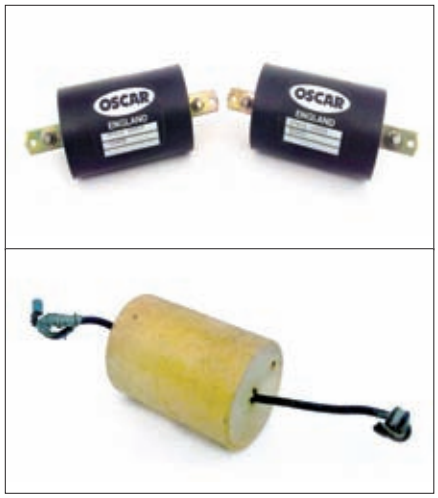
Old Antenna For Sale!

In his Buying Second-hand column this month, Chris Lorek G4HCL offers advice on second-hand antennas – items which he considers to be a great bargain rather than useless bits of metal!

The steel-wire brush is a little 'savage' to use on aluminium elements, a brass-wire one is preferable.



Two types of encapsulated traps for wire antennas that normally have few problems.

Many Radio Amateurs will have taken advantage of better summer and autumn weather to put up their shiny new antennas – often leaving their old antenna system lying around in the garage or the garden shed, just waiting for either a good home or to be taken to the dump. This is where we come in!

It's often said that "your antenna system is the most important part of your station", and it's certainly true that, what you plug into the antenna connector of your transceiver or receiver has a very great effect on the on-air performance of your station. Many people however, think little of the antenna and just erect something that's often a compromise.

Of course, if you've got space limitations or you don't want to go along the route of trying to obtain planning permission for a mast or tower – then you'll naturally be restrained in what you can use. Or perhaps maybe you simply don't want anything that looks rather obtrusive? Either way, there's a large choice out there waiting to be purchased!.

Why Buy Second-Hand?

The most compelling reason to buy a second-hand antenna, is probably because of price considerations. It's possible get a good second-hand antenna at a fraction of the price of a new one, as unlike electronic equipment, antennas just don't seem to hold a good re-sale price.

In fact, owners have been known to throw, or give away their old antenna, when getting a new one. The new antenna may have been purchased to help improve their station, be it fixed or mobile, or perhaps to add new bands, such as the 'newish' World Amateur Radio Conference (WARC) high frequency (h.f.) bands, to their older trapped h.f. vertical or beam antenna system. Remember that many older design 'trapped' type antennas only operate on the 14, 21 and 28MHz (20, 15 and 10m) bands.

So, to help, I'm providing some –hopefully useful – pointers for you on what to look for either after you've bought the antenna (or even better) before you do so. If it's the latter – you may get an even better bargain!

Physical Damage

If the reason for the (seller's) newer antenna is that their old antenna has become physically damaged – you'll probably need some mechanical skills. Prime examples for this sort of damage are h.f. trapped vertical antennas, which seem invariably prone to this for some reason. Many of them come away from their lower mountings and the tubular elements are damaged by whatever they fall onto.

Mind you, a friend of mine who lives by the coast often has had the tubular antenna elements on his 144MHz beam damaged by heavy seagulls using them as perches. This then leads to the elements bending. Then after being repeatedly re-bent back by him, they finally snap as the seagulls take off*.

Unfortunately damaged antennas like these are commonly resigned to a place in the non-ferrous recycling bin at a local dump. In my experience, the owner typically just wants to replace it – maybe with their household insurance settling the invoice.

If you place an ad, let's say in the 'Wanted' ads section of *PW*, for an unwanted but damaged antenna and offer to collect it, you'll often get it for a low price. Fortunately, eplacement aluminium tubing is readily available from suppliers, either a local supplier if you're lucky, or by mail order otherwise.

As an example a typical price of a 2m length of 12.7mm (half inch) outside diameter 16s.w.g. wall aluminium tube is around £9, and around £10 for a similar length of 15.875mm (5/8th in) outside diameter tube, with plenty of other sizes and wall thicknesses being readily available. All you need is a small hacksaw and maybe a small drill and you've an almost 'good as new' new h.f. vertical or v.h.f./u.h.f. beam antenna made from the damaged one.

***Editorial note:** The guano produced by the birds is also extremely corrosive Chris! **G3XFD**.*

Centre Junction Boxes

Apart from obvious physical damage to the antenna elements, the other thing to watch out for is the centre junction box of a beam or dipole antenna. This is small plastic enclosure into which your coaxial cable enters and the driven antenna elements emerge from. Open this up and take a look inside. If you see plenty of corrosion then you'll know that water will have probably got in.

Water damage is no great problem, a good clean with a metal brush will usually do the trick for the interior connections, use a finer brass-wire brush rather than the steel-wire ones. Then after doing the clean-up there should be a good (zero-resistance) connection between the internal connections and the relevant antenna elements. Once you've connected your own coaxial cable to the cleaned up points, make sure you seal the box well externally.

When sealing a mid-point box, self-

amalgamating rubber tape (***not*** ordinary *pvc* electrical insulating tape) works very well. You can get this from do-it-yourself and plumbing and electrical suppliers. To use it you remove the backing tape and stretch it to around twice its length while you wrap it over the junction box. The rubber tape then literally 'melts' or amalgamates into itself forming a waterproof seal. You'll need a knife to cut it off when you want to remove it.
Tip: Any surface about to receive a layer of self-amalgamating tape must be absolutely dry. Any hint of dampness will make the tape ineffective.

Enclosed traps, for tubular elements should be mounted with their drain holes at the lowest point.

Traps & Loading Coils

There are typically two types of traps and loading coils; encapsulated types as you'll find on h.f. wire antennas such as trapped dipoles and metal-encased types as you'll find on tubing-based multi-band antenna elements. Encapsulated types shouldn't give you any problems, the end connections may invariably be tarnished or corroded but, again, these connections can easily be cleaned up with a wire brush.

Metal encased traps are hollow and have air inside them and they'll often be satisfactory electrically. This type usually has drain holes to let out any water that may have got in. When re-assembling traps onto horizontal elements, they should of course be oriented with the drain holes pointing downwards. That's, of course, so that water that does get in, drains away rather than pooling inside.

However, putting the holes in traps at the lowest point, doesn't stop insects, like flies, spiders, or even ants getting in. They can often make the hollow trap their home, sometimes in a large colony! So if you find that one or more of the traps or loading coils on your second-hand antenna isn't working as it should be, and the electrical conductivity between physically connected elements is okay (check with a multi-meter on a low ohms setting), then carefully open up the traps in turn to see whether an insect infestation could be the cause of the problem.

Buying VHF/UHF Mobile Whips

Apart from physical damage and maybe a bit of road grime, second-hand v.h.f. and u.h.f. whips should normally give you no problems at all. That is unless the previous user has put excessive power into the antenna causing arc-over or burn-outs. But this is very unlikely, as most mobile rigs have limited transmit power. So, one of these should normally be a good buy if you find one.

A VHF/UHF Base Collinear?

The golden rule with multi-band or collinear v.h.f./u.h.f. antennas, is to check the antenna's s.w.r. readings on all bands before you put it up in the air! If you'd like to check one before you buy it, then take a dual-band handheld and a suitable s.w.r. meter and patch lead along with you.
These antennas are invariably designed to be operated in free space. So, unlike mobile whips which usually need a ground-plane, they won't need any radials apart from any which are part of the antenna itself and attach to the base section.

A quick check of the s.w.r. should show if the antenna is operating correctly. These antennas are usually encased in either a fibreglass tube or a hard plastic or polycarbonate tube, and the inner element assembly is often secured using some sponge foam spacers at intervals. Intermittent problems could arise if the antenna has been repeatedly flexed by the wind in the past, so while holding it at the base, give it a shake while you're monitoring the s.w.r.

If there are sudden 'jumps' in the reverse power, it could indicate a loose inner connection. Some antennas element assemblies can be pulled out by unscrewing the lower fixings between the coaxial cable connector and the metal section attached to the outer fibreglass sleeve. All you have to do is simply re-solder the internal connections and re-assembling the antenna, which should result in perfect performance again.

Sadly that's all I have space for this time but if any readers would like me to cover a specific type of equipment I'd be most pleased to hear from them. I can be contacted by email to **g4hcl@rsgb.org.uk** or post to **PO Box 400, Eastleigh SO53 4ZF.**

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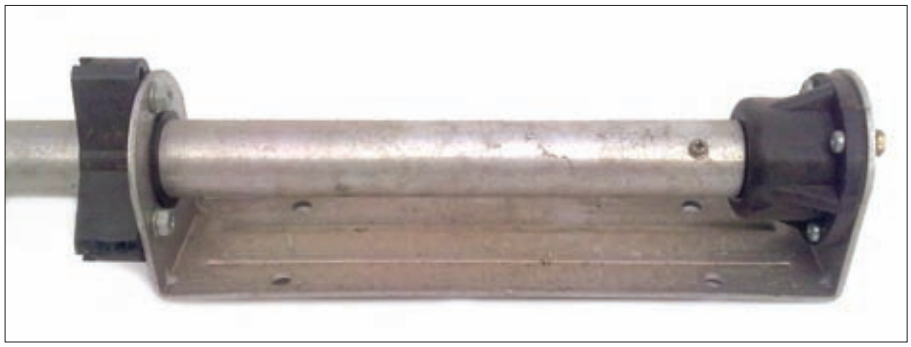
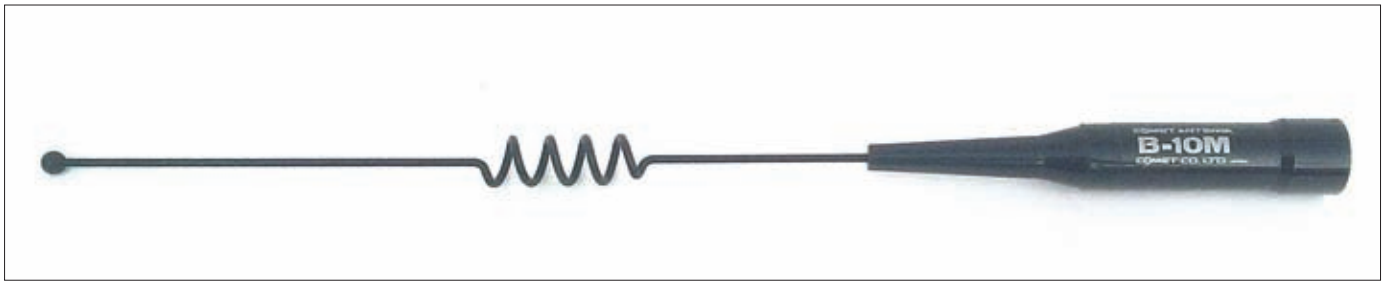

Vertical antennas often have small crack in the base of the bottom tube and corrosion at the lowest connections due to water damage.



Mobile whip antennas usually are problem-free.