

**ATTENTION! - DANGER! - WARNING!**

PLEASE READ THE FOLLOWING INFORMATION CAREFULLY:

The device described in this assembly manual utilizes **POTENTIALLY FATAL HIGH VOLTAGES**.

If you are in any way unfamiliar with high voltage circuits or are uncomfortable working around high voltages, **PLEASE DO NOT RISK YOUR LIFE BY BUILDING THIS OR ANY OTHER HIGH VOLTAGE PROJECT KIT OR DEVICE**. Seek help from an experienced and competent technician before building any unfamiliar electronics circuit.

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In the unlikely event that any parts or components included in this kit are defective from the manufacturer, said parts or components will be repaired or replaced at the discretion of the seller. Damage to parts or components included in this kit caused by misuse, or made to be unusable due to neglect, or failure to follow the recommended procedures contained in this assembly manual will not be repaired or replaced by the seller.

**PLEASE READ THROUGH THIS ENTIRE MANUAL BEFORE BEGINNING ASSEMBLY.**

## INTRODUCTION

Thank you for purchasing this kit.

The amplifier<sup>1</sup> that you are about to build, following the recommended assembly and layout instructions in this manual, will produce an audiophile-quality, high-fidelity sound that will please even the most ardent and discerning listener.

It is recommended that loudspeaker systems with a minimum sensitivity of 89dB SPL, 1 watt at 1 meter, and a nominal impedance of 4 to 8 ohms are to be used with this amplifier.

## FEATURES & SPECIFICATIONS:

- Single-ended class A operation
- Multiple output tube selection – KT88, 6550, EL34 (KT88 included with full kit)
- 6N1P-EV preamplifier tube (included with full kit)
- 5U4-GB rectifier tube (included with full kit)
- Switchable operation mode for output tubes:
  - Triode mode: 5+ watt output per channel (with KT88)
  - Ultralinear mode: 10+ watt output per channel (with KT88)
- Conservative tube biasing allows for extended tube life without comprising sound quality
- No semiconductor devices are used in the construction of this amplifier

Included with the full kit:

- Output transformers:
  - 5000 ohm primary with 6 ohm secondary load
  - 20-20,000Hz flat frequency response across band
  - 120mA, 500V rated primary, 25 watt output
- Power supply choke:
  - 10 Henry, 200mA, rated at 500V
- Power transformer:
  - 120/240V primary, 50/60Hz
  - 750V, 200mA, center-tapped secondary
  - 6.3V, 5A, center-tapped secondary
  - 5V, 3.5A, center-tapped secondary

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<sup>1</sup> Based on a design by Mikael Abdellah, and subsequent modifications by DIYAudio.com & AudioKarma.org members.

## Single Ended High Fidelity Two-Channel Vacuum Tube Amplifier – Assembly Manual

**PREPARATION:** Listed below are the parts included in the basic parts kit. Verify that all parts are present and accounted for:

<b>Resistors</b>	Quantity	<b>Capacitors</b>	
220K 1/4W Metal Film 1%	2	30uF MP Oil	1
100R 1W Metal Film 1%	2	50uF MP Oil	2
1K 1/2W Metal Film 1%	4	Erse or Solen 10uF 630V	2
1.5K 1W Metal Film 1%	2	Erse 0.22uF 630V	2
47K 3W Metal Film 1%	2	Elna Silmic II 100uF 25V	2
560R 10W Wirewound 1%	2	Elna Silmic II 220uF 100V	2
1M 1/4W Metal Film 1%	2	0.1uF 400V MP Orange	1
10R 5W Wirewound 5%	1		

<b>Connectors, Switches, Etc.</b>	Quantity	Notes
IEC Power Entry EMI/Fuse	1	
IEC Power Cord	1	for 120V USA kit only
Front Panel Power Switch	1	
Neutrik RCA Jack	2	one red, one white
Dual Binding Post	2	
DPDT Toggle Switch	1	
9-Pin Socket	1	
8-Pin Socket	3	
2" Capacitor Clamp	2	
1.5" Capacitor Clamp	1	
Turret Board	2	
Aluminum Knob	1	
100K Alps Volume	1	
2.5A or 2A Slow Blow Fuse	1	
Hammond 155H 5H Choke	2	

<b>Hardware</b>	Quantity	Notes
4-40 Locknut	16	
4-40 x 1/4" Screw	32	
6-32 Locknut	8	
6-32 x 3/8" Screw	8	
6-32 Lockwasher	3	
8-32 Lockwasher	16	w/transformers only
4-40 x 3/4" Standoff	8	
#4 Ground Lug	1	
#6 Ground Lug	1	
Crimp Terminal RED .187"	2 (120V kit)	4 (240V kit)
Crimp Terminal RED .250"	2	
Crimp Terminal BLU .187"	2 (120V kit)	0 (240V kit)
Crimp Splice	0 (120V kit)	1 (240V kit)
Adhesive Tie Wrap Mount	4	
Tie Wrap	12	
Velcro Strip	2	
1/8" Heatshrink Tubing	18	inches
1.5mm Hex Key Wrench	1	

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## Single Ended High Fidelity Two-Channel Vacuum Tube Amplifier – Assembly Manual

### PREPARATION: -continued

The basic parts kit will also include the following wire for connection of components:

<b>Wire</b>	<b>unit = ft.</b>
20AWG, 1C, STR, 600V BLK	3
20AWG, 1C, STR, 600V WHT	2
20AWG, 1C, STR, 600V RED	1
20AWG, 1C, STR, 600V BRN	5
20AWG, 1C, STR, 600V ORG	1.5
20AWG, 1C, STR, 600V YEL	1.5
20AWG, 1C, STR, 600V BLU	1
26AWG, 1C, STR, SHIELDED	3

If you have purchased the complete kit, the following items will be included:

- 1 – Pre-punched Aluminum Chassis with Walnut Side Panels
- 1 – Aluminum bottom plate w/(4) #6 x 1/2” sheet metal screw
  
- 1 – PT750 Power Transformer w/mounting bolts & insulators
- 1 – CK10 Filter Choke w/mounting bolts & insulators
- 2 – OT5000 Output Transformer w/mounting bolts & insulators
- 3 – 4.5” X 3.75” Powder-coated transformer end bell
- 1 – 3.75” x 3.125” Powder-coated transformer end bell
  
- 2 – Electro-Harmonix KT88EH Power Vacuum Tube
- 1 – Electro-Harmonix 5U4GB Rectifier Vacuum Tube
- 1 – Russian NOS 6N1P-EV Driver Vacuum Tube

RECOMMENDED TOOLS REQUIRED FOR ASSEMBLY:



Figure 1

Figure 1, from left to right, bottom row:

Nut Driver

- 1/4”/7mm
- 5/16”/8mm
- 11/32”/9mm

Fine Point Needle Nose Pliers

Small Side Cutter

Small Adjustable Wrench for tightening 9/16” nut on back of toggle switch.

Figure 1, from left to right, next row up:

Medium Flat Blade Screwdriver

#2 Phillips Screwdriver

#1 Philips Screwdriver

Wire Strippers for 18AWG through 26AWG

Crimp Tool for push-on crimp terminals

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RECOMMENDED TOOLS REQUIRED FOR ASSEMBLY: - continued

Figure 1, to the right of the hand tools previously mentioned:

- Temperature Controlled Soldering Iron with Stand & Sponge
  - 35 – 40 watt, 800°F, + or -, 1/4” screwdriver tip
  - Weller WP35 or equivalent recommended
- Rosin Core Solder, 60/40, 21 AWG
  - I use 60/40 Kester 44 21 AWG
- Digital Multimeter, preferably Auto-Ranging, 1000V minimum, AC or DC

Figure 1, at the top from left to right:

- “BBQ/Fireplace” Lighter – makeshift heat-gun for heat shrink tubing
  - Works OK if you use the blue part of the flame for not too long
  - If you've never done this before, practice before attempting on the amplifier circuitry
  - If you own a heat gun, use it
- Vacuum Desoldering Pump, and/or Solder Wick
  - not absolutely necessary, but if you make a mistake, OK maybe it is necessary, it makes it easy to remove the solder from tube socket terminals or terminal strip lugs

FYI: If you are unfamiliar with soldering techniques, it's easy once you get the hang of it, and not that hard to learn. There are plenty of resources available on the net found by searching “soldering tutorial” or “how to solder”.