Test Point tip Jacks (in red):
TP1A – red/blk – 300B filament voltage 1
TP1B – red/blk – 300B filament voltage 2
TP2A – blu/yel – 300B pass current 1
TP2B – blu/yel – 300B pass current 2
TP3 – blu/yel – driver tube pass current
TP4 – blu/yel – bias voltage
TP5 – red/yel – 300B anode voltage
TP6 – red/yel – B+ voltage
TP7 – red/yel – driver B+ voltage
TP8 – red/yel – driver anode voltage
TP9 – grn chassis (mains) ground
TP10 – yel circuit ground
TP11 – driver cathode voltage

Switches:
1) S1 Input select
2) S2 Volume defeat
3) S3 Mute
4) S4 Speaker / headphone
all switches are implemented with relays (except headphone switch)
All LED indicators are powered from umbilical pins 4,6 12V.

Calibration Procedure (verify this after buid):
TP6 – set PSU to 0V
TP4 – set coarse bias fully counter clockwise (max negative bias)
TP1A – set Coleman to 5V
TP1B – set Coleman to 5V
TP6 – set PSU to 380V
TP2A and TP2B – set coarse bias so these are nearly matched at .07V
TP2A and TP2B – set fine bias so these are nearly matched at .07V
Repeat above two steps as needed to get .07V as matched as possible
TP3 – verify driver current it should be about .02V
TP4 – verify bias voltage it should be about -85V (verify after)?
Verify all other test points for reasonableness

LL1660 Wiring for 20mA 1 : 2.25

Alt. T 2 : 4.5 Single End to Single End Interstage

5842 Base

BOTTOM VIEW

380V B+ (loaded)

TP6

Decouple umbilical pin 2 at umbilical entry point with MKP

C5 40uF MKP

left/right circuit grounds are separate.

male

TP10 yel

TP9 grn

locate star grounds near input jacks

circuit gnd

chassis gnd

set autoformer to + 380V here with amp load

24-36 inch umbilical

female

bias

to IEC

C6 .022uF 630V

R12 10R 5W House ground PCB

front panel lamps "bias" and "anode"

All Hammond chokes

158T 1H 40R 300mA (x2)

193MP 10H 79R 300mA

Choke input

barrier block

Capacitor input

choose PSU mode type jumper

1.2M

227K 3W

82K

40uF MKP 1kV

40uF MKP 1kV

40uF MKP 1kV

.22-.68uF Wima MKP10 2kV

40uF MKP 1kV

Install 2 tube sockets
< 200mA plug in one 5AR4.
> 200mA plug in two 5AR4.

BY255

5AR4

T1 Custom Toroidy step up

620v 350mA

5v 8A

2A slo blo

Variable anode supply

autoformer PSV-203-R 0-130V 320VA

Predicted output voltages with 100mA load:

Choke input mode:
0 to ~ 600 volts variable

Capacitor input mode:
0 to ~ 900 volts variable

Shutdown logic from amp.

11

Protection shutdown relay (future TBD)

TBD slo blo

Bias supply PCB

33R 3W

12V .5W

100R

STP4NK50Z

gyrator choke 155H 66R

1A 600V bridge

220uF 200V

470K

470K

220R

10uF

150uF 200V

100uF 200V

Bias Supply is varable in the amp chassis

90v 50mA

PCB's shown in yellow all other wiring is point to point.

Driver filament and relay/fan/ LED/misc supply

front panel lamps "cathode"

510R

+6.3V

0V

-6.3V

LT1084 regulated dual supply PCB board set to 6.3-0-6.3V @ 2.5A (minimum) (stock board Millett, Tubecad, etc. or build)

LV regulator PCB

7v 3.5A

7v 3.5A

22kuF 16V

1uF 630V

KBL04

DC blocker PCB

DC blocker on/ off

Raw DC supply PCB

8V twisted pair in pin 12 shield

330R

15000 uF

15000 uF

.33 - .47

1N5822

7v 3.5A

8V twisted pair in pin 12 shield

330R

15000 uF

15000 uF

.33 - .47

1N5822

7v 3.5A

front panel lamps "cathode"

T2 Custom Toroidy step down

soft start PCB board (ebay)

100K

front panel "power" lamp

20A toggle

slo blo (TBD)

120v

neutral

load

12

Ideally plug each PSU into opposing phase legs of a dedicated 240V house outlet (USA).

Grounds:
⏚ circuit ground
safety ground

Umbilical from PSU enclosure pin numbers: Duplicate PSU for left and right channels

Usage:
1) Circuit ground B+ NEG, bias POS
2) B+ V POS (300 mA) (unreg)
3) -neg V BIAS (25 mA) (unreg)
4) 6.3 V POS (2.5 A) (reg)
5) 0 V
6) 6.3 V NEG (2.5 A) (reg)
7) 8 V POS (3 A) (unreg)
8) 8 V NEG
9) 8 V POS (3 A) (unreg)
10) 8 V NEG
11) Protection shutdown data wire
12) safety ground

Wire sizes:
Pin 1 - circuit ground (B+ negative and bias positive) (18AWG)
Pin 2 - B+ variable (20 AWG)
Pin 3 - neg bias -100V (22 AWG)
Pins 4-6 - are a split 12.6 V (6.3-0-6.3) regulated supply for the driver filament, relays, LED indicators, fan, remote, etc. (18 AWG)
Pins 7-10 - are two separate floating unregulated supplies for the Coleman regulators. (18 AWG)
Pin 11 – Auto shutdown logic wire (future)
Pin 12 - grounds this chassis and amp chassis to mains ground. Braided shield enclosing pins 7-10 wires.

Silver Teflon wire except pin 12 is a tinned copper shield.

Umbilical pins
WEIPU WS28 TQ+Z M28
WEIPU WS28 TQ+Z
rated 700VDC

n Indicates pins

Pin 12 in the umbilical is a braided shield (safety ground). It also shields these noisier raw DC feeds.

Dual Mono Powered Parallel SE 300B with Tube Rectified Variable Power Supply

DRAFT! Windcrest77
2025/05/03

STEREO AMPLIFIER ENCLOSURE (x1)
POWER SUPPLY ENCLOSURE (x2)

Float RCA grounds away from the chassis!

A (rca)

B (rca)

Connect XLR ground to the chassis (mains) ground!

C (xlr)

S1 panel lamps

S2

S3

T1 Jensen JT-11P4-1 1 : 1.414

red

brn

whi

yel

org

blk

R1 1K

C1 1uF

R2 25K

R3 50K

R4 470K

lift

gnd

Ground XLR pin 1 shield to the chassis safety ground! NOT the B+ circuit ground.

12

PSU shutdown signal

11

Arduino protection monitors amp for bias etc. sends power cut if needed.

C3 40uF MKP

TP7

20mA

R8 10K Mills

140mA

T2 LL1660 10mA 1 : 2.25

T3 Toroidy KT88PSE 1.5K 300mA

green

white

red

black

blue

S4 sp / hp

6PDT

8R

4R

com

banana

6.2R 5W

1.8R 5W

use non-inductive Mills L-Pad resistors

TP8

5842 WE417A

heater

100R (x4)

TP11

R5 100R 120R

C2 220uF 10uF MKP

1R

TP3 .02V

Modular Driver PCB

Standardize driver PCB size and mounting so a variety of other tubes/driver circuits can be tried/ swapped with another PCB.

TP4 -85V?

C4 47uF

R6 CCW cold

CW hot

R7 upper limit

3

select an upper limit resistor that prevents the pot from outputting higher than -50V to 0V (too hot) of a bias voltage.

coarse bias adjust (both tubes) 10K 2W 10 turn Bourns 3590P-2-103L

R9 270R

TP5

300B

TP 1A

TP 1B

coleman PCB

R10 100R

R11 22R

R11 22R

100mA fuse

1R

TP 2A .07V

TP 2B .07V

fine bias adjust (each tube) 100R 2W 1 turn Bourns 93R1A-R22-A05L

wire filaments so a yearly tube swap will reverse previous socket polarity.

Hand match all resistors here especially current sense resistors.