



Two element QUAD antenna

Model

RQ-26H

Technical Specifications
and assembly manual

ANTENOS EUROPAI

www.antenna-europe.com

+ 370 687 81414

sales@antenna-europe.com

Antenna **RQ-26H**- preset "Cubical Quad" on the bands 6, 10, 12, 15, 17, 20 m with heavy duty design. It uses the most advanced composite materials and aluminum alloys. We offer you a very solid construction with excellent electrical characteristics, and all advantages of "Quad" antenna. Company R-QUAD thank you for choosing our antenna, we wish you good luck and DX. 73!

WARNING!

Some parts of the antenna are electrical conductors that contact with overhead power lines, power lines and broadcasting wire may lead to electric shock. Before installing the antenna define the space to be occupied by this antenna in its turn, taking into account the height of your mast and its location. In this space **should not be** located overhead power lines, antennas, parts of buildings, etc.

Preparing for assembling the antenna

For the assembly and installation this antenna recommended to find a assistant. Before assembly, read this manual carefully and carry out instructions of your assistant. Check the package antenna Table 1 and prepare the necessary tools.

You may need rung ladder of 2 meters, screwdrivers, wrenches 7, 10 and 13, tape measure, a marker, a drill, a hammer, a soldering iron. In addition, prepare accessories and tools for lifting (lowering) your mast. We assume that the mounting and installation of the mast and rotator for our antennas already been held. For RQ-23 (RQ-25) antenna we recommended mast with minimum height 10 meters.

Our antenna is not comes with a coaxial cable. Get yourself the required amount of cables. On the choice of the type of coaxial cable and method of feed and matching active elements you can read below in the "Antenna Feed".

Attention!

The bases for the mechanical design of antennas are fiberglass pipes. Technology longitudinal-transverse oblique reinforcing synthetic high-modulus filaments used in the manufacture of tubes, guarantees their high mechanical strength, which they do not reduce the temperature range from -40 to +70 ° C. We strongly recommend that before you install the antenna **to paint** the surface of the pipes of any paint suitable for this purpose. After this procedure, you can be sure that the tube life is unlimited (excluding the impact of unexpected extreme loads). While working with fiberglass pipes recommend the use of gloves.

Table 1

Number in Figures	RQ-26H Package Contents (name, material, dimensions)	Quantity pcs.
1	Pipe Al. D16T 60x2,5x1500	1
2	Pipe fiberglass 23x2x2000 + 23x2x1100	8 + 4
3	Pipe fiberglass 30x2,5x2000	8
4	Plate Al. D16T 150x200x4,5	1
5 (51, 52, 53, 54)	U Bolt. steel. (profile, nut, Grover, washer)	13
6	Corner Al. D16T 40x4x500 + 40x3x500	4 + 2
7	Clamp, steel 23-35 (52 pcs.), 28-48 (24 pcs.), 16-25 (24 pcs.)	100
8 (81, 82, 83)	Bolt M4 steel. (nut, washer)	19

9 (91, 92, 93)	Bolt M6 steel. (nut, Grover, washer)	6
10	Plate for mounting cable glass fiber.	6
11	Wire for elements, marked	13
12	Terminals	12
13	Self-tapping screws	24
14	Clamp, plastic	18
15	Adapter for docking traverses 55x2x500	1
16	Extender traverses 55x2x1000	2
17	Eye nut M8 for attaching extensions poles	8
18	M8 Bolt (nut, Grover, washer)	6
19	Thimble M3	16
20	The bracket for attaching extensions to the poles	16
21	Kevlar Rope 2mm, m	60
	Drill d. 2.8 mm	1
	Drill d. 6.0 mm	1
	cotton Gloves	1 pair
	Sealing tapes	1 roll
	Wrench	2
	Pin M8x80	4
	Specification	1

Antenna Feed

To connect the coaxial cable to the active elements advance solder terminals as shown in Fig. 1. It is necessary to accurately withstand the dimensions shown in Fig. 1, as they come in size of the active element.

For antenna RQ-23 feed required 50 Ohm coaxial cable type RG-213, RG-8. All bands vibrators are fed directly to the 50 ohm cable of any length.

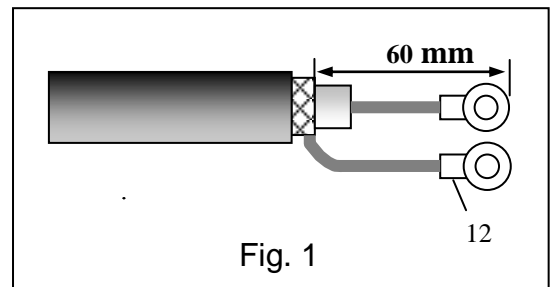


Fig. 1

Antenna assembly

Step 1 - Preparation of the boom.

Traverse is assembled from two tubes (1) connected via an adapter (15). At the edges of the traverse attached additional tubing (16) for fixing extensions poles (Fig. 2a). Thus, the total length of the traverse with extensions will be 4.1 m. Stretch ropes are mounted on the boom to the eye-bolts (17), which are installed on the boom as shown in Fig. 2a.

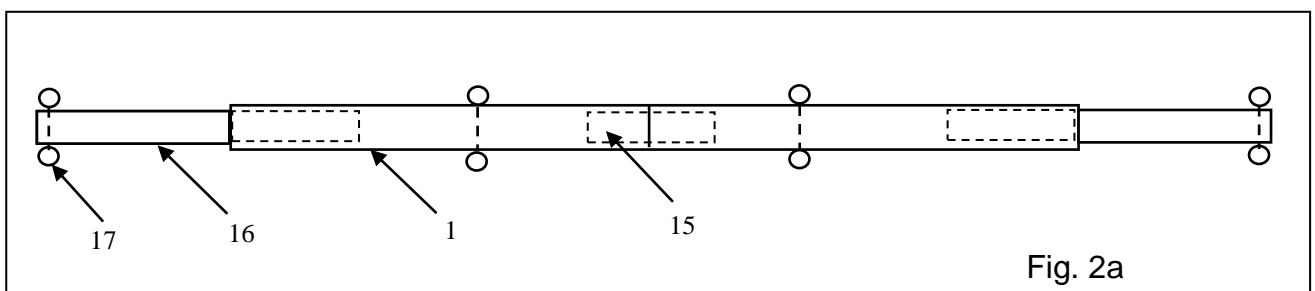
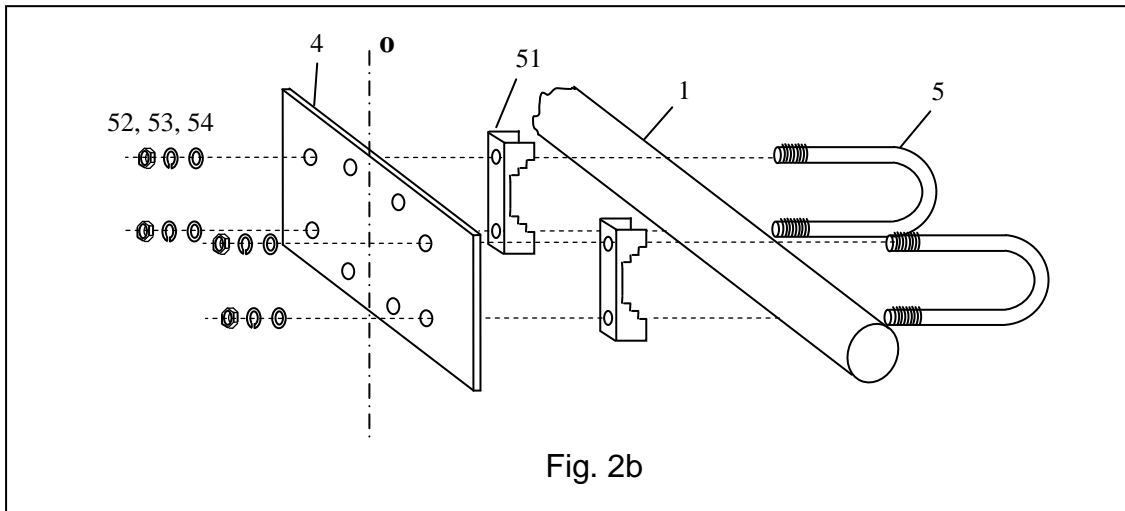


Fig. 2a

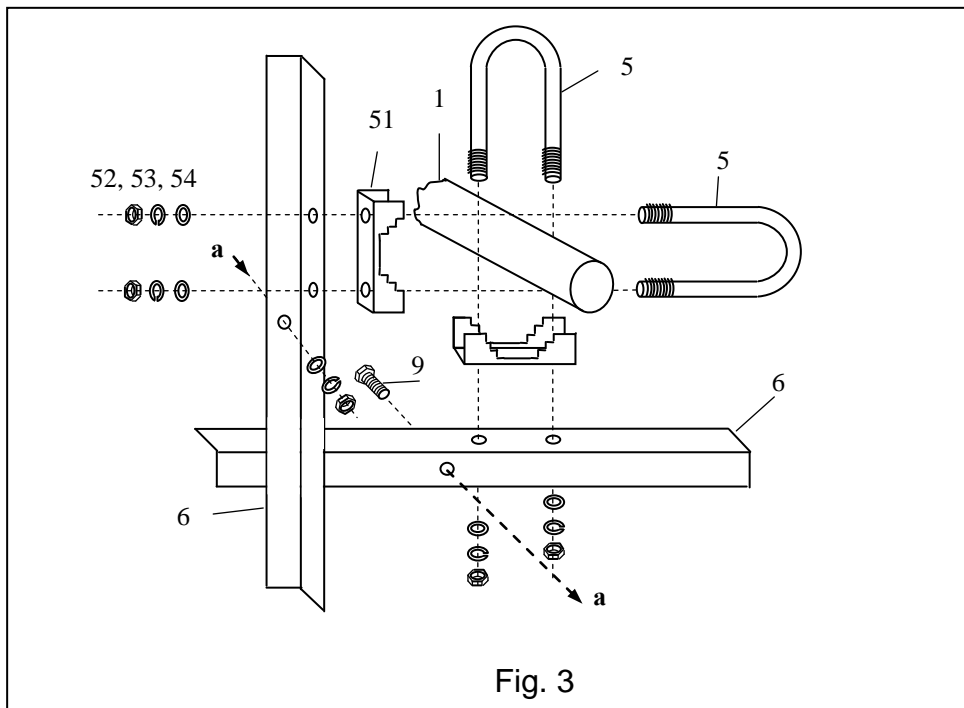
Fix the plate (4) in the center of the traverse (1) four U-Bolts (Fig. 2b). This is designed to mount an antenna on a vertical pipe with a diameter of 40 to 65 mm, which is

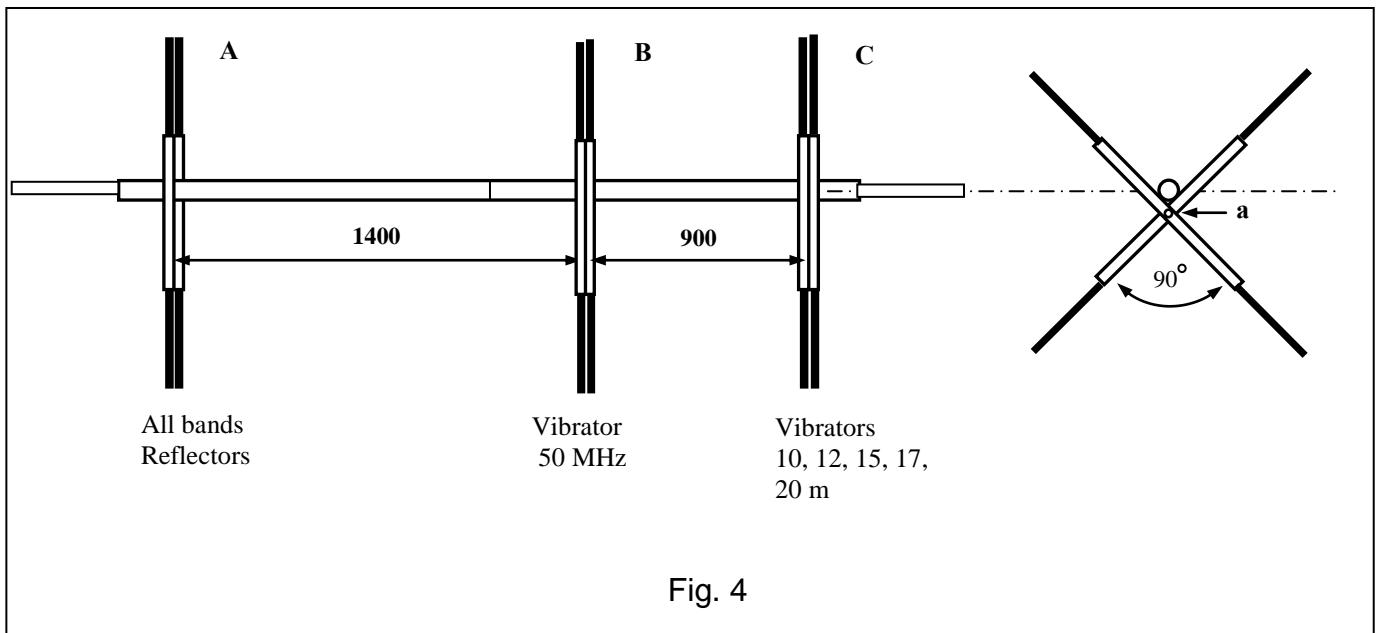
attached to the reverse side of the plate (4) is similar to the boom (1), but in a vertical plane (axis "o" in Fig. 2b).



STEP 2 - Mounting crosses

Attach the corners (6) at the end of the boom(1), as shown in Fig. 3 and 4. It is necessary to check the right angle between the two areas. To do this, you may need the angle. Tightening the nuts (52), it is necessary to check the perpendicularity of corners. Once you get cross of two perpendicular corners, a large drill bit that comes with the antenna drill two holes 6 mm diameter in the center of the cross (the point "a" in Fig. 3, 4) and fasten the corners of bolts (9) (Fig. 3). Similarly, a second cross assemble to the other end of the traverse on distance 2300 mm from the first. When installing a second cross note that both crosses were placed in the same plane along the axis traverse. The third cross 50 MHz band going similar but smaller than the thickness of the corners (3 mm).

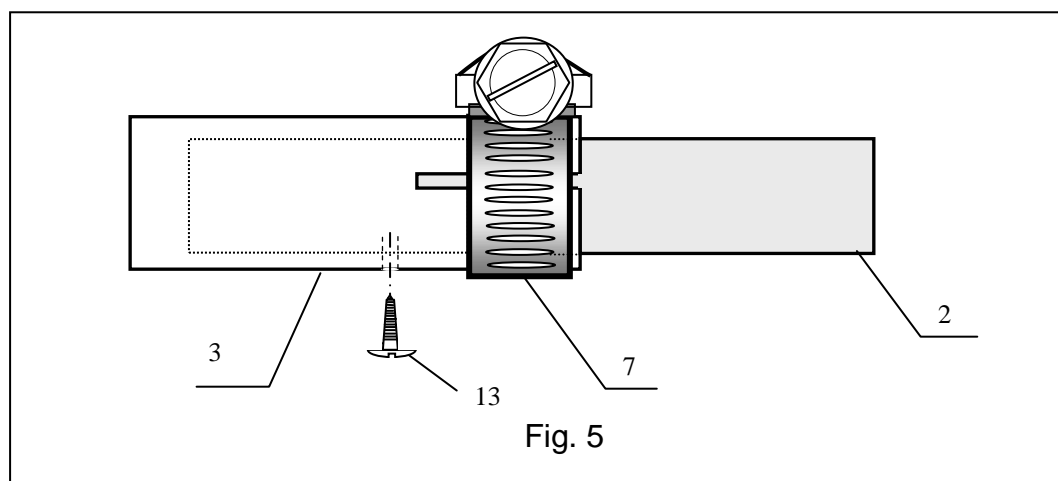


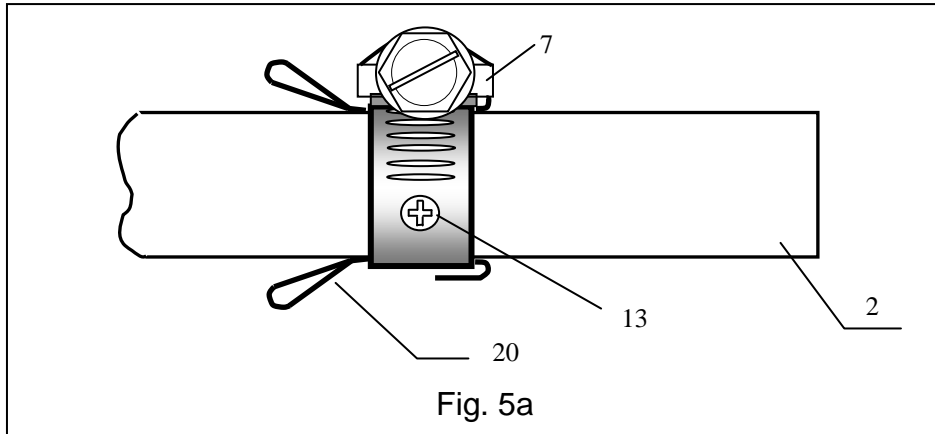


Step 3 - Assembling spreaders

Each of the eight spreaders **A** and **C** consists of two fiberglass tubes. One has an outer diameter of 23 mm and a length of 2 m, and the other - a diameter of 30 mm and a length of 2 m. At one end there is a thin tube of heat shrink material thickening. At the end of the thicker tube are longitudinal cuts. On the part of those cuts, insert a thin tube into the thick to shrink the size of the amount of thickening: turning a thin tube get a position in which it is easiest to enter the large (because of small oval), without disturbing the alignment of the two tubes (in order to avoid cracking of the thick tube). Then fix the two tubes by clamp (7), as shown in Fig. 5. The distance from the edge of the clamp to the edge of thick tube should be about 1-2 mm. Force when tightening the clamp can be roughly defined as follows. First tighten clamp with a screwdriver, and then takes one turn with a wrench 7. Next, drill a hole with a diameter of 2.8 mm at a distance of 10 mm from the edge of the clamp, as shown in Fig. 5. The hole must not be through, it is enough to drill two tubes with one side. At the opening of self-tapping screw (13) that comes with the antenna. Likewise assemble all eight spreaders. At a distance of 80 cm from the end of spreader fix the bracket (20) for fixing the spreader extensions, as shown in Fig. 5a. Staples should be directed towards the base of the spreader. When assembling the right spreaders can bind segments Kevlar rope (21) to the brackets (20). Kevlar rope segments must have a length of 3.7 m. The spreaders stretching Kevlar rope is attached to the brackets via thimbles (19), and to the eye-ring nut (without thimbles). Guying the spreaders of the antenna is shown in Fig. 11 .

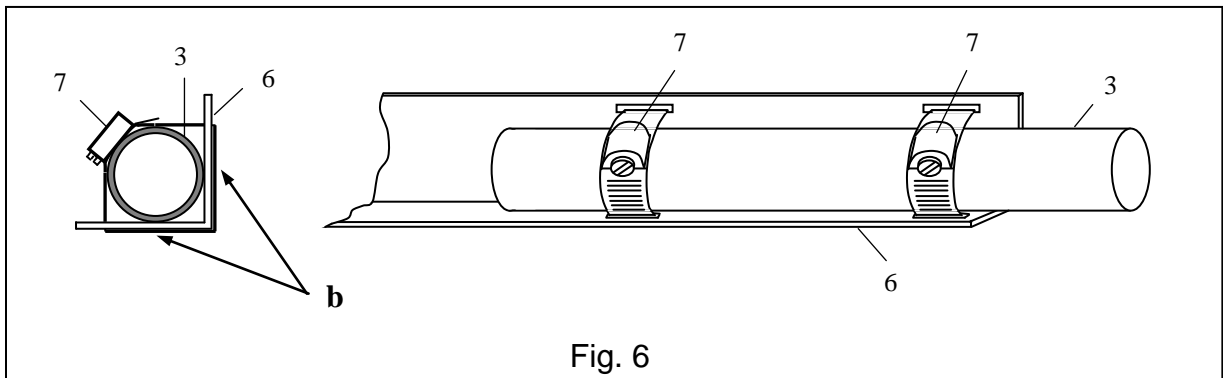
Each spreader of cross **B** (Fig. 4) consists of one tube of diameter 23 mm and length of 1.1 m.





STEP 4 - Attaching the spreaders.

Spreaders are attached to the cross by metal clamps, as shown in Figure 6. To do this, insert the hose clamps (7) designed for the holes in the corners (6) and pinching them strut (3), lightly tap with hammer at the point "b" (Fig. 6) to give the desired shape clamps. For fixing all spreaders need to be raised to the height of boom of about 2.5 meters (it's best to use your future mast). If space permits near the antenna, it is more convenient assemble first cross with elements on the flat surface of the land or of the roof and then fix them assembled on the boom.



Step 5 - Mounting wire elements

Color-coded wire elements:

Each wire element is marked with a specific color shrink tubing located on the terminals (Fig.7). For proper installation of elements, carefully read the table 2:

Table 2

Band	Reflectors	Vibrators
6 m		Active element marked one additional ring of the same color as the suitable band reflector
10 m	red	
12 m	purple	
15 m	green	
17 m	white (yellow)	
20 m	blue	

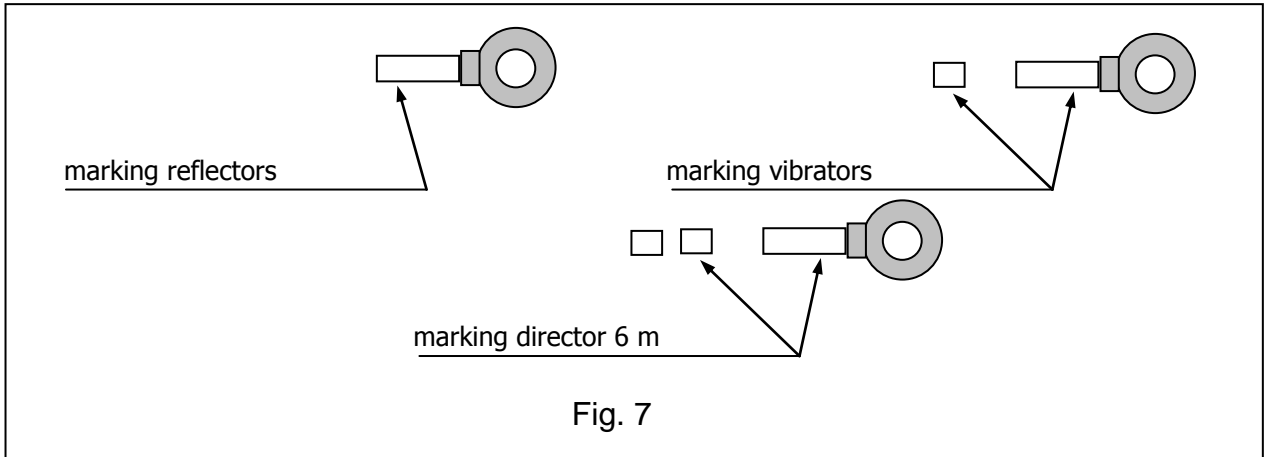


Fig. 7

Gently uncoil each element, avoiding sharp bends and avoiding damage to the insulation. Before fastening elements, using a tape measure and a marker, mark the location of attaching them on spreaders. To do this, determine where you will be located reflector and active element, and then on the table 3, measure the necessary distance.

You must measure from the center of cross-pieces (the point "a" in Fig. 4). Further, starting from elements 6 meters band, secure elements on spreaders.

The marker on the elements should approximately match the attachment points on spreaders. The method fixing elements with clamps is shown in Fig. 8. **It is very important for proper operation of the antenna element to piece of a wire extending from under the clamp does not exceed 2-3 cm.**

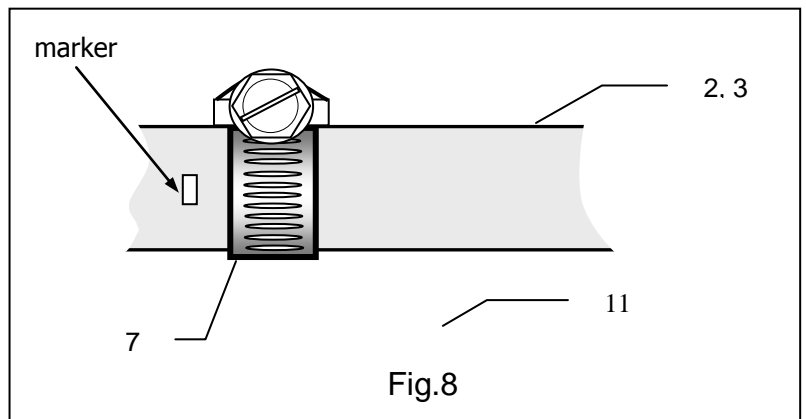
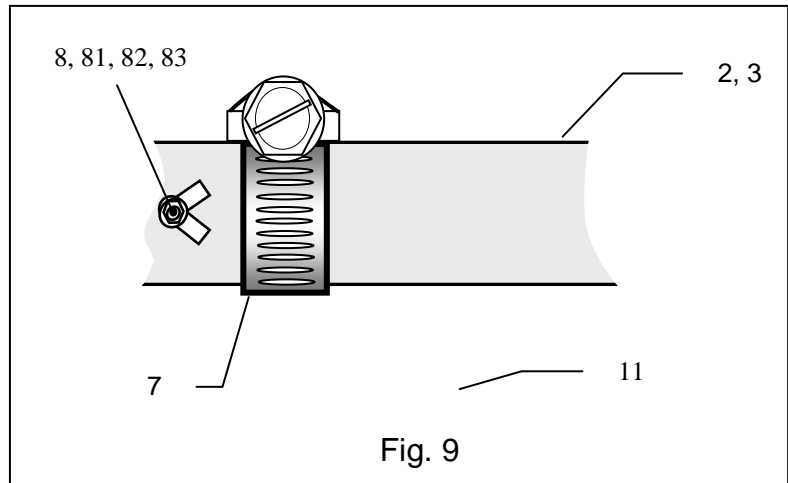


Fig.8

Reflectors terminals connected by bolts near one of the spreaders (Fig. 9). Terminals vibrators are connected to the insulation plate (10) (Fig. 10). Location of plates shown in Fig. 11, 12, 13. Clamping force at clamp should be approximately the same as described in "Assembling spreaders".

When you connect elements to the upper spreaders you will have to rotate whole construction around the axis boom weakening mounting boom (1) to the plate (4) (Fig. 2). **If space permits near the antenna, it is more convenient to assemble first cross with elements on the flat surface of the land or of the roof and then fix them assembled on boom.** After fixing all the elements, changing their places of attachment, align and stretch elements until smooth square structure.



Then you can start to connect coaxial cables as shown in Fig. 10. The cable at the connection point must be protected against ingress of moisture from the sealing mastic comes with the antenna. **After connecting the cables, tighten the nuts of the mast and boom to the plate (4).**

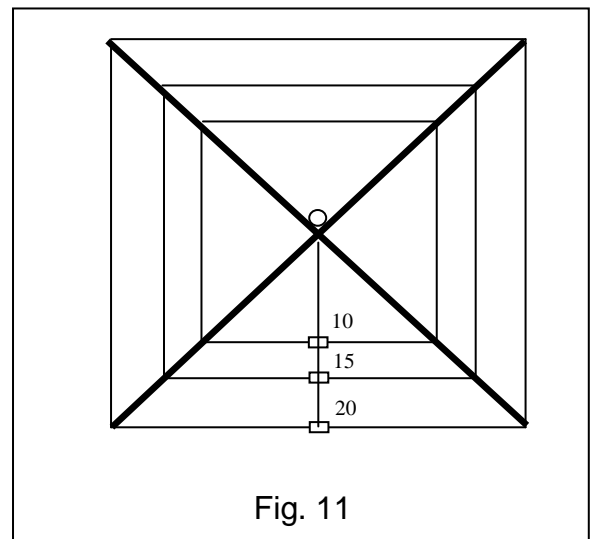
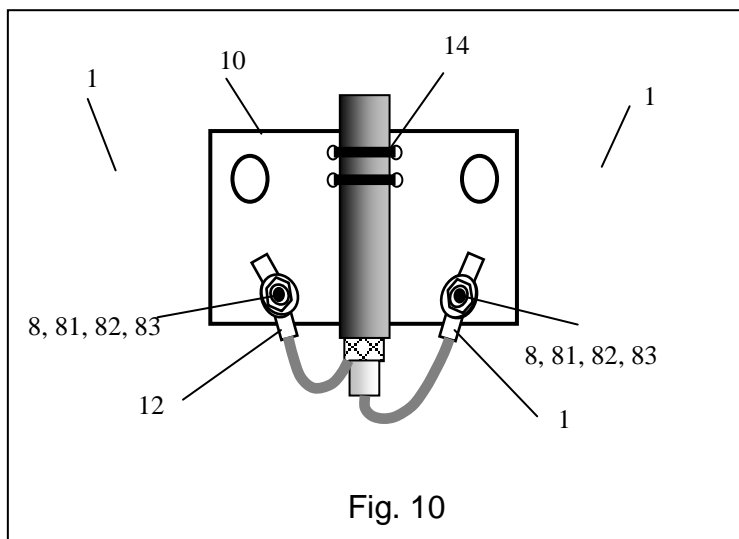


Table 3

Distances from the center of the cross to the place of fixing elements on the spreaders *

Band	Reflector	Vibrator	Director
6 m (50 MHz)	109 cm	104 cm	102 cm
10 m (28 MHz)	195 cm	179 cm	-
12 m (25 MHz)	213 cm	205 cm	-
15 m (21 MHz)	252 cm	241 cm	-
17 m (18 MHz)	295 cm	284 cm	-
20 m (14 MHz)	377 cm	364 cm	-

* See the table dimensions are only recommendations. Actual distances obtained in practice, may differ slightly from the directions above.

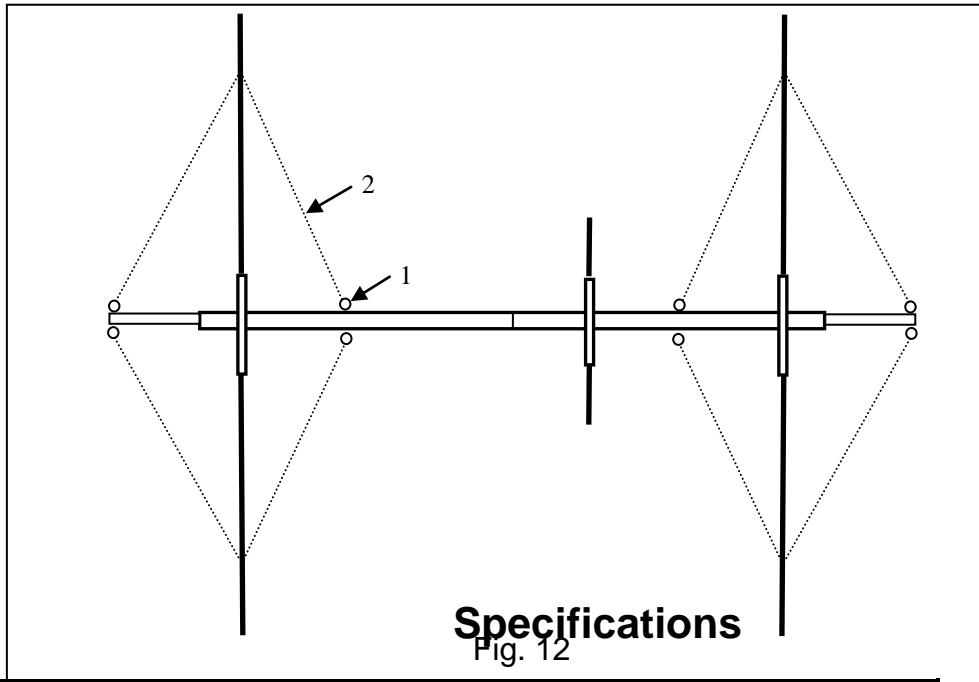


Fig. 12

Model	RQ-26H
Bands	6-10-12-15-17-20
Maximum gain *, dBd	5,5
Maximum F/B, dB	20-25
Boom length, m	2,3
Boom diameter, mm	60
Maximum turn radius, m	2,8
Maximum wind load, sq. m	0,8
Weight, kg	27
Maximum power, W	3000

(*) - Gain vs to a half-wave dipole in free space

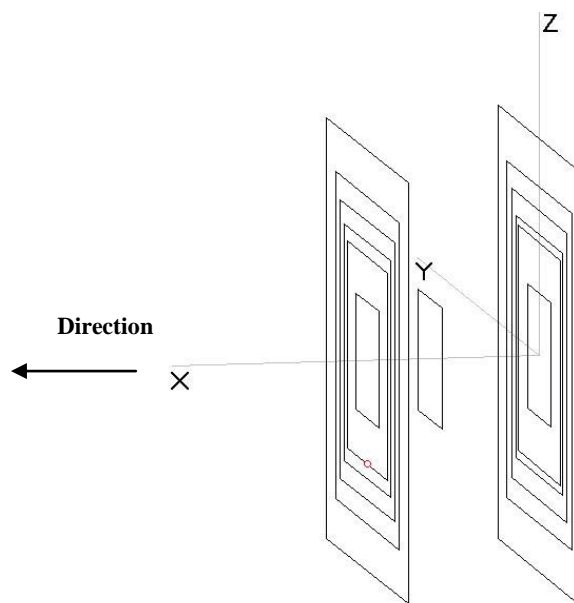
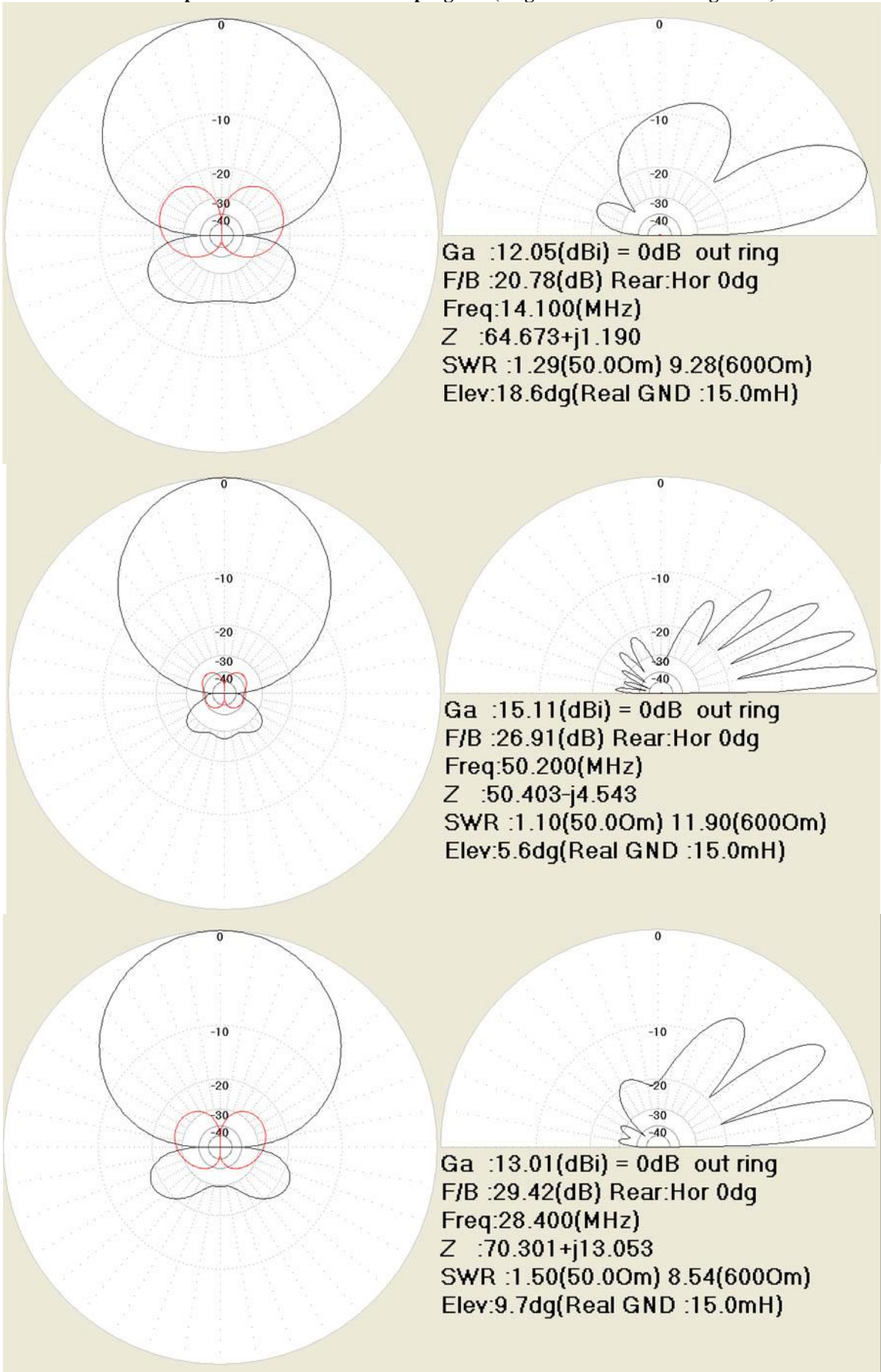
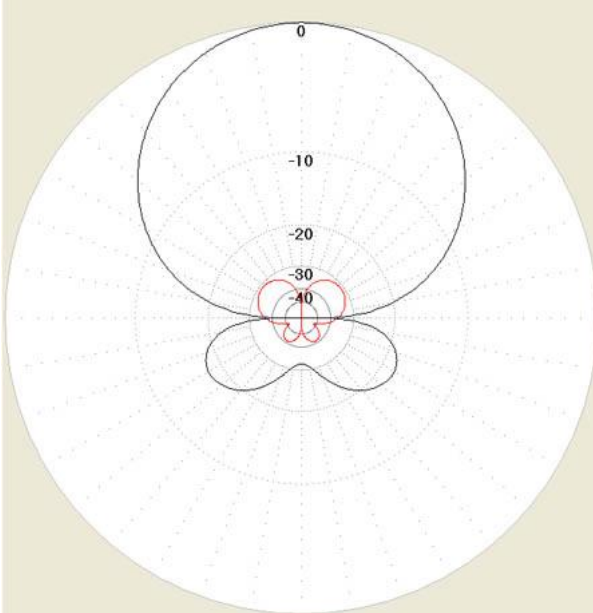


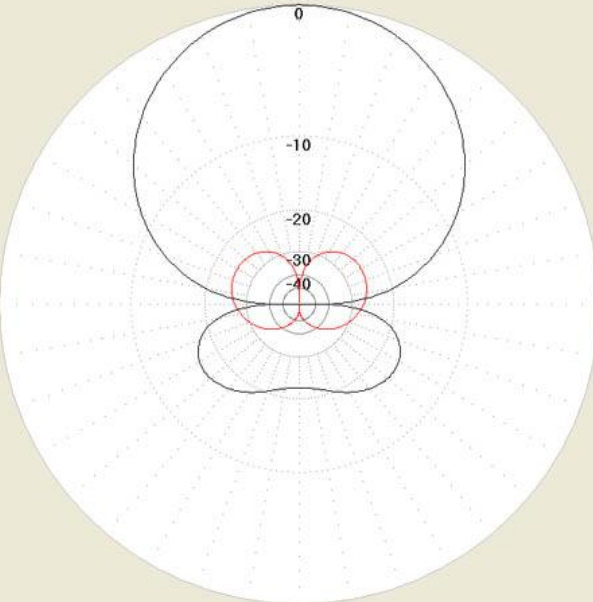
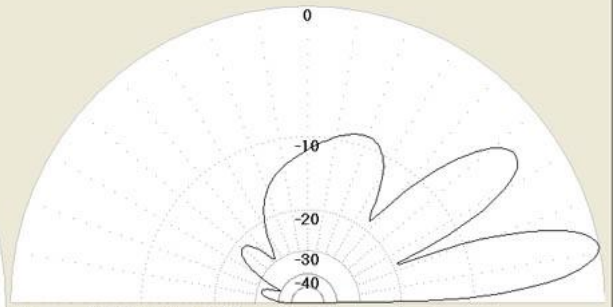
Fig. 13 Location of the elements.

Antenna pattern obtained MMANA program (height of 15 m above the ground)

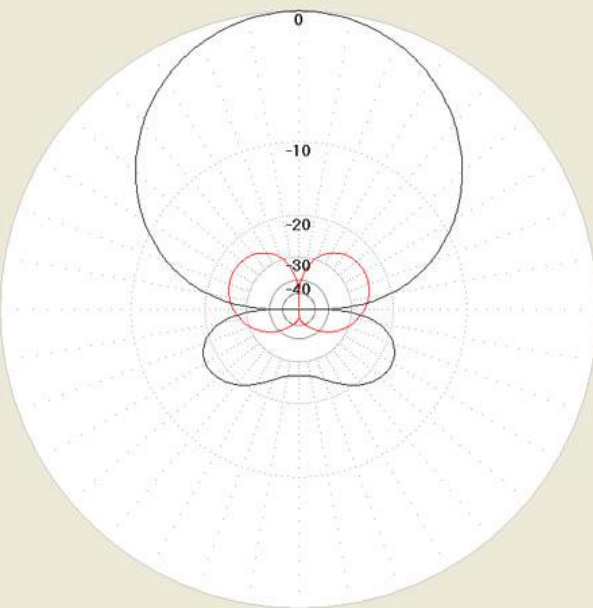
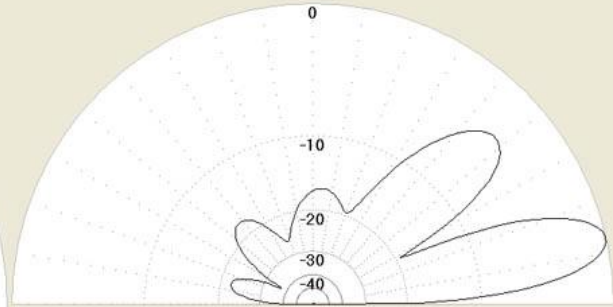




Ga :12.87(dBi) = 0dB out ring
F/B :32.14(dB) Rear:Hor 0dg
Freq:24.940(MHz)
Z :60.486-j9.364
SWR :1.29(50.0Om) 9.92(600Om)
Elev:11.1dg(Real GND :15.0mH)



Ga :12.74(dBi) = 0dB out ring
F/B :22.13(dB) Rear:Hor 0dg
Freq:21.200(MHz)
Z :63.759+j0.255
SWR :1.28(50.0Om) 9.41(600Om)
Elev:12.9dg(Real GND :15.0mH)



Ga :12.28(dBi) = 0dB out ring
F/B :26.07(dB) Rear:Hor 0dg
Freq:18.120(MHz)
Z :65.171+j6.332
SWR :1.33(50.0Om) 9.21(600Om)
Elev:14.8dg(Real GND :15.0mH)

