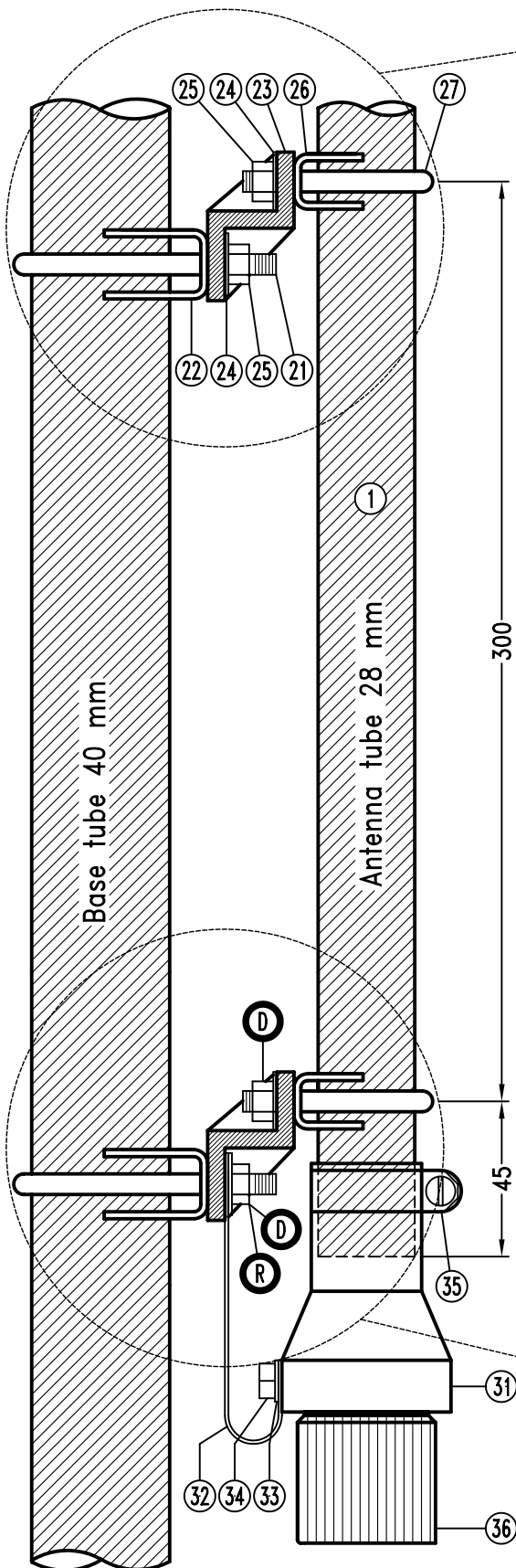




Antennas for Shortwave



upper double-tube clamp FR 6132-730

1. It's easy to assemble your FRITZEL vertical. Even with no practice at all you can put this antenna together in less than 1 hour. All you need is a screwdriver and a 10mm flat spanner.
2. Start by attaching the bottom double-tube clamp to the antenna tube (1). At the non-slotted end of the antenna tube - spacing from base tube: 45 mm - put together the insulating bracket (23), tube bracket (26), U-bolt (27), washer (24) and hex nut (25). Figure 1+2.

The remaining parts of the double-tube clamp will be needed later.

3. Attach the second double-tube clamp at a vertical spacing of approx. 300 mm. Before you tighten up the nuts, the antenna tube and two double-tube clamps must be placed on a flat surface in order to align the two insulating brackets.

Please note: if you use too much force when tightening up the hex nuts, you could damage the antenna tube.

4. Now fit the coaxial connector (31) onto the antenna tube (1). After loosening the tube clip (35), guide the coaxial connector over the end of the antenna tube until it will go no further. Make sure the ground connection plate (32) is located inside the insulating bracket (23).

Tighten up the tube clip (35) again.

bottom double-tube clamp FR 6132-730

Figure 1

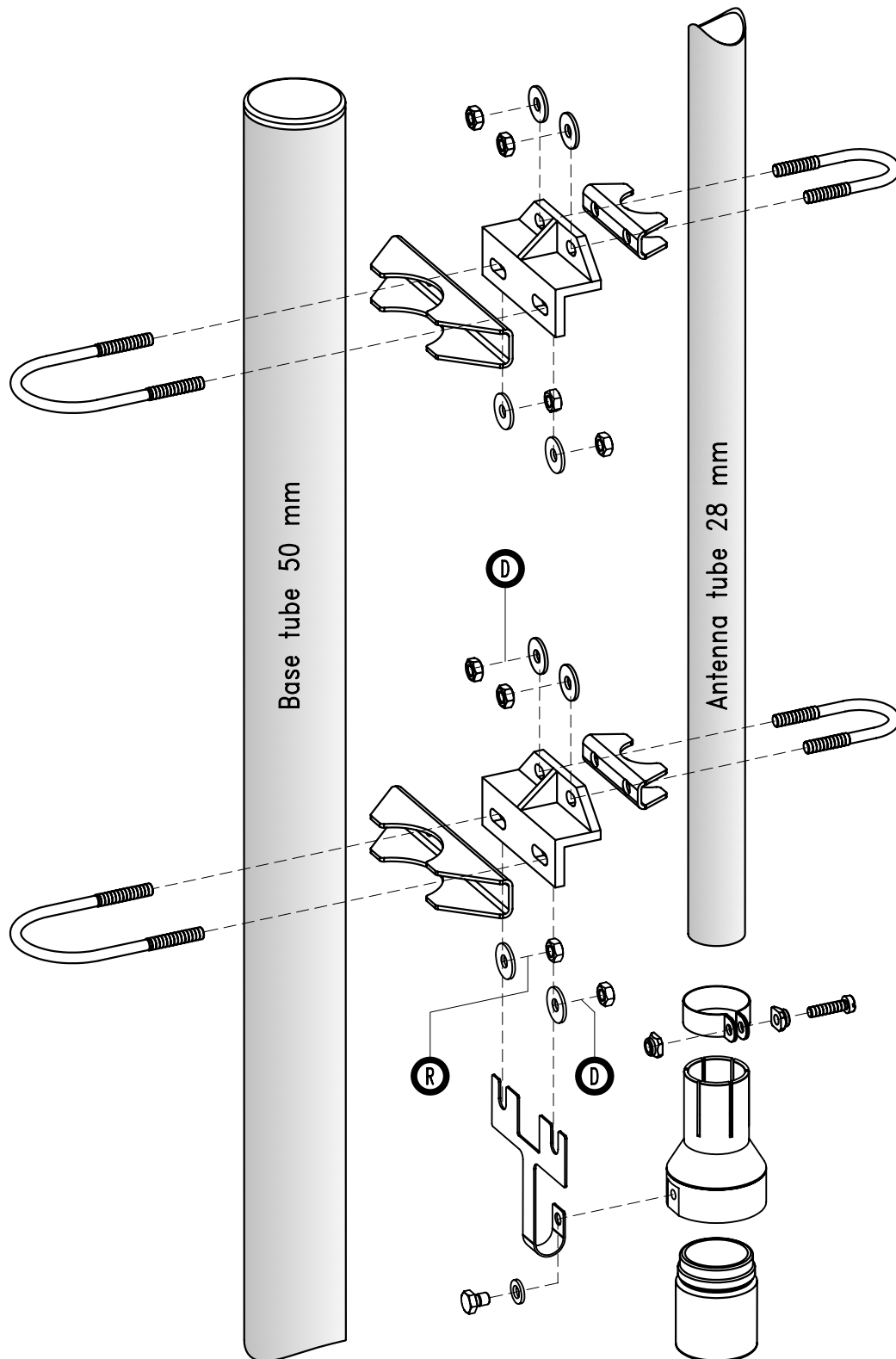


Figure 2

5. Now prepare the 3 wire radials (11) for the 10, 15 and 20m bands (Fig. 3). Adjust the radials to the desired length by means of the simplex clamps (42).

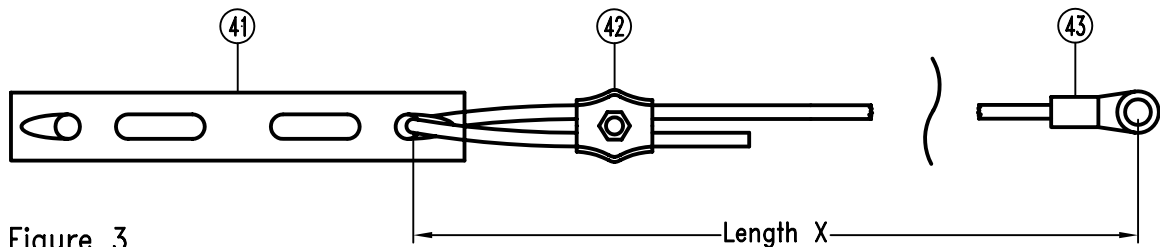


Figure 3

Length X:	for the 10m band:	approx. 2.70 m
	for the 15m band:	approx. 3.58 m
	for the 20m band:	approx. 5.33 m

6. Assemble the antenna tubes (2) + (3) and the trap (10) according to assembly diagram FR 3006.14-914, Fig. 4.
7. To continue you will need the assistance of a second person.

The antenna is fixed to the base tube by means of the U-bolt (21), tube bracket (22), washer (24) and hex nut (25). To attach the radials (11), unscrew one of the hex nuts (25) from the lower double-tube clamp (Fig. 1 + 2), (R) and attach the cable shoe for the radials (Fig. 3), (43). Tighten up the hex nut again.

8. The radials are a vertical antenna's electrical counterpoise. They increase the vertical component to a half wave on each band and ensure a low feedpoint impedance of 50 Ohms. They must be allowed to hang down freely and in no way come into contact with the roof or the ground. The angle of radials relative to the upright base tube (approx. 80°) and the horizontal alignment (approx. 120°) is not critical. Use non-conductive cord for guying purposes on the far side of the insulators (41).

The radials can also be positioned under a roof - given adequate roof space and non-conductive roofing material. However, here radiation losses are likely.

9. To connect the coaxial cable unscrew the protective tube (36) and pass it over the coaxial cable. Screw on the coaxial cable and then re-attach the protective tube.

10. Fine tuning: The GPA 30 is pre-tuned for use in the 10, 15 and 20m bands. However, should minor adjustments be deemed necessary then the easiest way to do this is to adjust the length of the radials. Changing the length by 10mm will result in a frequency shift of approx. 60 kHz in the 10m band, approx. 30 kHz in the 15m band and approx. 15 kHz in the 20m band.

Resonance in the 40m band is achieved by means of a shortened dipole with 2 traps (36 μH) (Fig. 4). Due to its position at the base of the antenna, the distance to the roof or ground will normally be fairly short. The resonant frequency (7.05 MHz) decreases due to such environmental factors. In order to correct this the ends of the dipole (A) need to be shortened.

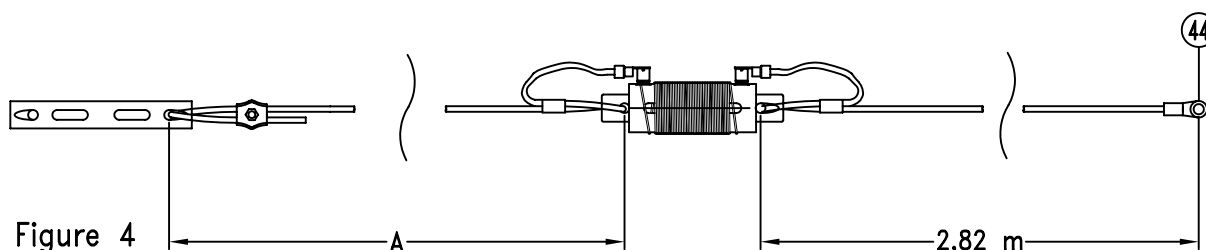


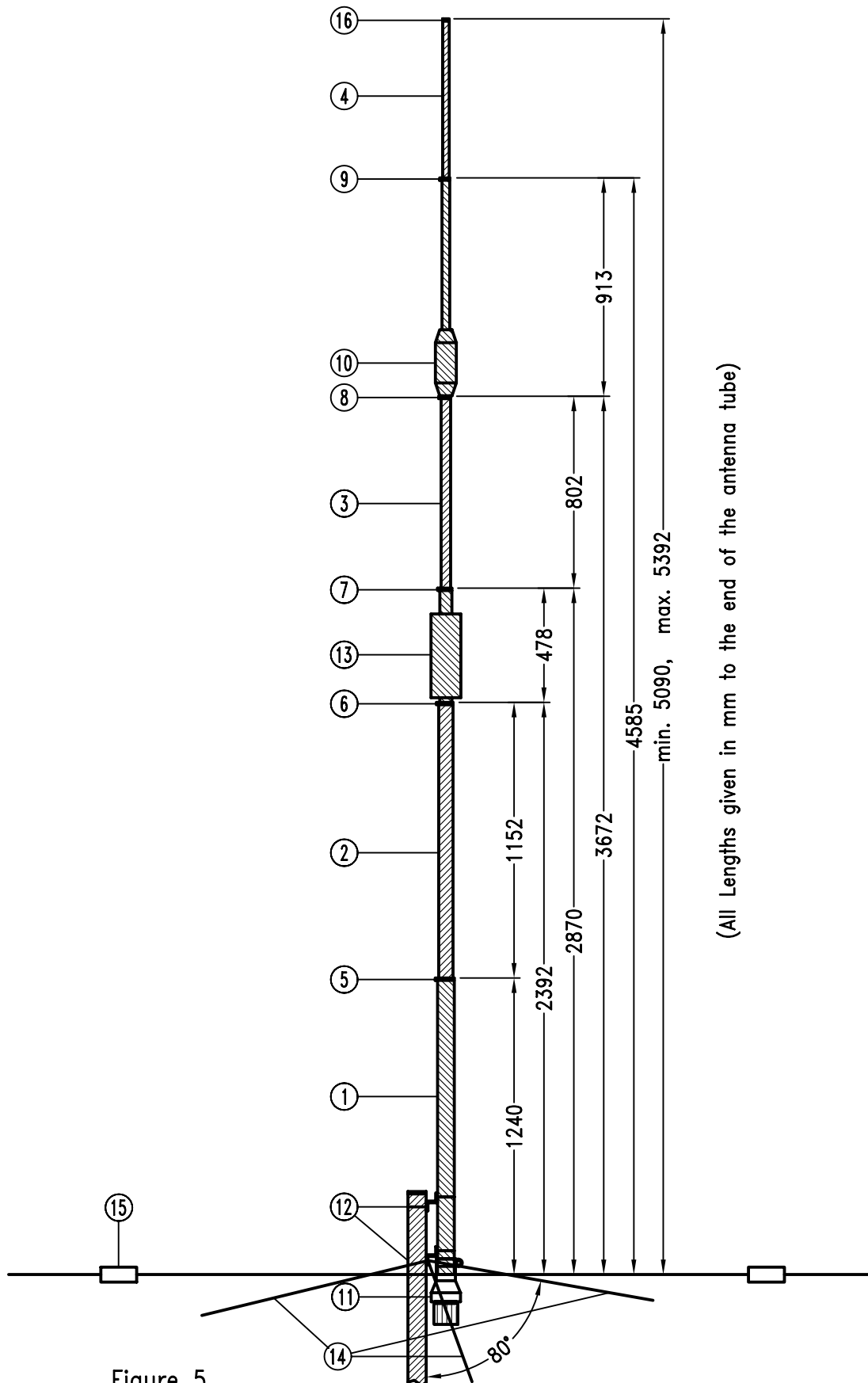
Figure 4

$$A = 1,32 \text{ m (standard length)}$$

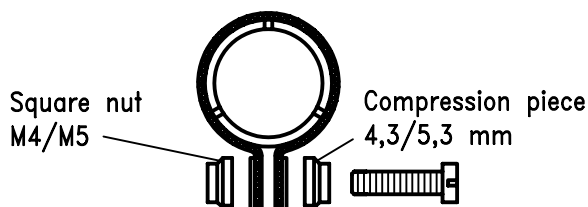
Shortening the length by 10 mm at each end increases the resonant frequency by approx. 20 kHz.

In many locations there is unlikely to be sufficient space to add a radial (19.5 m) for the 80m band. So resonance must be achieved vis-à-vis ground. An efficient RF earth can be difficult to achieve on the roof of a residential building. This can be remedied by connections to all conductive surfaces in the vicinity of the antenna tube, eg lightning conductor, heating systems, guttering, flashing etc. If such alternative earthing is not possible, any number of additional wires (the type or length is unimportant) can be laid out on the ground in the shape of a star away from the mast tube. There must be a good connection between the wires and the mast tube which then form an untuned counterpoise for the 80m band.

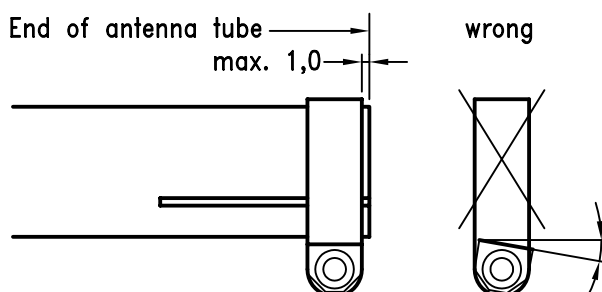
After ensuring that the antenna has been adequately earthed, the desired resonant frequency in the 80m band can be achieved by shortening or extending the top antenna tube (assembly diagram FR 5006-914.1). Changing the length by 10mm results in a frequency shift of approx. 10 kHz.



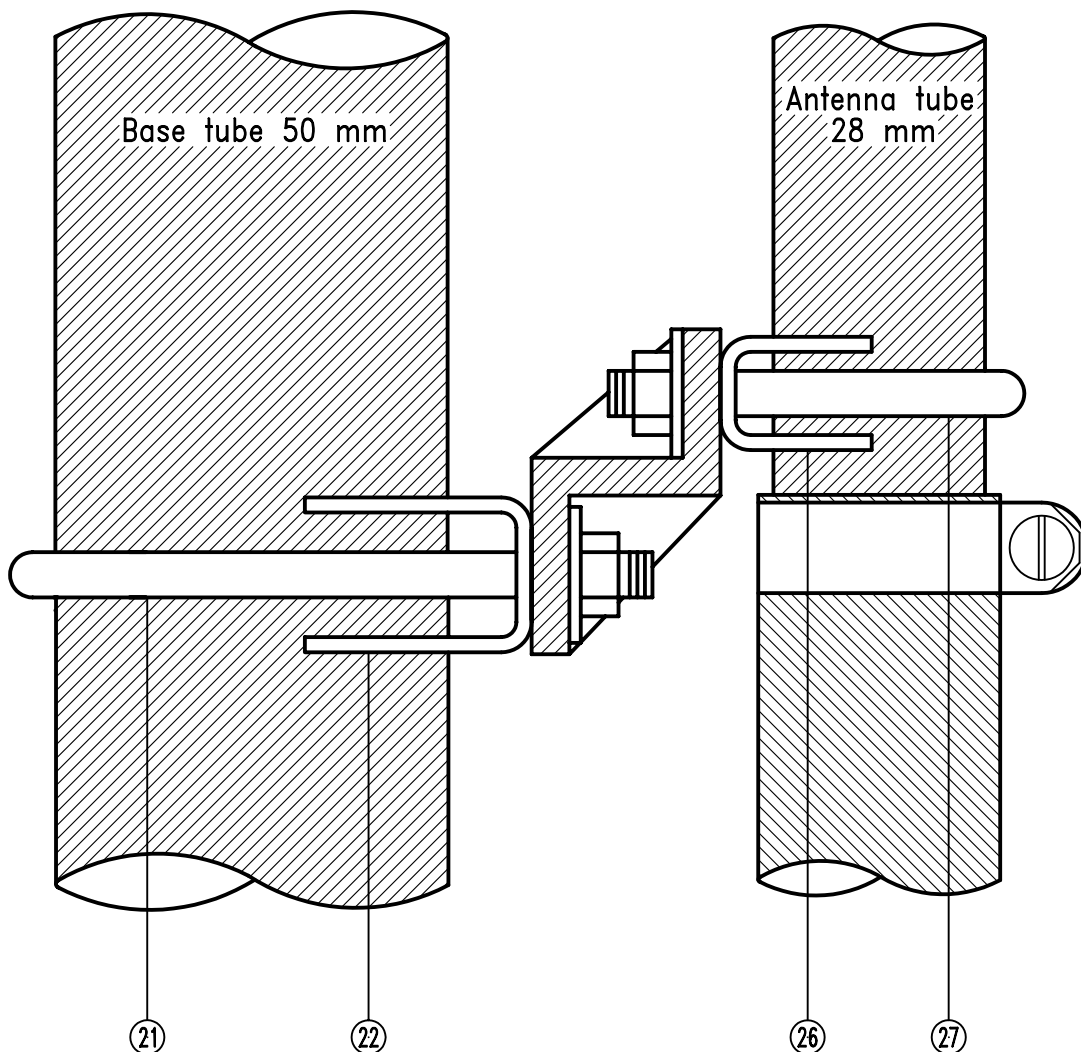
New clamp grip as of 01.01.2003:



When tightening up the tube clip make sure that the square nut and the compression piece are aligned parallel to the antenna tube.



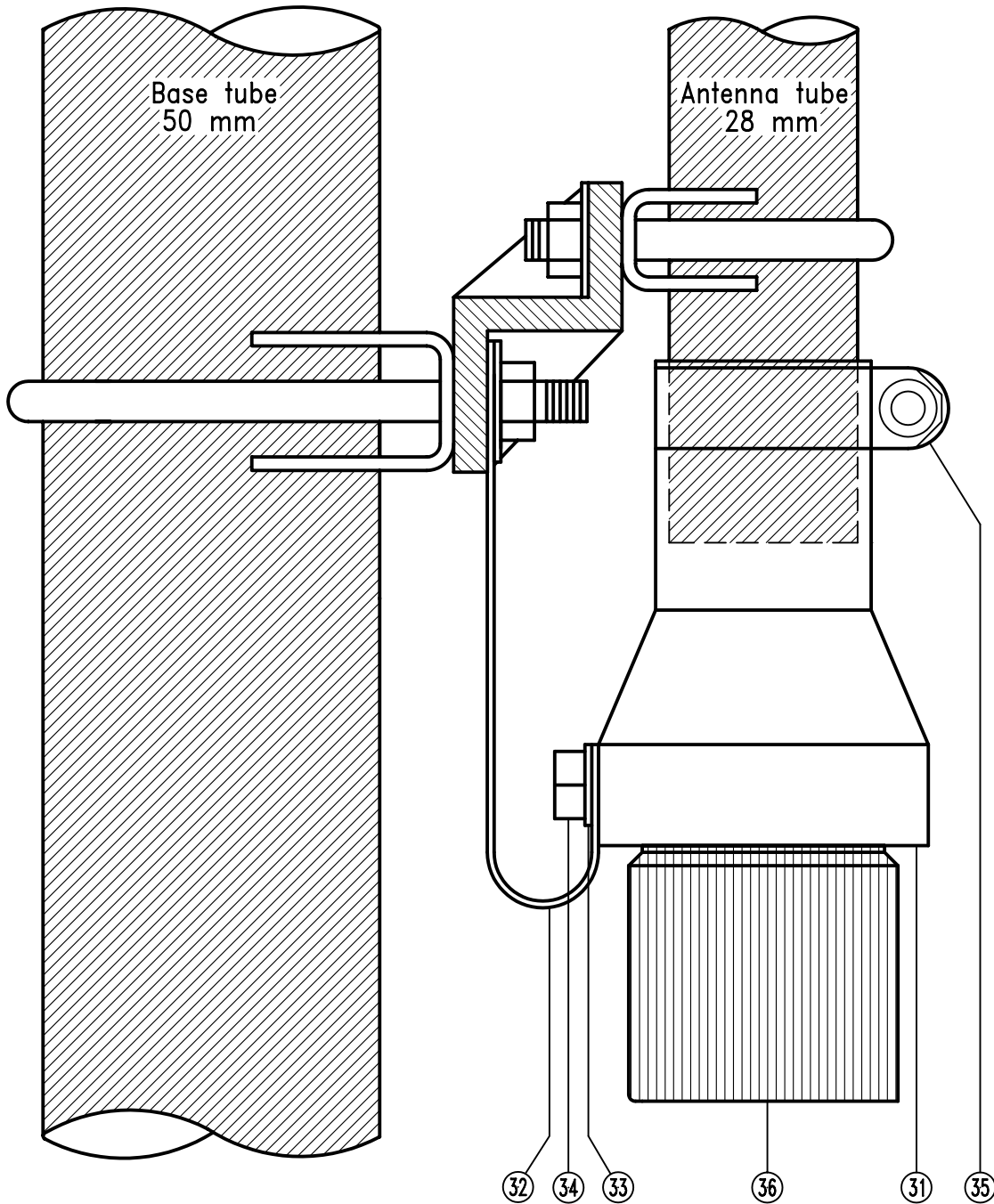
○	Description of part	Part number	Qty	Old part no.
①	Antenna tube 28x1,9x1240 mm	FR 6132-010	1	FR 8045
②	Antenna tube 24x1,9x1240 mm	FR 8365-020	1	FR 8069
③	Antenna tube 16x1,4x890 mm	FR 3006-010	1	FR 8105
④	Antenna tube 11x0,9x830 mm	FR 5006-020	1	FR 8147
⑤	Tube clamp 27x12 mm	FR 8365-710	1	-
⑥	Tube clamp 23x12 mm	FR 8365-720	1	-
⑦	Tube clamp 19x12 mm	FR 8365-730	1	FR 0147
⑧	Tube clamp 15x9 mm	FR 8365-740	1	-
⑨	Tube clamp 12x9 mm	FR 8367-710	1	FR 8536
⑩	80m-coil for GPA 50 complete	FR 3006-790	1	FR 8501
⑪	Coaxial connector GPA (UHF/50)	FR 3006-755	1	-
⑫	Double tube clamp 50/28 mm	FR 3006-730	2	-
⑬	Trap (GPA30) 10/15 m	FR 3006-790	1	FR 8501
⑭	Radials 10/15/20 m	FR 3006-710	1	FR 3003
⑮	40m-dipol for GPA 50 complete	FR 5006-720	1	FR 3040
⑯	Plastic cap 11 mm	FR 8367-050	1	FR 0149
	Assembly Instructions (e) GPA 50.15	FR 5006.15-919	1	-



○	Description of part	Part number	Qty	Old part no.
21	U-bolt 50x85 mm, M6, A2	FR 6132-130	1	FR 0301
22	Tube bracket 50 mm	FR 8365-620	1	-
23	Insulating bracket	FR 6132-110	1	FR 0105
24	Washer DIN 9021, 8,4 mm, A2	DI 9021-06000030	4	FR 0332
25	Hex nut DIN 934, M6, A2	DI 0934-06000030	4	FR 0309
26	Tube bracket 28 mm	FR 6132-070	1	FR 0393
27	U-bolt 28x55 mm, M6, A2	FR 6132-090	1	FR 0328



COAXIAL CONNECTOR (UHF/50) FR 3006-755



○	Description of part	Part number	Qty	Old part no.
①	Coaxial connector UHF	FR 3006-725	1	-
②	Earth connection plate 50 mm	FR 3006-150	1	-
③	Washer DIN 125, 6,4 mm, A2	DI 0125-06000030	1	-
④	Hex screw DIN 933, M6x8, A2	DI 0933-06000830	1	-
⑤	Tube clip 31x12 mm kompl. A2	FR 8367-720	1	-
⑥	Protective tube	FR 3006-130	1	-

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Assembly diagram FR 3006.15-916

(15.01.2009)