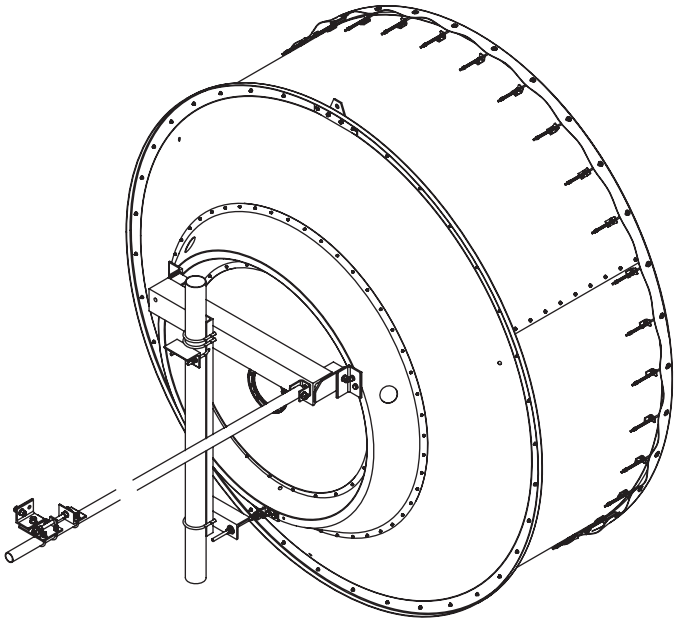
Installation Instructions
10 ft Antennas

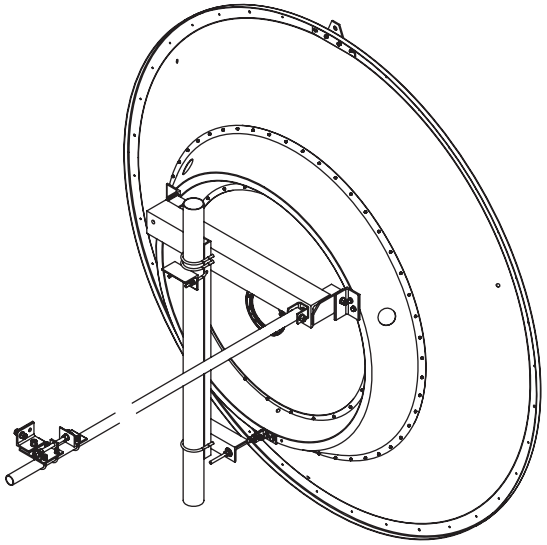
PA, PAL, PAD, PAX, PADX
DA, UA, DAX, UDA, UXA

HTT 81.222-11(e)

These installation instructions have been written for qualified, skilled personnel. The antenna shall be inspected once per year by qualified personnel to verify proper installation, maintenance, and condition of equipment. It is important to adhere precisely to all parts of the installation instructions. RFS disclaim any responsibility resulting from improper or unsafe installation. RFS reserves the right to alter details at any time, especially with respect to technical improvements.



**DA, UA, DAX, UDA, UXA**



**PA, PAL, PAD, PAX, PADX**

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

- Reflector Ø3.0 m (10 ft)
- Waveguide feed system **Single** or **Dual** polarized
- Pipe mount for installation on pipe Ø115 mm (or Ø219 mm on request at the order)
- Antenna offset to the left or the right
- Safety collar for easy installation
- 2 spindles for fine adjustment of **Azimuth** and **Elevation of ± 5°**
- 1 sway bar Ø60 mm x 3 m
- Reflector with shroud, the shroud aperture covered by **a flexible planar radome**, or without shroud (see sketch above)

Note : The assembly of the reflector and backring for antennas with “split” reflector is described in the dedicated Installation Instructions.

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Kabelkamp 20, D-30179 Hannover (Germany) • Tel. +49-511 676-2520 • Fax +49-511 676-2521
Plant : RFS France Trignac (France) • Tel +33 (0)2 40 45 95 45 • Fax +33 (0)2 40 90 41 43

## 1 - Tools required for installation (Tools are not included)

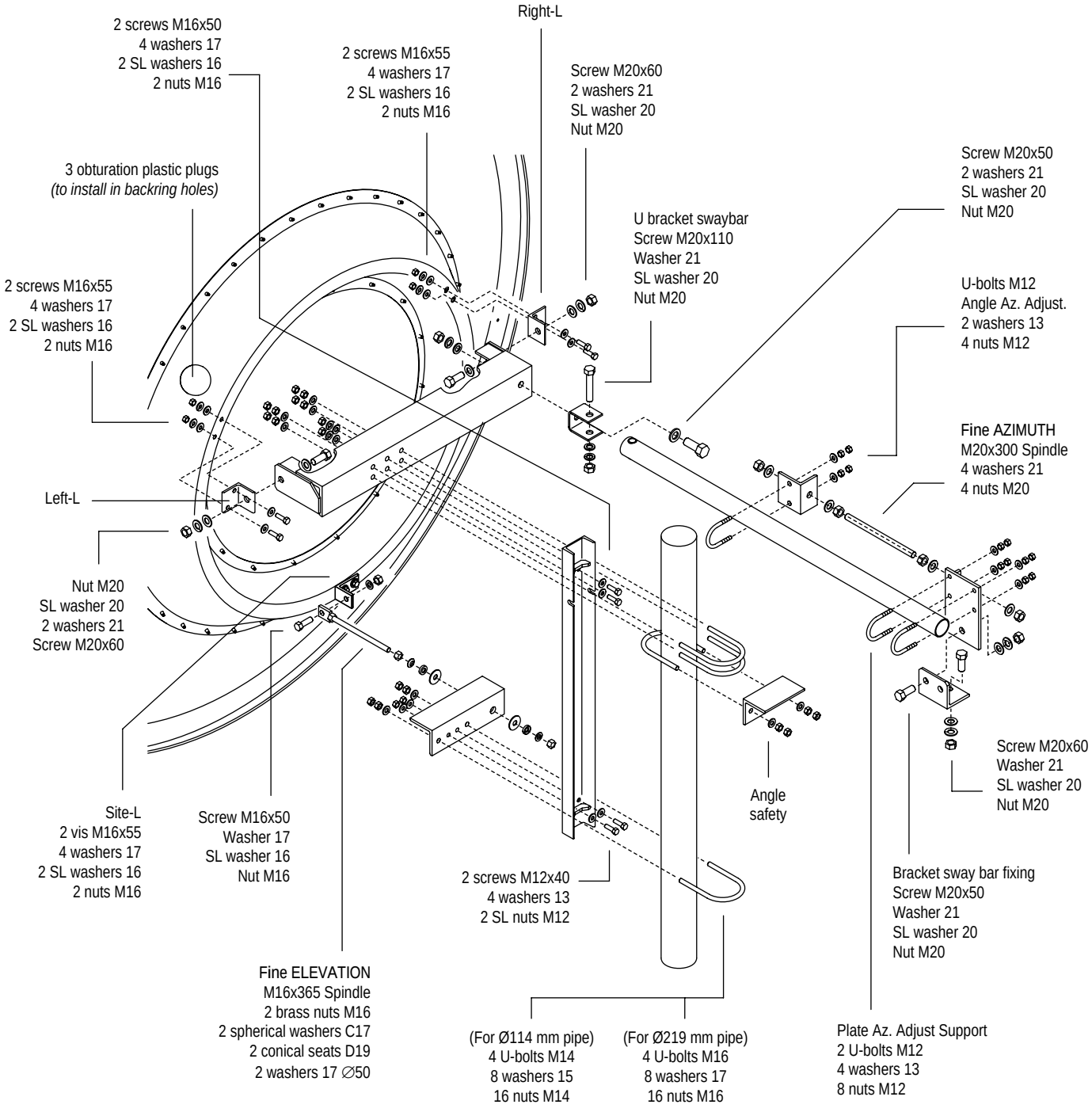
- Hoisting device for 500 daNm
- Torque wrench from 0,5 to 25 daNm
- Water balance and compass
- Wrenches for hexagon bolts :
  M5(8), M6(10), M10(17), M12(19), M14(21), M16(24), M20(30)

*(values in brackets = openings of spanners)*

- Shackle
- 2 ropes
- Square
- Mallet

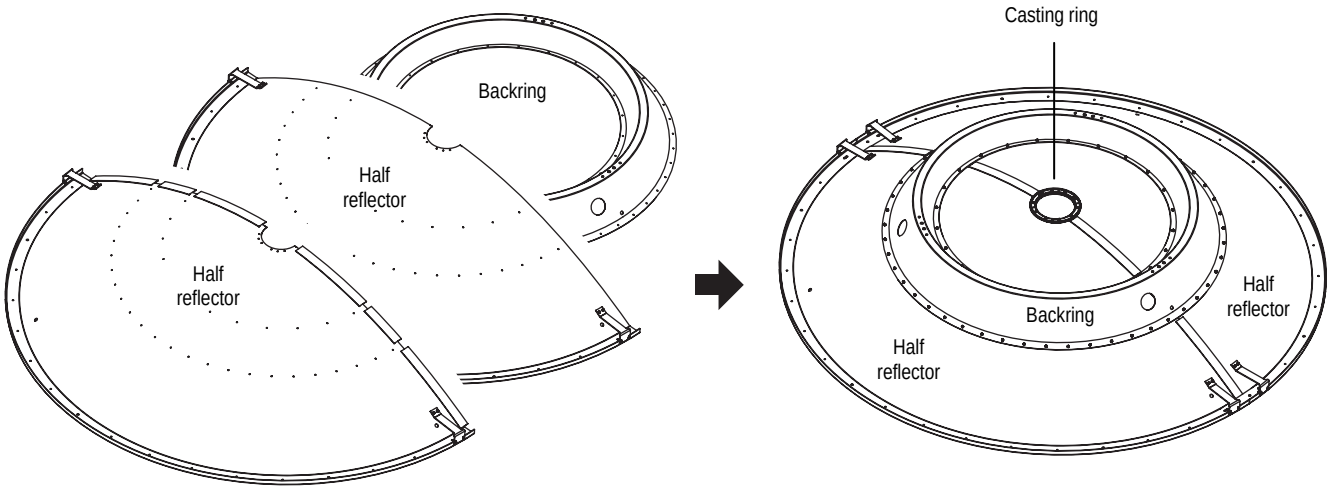
## 2 - Assembly of the mount (for an installation offset right)

For easy operation of the bolted joints, and correct torque tightening, « Anti Seize » Installation Paste must be applied to all threads of bolts and fine adjustment spindles. After this, keep the lubricated threads free of dust and dirt ! (a torque table is attached for specifications)



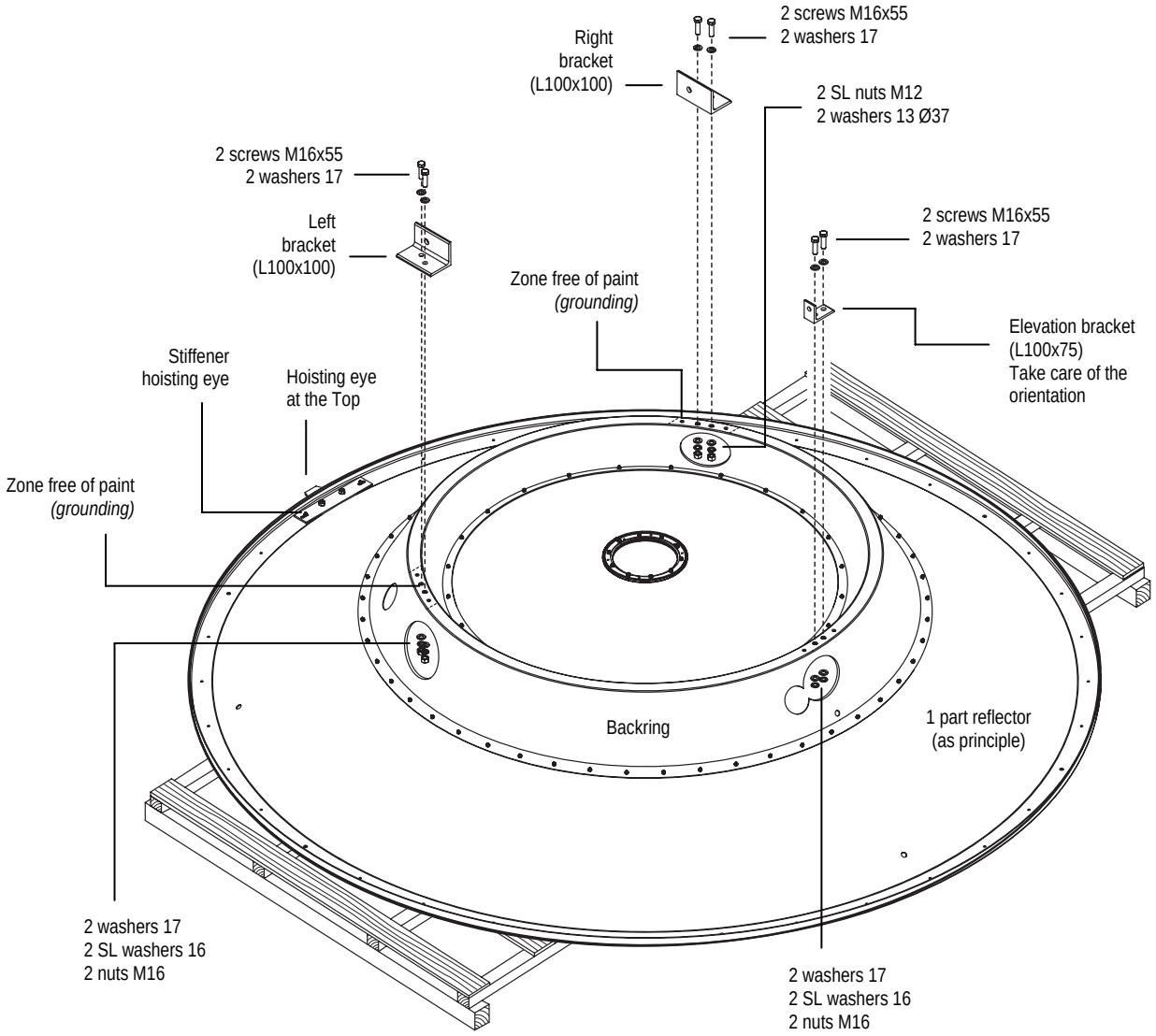
## 3 - Antenna with “split” reflector (otherwise skip this step)

If you have ordered an antenna with a “split” reflector, refer carefully to specific installation instructions joined, for half-reflector parts & backring assembly.




## 4 - Brackets installation on backring (valid for an antenna installation offset left or right)

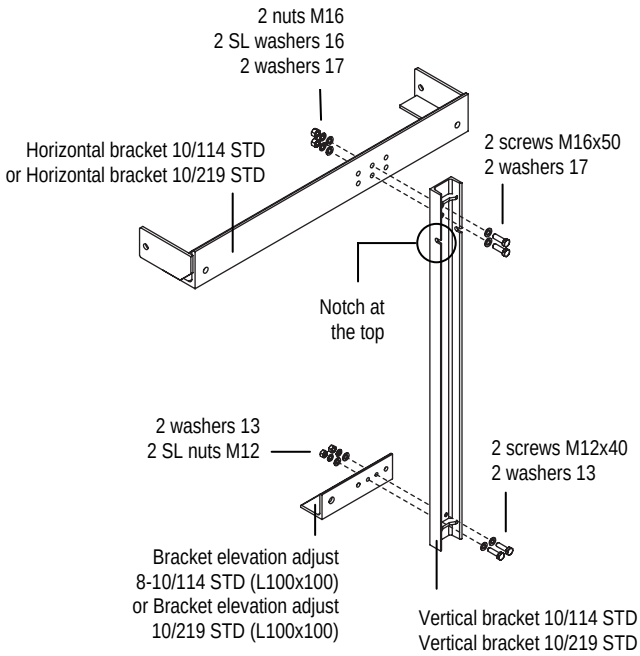
Before starting the installation of the brackets on the backring, install the antenna reflector on a thick cardboard or wooden planks to protect the antenna during the assembly *(or the antenna top packing case for e.g.).*



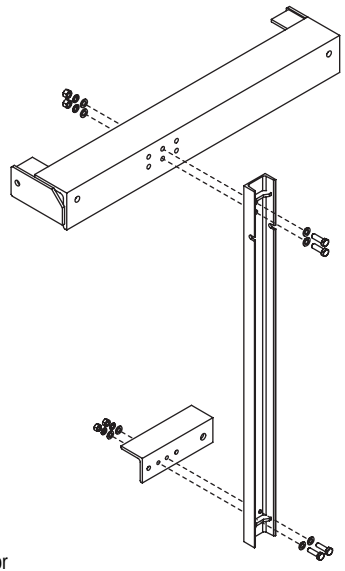
## 5 - Pre-assembly of the T-Mount & Antenna Offset

### T-Mount Pre-assembly

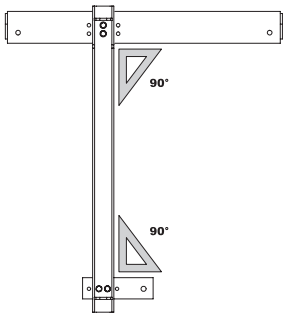
Offset left




Offset right



Perpendicularity

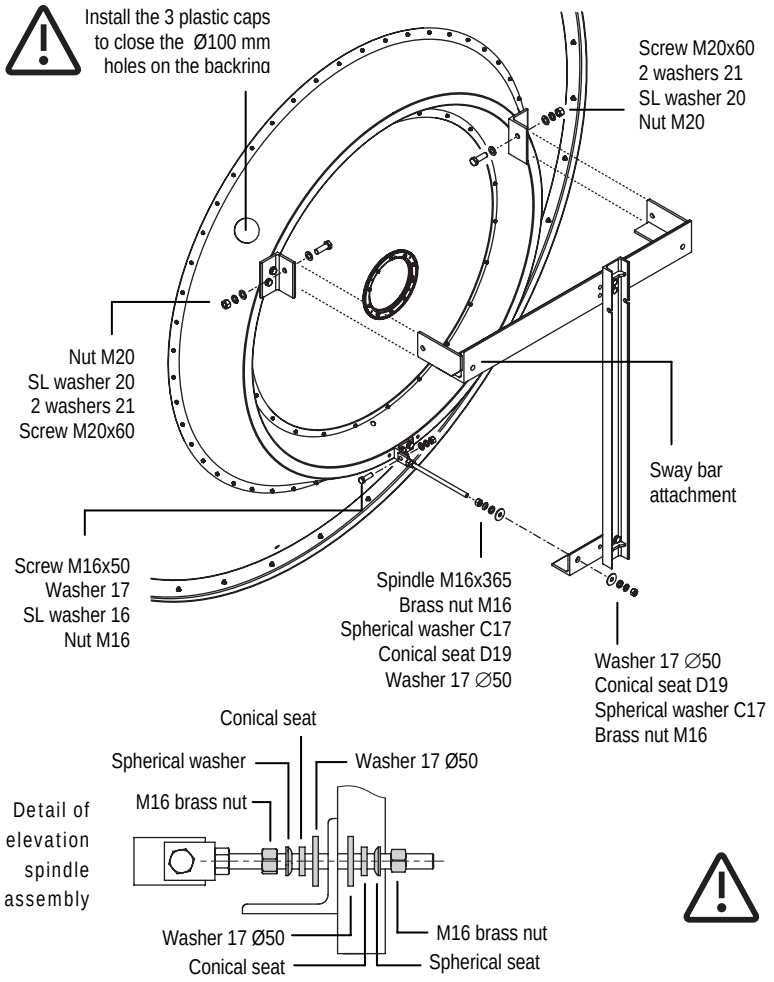



(Rear view)
for an offset right

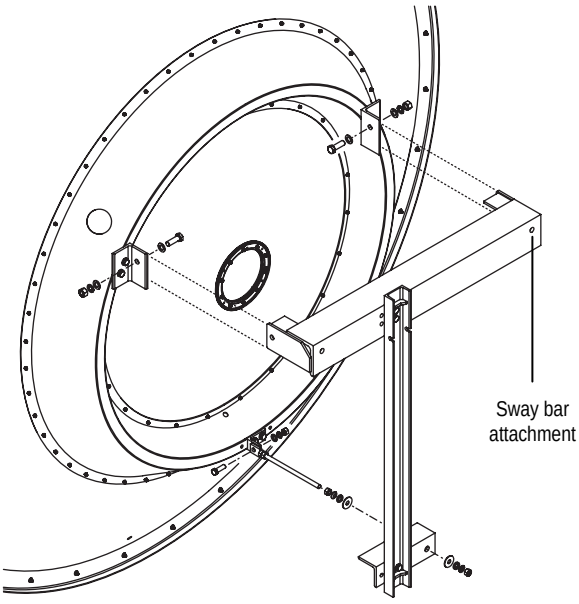
After perpendicularity check, torque tighten the M12 & M16 bolts to lock the assembly. *(Without square, you can help you with a sheet of paper).*

### T-Mount install on backring

Offset left




Offset Right



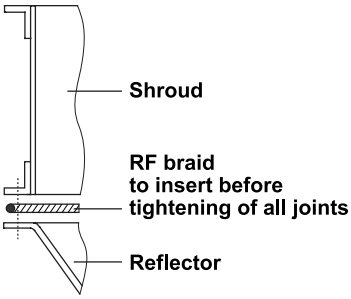




It is mandatory to tighten all bolted joints of the mount according to the torque table joined, before lifting the antenna.

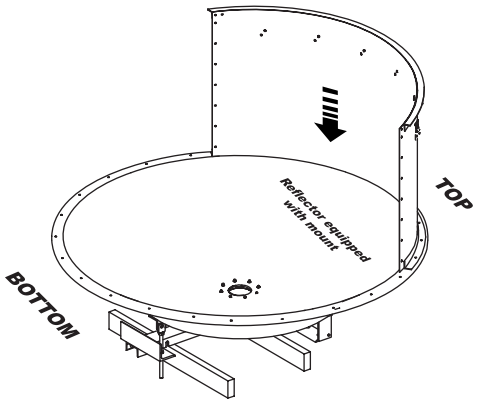
## 6 - Installation of the shroud panels (for antennas with shroud)

- Dismount the hoisting eye and the stiffener hoisting eye of the reflector (pre-installed in factory)
- Install the reflector equipped with its mount on wooden beams (take care of the to not damage with the ground) and keep bolt threads free of dust.
- The reflector's rim and the shroud panels must be clean and dry.

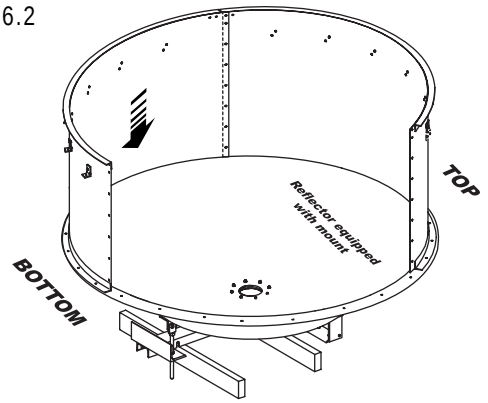



Do not tighten all joints before complete shroud installation.
See chapter 5 for RF braid installation.

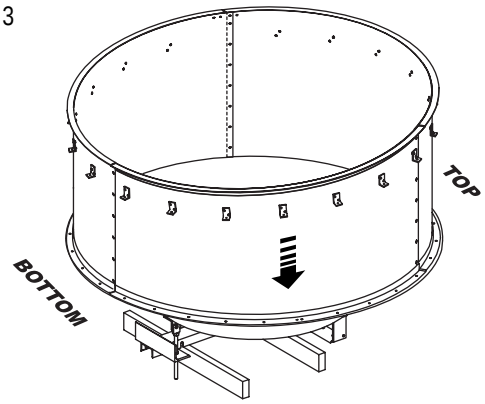
6.1



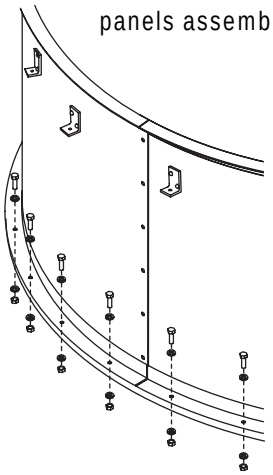

6.2




6.3



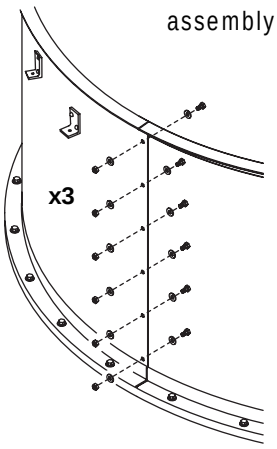

### Reflector / Shroud panels assembly



36 screws M6x25
72 washers 6.4 ∅18*
36 SL nuts M6

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

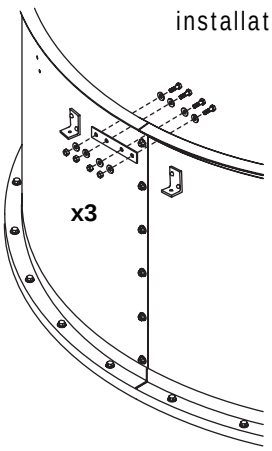
### Shroud panels assembly




(Short panel length)
8 or 9 screws M6x16
16 or 18 washers 6.4 ∅18
8 or 9 SL nuts M6

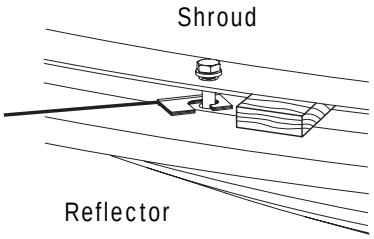
(Long panel length)
9 or 10 screws M6x16
18 or 20 washers 6.4 ∅18
9 or 10 SL nuts M6

### Stiffening plates installation

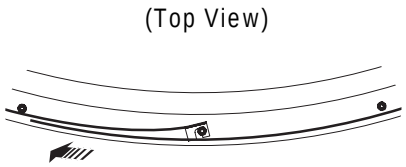



4 screws M6x25
8 washers 6.4 ∅18
4 SL nuts M6

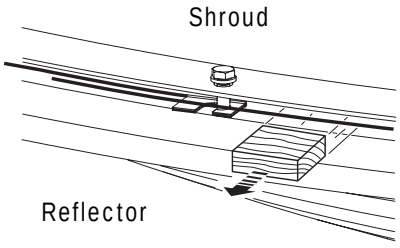
## 6.4 - RF Braid installation between shroud & reflector rim (for antennas with shroud)




- Squeeze the clip onto the RF braid, then hook it onto the a flange bol between the reflector and the shroud rim

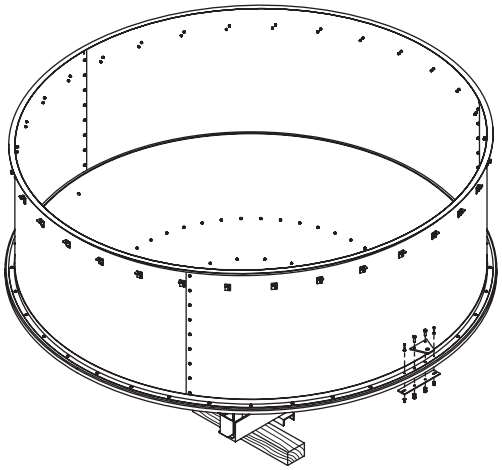


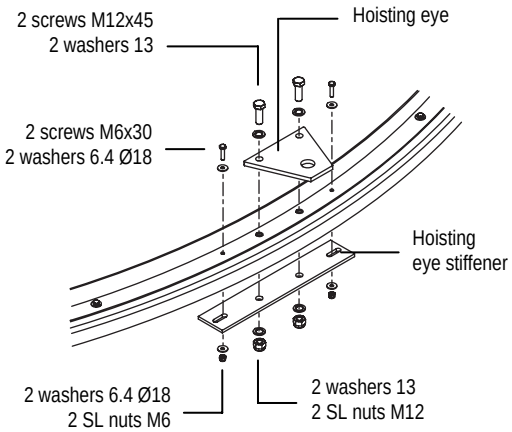

- Overlap the RF braid ends



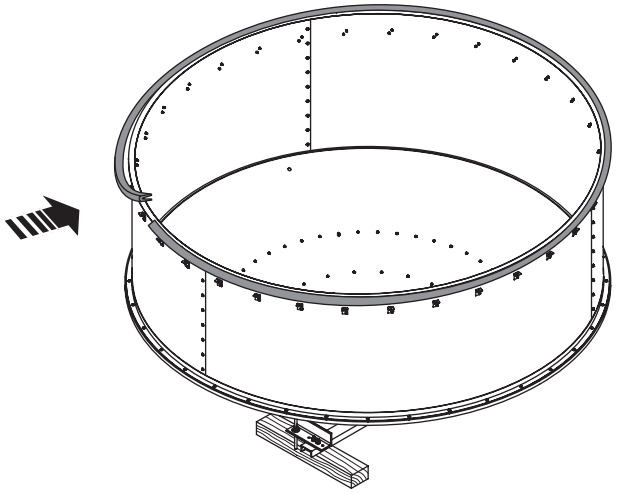

- Removed spacers, and tighten all the bolts

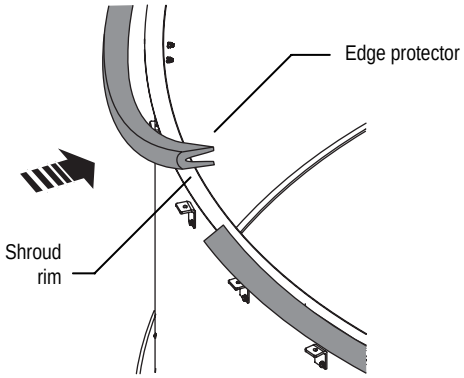
## 7 - Hoisting eye and stiffener re-installation (for antennas with shroud)






## 8 - Radome protection installation on shroud rim (for antennas with shroud)



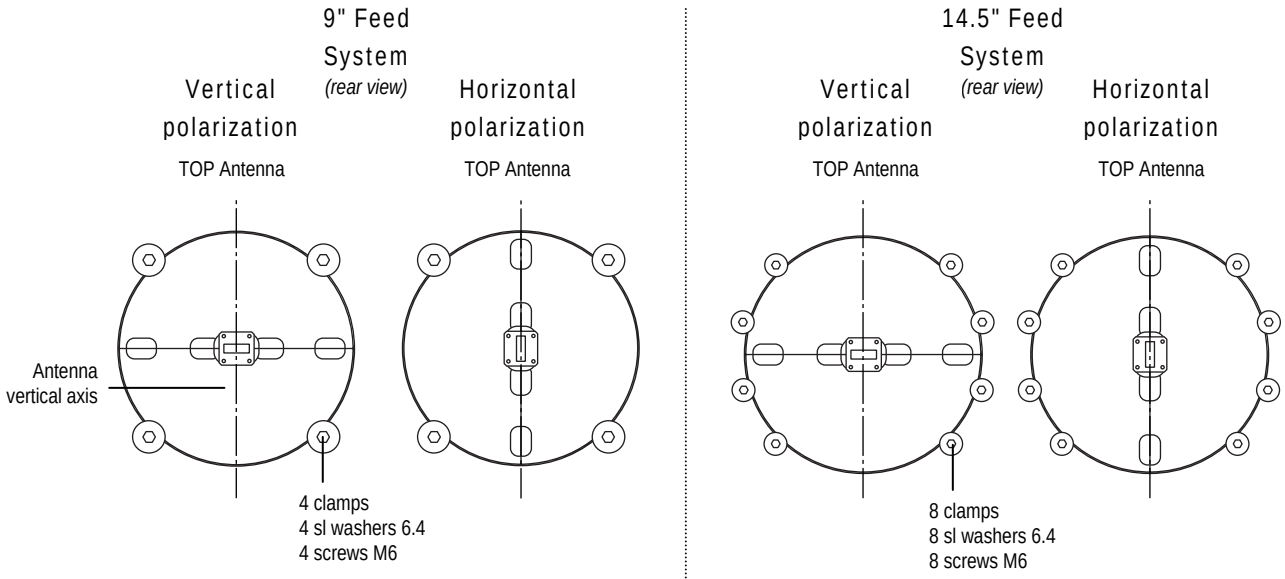


## 9 - Feed Installation (for customized antennas, see specific Feed Install. Instructions joined)

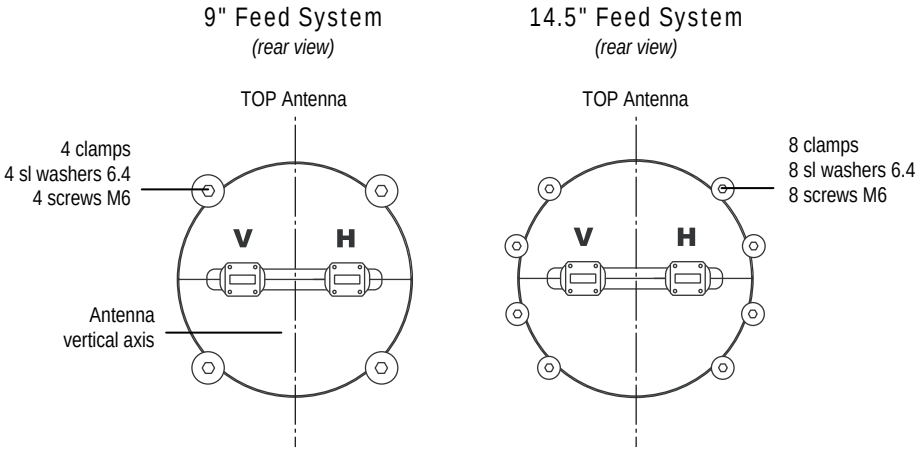
The feed is a precision component which should be handled with special care during installation. For instance, always carry the feed, supporting casting plate side. Any damage may degrade the antenna's performance. Repair of feeds is not possible in the field.

### 9.1 - Polarization choice

#### Single polarization

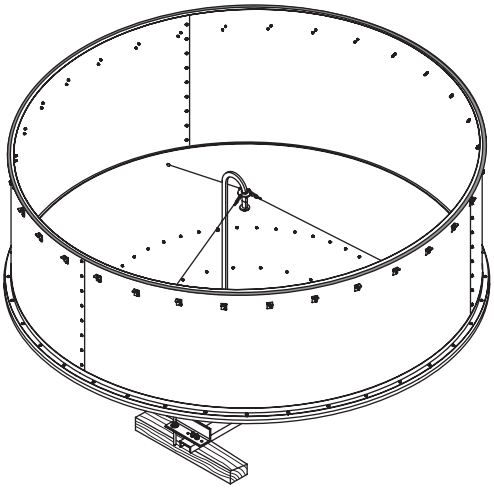


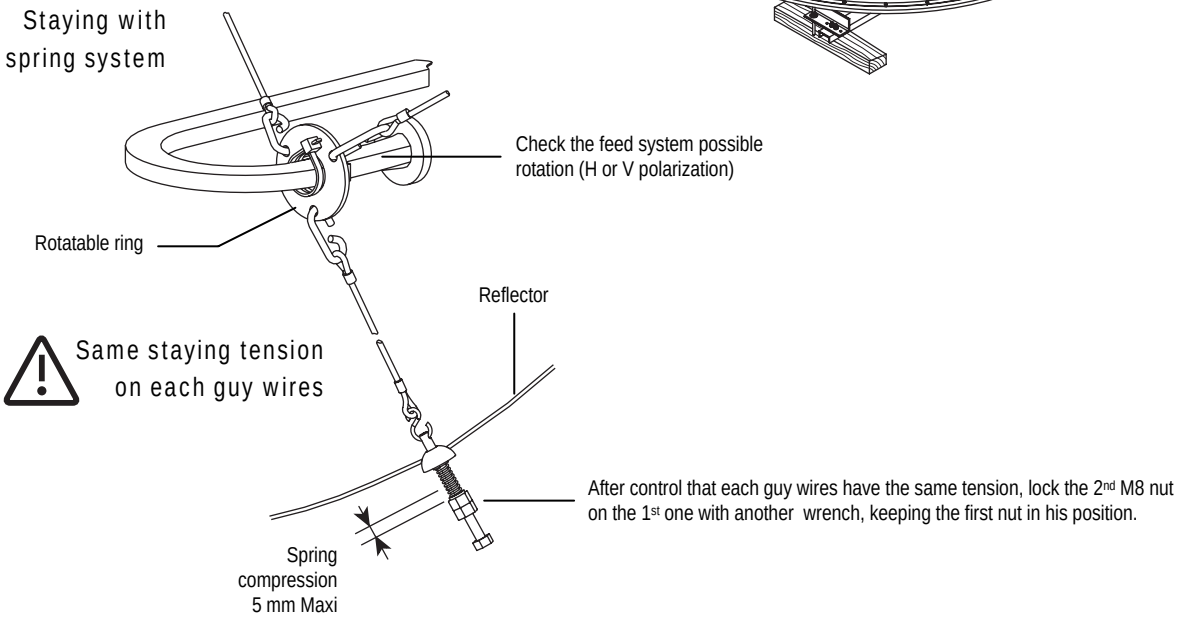

#### Dual polarization



## 9.2 - Guy wires assembly

- Insert the 3 guy wires in the mounting holes from the rear of the reflector.
- Move the feed assembly partway through the reflector casting ring.
- Hook the 3 guy wires onto rotatable ring.
- Move the feed and fix it, with the M6 screws in the reflector casting ring.

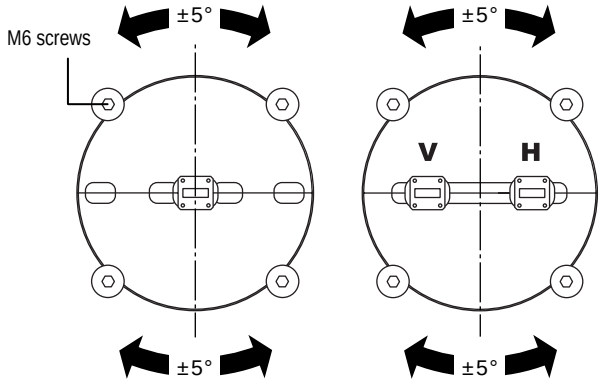





## 9.3 - Polarization fine adjustment

The final adjustment will be made after the antenna installation on tower

### 9" Feed System
*(rear view)*

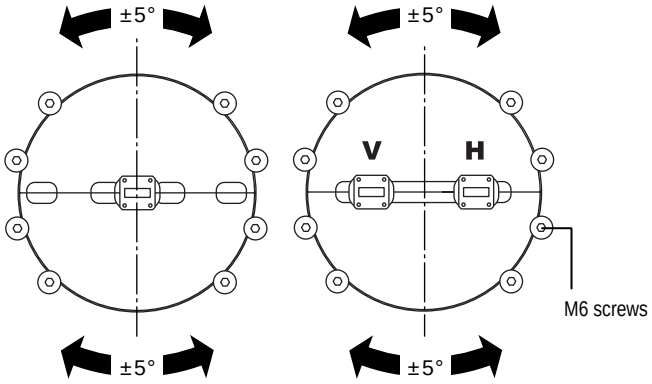



Single polar. Feed system

Dual polar. Feed system

Loosen the 4 screws M6 and adjust polarization by rotation of the feed system

### 14.5" Feed System
*(rear view)*



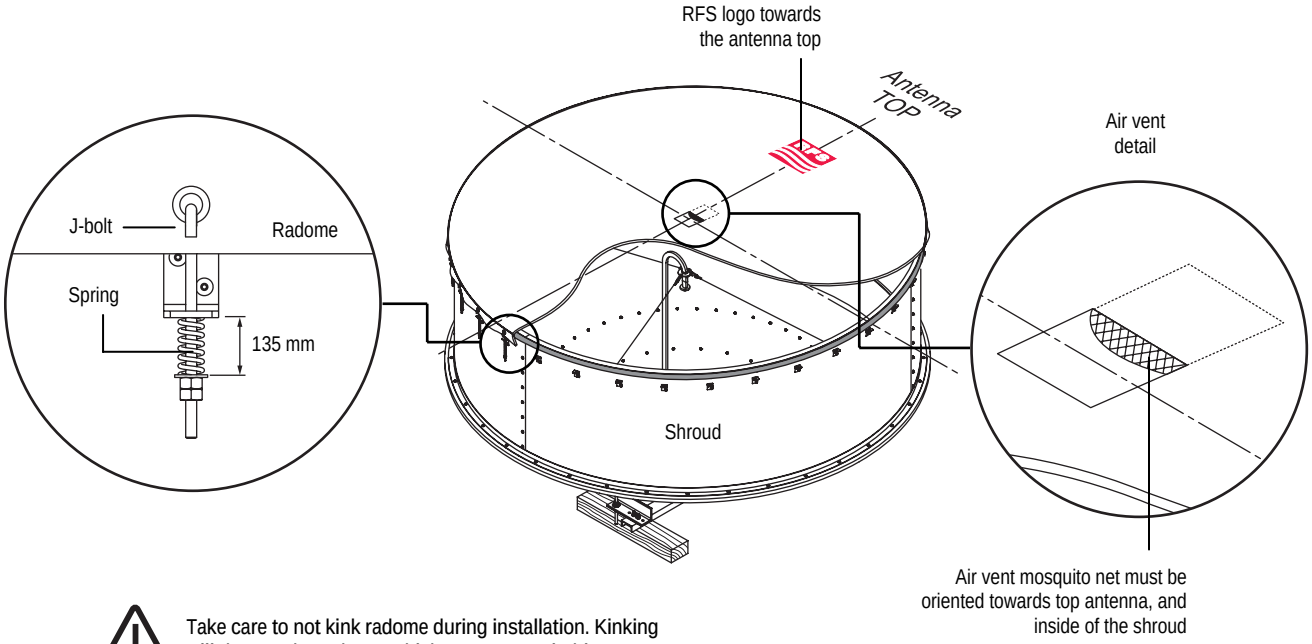

Single polar. Feed system

Dual polar. Feed system

Loosen the 8 screws M6 and adjust polarization by rotation of the feed system

## 10 - Installation of the planar radome (for antennas with shroud)

- Unpack the radome and carefully strech it over the shroud aperture
- For radomes with RFS logo, align it with the vertical axis of the antenna
- For radomes without RFS logo, the central air vent mosquito net aperture must be oriented towards the antenna top
- Attach J-bolt with springs and smooth radome down as the springs are attached, but do not displace the edge protector on the shroud rim.
- Align the length of the springs to approximately 135 mm at each J-bolt, this will provide proper radome tension.




Take care to not kink radome during installation. Kinking will destroy the radome, which are non-repairable

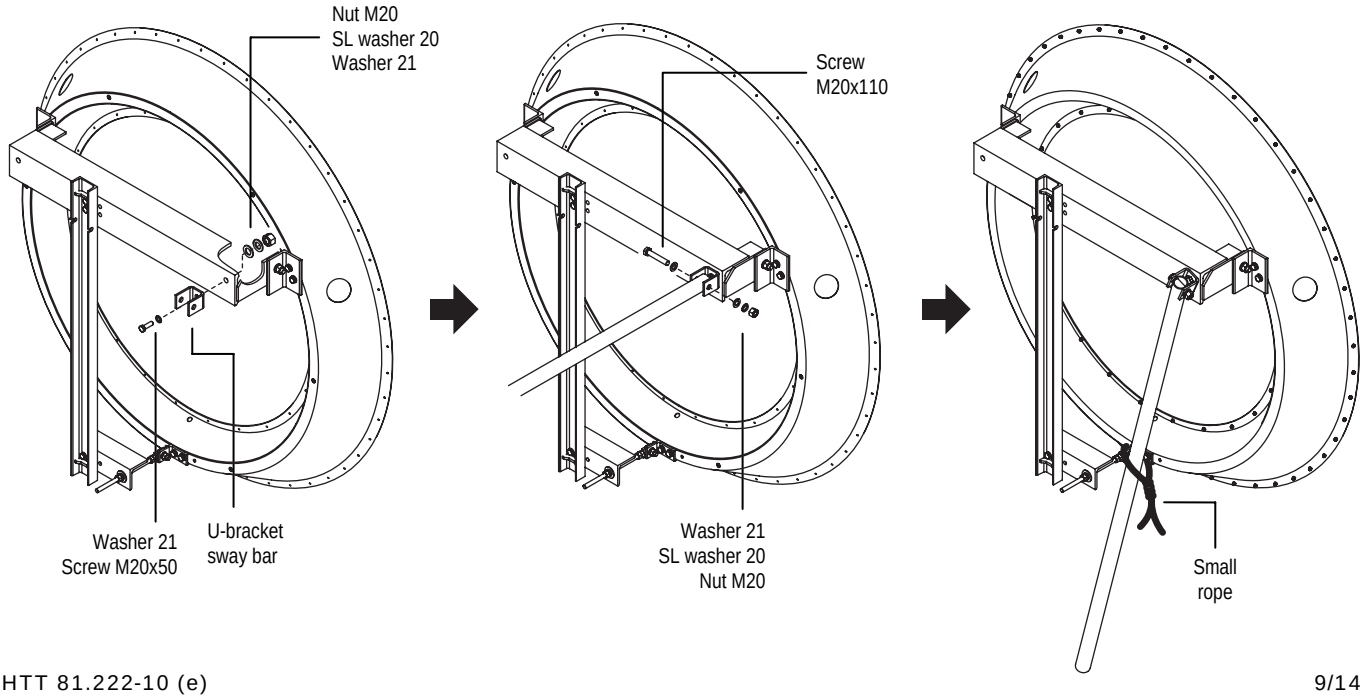
## 11 - Sway bar assembly (principle for an offset right)

### U-Bracket sway bar installation

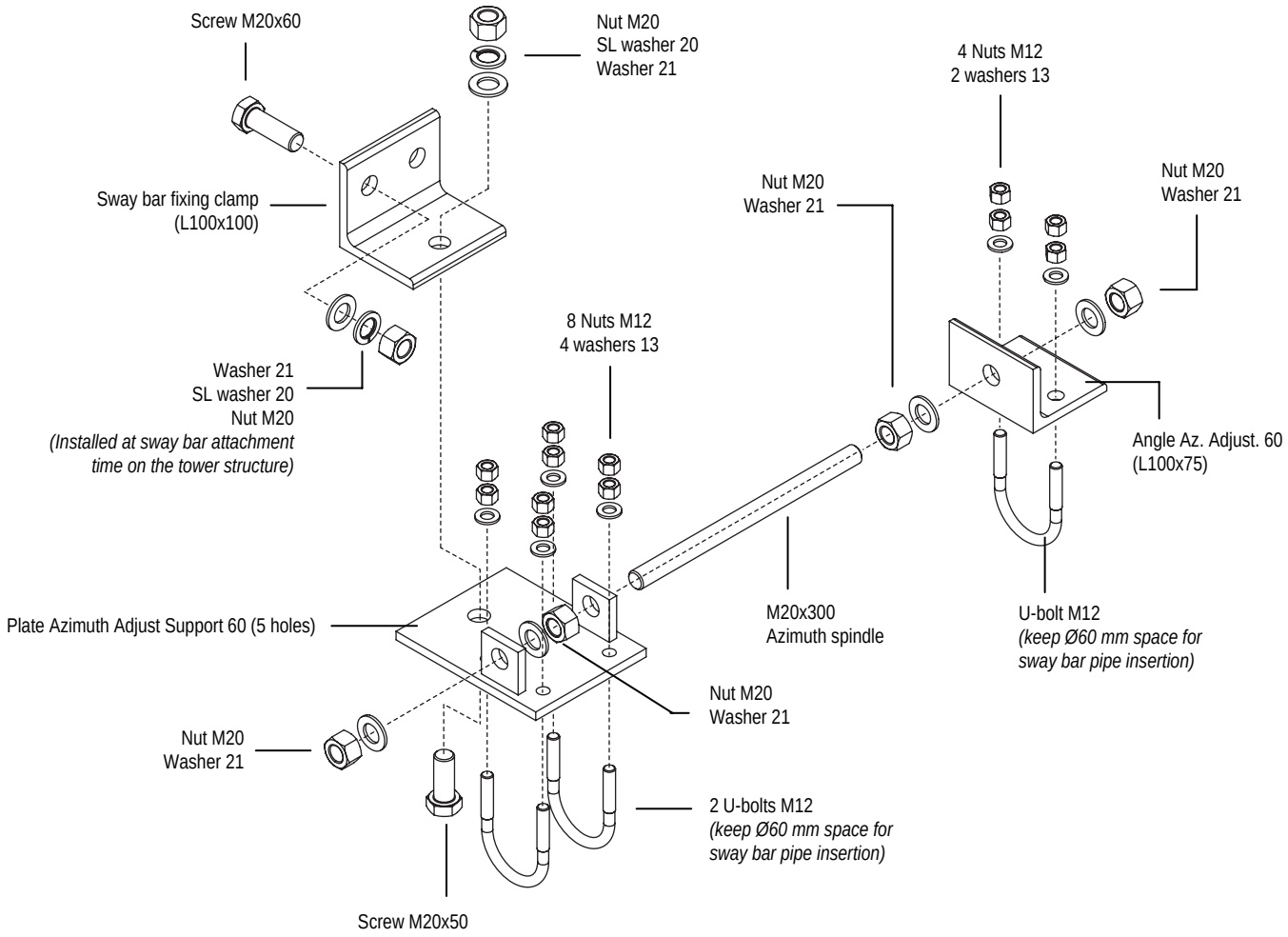
*For an easier sway bar orientation, keep the U-bracket sway bar free in rotation without gap until sway bar final attachment to the tower. At this time, all bolted joints will be torque tighten.*

### Sway bar pipe installation

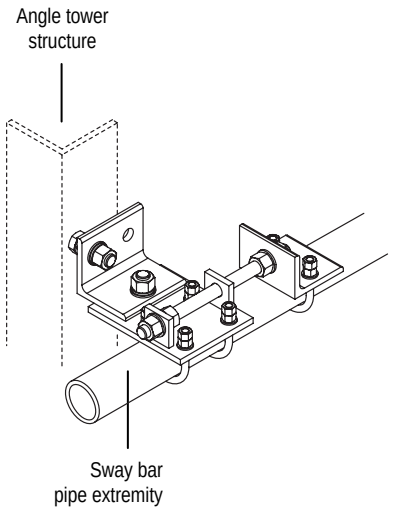
*Before antenna hoisting on the tower, attach the sway bar in vertical position at the elevation spindle with a small rope, to avoid possible shock.*



## 12 - Azimuth fine adjustment spindle pre-assembly (handtighten)



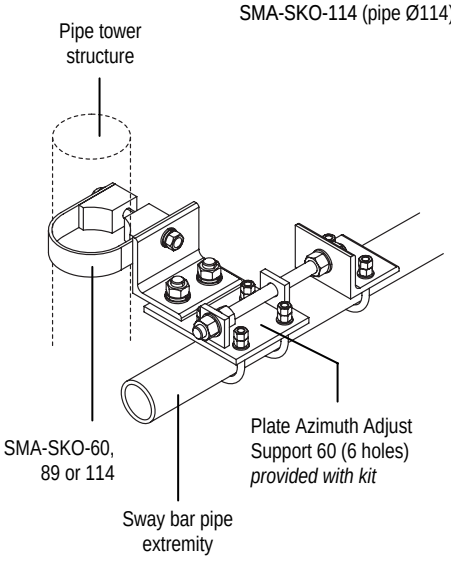

## Sway bar installation on tower without sway bar kit option




## Sway bar installation on tower with sway bar kit options

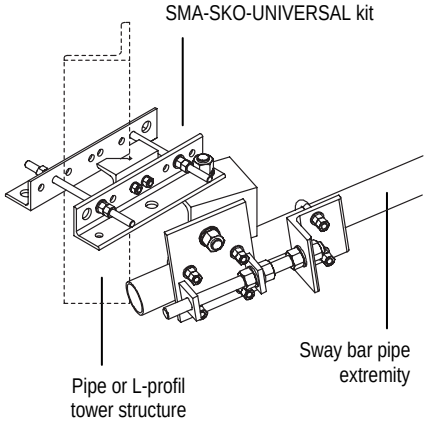
Sway bar kit options for installation on pipes

SMA-SKO-60 (pipe Ø60)
SMA-SKO-89 (pipe Ø89)
SMA-SKO-114 (pipe Ø114)




Sway bar kit option for installation on pipe or L-profils

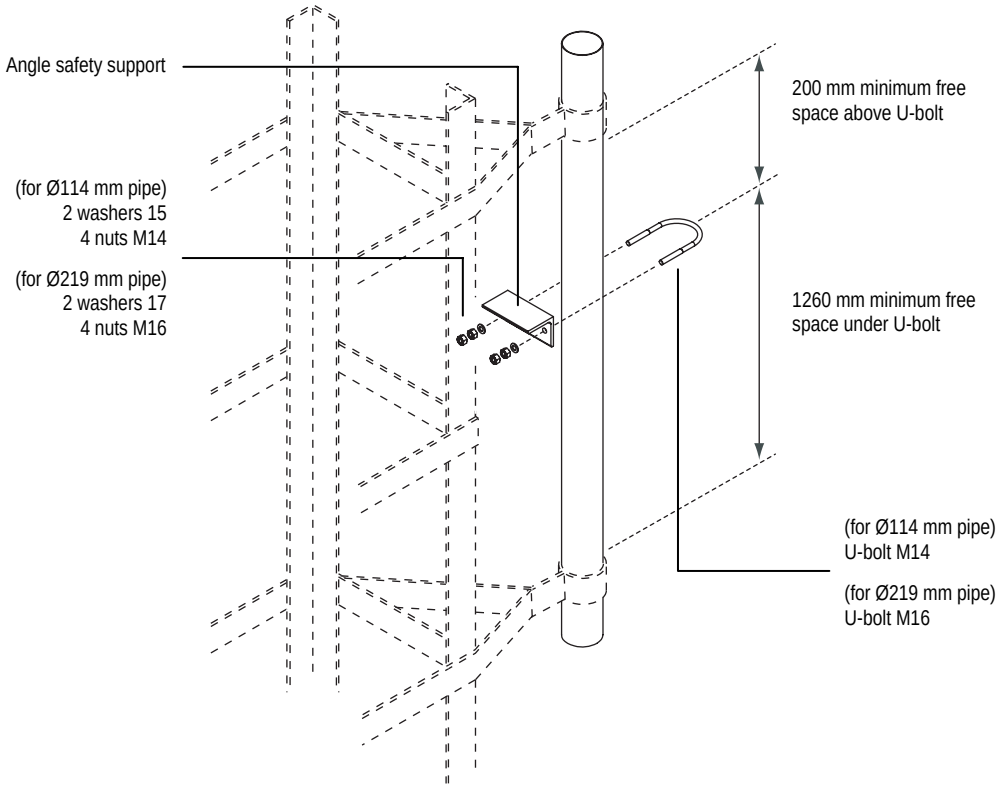
SMA-SKO-UNIVERSAL (pipe Ø48 up to 114 and L-profil 40x40 up to 110x110)



## 13 - WindKit 250 km/h installation

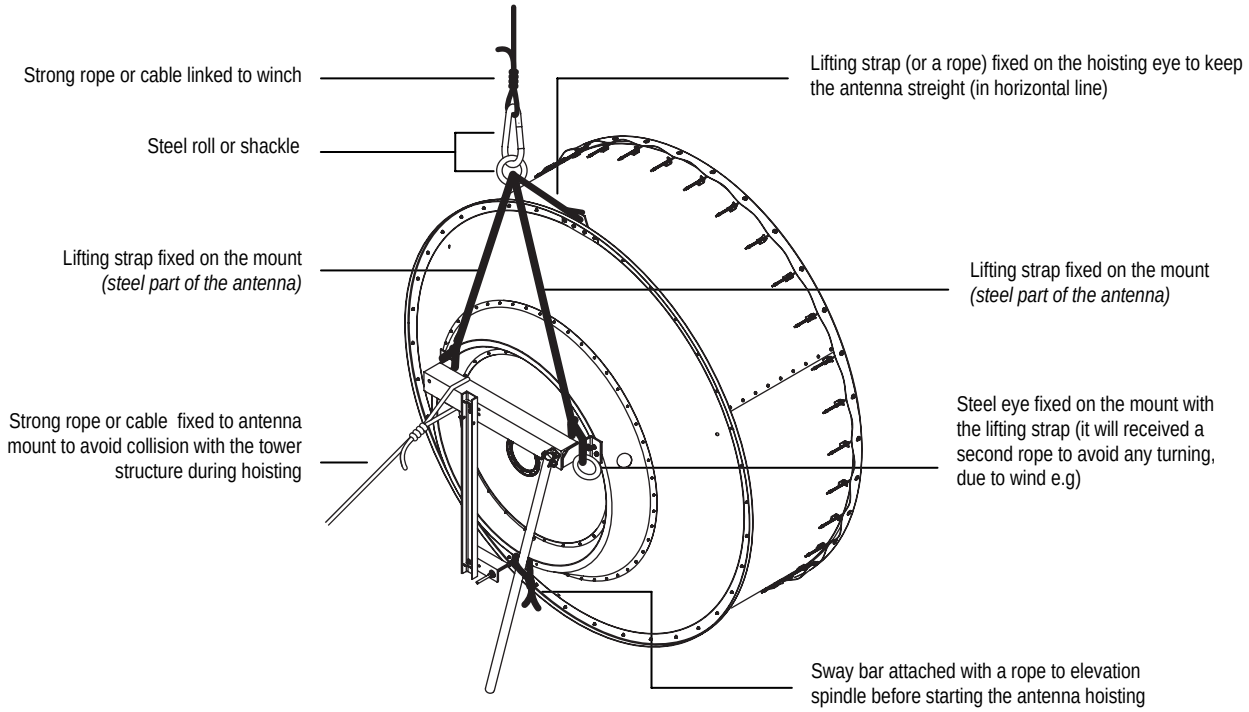
If you have order a 250 km/h WindKit separately, refer to specific installation instructions joined with the kit, otherwise skip this step.

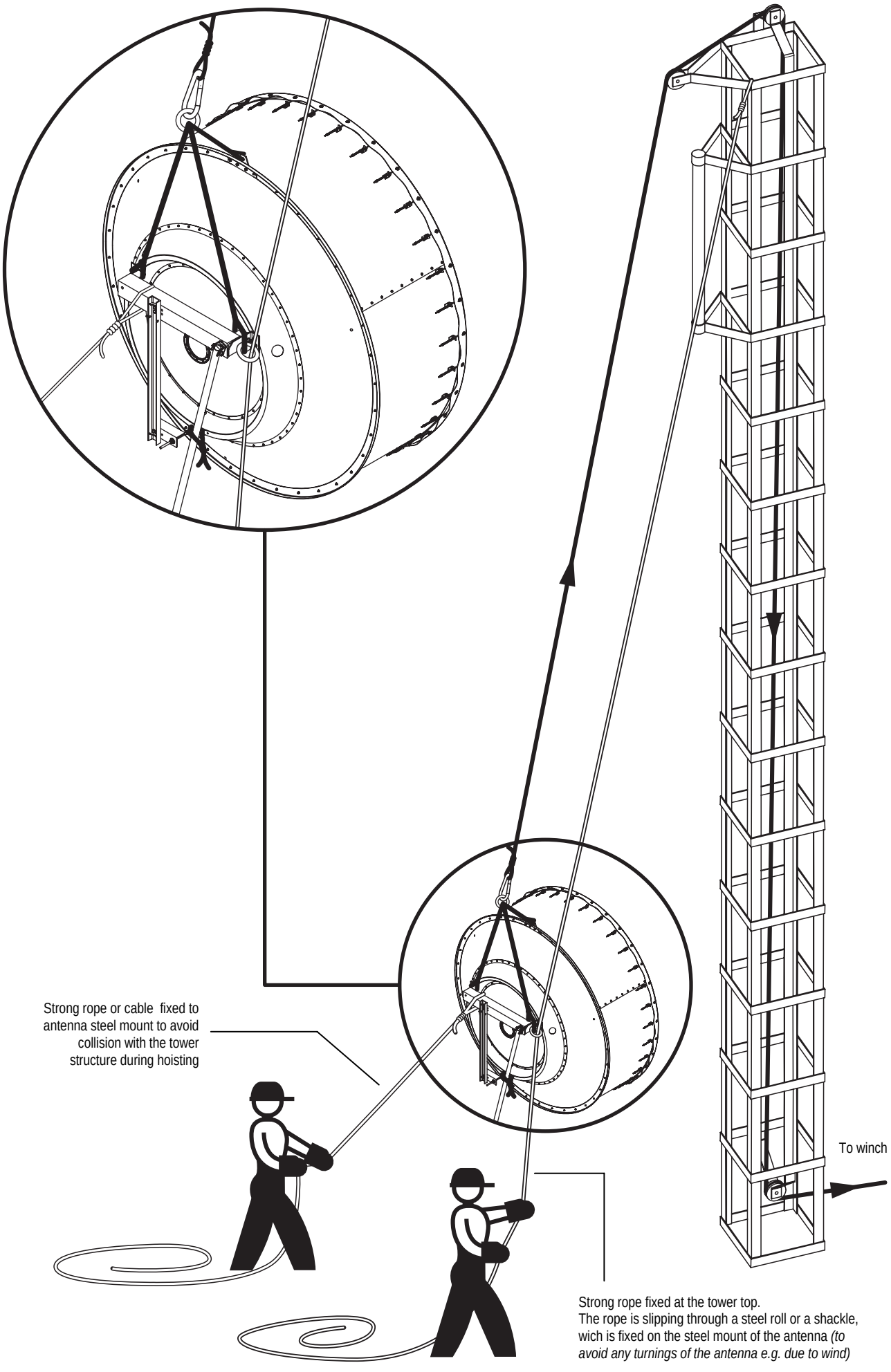
## 14 - Safety collar installation on tower pipe support



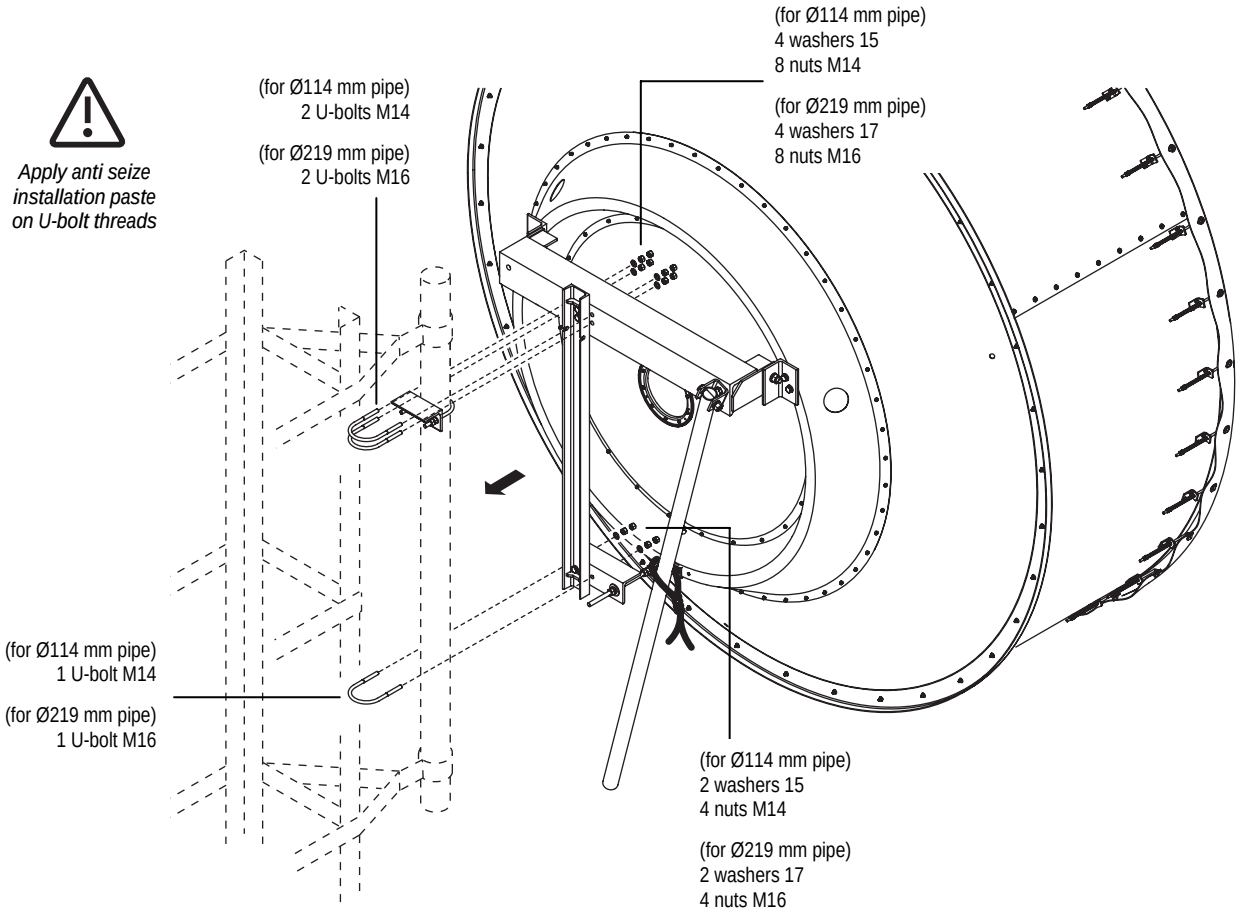

## 15 - Hoisting on Tower

Before antenna hoisting on the pylon, verify that all the bolted joint of the T-Mount structure on the antenna have been torque tighten, otherwise the installation on the pipe support could be problematic.

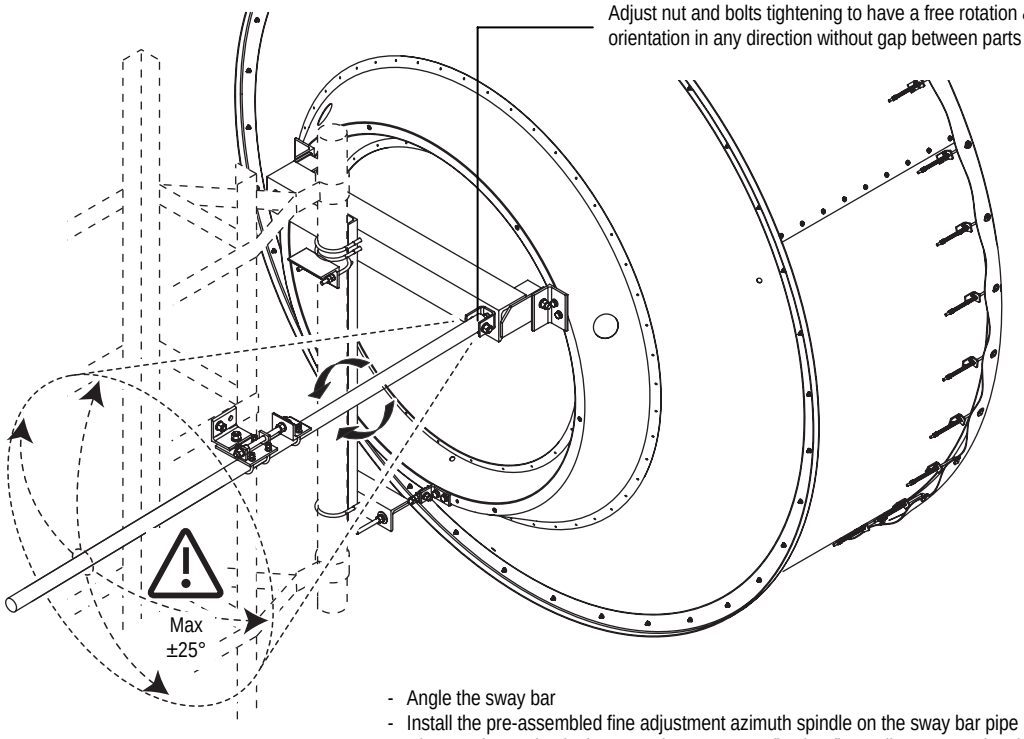



Strong rope or cable fixed to antenna steel mount to avoid collision with the tower structure during hoisting
To winch
Strong rope fixed at the tower top.
The rope is slipping through a steel roll or a shackle, wich is fixed on the steel mount of the antenna *(to avoid any turnings of the antenna e.g. due to wind)*

## 16 - Antenna installation on tower pipe (lifting accessories are not shown)

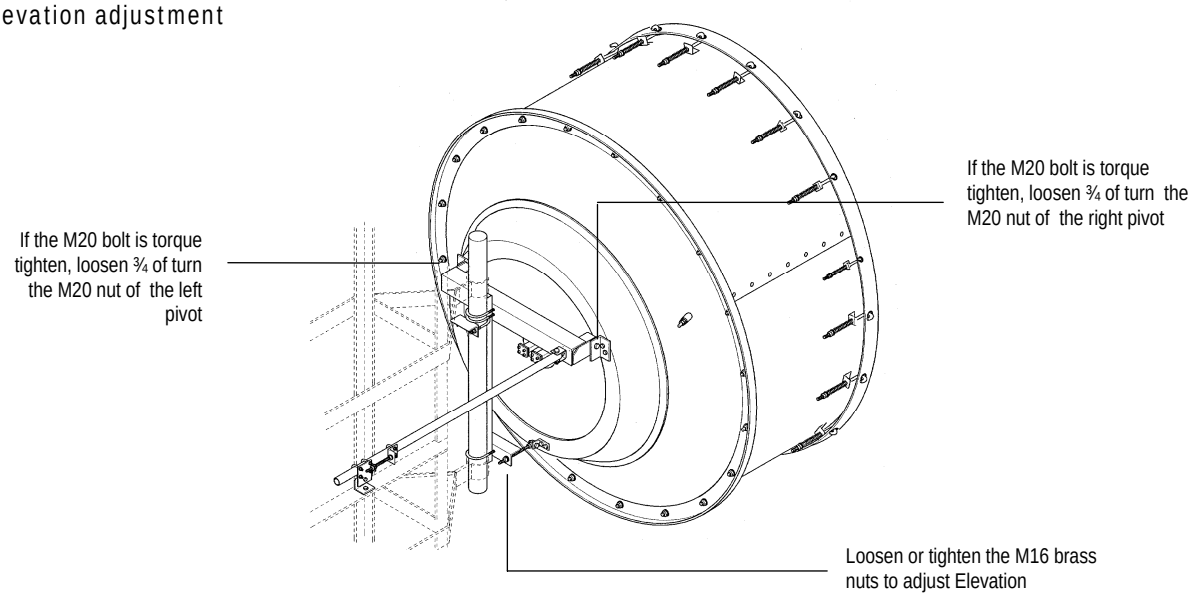



## 17 - Sway bar positioning



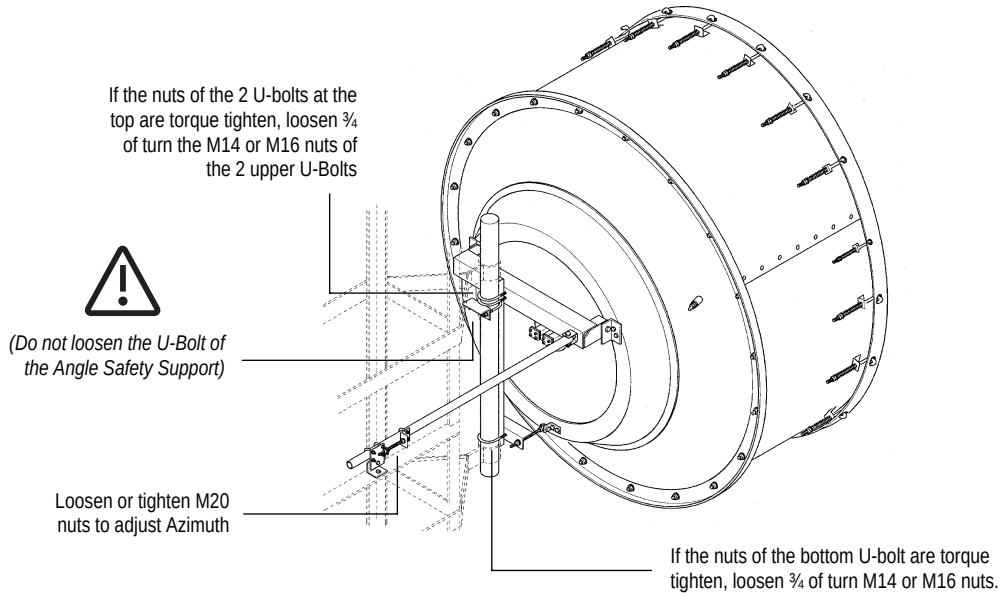

- Angle the sway bar
- Install the pre-assembled fine adjustment azimuth spindle on the sway bar pipe
- Choose the optimal place on the tower, to fix the fine adjustment azimuth spindle system (respect the ±25° sway bar orientation)
- After sway bar positioning, do not torque tighten nuts until elevation & azimuth adjustments.

## 18 - Elevation adjustment




After Elevation fine adjustment, lock each M20 nuts on the pivots at the specific torque value specified on the torque table joined *(the threads must have been greased before torque tightening).* Then tighten the M16 brass nuts of the Elevation spindle.

## 19 - Azimuth adjustment




After azimuth adjustment, lock each first nut on the 3 M14 or M16 U-bolts at the specific torque value specified on the torque table joined *(the U-bolt threads must have been greased before torque tightening)*, then tighten the second nut against the first one using usual wrench (*counter-nut function).* Then torque tighten all bolted joints of the Azimuth spindle.

## 20 - 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 torque tightly locked.