

Homebrew Your Own GI7B Socket

By N8GPQ

The GI7B tube can be mounted without the aid of a socket but it is nice to be able to remove the tube easily without the aid of a screwdriver. This design allows the user to simply pull the tube out of the socket.

Materials you will need to make your own socket.

<u>Qty</u>	<u>Item</u>	<u>Size</u>	<u>Supplier</u>
1	Copper Coupling	3/4"	Hardware/Builders Supply
1	Copper Coupling	1 1/2"	Hardware/Builders Supply
1	G-10 Glass Board	3 1/2" SQ	Electronics Supply
1	1/8" Aluminum Plate	3 1/2" SQ	Sheet Metal Supplier
1	Small Fuseclip	3AGC	Electronics Supply
1	Strip Brass	1/2"	Hobby Shop
1	Fingerstock	3/8" Wide	Electronics Supply

Misc.: 4-40 and 6-32 mounting hardware, Solder lugs, etc.

Step 1:

Start by taking each copper coupling and sawing off a ring about 1/2" wide. Copper will cut easily with hacksaw or bandsaw with metal blade. Dress up rough edges with a file or disc sander. Remove all metal burrs from each ring making all edges smooth.

Step 2:

You will need to make four of the following:

Cut off a piece of 1/2" inch strip brass about 1" long. Mark and punch or drill a 1/8" hole 1/4" from one end of this brass strip. Measure up 1/2" from one end and bend the brass strip 90 degrees using a bench vise forming an small "L" bracket. Repeat this process for all four brackets.

Step 3:

Attach two “L” brackets to each copper ring using 4-40 hardware. You will need to grind the head of each 4-40 bolt flat to within 1/32 of an inch. This allows the finger stock to remain somewhat flat after mounting. The flat head of the 4-40 bolt will go to the inside of the copper ring. Space each “L” bracket on opposite sides of each ring. Tighten each nut securely so “L” brackets do not move. **See Figure 1**

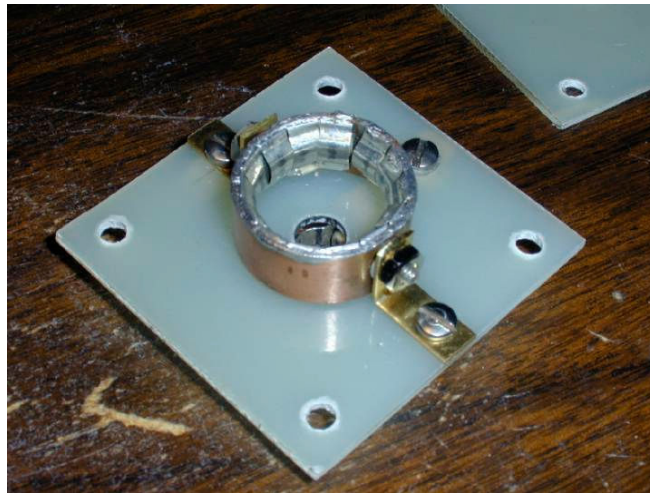


Figure 1: Showing “L” brackets attached to copper ring
With ring attached to G-10 bottom board

Step 4:

Cut two pieces of fingerstock to fit the inside of each copper ring. The fingerstock I use is about 3/8” wide and about 1/4” high. I purchased my fingerstock at a hamfest so I don’t have a supplier for this. You probably could make your own out of spring copper or brass if it is available. Place each piece inside each copper ring and secure it using solder. **HINT:** It takes a lot of heat to solder this in place. I have found a large soldering gun works best for this and not a pencil torch. Make sure you use the solder very sparingly to prevent fingerstock from flexing properly. In this case a very small amount of solder is the best policy. Remember it is easy to add but impossible to remove the solder from the fingerstock. **See Figure 1:**

IMPORTANT: Remember the fingerstock is placed in each ring as shown in **Figure 1.** The large copper ring fits under the aluminum square and the small copper ring fits on top of the G-10 glass board when assembled. The fingerstock is designed for insertion of tube in only one direction and that is flex down or open side to bottom.

Step 5:

Cut out both the G-10 board and aluminum square. They should each be the exact same size. You can substitute any phenolic based material for the G-10 glass board. Perf board from the local electronics supplier will work well also but it does not have the strength the G-10 board has. You can also take G-10 PC circuit board and remove the copper on it by etching it away. Remember the socket must hold up to the heat generated by the GI7B filament and also the insertion pressure when the tube inserted into the socket.

Cut out and paste the layout pattern supplied with this document onto both the G-10 board and the aluminum square. Use contact cement to paste this pattern onto G-10 board and aluminum square. Center punch the four outer mounting holes and also the very center mark on each square. On the aluminum square also center punch the 3/8" cooling holes that surround the tube. Drill the outer holes with a 5/32" drill to allow a 6-32 bolt to pass through freely. Also drill the very center mark with the same drill. Drill the 3/8" cooling holes on the aluminum square using a step drill process (start with smaller drill and work up to 3/8"). Final step is to remove a 1 3/8" diameter slug from the middle of the aluminum square using a 1 3/8" hole saw or chassis punch. You may have to lightly sand or file this large hole until the GI7B tube fits loosely in this hole. Completed squares are shown in Figure 3



Figure 2: Top and bottom socket blanks with holes
1 3/8" hole not drilled yet

Step 6:

Attach each ring to its proper board using 4-40 hardware. Use the tube to center and mark each ring on each board. Make sure you orient each ring correctly on each square. The large ring goes under the aluminum square and the small ring goes on top of the G-10 board. Drill each hole for the "L" brackets and mount each ring using 4-40 hardware.

Step 7:

This step involves mounting the small fuseclip to the bottom of the G-10 board. You must drill out the middle hole using a drill which will allow the tube filament pin to go through easily. I mount my fuse clip using a small “L” bracket made out of 1/2” brass stock. Size of this is up to you but it must be longer than it is high to work properly. The small height of this is about the same height as the fuse clip. I attach the fuse clip with 4-40 hardware and then attach this to the G-10 with the same hardware. See picture below for detail of this piece. I can’t give a layout size on this as it will vary from user to user.



Figure 3: Attaching fuse clip assembly to board

Step 8:

You are now ready to assemble you socket. The top aluminum plate and bottom phenolic board are attached to each other using 6-32 bolts. Start your assembly by mounting these bolts to the aluminum plate with 6-32 nuts. Tighten securely all four nuts. Place loosely on each bolt another 6-32 nut and insert tube into the top plate. Move the four loose nuts to a position which allows the bottom phenolic board to be mounted and the tube filament tip to go though board and make good contact with fuse clip. Secure board with four other nuts and socket is completed.

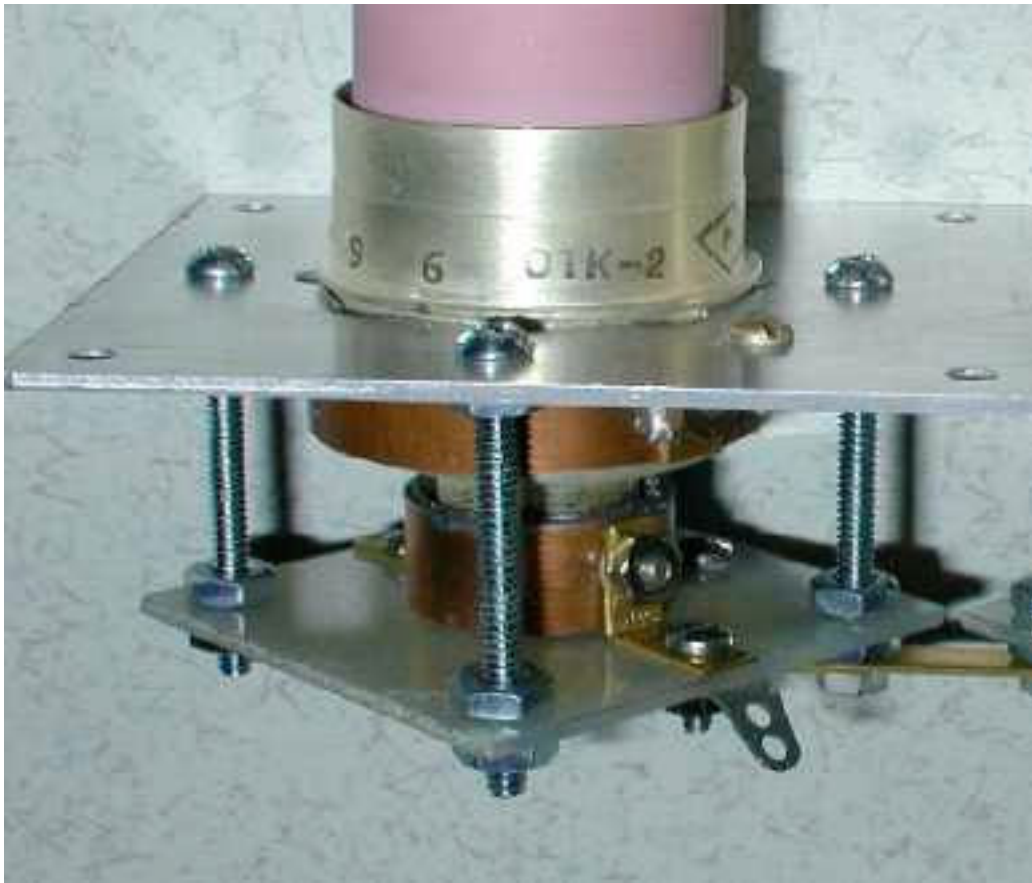


Figure 4: Assembled Socket