

Hy-gain

INSTRUCTION MANUAL

ORDER NO. 389

TH6-DXX

"SUPER THUNDERBIRD"

PN 801129

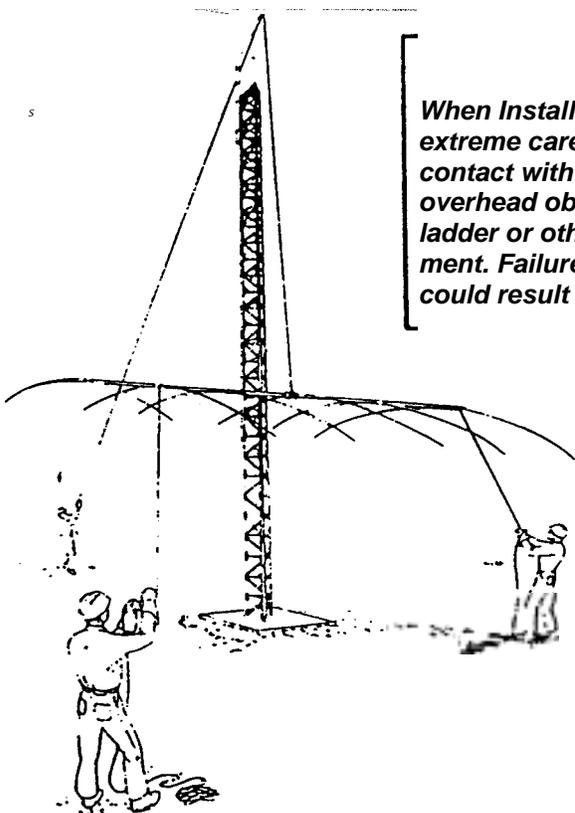
General Description

The Hy-Gain TH6-DXX "Super Thunderbird" is a 6-element beam designed to operate on 10, 25 and 20 meters. It has four active elements on 10-meters and three active elements on 15 and 20 meters. The "Super Thunderbird" has optimum spaced elements on a 24 foot boom giving you the best gain while maintaining a high front-to-

There are two methods for raising this antenna. Decide which method you will use before you begin; it will determine how you put the antenna together.

Method 1: Completely assemble the antenna on the ground then hoist it into position using a setup as shown in Figure 1.

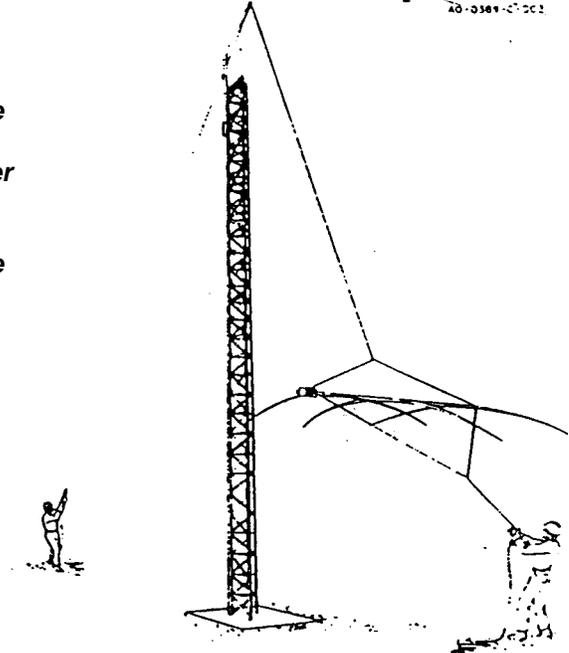
Method 2: Assemble the antenna on the ground in halves. then hoist each half up the tower and assemble in the boom-to-mast bracket on the tower- as shown in Figure 2.



Complete Antenna Hoisted
On **Tower** By **Cable** or
Rope

Figure 1

WARNIN
When Installing your system, take extreme care to avoid accidental contact with power lines and other overhead obstructions by any ladder or other installation equipment. Failure to exercise this care could result in serious injury.



Antenna Section
Being Erected On
Tower

Figure

All slotted tubing supplied with the TH6-DXX telescopes together. It is held in place with compression clamps. Make all measurements as accurate as possible using the given dimensions for optimum results from your antenna.

Compression Clamps

Take care when measuring the tubing lengths for your mode of transmission. Place the clamp near the end of the tube with the joint even with the slot in the tube. Tighten the clamp until the inner tube cannot be turned in the outer tube. The compression clamps and their associated hardware are shown in Figure 7. Do not tighten the compression clamps until instructed to do so.

NOTE: To save time, loosely assemble all of the compression clamps and their appropriate hardware before beginning further installation of the antenna.

Assembly Of The Boom

Select the two halves of the boom brackets (items 7 & 8) and the two cast aluminum mast clamps (item 1) and loosely assemble as shown in Figure 4.

Select the four boom sections (items 6, 12 & 13) 2" diameter tubing. Slip the unswaged end of the long boom section (items 12 & 13) into the boom-to-mast bracket (items 7 & 8) and line up the holes. Secure the boom sections to the bracket using the two 5/16"-18 x 2 3/4" bolts (item 63), nuts (item 69) and lockwashers (item 74) provided. Do not tighten at this time. The bracket must be loose to facilitate mounting the antenna on

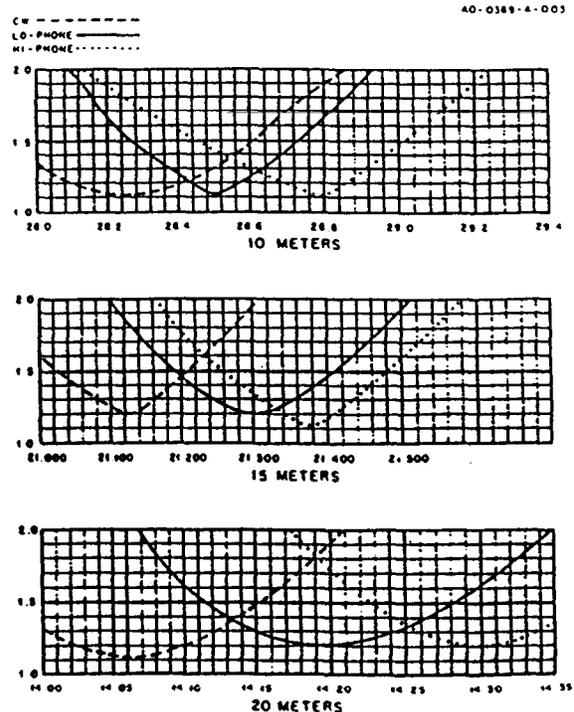
NOTE: The reflector end of the boom (item 12) has a small hole drilled 7 1/8" from the unswaged end. This hole must be positioned so it is facing up (skyward) when the boom is assembled. The hole will be used for attaching the beta match in a later step. Refer to Figure 4.

Slip the remaining boom section (item 6) over the swaged end of the assembled boom section (items 12 & 13) and secure using the 1/4"-20 x 2 1/2" bolt (item 65), nut (item 70) and lockwasher (item 77) as shown in Figure 4.

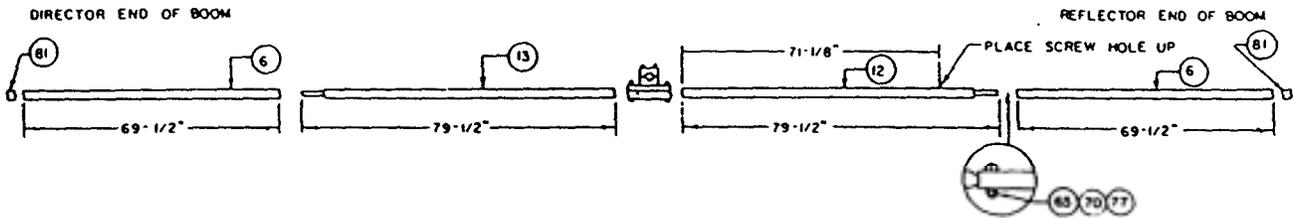
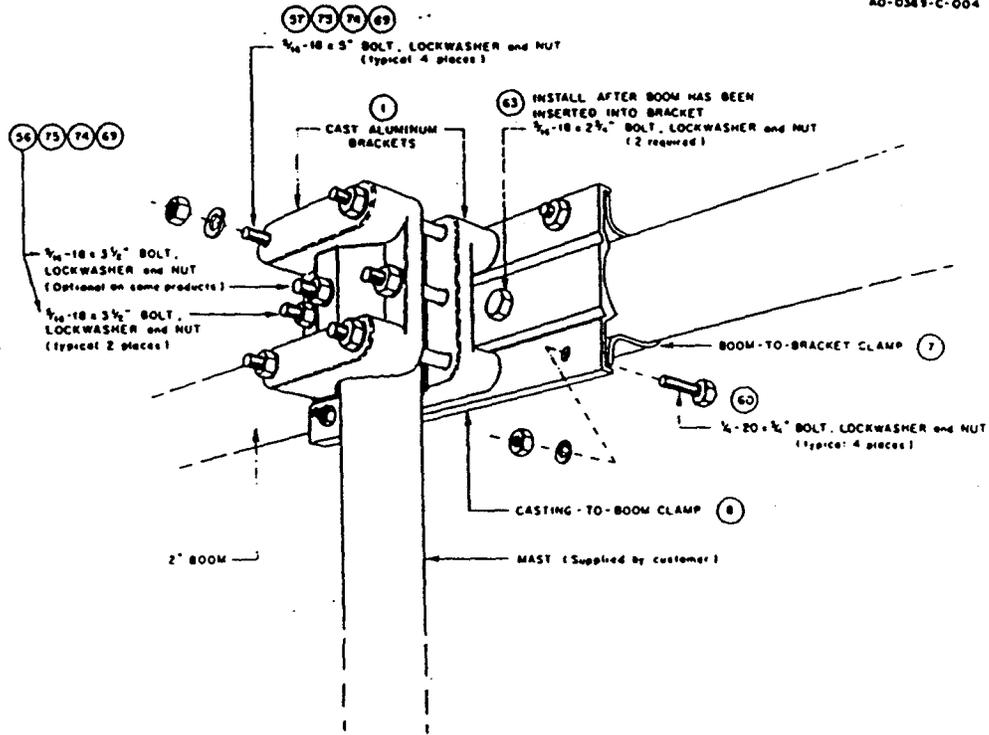
NOTE: The boom-to-mast brackets have a hole through their center to allow securing to the mast with the 5/16"-18 x 3 1/2" bolt. It is recommended that the mast be removed and a 11/32" hole be drilled at the desired mast clamp position, then reinstall the mast. If this is not possible, the clamp will hold its position on the mast in all but

VSWR Charts

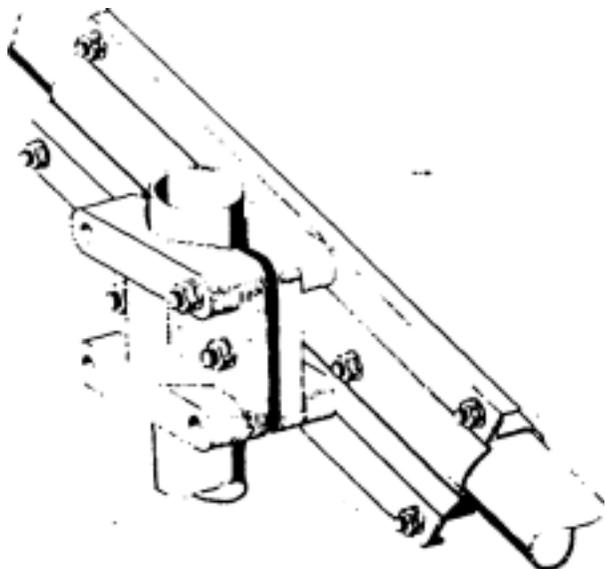
These VSWR curves are typical for this antenna mounted 70 feet above the ground, horizontally polarized. Similar curves can be expected for this antenna mounted between 50 and 100 feet above the ground. **Do not try to tune this antenna for low VSWR at ground level!**



Flaure 3



AO-0226-C-004



Item	Description
1	bracket, cast aluminum
6	boom section, 2 x 69 1/2"
7	clamp, boom-to-bracket
8	bracket, casting-to-boom
12	boom tube assembly, beta
13	boom tube assembly
56	screw, 5/16-18 x 3 1/2" hex head
57	screw, 5/16-18 x 5" hex head
60	screw, 1/4-20 x 3/4" hex head
63	screw, 5/16-18 x 2 1/4" hex head
69	nut, 5/16-18 hex jam
74	lockwasher, 5/16" split
75	washer, 5/16" flat
81	2" caplug
65	screw 1/4-20 x 2 1/2" round head
70	nut 1/4-20 hex
77	lockwasher 1/4" internal

Figure

Pre-assembling The Select a large sized set of element-to-boom brackets.(item 4) marked with a number 14.

Element-to-Boom center of

Pre-assemble the brackets on the reflector end of the boom about 18 1/2" from the

Brackets On The

the boom-to-mast clamps. The reflector end of the boom can be identified by the

Select a small sized element-to-boom bracket (item 2) marked with a number 4 and loosely assemble, on the reflector end of the boom 75" from the driven element brackets that you assembled earlier. Refer to Figure 5B. These brackets *will* be the 10-meter reflector brackets. *DO NOT TIGHTEN.*

Select a set of medium sized element-to-boom brackets (item 3 marked with a number 13 and loosely assemble on the reflector end of the boom as shown in Figure 5B. Assemble the bracket 3 inches from the end of the boom to the center of the bracket. This pair of brackets will be for the 15 - 20-meter reflector.

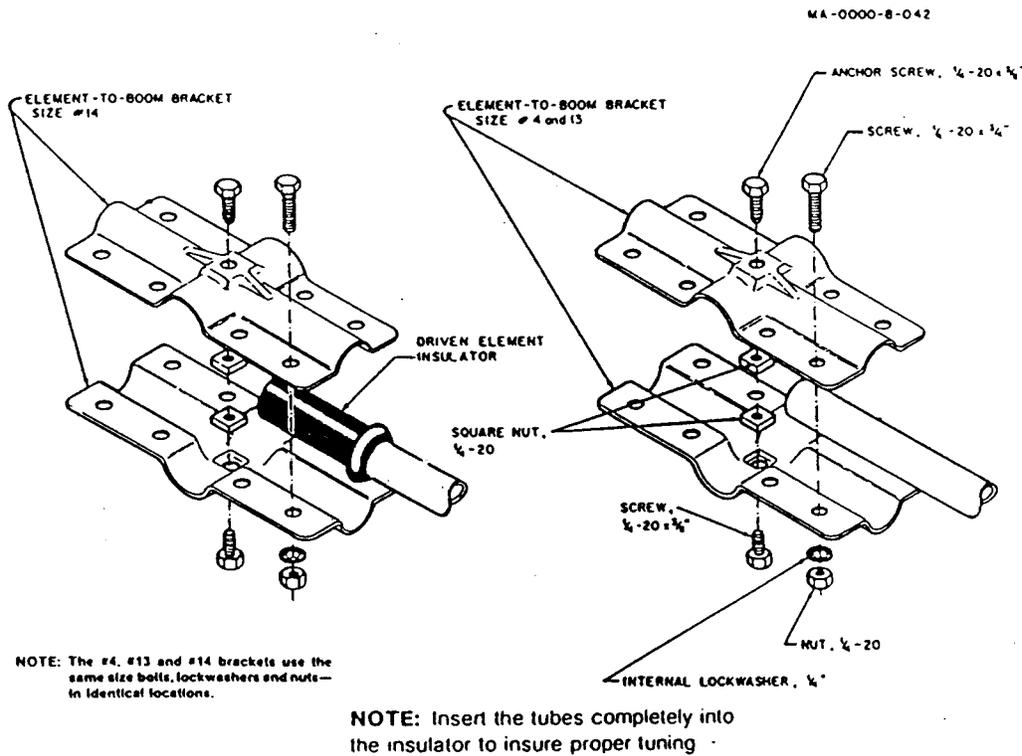


Figure 5

Assembly of boom 15 -20-Meter Reflector

NOTE: The following steps will be in singular form. Do them first for one side of the then for the other side.

Select the "15-20 Ref" tubing bundle (item 36). Insert the thick-walled end of the R1 (t 1/4" x 95 1/2") into the element-to-boom bracket (item 3) assembled on the boom. Tighten the screws to hold the element securely but do not tighten the anchor screws

Check to see that the 15 - 20-meter reflector element will lie in a plane parallel to the earth when the antenna is mounted on the mast. This can be done by observing the position of the reflector element with respect to the boom-to-mast bracket and then adjusting the reflector element accordingly. Recheck the 3" measurement from the end of the boom to the center of the bracket then tighten the anchor screws

Select a 1/4" compression clamp (item 48) and its' associated screw (item 80) and nut (item 68) and assemble as shown in Figure 7.

NOTE: Figure 7 shows all the compression clamps with their associated hardware. The drawing is full size to aid you in identifying the parts. Lay the part over the proper drawing for easy identification.

Slip the assembled compression clamp over the end of the R1 section (item 39). Select the R2 section (1 1/8" x 38") and slip the unswaged end into the R1 section.

At this time, you must decide which mode of transmission you will use either Lo Phone, Hi Phone or CW. Measure the dimension of R2 for your mode of transmission as shown in Figure 6. The measurement is made from the end of R1 to the end of R2.

CAUTION

When you have *selected* your mode of transmission (Lo Phone, Hi Phone or CW), you must use *the* same mode for remaining measurements. Do not attempt to use averages or various combinations of setting measurements on *the* same element, or *serious deterioration in antenna performance will result. the VSWR charts shown in Figure 3 should help you to decide which mode to select.*

Assemble a 1" compression clamp (item 49) as shown in Figure 7. Slip the assembled clamp over the end of R2. Select the 15-meter parasite trap and slip the unswaged end into the R2 section with drain hole down.

CAUTION

- There are two style 15- and 10-meter traps. Observe *the* part number marking closely, as shown in Figure 6. *The Driven Element traps are different internally than the parasitic element traps.*

Measure 1" from the end of the R2 section to the edge of the plastic trap cap as shown in Figure 6. Now, tighten the compression clamp *SLIGHTLY*.

Assemble a 1/2" compression clamp (item 45) as shown in Figure 7. Slip the assembled clamp over the end of the 15-meter trap. Select the R3 section (item 37, 7/16" x 37") and slip it into the 15-meter trap. Measure dimension of R3 for your mode of transmission as shown in Figure 6. Tighten compression clamp *SECURELY*.

Carefully recheck all your measurements then tighten the compression clamps *SECURELY*.

Assembly of 10-Meter Reflector

Select the "10 Ref" tubing bundle (item 32) and slip the unswaged end of the R2-1 section (item 35, 1/2" x 55") into the bracket (item 2) assembled on the boom. Tighten the screws to hold the element securely but do not tighten the anchor screws at this

Check to see that the 10-meter reflector will lie in the same plane as the 15-20 meter reflector and carefully recheck the 48" measurement from the center of the one reflector bracket to the center of the other reflector bracket. Now tighten the anchor screws *SECURELY*.

Assemble the remainder of the 10-meter reflector in the same manner as you did the 15-20 meter reflector. Refer to Figures 5, 6 and 7 for illustrations.

Assembly of the Driven Element

() Select the DE1 section (31) (1 ¼" x 48") from the Driven Element tubing bundle (26). Slip a Driven Element insulator (85) on the unslotted end of the DE1 section. Then slip the insulated end of DE 1 into the bracket assembled on the boom. Tighten the screws to hold the element securely but do not tighten the anchor screws at this time.

() Check to see that the Driven Element will lie in the same plane as the Reflector elements already installed. Carefully re-check the 75" measurement from the center of the 10-meter Reflector bracket to the center of the Driven Element bracket then tighten the anchor screws *SECURELY*.

() Assemble a 1 ¼" compression clamp (48) as shown in Figure 7. Slip the assembled clamp over the DE1 section. Select the DE2 section (29) (1 ¼" x 42") and slip the unswaged end into the DE1 section. Measure the DE2 dimension for your mode of transmission as shown in Figure 6 then tighten the compression clamp

() Assemble a 1" compression clamp (49) as shown in Figure 7. Slip the assembled clamp over the end of the DE2.

() Select the 10-meter Driven Element trap (44). If you look closely at the trap, you will notice that the part number is marked near one end. This is the *SHORTED* end of the trap. Slip the *SHORTED* end of the trap into the DE2 section (29) and measure 1" from the end of DE2 to the plastic trap cap as shown in Figure 6. Now tighten the compression clamp *SLIGHTLY*.

() Assemble two 1" compression clamps (49) and slip them on each end of the DE3 section (30) (1 x 5") positioning them near each end. Slip the DE3 section over the 10-meter trap (44) then slip the unswaged end of the 15-meter Driven Element trap (42) into the DE3 sections. Keeping the DE3 section approximately equidistant from the two traps, measure the DE3 dimension for your mode of transmission as shown in Figure 6. Now tighten the compression clamps *SLIGHTLY*.

() Assemble a ½" compression clamp (45) as shown in Figure 7 and slip it over the swaged end of the 15-meter trap. Select the DE4 section (27) (7/16 x 28") and slip it into the 15-meter trap. Measure DE4 dimension for your mode of transmission as shown in Figure 6. then tighten compression clamp *SLIGHTLY*.

() Carefully re-check all dimensions then tighten the compression clamps *SECURELY*

Assembly Of Beta Match

() Select the Beta Match tubes (28) (36 x 38 ¾"). Beta shorting wire (5) (1/8" formed wire) and the beta supporting insulator (83) and clamps (84) as shown in Figure 8. Attach the shorting wire to the beta tubes using the two 10-24 x 1/2" screws (61) square nuts (68) and lockwashers (78). Assemble the beta tubes on the boom as shown in Figure 8. using four 10-24 x 2" screws (79), nuts (68) and lockwashers (78) but do not tighten the screws at this time.

() Select the beta shorting clip and secure to the end of the beta shorting wire using a 10-24 x 1/2" screw (61) nut (65) and lockwasher (78). Attach the shorting clip to the boom using a No. 10 sheet metal screw and lockwasher (66) & (78). Now tighten all screws *SECURELY*.

Select a set of small element-to-boom brackets (item 2), marked with a number 4. and *LOOSELY* assemble them on the boom 73" from the center of the driven element bracket to the center of the 10-meter director bracket as shown in Figure 5 and 6.

Select the "No. 10 Dir" tubing bundle (item 23) and assemble it on the boom in the same manner as you did the previous elements. Refer to Figures 5.6 and 7. Make certain the 10meter Director lies in the same plane as the other elements and carefully recheck the 73" dimension before tightening the bracket anchor screws securely.