	audio research HIGH DEFINITION®	PROCEDURE NUMBER REF75SE Update
		ISSUED: 3/20/2015

Title:

REF75SE
Update Procedure

Caution Electrical Shock Hazard:

To prevent electrical shock make sure the AC POWER CORD IS NOT CONNECTED TO THE REF75

DO NOT touch the Vacuum Tube Socket Pins when inserting or removing the vacuum tubes, as there may be hazardous voltages present even after the REF75 has been switched "Off" for a period of time.

If the REF75 has been "ON", allow the Hot Vacuum Tubes to cool first before removing.

1.0 **PURPOSE**

The purpose of this document is to define the process for updating the **REF75** Amplifier to a **REF75SE** Amplifier.

2.0 **SCOPE**

This document specifies materials, equipment, and assembly instruction and safety precaution requirements for assembling the SE Update Kit.

3.0 **EQUIPMENT**

3.1. **Hand Tools Required:**

3.1.1 Diagonal cutters, Needle Nose Pliers, Nut Driver, and Phillips Screwdriver

3.2. **Solder Tools Required**

3.2.1. Small and Large Tips, High Power Solder Iron, Solder Remover or Solder Sucker

3.3. **Kit Includes**

Quantity	Description	Part Number
1	Top Cover SE Badge	10132310
1	Rear SE Badge	10132410
4	Tube Damper	20004660
8	6-32 X 2.0" Hex Spacer	21406031
1	Hubbel Connector (IEC)	23201820
4	High Speed Diode	30506700
2	6H30P Tube	32002301
4	KT150 Tube	32002601
1	3.15A Fuse	34600302
4	1.0Ù 3W Resistor	43100006
2	19.5" 16 GA White Wire	N/A
2	19.5" 16 GA White Wire With Black Sleeve	N/A
2	19.5" 16 GA Clear Wire	N/A

4.0. **PROCEDURE**

4.1. **Panel and Input Wire Removal**

4.1.1. Remove 18 – #6 Screws that secure the Top Cover to the Chassis.

4.1.2. Remove Top Cover.

4.1.3. **Discharge the Power Supply!!**
Refer to Figure 1 and 2 for the Discharge Points

Figure 1

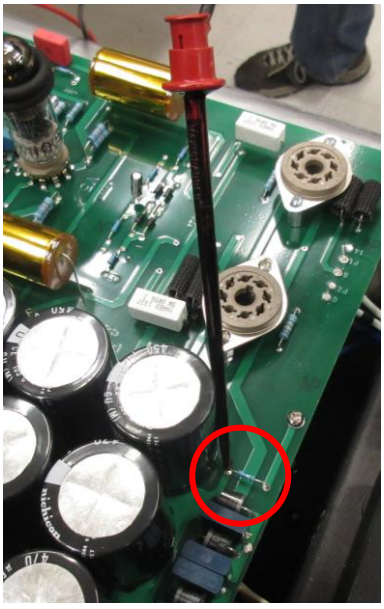
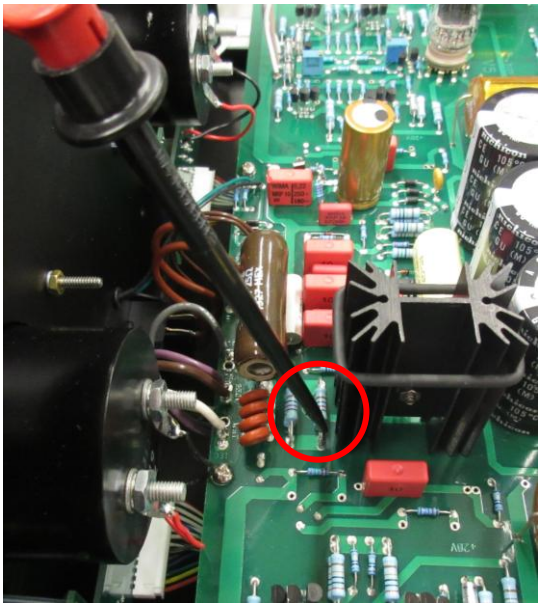


Figure 2



4.1.4. Remove the 4 – KT120 and 2 – 6H30P Tubes.

4.1.5. Use a large tip Solder Iron to remove 6 – Output Wires from the 2 – XLR Connectors.
Refer to Figure 3 for an example of an adequate Tip
Refer to Figure 4

Figure 3

Figure 4

4.2. **IEC Update**

4.2.1. Loosen the two terminal screws on the IEC that hold the Blue and Brown wires.

4.2.2. Remove 2 – Screws that secure the IEC to the Chassis.
Refer to Figure 5

4.2.3. Pull IEC out of the chassis far enough to gain access to the ground screw that holds the GRN/YEL Wire and loosen the green screw to free the IEC.
Refer to Figure 6

4.2.4. Discard the old IEC and replace with the new IEC (23201820).
Make sure the GRN/YEL, Brown, and Blue wire ends are tight!
Loosen all the terminal screws on the new IEC to allow for easy insertion of the Blue and Brown wires once mounted in the chassis.

4.2.5. Insert the GRN/YEL wire into the ground terminal and secure the terminal screw tightly.
Refer to Figure 7

4.2.6. Insert the new IEC into the chassis and secure with the 2 – Screws removed in ***Step 4.2.2***.

4.2.7. Place the Blue and Brown wires back into their respective terminals and tighten the screws firmly.
Refer to Figure 8
Use care when working around the fuse holder terminals as they can be broken without the proper care!

Figure 5

Figure 6

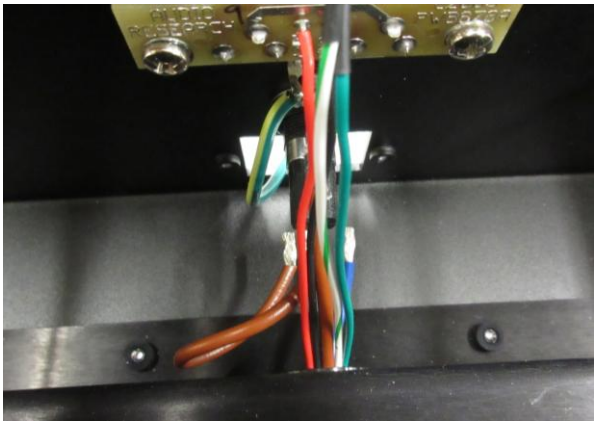


Figure 7

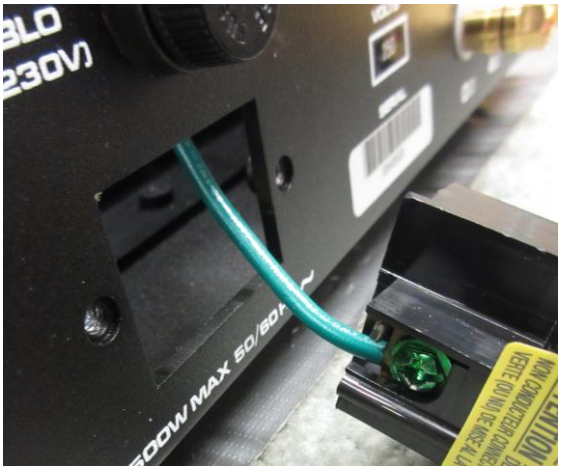


Figure 8

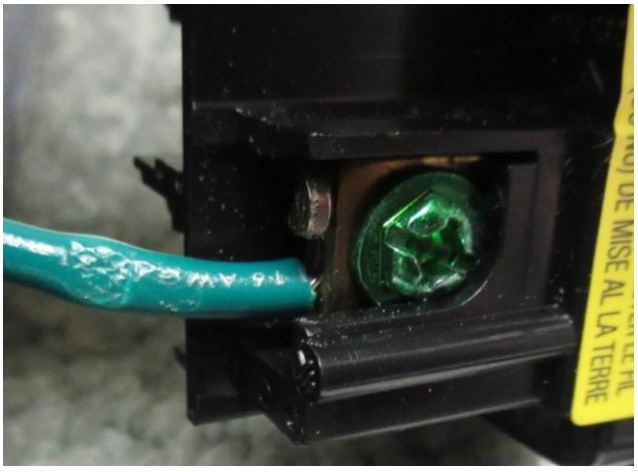
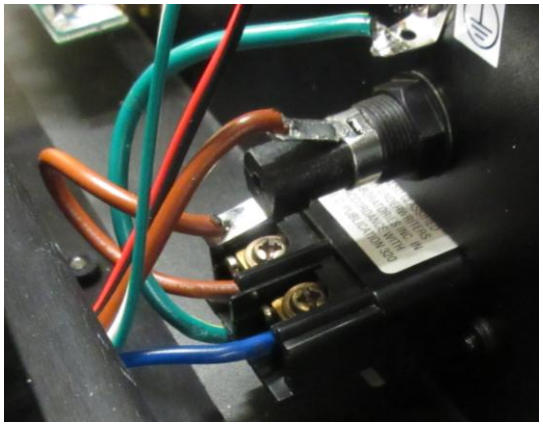


Figure 9



4.2. **Resistor Replacement**

4.2.1. Remove 4 – 1- 1.0Ù 2W Resistors *(outlined in **Figure 10**)* and replace with 4 - 1.0Ù 3W Resistors from the update kit.

Reuse the containment sleeves from the removed resistors on the new ones.

Make sure to heat the component and through hole enough so as not to pull the through hole pads out with the components!

Figure 10

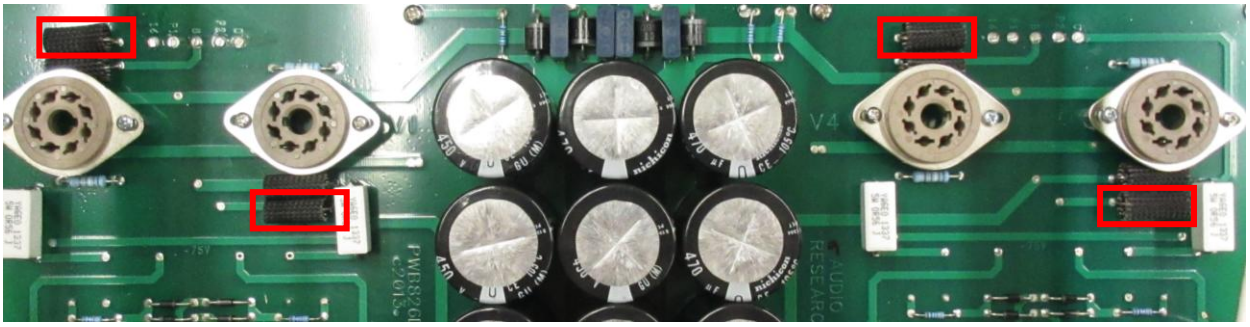


Figure 11

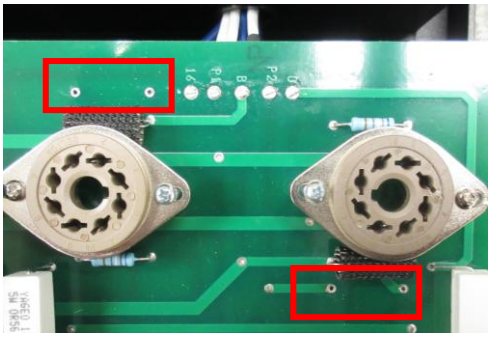


Figure 12

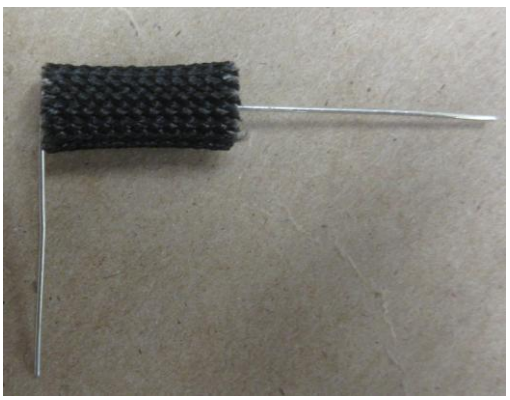


Figure 13

4.3. **Diode Replacement**

4.3.1. Remove the 4 – Diodes from the main board and replace with the 4 – High Speed Diodes (30506700) from the update kit.
When removing the old diodes, start by removing the lead closest to the capacitor bank first, followed by the lead near the edge of the board; this will allow you to access both leads with the solder iron!

4.3.2. Prepare the 4 – Diodes by forming the leads like the Diode shown on the right in ***Figure 16***.

Figure 14

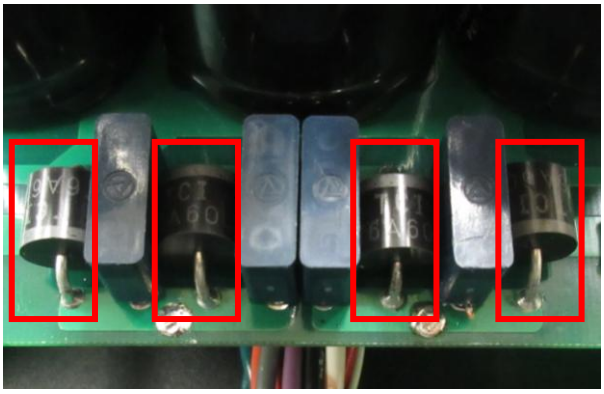


Figure 15

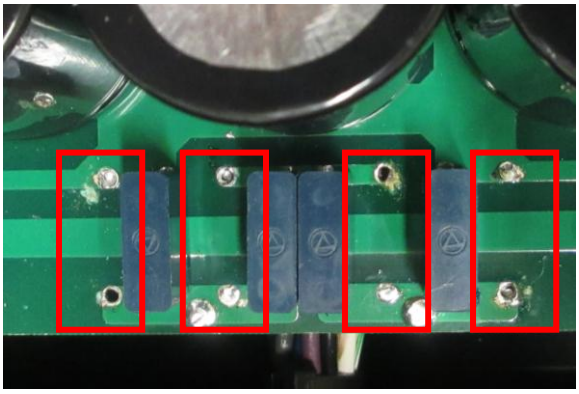


Figure 16

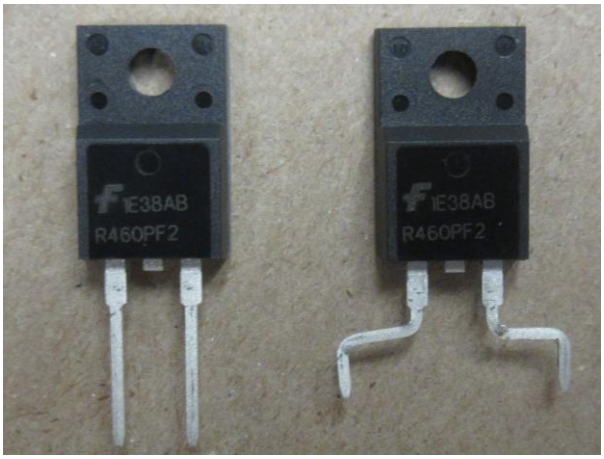
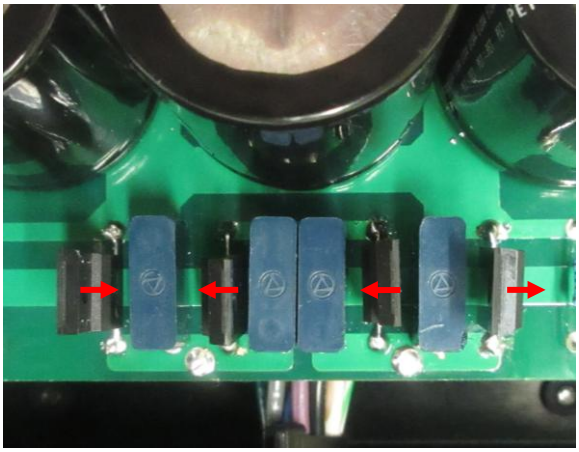


Figure 17



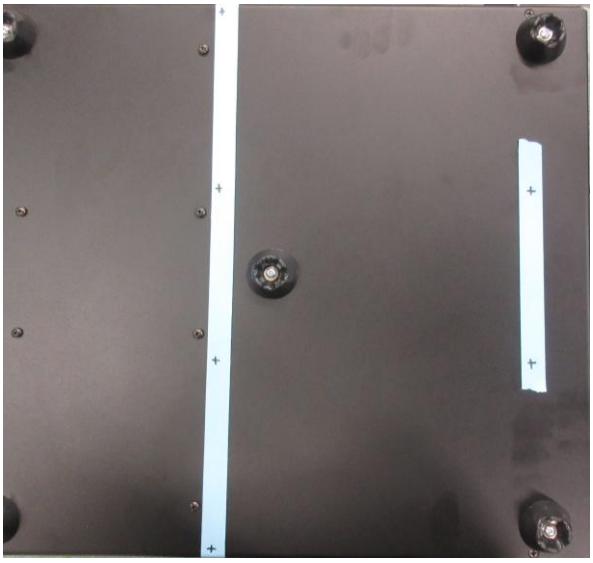
Arrow indicates the side the text faces!

4.4. **Mainboard Hex Spacer Replacement**

4.4.1. Place masking tape over 6 – Screws on the bottom of the chassis that secure the Hex Spacers.
The other 2 – Screws are partially under the feet, so they won't fall out when removing spacers!

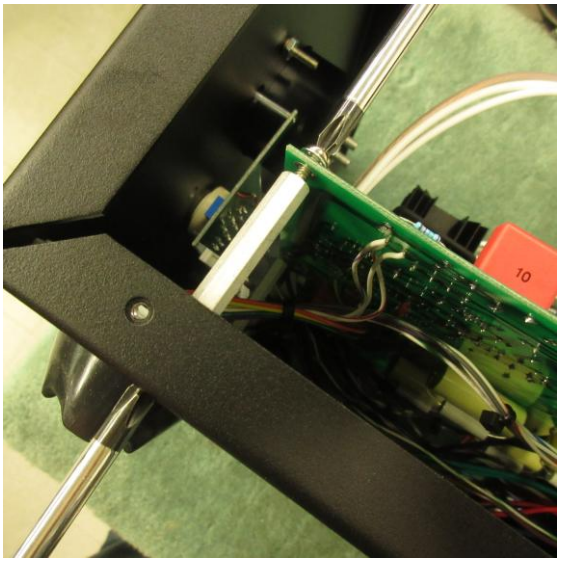
4.4.2. Remove 1 – Screw/Lock Washer from the top of the mainboard and the 2-1/4" Hex Spacer, then replace with a 2" Hex Spacer from the update kit one at a time until all 8 – Spacers are replaced.
Note: When replacing Hex Spacer, do not tighten the screws fully until all Screws are started in the Spacers, this will allow for proper alignment of the Screws and prevent you from stripping the threads on the Hex Spacers!

Figure 18



"+" Indicates Hex Spacer Screw!

Figure 19



If one or more of the Hex Spacers doesn't line up, loosen the bottom screw, get the screw started, and then retighten the bottom screw!

4.5. **Input Wires and Panel**

Make sure the following wires are through the through hole before soldering and when soldering use extreme caution not to melt and damage the wire insulation!

Repeat Steps 4.5.1 – 4.5.4 for each channel

4.5.1. Solder 1 – 16 GA White Wire w/Sleeve from the update kit to the "+" location on the main board.

4.5.2. Solder 1 – 16 GA Clear Wire from the update kit to the Ground location on the main board between the "+" and "-" locations.

4.5.3. Solder 1 – 16 GA White Wire from the update kit to the "-" location on the main board.

4.5.4. Twist the 3 – Wires in 1-1/2 ***Counter Clockwise Rotations*** *(when standing at the front of the unit)* and then place in the respective locations in the XLR Connectors and solder.
Refer to Figure 21 to make sure the wires are in the correct orientation!

Figure 20

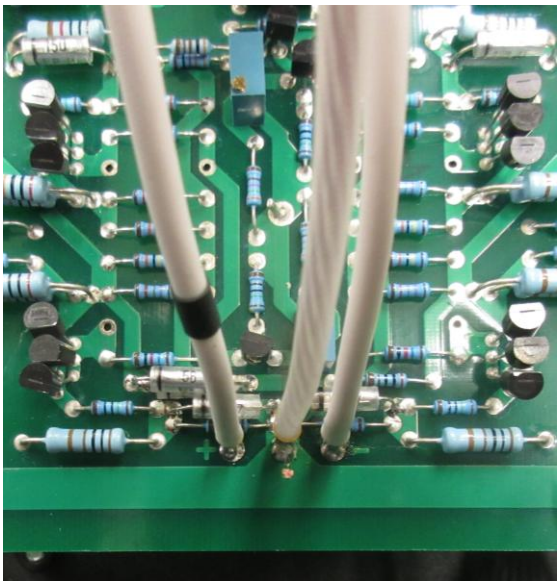


Figure 21

Figure 22

4.5.5. Place 4 – KT150 Tubes into the sockets and 2 – 6H30P Tubes in the other sockets, place 2 – Damping Tubes around both 6H30P Tubes.
Refer to Figure 23 and Figure 24

Figure 23

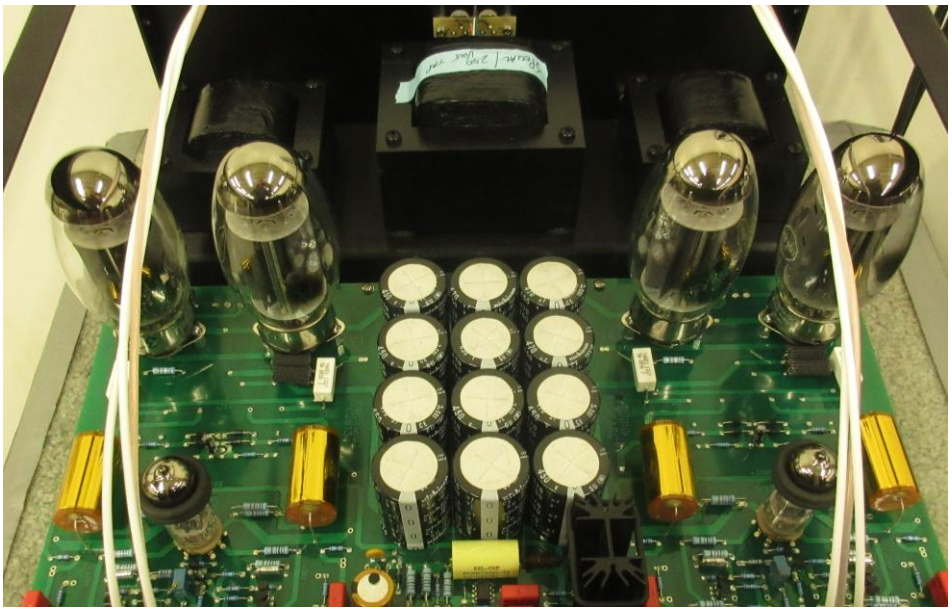


Figure 24

Refer to the old 6H30P Tubes for tube damper placement!

4.5.6. Place the Top Cover on the chassis and secure with the 18 – #6 Screws removed in ***Step 4.1.1.***

4.5.7. Place 1 – Top Cover SE Badge (10132310) on the Top Cover and 1 – Rear SE Badge (10132410) on the back of the Chassis.
Refer to Figure 25 and Figure 26

Figure 25

Figure 26