PRICE $1.00

Assembling
and Using Your...

Heathkit

HIGH FIDELITY AMPLIFIER

MODEL W-5M

HEATH COMPANY

A Subsidiary of Daystrom Inc

BENTON HARBOR, MICHIGAN

595-133

HIGH FIDELITY

25 Watt Amplifier KIT

Own One of the Finest

Specially Designed Peerless Output Transformer

Balance circuit requires only voltmeter for adjustment

Full 25 watt output with KT 66 tubes

MODEL W-5M $59.75

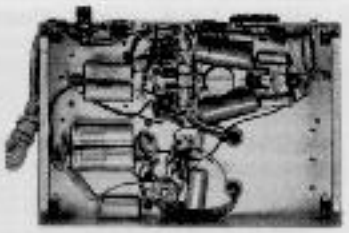
MODEL W-5: Consists of W-5M kit plus model WA-P2 preamplifier. Express only. Shpg. Wt. 38 lbs. **$79.50**

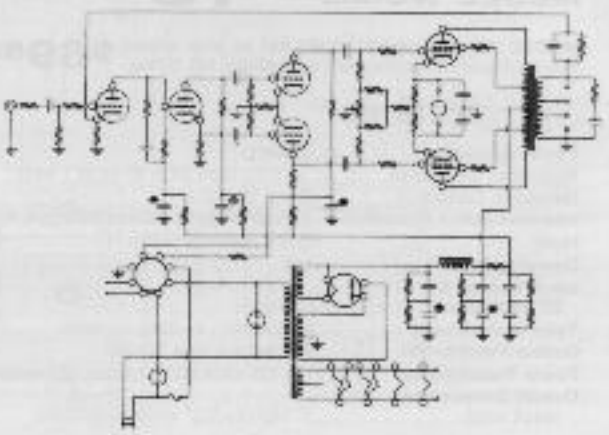
Still a favorite in its power class, the W-5M represents one of the most outstanding high fidelity amplifiers available today at any price. It employs a specially designed Peerless output transformer and KT66 tubes to prevent loss of frequency response particularly at moderate volume levels, in addition to allowing increased power output. The circuit is rated at 25 watts and will follow instantaneous power peaks of a full orchestra up to 42 watts. Also featured is a "tweeter saver" which suppresses high frequency oscillation, and an easy-to-adjust balancing circuit to obtain "dynamic" balance between output tubes. In order to reduce harmonic distortion at low frequencies it is essential that the plate current of the output tubes be balanced. The exclusive balancing circuit in the W-5M makes this balancing operation easier and much more accurate. Precision balanced resistors are connected in the cathode circuits of the power output tubes. When the current in each tube is balanced, the voltage drop across each precision resistor will be the same as the resultant potential will be if measured at both cathodes at the same time. A great advantage is gained, since the current in both tubes is measured simultaneously instead of one at a time and only a voltmeter is required. A load limiting device is built into the amplifier to provide high frequency and transient stability. Rising impedance affects of speaker systems at higher frequencies will frequently cause oscillation in a feedback type amplifier, since the amplifier fails to match the load at these frequencies. To counteract this, a resistor and condenser have been installed in series across the output transformer secondary. The condenser is chosen to prevent loading of the amplifier throughout the audible portion of the spectrum and still provide loading above these frequencies. Results of this unique circuit arrangement add up to improved phase shift characteristics, reduced IM and harmonic distortion and improved frequency response with complete stability under all dynamic operating conditions.

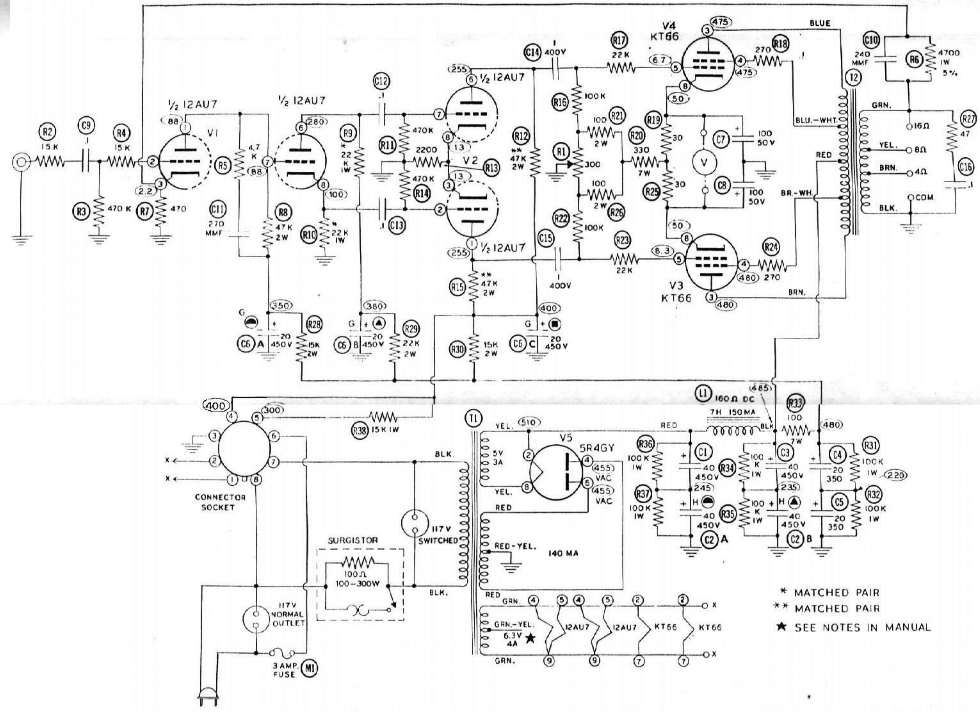
All connectors and terminals are conveniently located on one side of the chassis apron. The circuit is fused, and two AC outlets are provided for accessory equipment. One outlet is switch-operated and can be used to automatically turn off record player motor when amplifier is turned off. Provision is made for matching 4, 8 or 16 ohm speakers at a terminal strip on the chassis. An attractive cover protects against tube breakage and accidental burns. The bottom plate has large rubber feet to prevent marring of furniture. Featuring stylish gold and black color harmony, the amplifier is suitable for built-in locations or as a bookshelf model. Conservatively rated, high quality components are used throughout to insure years of trouble-free performance. Easy to build and a thrill to use. Shipped express only. Shpg. Wt. 31 lbs.

Specifications

Power output	25 Watts
Frequency Response	± 1 db from 5 to 160,000 cps at 1 watt
Harmonic Distortion	1% at 25 watts
Intermodulation Distortion	1% at 20 watts (60 and 3,000 cps, 4:1)
Hum	90 db below 25 watts
Damping Factor	40:1
Input voltage for 6 watts output	1 volt
Tube Complement	2—12AU7, 2—KT66, 1—5R4GY
Output Transformer	Peerless, Special Design
Power Requirements	105-125 volts, 50/60 cycles, 140 watts
Dimensions	13¾" wide x 8½" deep x 8¼" high







V1
1/2 12AU7
V2
1/2 12AU7
V3
KT66
V4
KT66
V5
5R4GY
R2 15 K
C9 .1
R4 15 K
R3 470 K
R7 470
R5 4.7 K
C11 270 MMF
R8 47 K 2W
R9 * 22 K 1W
R10 * 22 K 1W
C12 .1
C13 .1
R11 470 K
R13 2200
R14 470 K
R12 ** 47 K 2W
R15 ** 47 K 2W
C14 .1 400V
C15 .1 400V
R16 100 K
R22 100 K
R1 300
R21 100 2W
R26 100 2W
R20 330 7W
R19 30
R25 30
R17 22 K
R23 22 K
R18 270
R24 270
C7 100 50V
C8 100 50V
C10 240 MMF
R6 4700 1W 5%
T2
BLUE
BLU.-WHT.
RED
BR.-WH.
BRN.
GRN.
YEL.
BLK.
16Ω
8Ω
4Ω
COM.
R27 47
C16 .1
C6 A 20 450V
C6 B 20 450V
C6 C 20 450V
R28 15K 2W
R29 22K 2W
R30 15K 2W
CONNECTOR SOCKET
R38 15K 1W
T1
5V 3A
RED-YEL.
140 MA
L1 160 Ω DC 7H 150 MA
R33 100 7W
R36 100 K 1W
R37 100 K 1W
R34 100 K 1W
R35 100 K 1W
R31 100K 1W
R32 100K 1W
C1 40 450V
C2 A 40 450V
C3 40 450V
C2 B 40 450V
C4 20 350
C5 20 350
455 VAC
117V SWITCHED
SURGISTOR
100Ω 100-300W
117V NORMAL OUTLET
3 AMP. FUSE
M1
GRN.-YEL. 6.3V 4A
12AU7
KT66
* MATCHED PAIR
** MATCHED PAIR
★ SEE NOTES IN MANUAL

OPERATING INSTRUCTIONS

The Quicksilver mono amp is designed to give the best of tube amp performance at a price previously not possible. To ensure this performance these instructions should be followed closely.

Initial turnon:

Insert the tubes in their proper sockets. Connect the amp into the system and turn it on. Make sure the bias is between 100 and 110 ma after 60 seconds or so, and is between 115 and 125 ma after 20 minutes or more of operation. 115 ma bias gives longer output tube life than 125 ma. Check bias once a month or so.

Speaker Connection:

Screw terminals are used for speaker connection because of their superior sonic performance. The output transformer wires are silver soldered directly to the screw strips eliminating any output wiring. Placing the amp directly behind the speaker with a very short speaker wire will further improve the performance. The connection to the 4 or 8 ohm tap will be determined by the rating on the back of your speaker system. The 1 ohm tap is for special applications only.

Avoiding Potential Problems:

To insure trouble free operation from your Quicksilvers the following tips are recommended. Don't turn the amps on and off within a short period of time (45 seconds). Don't connect or disconnect the preamp when the amp is on. Don't drive the amps hard when they are cold, or with the speakers disconnected. And remember, the output tubes are very sensitive during their first 50 hours of operation.

Fuse Blowing:

If the 3 amp (slo-blo) fuse blows, an output tube is probably damaged. Substituting the 8417s and the fuse from the other amp will verify this. The output tubes must be replaced only in matched pairs from your dealer or Quicksilver Audio.

Tube Replacement:

Tubes should be replaced only with the same type and brand originally in the amplifier. The Sylvania 8417 output tubes must be replaced as a matched pair and should be purchased through Quicksilver Audio or a Quicksilver dealer. The brand of tube is important since performance varies widely between makes. The 8417 output tubes must be biased when they are replaced.

Special Features:

Quicksilver mono amps use no circuit boards and no transistors and are made to be extremely reliable. Not only are they hand wired with the best parts available, but all tubes are run well within their ratings and are protected from turn on surge.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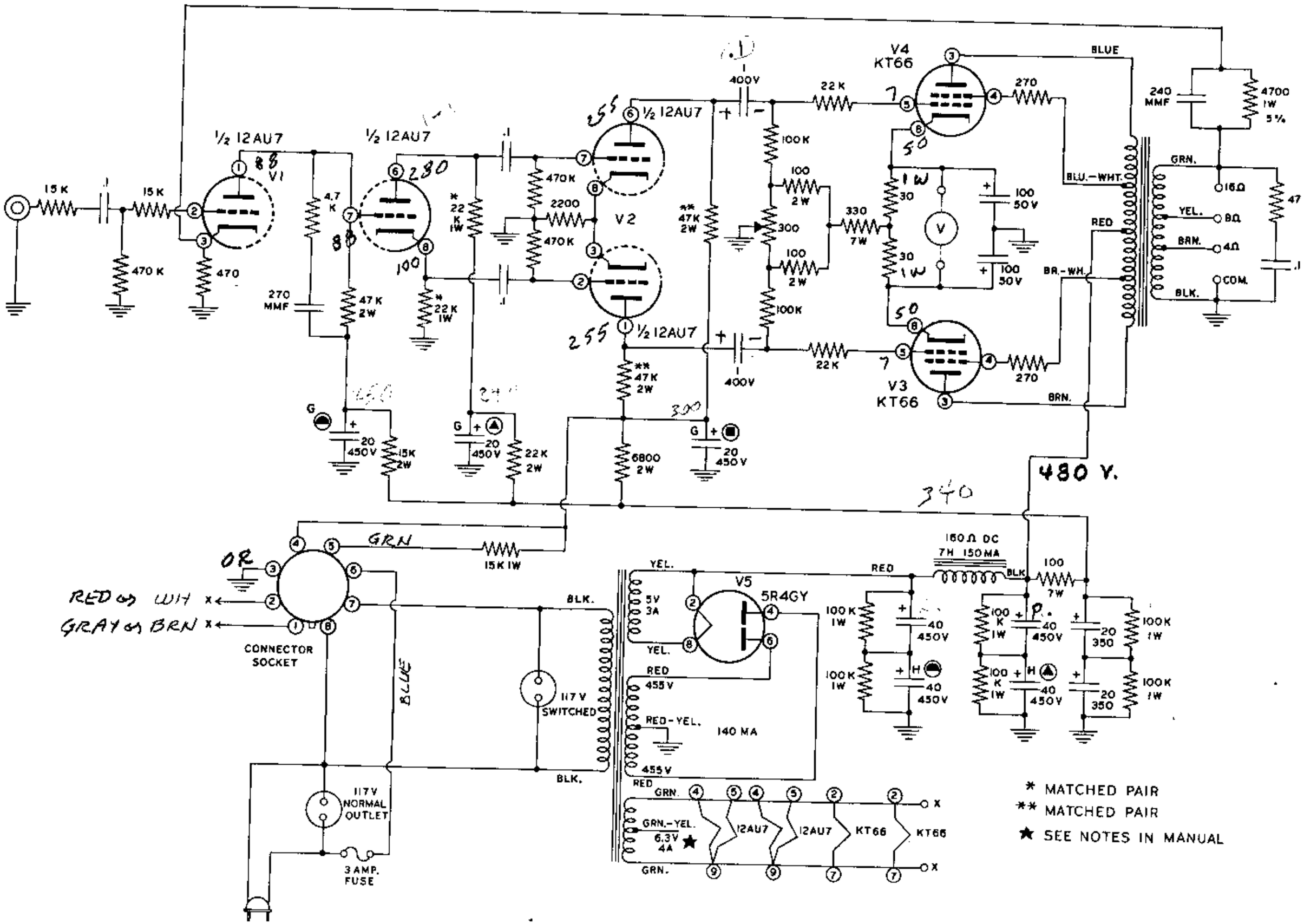

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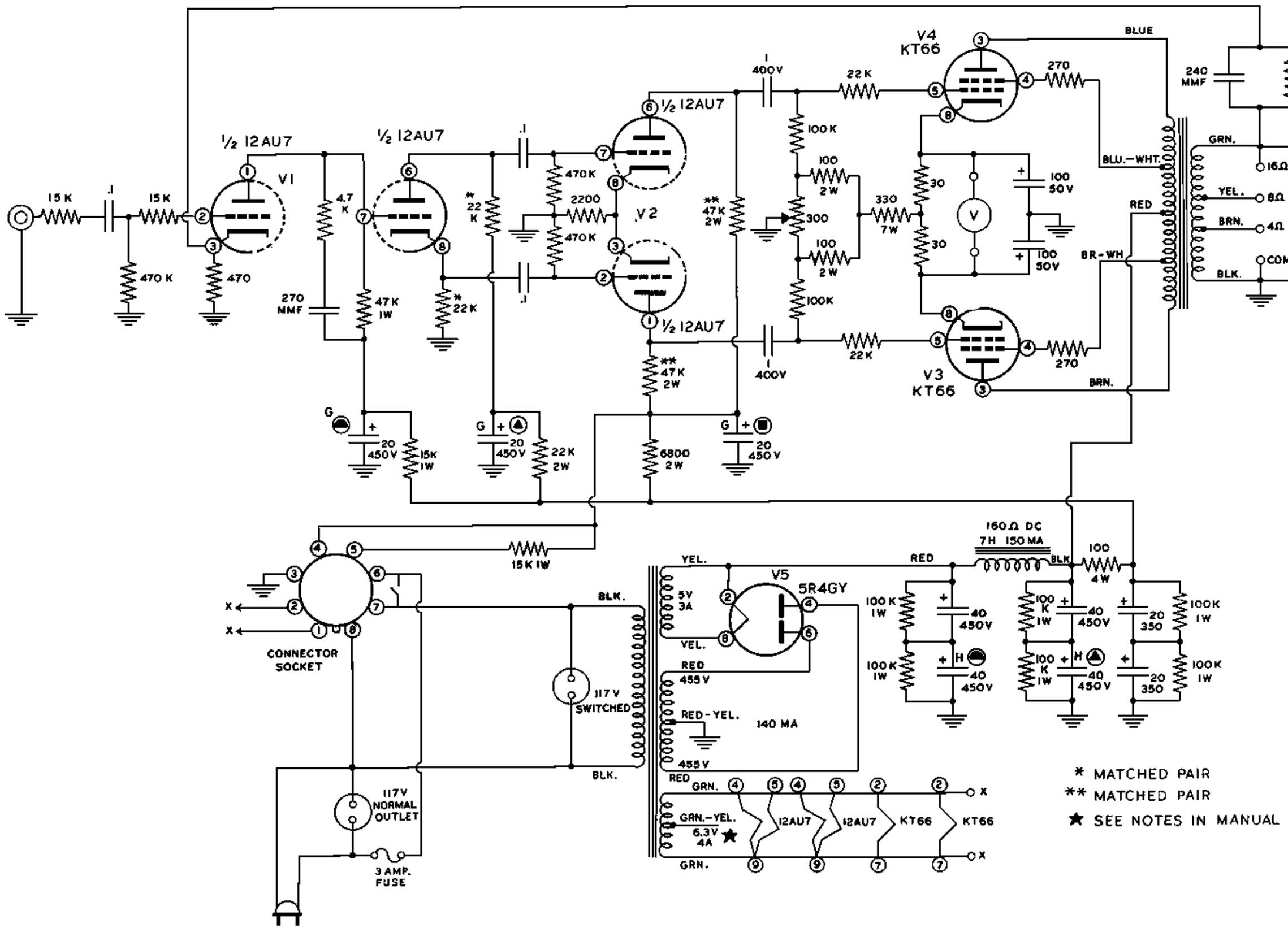

THE HEATHKIT W-5M HIGH FIDELITY AMPLIFIER

FUSE BLOWING

The mono amp has no sound-degrading protection circuitry, so the line fuse value is chosen close to the minimum value that will work. A fuse can blow during normal use every now and then.

If a fuse blows, insert a new 3 amp slo-blo fuse and check the bias. If the bias returns to normal shortly then there is no damage to the 8417 tubes. If it is more than 20 or 30 ma different than before, an 8417 tube is damaged. Turn the amp off until these tubes have been replaced and cause has been corrected.

Damage to the 8417 tubes is caused by:

a shorted speaker or speaker wire
large mismatch between speaker and amp impedances
constant hard clipping or overdriving
excessive bias setting
an unstable preamp (beware of modified preamps)

If you need assistance, contact Quicksilver Audio 209-477-6428.

BIAS INSTRUCTIONS

1. Locate bias jack and bias control between transformers, toward input-output side of amp.
2. Insert bias meter plug into bias socket. (Generally it's easiest to push bias meter plug into jack just far enough to get a reading). Remember, the tubes are hot.
3. Turn bias control slowly with a screw driver until reading is between 100 and 110 milliamperes when amp is cold or between 115 and 125 milliamperes after amp has been on 20 minutes or more.
4. Unplug bias meter.

CAUTION: Do Not Connect Bias Meter With Music Playing.

CAUTION: Bias Higher Than 125 ma May Damage Output Tubes.