

Please check the completeness of the delivered antenna kit with the parts list on the invoice. All parts needed for self construction should be in the kit.

This manual is only a recommendation on how you can build up a working antenna with the delivered parts. Individual adjustments are possible. In all cases the customer is responsible for the proper function of the antenna.



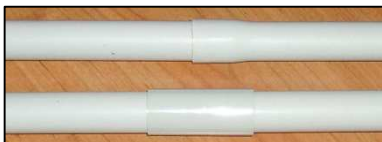
All lengths and measurements of our antennas have to be followed exactly, otherwise you will not have the predicted results.



Lightweight yagis are not constructed for permanent installation and may be damaged by wind and weather. But they are very good for all outdoor activities, for example SOTA, where less material and less weight is advantageous.



The boom:



The boom is a 20mm or 25mm diameter PVC tube and is being delivered in length of one meter. If it is delivered in two or more parts, you can put it together with the flange at the end of a rod or with the sleeve socket (see picture). To prevent twisting of the tubes you can fix it with tape or hose clamps (not in the kit). Check first if the element positions collide with the PVC tube connection. If yes, shift the elements until the tube connection is between two elements. Cut the tube to the desired length, but leave at least a space of 7,5mm from the end of the tube to the last elements. 7.5 mm is the space between element center and the end of the PCV clamp.



If you build an antenna with a boom length over 2 meters, you should use ropes to support the boom vertically (not in the kit).



Mark the positions for the elements. We recommend using tape in front and behind the clamps and leave enough space for the clamp.

Mounting of reflectors and directors:

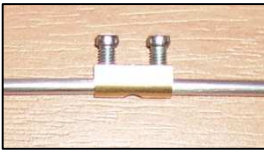


We use 3.2mm or 4.0mm aluminium rods for the parasitic elements. The rods are mounted with PVC clamps to the PVC rod. Shorten the rods to the desired length according the measurements table.



If you build a 144 MHz yagi please keep the rest pieces of the rods, you will need one for the reflector!

Drill a horizontal hole through the upper part of the clamp (3.2 or 4.0mm, depending on the rod diameter) and push the rod through this hole so it is centered in it. You may fix it with some glue if needed. No matter if the tube is not exactly horizontal in the clamp, you can correct this when mounting it on the tube. Don't forget to mark the elements with their number (Ref., D1, D2, D3 ...)



Because a reflector of a 144 MHz yagi is longer than 1m, you have to lengthen the rod with one rest piece from the directors and one connector of a terminal strip (without housing).

Construction of the dipole:

Making the connection box



Cut the two lugs from the box and make a hole in one of the short sides of the box, which will be used to fix the coax socket (16mm for N or HF socket, 10mm for BNC socket). For the fixing on the boom drill two holes through the base of the box. One at the dipole counterpart to the coax socket and one in the near of the coax socket (take care that screw and coax socket haven't contact).

In our example we made the hole for the dipole 8mm away from the wall, and the one on the coax side 16mm to the wall.



Coax socket side :

Push the M4x14mm screw with one flat washer through the PVC clamp, then through the bottom of the box and fix it with a flat washer and one hex nut.

Dipole connector side:

Drill the center hole of the dipole connector with a 4mm drill to make it bigger. Push the M4 x 20mm screw with one flat washer through the PVC clamp and then through the bottom of the box. Plug the dipole connector over the end of the screw and fix it only with one nut. Then drill holes for the radiator rods into the side wall of the box.

The Radiator



The radiator consists of two aluminium rods with 4mm diameter, which are pushed into the dipole connector. The break in the middle is about

10mm. The given length of the radiator is the length from tip to tip including the break in the middle. You can leave it a bit longer to be able to tune the antenna after it is finished.



In some cases the radiator is longer than 1010mm (maximum length with dipole connector). Then we enclose 2 pieces of 1m aluminum rod, so you can make each radiator half of one of these rods.



Carefully drill two 2.5mm holes into the dipole through the left and right hole in the dipole connector. You may fix the rods with

tape on the dipole connector to prevent them to slide away. Lay the dipole connector into the box and push the radiator rod from the outer side into the dipole connector through the wall of the box. Now carefully screw the two 2.9 x 9.5mm screws together with the solder lugs into the connecting holes. Mount the coax socket to its place.



Kabeldrossel bei 50 Ohm Design Yagis



Because 50 ohm design antennas do not need a transformation, they can be fed with a simple coil containing 5-7 windings of 50 ohm coax cable (RG188 PTFE cable is delivered) on a 16mm PVC tube. The one end is connected to the coax socket, the other to the dipole

rods. Please be here also careful to keep the connections between choke and radiator as short as possible. By the way, the length of the used cable is not critical, but you should have at least 5 windings.



Solder one side of the choke to the solder lugs at the radiator. No matter which conductor you solder on the left or right side, but if you want to stack the antennas, all have to be made identically.

Then solder the other side to the coax socket – inner conductor on the pin and the outer conductor to the ground solder lug. Put the cover on the box and you are ready for the first test!

Last workings and fine tuning:

Mount all elements and the dipole to the boom, your antenna is ready. Use an (optional) mast clamp to connect the antenna to a mast and do some testing (use minimum 2 wavelengths height over ground). If you have an antenna with more than 2m length, you should use ropes to support the boom vertically. If it works well, you can seal all vents in the box with silicone or hot glue.

If it not works well, you can try fine tuning with the radiator length. On 70cm also the length of the feeding cable can have a transformation effect. This should not happen with 50 Ohm feeding, but we have 50 ohms only on the resonance frequency. Below and above this frequency the feeding is not 50 ohms and special cable lengths can cause transformation effects. Also the surrounding of the antenna can cause different feeding impedance and therefore mismatching.

Hint: Please check first all element lengths and distances. Also there should not be any short circuit between the two dipole halves.

Info only for twinband antenna kits 2m/70cm:

The 70cm element which is near the radiator, is the so called open-sleeve-element, and can be used to tune the SWR on 70cm. Shift the element some millimeters to adjust the SWR. In some cases also a correction in length can be helpful.

Important information only for 430 MHz antennas:

- The coax socket shows always backside to the reflector and the feeding cable goes over the reflector and should be lead under the boom towards the mast.

- Middle mounting of 430 MHz yagis on electro conductive masts could destroy your radiation pattern and should be avoided. The effect is lower with more distance of the mast to the radiator, so at shorter antennas the effect can be much bigger than at long yagi systems. 430 MHz antennas should always be mounted with a support (available as accessory) or at least with an L-profile over the top of the mast (elements over the top). If you're using non-conductive mast material, for example glass-fiber tubes, you can mount the antenna without any problems in the middle.

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If you have critic or suggestions regarding this manual, please contact us:

Attila Kocis Kommunikationstechnik
Lenzenweg 2
D-96450 Coburg
GERMANY
Fax: +49 9561 3551883
E-Mail: nuxcom@nuxcom.de

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Drilling, cutting and other technical work have to be done carefully and can hurt you. We are not responsible for any accidents which result in following our instructions in the manual. Please be careful.