

Air Cored 1:1 Balun for 3.5 – 30.0 MHz

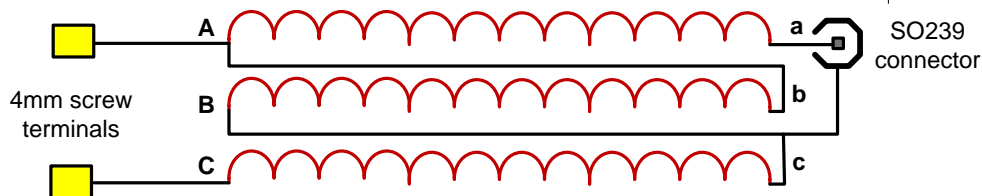
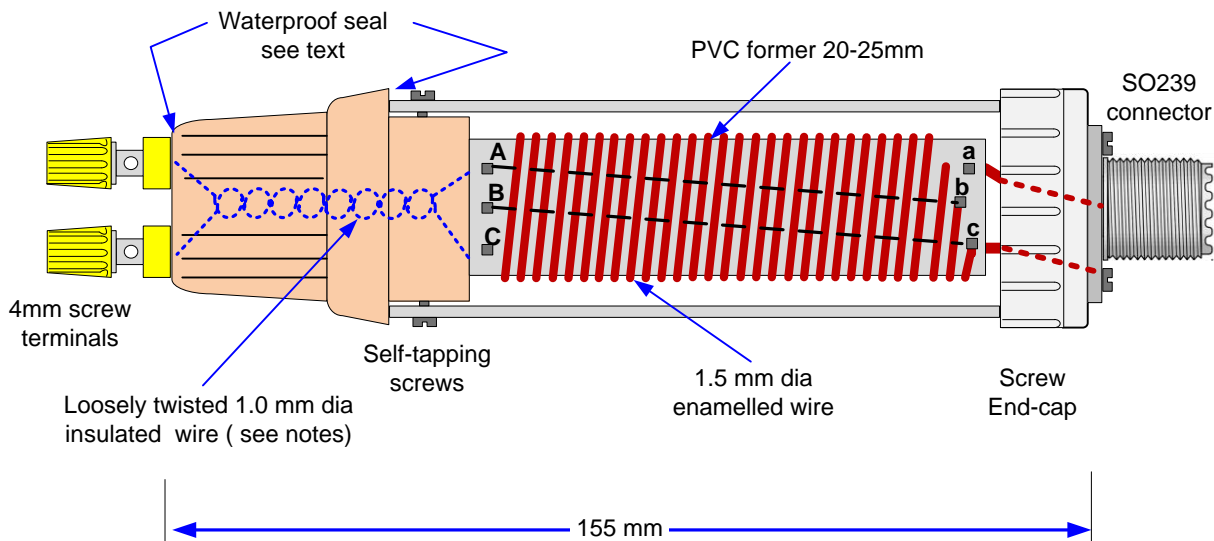


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12 turns trifilar close wound winding shown inside MARLEY™ plumbing adapter – the drawing emphasises the wires



PARTS LIST

1. 1.8 metres of 1.6 mm OD copper enamelled wire.
2. Former 20-25. diameter white PVC tube – avoid black plastic which has carbon particles for colouring
3. Gold screw top from a **COMFORT™** clothes conditioning bottle.
4. **MARLEY™** plumbing trap adjuster 1.5 inch (40mm).
5. 2 off SO239 connectors,
4 off 3.5mm nuts, bolts & washers,
2 off small self tapping screws.
6. 1 metre of 1mm multi-strand wire for top cap connections.
7. 2 off 4mm screw terminals antenna connections
8. Electrical Insulation tape to secure the trifilar winding
9. Silicone bath sealer for waterproofing

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G8ODE Balun Construction Notes

1. Ensure that the three wires are the same length on the white plastic former
2. Wire "a" is soldered to the centre pin of the SO239 and a solder tag secures wire "c" to the body of the SO239.
3. Test the coil assembly by inserting it into the Marley Trap Adjuster to see that former rotates freely when end cap is screwed onto the body of the trap.
4. Solder a 10 mm long insulated wire 1mm diam onto each of the gold cap terminals solder tags
5. Solder the other ends of the two 1 mm wires onto the coils "A" and "C" terminals .
6. Turn the gold top to twist the wires loosely together, and push on the gold cap. The wires should drop into the centre of the coil.
7. Drill two tiny pilot holes on opposites sides of the gold top cap into the Marley trap adjuster body and secure the cap with two short self tapping screws.
8. Waterproof the gold cap with silicone bath sealant

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Photograph showing the COMFORT™ top cap with the 4mm screw terminals attached and the MARLEY™ Trap Adjuster end cap with the SO239 connector attached to the former with the trifilar winding. Flexible wires are attached to the 4mm screw terminals and soldered to the windings A & C ends. The wires should be kept fairly short and slack taken up by twisting the end cap a few turns before seating the gold coloured cap onto the end of the plumbing trap adjuster.

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Waterproofing

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Apply a smear of silicone bath sealant around the two holes in the cap before fixing the 4mm screw terminals to help waterproof the joint. This is very important because any moisture or water inside the Balun or on the trifilar winding can cause tracking especially between the windings and create a short circuit. A coating of clear polyurethane varnish will also help to protect the trifilar winding

The COMFORT™ cap has an elongated neck. This slides inside the body of the Trap Adjuster. The outer flange overhangs the outside of the Trap Adjuster body and forms a “gutter” that is filled with silicone sealant to make the balun water tight. In use the COMFORT cap’s design helps to keep water out because of its shape that will form a water shed when it is in used with the terminals uppermost.

“Beware of sealants that exude a vinegar smell when curing, as the acetic acid will eat away almost any metal in time. Some PVC waste pipes do not like UV light and become brittle over time. A coat of outdoor varnish may help prevent this. Finally if the Balun is to be hung vertically then a small hole drilled at the bottom will allow condensation to escape before it can cause trouble.”

Barry G3YEU

Testing

It is a good idea to test the balun using a transmitter on low power, an SWR meter, and a 50 ohm resistor or dummy load connected across the 4mm screw terminals. Repeat this test on all the HF bands (80-10m). The SWR should remain close to 1:1.1. Any significant variation will indicate that there is an imbalance between windings.