



ANTENNA EXPERTS

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AP-45015 406 – 512 MHz. 1.8 Meters 15dBi. Gain

INSTALLATION MANUAL – GRID PARABOLIC ANTENNA

NOTICE:

Installation, maintenance or dismantling of the grid parabolic antenna system requires qualified and experienced personnel. **Antenna Experts** Installation instructions have been prepared and are meant for skilled personnel only.

Antenna Experts disclaims any liability or responsibility as a result of improper or unsafe installation practices.

MATERIALS AND FINISH:

Following materials are used for the fabrication of Grid Parabolic Antennas and its accessories.

| | |
|----------------------------|--|
| Grid Parabolic Reflectors: | 6063T6 Aluminum, Silver Gray paints finish. |
| Mounting Hardware: | All stainless steel, Silver Gray paints finish. |
| Fasteners: | All Stainless Steel. |
| Dipole Feed: | All Aluminum with silver gray paints finish outside. |
| Insulator: | TEFLON. |

01 INTRODUCTION:

AP series grid parabolic antenna reflector consists of numbers of grid members to handle the maximum wind pressure and supplied in assembled condition for quick installation. When assembled, the antenna can be mounted on a pipe having a maximum O.D. of 75 mm.

01.1 GRID PARABOLIC REFLECTORS:

Grid parabolic reflector is supplied complete in assembled condition for quick installation.

01.2 UPPER SUPPORT ARM:

Upper support arm is supplied to hold the antenna from top. Upper support arm includes “U” bolt hardware and a section of “U” type channel with teeth on both edges.

01.3 LOWER SUPPORT ARM:

Lower support arm is supplied with the antenna to hold the antenna from lower side. **Lower support arm** consists of elevation adjustment mechanism along with “U” bolt hardware and locking nuts/bolts.

01.4 STOPPER:

A **stopper** is supplied with the antenna to hold the weight of the antenna during installation and adjustment.

01.5 DIPOLE FEED:

Dipole Feed having N-Female termination is supplied with the antenna along with feed holder.

02. PACKING LIST

| <u>Sl. No.</u> | <u>Item/Description</u> | <u>Quantity</u> |
|----------------|---|-----------------|
| 01. | Parabolic Reflector in assembled condition. | 1 Set. |
| 02. | Dipole Feed complete with feed holder. | 1 Each. |
| 03. | Upper Support Arm complete with “U” bolt. | 1 Each. |
| 04. | Lower Support Arm complete with “U” bolt. | 1 Each. |
| 05. | Stopper to hold the Antenna on mounting pipe. | 1 Each. |
| 06. | Installation Instruction. | 1 Each. |
| 07. | Test Report. | 1 Each. |

03. PREPARATION:

It is recommended that the antenna is assembled in a flat clear area as close as possible to the final lifting point. Unpack all the materials and inspect for any shipment damage.

04. INSTALLATION OF DIPOLE FEED:

The **Dipole feed** is precision component, which should be handled with special care during installation. For instance, always carry the dipole feed supporting both ends using both hands. Any damage may degrade the antennas performance.

Install the Dipole-Feed at the center of Parabolic Reflector using feed holder and nuts/bolts that are fixed on the grid parabolic reflector.

Take extreme care during installation that the Dipole must be parallel to the grid members. In other words the polarization of **grid members** and Dipole must be **same**. Do not install the dipole feed 90 Degrees to the grid member.

05. PLANE OF POLARIZATION:

Select the plane of polarization of the antenna. A marking of V and H is provided at the **aluminum square mounting blocks** that are welded on the **support arcs**.

06. INSTALLATION OF UPPER SUPPORT ARM:

Fix the **upper support arm** at the **upper aluminum square mounting blocks** that are welded on the **support arc**, using the supplied fasteners. Tighten the first nut sufficiently to take up free up/down movements of the support, than tighten the **second nut** against the first. Assemble the "U" channel and "U" type bolt.

07. INSTALLATION OF LOWER SUPPORT ARM:

Fix the lower support arm at the **lower aluminum square mounting blocks** that are welded on the **support arc**, using the supplied fasteners. Tighten the first nut sufficiently to take up free up/down movements of the support, than tighten the **second nut** against the first. Assemble the "U" channel and "U" type bolt.

08. HOISTING ON TOWER:

The following material is required to hoist the antenna on the tower, not supplied by **Antenna Experts**:

1. Ropes
2. Pulley
3. Compass
4. Socket wrenches for Hexagon nuts and bolts
5. Nail puller
6. Tape measure

Fix the pulley where the grid parabolic antenna to be installed on the tower. A rope nearly double in length of the proposed height of antenna is required to lift the antenna. One end of this rope should pass through the pulley and attached one end of **rope** to the rim of parabolic reflector to lift the antenna upwards.

Fasten one **rope** to the lower portion of parabolic reflector. This rope is used for optimal balance of the antenna due to the wind and to avoid hitting the antenna with tower. Slowly lift the antenna with the top rope into **upright** position.

9. INSTALLATION OF ANTENNA ON THE TOWER:

When the antenna is hanging free in the hoisting rope, mount the **stopper** on the mounting pipe, at the required height and direction and care fully tighten the nuts/bolts of the U-bolts.

Position the antenna on **Stopper** and loosely mount the U-bolts of upper support arm just above the stopper so that the stopper can hold the weight of the antenna during installation and tracking. Now loosely mount the U-bolts of lower support arm.

Align the antenna as exactly as possible to the specified direction, using the **compass**, so that later fine adjustment of +/- 10 degrees is possible.

10. ELEVATION ADJUSTMENT:

Using a **tracking mechanism**, which is fixed on the lower support arm, can do elevation tracking. Before attempting the elevation tracking, make sure that both "U" bolt hardware of Lower support arm and Upper support arm are **fully tight** and all the locking nuts/bolts are fully loose. Rotating the tracking mechanism clockwise results in **up-tilt tracking** where as rotating the tracking mechanism counter clockwise results in **down-tilt** tracking.

11. AZIMUTH ADJUSTMENTS:

Before attempting the azimuth tracking, make sure that all the **locking nuts/bolts** and both the "U" bolts hardware of Upper and Lower support arms are **fully loose**. Rotate the parabolic reflector in desired direction to obtained the maximum signal strength.

12. FINAL ADJUSTMENTS AND LOCKING THE HARDWARE:

Carefully repeat the azimuth adjustments to get the **maximum signal strength** and lock all the locking nuts/bolts and all "U" bolts hardware.

13. FINAL CHECK:

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

It is especially important to recheck that the all nuts/bolts are tightly **locked**.

All ropes may then be removed.

14. MAINTENANCE:

Qualified, skilled personnel to verify proper installation and maintenance should inspect antenna system once a year.

Take VSWR reading by using RF Network Analyzer. The VSWR should never exceed 1:1.5.

Keep the record of VSWR measurements for future reference.