Installation Instructions

Integrated Radio Interface
2.5ft Antennas

AN-0029-0, AN-0027-0, AN-0016-0

CERAGON, Sept-2000

CERAGON Ltd.
24 Raul Valenberg Street, Tel-Aviv, 69710,
Israel Tel: +972-3-6455733 Fax: +972-3-6455499 Home Page: www.ceragon.com

Description

This antenna consists of a 0.8-meter (2.5ft) shielded reflector, radome, feed, and offset tower mount. The mount is designed to attach the antenna to a vertical tower pipe of diameter 64 to 115 mm (2.5 to 4.5"). The mount also provides adjustment ranges of±50° elevation and±180° (+15, -7.5° fine) azimuth.

Notice

The installation, maintenance, or removal of antenna systems requires qualified, experienced personnel. Manufacturer's installation instructions have been written for such personnel. Ceragon systems should be inspected once a year by qualified personnel to verify proper installation, maintenance, and condition of equipment.

Manufacturer disclaims any liability or responsibility for the results of improper or unsafe installation practices.

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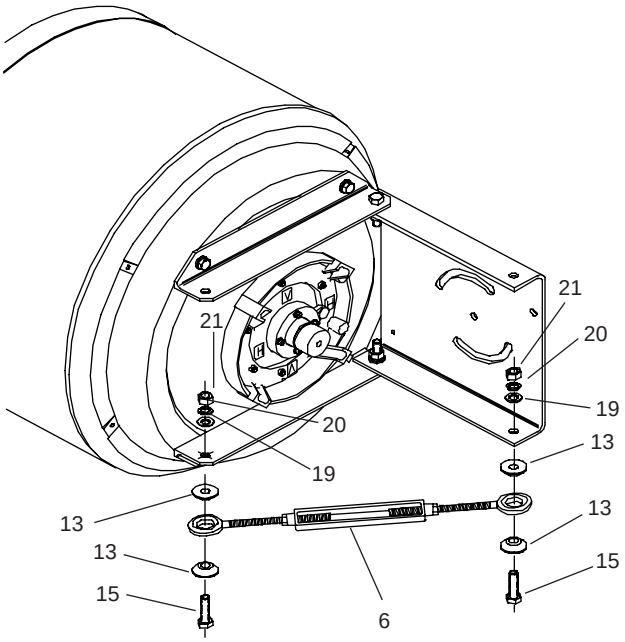

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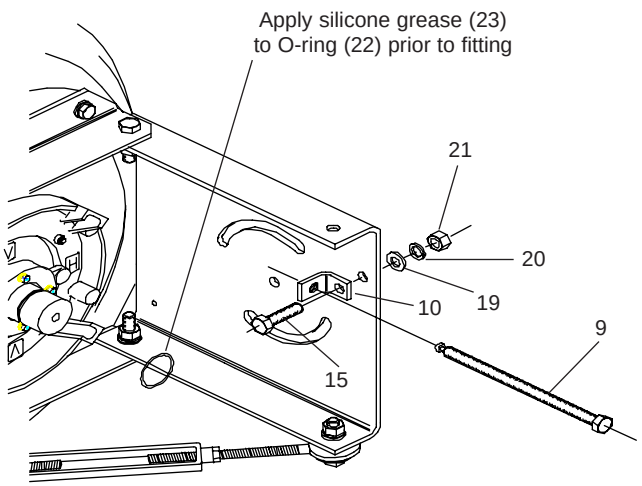

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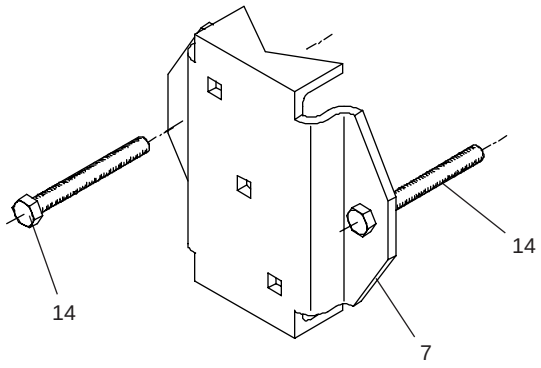

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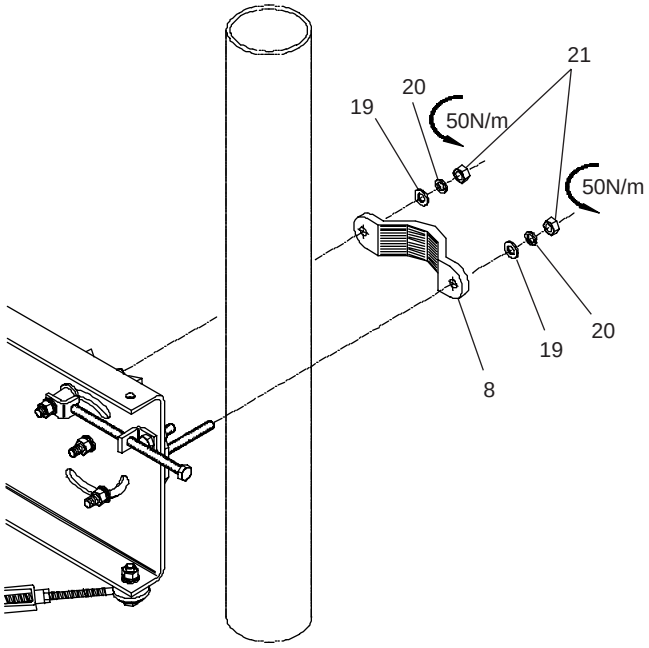

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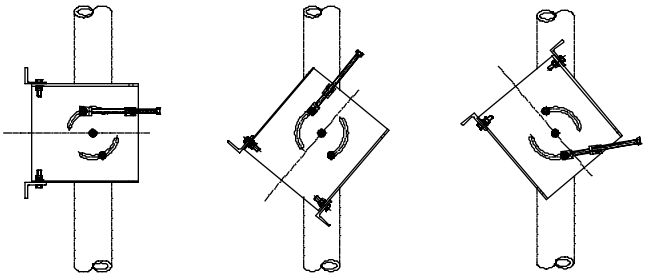
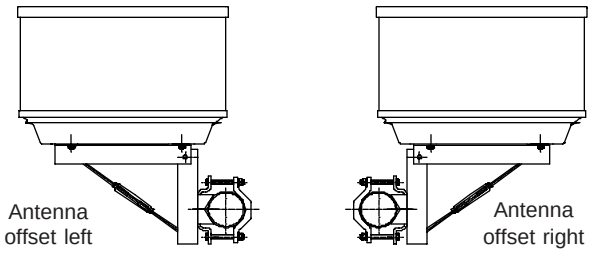
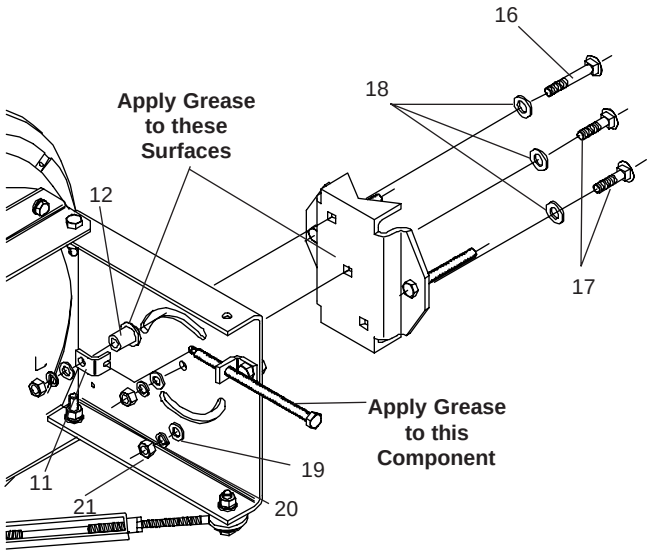
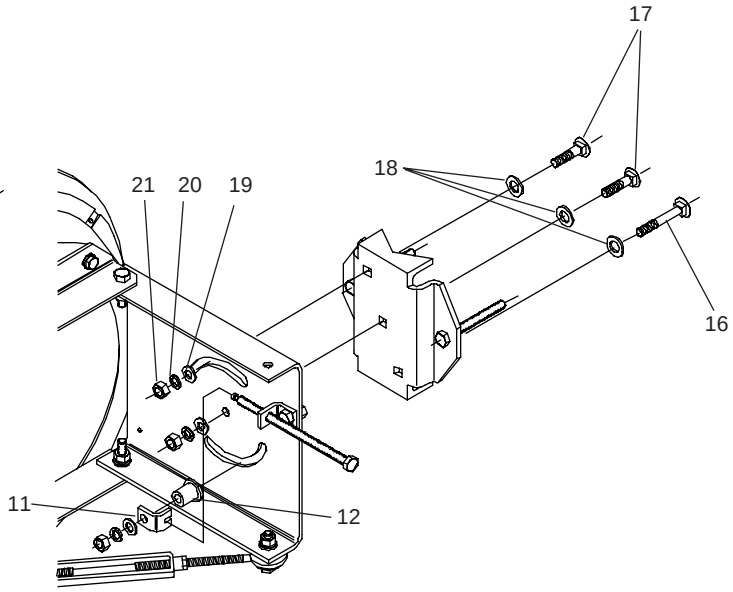


Elevation Adjustment Ranges





Mount Arrangement for Elevation of +15° to -50°



Mount Arrangement for Elevation of +15° to +50°

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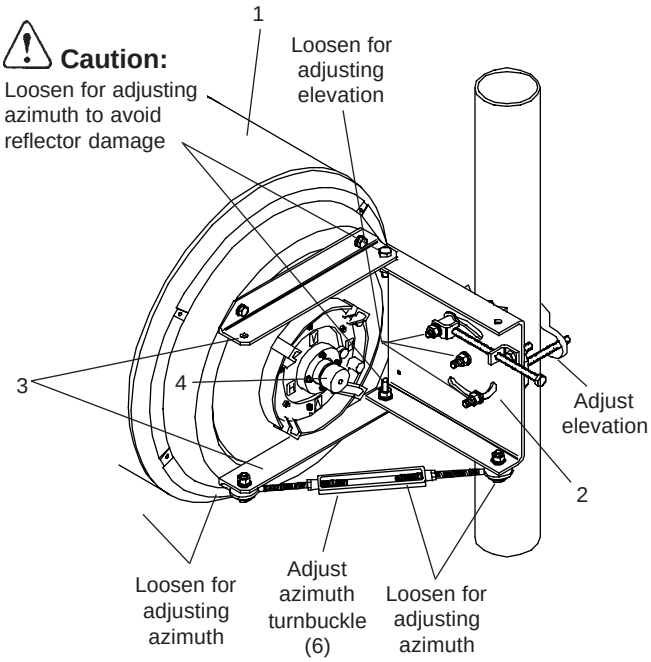

Table 1. Antenna Parts List

Item	Description	Part no.	Qty
1	Reflector/shield assembly	113502	1*
2	Mount plate	108992	1*
3	Mount angle bracket	108984	2*
4	Feed assembly	#	1*
5	Radome	#	1*
6	Azimuth adjustment turnbuckle	224403-2	1
7	Mount pivot plate	109103	1
8	Half clamp (cap)	109036	1
9	Elevation adjustment bolt	109105	1
10	Upper bracket	108995	1
11	Slotted bracket	108994	1
12	Spacer	109104	1
13	Bevel washer	224322-1	1*+3
14	M12 x 110 hex head bolt, gs	100535-132	2
15	M12 x 45 hex head bolt, gs	100535-42	1*+2
16	M12 x 80 carriage bolt, gs	204026-4	1
17	M12 x 45 carriage bolt, gs	204026-2	2
18	M16 flat washer, gs	100521-51	3
19	M12 flat washer, gs	100521-45	8
20	M12 lock washer, gs	100522-45	8
21	M12 hex nut, gs	100526-45	1*+7
22	O-Ring	106837-3	1
23	Silicone Grease (tube)	12225	1

* Part of antenna sub-assembly
\# Frequency Dependant
gs Galvanised Steel

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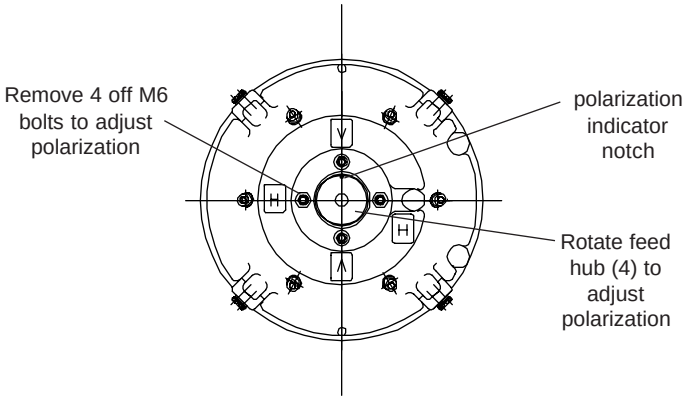
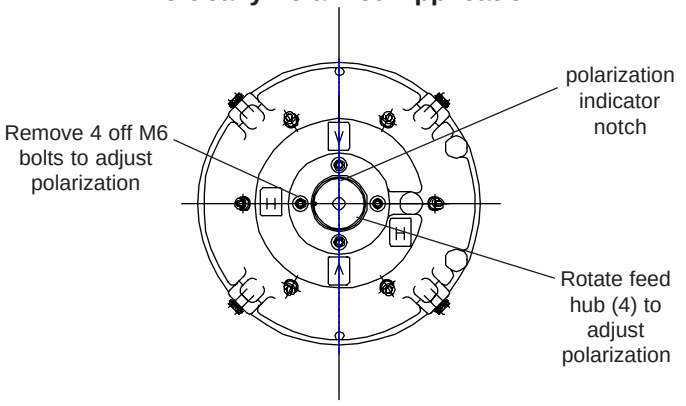


Vertically Polarized Application



Horizontally Polarized Application

Table 2. Fastener Torque Specifications

Fastener	Torque value in N·m (lb·ft) for each fastener size					
Size	M5	M6	M8	M10	M12	M16
Stainless steel	4.5 (3.3)	7.7 (5.7)	18.7 (13.8)	39.2 (28.9)	65.1 (48)	161 (118.7)
Galvanized steel	2.7 (2)	4.5 (3.3)	11.1 (8.1)	22 (16.2)	38 (28)	95 (70.1)

Installation Instructions

Ceragon Antenna Mount

For 4ft (1.2 m) & 6 ft (1.8 m) Integrated Antennas

AN-0033-0, AN-0030, AN-0015-0

CERAGON, Sept-2000

CERAGON Ltd.
24 Raul Valenberg Street, Tel-Aviv, 69710, Israel
Tel: +972-3-6455733 Fax: +972-3-6455499
Home Page: www.ceragon.com

Introduction

The type tower mount is an offset 3-point suspension unit which has been designed to mount a 4ft (1.2m) or 6ft (1.8m) parabolic antenna to a 4-1/2in (115mm) diameter pipe.

The mount incorporates an eyebolt which, by pivoting the reflector about two hinges, provides an elevation adjustment of ±5 degrees. Azimuth adjustment is obtained by means of an adjustable strut (see Figure 1).

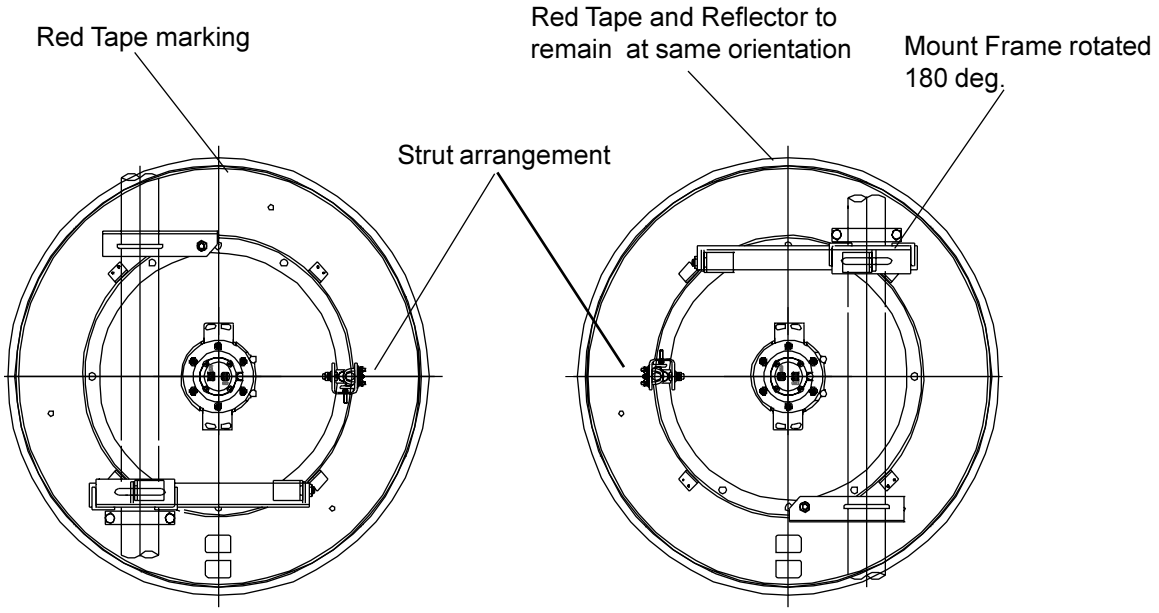


Figure 1. Ceragon Tower Mount Options

NOTE:- The following diagrams are based on the Offset Right mount arrangement.

NOTICE

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READ THE INSTRUCTIONS THOROUGHLY BEFORE ASSEMBLY

1 **Material Check.** Unpack all materials and inspect for any shipment damage. Refer to Parts List (Table 1) to assist in identification.

2 **Tightening of Hardware.** It is recommended that all hardware is tightened to the torques specified in Table 2. The integrity of the mount depends on all fasteners being properly tightened.

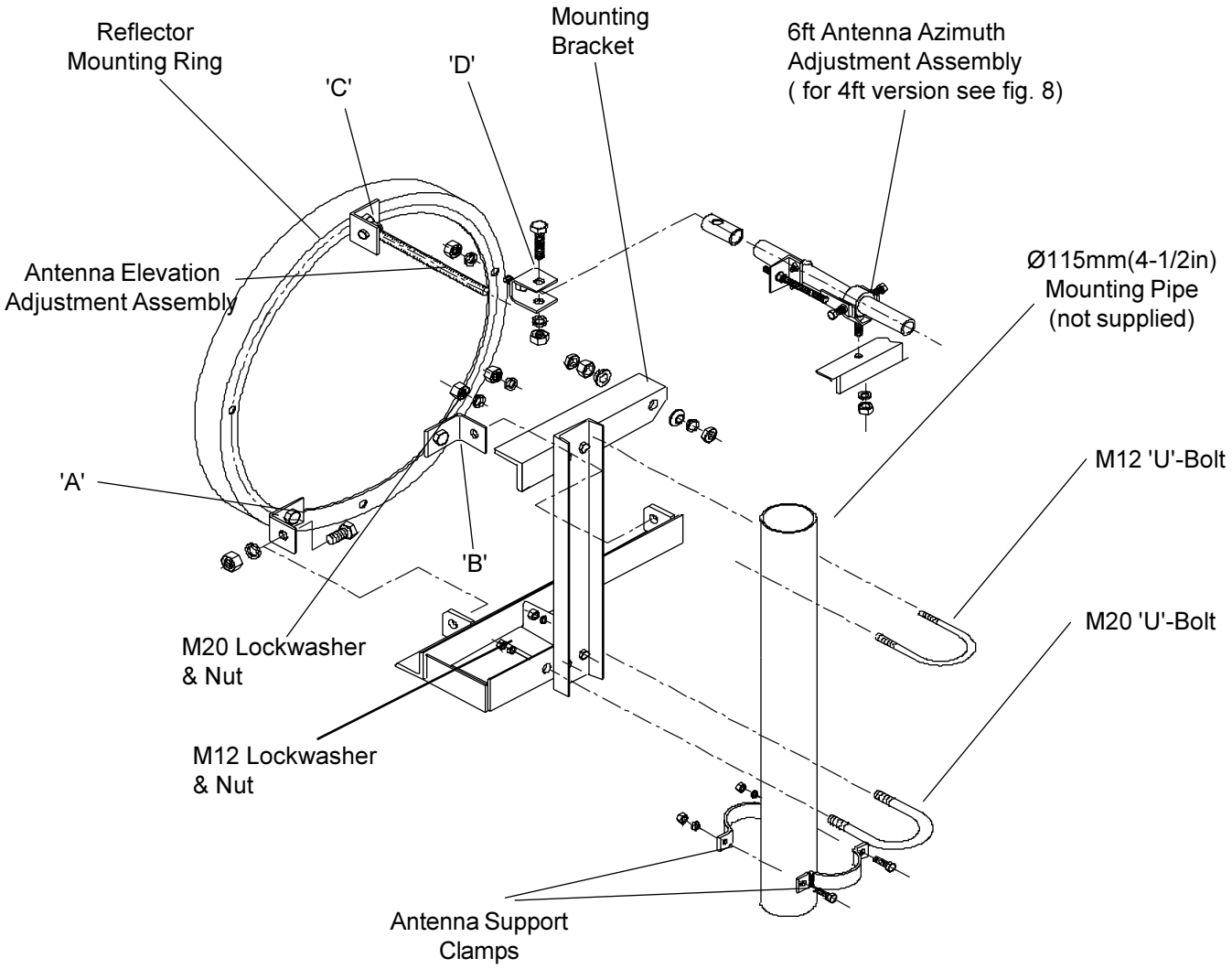


Figure 2. Tower Mount Assembly

3 **Assembly of Mounting Bracket**

Attach the mounting angle assembly and the mount angle to the main channel , as shown in Figure 3, using M12 x 40mm long bolts, lockwashers & nuts. Ensure that both are perpendicular to the main channel. (The main channel may be mounted in either of two positions depending on which side of the pipe the antenna is to be mounted). Fully tighten hardware.

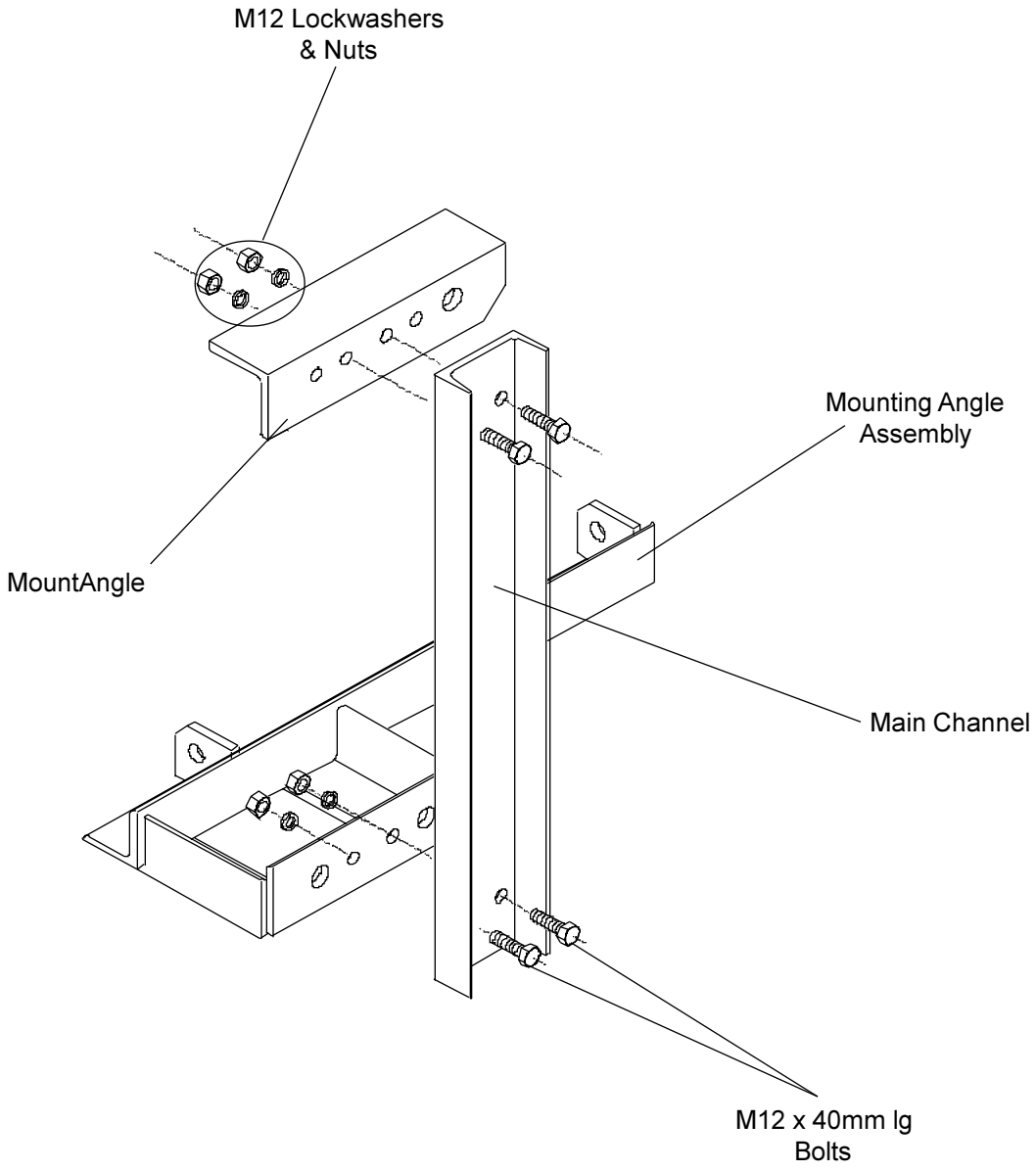


Figure 3. Assembly of Mounting Bracket

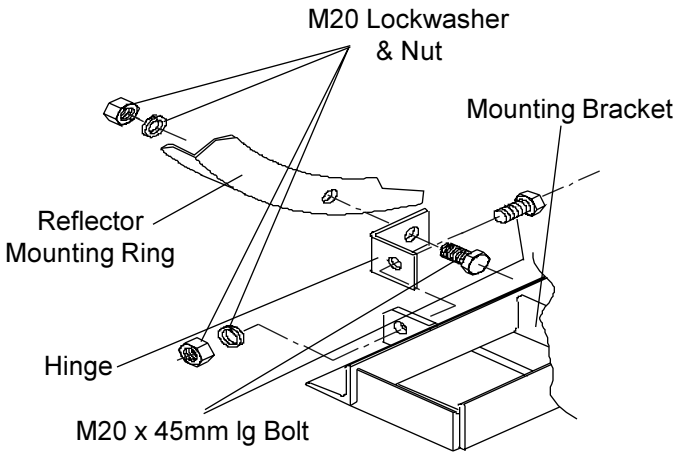


Figure 4. Attachment of Mounting Bracket

4 **Attachment of Suspension Parts.** (Refer to Figures.2, 4 & 5). Attach hinges to the reflector mounting ring at positions 'A', 'B' & 'C' in Figure 1, using M20 x 45mm long bolts, lockwashers & nuts. Fully tighten hardware.

5 **Attachment of Mounting Bracket Assembly to Antenna.** (Refer to Figures.2, 4 & 5). Attach assembled mounting bracket to hinges at positions 'A' & 'B' using M20 x 45mm long bolts, lockwashers & nuts and connect eyebolt to hinge assembly at position 'C' using M12 x 45mm long bolt, lockwasher & nut. Do not tighten hardware. Thread M20 locknut approximately halfway along eyebolt, then add concave adjustment nut and convex washer. Slip eyebolt through hole in mount angle. Add other convex washer, concave adjustment nut and locknut as shown ensuring that convex washers and concave nuts engage properly.

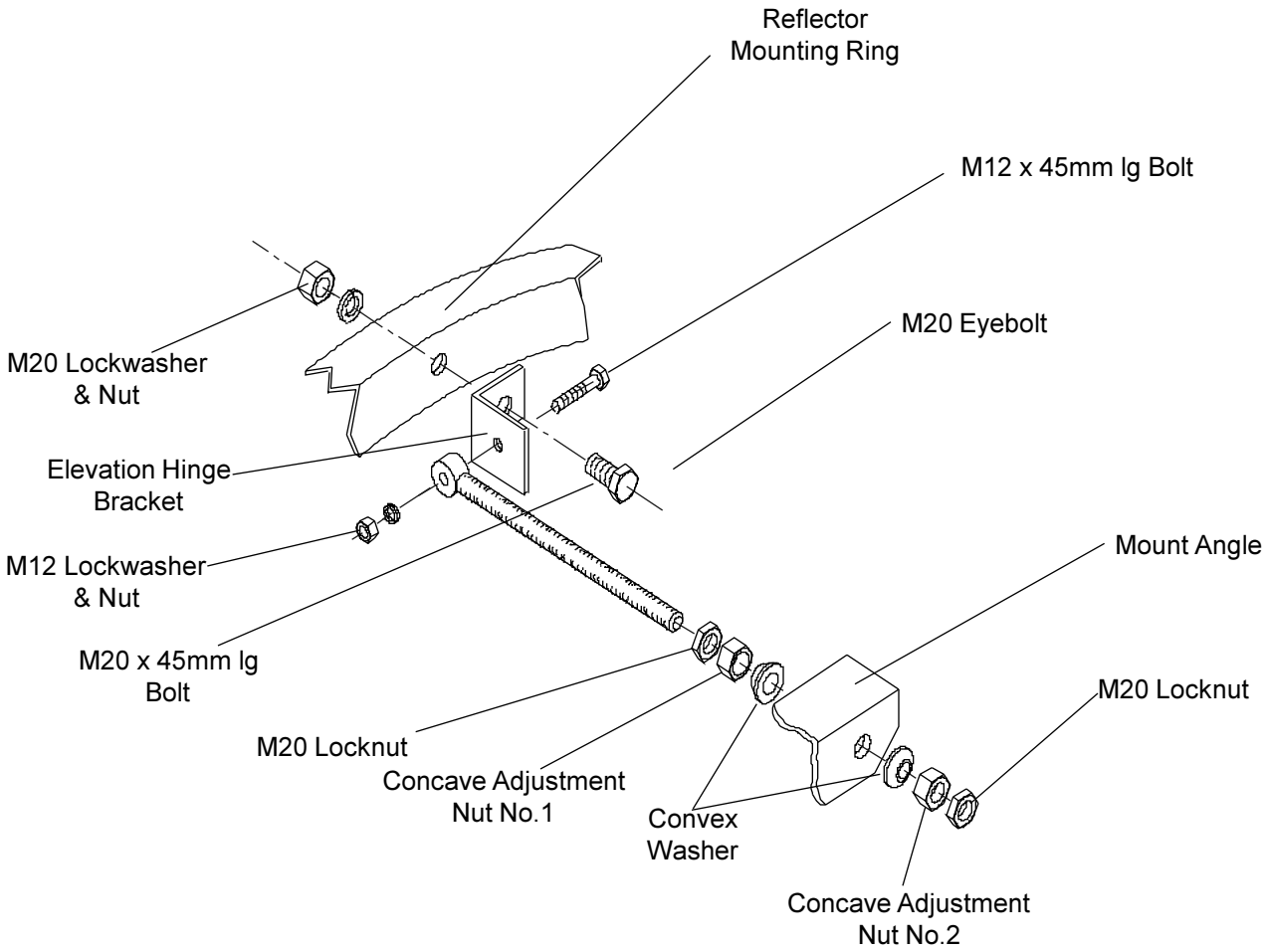


Figure 5. Antenna Elevation Adjustment Assembly

6 **Attachment of Antenna Support Clamp**
(Refer to Figures 2 & 6)**.** Determine desired height for antenna and attach antenna band clamps to mounting pipe at required location using M12 x 40mm long bolts, lockwashers & nuts. Fully tighten hardware.

7 **Attachment of the Antenna to the Mounting Pipe**
(Refer to Figures 2 & 7). Rest the lower end of the main channel on the antenna support clamp. Attach antenna to mounting pipe using M20 'U'-bolt, M12 'U'-bolt and their respective lockwashers & nuts. Tighten the nuts on the 'U'-bolts until the lockwashers begin to close. Roughly align the antenna onto its operating path.

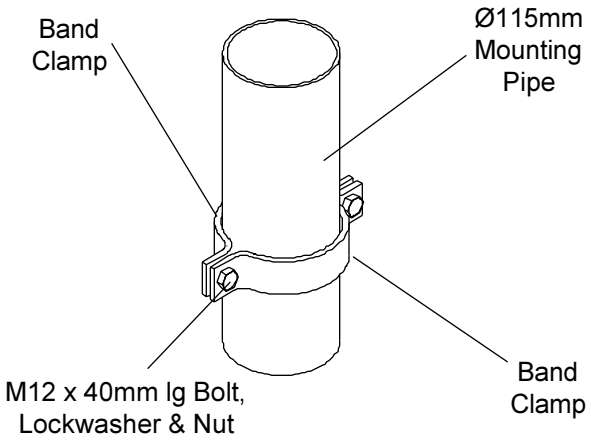
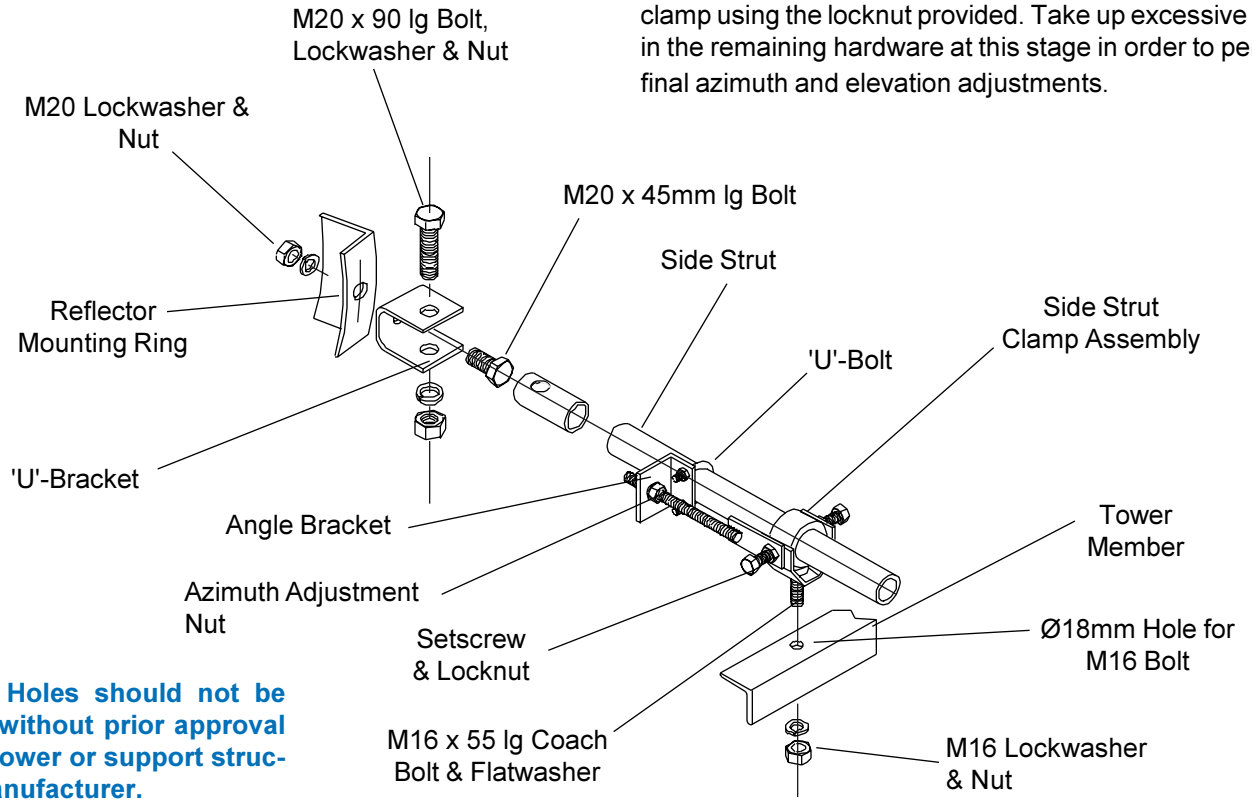


Figure 6. Attachment of Antenna Support Clamp

8 **Determine Strut Orientation.**
Suitable mounting points must be provided on the tower or main support structure prior to installation of the azimuth adjustment strut and the fixed strut (if required). For structural efficiency, the struts should be installed parallel to the antenna axis (ie in the direction of final transmission path). When it is not possible to mount the struts in this manner due to tower or outrigger considerations, the struts may be positioned anywhere within an angular 'cone' relative to the reflector axis as shown in Figure 9.

9 **Azimuth Adjustment Strut Installation.**
Attach 'U'-bracket to reflector mounting ring at point 'D', as shown in Figure 6, using an M20 x 45mm long bolt, lockwasher & nut. Attach the pre-drilled end of the azimuth adjustment strut to the azimuth 'U'-bracket on the reflector using an M20 x 90mm long bolt, lockwasher & nut as shown in Figure 6. Do not fully tighten at this stage.
Assemble the azimuth adjustment components and the strut clamp on to the free end of the strut as shown in Figure 6. Position the azimuth adjustment nuts such that they are approximately at the mid-point of the azimuth bolt threads. Tighten the 'U'-bolt and clamp assembly set screws sufficiently enough to prevent the assembly from falling off the strut at this stage.
Rotate the antenna in azimuth until pointing (as closely as possible) in the direction of the final transmission path. Loosen the azimuth adjustment assembly 'U'-bolt and clamp set screws and slide the assembly until the clamp can be installed on a suitable tower member. Fully tighten the 'U'-bolt nuts to secure the angle bracket to the strut. Ensure that the tab of the azimuth bolt is secured against the strut clamp using the locknut provided. Take up excessive slack in the remaining hardware at this stage in order to perform final azimuth and elevation adjustments.



Note : Holes should not be drilled without prior approval of the tower or support structure manufacturer.

Figure 7. Attachment of Azimuth Adjustment Strut (6ft version)

10 Elevation and Azimuth Adjustment.

Normally several alternating adjustments in elevation and azimuth will be required to achieve optimum transmission path alignment. Begin by adjusting the antenna in elevation using the concave faced nuts on the elevation eyebolt until the antenna is as close as possible to its final transmission path direction. Correct any azimuth mis-alignment by adjusting the azimuth adjusting strut. Repeat the sequence as necessary.

Once alignment is achieved, carefully tighten all mount and strut hardware, taking care not to disturb the antenna positioning. The following hardware tightening sequence is recommended.

1. Fully tighten the nuts on the two 'U'-bolts on the tower mounting pipe

2. Fully tighten the mounting ring bolts at each of the three elevation hinge brackets.

3. Fully tighten bolts attaching elevation hinge brackets to mounting bracket.

4. Fully tighten bolt attaching elevation eyebolt to elevation hinge bracket.

5. Fully tighten the bolt passing through the azimuth 'U'-bracket and strut.

6. Fully tighten bolt attaching fixed strut to mounting ring (if applicable).

7. Tighten the strut clamp assembly of the azimuth strut and then the clamp assembly of the fixed strut (if required). Do this by first loosening the jam nuts. Next tighten the setscrews until they touch the strut. Then tighten them 1¼ turns more so that their cup points cut into the strut. Tighten the locknuts against the bracket.

8. Fully tighten the nuts securing the clamp assemblies to the tower members.

9. Finally re-check that all hardware has been tightened.

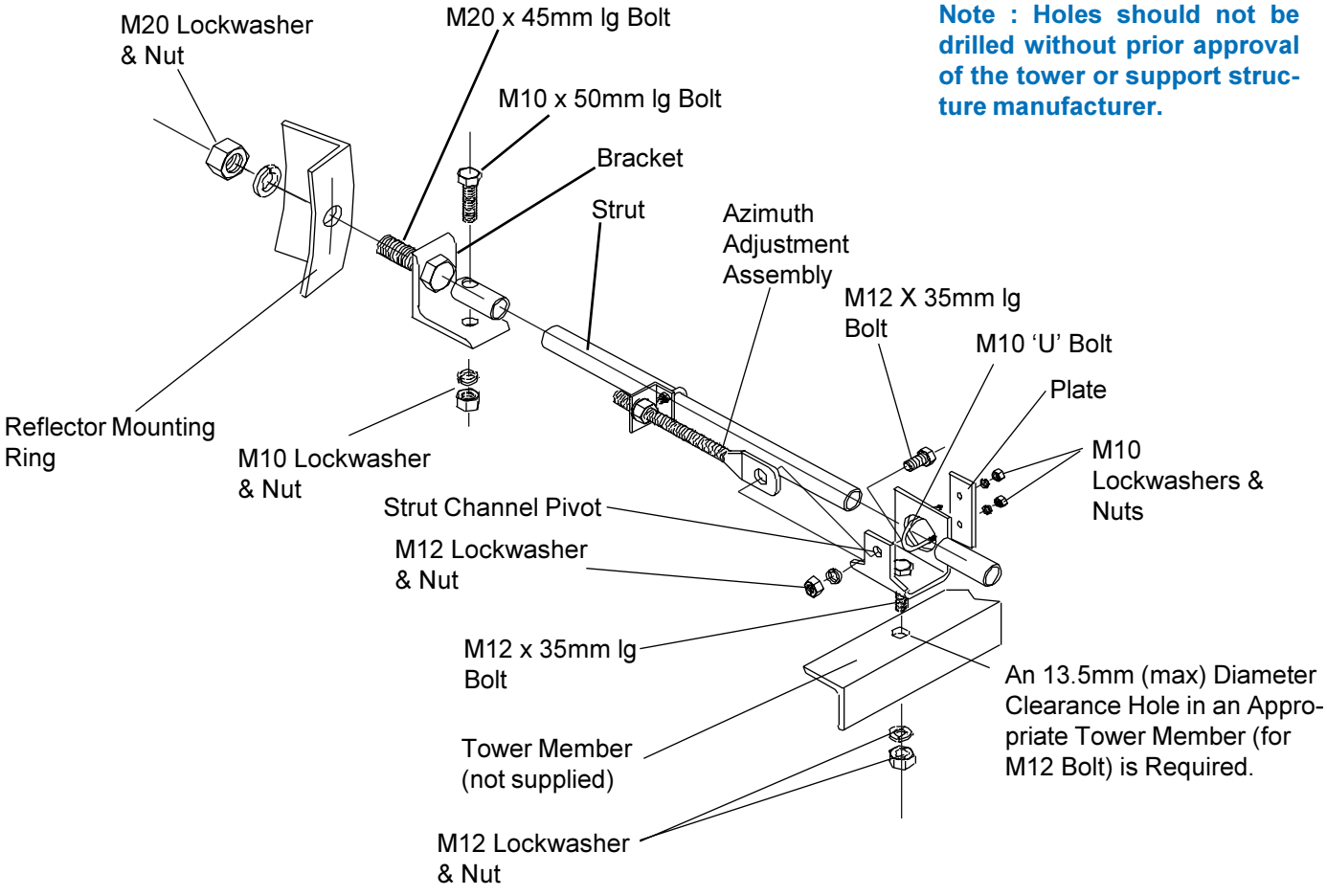
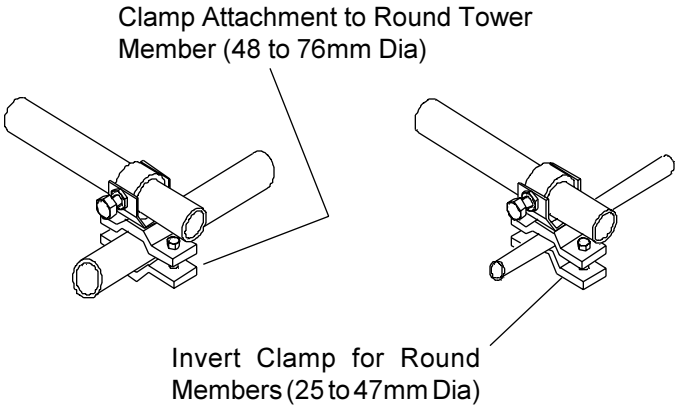


Figure 8. Attachment of Azimuth Adjustment Assembly (4ft version)

11 **Hardware Check.** Recheck all hardware to ensure that it has been correctly tightened during installation procedure.

12 **Corrosion Prevention.** Paint the cut end of the strut with a Zinc based paint (eg. 'Galvafroid') to prevent corrosion.



Strut may be attached to a Round Tower Member of 25 to 76mm Diameter using Pipe Clamp Assembly Part No. 33984-7. This Must be ordered separately

Figure 8. Attachment of Side Struts to Round Tower Members

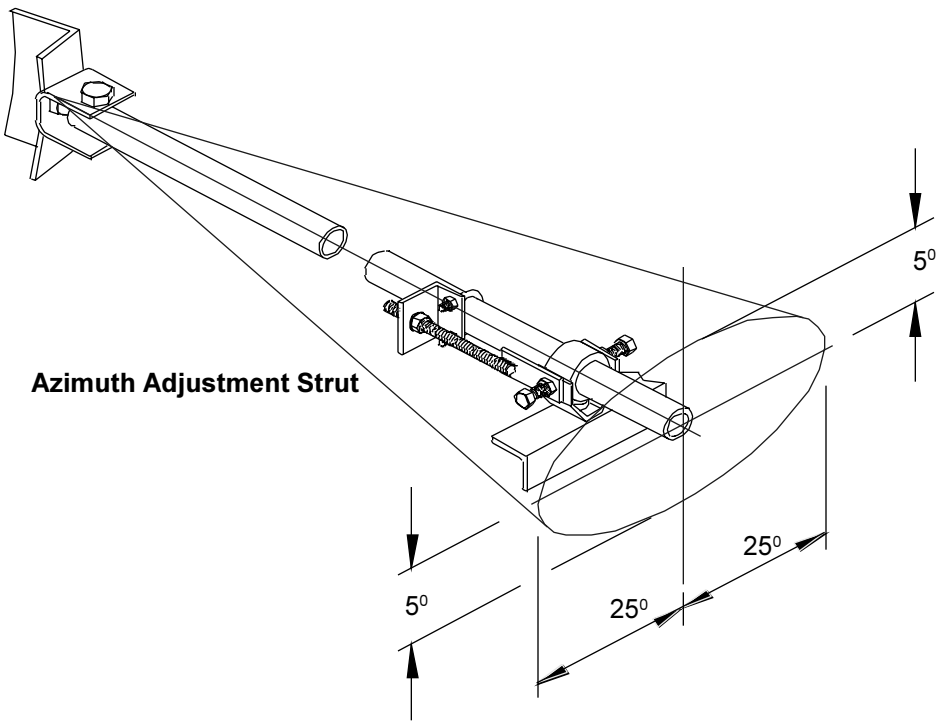


Figure 9. Azimuth Strut Positioning

Table 1. Mount Parts List

Item	Description	4ft Qty*	6ft Qty*
1	Antenna azimuth adjustment	1	1
2	Front strut angle	1	-
3	'U' bracket	1	-
4	Strut plate	1	-
5	M12 U-bolt	1	1
6	M10 U-bolt	1	-
7	M20 U-bolt	1	1
8	Antenna support band	2	2
9	M12 lockwasher, gs	11	9
10	M12 hex nut, gs	11	9
11	M10 lockwasher, gs	3	-
12	M10 hex nut, gs	3	-
13	M10 x 50mm hex bolt, gs	1	-
14	M12 x 35mm hex bolt, gs	2	-
15	M12 x 40mm hex bolt, gs	6	6
16	M12 x 45mm hex bolt, ss	1	1
17	M12 lockwasher, ss	1	1
18	M12 nut, ss	1	1
19	M20 x 45mm hex bolt, gs	6*	7*
20	M20 x 90mm hex bolt, gs	-	1
21	M20 lockwasher, gs	8*	9*
22	M20 nut, gs	8*	9*
23	M20 locknut, ss	2	2
24	Strut channel	1	-
25	Main channel	1	1
26	Strut	1	1
27	Strut clamp assembly	-	1
28	Band clamp	2	2
29	Convex washer, ss	2	2
30	Concave nut, brass	2	2
31	Pivot bracket	2	2
32	Rod end eyebolt assy.	1	1
33	Mount angle	1	1
34	Mounting angle assy.	1	1
35	Hinge	2	1
36	Conductive grease	1	1
37	Vinyl gloves	2	2

ss/gs stainless steel/galvanized steel * Includes spares

Table 2. Fastener Torque Specifications

Fastener	Torque value in N·m (lb·ft) for each fastener size					
Size	M5	M6	M8	M10	M12	M16
Stainless steel	4.5 (3.3)	7.7 (5.7)	18.7 (13.8)	39.2 (28.9)	65.1 (48)	161 (118.7)
Galvanized steel	2.7 (2)	4.5 (3.3)	11.1 (8.1)	22 (16.2)	38 (28)	95 (70.1)

Installation Instructions

Feed Installation For Ceragon Antennas

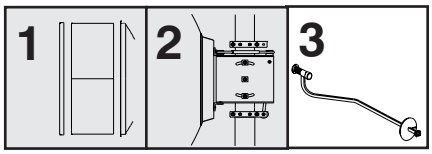
AN-0033-0, AN-0027-0, AN-0015-0

CERAGON, Sept-2000

CERAGON Ltd.
24 Raul Valenberg Street, Tel-Aviv, 69710, Israel
Tel: +972-3-6455733 Fax: +972-3-6455499
Home Page: www.ceragon.com

Antenna Assembly Sequence

VHP antenna



Description

This feed is designed to interface with a CERAGON RFU and to be mounted into the reflector of the antenna.
Included with the feed are guy wires. An notch on the feed hub indicates the direction of polarization and the feed can be rotated to adjust polarization.

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Table 1. Feed Parts List

Item	Description	Qty
1	Feed Assembly	1
2	Guy Wire	3
3	M6x16lg SHCS, ss.	4*
4	M6 Lockwasher, ss.	4*
5	O-Ring	1*
6	Silicone Grease, tube	1*
7	Conductive grease, tube	2*

ss - Stainless Steel
* - Part of feed kit

Table 2. Fastener Torque Specifications

Fastener	Torque value in N·m (lb·ft) for each fastener size					
Size	M5	M6	M8	M10	M12	M16
Stainless steel	4.5 (3.3)	7.7 (5.7)	18.7 (13.8)	39.2 (28.9)	65.1 (48)	161 (118.7)

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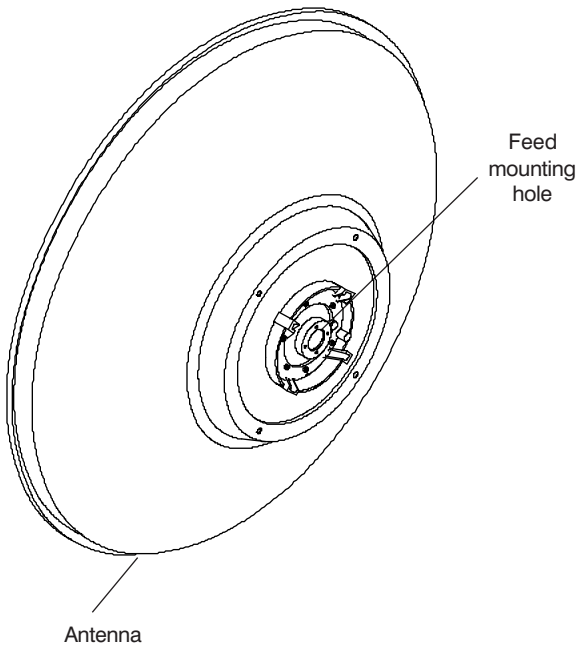

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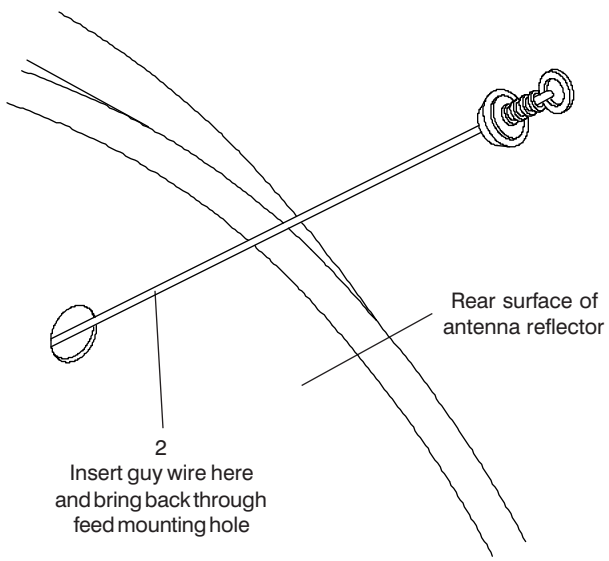

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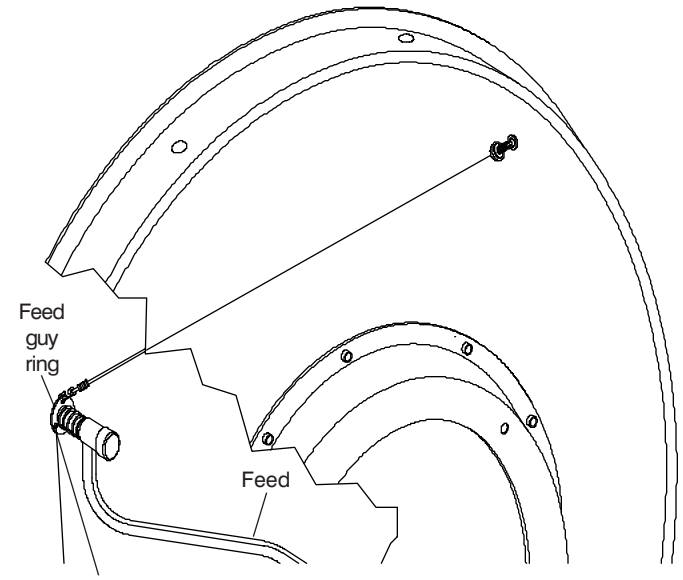

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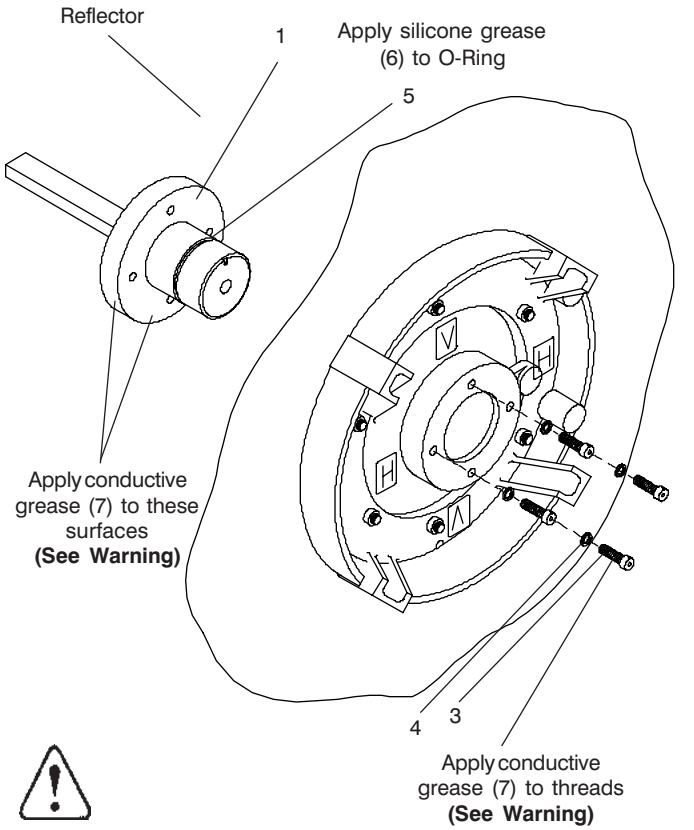

Warning: Use protective wear to avoid skin contact with the conductive grease. Keep away from mouth. Wash thoroughly after use with liberal amounts of liquid soap and rinse with water. Do not store open near food or food sources. Contents: oil, clay, and zinc dust.

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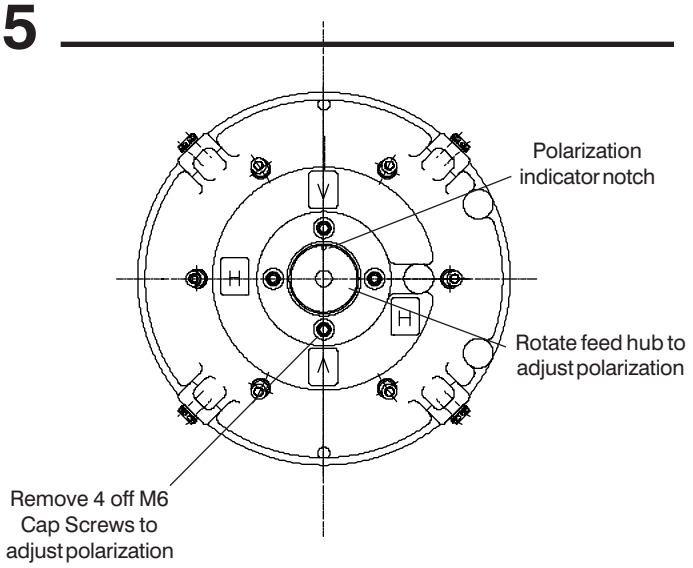
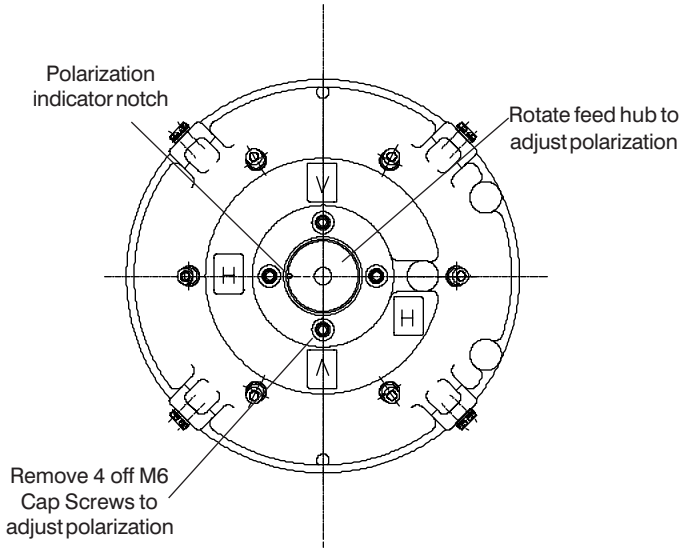


Vertically Polarized Application



Horizontally Polarized Application

Installation Instructions

Ceragon Antennas
Shield-Radome

AN-0033-0, AN-0030-0, AN-0015-0

CERAGON, Sept-2000

CERAGON Ltd.
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Tel: +972-3-6455733 Fax: +972-3-6455499
Home Page: www.ceragon.com

Description

This four-segment shield with radome is designed to be mounted on the reflector of the antenna to achieve high performance. Signal absorber is fastened to the inside of the shield segments. Some antennas require absorber on only two shield segments and other antennas require absorber on all four segments. Assembly and mounting hardware is included.

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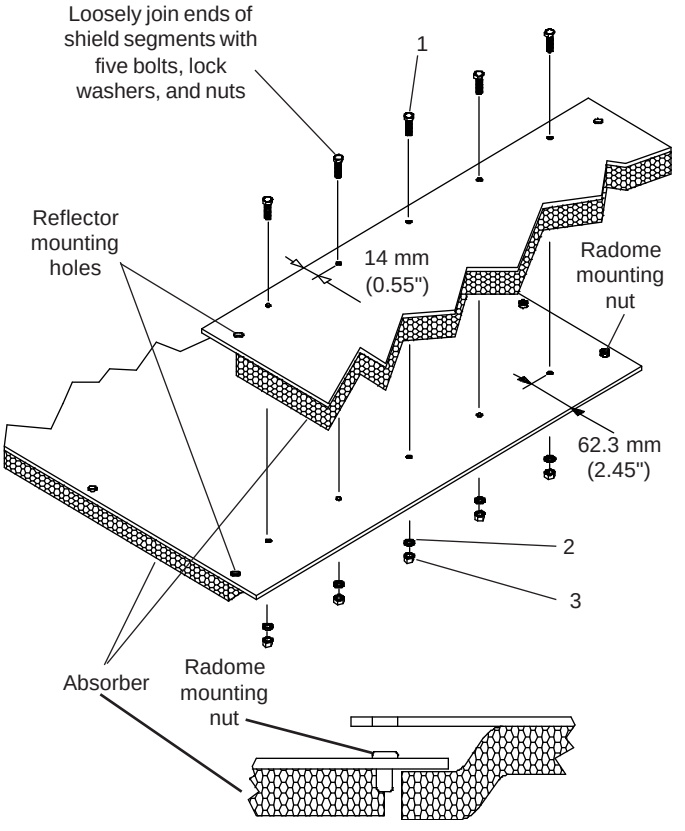
Table 1. Shield-Radome Parts List

Item	Description	Part no.	Qty*
1	M6 x 1-6g x 12 mm hex bolt, ss	204000-76	38
2	M6 lock washer	204003-5	56
3	M6 x 1-6H hex nut	204001-12	38
4	M6 flat washer	204002-14	18
5	M6 x 1-6g x 20 mm hex bolt, ss	204000-78	18
6	Hole plug	48504	8
7	Absorber clip	108953-1	4
8	Absorber washer	9862-10	4
9	Tapered pin (alignment tool)	224797	1
10	Angle adaptor	45840-1	1
11	Angle adaptor bolt	9953-23	1

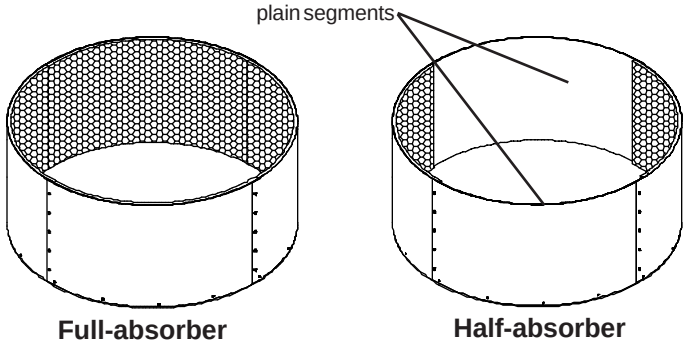
* Includes spares
ss stainless steel

Table 2. Fastener Torque Specifications

Fastener	Torque value in N·m (lb·ft) for each fastener size					
Size	M5	M6	M8	M10	M12	M16
Stainless steel	4.5 (3.3)	7.7 (5.7)	18.7 (13.8)	39.2 (28.9)	65.1 (48)	161 (118.7)

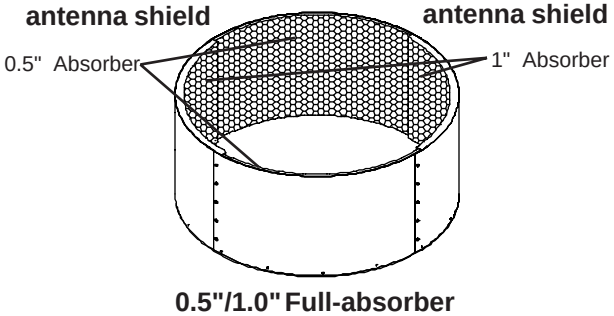


Typical overlap arrangement



Full-absorber antenna shield

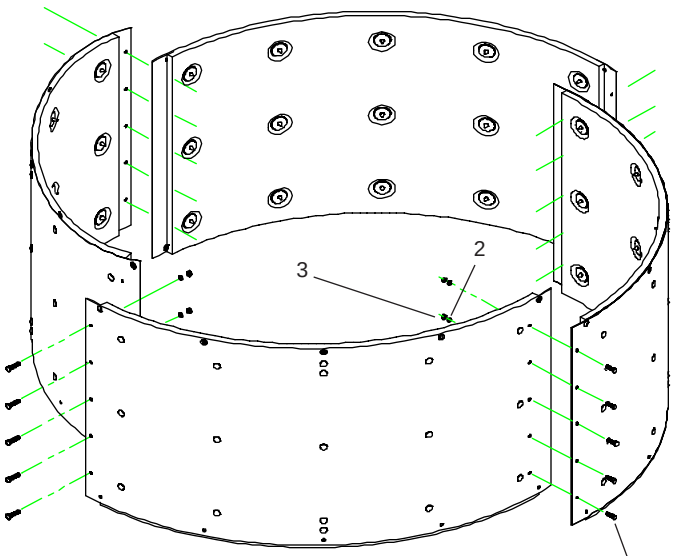
Half-absorber antenna shield



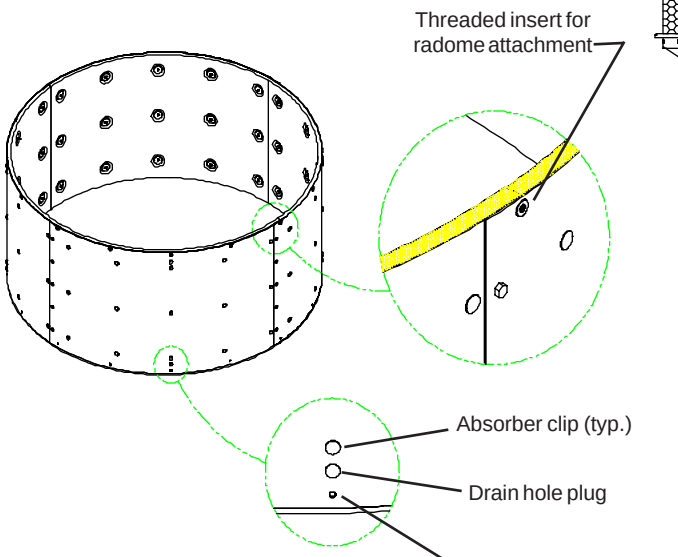
0.5"/1.0" Full-absorber antenna shield (71WA Only)

2

Full-absorber antenna shield version shown

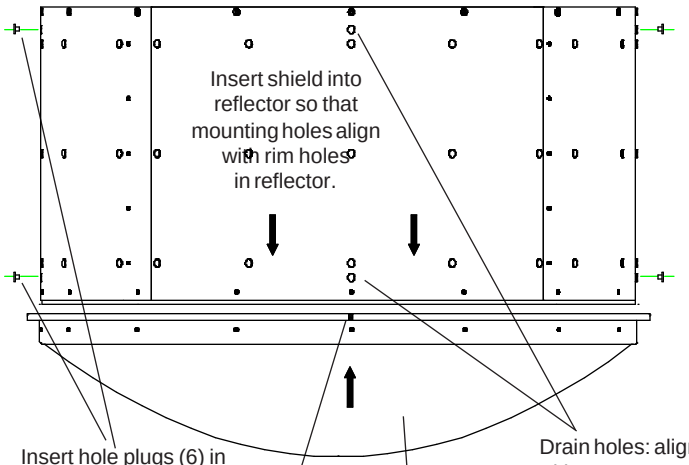


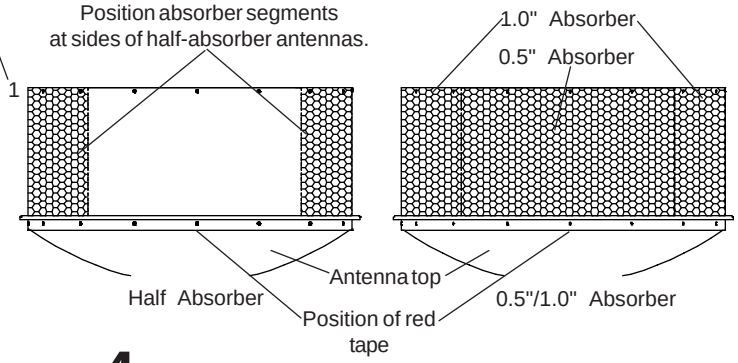
Antenna shield arrangement



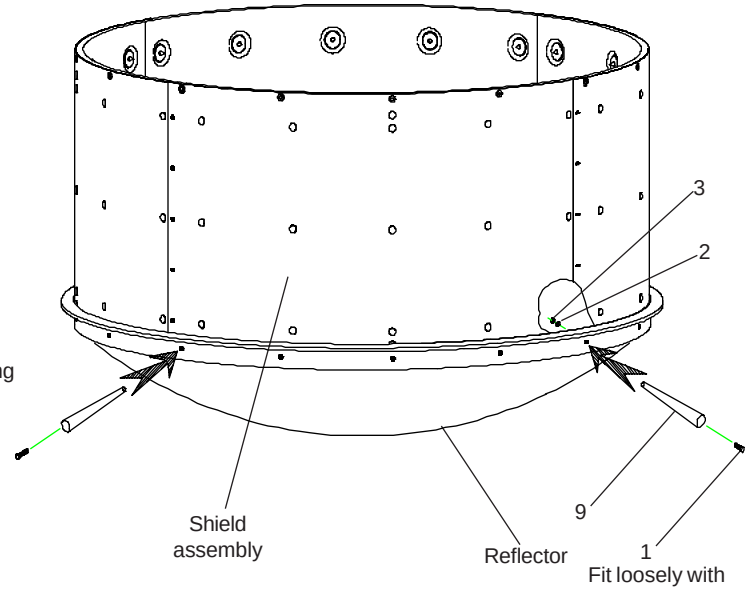
Assembled shield arrangement

3





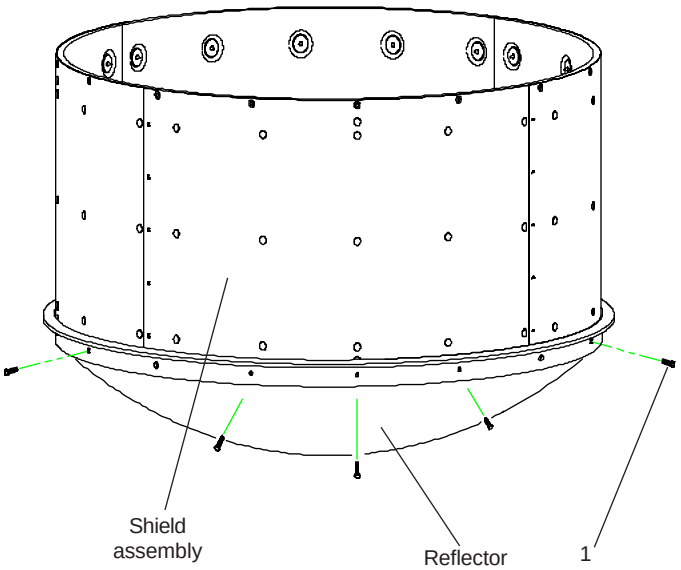
4



Insert the tapered pin (9) into the reflector hole as shown. Pry the shield slightly to align shield and reflector holes to receive a bolt. Repeat at 3 opposite positions.

Fit loosely with lockwasher (2) and nut (3) in 4 opposite places as shown then tighten.

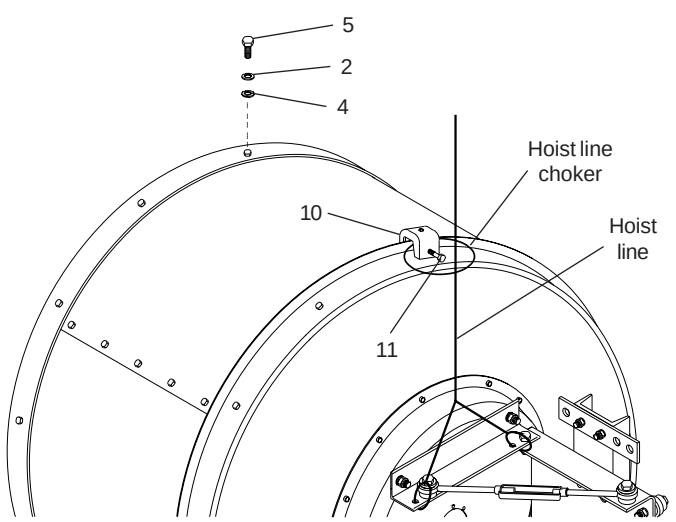
5



Fit bolts (1), lock washers (2) and nuts (3) to remainder of holes of the reflector and tighten. Tighten all shield segment fastenings.

6

Position the radome on the shield with the red flash nearest the top of the antenna. Assemble radome to the shield with bolts(5), lock washers (2), and flat washers (4). Tightly attach the angle adaptor (10) to the top of the reflector rim with the adaptor bolt (11) to accommodate a hoist line choker.



Installation Instructions

Ceragon 2.5 ft Antenna Mount

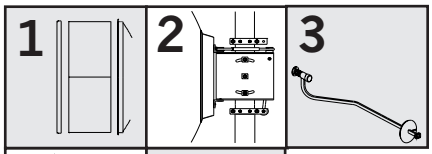
AN-0015-0, AN-0016-0, AN-0027-0, AN-0029-0, AN-0030-0

CERAGON, Sept-2000

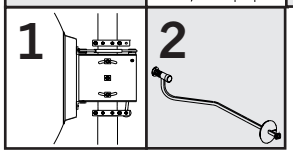
CERAGON Ltd.
24 Raul Valenberg Street, Tel-Aviv, 69710, Israel
Tel: +972-3-6455733 Fax: +972-3-6455499
Home Page: www.ceragon.com

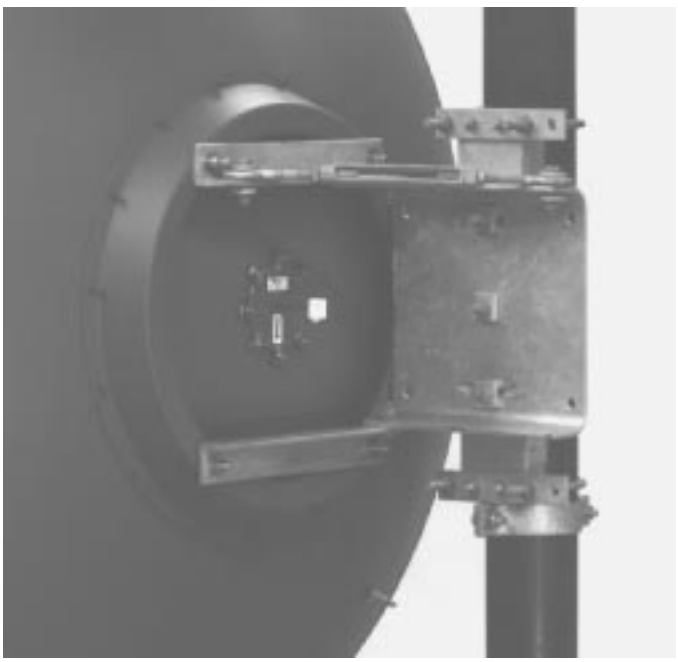
Antenna Assembly Sequence

VHP antenna



VP antenna





Description

This mount is designed to be attached to an antenna reflector and to provide for mounting the antenna on a 4-1/2" (114 mm) diameter vertical tower pipe. A strut is used to connect the bottom of the mount to a tower member for extra stability.

The antenna center can be located 10.4" (264 mm) from either side of the vertical tower pipe center, depending on how the mount is assembled. This provides the clearance necessary for the antenna feed components and connections.

The mount includes separate turnbuckles for plus or minus 15° azimuth adjustment and plus or minus 20° elevation adjustment.

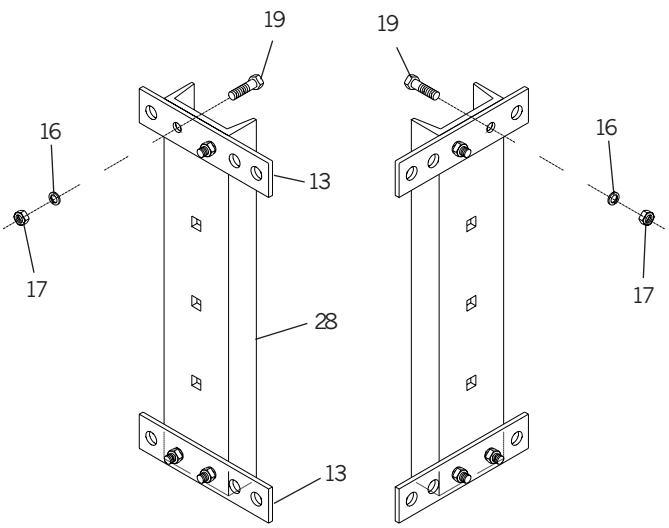
Notice

The installation, maintenance, or removal of antenna systems requires qualified, experienced personnel. This installation instructions have been written for such personnel. Antenna systems should be inspected once a year by qualified personnel to verify proper installation, maintenance, and condition of equipment.

Ceragon disclaims any liability or responsibility for the results of improper or unsafe installation practices.

1

Tightly attach the crossbars to the channel for the desired offset of the center of the antenna

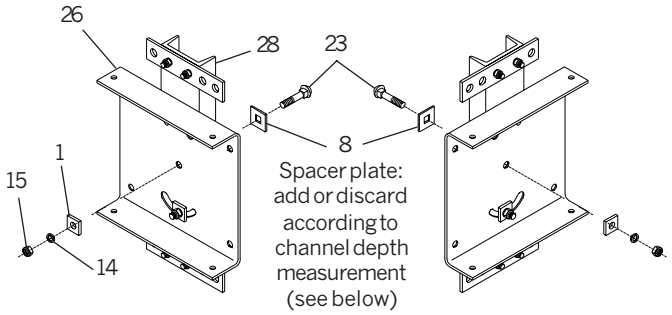


Antenna center offset left (rear view)

Antenna center offset right (rear view)

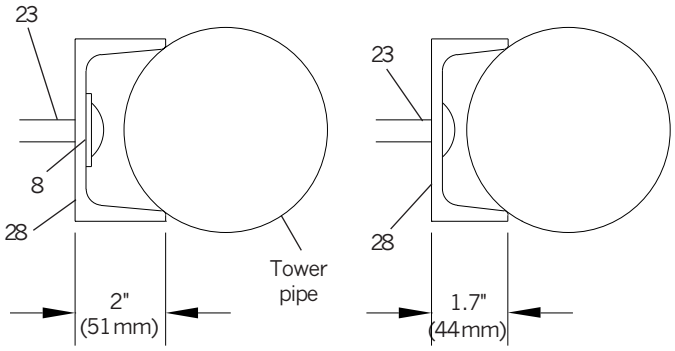
2

Loosely attach the base plate (26) to the channel (28). **Note:** the channel depth varies according to the origin of manufacture, which determines whether or not to use the spacer plate (8).



Antenna center offset left

Antenna center offset right

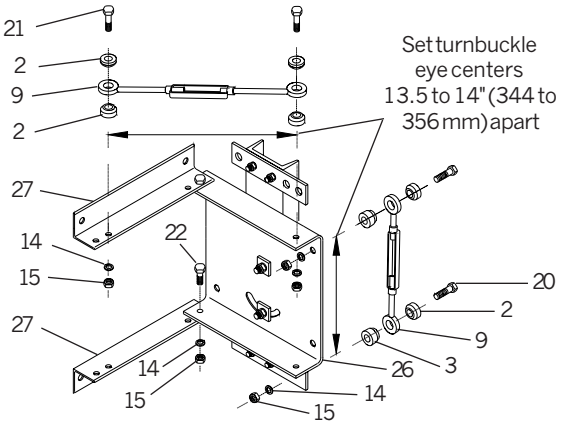


Spacer plate added

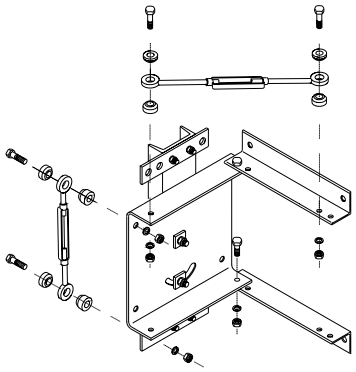
Spacer plate discarded

3

Very loosely attach both angles (27) to the base plate (26). Loosen the jam nuts and set both turnbuckles (9) with their eye centers at the mid-travel position. Loosely attach the turnbuckles as shown.



Antenna center offset left



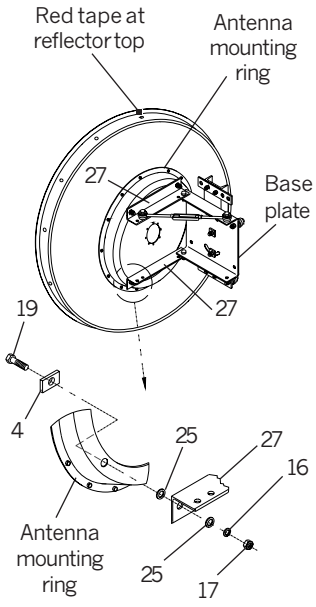
Antenna center offset right

4

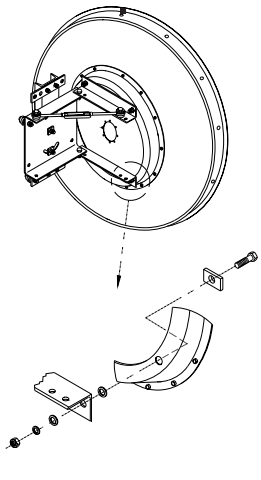
Position the angles (27) of the mount on the antenna mounting ring parallel to the antenna top. The antenna top is indicated by red tape on the reflector rim. Carefully align the mounting holes and loosely add the attaching hardware.

Important: Partially tighten each bolt while checking to be sure that the remaining untightened bolts are not binding in the holes. If binding occurs, loosen all partially tightened bolts. Then, slightly reposition the mount to the reflector and repeat the procedure. **If the mount is improperly positioned on the reflector when the bolts are tightened, distortion of the reflector can occur.** After the four bolts are partially tightened, fully tighten them as given in Table 2.

Partially tighten the bolts holding the angles to the base plate enough to compress the lock washers.



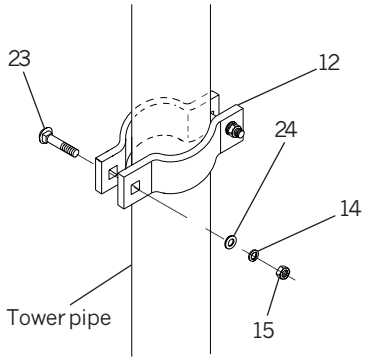
Antenna center offset left



Antenna center offset right

5

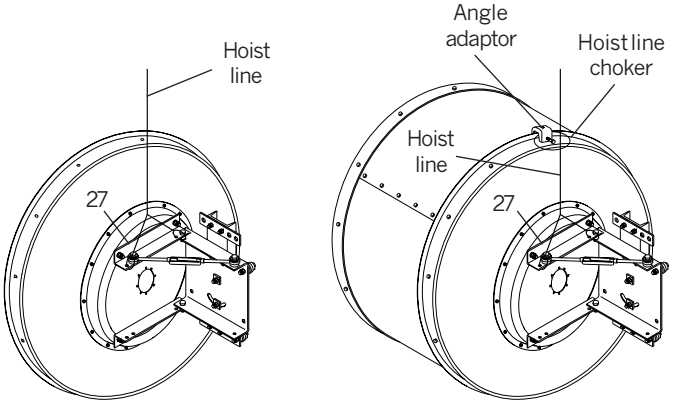
Tightly attach the support bands (12) to the tower pipe in the antenna mounting position. The antenna mount channel will rest on these bands.

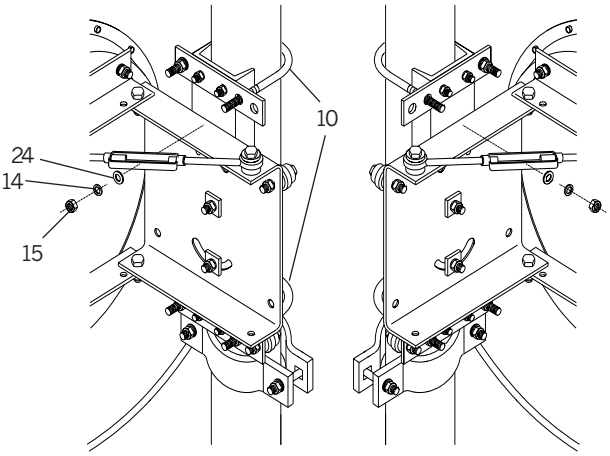


6

Install the feed according to Bulletin 237285 (feed not shown for clarity). Attach hoist lines to the upper mount angle (27) as shown: add a hoist line choker through the angle adaptor of a shielded antenna.

Raise the antenna to the tower pipe and position it on the support bands as close to its operating position as possible. Tightly attach the mount to the tower pipe with two U-bolts (10).





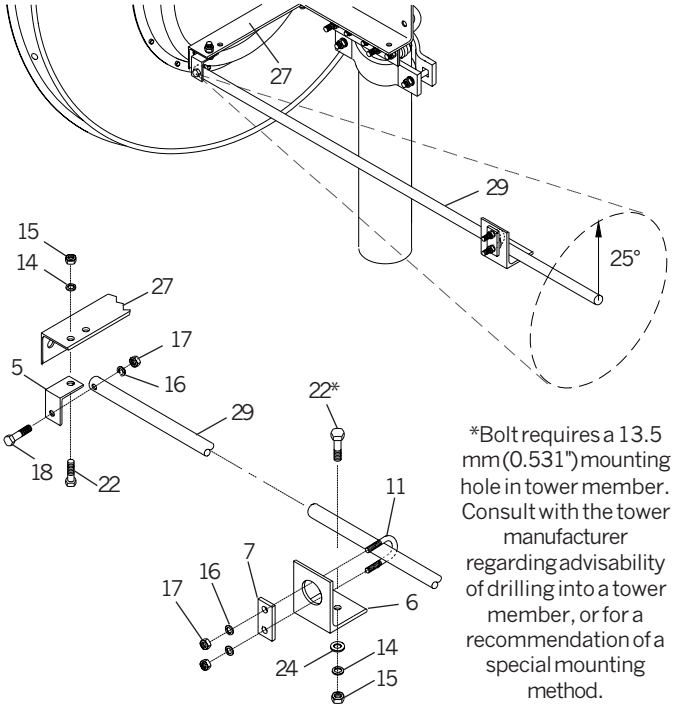
Antenna center offset left

Antenna center offset right

7

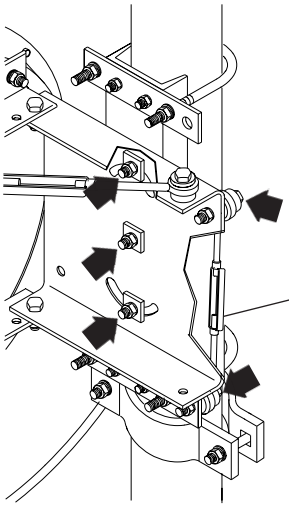
Very loosely attach the strut (29) to the mount angle (27) with the front strut angle (5). Very loosely attach the other end of the strut to a tower member with the rear strut angle (6); attach this end so that the strut is as parallel as possible to the antenna axis for maximum stability. The deviation angle from this parallel position should be no more than 25° in any direction.

Leave all strut attaching hardware loose until after elevation and azimuth adjustments are done. Then, tighten the hardware according to Table 2.



*Bolt requires a 13.5 mm (0.531") mounting hole in tower member. Consult with the tower manufacturer regarding advisability of drilling into a tower member, or for a recommendation of a special mounting method.

Adjust elevation and azimuth. Make sure that **all strut attachment hardware is loosened** before making either adjustment. Tighten turnbuckle jam nuts to hold the adjustments. Then, tighten the remaining adjustment hardware according to Table 2.



Elevation

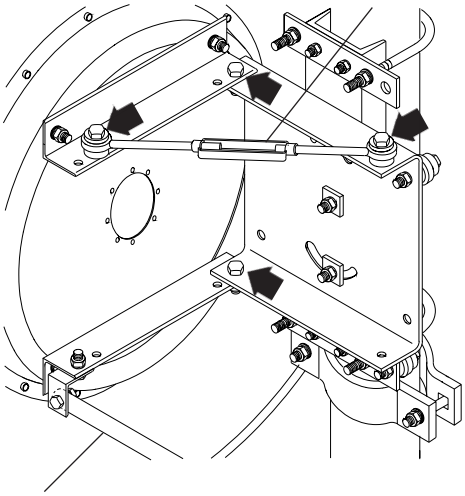
Loosen bolts indicated by arrows and rotate turnbuckle

Loosen jam nuts and rotate turnbuckle

Azimuth

Loosen bolts indicated by arrows and rotate turnbuckle

Loosen jam nuts and rotate turnbuckle



Strut: loosen **all** attaching hardware for elevation or azimuth adjustment

Table 1. Mount Parts List

Item	Description	Part no.	Qty*
1	Square washer	224349	3
2	Bevel washer, thin	224322-1	6
3	Bevel washer, thick	224322-2	2
4	Rectangular washer	224348	4
5	Front strut angle	224422	1
6	Rear strut angle	224406	1
7	Strut plate	224410	1
8	Spacer plate	224479	3
9	Turnbuckle	224403-1	2
10	M12 U-bolt	204031-1	2
11	M10 U-bolt	204031-3	1
12	Antenna support band	42922A-1	2
13	Crossbar	224320	2
14	M12 lock washer	100522-45	18
15	M12 hex nut	100526-45	18
16	M10 lock washer	100522-39	12
17	M10 hex nut	100526-39	12
18	M10 x 50 mm hex bolt, gs	100534-63	1
19	M10 x 35 mm hex bolt, gs	100534-36	8
20	M12 x 70 mm hex bolt, gs	100535-84	2
21	M12 x 50 mm hex bolt, gs	100535-48	2
22	M12 x 35 mm hex bolt, gs	100535-21	4
23	M12 x 45 mm carriage bolt, gs	204026-2	5
24	M12 flat washer	100521-45	7
25	M10 flat washer	100521-39	8
26	Base plate	224321	1
27	Angle	224766	2
28	Channel	224324	1
29	Strut	224409	1

* Includes spares
gs galvanized steel

Table 2. Fastener Torque Specifications

Fastener	Torque value in N·m (lb·ft) for each fastener size					
Size	M5	M6	M8	M10	M12	M16
Galvanized steel	2.7 (2)	4.5 (3.3)	11.1 (8.1)	22 (16.2)	38 (28)	95 (70.1)

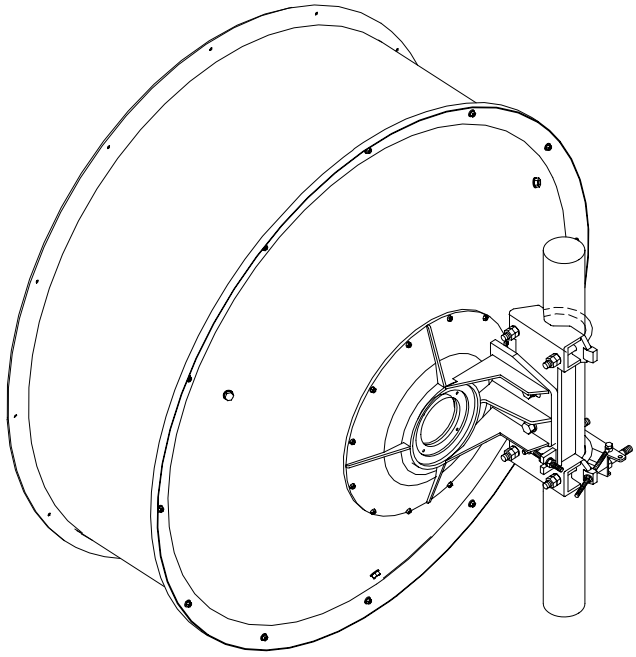
Installation Instructions

For AN-0014-0, 4-foot Antennas

CERAGON, Sept-2000

CERAGON Ltd.
24 Raul Valenberg Street, Tel-Aviv, 69710, Israel
Tel: +972-3-6455733 Fax: +972-3-6455499
Home Page: www.ceragon.com

Installation Instructions
4-foot Antenna AN-0014-0



These Installation Instructions are valid for antennas in the following version:

- reflector ∅ 1,2 m (4 ft)
- waveguide feed single or dual polarized
- pipe mount for installation on pipe ∅115mm
- antenna offset to the left or the right
- standard installation with offset to the left
- safety collar for easy installation
- 2 spindles for fine adjustment of **azimuth** ± 5° and **elevation** of ± 10°
- reflector (SP-Types)
- reflector with shroud, shroud aperture covered by a radome (SU- and SD-Types)

It is important to mount the antenna exactly as described in these installation instructions.
The installed antenna shall be inspected once per year by qualified personnel .
Ceragon disclaims any responsability for the result of improper or unsafe installation.
These installation instructions have been written for qualified, skilled personnel.

We reserve the right to alter details, especially with respect to technical improvement.

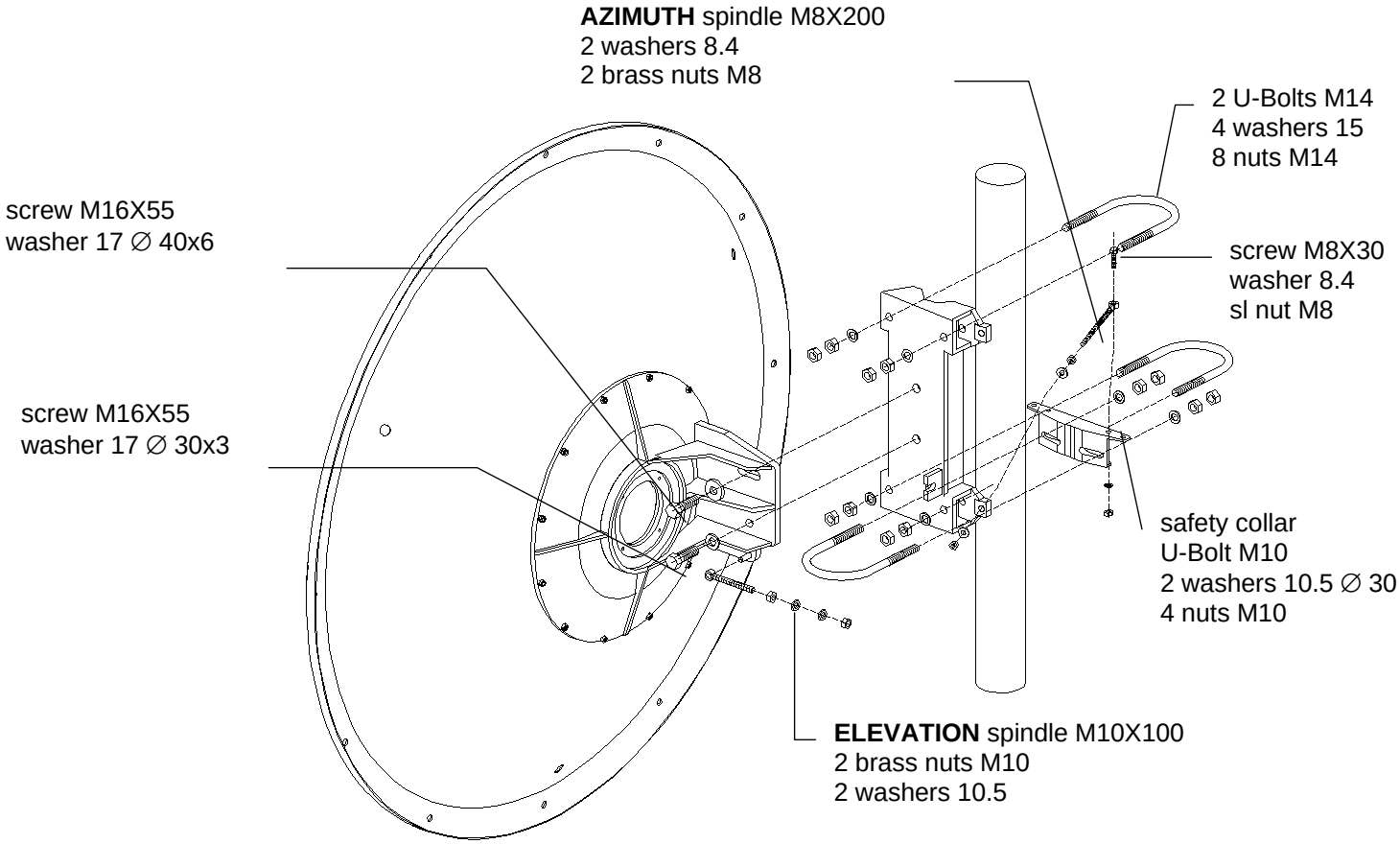
1. Tools required for installation

Tools are not included with antenna:

- Hoisting device for 250 daN
- Shackle
- 2 ropes
- Water balance and compass
- Mallet
- Wrenches for hexagon bolts:
  M5(8), M6(10), M10(17), M12(19), M14(21), M16(24)
  (values in brackets=openings of spanners)
- Torque wrench from 0,5 to 15 daNm
- Nail set or punch for ∅6mm.

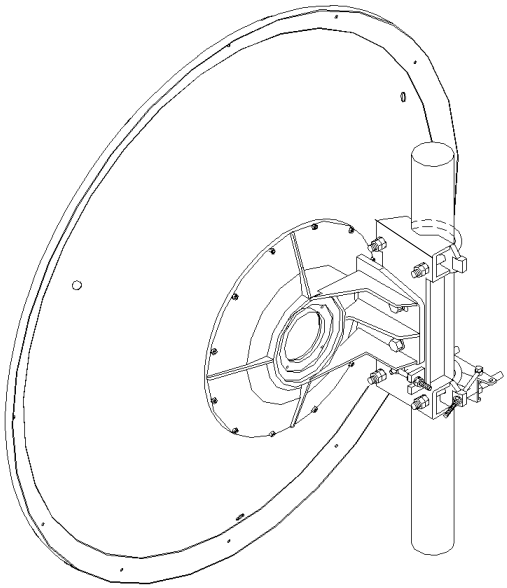
2. Assembly of the mount

For easy operation of the bolted joints, « Anti Seize »Installation Paste should be applied to all threads of bolts and fine adjustment spindles.
After this, keep the lubricated threads free of dust and dirt!
Fastener torque specification see table attached!



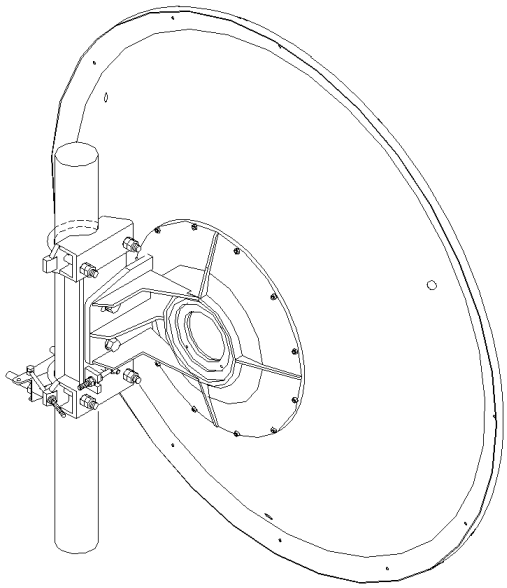
3. Antenna offset

Offset left

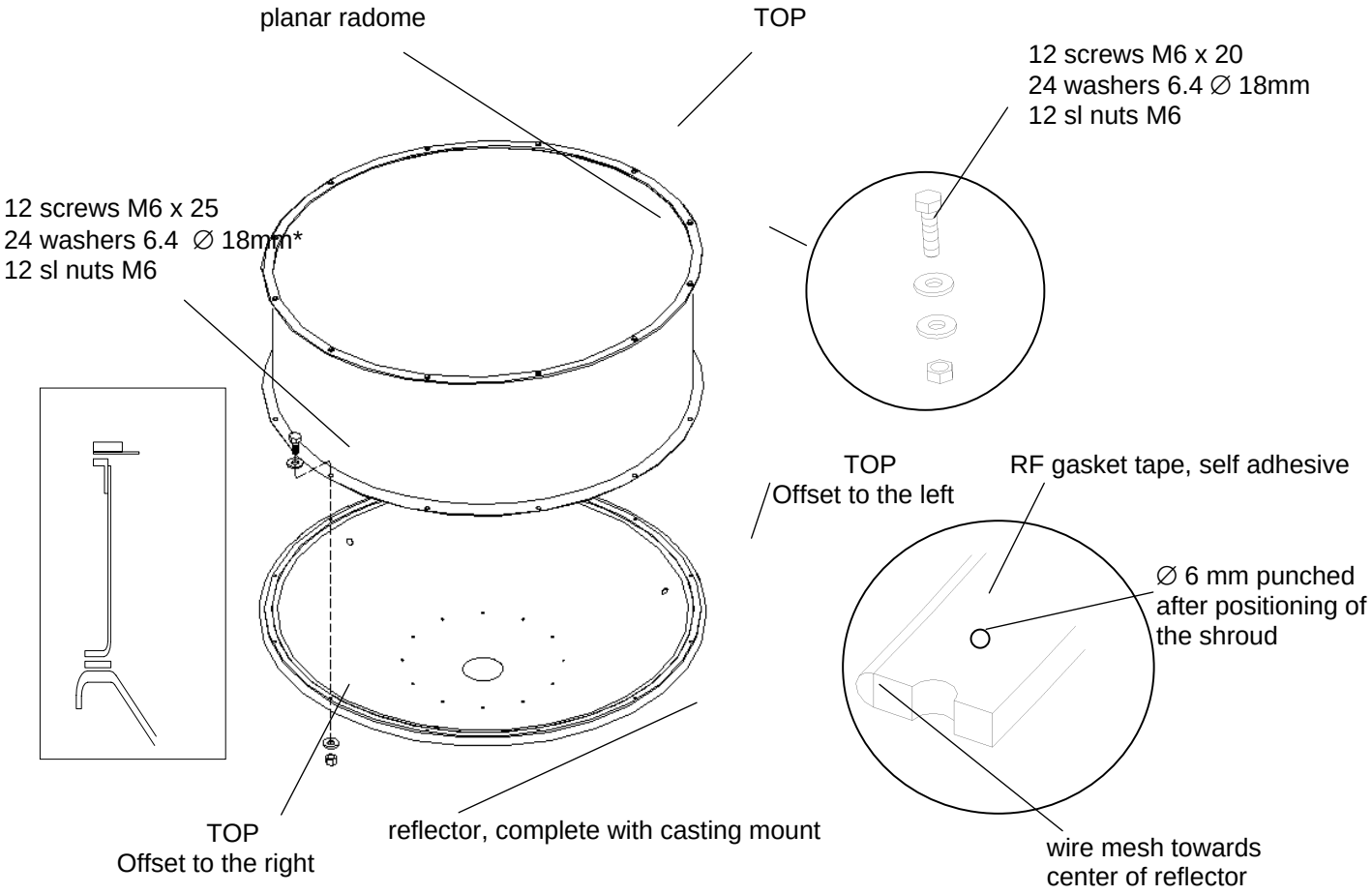


Offset right

- Rotate the reflector and the tower mount 180 deg



4. Assembly of the shroud and the planar radome (only SU-and SD-Types)



* for spots free of paint 90 deg from TOP (left and right) add 2 serrated lock washers A6.4

- The rim of the reflector must be **clean** and **dry**
- Stick on the RF gasket tape 360 deg in a way, that
  - all mounting holes are covered by the tape and
  - the wire mesh is directed to the center of reflector
- position the shroud **-clean** and **dry-** on inside of the reflector.

antenna offset to the left

TOP shroud to TOP reflector

or

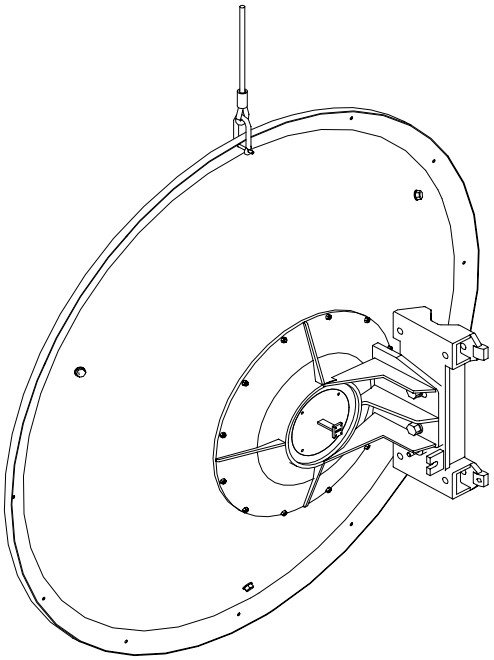
antenna offset to the right

TOP shroud oposite to TOP reflector

5. Lifting of antenna

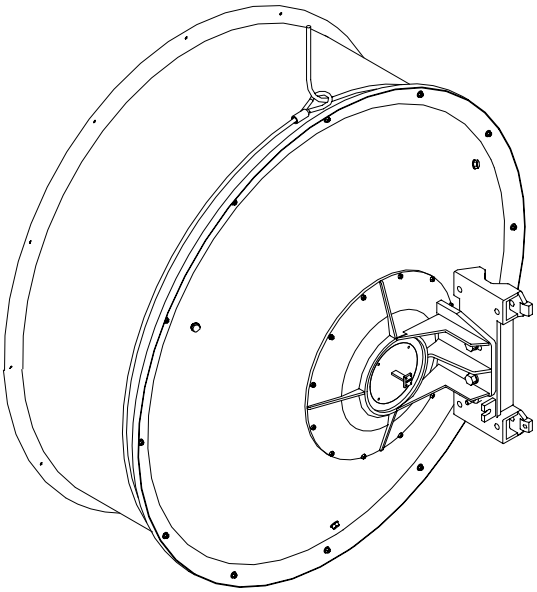
5.1 SP-Type

- Fix a shackle in the rim of the reflector. The diameter of the hole is 8mm.
- Lift the antenna carefully.



5.2 SD and SU-Type

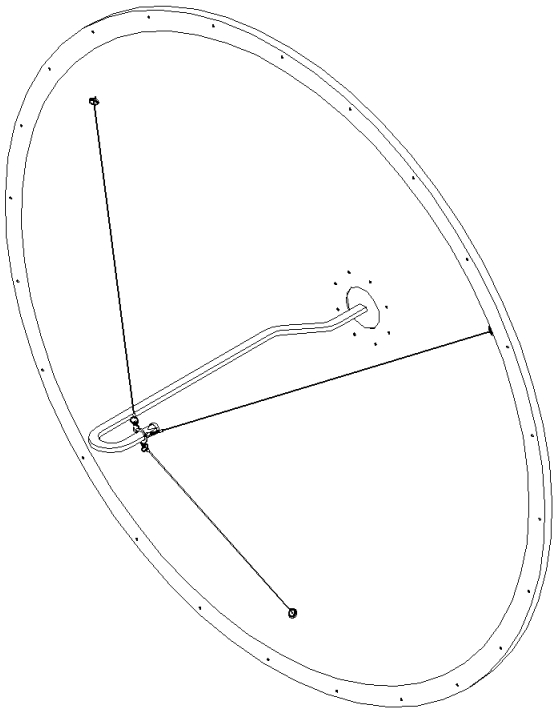
- Fix a lifting sling at the shroud near the reflector.
- Lift the antenna carefully.



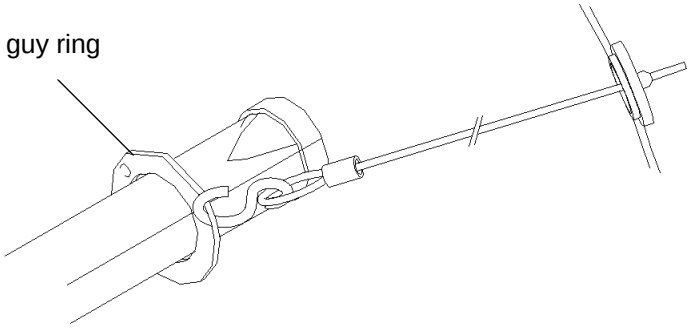
6. Feed installation

The feed is a precision component which should be handled with special care during installation. For instance, always carry the feed, supporting both ends. Any damage may degrade the antenna's performance. Repair of feeds is not possible in the field.

6.1. Guy Wire Assemblies



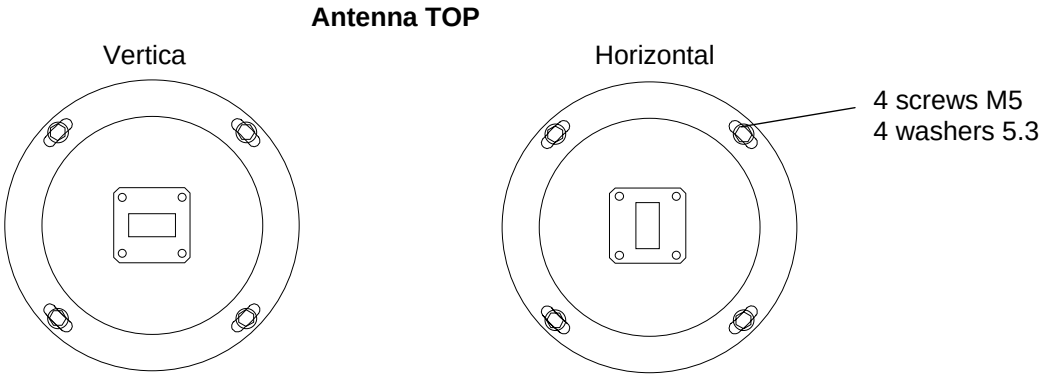
rotatable feed guy ring



- Insert the 3 guy wires in the mounting holes on the rear of the reflector.
- Move the feed assembly partway through the connecting ring.
- Hook the guy wires into the rotatable guy ring
- Move the feed and fix it, with the 4 screws M5, in the connecting ring.

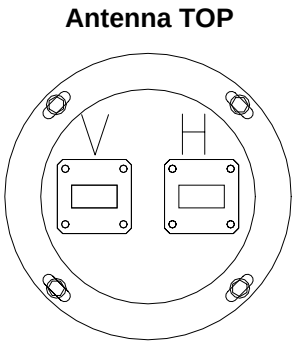
6.2. Polarization Choice

6.2.1 Single polarization

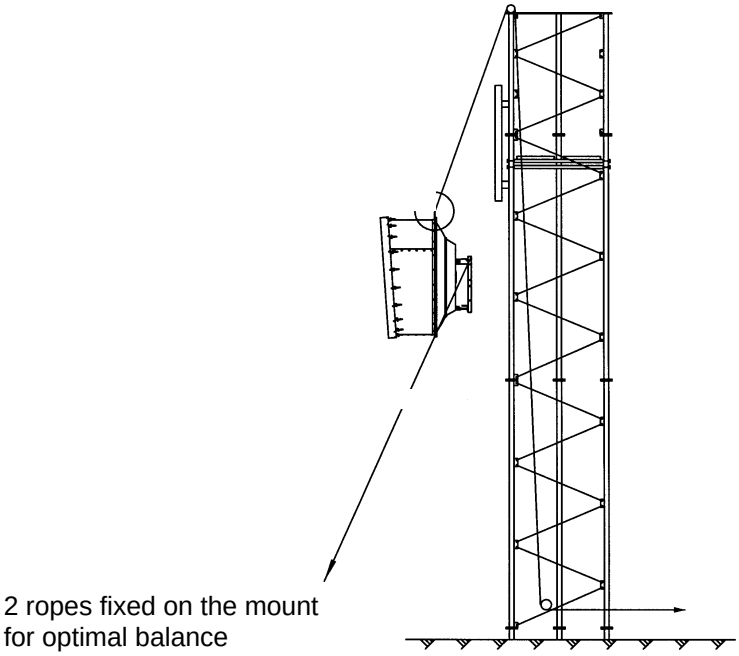


- unscrew the 4 screws M5
- carefully rotate the feed 90 degrees
- lock the 4 screws M5

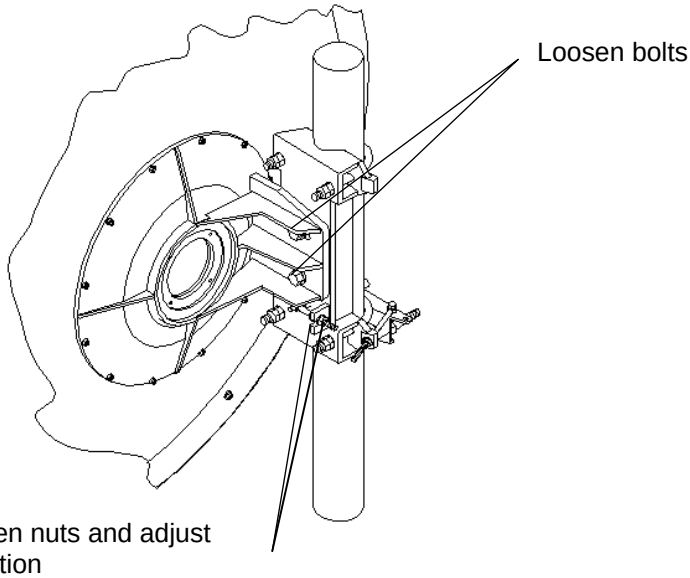
6.2.2 Dual polarization



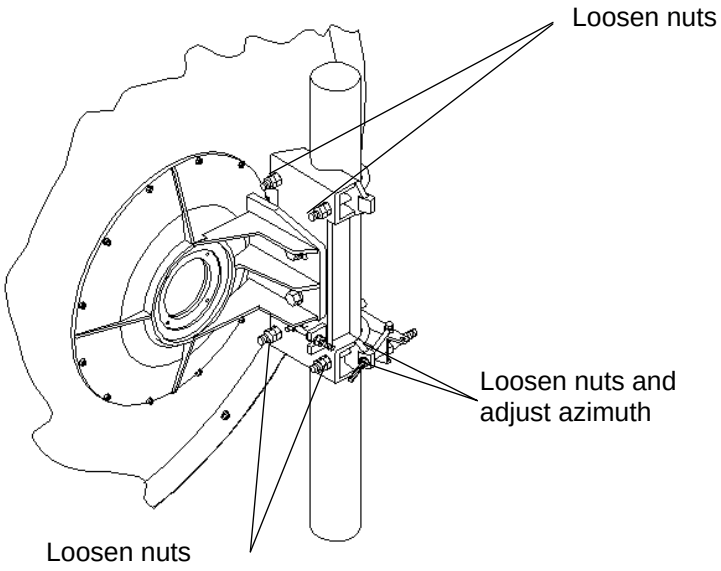
7. Hoisting on tower



8. Elevation adjustment

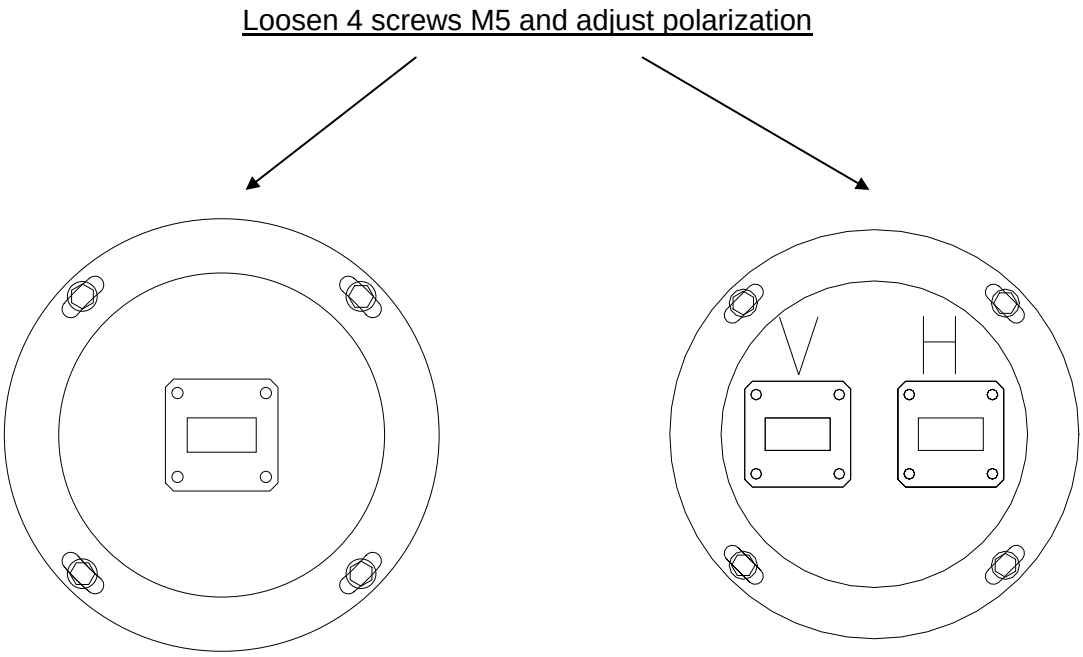


9. Azimuth adjustment



Important*:* After azimuth adjustment, lock the first nut on the U-bolts with a torque of 95Nm, then the second lock nut is fixed against the first one***. Don't use two wrenches to fix the second nut.***

11. Polarization adjustment



12. Final Check

When the installation of the antenna has been completed, it is necessary to make sure t the installation instructions have been followed in all aspects.

It is especially important to check that all bolted joints are tightly locked.

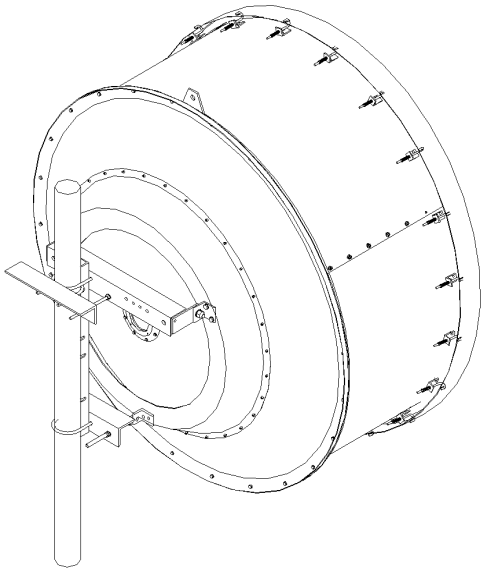
Installation Instructions

For 6-foot Antennas

CERAGON, Sept-2000

CERAGON Ltd.
8 Hanechoshet Street, Tel-Aviv, 69710, Israel
Tel: +972-3-6455733 Fax: +972-3-6455499
Home Page: www.ceragon.com

Installation Instructions
6-Foot Antenna



These Installation Instructions are valid for antennas in the following version:

- reflector ∅ 1,8 m (6 ft)
- waveguide feed single or dual polarized
- pipe mount for installation on pipe ∅115mm
- antenna offset to the left or the right
- safety collar for easy installation
- 2 spindles for fine adjustment of **azimuth** and **elevation** of ± 5 deg
- reflector (SP-Types)
- reflector with shroud, shroud aperture covered by a radome (SU- and SD-Types)

It is important to mount the antenna exactly as described in these installation instructions.
The installed antenna shall be inspected once per year by qualified personnel .
Ceragon disclaims any responsibility for the result of improper or unsafe installation.
These installation instructions have been written for qualified, skilled personnel.

We reserve the right to alter details, especially with respect to technical improvement.

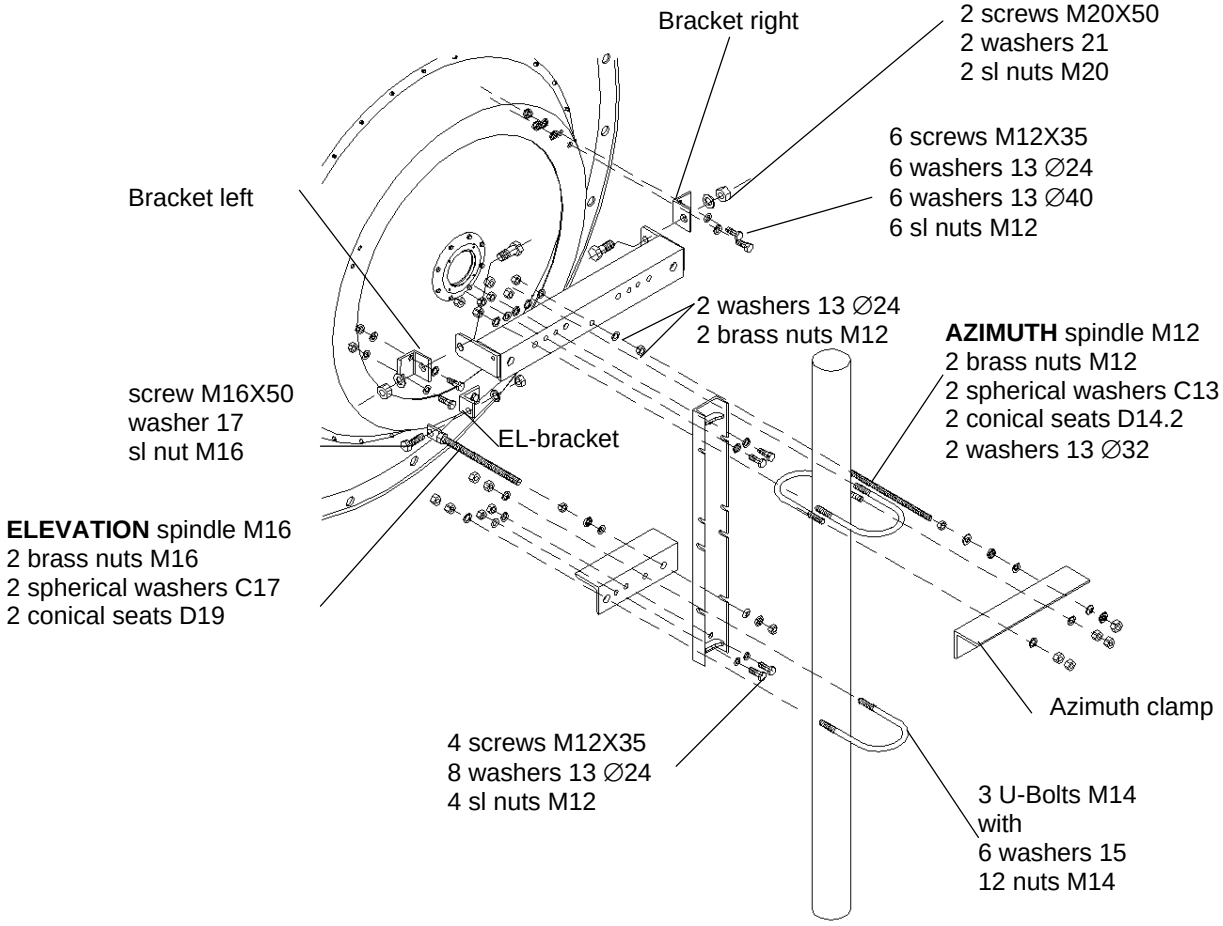
1. Tools required for installation

Tools are not included with antenna:

- Hoisting device for 250 daN
- Shackle
- 2 ropes
- Water balance and compass
- Mallet
- Wrenches for hexagon bolts:
  M5(8), M6(10), M10(17), M12(19), M14(21), M16(24), M20(30)
  (values in brackets=openings of spanners)
- Torque wrench from 0,5 to 25 daNm
- Nail set or punch for ∅6mm.

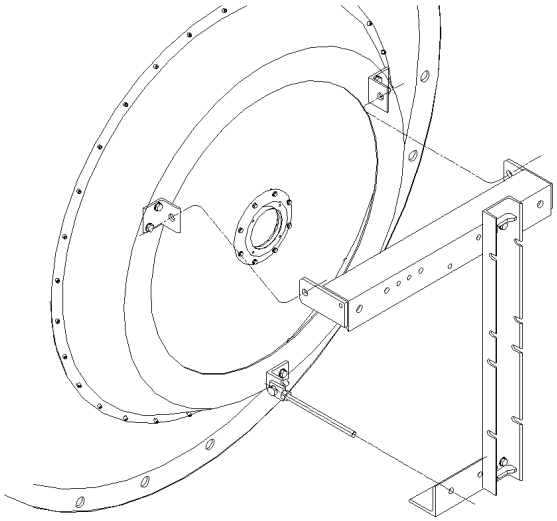
2. Assembly of the mount

For easy operation of the bolted joints, « Anti Seize »Installation Paste should be applied to all threads of bolts and fine adjustment spindles.
After this, keep the lubricated threads free of dust and dirt!
Fastener torque specification see table attached!

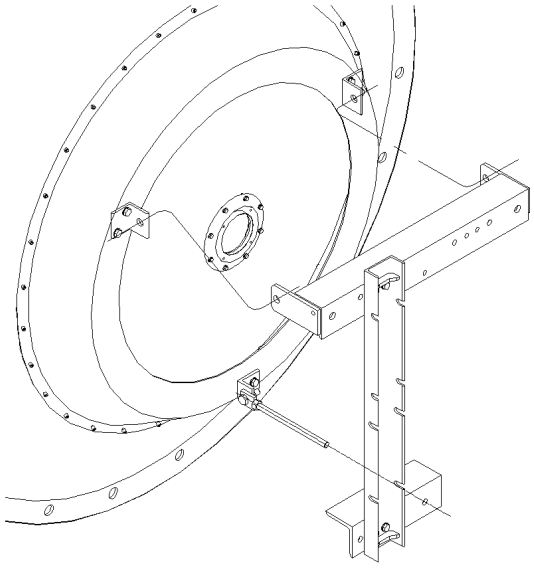


3. Antenna offset

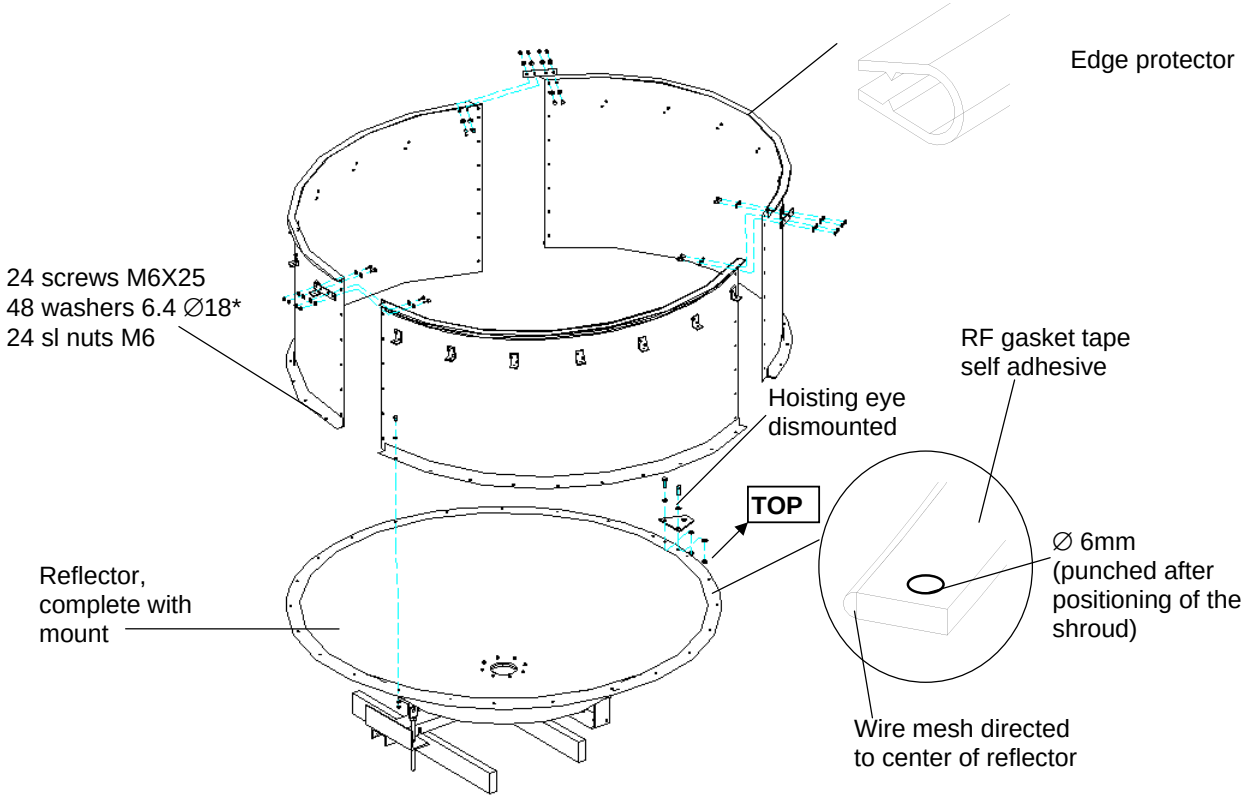
Offset left



Offset right



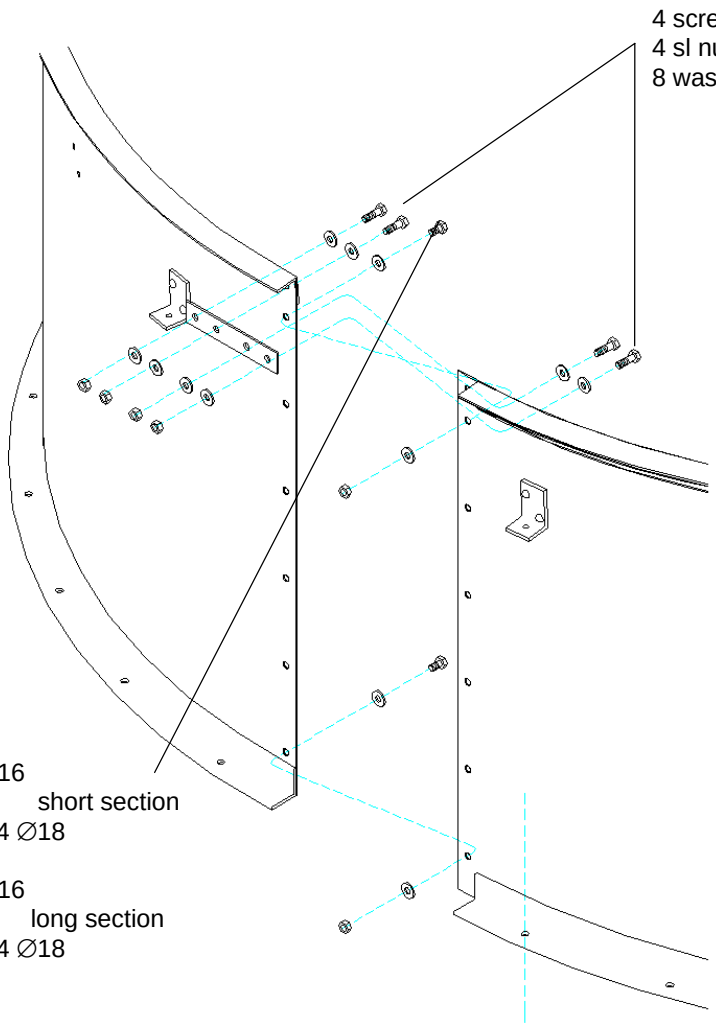
4. Assembly of the shroud (only SU-and SD-Types)



* for spots free of paint 90 deg a side TOP (left end right) additionnaly use 2 serrated lock washers A6.4

- The rim of the reflector must be **clean** and **dry**
- Stick on the RF gasket tape 360 deg in a way, that
  - all mounting holes are covered by the tape and
  - the wire mesh is directed to the center of reflector
- position the shroud **-clean** and **dry-** into the reflector**.**

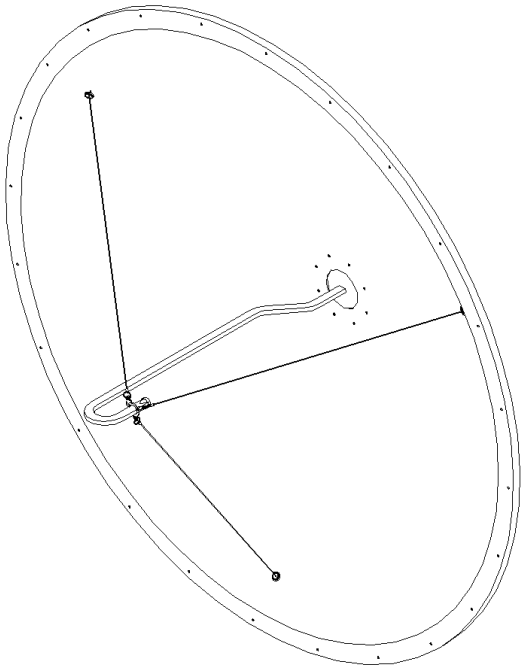
5. Shroud Sections Attachment


4 screws M6X25
4 sl nuts M6
8 washers 6.4 ∅18
6 screws M6X16
6 sl nuts M6 short section
12 washers 6.4 ∅18
or
7 screws M6X16
7 sl nuts M6 long section
14 washers 6.4 ∅18

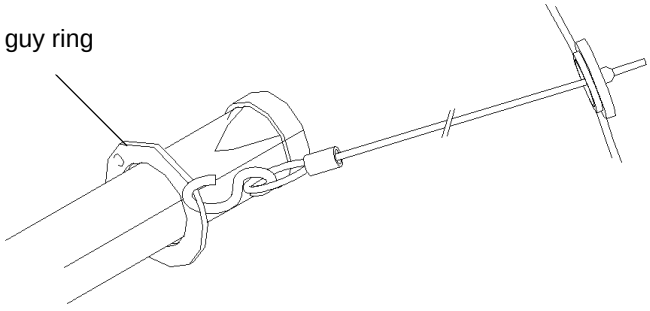
6. Feed installation

The feed is a precision component which should be handled with special care during installation. For instance, always carry the feed, supporting both ends. Any damage may degrade the antenna's performance. Repair of feeds is not possible in the field.

6.1. Guy Wire Assemblies



rotatable feed guy ring

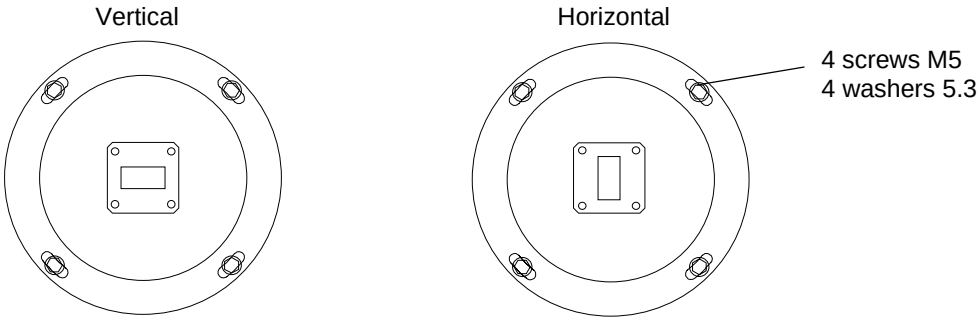


- Insert the 3 guy wires in the mounting holes on the rear of the reflector.
- Move the feed assembly partway through the connecting ring.
- Hook the guy wires into the rotatable guy ring
- Move the feed and fix it, with the 4 screws M5, in the connecting ring.

6.2. Polarization Choice

6.2.1 Single polarization

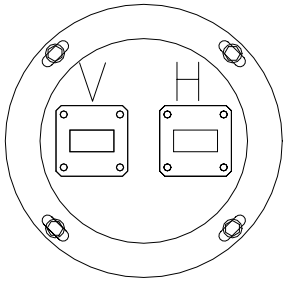
Antenna TOP



- unscrew the 4 screws M5
- carefully rotate the feed 90 degrees
- lock the 4 screws M5

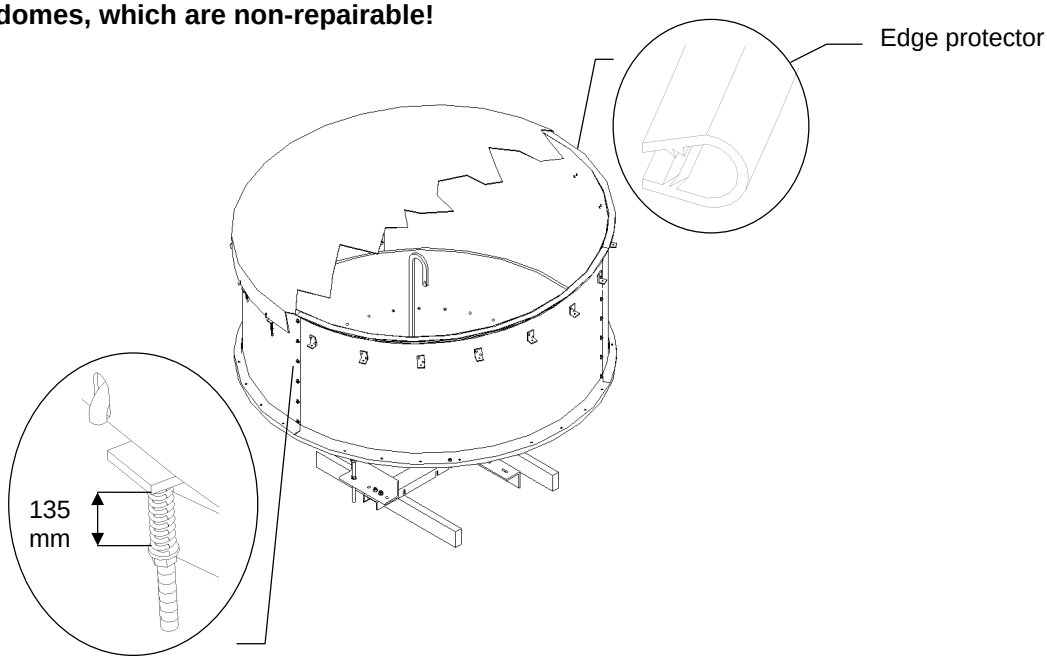
6.2.2 Dual polarization

Antenna TOP



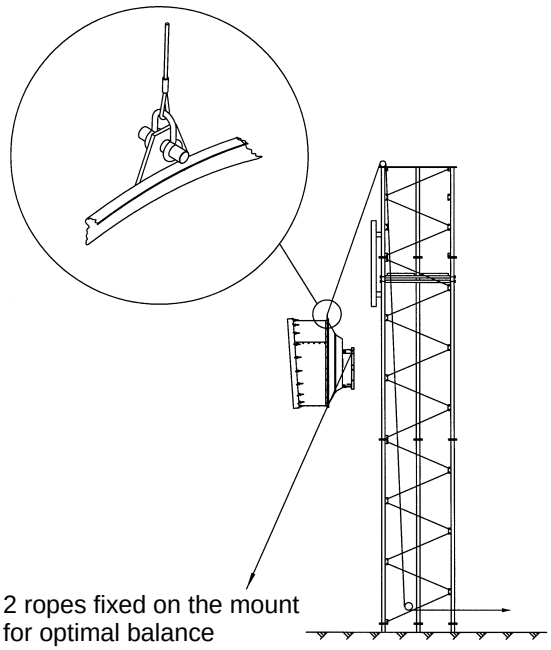
7. Installation of the planar radome (only U and D-Types)

Take care to avoid kinking of planar radomes during installation. Kinking would destroy the radomes, which are non-repairable!

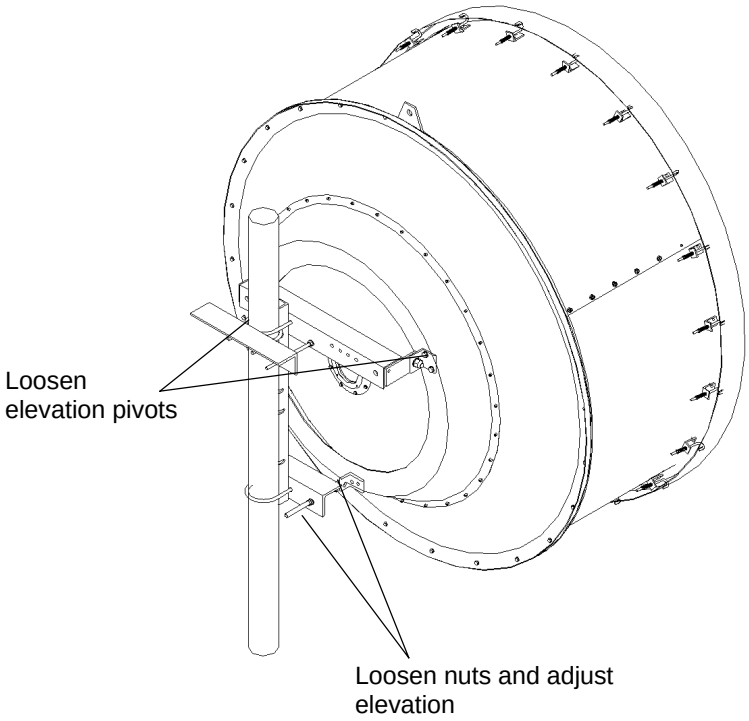


- Unpack the radome and carefully stretch it over the shroud aperture.
- Orient the drainhole grommet exactly to the bottom point of antenna, opposite TOP.
- Attach J-bolts with springs and smooth radome down as the springs are attached, but do not displace the edge protector.
- Align the length of springs to approx. 135 mm at each J-bolt, this will provide proper radome tension.

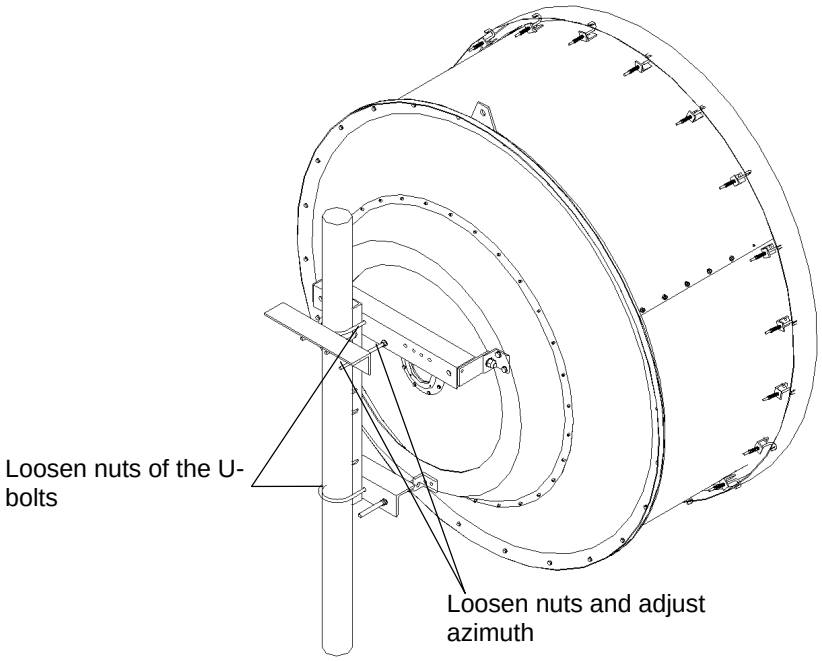
8. Hoisting on tower



9. Elevation adjustment



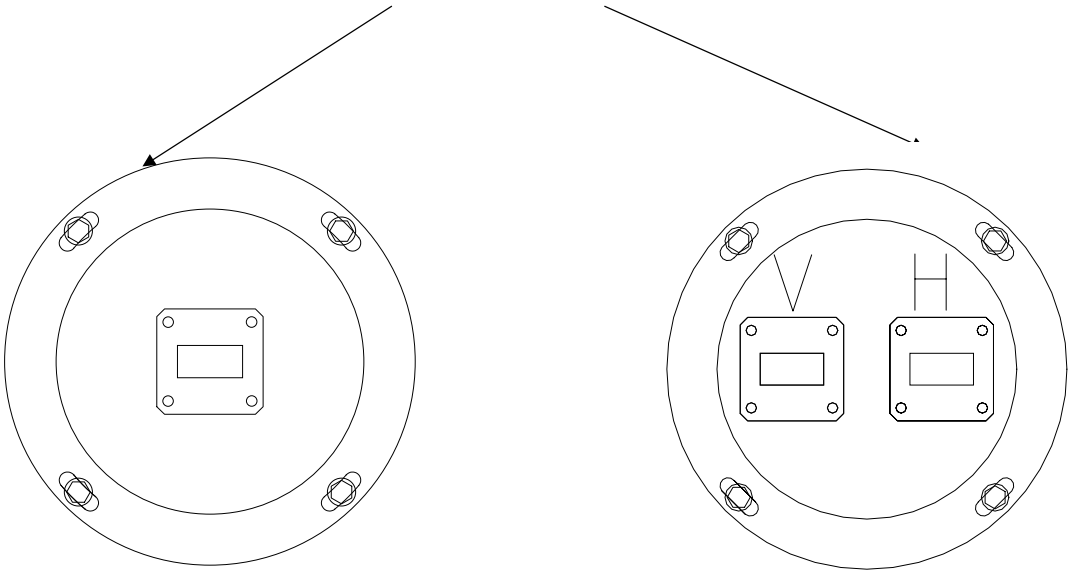
10. Azimuth adjustment



Important*:* After azimuth adjustment, lock the first nut on the U-bolts with a torque of 95Nm, then the second lock nut is fixed against the first one**. Don't use two wrenches to fix the second nut.**

11. Polarization adjustment

Loosen 4 screws M5 and adjust polarization



12. Final Check

When the installation of the antenna has been completed, it is necessary to make sure that the installation instructions have been followed in all aspects.
It is especially important to check that all bolted joints are tightly locked.

Supplement To Installation Instructions

For 4-foot and 6-foot Antennas

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CERAGON Ltd.
24 Raul Valenberg Street, Tel-Aviv, 69710, Israel
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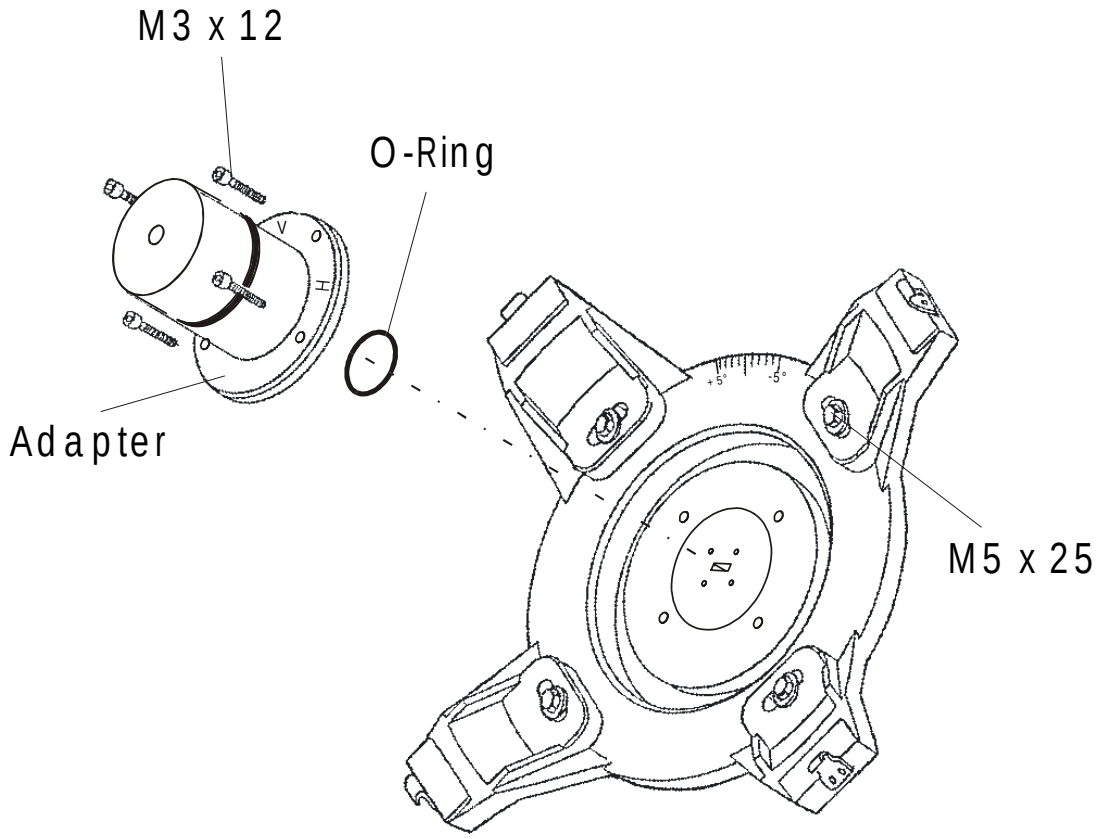
Home Page: www.ceragon.com

Installation Instruction

Supplement for Installation Instruction 4 and 6-foot Antennas



Polarization adjustment with Ceragon-Adaptation

- Loosen the 4 bolts M5x25
- Adjust the feed carefully.
  - for the vertical polarization, **V** to **TOP**-direction
  - for the horizontal polarization, **H** to **TOP**-direction
- Lock the 4 screws M5x25

Connection of a standard wave guide flange

- Loosen the 4 bolts M3x12
- Remove the Adaptation and the O-Ring carefully from the feed
  Attention: UBR-flange on antenna feed.

Radiation Pattern Envelope

Antenna Type Number AN – 0031-0
1 Foot Antenna 17.7 – 19.7 GHz Single Polarized
Gain: 34.0 dBi at 18.7 GHz

Legend:

———— Envelope for a horizontally polarized antenna (HH, HV)

..... Envelope for a vertically polarized antenna (VV,VH)

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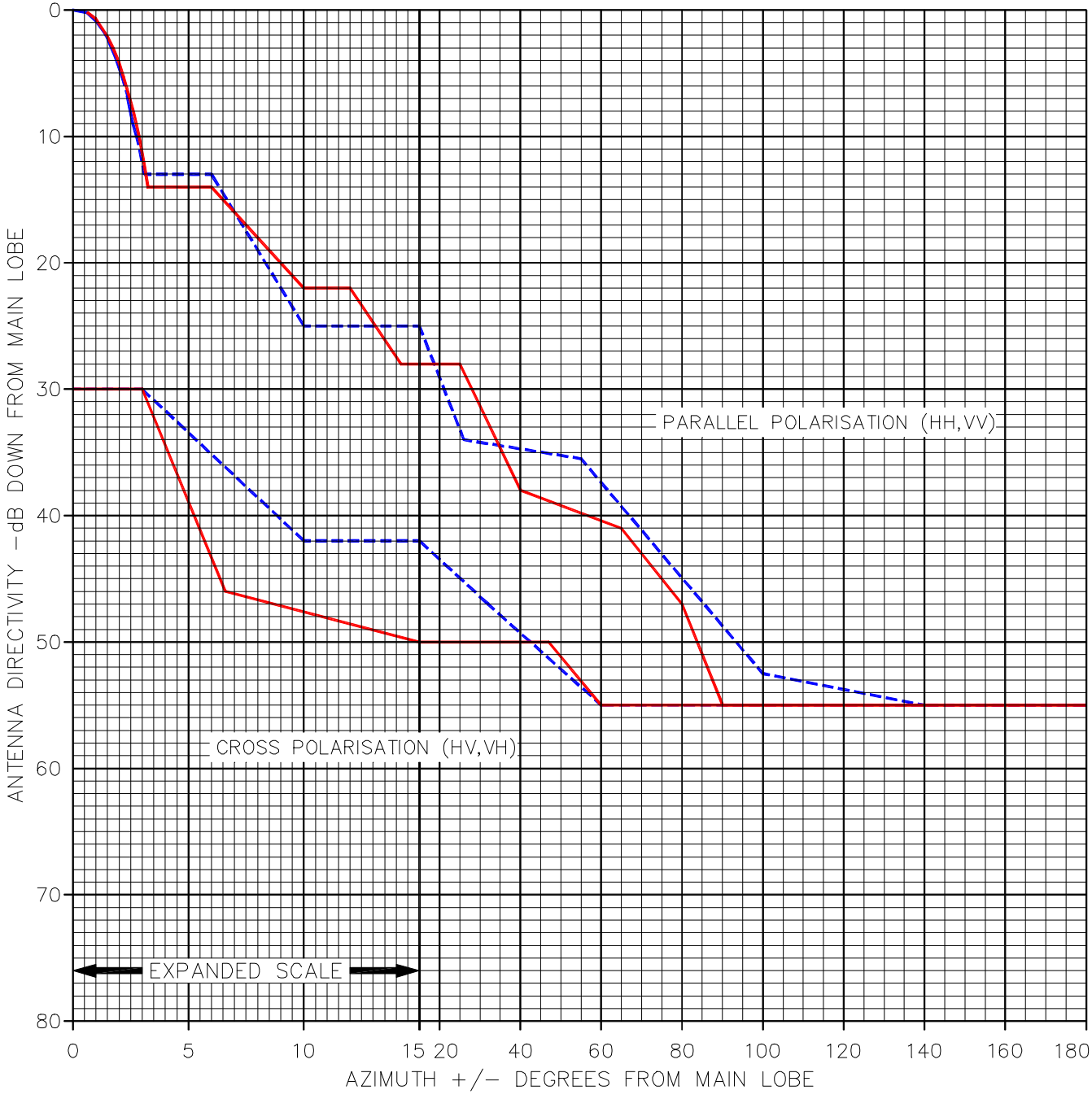
ANTENNA DIRECTIVITY – dB DOWN FROM MAIN LOBE
0
10
20
30
40
50
60
70
80
PARALLEL POLARISATION (HH,VV)
CROSS POLARISATION (HV,VH)
EXPANDED SCALE
0
5
10
15
20
40
60
80
100
120
140
160
180
AZIMUTH +/– DEGREES FROM MAIN LOBE