

# REWIRING A VHF RADIO ANTENNA



If you're mounting a new VHF antenna at the top of the mast all you need to do is run some new cable down the inside and fit a new plug on the end. Even if the antenna isn't mounted up the mast there's still no reason to tear the interior of the boat apart to fit new cable; you can simply use the same type of plug and socket as the one

at the base of the mast to connect the new antenna to the old cable. You can then remove the antenna for winter storage if desired.

That's what I decided to do when I recently discovered that my 2.4m VHF antenna had snapped off about a foot above the stainless steel fitting. Faced with the onerous task of running new cable throughout the

boat, I decided to retain the original cable and fit a water-tight deck plug and socket instead.

I then wondered how you might make an emergency repair without soldering facilities and found the answer along with my new antenna, plug and socket at Communication Aerials, better known as V-Tronix.

If your antenna is mounted on stainless steel or plastic ratchet

mounts it's important to check the thread type on the mounting to make sure it's compatible with the new antenna. That's especially important if your mounts are more than about 15 years old, because there may be a conflict of thread types. Since my boat is more motor than sail the antenna is on the side of the light mast and was broken about a foot above the ratchet mount.



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**1.** The V-Tronix plug and socket laid out in order of assembly. From right to left: Backing nut, washer, cable seal, insert, first insulating seal, second insulating seal, pin, body. Note also the watertight cover and the blanking plugs for keeping the plug and socket clean and dry when unplugged.

**2.** Begin with the plug that's fitted to the antenna cable, because



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you can do that in the comfort of the cabin. The first task is to cut the old cable to allow the broken antenna to be removed. However, remember to leave plenty of slack in the cable that will remain to make it easier to fit the plug socket.

What happens when your radio antenna breaks? As **Peter Caplen** explains in this step by step guide, you can either run new cable through the boat, with all the disruption that entails, or, better still, avoid such unnecessary tribulations by connecting the new antenna using the old cable and a watertight deck plug.

## SAILING TODAY

**Time taken**  
2 hours



**Skill level**  
Easy

**Tools**

Soldering iron  
Side cutters  
Wire strippers  
Scissors  
Adjustable spanner  
Slotted head screwdriver

**Time taken:**  
Plug and socket: 2 hrs  
Cable splice: 10 mins

**COST:**

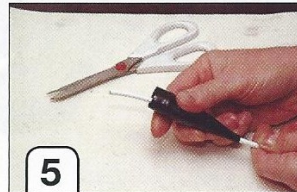
ACC105 Deck Plug and Socket for RG58 cable £20.42  
ACC157 Cable Splicer £8.10



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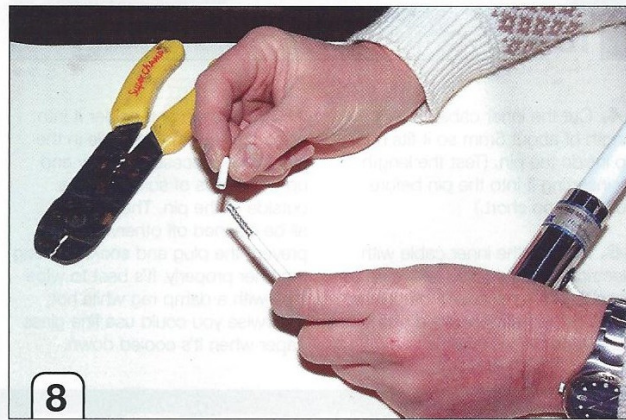
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### STEP-BY-STEP GUIDE

**3.** Because everything tends to seize up in a marine environment, you may need to use pipe-grips like these to unscrew the old antenna.

**4.** Start with the cable on the new antenna. Now snip the end off the cable cover, but remember to try

and keep the cut small so that it fits tightly over the cable.

**5.** Slip the cover over the cable and slide it back out of the way.

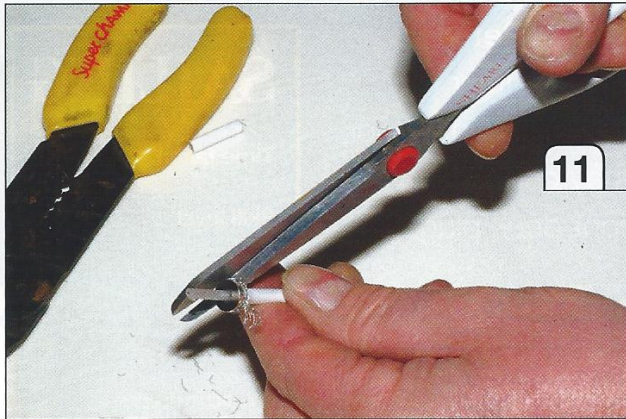
**6.** Next slip the backing nut, washer and seal onto the cable.

**7.** Carefully cut the outer insulation without damaging the braid. Ideally use a wire stripper tool although a craft knife used carefully works equally well.

**8.** Lift off the insulation, which reveals the braid underneath.

**9.** Carefully turn the braid back over the remaining outer insulation.

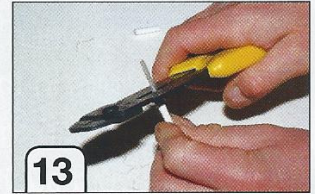
**10.** Now simply slide the insert over the inner insulation so the spigot passes inside the braid until it's up against both the braid and the outer insulation.



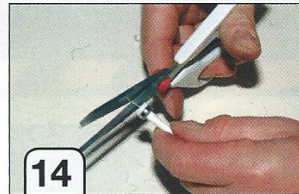
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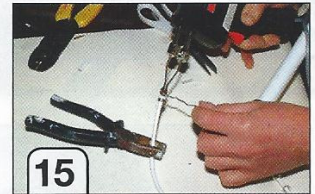
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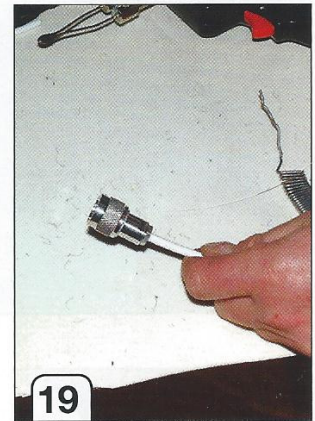
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**11.** Using a pair of scissors, trim the braid until it's flush with the outside edge of the insert.

**12.** Slide the first insulating washer over the inner insulation and up against the face of the insert.

**13.** Again, using the wire strippers, cut the inner insulation flush with the face of the first insulating seal.

**14.** Cut the inner cable to a length of about 5mm so it fits right up inside the pin. (Test the length by inserting it into the pin before cutting it too short.)

**15.** Now tin the inner cable with electrical cored solder. Take care to keep this to a minimum, otherwise, if you're too heavy handed, the cable won't fit into the pin.

**16.** Fit the pin and solder it into place through the tiny hole in the pin. In the process you may end up with blobs of solder on the outside of the pin. These must all be cleaned off otherwise it will prevent the plug and socket mating together properly. It's best to wipe it off with a damp rag while hot; otherwise you could use fine glass paper when it's cooled down.

**17.** Fit the second insulating seal.

**18.** Offer up the plug body, push the cable seal into the body, follow this with the washer and finally enter the nut into the body and tighten it to compress the seal to make it watertight.

**19.** The finished job should look like this – without any bits left over.

## SOCKET ASSEMBLY

**That was the easy bit. Now follow exactly the same procedure with the socket part. This is slightly more difficult, because it has to be done outside in a rather more awkward position. Don't even bother to attempt the job in windy, freezing conditions. Even a commercial soldering iron won't be able to maintain sufficient heat outside.**



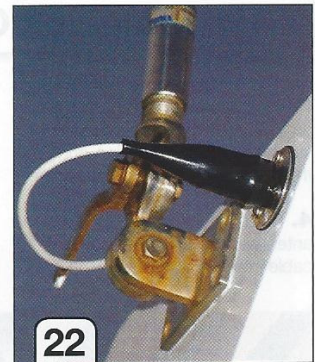
**20 (below).** The socket is the only different part of the set and although the work is almost identical, remember to place the rubber backing pad over the cable before beginning the assembly.

**21.** Now you can fit the socket in the chosen position and bed it down on a little sealant for extra protection. It's especially important if you've managed to cut the backing pad.

**22.** Fit the antenna by screwing it tightly onto the mount, connect the plug and socket and slide the waterproof cover over the entire assembly. You might also make a note to clean and polish the mount at the beginning of the season.



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## MAKING A CABLE SPLICE

The plug and socket is all very well, assuming you have the time to spend on fitting it, but what about when you need a quick, 100 per cent reliable and permanent repair without solder? The simple answer is to use a cable splice.

**23.** Here it is, laid out in order of assembly from left to centre: Backing nut, cable seal, insulator, body. There's a pin inside the body that passes into the inner cable when the fitting is assembled.

**24.** Cut the end of the cable flush and square using either scissors or side cutters.

**25.** Slip the backing nut, cable seal and insulator onto the cable.

**26.** Carefully push the cable end into the body of the fitting until it bottoms out inside the fitting. This ensures the internal pin has penetrated the inner cable.

**27.** Using a pair of pliers, squeeze the extending arms of the fitting so

they pierce the outer insulation and make contact with the braid.

**28.** Note: it doesn't need a great deal of pressure to satisfactorily pierce the braid.

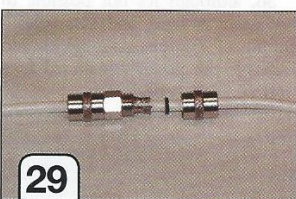
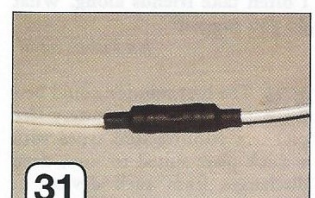
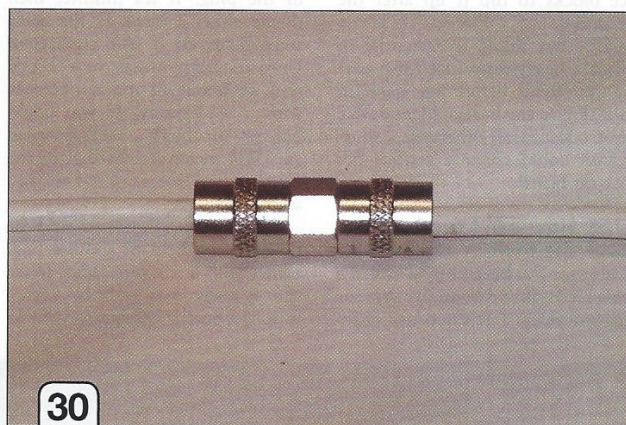
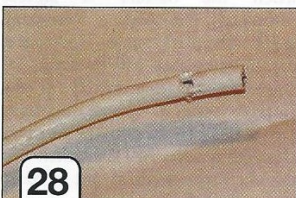
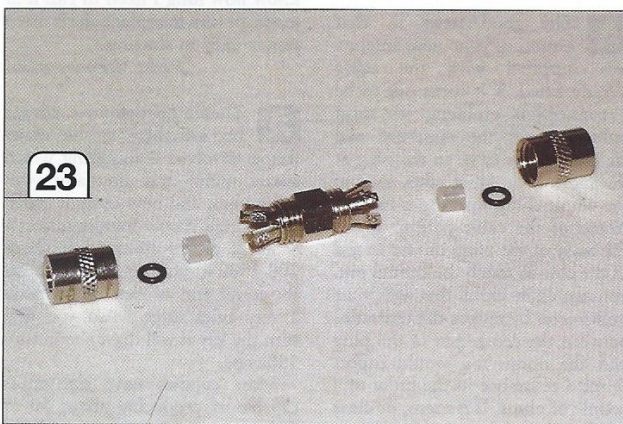
**29.** Squeeze the arms together in pairs until all of them are fairly even and the body of the fitting can be passed over the top. Slide the seal up to the body and screw the nut snugly onto the body.

**30.** Follow exactly the same

procedure for the other end and the job is completed.

**31.** For total security, seal the fitting with heat shrink. It's slipped over the fitting and heated gently with a hot air gun until it shrinks tightly against the fitting. An arguably less effective alternative is to use self-amalgamating tape.

**32.** Back in business. With everything up and running, the antenna is ready to connect us to the world (or 30 or so miles).



## CONTACTS AND TIPS

For details of all types of marine aerials and plugs and sockets, contact your local chandler or:

**Communication Aerials.** Unit 1a, Woodland Industrial Estate, Eden Vale Road, Westbury, Wiltshire BA13 3QS Tel: 01373 822835  
[www.communicationaerials.com](http://www.communicationaerials.com)  
[info@communicationaerials.com](mailto:info@communicationaerials.com)

### FOR SUCCESSFUL SOLDERING:

1. Use plumbers heat pad to avoid damaging surrounding areas.
2. Keep soldering iron well away from polished surfaces.
3. Always tin the tip of the soldering iron before using.
4. When hot, wipe off excess blobs with a damp rag.
5. When cold, use fine grade glass paper to remove blobs.

