

DIAMOND ANTENNA

X500HA SO-239 (UHF)

X500HNA Type-N Female

2m/70cm Dual Band High Performance Gain Vertical Antenna

Direct Joint System • FRP Outershell • Linear Phase Shifter System

• Description

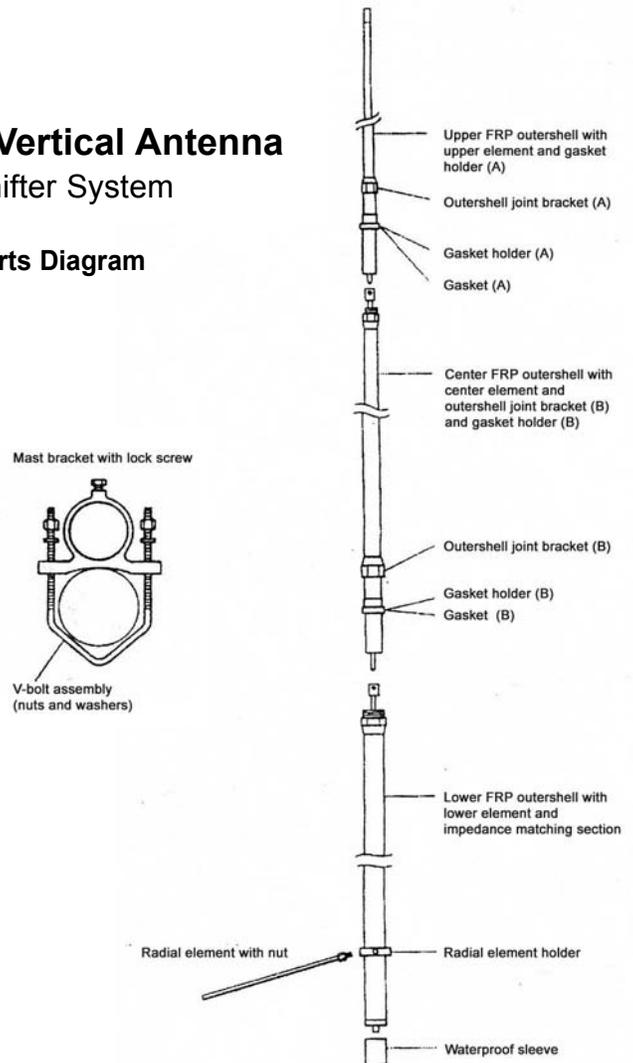
Newly developed Linear Phase Shift technology and Direct Joint structure by three-piece FRP outershell enables antenna to achieve the following performance:

1. 2m 5/8 wave three-element C-Load and 70cm 5/8 wave eight-element structure.
2. High performance and high maximum power rating at 2m and 70cm bands.
3. Low VSWR and broader coverage at 2m and 70cm bands.
4. Overlapping three-piece FRP outershell structure is strong enough to compete with one piece structure.
5. Ring gasket provides perfect waterproofing.
6. Ideally tapered FRP outershell has enough thickness to withstand strong wind and avoid unwanted QSB.
7. Joint bracket can be fastened securely by special wrench attached.
8. DC ground structure of the antenna protects transceiver from high voltage caused by thunder and lightning.
9. Feedpoint connector is being exposed downward at the bottom of support pipe to make antenna installation or detachment easier.
10. With optional 2m/70cm duplexer, two bands can be transmitted simultaneously, or one band can be transmitted while simultaneously receiving the other band.

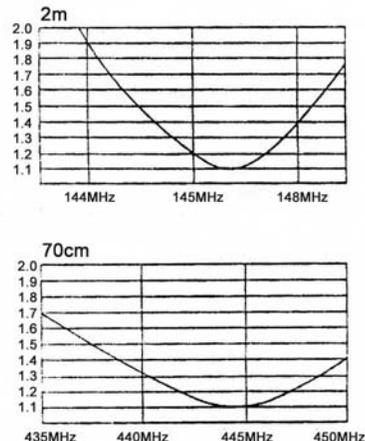
• Specifications

Frequency:	144–148MHz, 435–450MHz
Gain:	8.3dB (2m), 11.7dB (70cm)
Impedance:	50Ω
VSWR:	Less than 1.5:1
Max Power Rating:	200W
Max Wind Resistance:	90 MPH
Mast Diameter Accept.:	1 1/5" to 2 2/5"
Length:	17.8'
Radial Length:	approx. 20.5"
Weight:	5.73 lbs.
Type:	5/8λ three-element C-Load antenna (2m) 5/8λ eight-element C-Load antenna (70cm)

• Parts Diagram



• VSWR



• Assembly

Note: Be sure to assemble from upper element. If the antenna is being assembled from lower element, element can not be pulled out from outer shell and fastened properly.

- Put special wrenches on upper and center FRP outershells as shown in Fig. 1. Use small diameter section of the wrench.

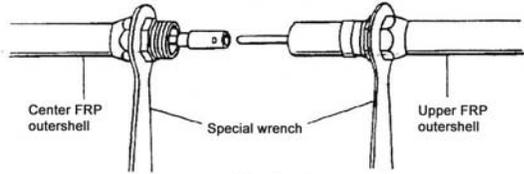


Fig. 1

- Connect upper element in the upper FRP outershell and center element in the center FRP outershell with screwdriver.

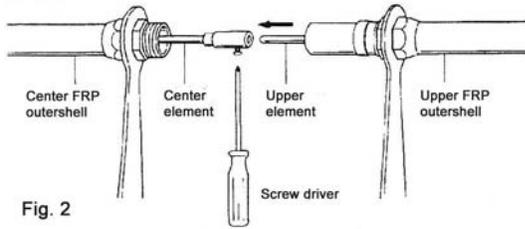


Fig. 2

- After connecting these two elements in the outershells, fasten upper FRP outershell joint bracket with special wrenches as shown in Fig. 3. Fasten the bracket thoroughly until there is no gap between each part of the bracket.
- After fastening the bracket, detach the wrenches from the outer shells as shown in Fig. 4.

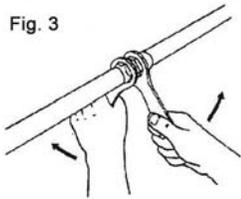


Fig. 3

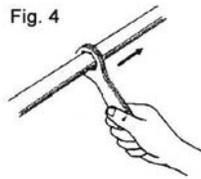


Fig. 4

- Connect center element in the center FRP outershell and lower element in the lower FRP outershell the same was as sections 2 and 3, but use larger diameter section of the wrenches as shown in Fig. 5.

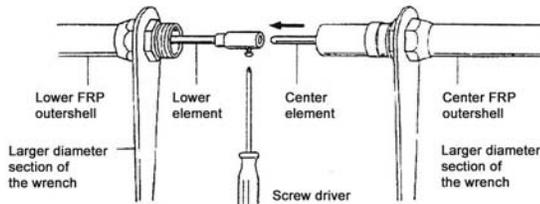


Fig. 5

- Attach three radial elements with the wrench as shown in Fig. 6.
- Attach mast brackets on support pipe and fix them.
- Attach assembled antenna on mast as shown in Fig. 8. While installing, be sure to take the balance of the entire antenna into account.

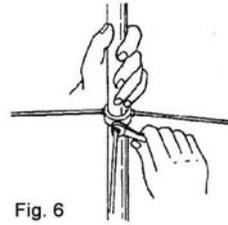


Fig. 6

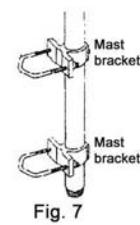


Fig. 7

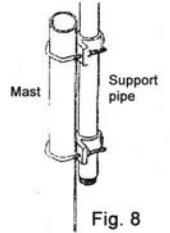


Fig. 8

- Connect coaxial cable with connector to feedpoint section at the bottom of the antenna through waterproof sleeve as shown in Fig. 9.
- After connecting coaxial cable, fix waterproof sleeve to the bottom of support pipe with a screw. Turn connected coaxial cable once to make a loop right below the antenna as shown in Fig. 10 to escape excess load from the cable.

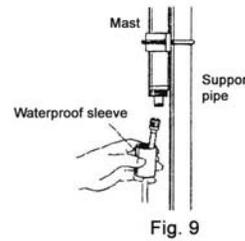


Fig. 9

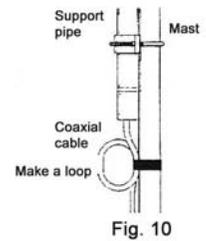


Fig. 10

• Adjustment

The X500HA and X500HNA antennas are completely adjustment free. If VSWR of the antenna is extraordinarily high, most likely it is due to coaxial cable and connector contact, or a connector soldering problem. Be sure to use 50Ω coaxial cable to feed the antenna.

• Note

Though the X500HA and X500HNA are DC grounded structures, circuit across the inner conductor and outer conductor is open-circuit when measured by a volt-ohm meter. If it is close-circuit, confirm coaxial cable connections. Use the antenna vertically. If the antenna is tilted, it can not perform perfectly as it is expected.



Please see next page for installation safety and precaution guidelines.



FOR YOUR SAFETY

Please read the following safety precautions before antenna assembly.

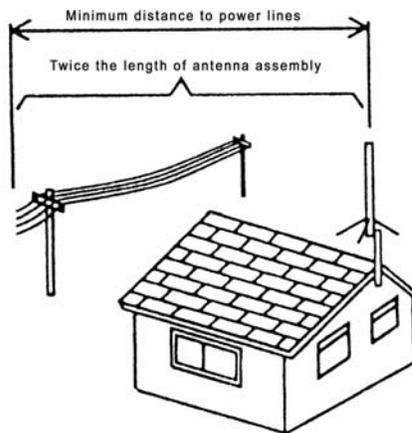
- Assemble the antenna on the ground or wide and flat place such as on balcony before installation.
- Do not assemble or install the antenna on a place where you can not have enough distance from any electric power lines.
- Do not install the antenna on a rainy or windy day.
- Do not attempt to install the antenna only by yourself. Installing the antenna alone on the roof may lead you to a dangerous accident. Always ask your friends or a professional for help installing the antenna.
- Do not use iron or aluminum ladder at a reachable distance from any electric power lines.
- Do not install the antenna on a mast which is not grounded properly.
- Do not have your family members or friends touch or come close to the antenna, unless they have realized its potential danger.

TO AVOID FATAL ACCIDENT

- Do not attempt to sustain the antenna, or any part of support structure if it begins to fall down. Let it fall by itself.
- Do not attempt to remove or restore the antenna or any part of support structure if it touches an electric power line. Let it be as it is, do not touch it, and call your local electric power company immediately.

IN CASE OF AN ACCIDENT

- Do not touch a person or an animal who is or seems to be in contact with the antenna or any support structure which is fallen on a live electric power line. Touching one may lead you to be electrocuted.
- Do not attempt to separate a person or an animal who is or seems to be in contact with the antenna or any support structure which is fallen on a live electric power line by yourself. Call or have someone call a police officer, ambulance, or doctor immediately.



ANTENNA INSTALLATION PRECAUTIONS

To determine antenna installation location, there are several factors to be taken into account. First thing is antenna propagation direction to specific target stations. As to whether there are any obstacles such as tall buildings on the line of sight. Next is specific installation location. As to whether specific location is adequate in terms of antenna support and surrounding safety.

- Do not attempt to install the antenna by yourself if you do not have any experience in installing base station antenna. Ask your experienced friends or a professional for help.
- Do not attempt to install the antenna at a location where it does not have enough distance from nearby electric power lines. It is advised to install the antenna at least twice of total antenna height from nearby electric power lines.
- Do not install the antenna on any type of tower, pole or telescopic mast which exceeds 30 feet high, if you do not have enough experience in installing the antenna on that kind of location. Ask your experienced friends or a professional for help.
- Do not use more than 1/10' section if you install the antenna on iron plumber's pipe. Attach guy wire if multiple pipes are used to install the antenna.