

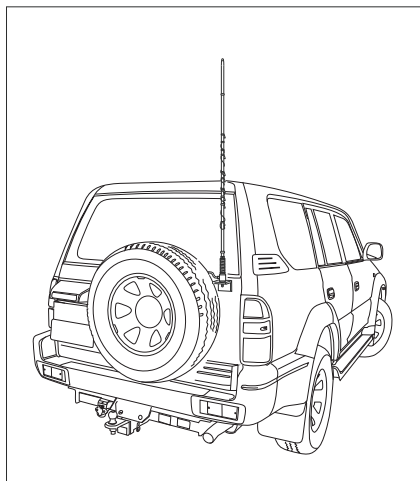
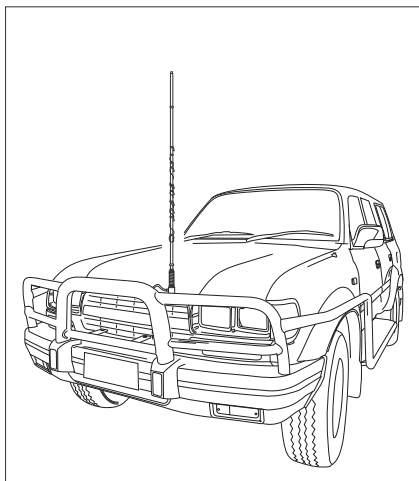
2014/914 Series manual tap whip antenna

P/N BC201400

Installation Instructions

2014/914 Series Manual Tapped Whip Antennas are mounted on vehicles using a heavy duty base and spring (Barrett P/N BCA201400/BCA91400). The whip should be mounted on the vehicle in positions such as those illustrated in the diagrams below. A bracket, fabricated to withstand the forces and vibration that can be expected during off-road driving, should be used to mount the antenna base and spring to the vehicle. When locating the mounting position for the antenna, the ring located above the label at the bottom of the whip should be level with the surrounding ground plane, eg. the bonnet of the vehicle or the roof of the vehicle. Ensure that the mounting bolt on the base and spring is electrically bonded to the chassis of the vehicle via a very low resistance path, ie. clean all joints to bare metal and use braid earth straps if any non-metal joints are encountered. Use only good quality coaxial cable and water proof UHF connectors (such as those supplied by Barrett Communications). **Do not use PL-259 UHF connectors.**

When running the coaxial cable from the antenna to the transceiver avoid sharp corners and heat such as that generated by the manifold of the engine. After installing the antenna check the antenna SWR on each channel. Generally if the antenna has been mounted in the positions as illustrated, the SWR will be less than 1.6-1 and no adjustment is necessary.



If the SWR is not lower than 2:1 the antenna to ground capacitance in that installation is probably outside of the design range of the factory set tuning. Consideration may be given to retuning the whip if the SWR is so high as to cause the transmitter ALC system to begin to reduce power (to protect the transmitter).



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For each frequency which will not tune correctly you will need to determine whether the tuning is high or low in frequency. Generally any frequencies which will not tune will always be out the same way. When the antenna is made most frequencies are deliberately made on the low frequency side and adjusted upwards by the placement of "tuning rings". Tuning rings are single short circuit rings of 20 amp fuse wire placed on the windings of an individual part of the antenna. A tuning ring inductively raises the frequency of the section of antenna over which it is placed.

It must be understood that the tuning of an antenna on a particular vehicle or installation may not hold for other vehicles or installations. To determine whether any particular frequency tap is high or low hold the tune key down on the relevant frequency and observe the SWR on a suitable meter. Get an assistant to slowly move his outstretched arm closer to the antenna tap in use.

If the SWR gets better then the antenna is too high in frequency. This indicates that there is insufficient antenna to ground capacity. Usually this happens when the antenna is mounted too far away from the body of a vehicle. Either resite the antenna closer to the vehicle or remove any tuning rings which are already on the antenna.

If the SWR gets worse when following the above procedure then too much capacity is already present, this is frequently encountered when mounting the antenna too low on a vehicles bumper bar or when mounting close to bodywork as in cab-over type vehicles. In this case either resite the antenna further away or add extra tuning rings to the frequency sections affected until a suitable SWR is obtained.

Note: Cab-over installations usually produce distorted radiation patterns even when the SWR looks good.

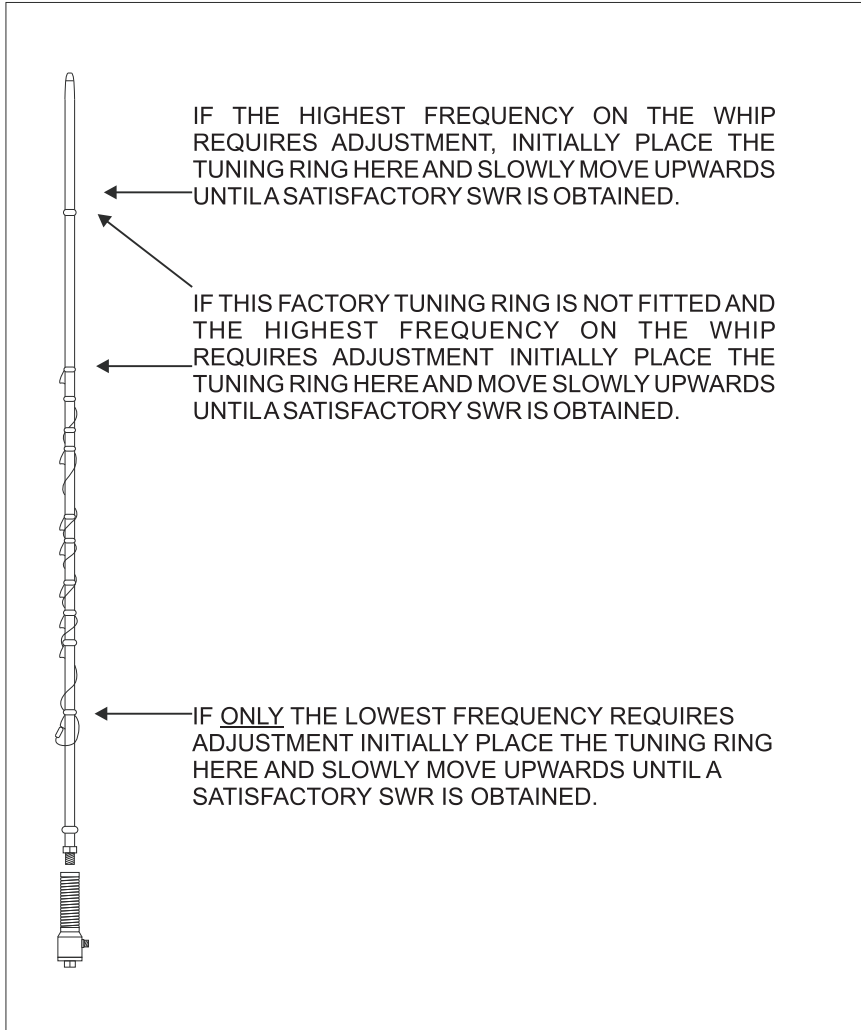
When tuning is complete any new rings added should be coated with epoxy resin to secure and protect the ring from damage. Five minute quick setting type epoxy is suitable. If rings need to be removed they may be cut off using a sharp pair of side cutters. Take care not to cut into the body of the antenna.



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Tuning Ring Placement:-



Note: If the wander lead is damaged or lost and requires replacing the number on the first tap eg. WL-60 indicates the length of the wander lead was 60cm. When making a replacement wander lead ensure it is made to this length to obtain optimum performance.



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Operation Instructions

The 2014/914 manual tapped whip antenna should now be screwed into the base and spring mounted on the front of the vehicle.

The operation frequency being used on the transceiver should now be selected on the antenna. This is done with the supplied jumper lead as indicated in the diagram below and the following example (Note:- this is an example only and your antenna will be manufactured with different frequency taps).

An example below illustrates the operation:-

The 2014/914 manual tapped whip antenna used in the example has the following frequencies:-

Channel	1	4030 kHz
Channel	2	4760 kHz
Channel	3	5190 kHz
Channel	4	5254 kHz
Channel	5	7180 kHz
Channel	6	8199 kHz
Channel	7	9134 kHz
Channel	8	9145 kHz
Channel	9	10567 kHz
Channel	10	14567 kHz

When using Channel 1, frequency 4030kHz, the jumper lead should be removed from the bottom antenna socket and stored in the vehicle. On all other channels the jumper lead is required:-

For Channel 2 , frequency 4760kHz, the jumper is plugged into the bottom socket then wound tightly around the antenna and the other end plugged into the socket marked 4760.

For Channel 3 , frequency 5190kHz, the jumper is plugged into the bottom socket then wound tightly around the antenna and the other end plugged into the socket marked 5190.

For Channel 4 , frequency 5254kHz, the jumper is plugged into the bottom socket then wound tightly around the antenna and the other end plugged into the socket marked 5254.

And so on to channel 10.

Note:- It is important for correct operation of the whip antenna to have the right frequency tap selected as indicated above and that the jumper lead is wrapped tightly around the antenna between sockets.

Illustrated is a 10 frequency 914 manual tapped whip antenna with the highest frequency being selected.

