

Construction Guide: Spiderbeam 40m Add-On Dipole

6. Spiderbeam 40m Dipole

Required Material for Both Versions:

Pos	QTY	Description
1	1210cm	Wireman CQ-532 Copperweld Wire
2	986cm	Wireman CQ-534 Copperweld Wire
3	210cm	Enamel-Insulated Copper Wire 1.5mm dia.
4	2	Coil Form, 35mm dia., 50mm long
5	30cm	Heat-Shrink tubing, 3/1 mm with hot-melt-glue inside
6	20cm	Heat-Shrink tubing, 6/2mm with hot-melt-glue inside
7	12cm	Heat-Shrink tubing, 40/13mm with hot-melt-glue inside
8	8	Polyethylene Insulators, black, UV-resistant
9	2	M6 Tubular Solder Lugs, galvanized and tinned
10	25m	PVDF Monofil Line, 1 mm dia.
11	10	Wire-Tie, UV-resistant 100x2.5mm
12	1	Seilrolle (20cm Durchmesser)

For Portable Beam:

13	2	Fiberglas-Tube, Length = 1.15m, Diameter = 35mm, Wall Thickness = 1mm
14	2	Stainless Steel Hose-Clamp, 30-45mm Diameter, 9mm wide
15	25cm	Flat Rubber Strip UV-resistant), 15mm wide, 3mm thick
16	20cm	Heat-Shrink tubing, 13/6mm

For HD Beam:

17	2	Fiberglas-Tube, Length = 1.15m, Diameter = 35mm, Wall Thickness = 2mm
18	2	Stainless Steel Hose-Clamp, 25-40mm Diameter, 9mm wide
19	22cm	Flat Rubber Strip UV-resistant), 15mm wide, 3mm thick
20	16cm	Heat-Shrink tubing, 13/6mm

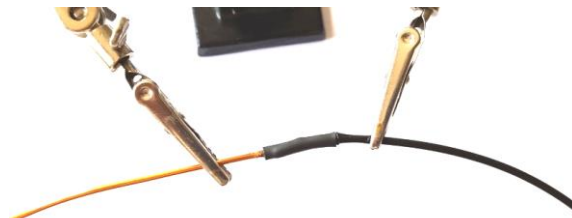
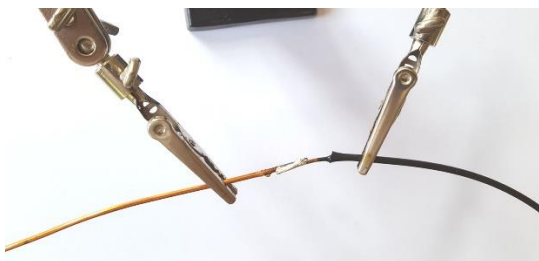
6.1 Construction of the Wire Elements with Loading Coils

- Cut two pieces of enamel-insulated copper wire, each 105cm long. Remove (scratch off) 10cm of insulation from each end of both wires.
- Cut two 250cm pieces of CQ-532 wire; remove 10mm of insulation from each of their ends.
- Cut two 355cm pieces of CQ-532 wire; remove 10mm of insulation from each of their ends.
- Cut four pieces of heat-shrink tubing (3/1 mm) 20mm long.
- Cut two pieces of heat-shrink tubing (40/13mm) 60mm long.
- Cut two pieces of heat-shrink tubing (3/1 mm) 30mm long.
- Cut two pieces of heat-shrink tubing (6/2 mm) 30mm long.

1.

Solder one end of the 105cm copper wire to the 350 cm piece of CQ-532 wire.

Then slide a 20mm piece of 3/1 mm heat shrink tubing over the connection and shrink with heat.



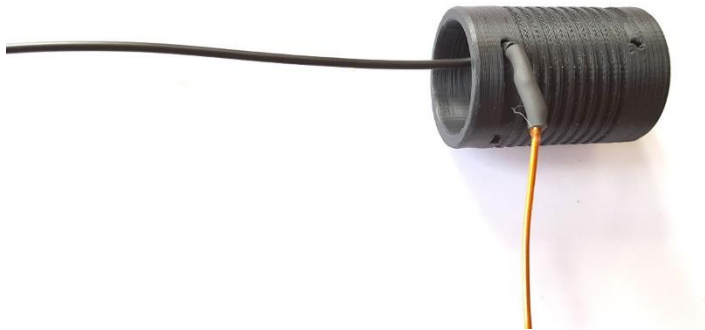
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2.

Solder a 355cm piece of CQ-532 wire to the other end of the 105cm copper wire; then (like above) slide a 20mm piece of 3/1 mm heat-shrink-tubing over the connection and shrink with heat.

3.

Insert the other end of the 355cm piece of CQ-532 through the coil form and pull it all the way through until the soldered-splice is resting in the thick groove at the beginning of the coil form.



4.

Now while pulling the wire tight, wind the copper wire into a coil, such that it fits snugly into the grooves. When reaching the end of the copper wire, insert the far end of the CQ-532 wire through the hole in the coil form and pull the wire tight, such that the heat-shrink tubing is sitting in the thick groove at the end of the form and the wire does not move on the coil form.



5. (please read step 6 before performing this step)

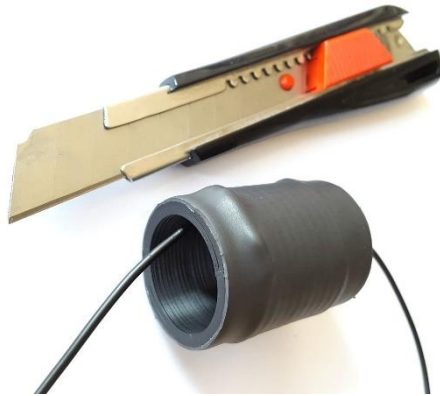
Slide a 60mm length of 40/13mm heat-shrink tubing over the coil and CAREFULLY shrink the tubing with **low temperature heat**, pausing from time to time, so that the coil form does not bend or get damaged from the heat.



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6.

Allow the tubing to cool off a little, but while it is still slightly warm, using a sharp knife, carefully cut off the excess tubing extending beyond the coil form. The tubing should be flush with the ends.



7.

Slide a 30mm piece of 3/1 mm and 30mm piece of 6/2mm heat-shrink tubing over the end of the 355cm CQ-532. Solder a 90° solder lug to the end of the wire. Then slide the 3mm heat-shrink tubing **against** the solder lug, heat and shrink. Next, slide the 6mm heat-shrink tubing **over** the solder lug, heat and shrink.



8.

Repeat steps 1 through 7. Then mark the dipole legs (wires) with "DIR" and "REF".



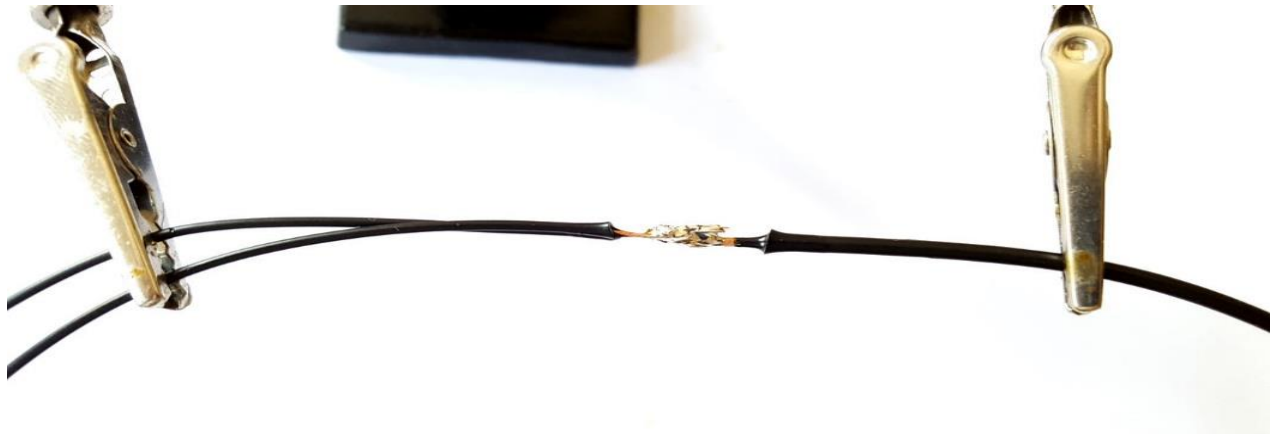
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6.2 Installation of the T-Wire (Capacitive-Loading Wires) and Monofil Guy Line

- Cut two 283cm pieces of CQ-534 wire, and carefully remove 10mm of insulation from one end.
- Cut two 210cm pieces of CQ-534 wire, and carefully remove 10mm of insulation from one end.
- Cut two 575cm long pieces of Monofi.
- Cut two 645cm long pieces of Monofi.
- Cut two pieces of heat-shrink tubing (6/2 mm) 30mm long.
- Cut two pieces of heat-shrink tubing (3/1 mm) 50mm long.

1.

Splice the two 283cm CQ-534 wires together and connect the to the dipole leg marked “REF”; **Solder**.
Splice the two 250cm CQ-534 wires together and connect the to the dipole leg marked “DIR”; **Solder**.



2.

Slide a 50mm long piece of 3/1 mm heat-shrink tubing over the splice and heat to shrink. Then slide a 30mm long piece of 6/2 mm heat-shrink tubing over the 3/1 mm tubing, heat to shrink. Do this for both ends of the dipole.



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3.

Push each end of the capacity-loading wires through the one end of an insulator and pull about 25 cm of wire through the insulator. Tie a double-knot 15 cm from the outer end of the wire.

(outer end)



4.

Fold back 10 cm of wire at the point 5 cm away from the knot and fasten with two small wire-ties.



5.

Slide a 575 cm long Monofil Line through the other end of the insulator, pulling it through to the slot, and secure by tying a 3-knots over each other (on the slot side of the insulator). Slide the other end of the Monofil through the end of a second insulator, pulling the line through to the slot side, then secure with another triple-knot, 535 cm away from the first knot.

6.

To roll the two CQ-534 capacity-loading wires with their Monofil lines onto the large plastic reel that came with the dipole kit, first wind one of the wires onto the reel, then wind the other wire onto the reel. Finally, wind the wire leg of the dipole onto the reel.

7.

Repeat steps 9-13 for the „DIR” side of the dipole. Use the 210 cm lengths of CQ-534 and 645 cm long Monofil lines for these steps. The distance between the knots is 604 cm.

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6.3 Assembling the Mounting Brackets (Hose Clamps)

- Cut two pieces of 15x3mm flat rubber strip: Portable Beam: 12.5cm long, HD Beam: 11 cm.
- Cut two pieces of 13/6mm heat-shrink tubing: Portable Beam: 10cm long, HD Beam: 8 cm.

Then open the hose camps completely and lay flat onto the rubber strip, as shown below:



Slide the heat-shrink-tubing over them as shown below:



After heating and shrinking, it should look like this:



Now screw the end of the clamp
Back through the fastener:



15mm

6.4 Construction des Baluns am Spiderbeam

The 40m dipole can be used either with a separate feedline and balun, or it can be connected to the existing balun of the Spiderbeam. **IMPORTANT:** please only use an original Spiderbeam Balun – the antenna has been tested with this balun.

1.

For the addition of the 40m dipole, each end side of the boom must be extended with one additional fiberglass tube section. The boom consists of the two spreaders supporting the middle of the wire elements. The front side supports the Directors, the back side supports the reflectors.

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2.

Connect the 40m dipole to the balun in the middle of the Spiderbeam. Stretch out the side marked DIR towards the Director side of the boom. When you reach the T-Junction (where the two CQ-534 wires are soldered to the dipole leg), fasten the T-Junction to the extension tube on the Director side of the boom using a clamp prepared in section 6.3 above. The fiberglass extension tube is longer than required. You may saw off the excess length if you wish, being careful not to saw off too much.

3.

Stretch the Capacity-loading wires to the left and to the right, and fasten their Monofil extension lines to the ends of the side spreaders.

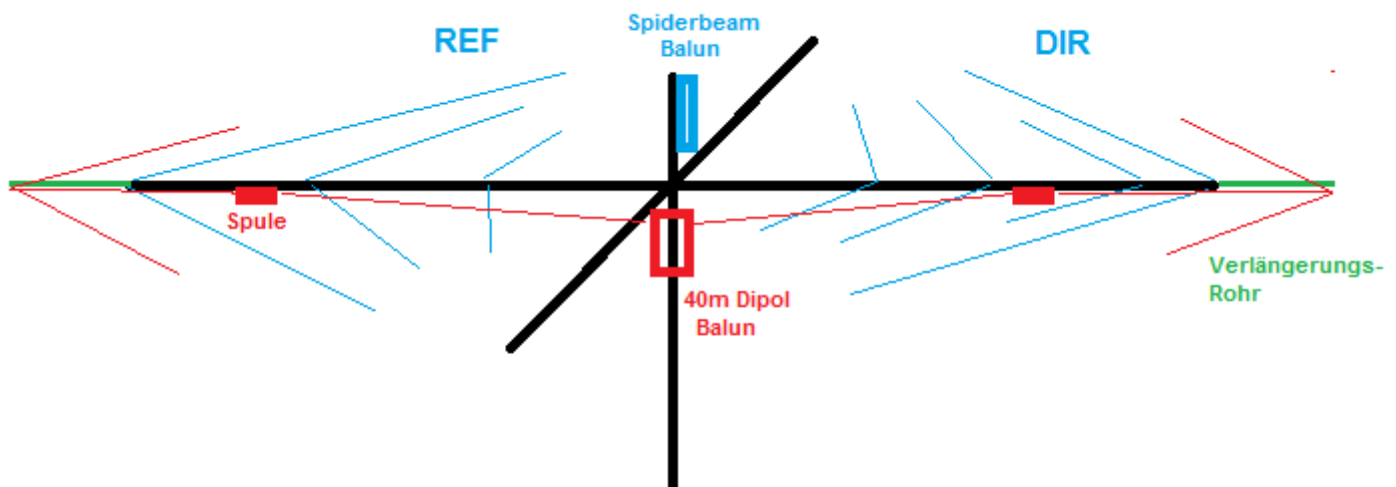
4.

Optional: The loading coils may be fastened to the boom with wire-ties, but this is not a must.

5.

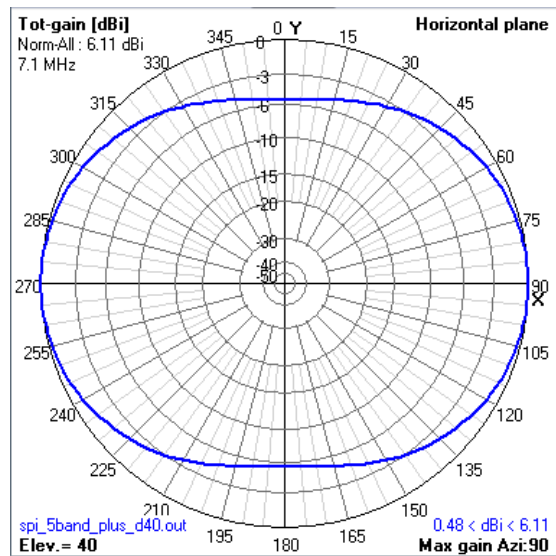
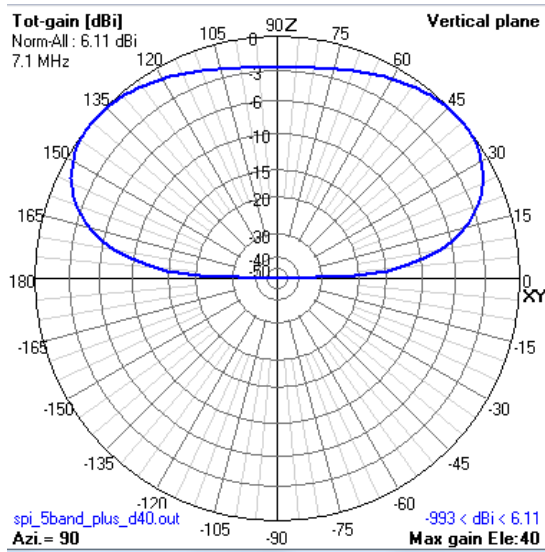
Repeat steps 1-4 for the dipole side marked with "REF", fastening it to the extension tube on the Reflector side of the boom. NOTE: YES, the capacity-loading wires on the REF side are longer than those on the DIR side. This is intentional. You can see this in the picture below:

(Note: "Verlängerungs-Rohr" = Extension Tube; "Spule" = Loading Coil)



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6.5 Radiation Pattern und SWR in 15m Height above Ground



SWR (50 Ohms)

