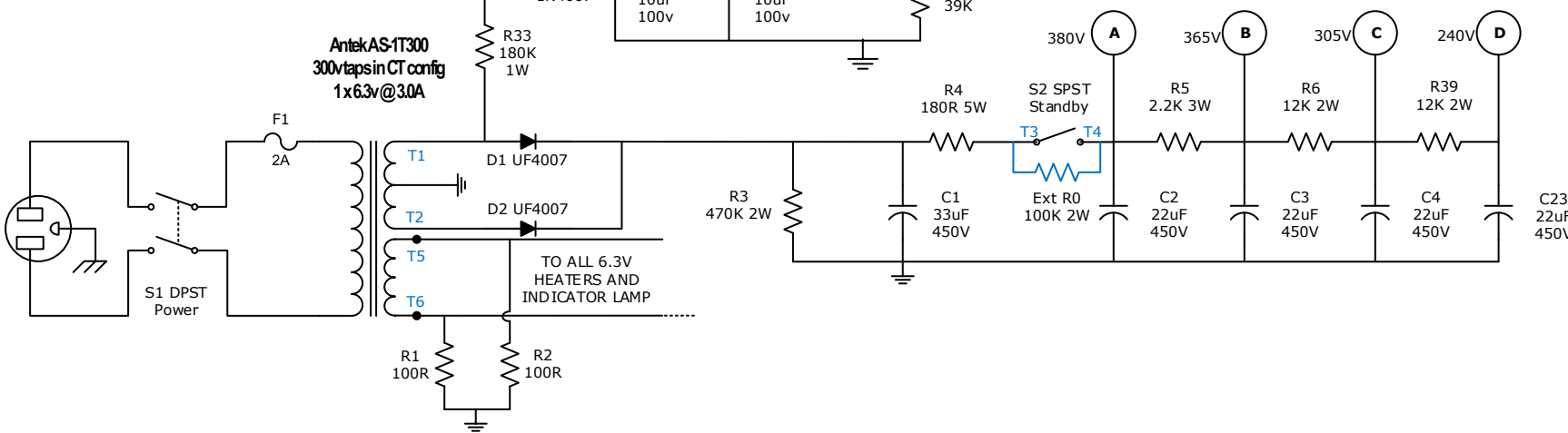
Adjust the Cermat 50K "VR-Bias" Pot such that the mA reading across TP1 & TP2 is in accord with the following formula:-

$$mA = 0.7 \times 2 \times PaMAX / Va$$

Where PaMAX is the maximum plate dissipation for the power tubes (i.e. 14Watts for a 6V6S) and Va is the plate (AKA Anode) voltage (pin 3).

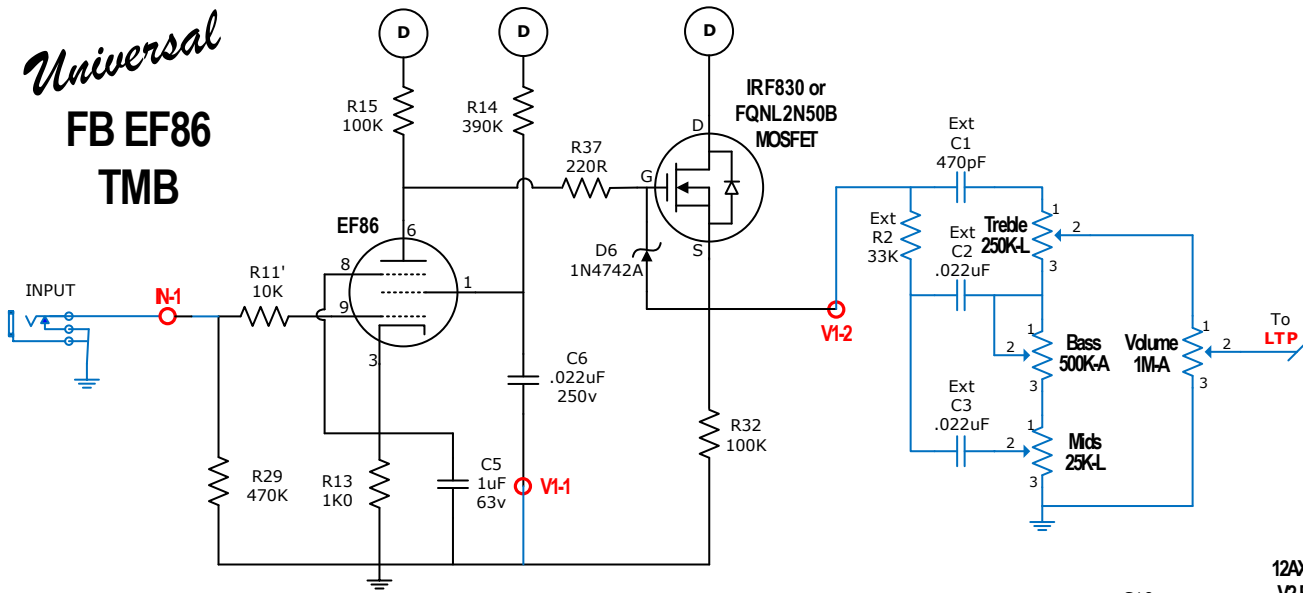


AntekAS-1T300
300vtaps in CT config
1x6.3v@3.0A



PPWatt.com	
Universal PCB	
Variation	FB Tweed EF86
PCB Versions	V1.2
Date	14/01/2014
Author	Jamesrr

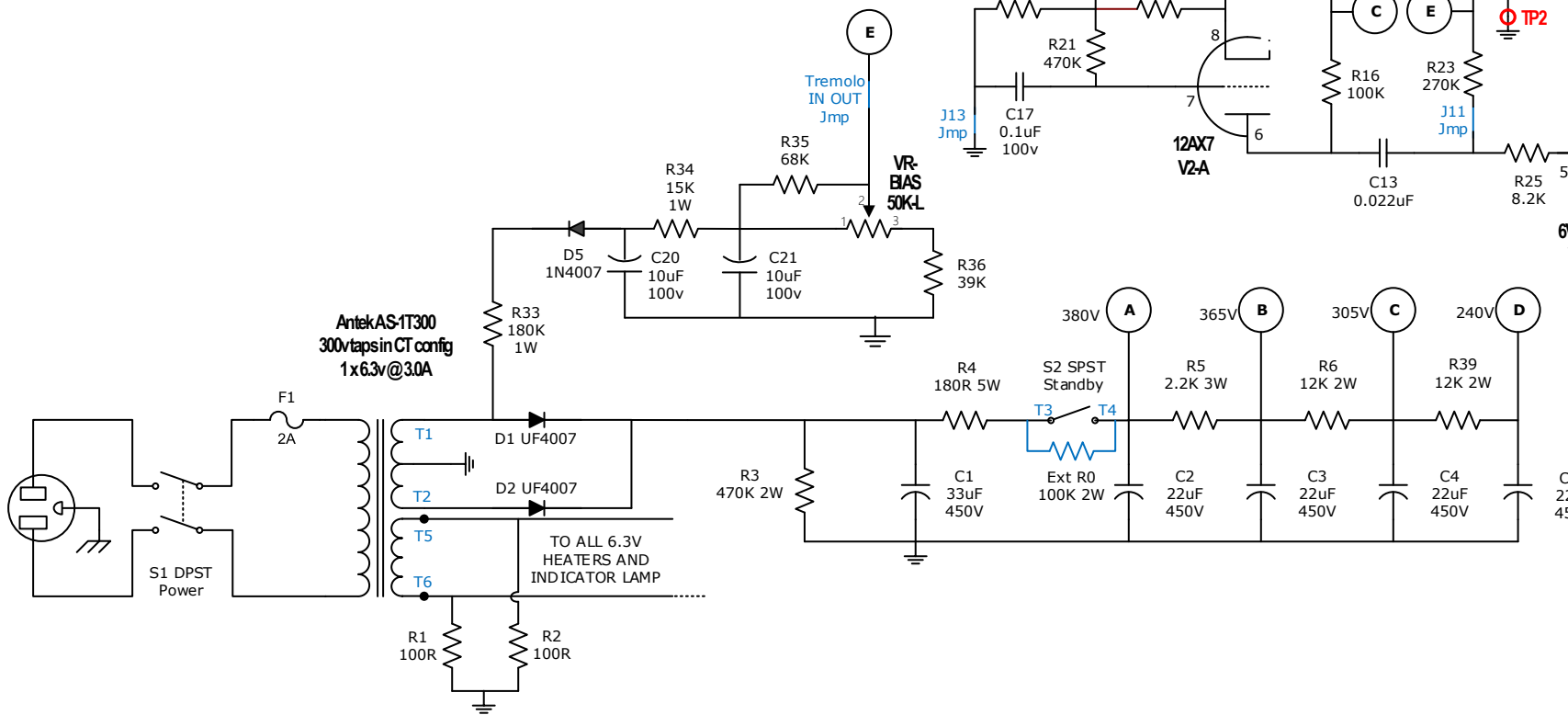
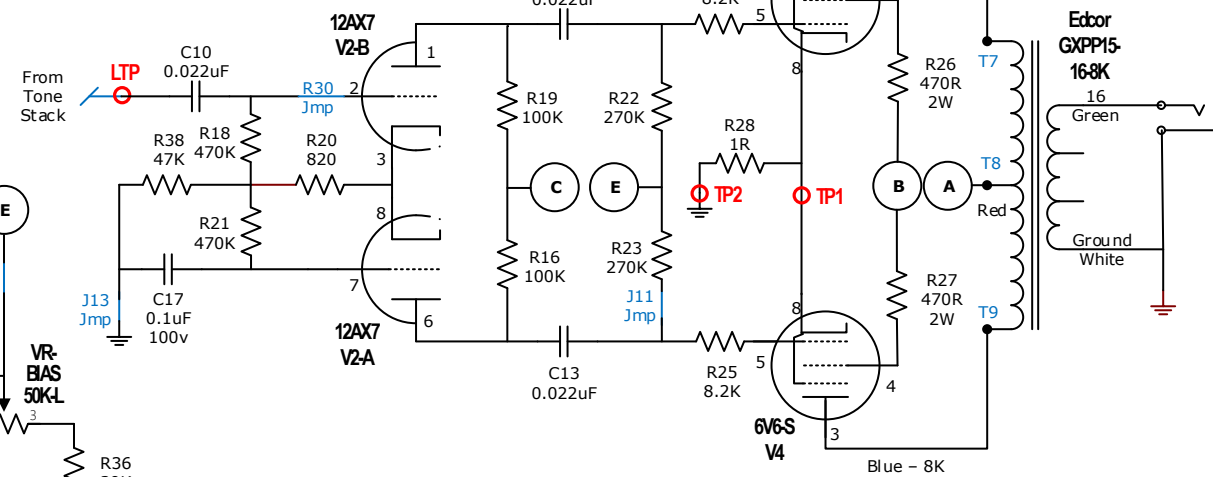
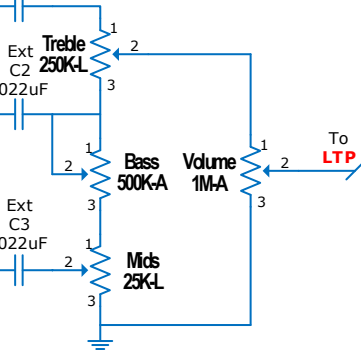
Universal FB EF86 TMB



TMB Tone Stack Tweaks

Adjust the Cermat 50K "VR-Bias" Pot such that the mA reading across TP1 & TP2 is in accord with the following formula:-

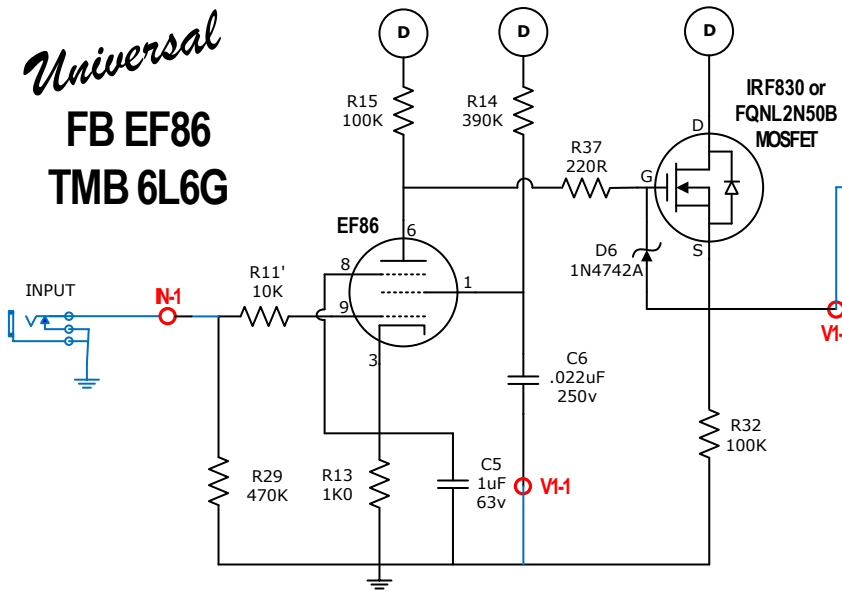
$$mA = 0.7 \times 2 \times PaMAX / Va$$
 Where PaMAX is the maximum plate dissipation for the power tubes (i.e. 14Watts for a 6V6S) and Va is the plate (AKA Anode) voltage (pin 3).



AntekAS-1T300
300vtaps in CT config
1x6.3v@3.0A

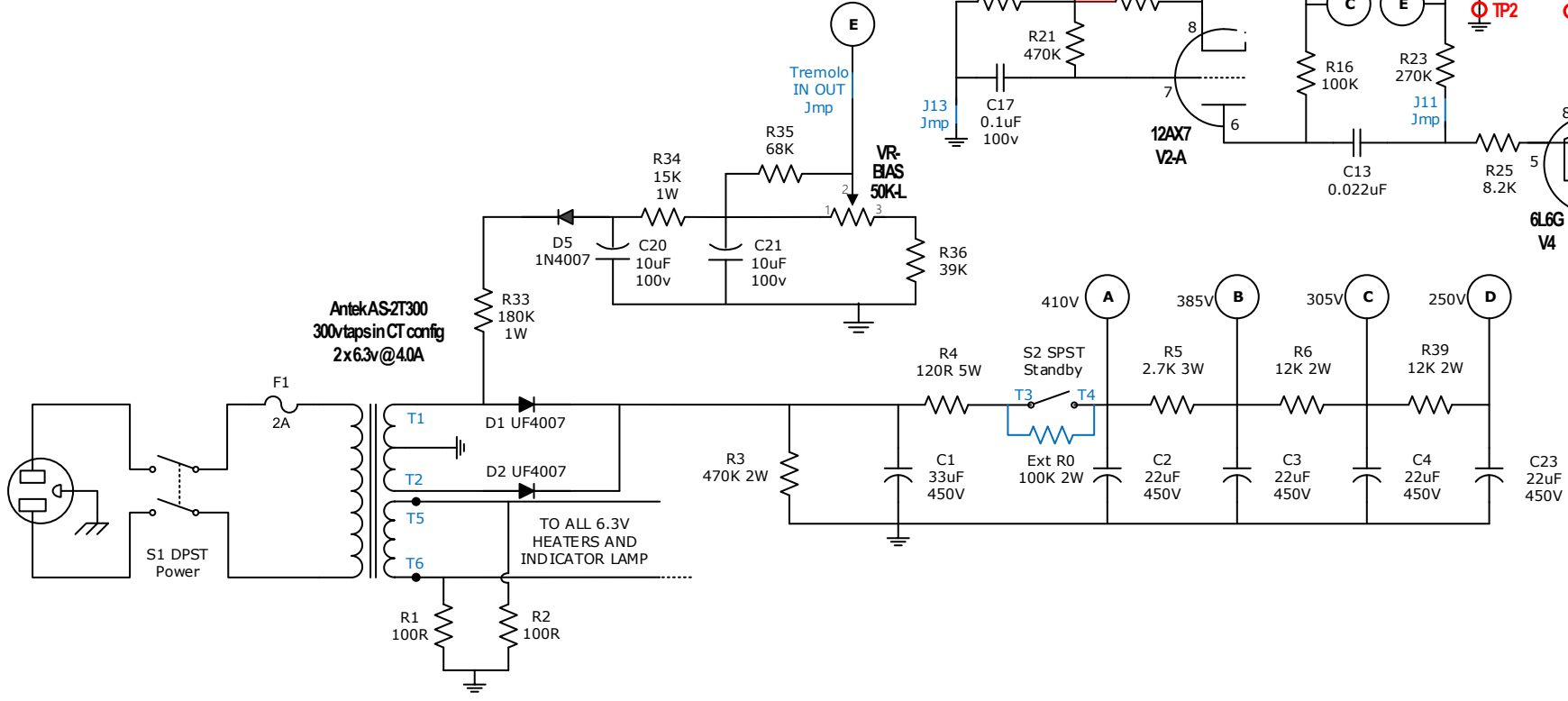
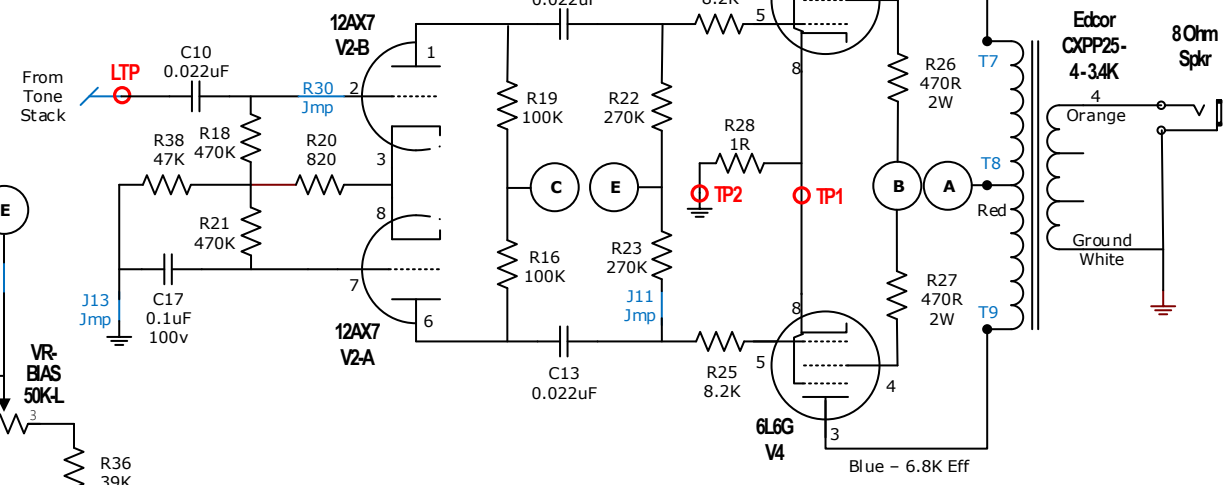
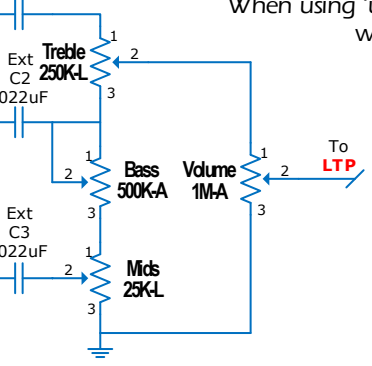
PPWatt.com	
Universal PCB	
Variation	FB EF86 TMB
PCB Versions	V1.2
Date	14/01/2014
Author	Jamesrr

Universal FB EF86 TMB 6L6G



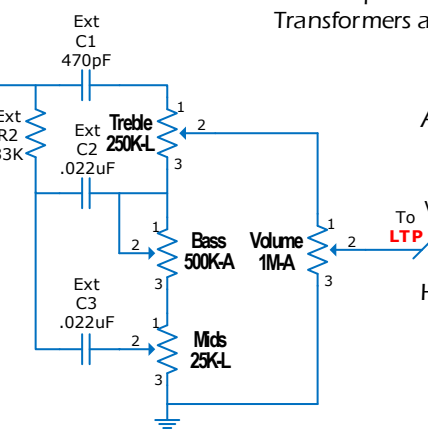
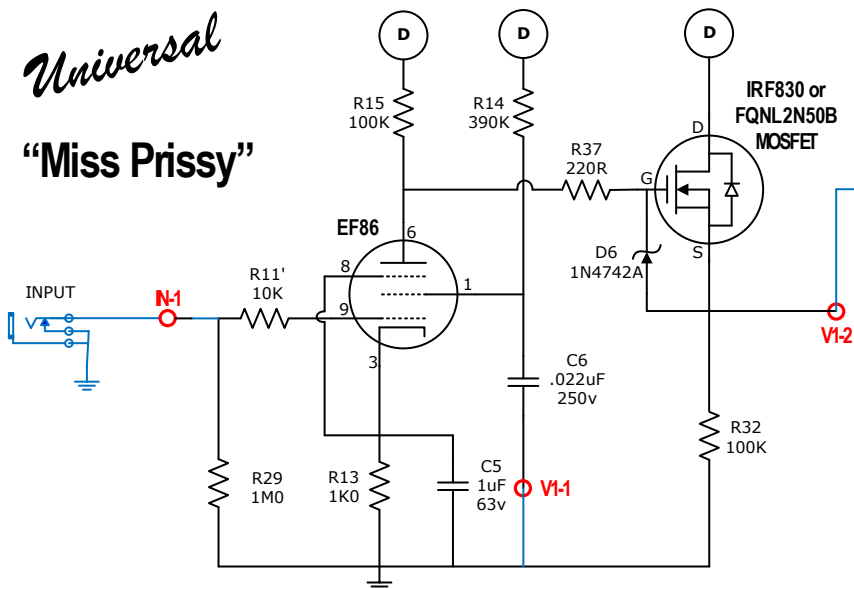
Output Transformer
 An Ecor CXPP25-(4 or 8)-3.4K provides a moderate cost high quality option to suit either an 8 or 16 Ω speaker cab. (use an 8Ω cab with the 4Ω TX or a 16Ω cab with the 8Ω TX)
 An Ecor CXPP30-MS-6.6K provides a more flexible multi secondary cab option.
 3rd party OT's of around 6.6K primary impedance handling around 25-40 watts will be suitable.
 When using 'untried' TXs be careful with power ratings. A pair of 6L6s can easily provide 40 watts sustained RMS output at various Bias levels & OT impedances.

Bias Adjustment
 Adjust the Cermat 50K "VR-Bias" Pot such that the mA reading across TP1 & TP2 is in accord with the following formula:-
 $mA = 0.7 \times 2 \times PaMAX / Va$
 Where PaMAX is the maximum plate dissipation for the power tubes (i.e. 21Watts for a 6L6G) and Va is the plate (AKA Anode) voltage (pin 3).



PPWatt.com	
Universal PCB	
Variation	FB EF86 6L6TMB
PCB Versions	V1.2
Date	14/01/2014
Author	Jamesrr

Universal "Miss Prissy"



Transformers

A spare set of Hot Rod Deluxe transformers may be used to great effect with this amp. Drop in replacements such as the ClassicTone 40-18020 or Hammond 1750JA Output Transformers and ClassicTone 40-18015 or Hammond 290UX Power Transformers may be used if you don't have a spare HRD to cannibalise ;-)

Bias Adjustment

Adjust the Cermet 50K "VR-Bias" Pot such that the mA reading across TP1 & TP2 is in accord with the following formula:-

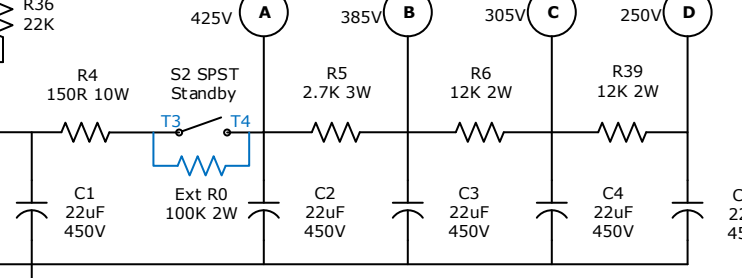
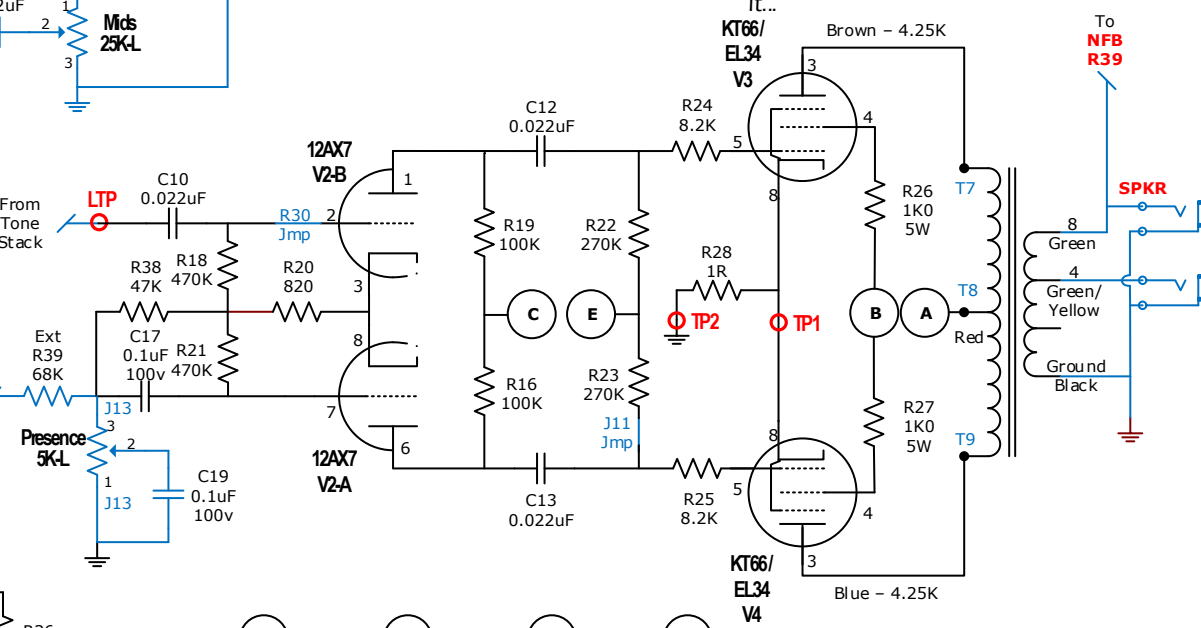
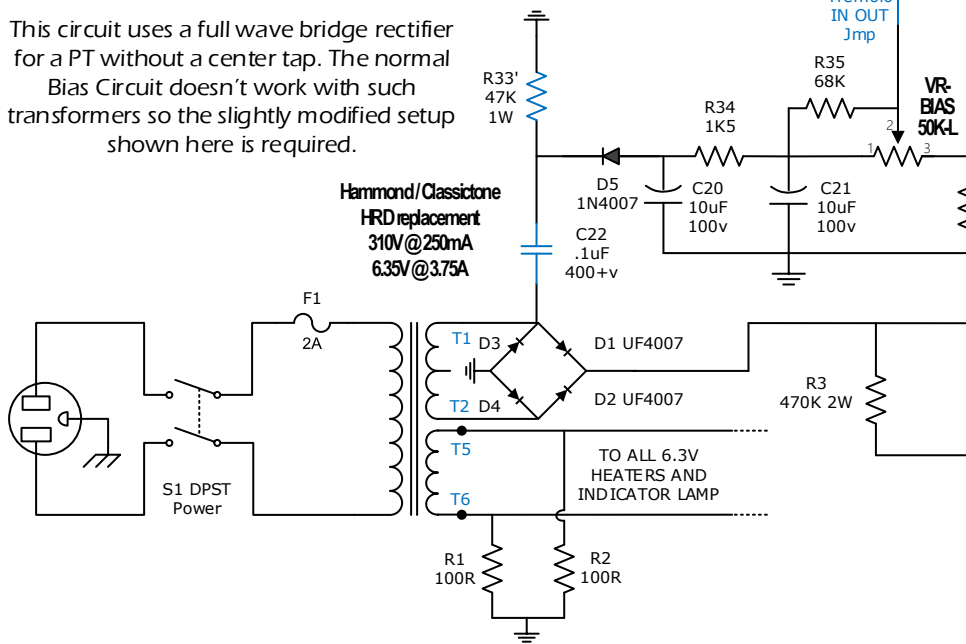
$$mA = 0.7 \times 2 \times PaMAX / Va$$

where PaMAX is the maximum plate dissipation for the power tubes (i.e. 27Watts for a KT66) and Va is the plate (AKA Anode) voltage (pin 3).
E.g. if Va is 410V then mA across TP1 / TP2 should be 92mA

HRD PTs are a bit wimpy so best to err on the 'cold' side of biasing and don't push it...

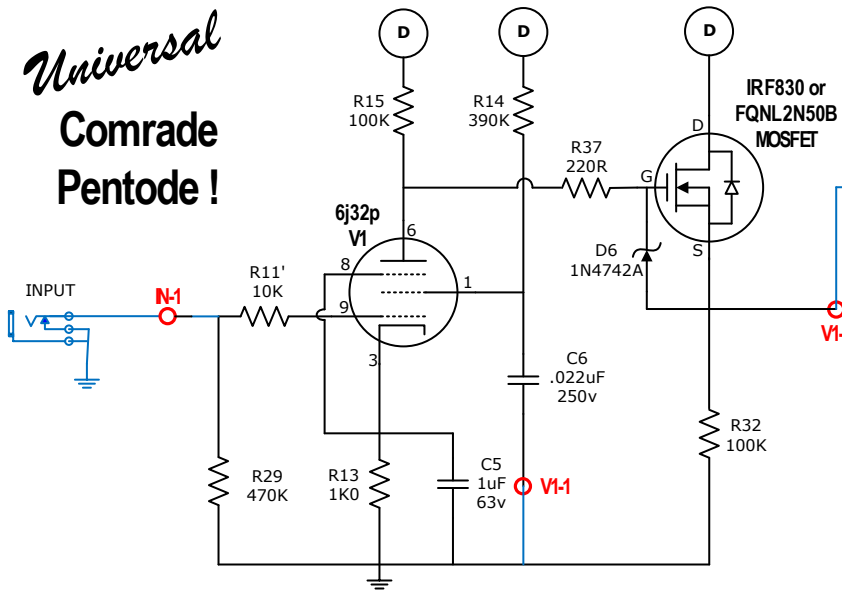
Bias Circuit

This circuit uses a full wave bridge rectifier for a PT without a center tap. The normal Bias Circuit doesn't work with such transformers so the slightly modified setup shown here is required.



PPWatt.com	
Universal PCB	
Variation	Prissy Pentode
PCB Versions	V1.2
Date	07/12/2015
Author	Jamesrr

Universal Comrade Pentode!



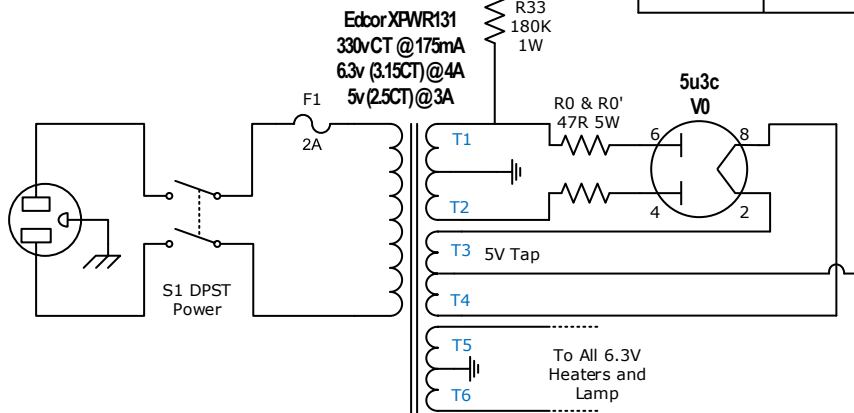
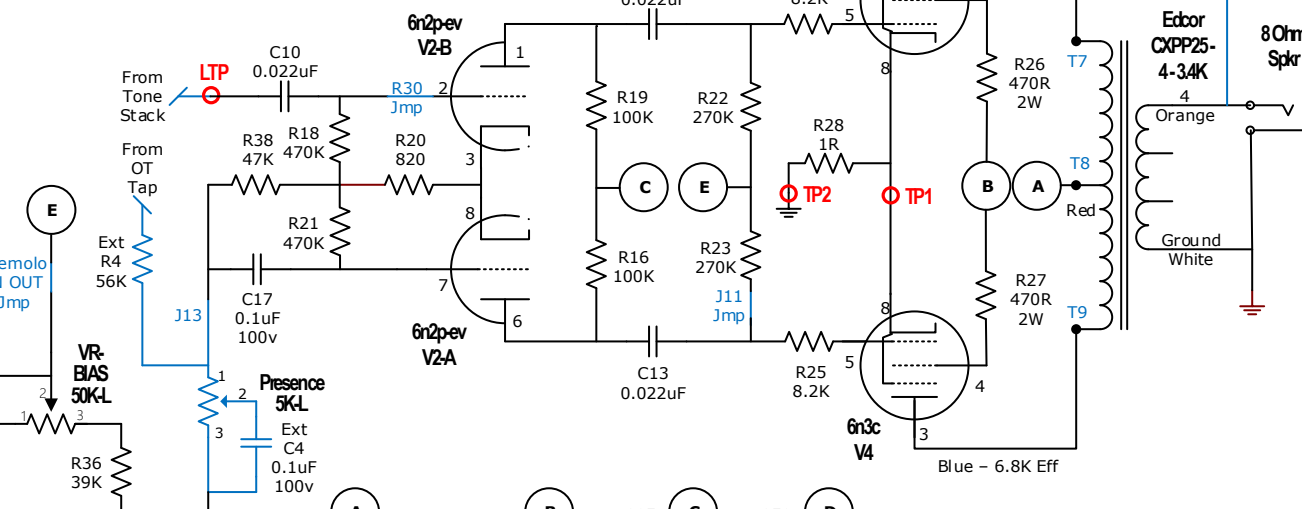
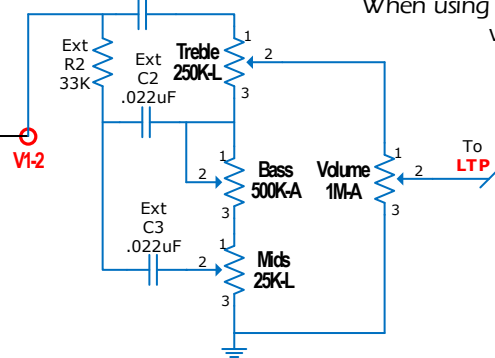
Output Transformer

An Eddor CXPP25-(4 or 8)-3.4K provides a moderate cost high quality option to suit either an 8 or 16 Ω speaker cab. (use an 8Ω cab with the 4Ω TX or a 16Ω cab with the 8Ω TX)
 An Eddor CXPP30-MS-6.6K provides a more flexible multi secondary cab option.
 3rd party OT's of around 6.6K primary impedance handling around 25-40 watts will be suitable.
 When using 'untried' TXs be careful with power ratings. A pair of 6L6s can easily provide 40 watts sustained RMS output at various Bias levels & OT impedances.

Bias Adjustment

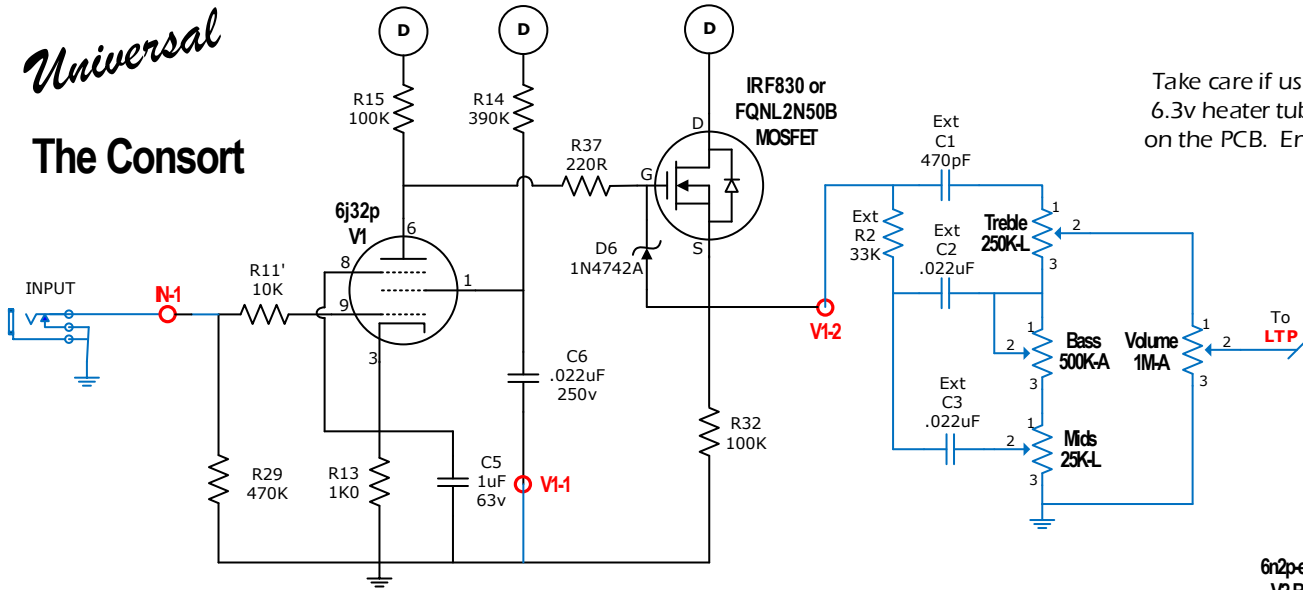
Adjust the Cermat 50K "VR-Bias" Pot such that the mA reading across TP1 & TP2 is in accord with the following formula:-

$$mA = 0.7 \times 2 \times PaMAX / Va$$
 Where PaMAX is the maximum plate dissipation for the power tubes (i.e. 21Watts for a 6L6G) and Va is the plate (AKA Anode) voltage (pin 3).



PPWatt.com	
Universal PCB	
Variation	Comrade Pentode!
PCB Versions	V1.2
Date	14/01/2014
Author	Jamesrr

Universal The Consort



6j32p / 6n2p Pre-Amp tubes

Take care if using the Soviet 6n2p / 6n23p (ECC88 etc) style valves as they are 6.3v heater tubes only (unlike the 12AX7 style tubes) and are wired differently on the PCB. Ensure you install the correct heater jumpers for the tube type you are intending to use!

Output Transformer

Hammond, Heyboer & ClassicTone "18watt" OTs provide excellent tone with 16, 8 & 4 Ohms taps. An Eddor GXPP15-x-8K provides a good quality cost effective option if using an Eddor power TX (such as the XPWR121). A CXPP10-MS-8K is even better with either 4/8 or 8/16 speaker taps.

Bias Adjustment

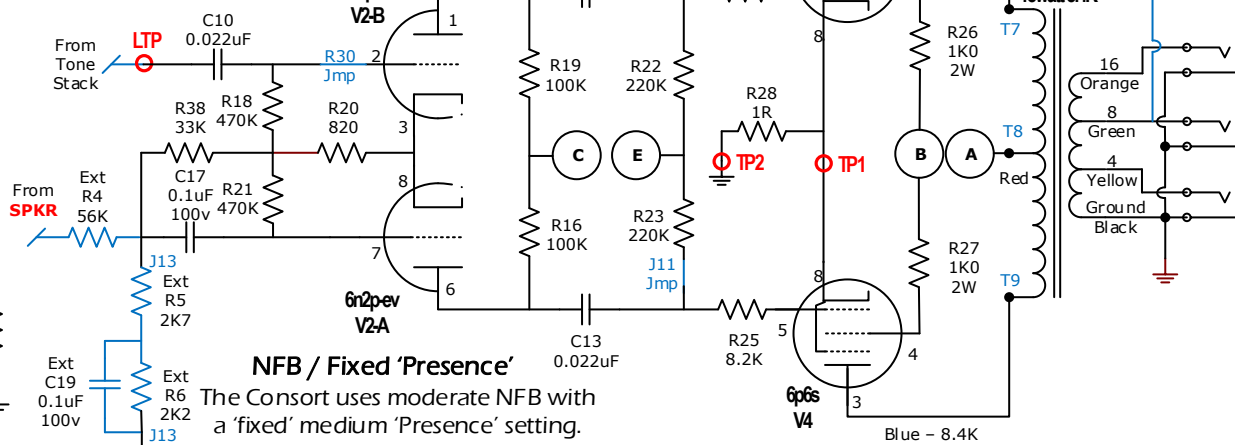
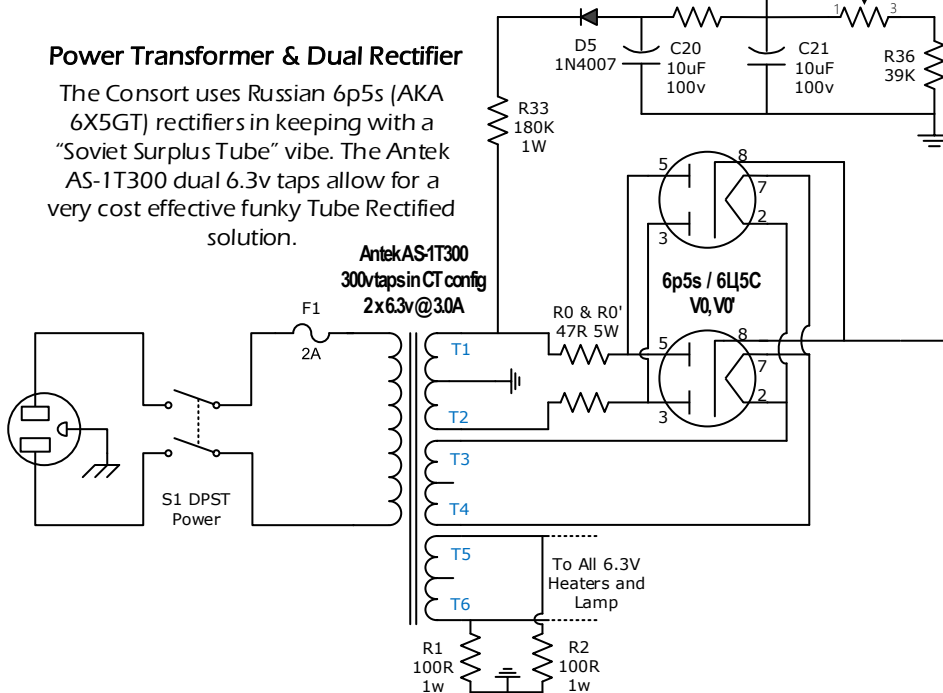
Adjust the Cermet 50K "VR-Bias" Pot such that the mA reading across TP1 & TP2 is in accord with the following formula:-

$$mA = 0.7 \times 2 \times PaMAX / Va$$
 Where PaMAX is the maximum plate dissipation for the power tubes (i.e. 12Watts for a 6p6s/6V6) and Va is the plate (AKA Anode) voltage (pin 3).

Power Transformer & Dual Rectifier

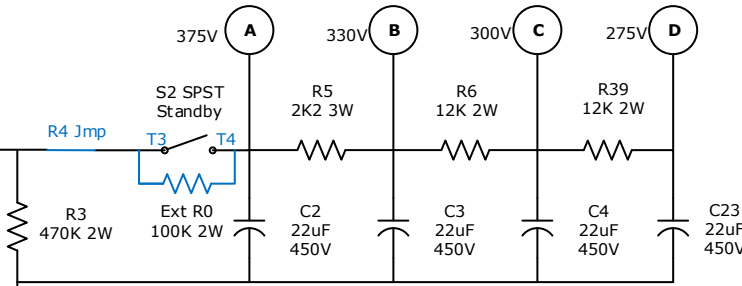
The Consort uses Russian 6p5s (AKA 6X5GT) rectifiers in keeping with a "Soviet Surplus Tube" vibe. The Antek AS-1T300 dual 6.3v taps allow for a very cost effective funky Tube Rectified solution.

Antek AS-1T300
300v taps in CT config
2x6.3v@3.0A



NFB / Fixed 'Presence'

The Consort uses moderate NFB with a 'fixed' medium 'Presence' setting.



PPWatt.com	
Universal PCB	
Variation	The Consort
PCB Versions	V1.2
Date	23/10/2016
Author	Jamesrr