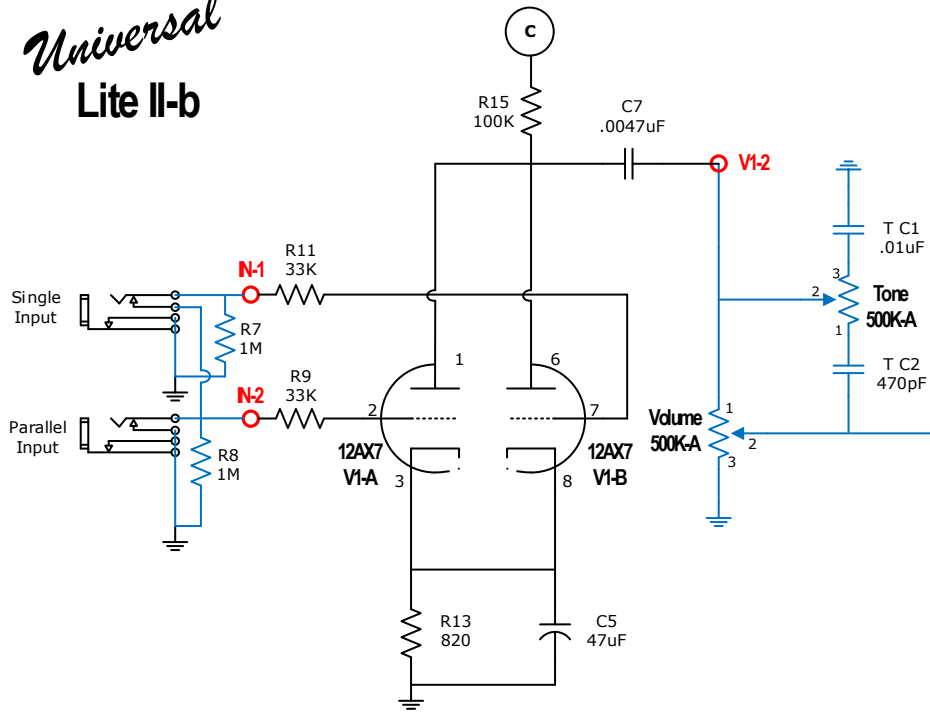


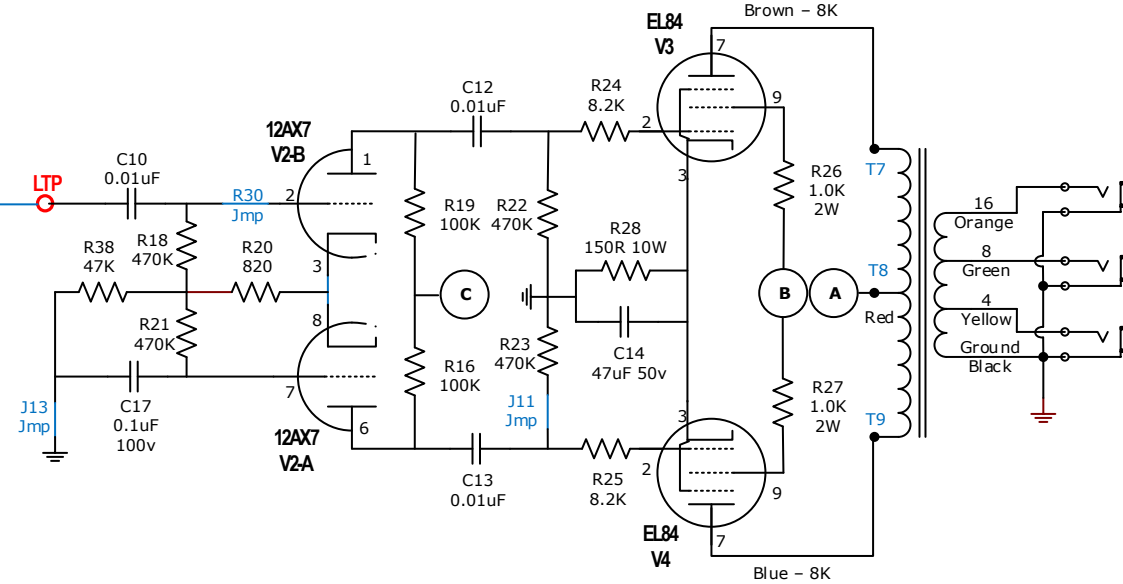
# Universal Lite II-b



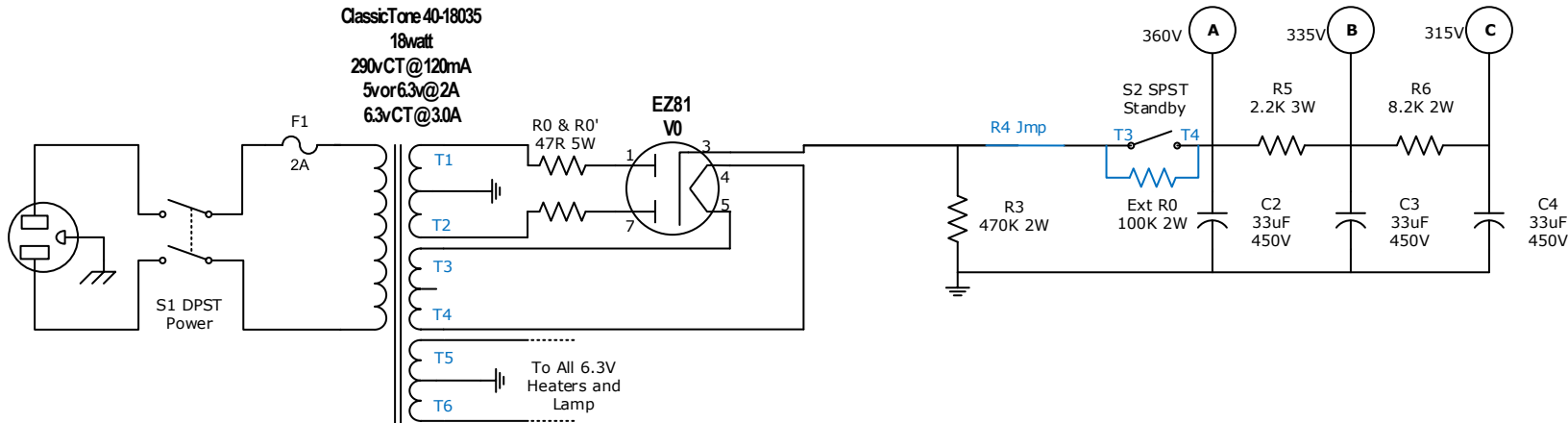
## Output Transformer

Heyboer & ClassicTone "18watt" OTs provide a really authentic & great sounding tone with 16, 8 & 4 Ohms taps.

An Ecor GXPP15-n-8K works well as a budget option. Get the 16, 8 or 4 ohm version to suit your speaker cab as there is no multi-tap option.



ClassicTone 40-18035  
18watt  
290vCT@120mA  
5vor6.3v@2A  
6.3vCT@3.0A

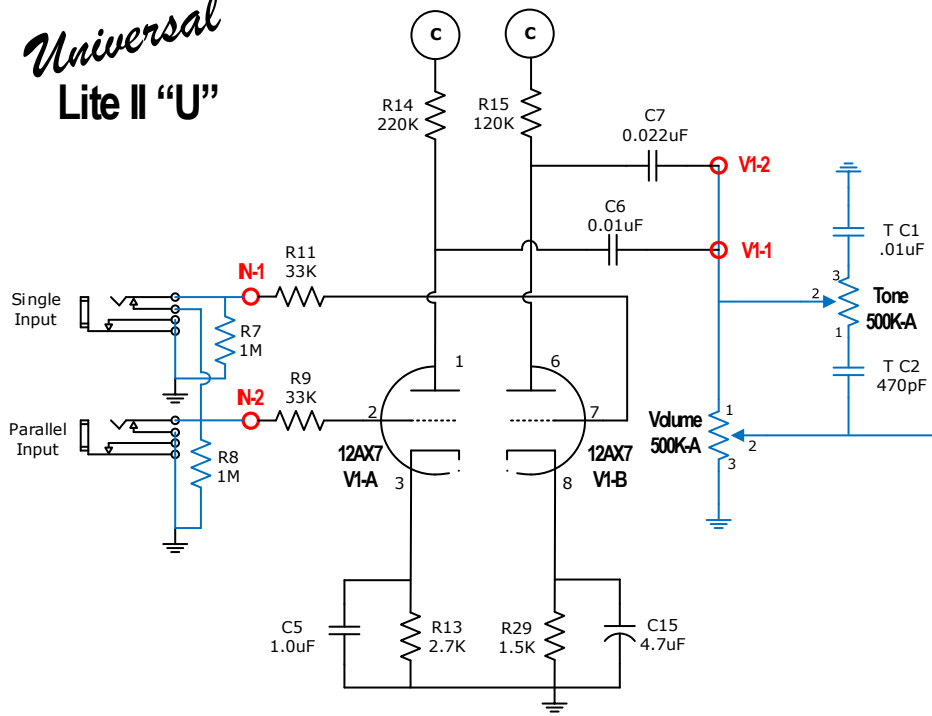


Wattkins.com

Universal PCB

Variation	18watt Litell"U"
PCB Versions	V1.2
Date	05/09/2013
Author	Jamesrr

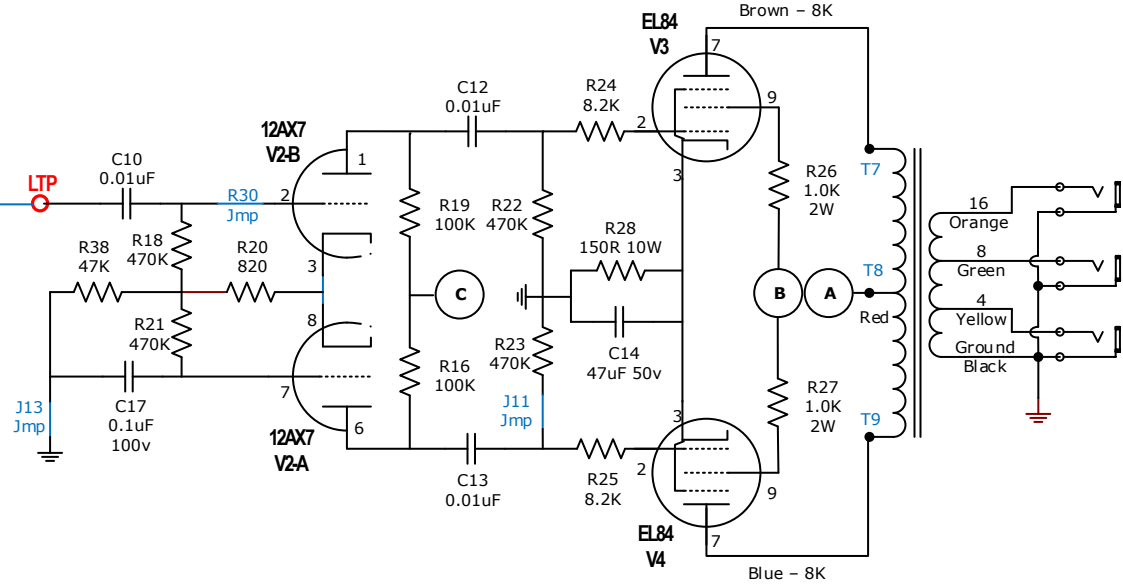
# Universal Lite II "U"



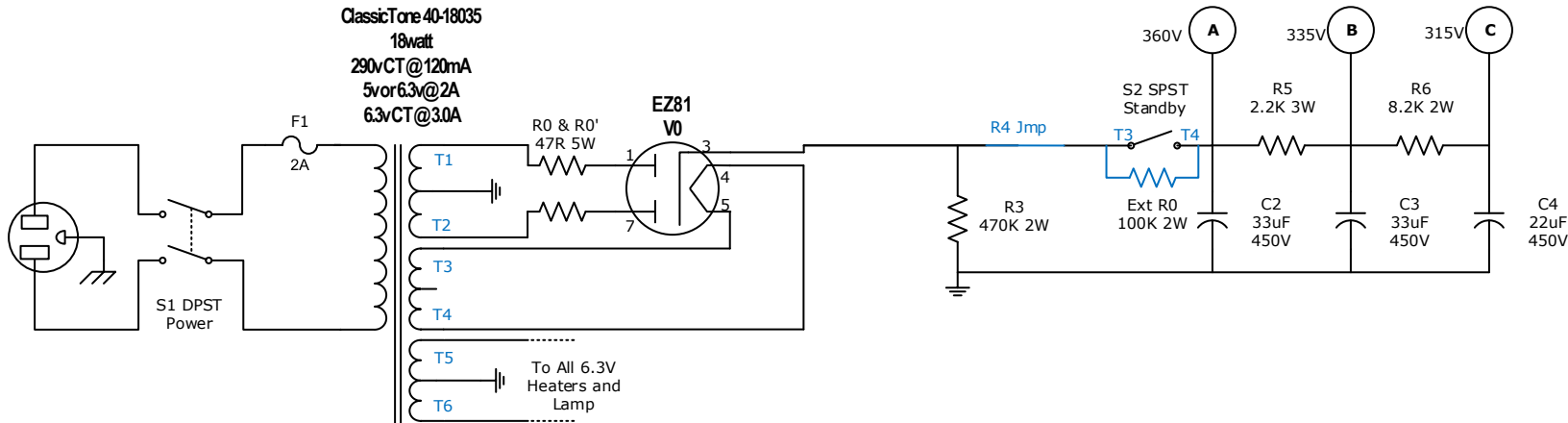
## Output Transformer

Heyboer & ClassicTone "18watt" OTs provide a really authentic & great sounding tone with 16, 8 & 4 Ohms taps.

An Ecor GXPP15-n-8K works well as a budget option. Get the 16, 8 or 4 ohm version to suit your speaker cab as there is no multi-tap option.

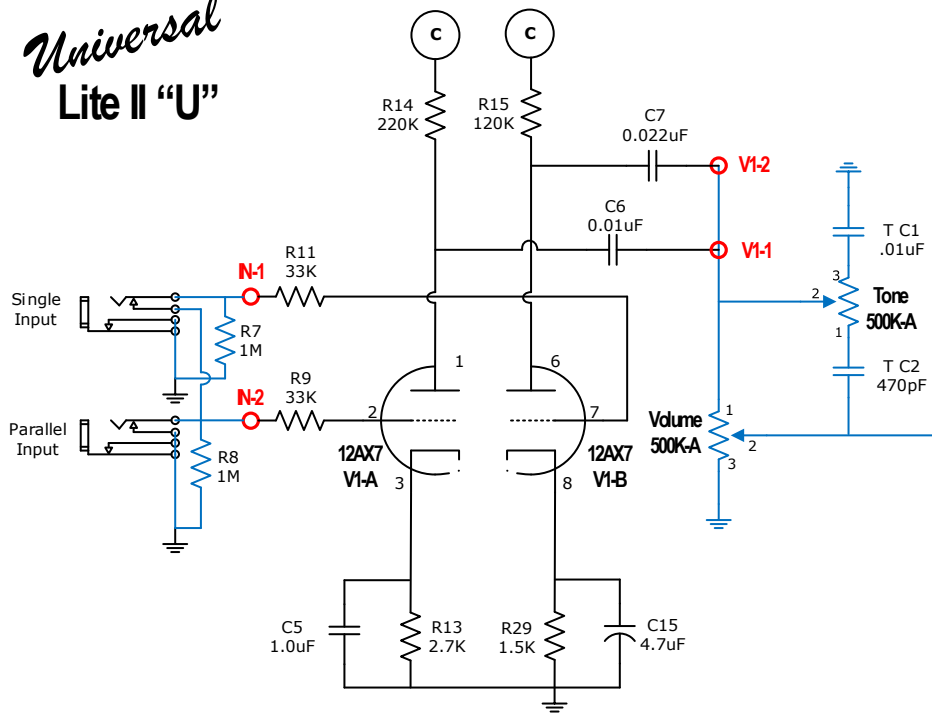


ClassicTone 40-18035  
18watt  
290vCT@120mA  
5vor6.3v@2A  
6.3vCT@3.0A



Wattkins.com	
Universal PCB	
Variation	18watt Litell"U"
PCB Versions	V1.2
Date	05/09/2013
Author	Jamesrr

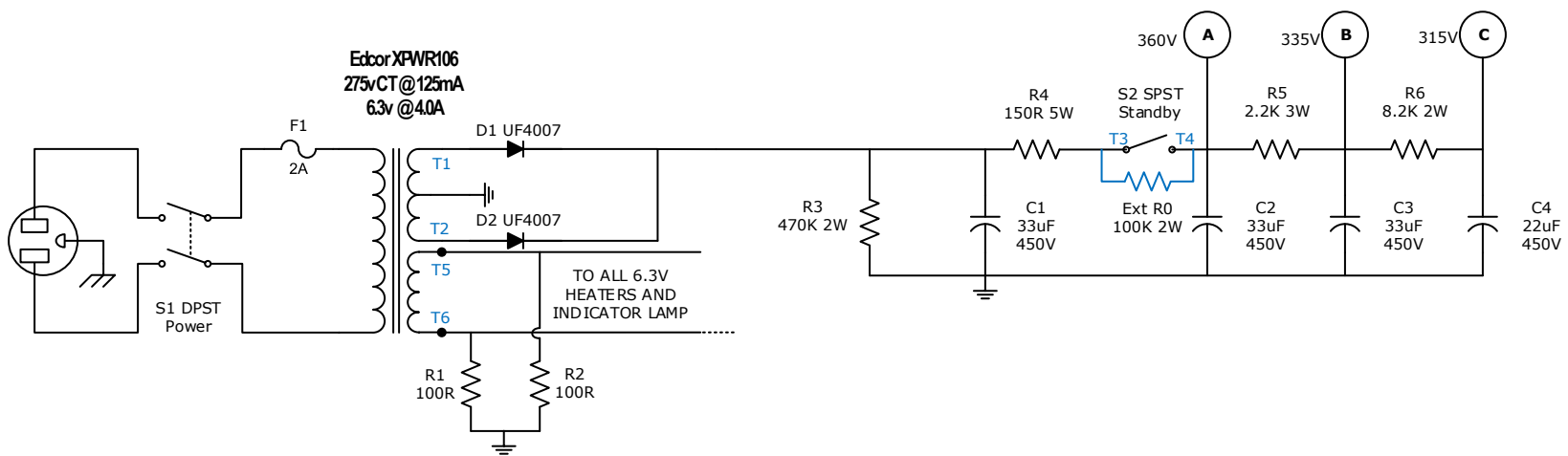
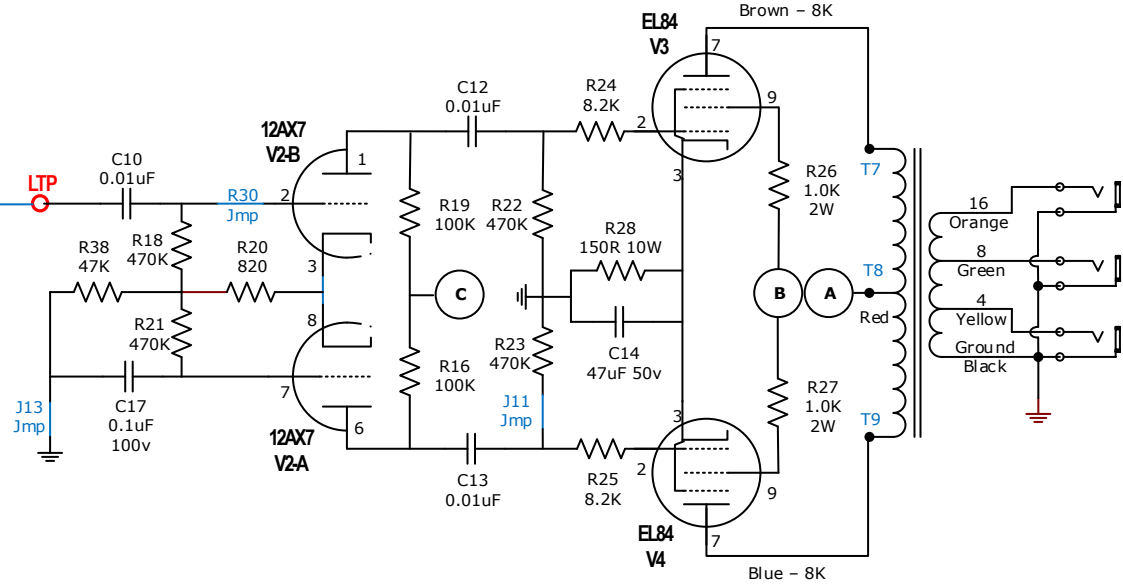
# Universal Lite II "U"



## Output Transformer

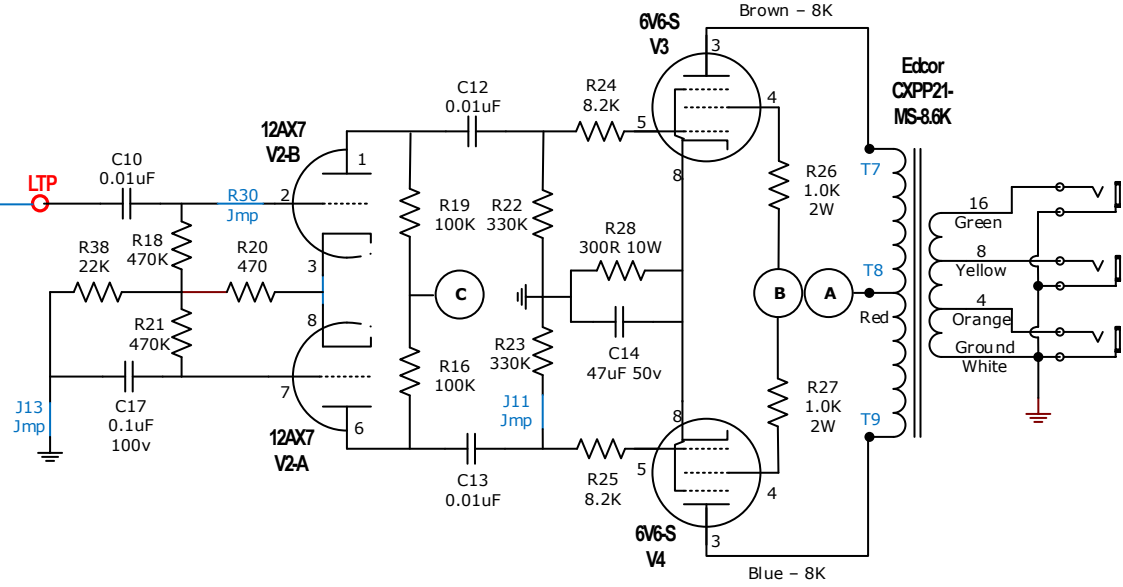
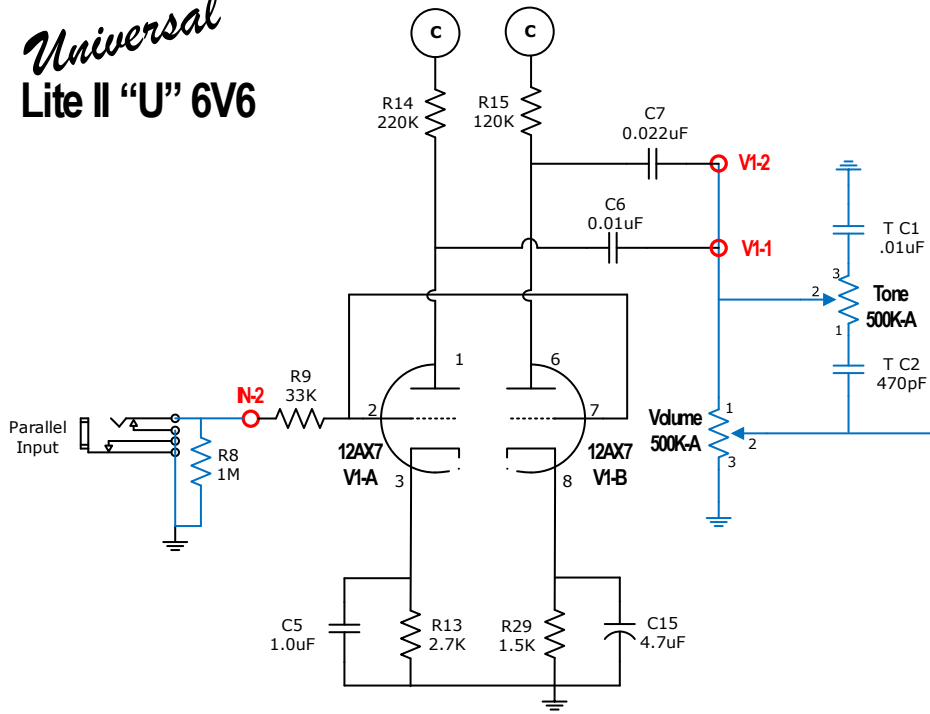
Heyboer & ClassicTone "18watt" OTs provide a really authentic & great sounding tone with 16, 8 & 4 Ohms taps.

An Ecor GXPP15-n-8K works well as a budget option. Get the 16, 8 or 4 ohm version to suit your speaker cab as there is no multi-tap option.



Wattkins.com	
<i>Universal PCB</i>	
Variation	18watt Litell"U"
PCB Versions	V1.2
Date	05/09/2013
Author	Jamesrr

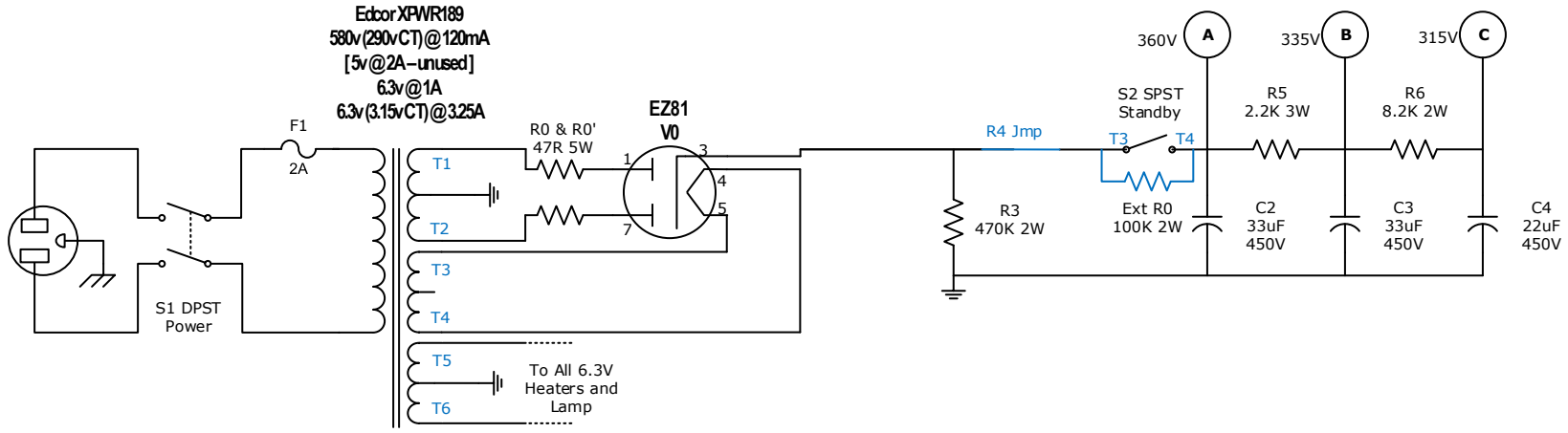
# Universal Lite II "U" 6V6



## Output Transformer

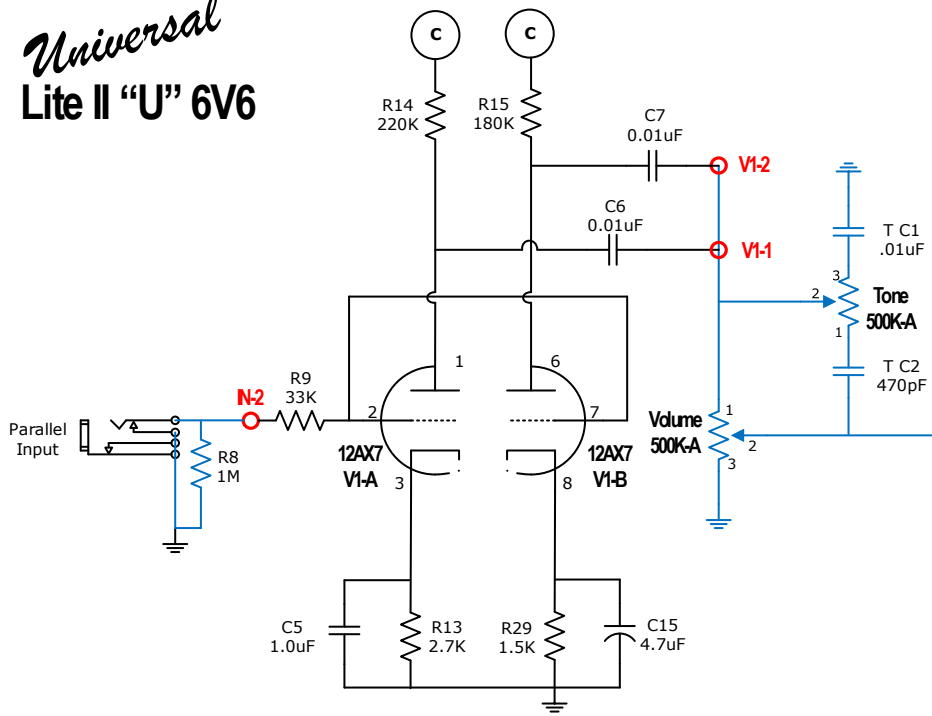
Heyboer & ClassicTone "18watt" OTs provide a really authentic & great sounding tone with 16, 8 & 4 Ohms taps. The Edcor "21 Watt" CXPP OT is a very high quality option in an all Edcor Transformer set.

Edcor XPWR189  
580v(290vCT)@120mA  
[5v@2A-unused]  
6.3v@1A  
6.3v(3.15vCT)@3.25A



Wattkins.com	
Universal PCB	
Variation	18watt Litell"U"6V6
PCB Versions	V1.2
Date	05/09/2013
Author	Jamesrr

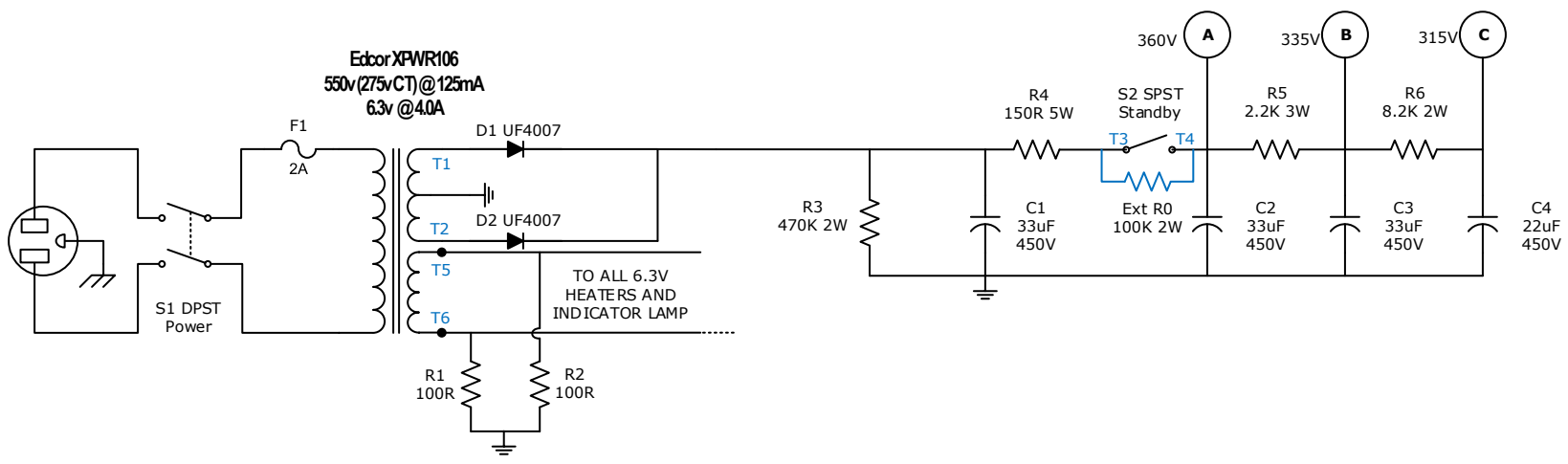
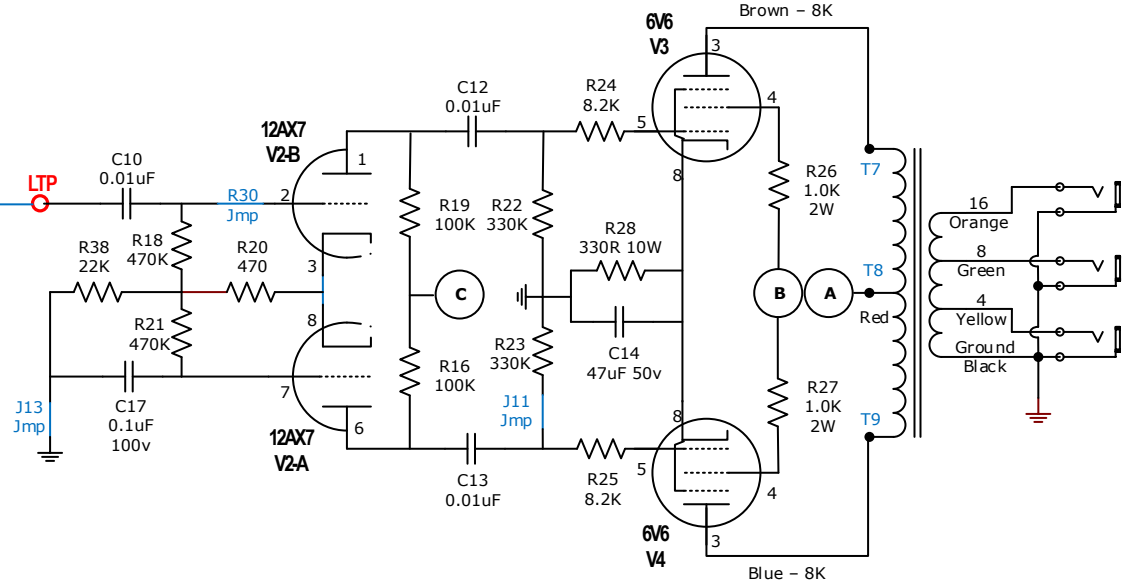
# Universal Lite II "U" 6V6



## Output Transformer

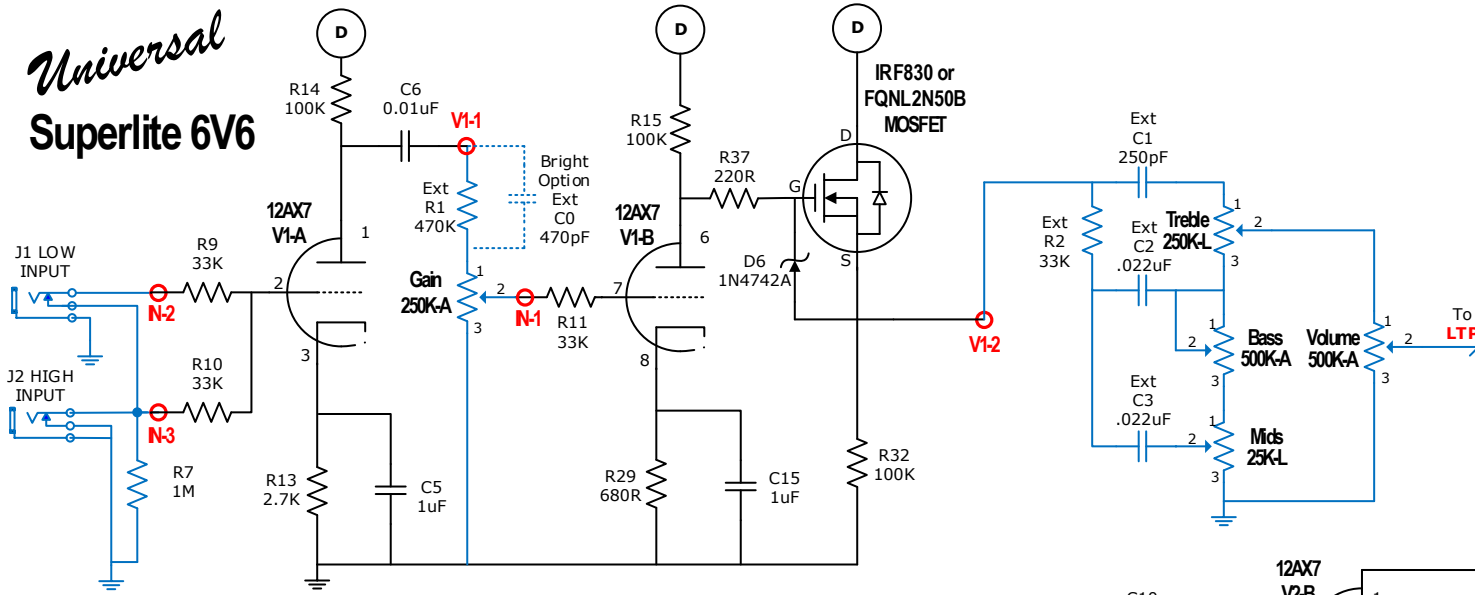
Heyboer & ClassicTone "18watt" OTs provide a really authentic & great sounding tone with 16, 8 & 4 Ohms taps.

An Ecor GXPP15-n-8K works well as a budget option. Get the 16, 8 or 4 ohm version to suit your speaker cab as there is no multi-tap option.



Wattkins.com	
<i>Universal PCB</i>	
Variation	18watt Litell"U"6V6
PCB Versions	V1.2
Date	05/09/2013
Author	Jamesrr

# Universal Superlite 6V6



## Preamp Tweak

C5 (& C15) may be adjusted to taste between 2.2uF & .68uF to provide more or less bass gain suited to modern higher output pickups  
 R29 "stock" is 820Ω but is changed to 680Ω to get characteristic asymmetric distortion from the MOSFET cathode follower.

## Power Transformer & Tube Rectifier

Tube rectifiers drop more voltage than Silicon Diode rectifiers. As such use a PT with a 280-350v CT secondary and use the Rectifier model to adjust the B+ as required. 5Y3's drop the most, then 5Z4, 5V4 & 5AR4's the least. Use whichever suits. If unsure, ASK in the forums !

Suitable Hammond, Ecor & ClassicTone models include :-

Hammond 290CAX, 290PAZ

Ecor XPWR189, 061, 044, 047

ClassicTone 40-18028, 40-18016 (120v mains) or 40-18017 (240v mains)

Hammond 290PAZ

290vCT@140mA

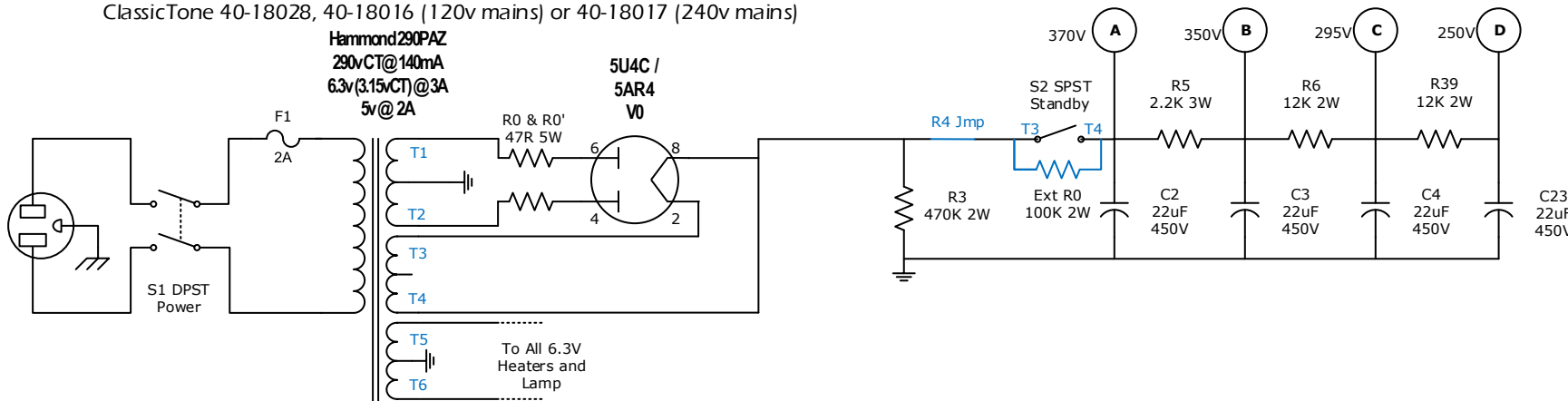
6.3v(3.15vCT)@3A

5v@2A

5U4C /

5AR4

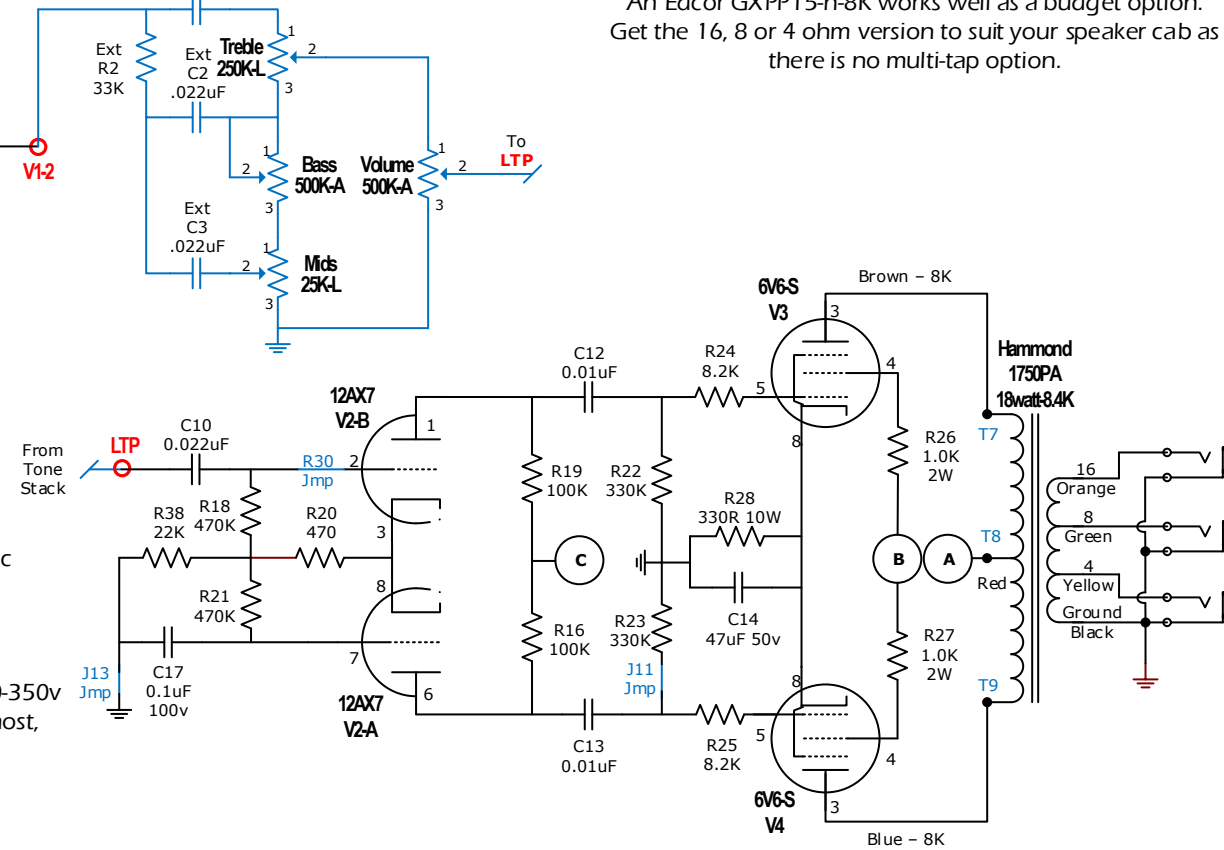
V0



## Output Transformer

Heyboer & ClassicTone "18watt" OTs provide a really authentic & great sounding tone with 16, 8 & 4 Ohms taps.

An Ecor GXPP15-n-8K works well as a budget option. Get the 16, 8 or 4 ohm version to suit your speaker cab as there is no multi-tap option.

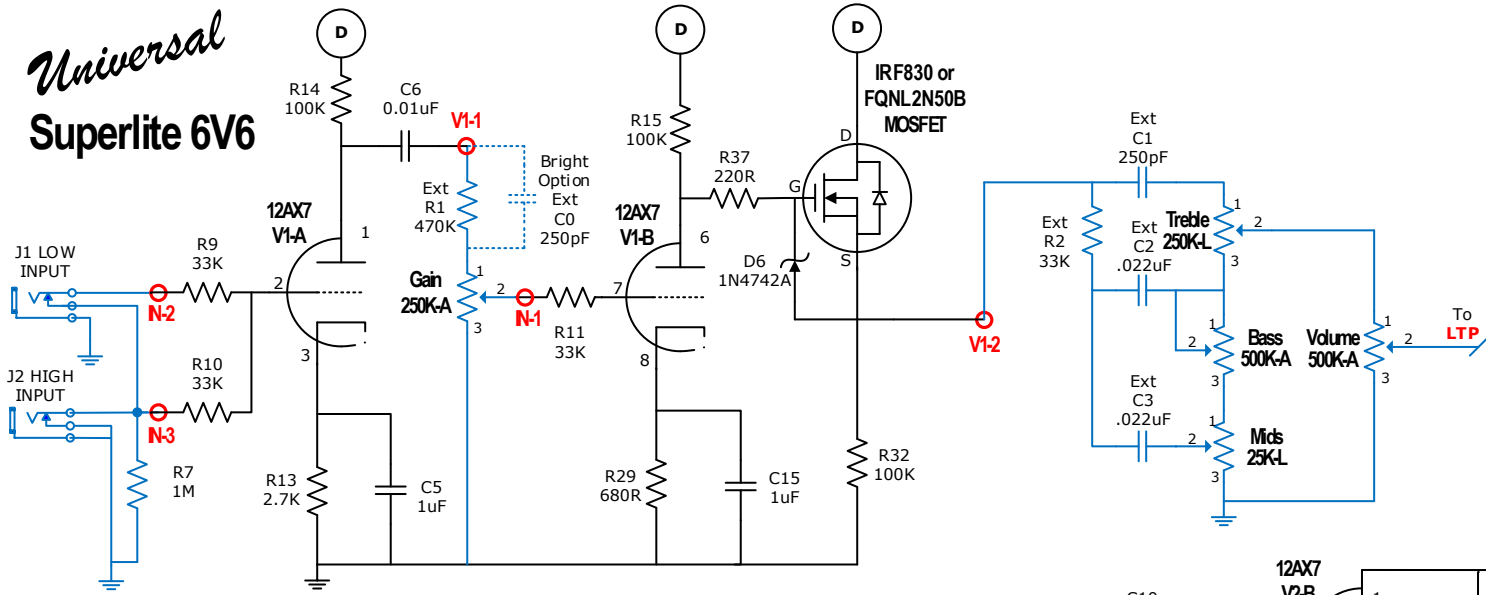


Wattkins.com

Universal PCB

Variation	18watt Superlite 6V6
PCB Versions	V1.2
Date	15/11/2013
Author	Jamesrr

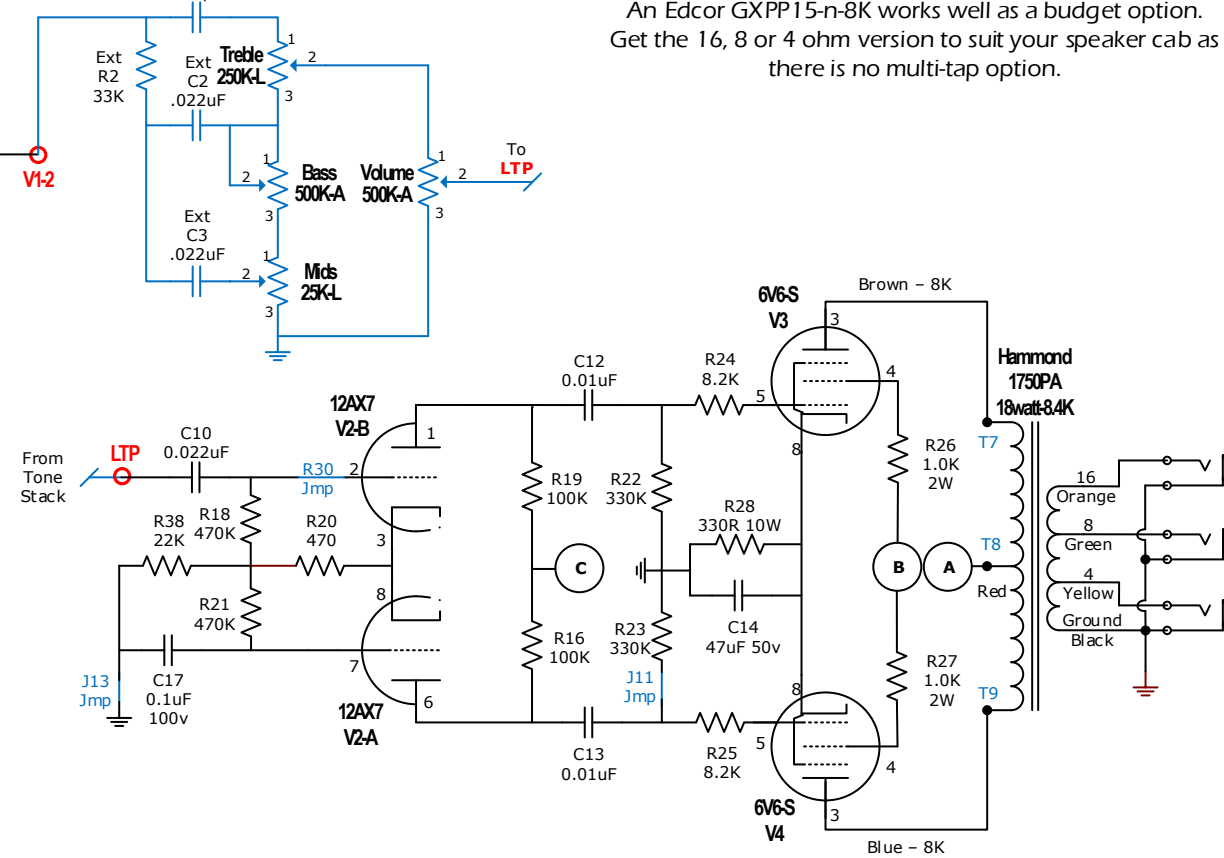
# Universal Superlite 6V6



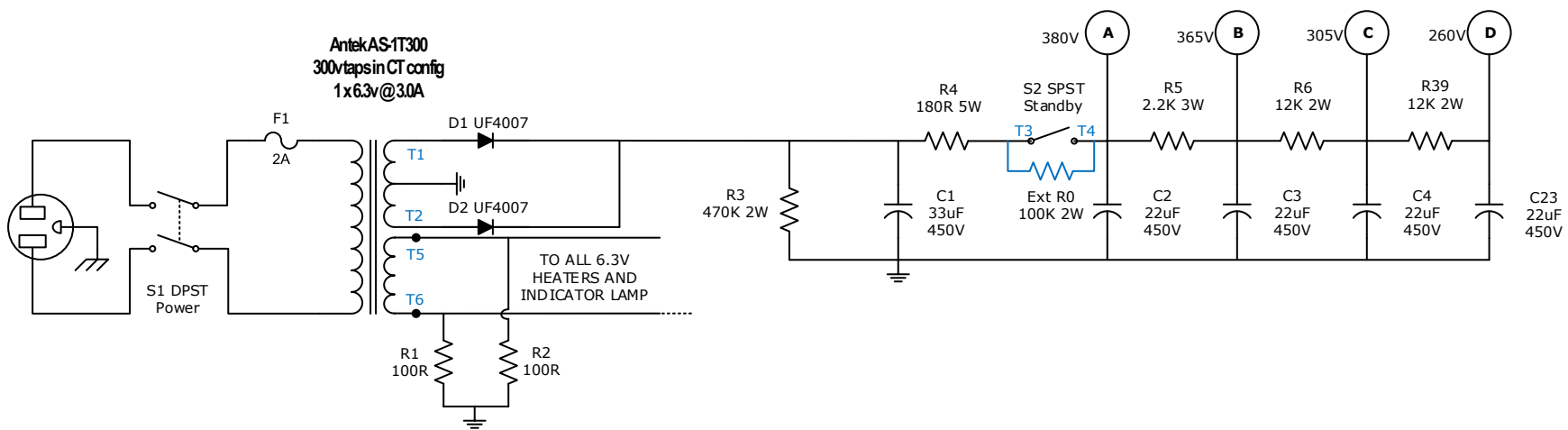
## Output Transformer

Heyboer & ClassicTone "18watt" OTs provide a really authentic & great sounding tone with 16, 8 & 4 Ohms taps.

An Ecor GXPP15-n-8K works well as a budget option. Get the 16, 8 or 4 ohm version to suit your speaker cab as there is no multi-tap option.

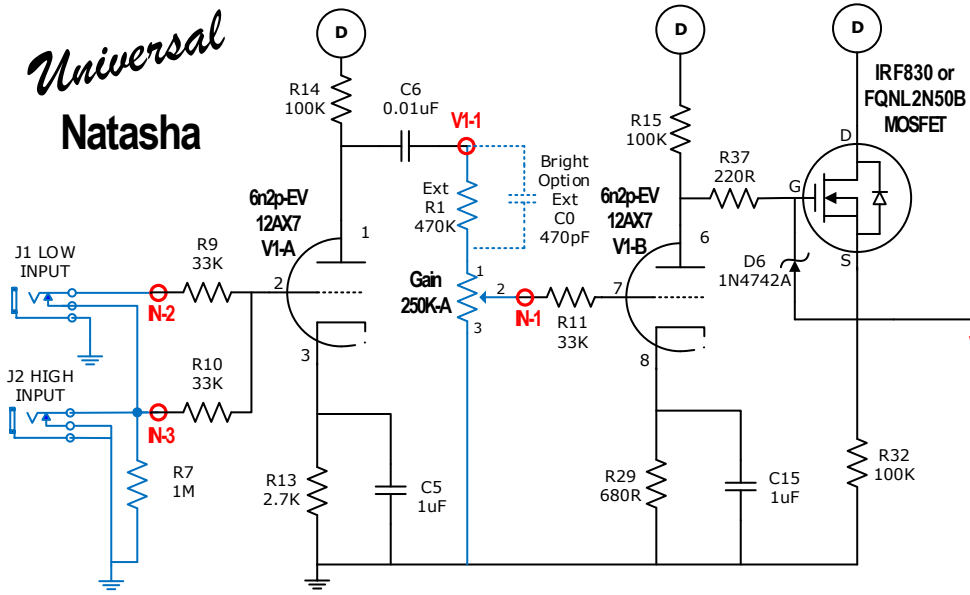


AntekAS-1T300  
300vtaps in CT config  
1x6.3v@3.0A



Wattkins.com	
Universal PCB	
Variation	18watt Superlite 6V6
PCB Versions	V1.2
Date	15/11/2013
Author	Jamesrr

# Universal Natasha

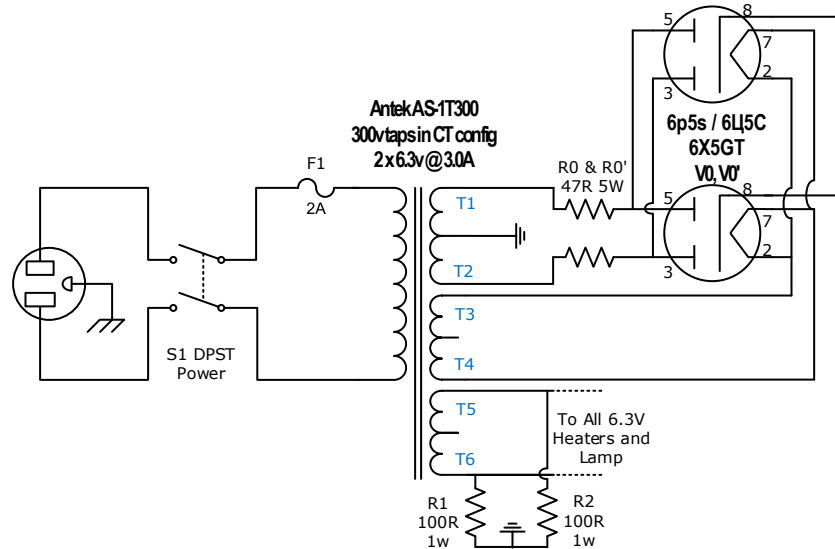


### Preamp Tweak

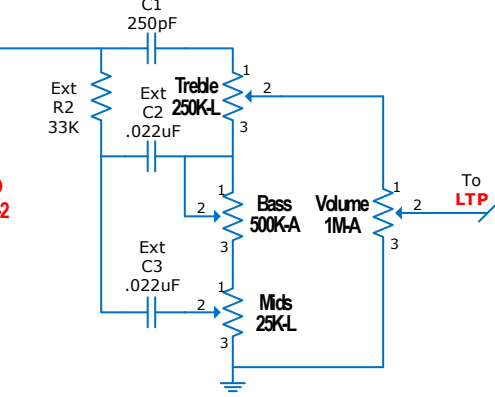
C5 (& C15) may be adjusted to taste between 2.2uF & .68uF to provide more or less bass gain suited to modern higher output pickups. R29 "stock" is 820Ω but is changed to 680Ω to get characteristic asymmetric distortion from the MOSFET cathode follower.

### Power Transformer & Dual Rectifier

An EZ81 tube rectifier would be the 'natural' choice for a 6.3v heater tube rectifier with a pair of 6p6s ( 6V6 ) power tubes however I have shown use of the Russian 6p5s (AKA 6X5GT) rectifiers in keeping with the "Soviet Surplus Tube" vibe. The Antek AS-1T300 dual 6.3v taps allow for a very cost effective Tube Rectified solution.



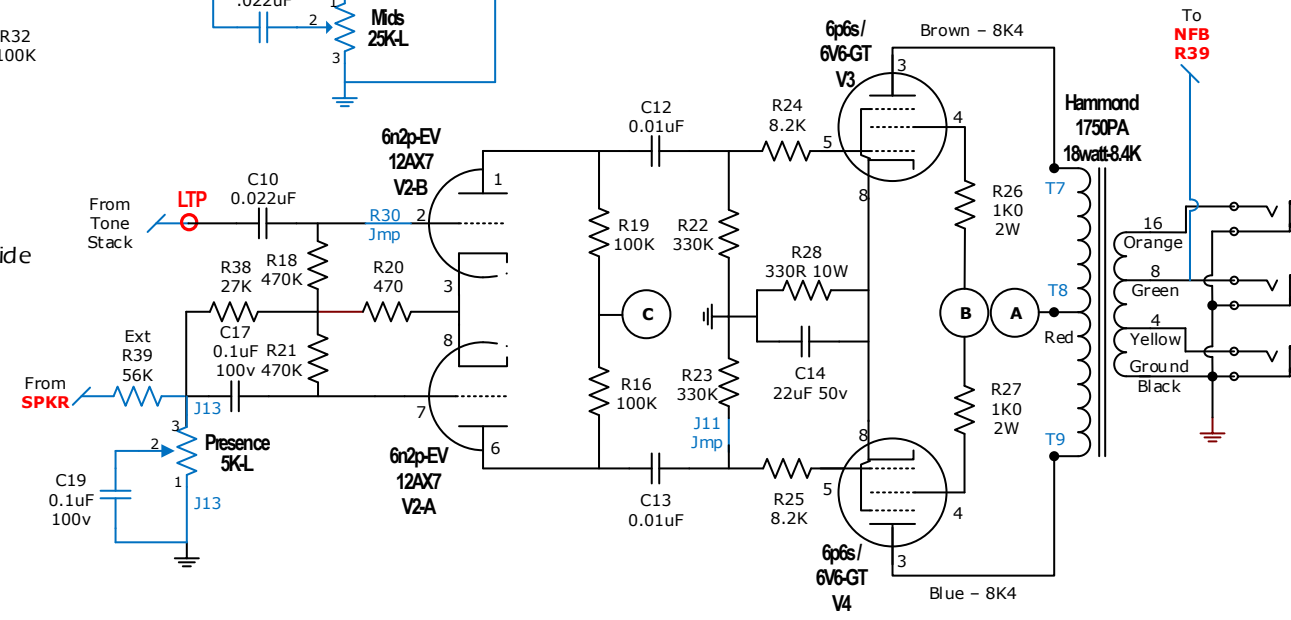
**6n2p Pre-Amp tubes**  
Take care if using the Soviet 6n2p / 6n23p (ECC88 etc) style valves as they are 6.3v heater tubes only (unlike the 12AX7 style tubes) and are wired differently on the PCB. Ensure you install the correct jumpers for the tube type you are intending to use !



### Output Transformer

Hammond, Heyboer & ClassicTone "18watt" OTs provide an authentic & great sounding tone with 16, 8 & 4 Ohms taps.

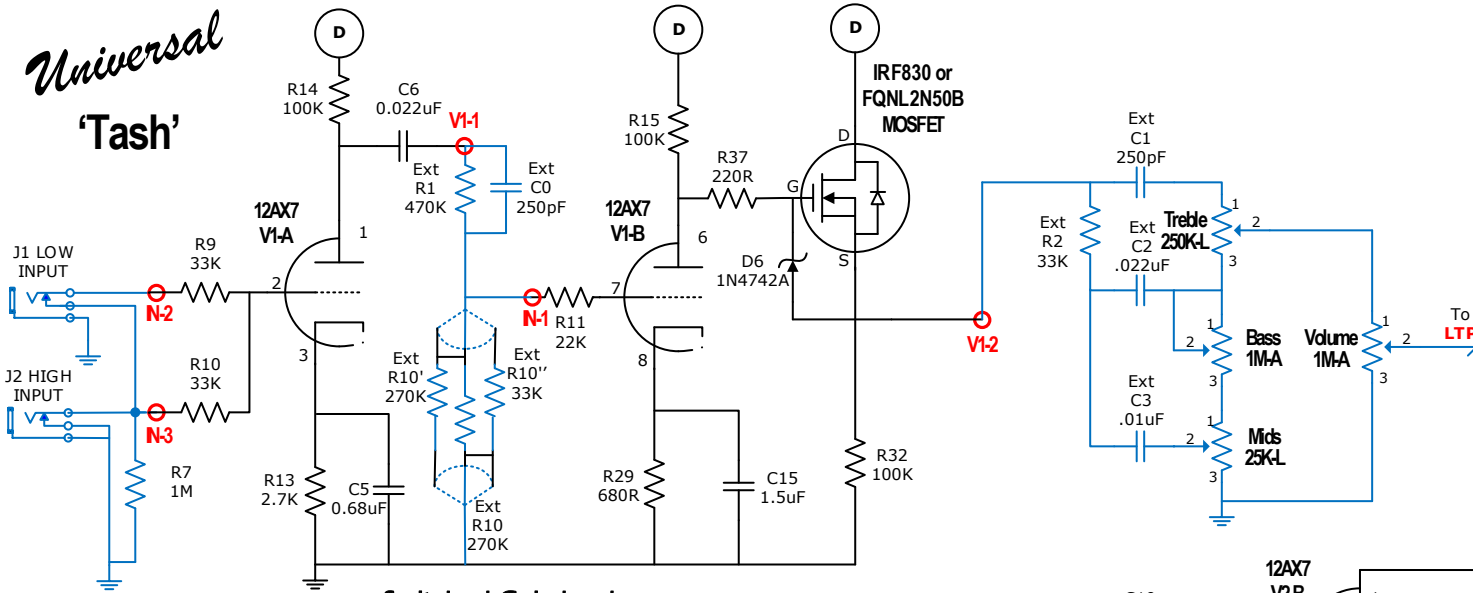
An Ecoror GXPP15-x-8K provides a good quality cost effective option if using an Ecoror power TX (such as the XPWR121).



Wattkins.com	
Universal PCB	
Variation	Natasha 6p6s "18 watt"
PCB Versions	V1.2
Date	11/05/2016
Author	Jamesrr

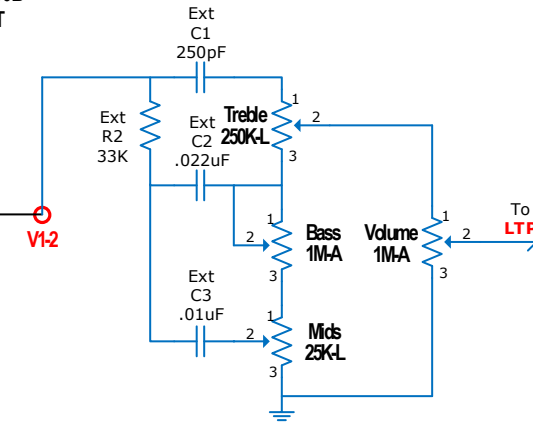


# Universal 'Tash'

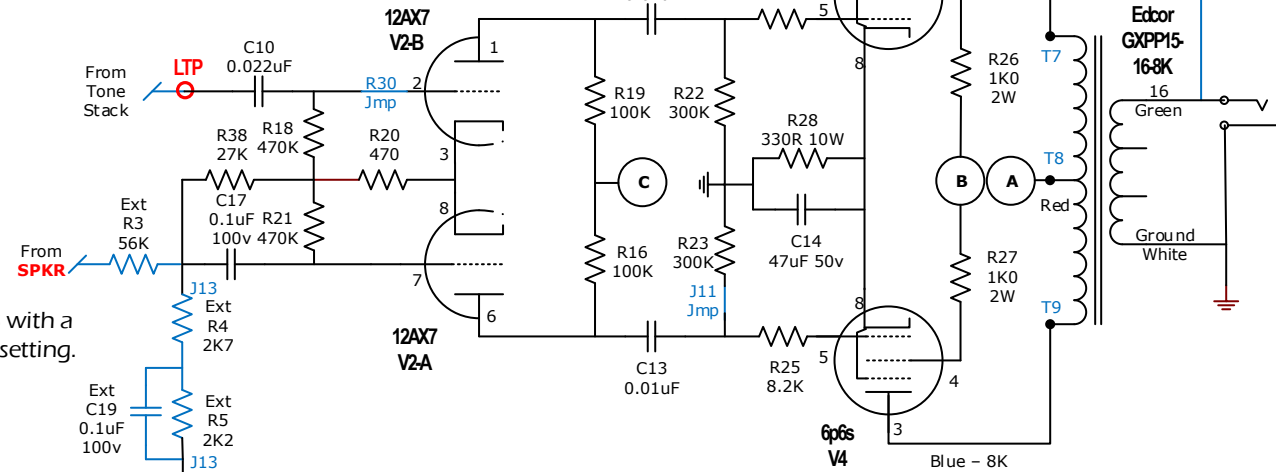


### Switched Gain levels

Rather than a Gain Pot, Tash uses a DPDT Centre On switch to provide 3 gain levels, Mild, Moderate and Mad...



**Output Transformer**  
 'Tash' was built with an Edcor GXPP15-x-8K, a good quality cost effective option.

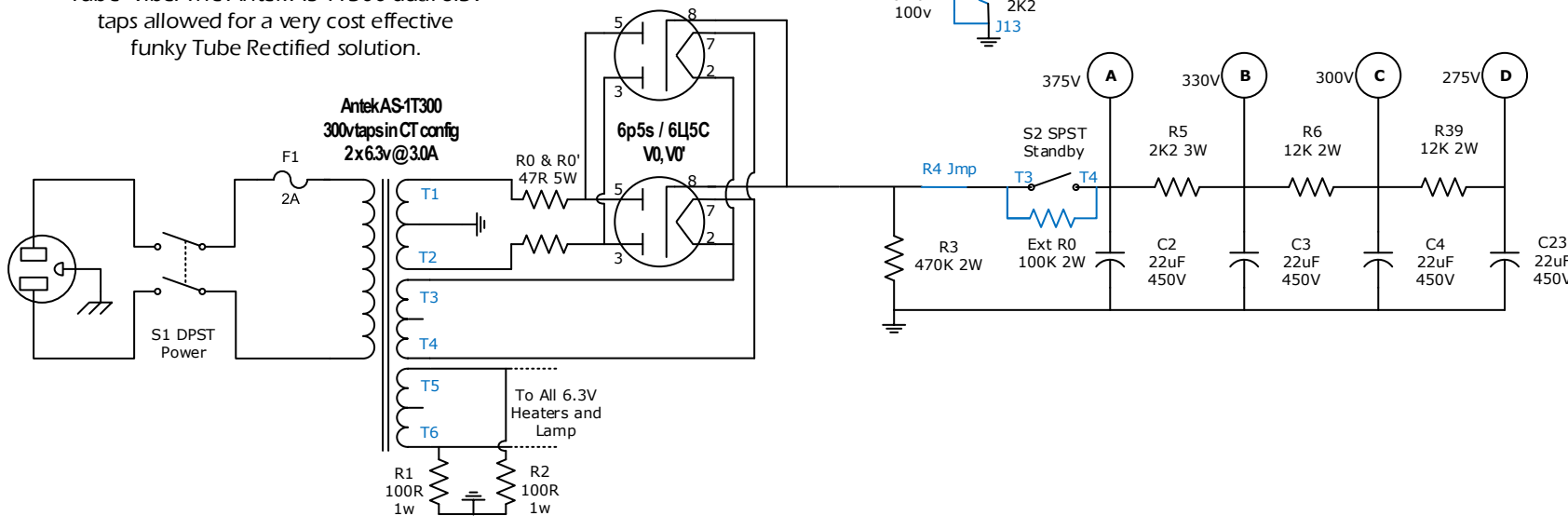


### Power Transformer & Dual Rectifier

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

### NFB / Fixed 'Presence'

'Tash' uses moderate NFB with a 'fixed' medium 'Presence' setting.

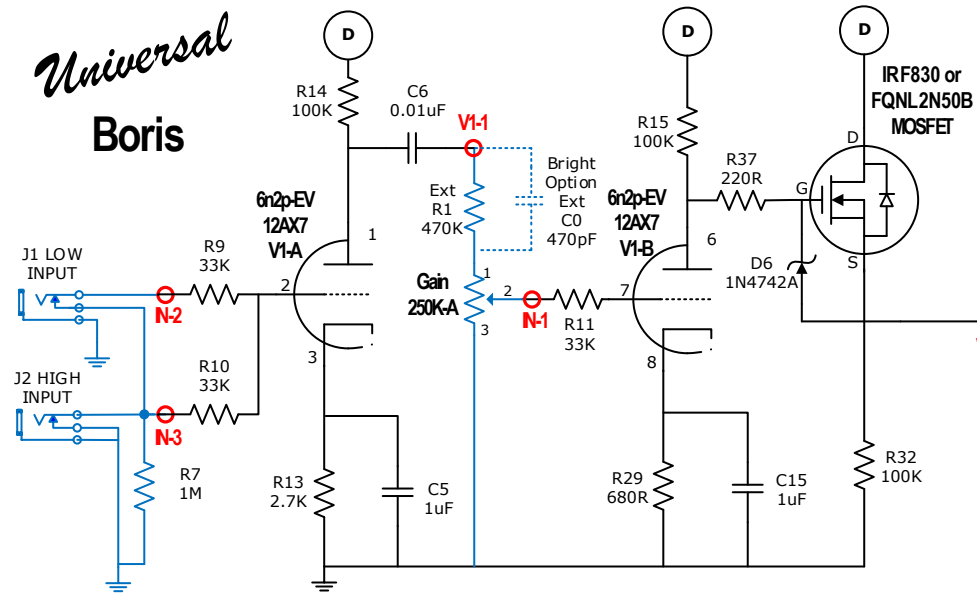


Wattkins.com

Universal PCB

Variation	Tash 6p6s "14 watt"
PCB Versions	V1.2
Date	11/05/2016
Author	Jamesrr

# Universal Boris

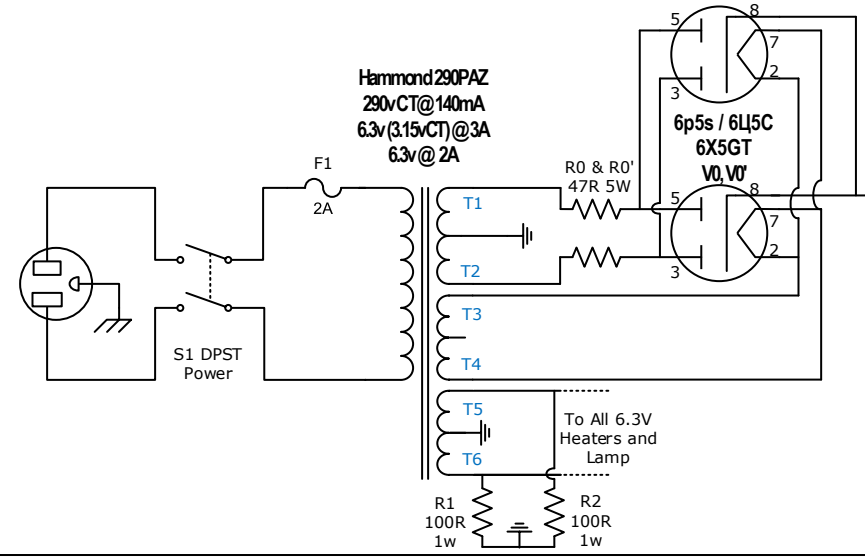


### Preamp Tweak

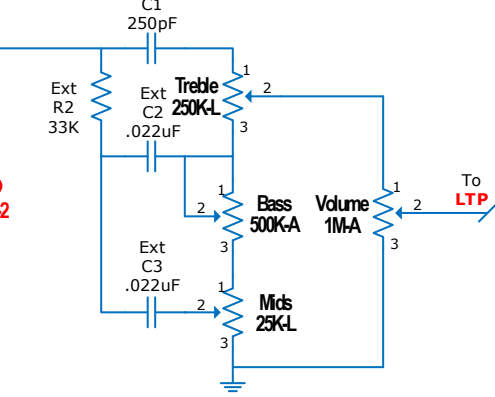
C5 (& C15) may be adjusted to taste between 2.2uF & .68uF to provide more or less bass gain suited to modern higher output pickups. R29 "stock" is 820Ω but is changed to 680Ω to get characteristic asymmetric distortion from the MOSFET cathode follower.

### Power Transformer & Dual Rectifier

Whilst an EZ81 tube rectifier will just handle the current draw of the pair of 6L6s biased as in this circuit, it will drop too much voltage. The pair of Russian 6P5S (AKA 6X5GT) rectifiers will handle the current and drop far less voltage to allow the power stage to work effectively. Use the 6.3v tap of the combined 5v/6.3v tap for the heater supply of these rectifiers. Alternatively use a single 5AR4 rectifier with the 5v heater supply. Voltages will be comparable.

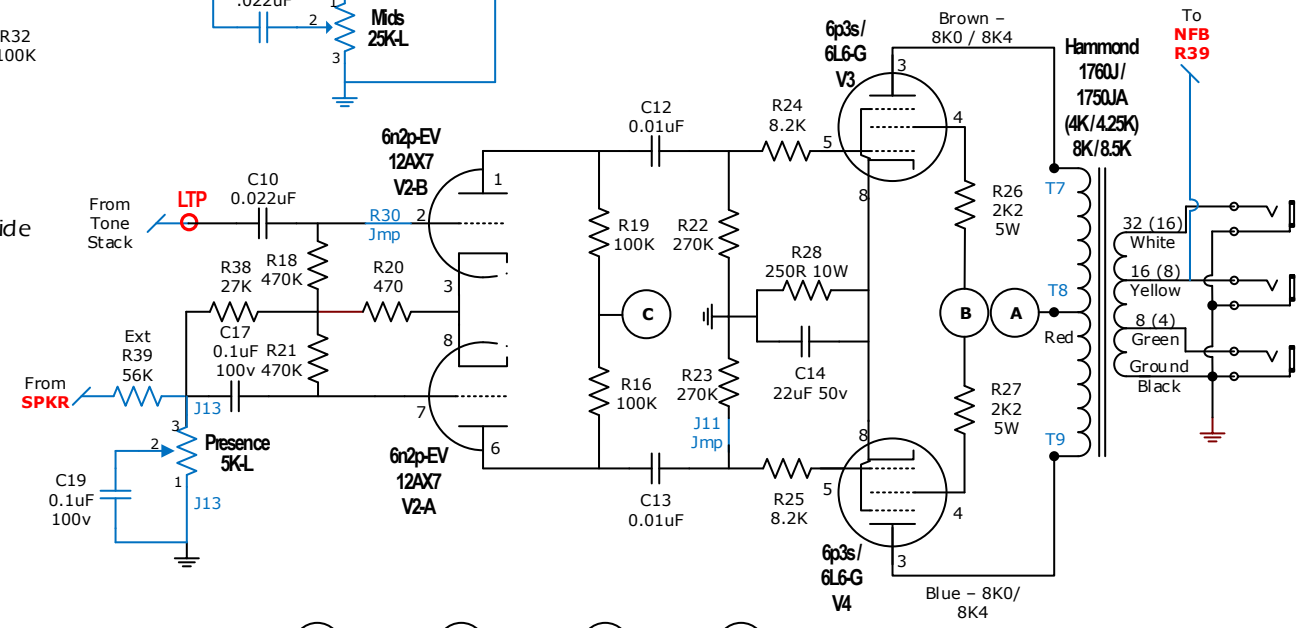


**6n2p Pre-Amp tubes**  
Take care if using the Soviet 6n2p / 6n23p (ECC88 etc) style valves as they are 6.3v heater tubes only (unlike the 12AX7 style tubes) and are wired differently on the PCB. Ensure you install the correct jumpers for the tube type you are intending to use !



### Output Transformer

Required OT should handle around 25watts with a 8 – 9K primary load.  
The Hammond 1760J and 1760JA come with 16, 8 & 4 and 8 & 4 Ohms taps @ 4K / 4.25K so you use the double impedance speaker to get the appropriate 8K load, i.e a 16 Ohm speaker on the 8Ohm tap.  
An Ecor CXPP21-MS-8.6K provides a rich full toned option with 16, 8 & 4 speaker taps.

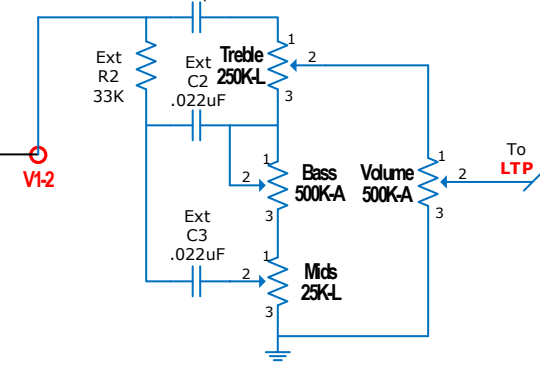
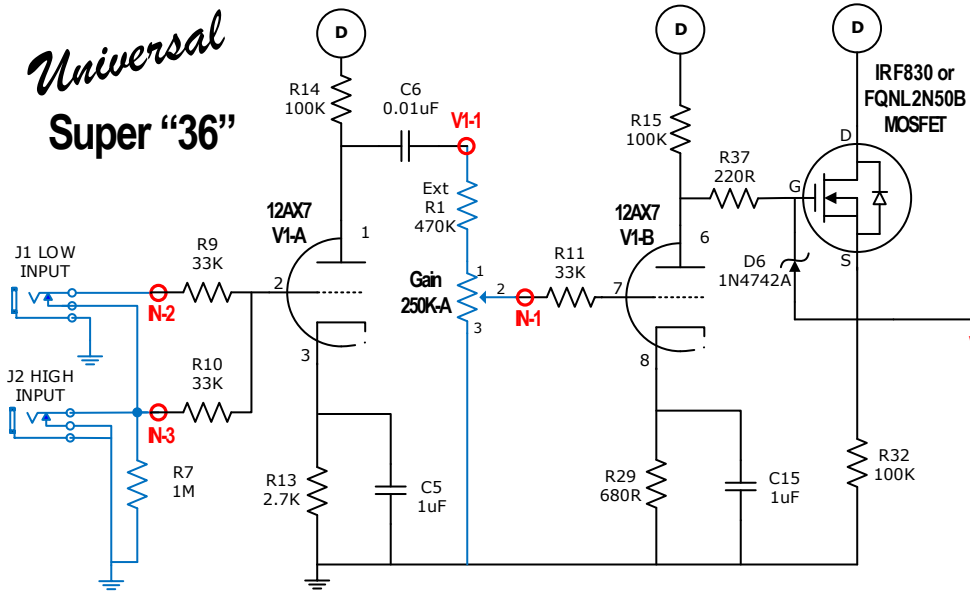


Wattkins.com

Universal PCB

Variation	Boris 6p3s / 6L6 "24 watt"
PCB Versions	V1.2
Date	11/05/2016
Author	Jamesrr

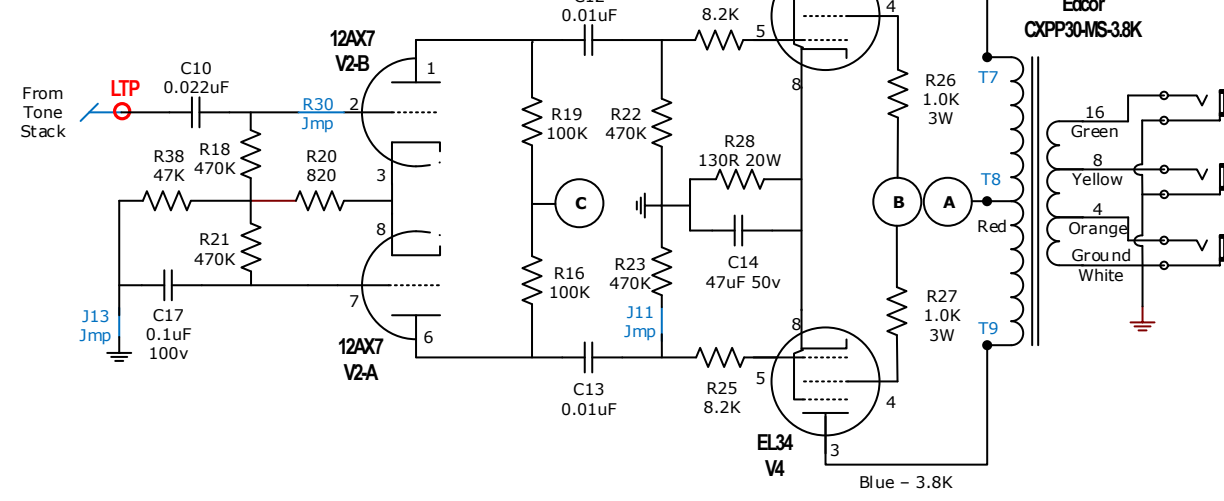
# Universal Super "36"



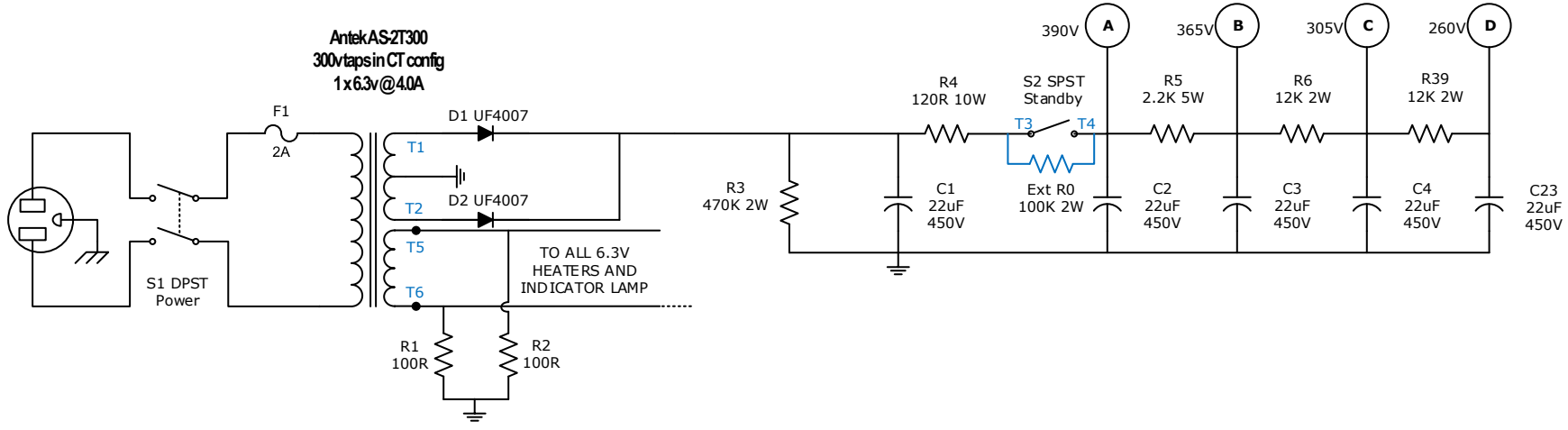
## Output Transformer

An Ecor CXPP30-MS-3.8K provides a rich high quality experience and supports 16, 8 or 4 ohm speaker cabs. The Ecor CXPP45-MS-6.6K could also be used by using 1/2 impedance cabs, i.e. an 8 Ohm cab into the 16 Ohm jack or a 4 into the 8.

Many other reputable OT suppliers such as Heyboer & ClassicTone provide suitable OTs handling around 35 watts at a 3.3K-4K load. ClassicTone examples would be the 40-18025 or 40-18064 (at 1/2 impedance).

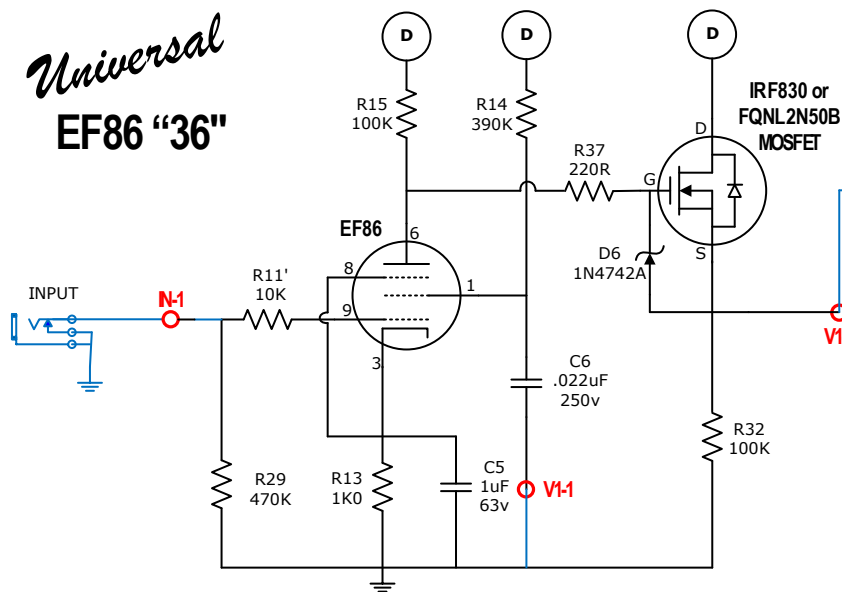


AntekAS2T300  
300vtaps in CT config  
1x6.3v@4.0A



Wattkins.com	
Universal PCB	
Variation	36watt Superlite EL34
PCB Versions	V1.2
Date	15/01/2014
Author	Jamesrr

# Universal EF86 "36"

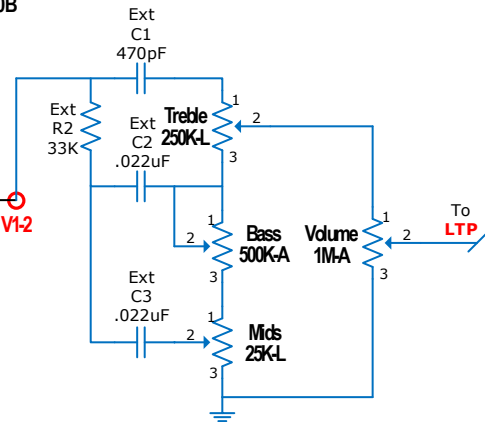


## EF86 Tweaks

EF86 data sheets quote recommended component values that can give very high voltage gain (up to 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 the risk of microphonics and frustration!

## MOSFET cathode Follower

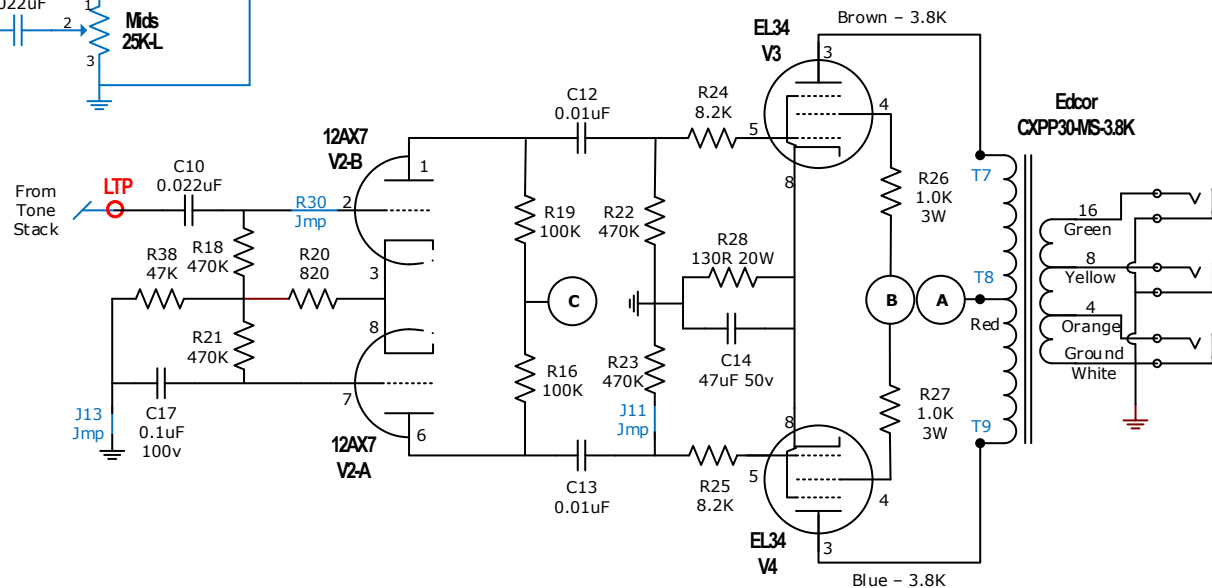
Pentode pre-amp tubes are not renowned for their ability to drive a high loss tonestack like a full TMB. The MOSFET cathode follower is used to facilitate this.



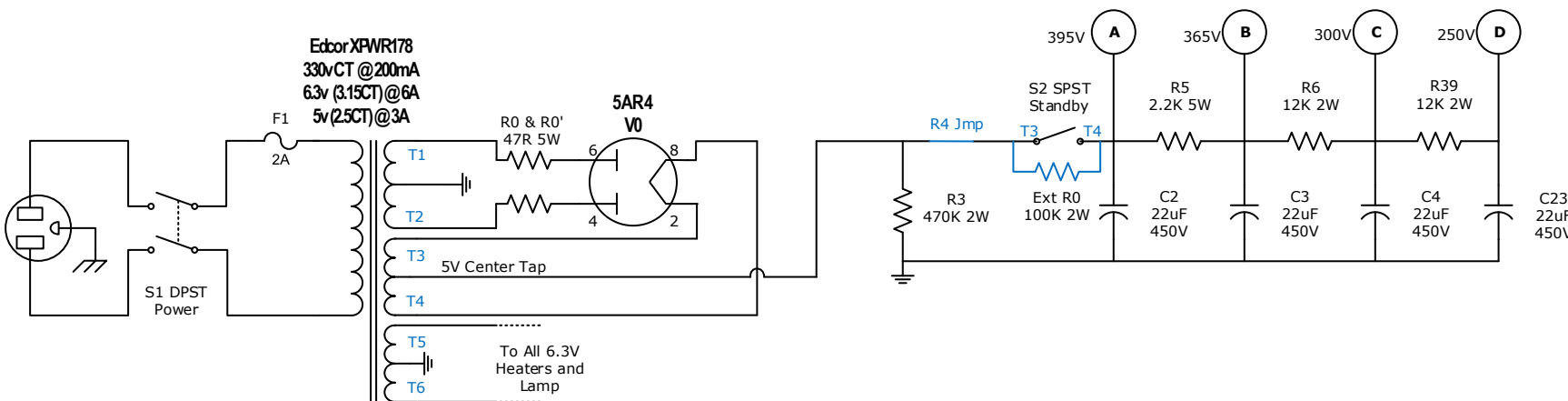
## Output Transformer

An Ecor CXPP30-MS-3.8K provides a rich high quality experience and supports 16, 8 or 4 ohm speaker cabs. The Ecor CXPP45-MS-6.6K could also be used by using 1/2 impedance cabs, i.e. an 8 Ohm cab into the 16 Ohm jack or a 4 into the 8.

Many other reputable OT suppliers such as Heyboer & ClassicTone provide suitable OTs handling around 35 watts at a 3.3K-4K load. ClassicTone examples would be the 40-18025 or 40-18064 (at 1/2 impedance).



Ecor XPWR178  
330vCT @ 200mA  
6.3v (3.15CT) @ 6A  
5v (2.5CT) @ 3A

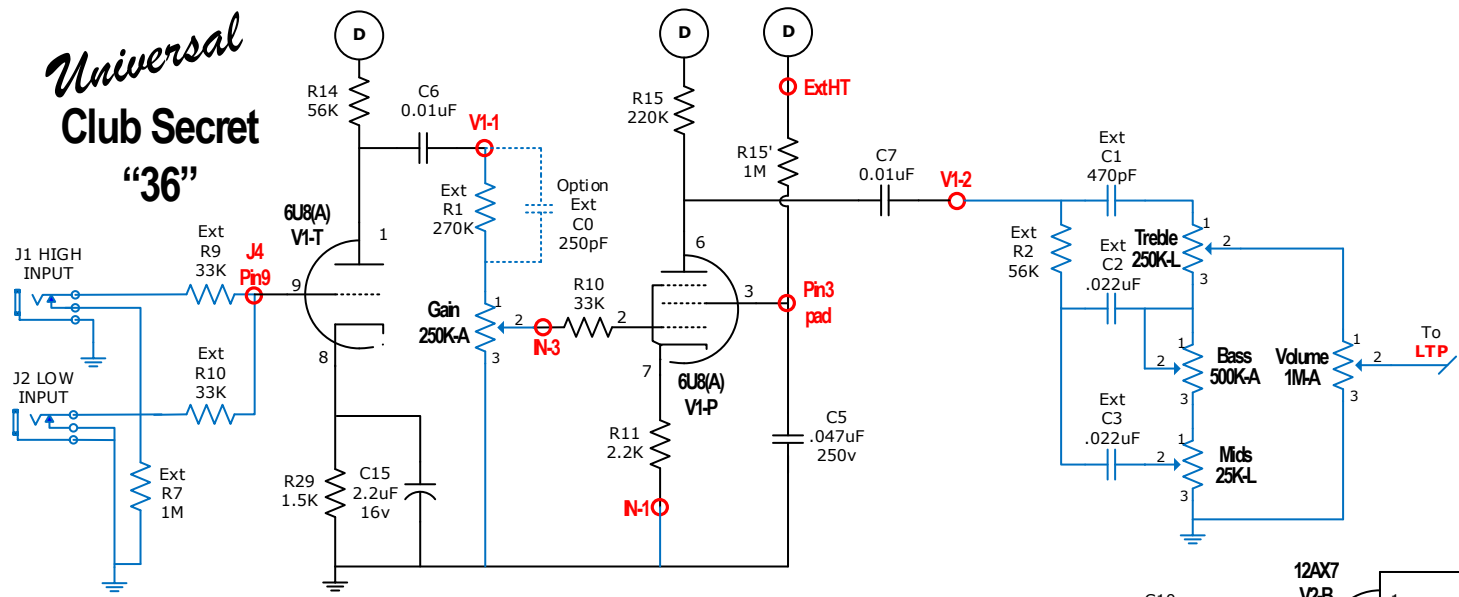


Wattkins.com

Universal PCB

Variation	EF86 36watt EL34
PCB Versions	V1.2
Date	15/01/2014
Author	Jamesrr

# Universal Club Secret "36"



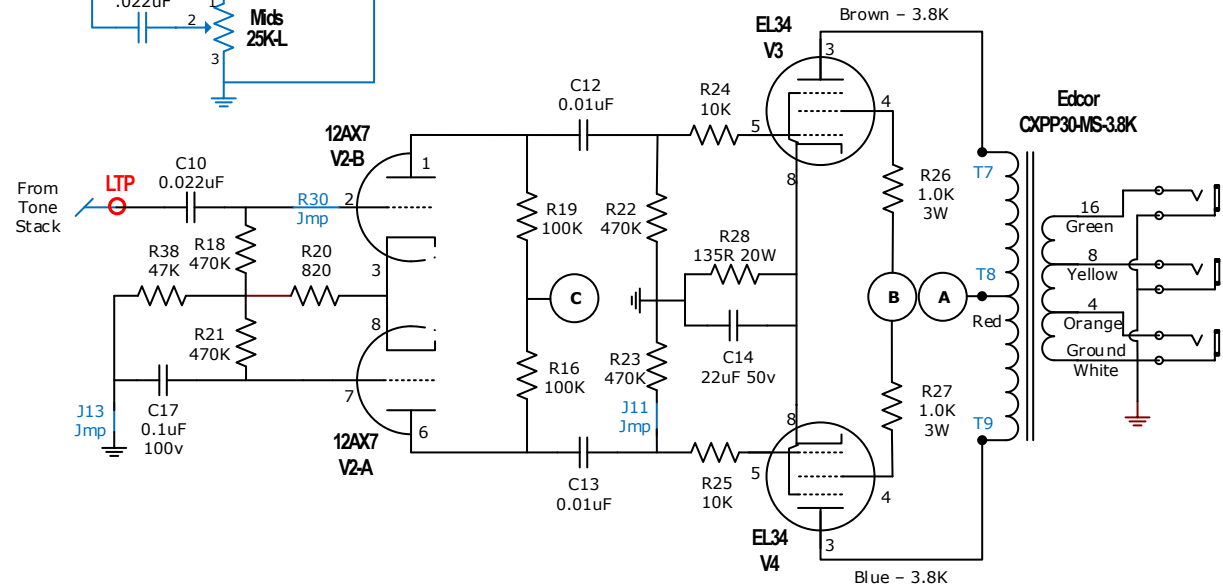
## Preamp Tweak

6U8(A) Triode/Pentode values are well tested and very usable. C15 bypass cap on the Triode 1<sup>st</sup> gain stage boosts the mids & highs & may be put on a footswitch for a simple boost effect.

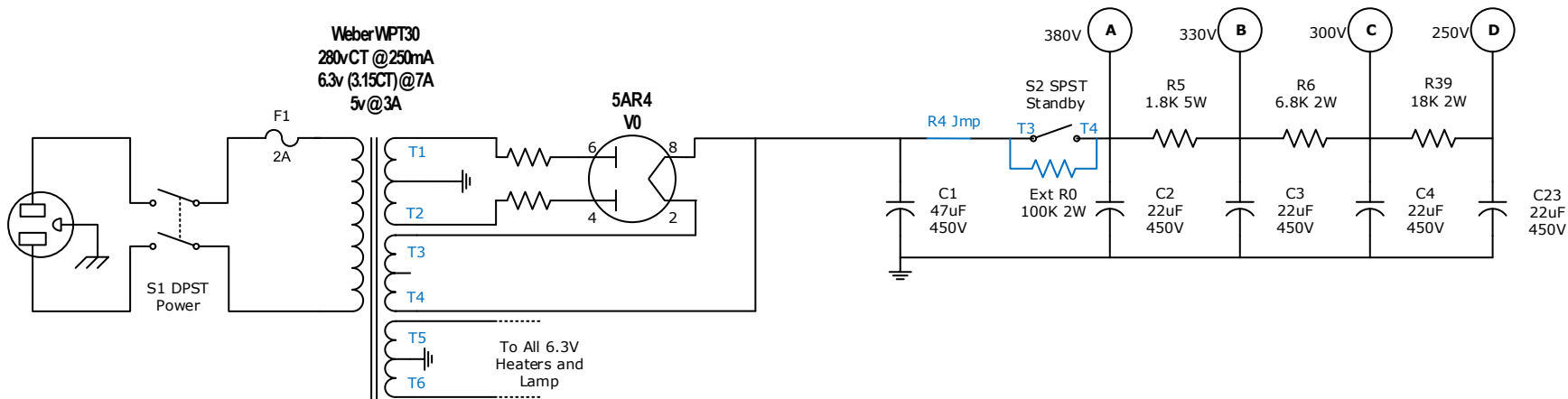
### Output Transformer

An Ecor CXPP30-MS-3.8K provides a rich high quality experience and supports 16, 8 or 4 ohm speaker cabs. The Ecor CXPP45-MS-6.6K could also be used by using 1/2 impedance cabs, i.e. an 8 Ohm cab into the 16 Ohm jack or a 4 into the 8.

Many other reputable OT suppliers such as Heyboer & ClassicTone provide suitable OTs handling around 35 watts at a 3.3K-4K load. ClassicTone examples would be the 40-18025 or 40-18064 (at 1/2 impedance).

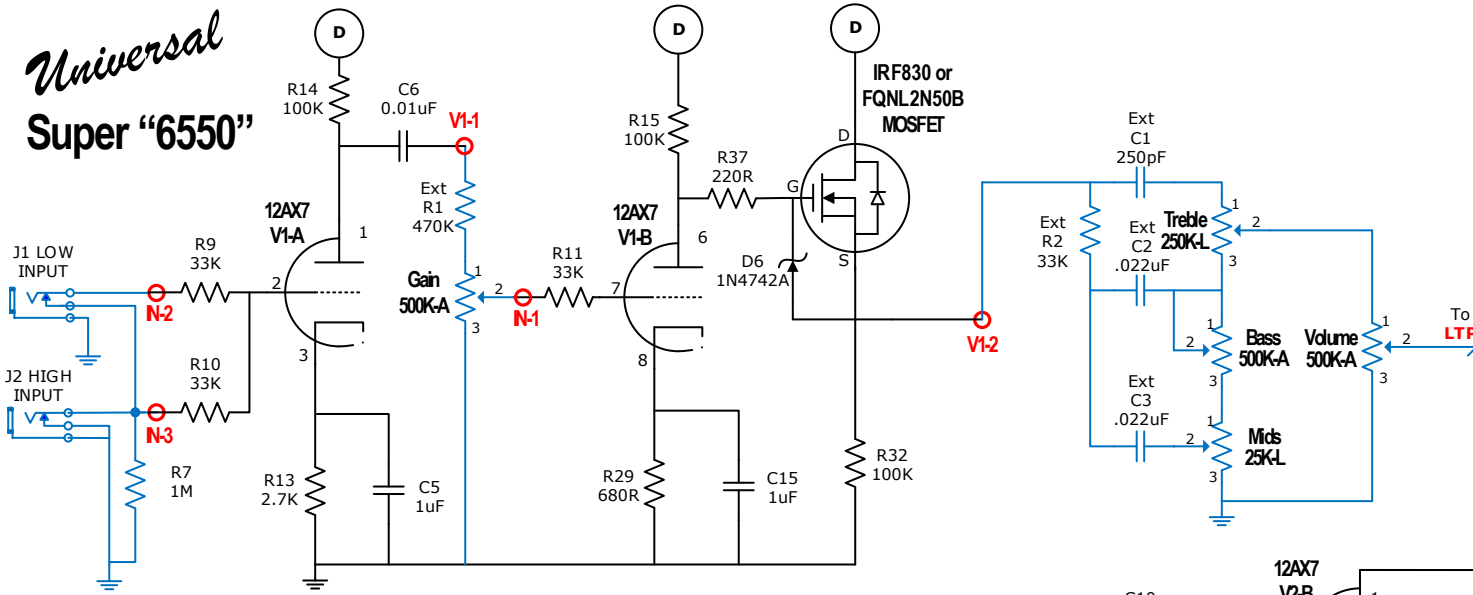


Weber WPT30  
280vCT @250mA  
6.3v (3.15CT)@7A  
5v@3A



Wattkins.com	
Universal PCB	
Variation	SuperSecret 36watt
PCB Versions	V1.2
Date	15/01/2014
Author	Jamesrr

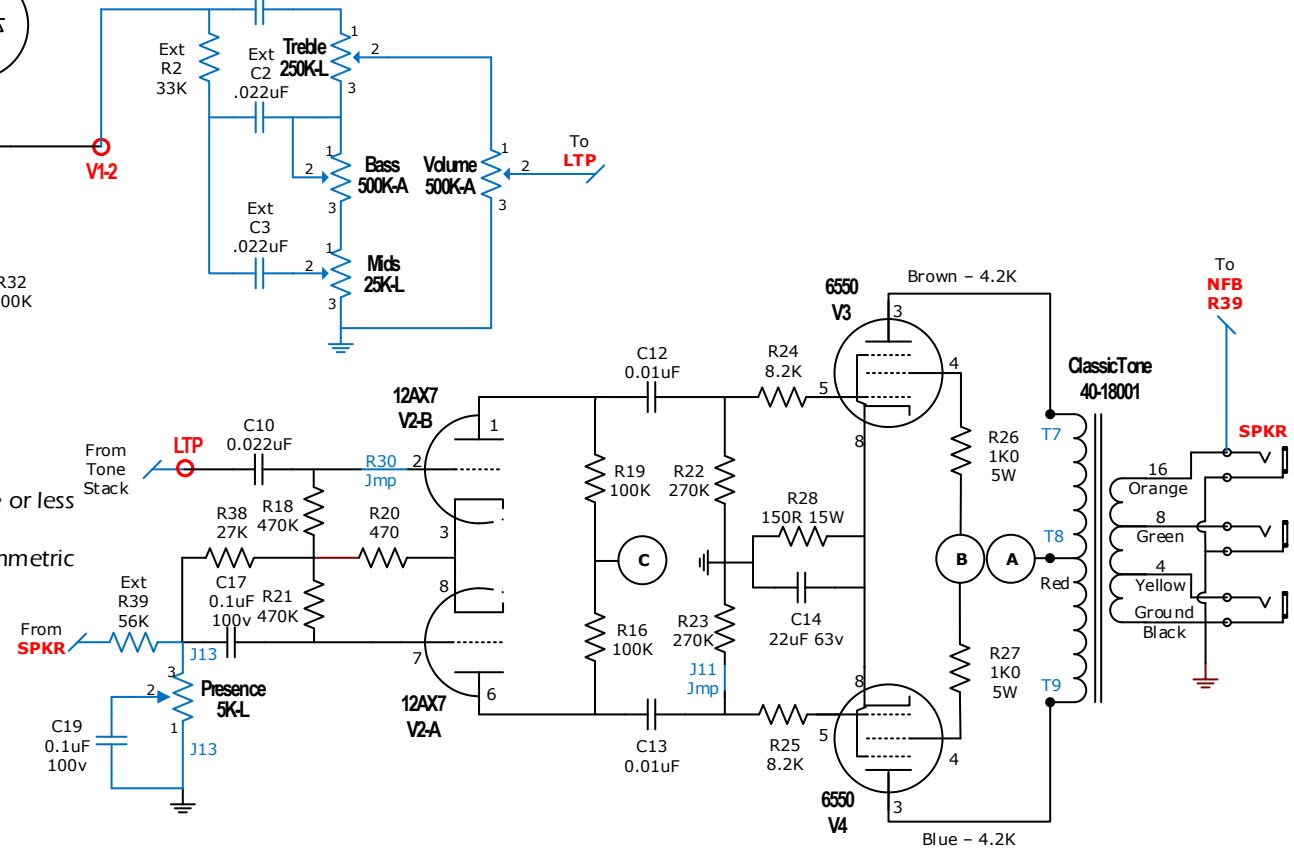
# Universal Super "6550"



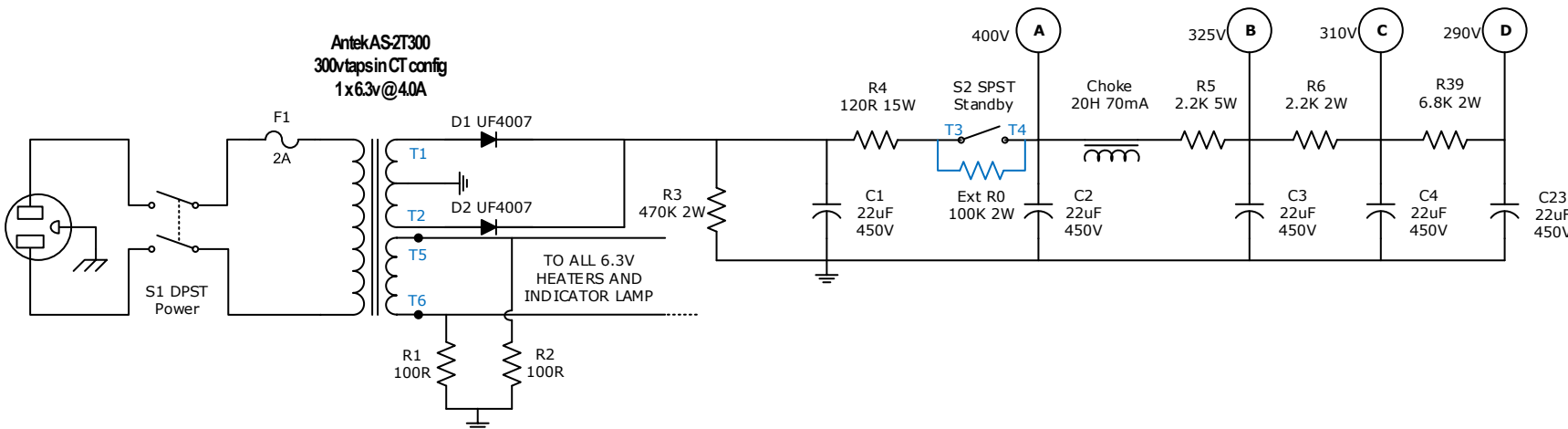
C5 may be adjusted to taste between 4.7uF & .68uF to provide more or less bass gain suited to modern higher output pickups.  
 R29 "stock" is 820Ω but is changed to 680Ω to get characteristic asymmetric distortion from the MOSFET cathode follower.

## Output Transformer

The ClassicTone 40-18001 is a suitable OTs handling around 50-60 watts at a 4.2K load with 4, 8 & 16 Ohm speaker taps.



AntekAS2T300  
 300vtaps in CT config  
 1x6.3v@4.0A



Wattkins.com

Universal PCB

Variation	Super 6550
PCB Versions	V1.2
Date	9/03/2016
Author	Jamesrr