Installation Instructions for the

Heavy Duty Polar Mount

Congratulations, you have now purchased the finest Polar Mount available. This unit has been designed to give you the most stable system to work on a single pole application. Please follow these instructions, and if you have any questions please call 608/326-8406 for help.

The Polar Mount is designed to go with the 3.0m, 3.3m, 3.7m, 3.9m, 4.2m, 4.5m and the 5.0 meter antenna. As all are identical in theory, we will cover the basic installation first and address each individually as the installation requires. **PLEASE READ COMPLETE INSTRUCTIONS BEFORE BEGINNING INSTALLATION!!**

*** *Optional: Power Declination Instructions are on Page 13.*

PARTS LIST

1 - DH Antenna
1 - Polar Mount
60" Back Ring
1 - 5 ½" I.D. Base Can
4 - Back Braces for 3.3m - 3.7m
(8 for 3.9m - 5m)
4 - Feed Struts
1 - Feed Collar
1 - Locking Bar
1 - Bolt Bag to include all Hardware
(see page 1)
1 - Feed Cover
*** *Options:* Four Leg Base Stand, Base Post, Non-Penetrating Roof Mount, Hot Dip Galvanization, 36" Actuator, Electronics

DH Satellite
P.O. Box 239
Prairie du Chien, WI 53821
Phone: (608) 326-8406
Fax: (608) 326-4233

CAUTION! - All 3.0m - 5.0m, 2 pc. antennas must be handled with extreme care.

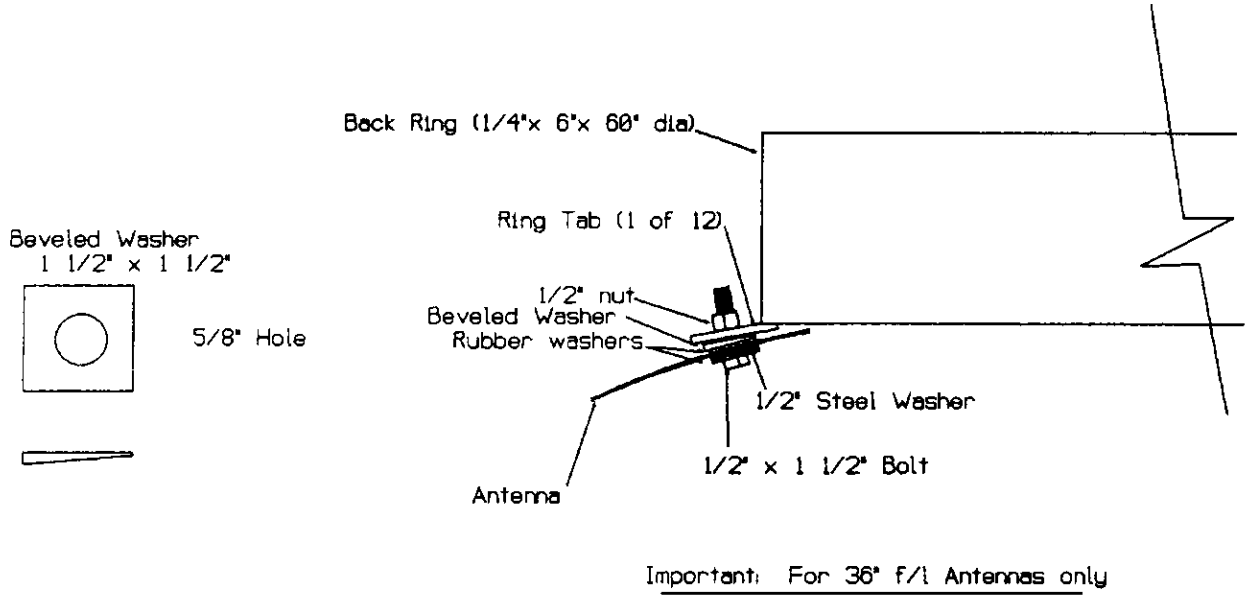
Important!!!

If you have purchased a 36" F/L Antenna (3.0m, 3.3m or 3.6m T.I. Eliminator) follow these directions.

The following instructions pertain to the Installation of the 36" F/L Reflector only. **If you have purchased a 57.6" F/L Reflector please disregard these Instructions.**

When you purchase the 36" F/L Reflector with the 60" Ring Mount the following procedure is necessary in order to conform the Reflector to the Mount.

When Assembling the reflector to the Mount, the 12 Beveled Washers must be installed between the reflector and the mount tab. When you put the Beveled Washer in place, **make sure that the thick part is oriented toward the reflector perimeter**. This is very important as failure to do this will distort the reflector causing loss of signal because the parabolic shape will be compromised.



Important: For 36" f/l Antennas only

Polar Mount

ALL 1/2" BOLTS WILL BE FURNISHED WITH 1/2" NUTS AND 1/2" LOCK WASHERS. WE WILL NO LONGER BE USING THE 1/2" LOCK NUTS. THANK YOU

ANTENNA TO RING

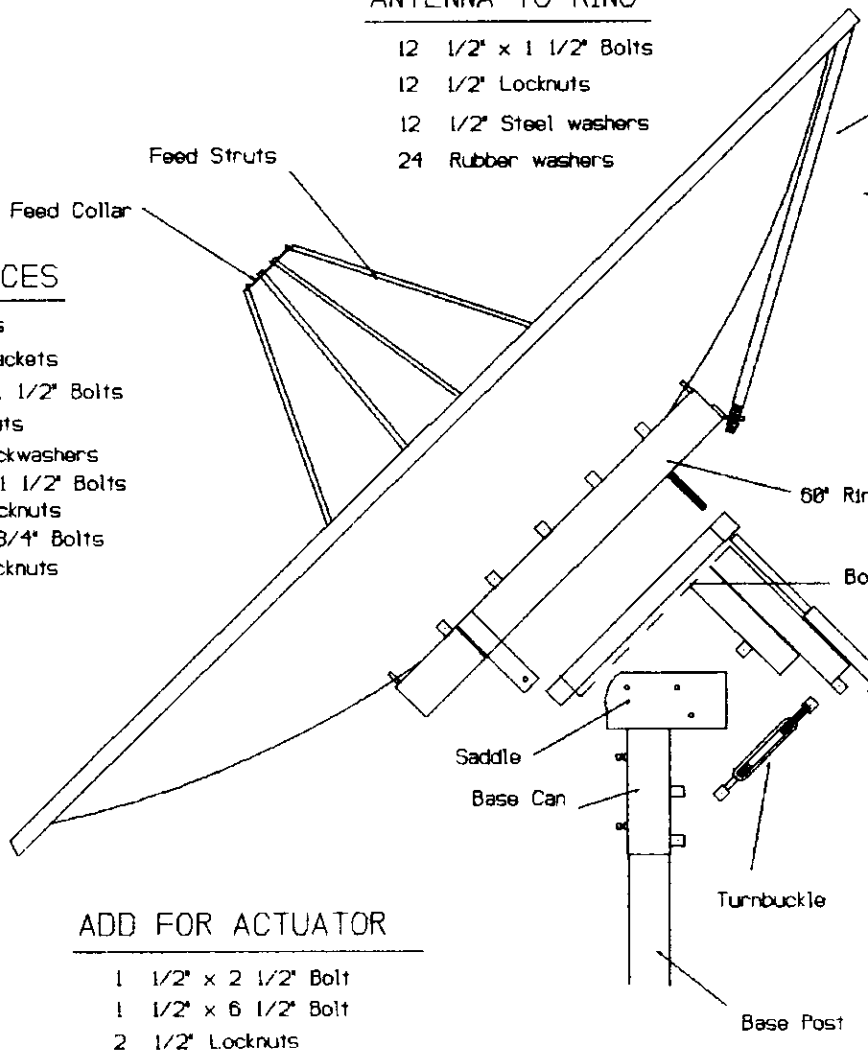
12 1/2" x 1 1/2" Bolts
12 1/2" Locknuts
12 1/2" Steel washers
24 Rubber washers

MOUNT TO RING

2 3/4" x 7" Bolts
2 3/4" Nuts
2 3/4" Lockwashers
1 Turnbuckle
2 1/2" x 1 1/2" Bolts
2 1/2" Locknuts

BACK BRACES

4 Bent Tabs
4 Brace Brackets
4 1/2" x 1 1/2" Bolts
12 1/2" nuts
4 1/2" Lockwashers
4 3/8" x 1 1/2" Bolts
4 3/8" Locknuts
8 1/4" x 3/4" Bolts
8 1/4" Locknuts



ADD FOR LOCKING BAR

1 1/2" x 5 1/2" Bolt
2 1/2" Locknuts
1 1/2" x 1 1/2" Bolt

ADD FOR ACTUATOR

1 1/2" x 2 1/2" Bolt
1 1/2" x 6 1/2" Bolt
2 1/2" Locknuts

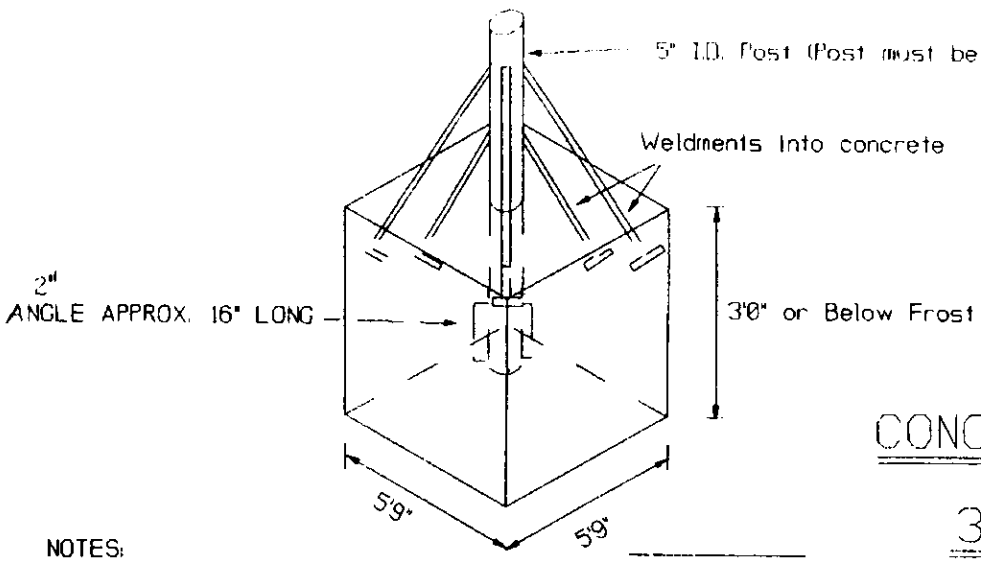
BOLT BAG FOR 60" POLAR MOUNT

MCD 5/28/93
Revised 2/14/96

Installation of Base Post

With this Polar mount you have a choice of using the factory base stand (on page 4) or using a base post. If you are using a post, please be sure to check with an engineer to determine the reinforcing required on this single post. DH Satellite will not engineer post designs. When placing your post in the concrete be sure it is plumb. The following chart shows how much of the post should be out of the ground for the different size antenna's.

3.0m antenna ..... 5'-0" out of ground
3.3m - 3.7m antenna ..... 5'-6" out of ground
3.9m - 4.2m antenna ..... 6'-0" out of ground
4.5m - 5.0m antenna ..... 7'-0" out of ground



POST DESIGN CRITERIA:
Wind Speed
80 mph max. 5" schedule 40
100 mph max. 5" schedule 80
125 mph max. 5" schedule 120

CONCRETE PAD FOR 3.7M ANTENNA

NOTES:

5 #3 Rebar used in Footings
Rebar distributed evenly in two directions
Center of Rebar should be min. of 2" above bottom of pad
Outside of bars should be 3" from edge of footings.

NOTES:

PAD MUST EXTEND BELOW FROST DEPTH
DIMENSIONS FOR CONC. MAY VARY DEPENDING ON SOIL TYPES AND WIND CONDITIONS CHECK WITH LOCAL ENGINEER
POST MUST BE 5'6" MIN. OUT OF PAD
POST MUST HAVE WELDMENTS ON SIDE TO PREVENT POST FROM TURNING IN WIND
POST MUST BE CLEAR 20" FROM TOP
IF POSSIBLE TRIANGULATE FROM POST TO CONCRETE WITH TUBE OR ANGLE AS IN SKETCH ABOVE
NOT TO ANY SCALE

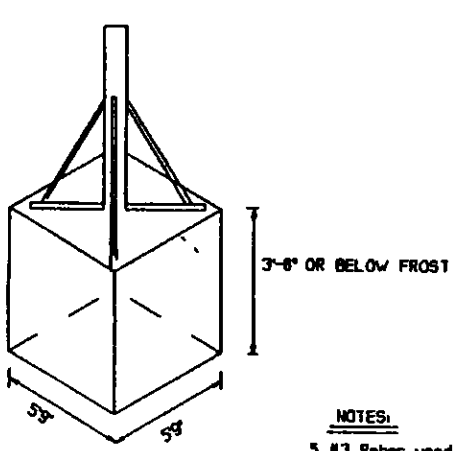
Installation of Base Stand

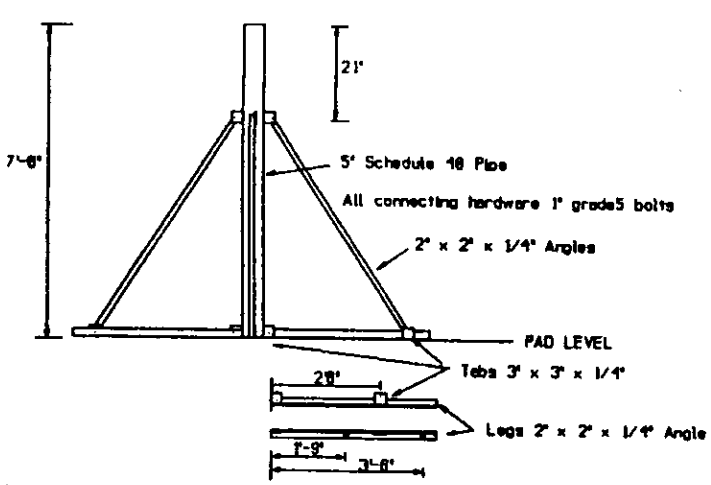
Looking at the drawings on the following page, you will notice the two base stands we offer. The first is for the 3.7m - 4.2m size antenna and the second is for the 4.5m - 5.0m antennas. Before construction, please request the full size drawings of the unit that will fit your need. WE RECOMMEND THAT YOU CHECK WITH A LOCAL ENGINEER TO DETERMINE SOIL TYPE AND BEARING TO VERIFY THAT THIS BASE WILL WORK FOR YOUR LOCALE. In areas of frost, you must go below frost levels or make provisions for frost heave.

The Base Stand unit is designed to go above ground and /or installed on the concrete pad instead of in it. You can install this either of two ways, the first is you can request a template of the base stand and then install J-bolts in the concrete as you are pouring it. Or you can wait until you receive the base stand (having previously poured pad) and drill holes into the concrete using the stand as the template. You must use a type of Lead Head or Garonite, a Resin Mortar to secure the bolts.

Installation of Base Stand *(continued)*

Concrete Pad for 3.7 - 4.2m Antennas

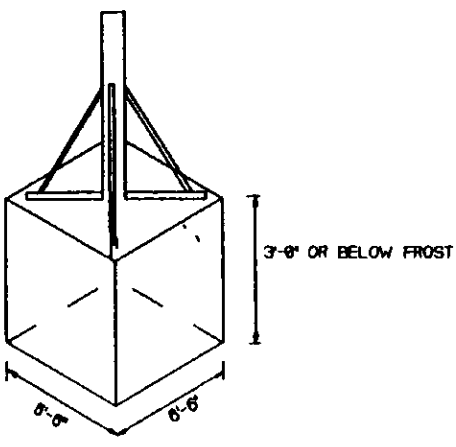


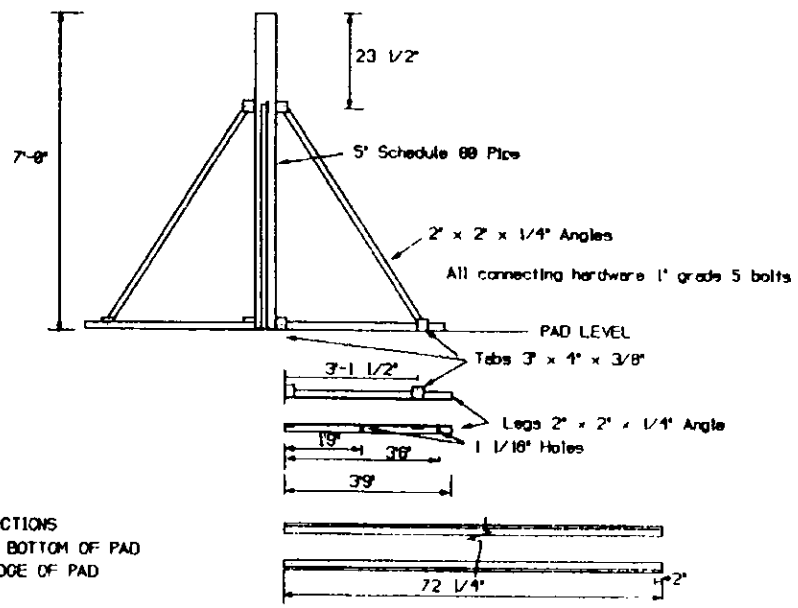


NOTES:
5 #3 Rebar used in Footings
Rebar distributed evenly in two directions
Center of Rebar should be min. of 2" above bottom of pad
Outside of bars should be 3" from edge of footings.

Concrete Pad for 4.5 - 5.0m Antennas

Figure #2





NOTE:
5-7 #3 REBAR USED IN FOOTINGS
REBAR DISTRIBUTED EVENLY IN TWO DIRECTIONS
CENTER OF REBARS SHOULD BE 2" ABOVE BOTTOM OF PAD
OUTSIDE OF BARS SHOULD BE 3" FROM EDGE OF PAD

Assembly of the Antenna

The antenna will come in either one or two pieces. If you have requested your antenna to be shipped in one piece, please ignore this paragraph and go on to the next one. Those of you who had your antenna shipped in two pieces, you must take the two halves and place them on a flat surface. USE EXTREME CARE WHEN HANDLING A MULTIPLE PIECE ANTENNA. The antenna must always set on the lip when assembling and/or storing, (see figure #3). Before sliding the halves together, one person should get under the antenna with the 1/4" x 3/4" bolts supplied. Using the proper joiner strips, push the bolts from the inside out and secure with the 1/4" nuts. The joiner strips and the dish will have serial numbers that match, so when installing be sure the numbers match. These numbers are on the inside lip of the dish and the end of the joiner strip (see figure #4). Tighten these very tight so the dish holds the shape it had when it was manufactured.

Below is a listing of the additional number of 1/4" bolts that should be in your bolt bag when your antenna is in two pieces.

10' (3.0m)	28 1/4" x 3/4" bolts
11' (3.3m)	28 1/4" x 3/4" bolts
12' (3.7m)	28 1/4" x 3/4" bolts
12'9" (3.9m)	36 1/4" x 3/4" bolts
14' (4.2m)	36 1/4" x 3/4" bolts
14'9" (4.5m)	36 1/4" x 3/4" bolts
16' (5m)	36 1/4" x 3/4" bolts

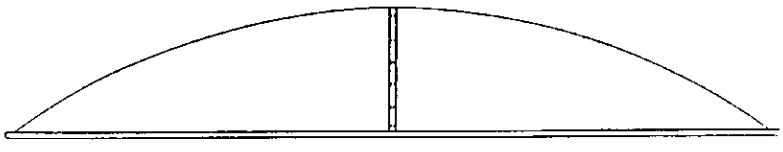


Figure #3

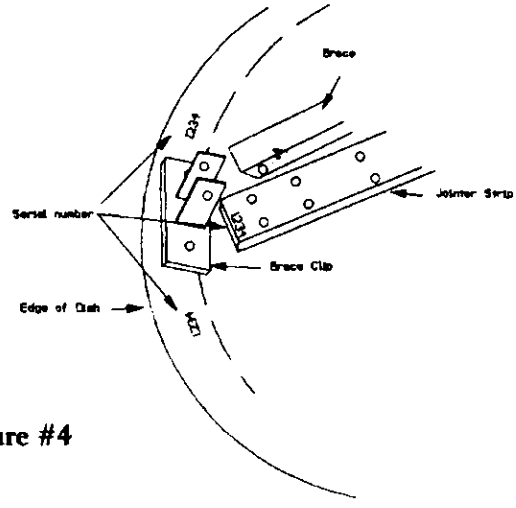


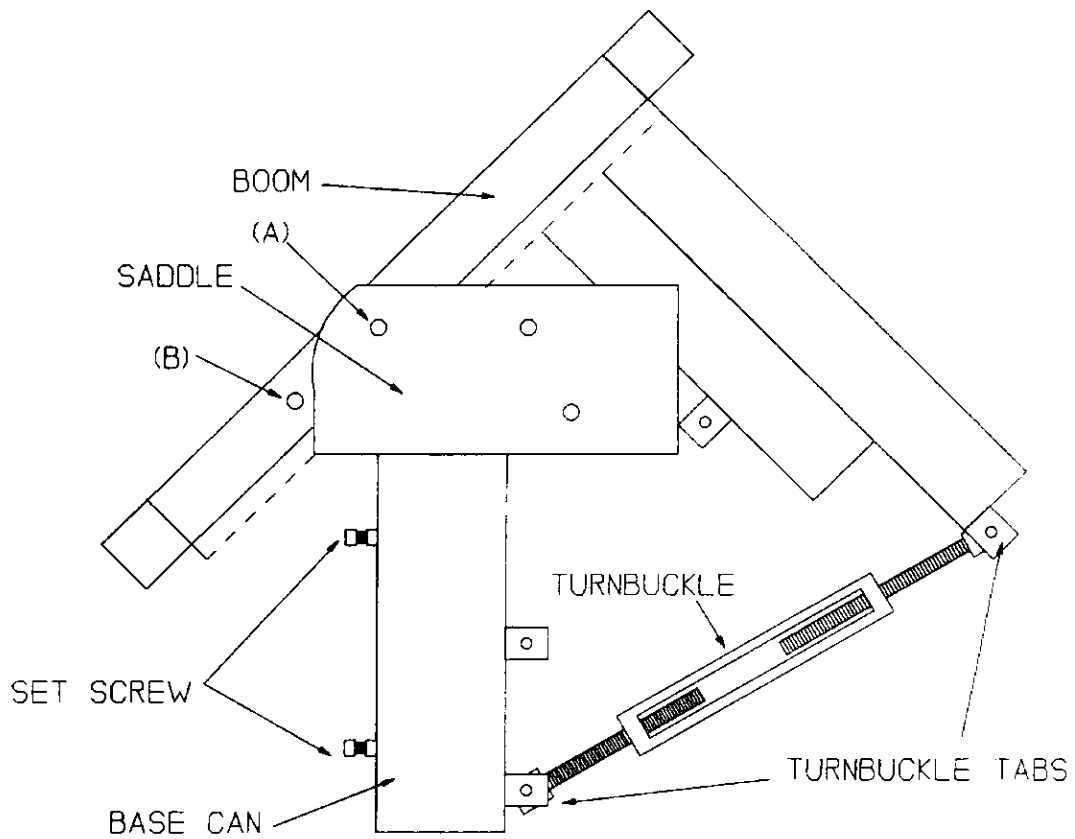
Figure #4

Preparing the Base Post

Before setting the base can over the base post, please loosen the four set screws on the base can. Now get some help and lift this base can over the base post. Set it so the front ears of the saddle are pointing in a southerly direction. Now tighten down one or two of the set screws. If you are relying on man power to lift the antenna in place, you must now gather your manpower and take the 60" ring and lift it up and set it onto the top of the base can. This is referred to as the saddle, (See drawing below). While you align the hole in the boom to the holes in the ears of the base can, have one of your helpers slip the 3/4" x 5 1/2" bolt through these holes. Yes, the bolt will fit, we actually overdrilled this hole. After you have cooled down, come back and finish reading these instructions!! You may want to use a hammer to get this bolt in place.

Now take the turnbuckle and the two 1/2" x 1 1/2" bolts and place them as in the drawing below. The turnbuckle is used to set your elevation and then never adjusted again. The boom will be set to your latitude. This will be covered again in the section under declination.

In most locations you will use the top hole in the boom. (A) The lower hole is for areas below 20 degrees latitude. (B) Use the second $\frac{3}{4}$" x $5\frac{1}{2}$" bolt in the back top of the saddle and tighten it until the sides of the saddle compress against the boom. (See below).



Declination Setting and Power Declination Option

Set the boom to the same degree as your latitude. You will find most road atlases will have this listed. Now adjust the four 3/4" nuts on the top tube moving it in or out to your off set angle. See the chart below. The farther North or South you go from the equator the larger your off set will be. The off set (declination) is the number in degrees between your axis (latitude) and the angle of the face of the antenna. Once this is set it should be left alone.

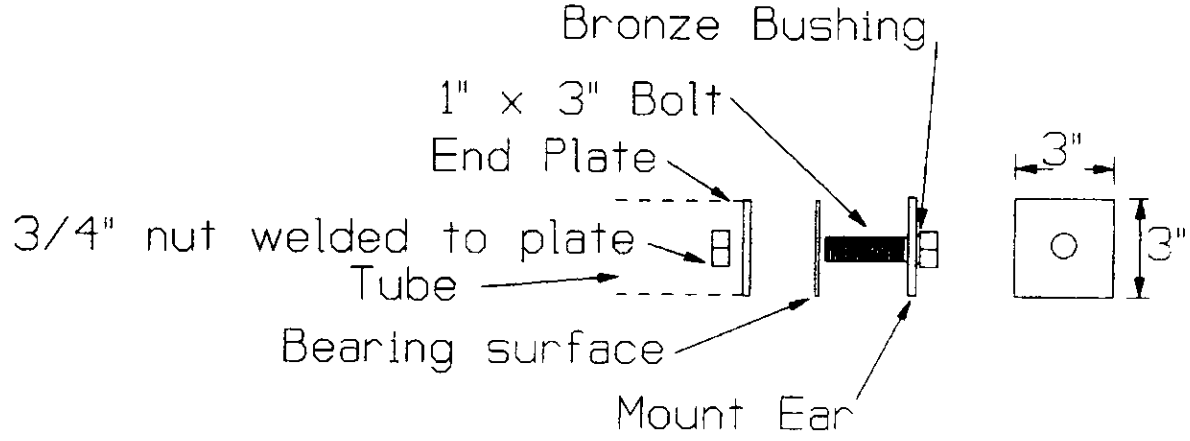
Units with power declination must have the actuator assembled to the ring and bracket prior to assembling the antenna to the mount. The power declination is a modification made to the mount in the factory and it requires the assembly of the actuator to the bracket on the ring and to the bracket on the back of the boom. Refer to page 15.

Site Latitude	Declination (Offset Angle)	Inclination	Zenith	Site Latitude	Declination (Offset Angle)	Inclination	Zenith
5°	0.75674°	5.13°	5.89°	39°	5.44034°	39.70°	45.15°
10°	1.50699°	10.26°	11.77°	40°	5.55596°	40.71°	46.27°
15°	2.24524°	15.37°	17.62°	41°	5.66969°	41.71°	47.38°
20°	2.96550°	20.47°	23.45°	42°	5.78151°	42.72°	48.50°
25°	3.66193°	25.57°	29.23°	43°	5.89173°	43.72°	49.61°
26°	3.79780°	26.58°	30.38°	44°	5.99987°	44.72°	50.72°
27°	3.93257°	27.59°	31.53°	45°	6.10625°	45.71°	51.82°
28°	4.06606°	28.61°	32.68°	46°	6.21808°	46.71°	52.92°
29°	4.19816°	29.62°	33.82°	47°	6.31344°	47.70°	54.02°
30°	4.32124°	30.63°	34.96°	48°	6.41412°	48.70°	55.12°
31°	4.45864°	31.64°	36.11°	49°	6.51227°	49.71°	56.21°
32°	4.58675°	32.66°	37.25°	50°	6.60936°	50.69°	57.31°
33°	4.71344°	33.67°	38.38°	55°	7.06154°	55.66°	62.72°
34°	4.83835°	34.67°	39.52°	60°	7.45937°	60.59°	68.06°
35°	4.96207°	35.68°	40.65°	65°	7.80106°	65.52°	73.32°
36°	5.08401°	36.69°	41.78°	70°	8.08352°	70.43°	78.52°
37°	5.20452°	37.69°	42.90°	75°	8.30517°	75.33°	83.64°
38°	5.32327°	38.70°	44.03°	80°	8.46446°	80.22°	88.69°

Assembling Ring to Boom

In most cases the 60" ring is already attached to the boom. If you have requested your shipment as the knocked down version then you will have to assemble these pieces. The easiest way to assemble the ring and the boom is before you set the boom in place on the base can. First attach the top and bottom tubes to the ring. Take the bottom tube and lay it between the ears of the ring. Put the bronze bushing in the ear and insert the 1" x 3" bolt through the bushing. Be sure to put the special wear plate washer between the ear and the end of the tube. Now thread the bolt into the tube. Do the same for the other end. See section A-A.

Now thread one 3/4" nut on each of the two 3/4" declination bolts. Run the nuts most of the way down. Insert the bushing into the top and bottom tubes, two bushings per tube. Now swivel the bottom tube slightly and set the base bolt of the boom in place and secure with 1" nut. Next you can swivel the unit into place so the top tube slides over the declination bolts. Secure by threading the remaining two 3/4" nuts to the declination bolts. Now is the ideal time to attach the Locking Bar if you are not going to motorize this unit. The locking bar can go on either side of the top tube and bolts in place with the 1/2" x 1 1/2" at the tab and 1/2" x 5 bolt at the back of the boom. Lift assembly onto base can and follow instructions from "Preparing the base post" section.



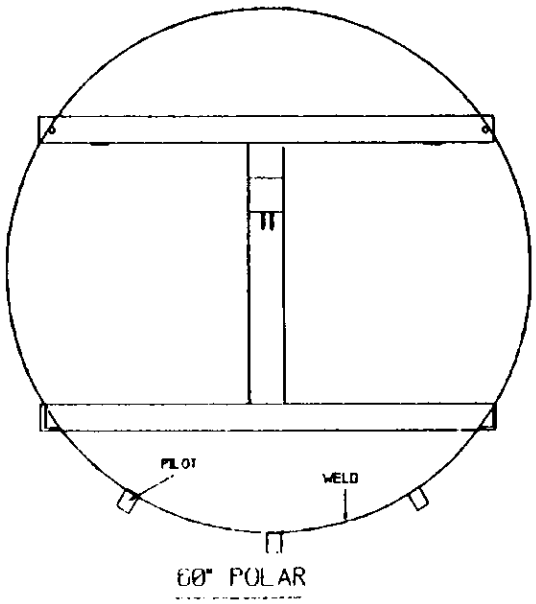
SECTION A-A

Assembling the Antenna to the Ring

The mount should be assembled, and now it is time to install the antenna. We recommend two methods of lifting the antenna onto the post. The first is to take the ring and place it on the antenna on the ground and tighten the eight bolts to secure the ring to the antenna. You can now lift this antenna and ring by a crane, forklift or a boom truck. This insures that no pressure will be put on the antenna.

If you are going to use manpower, follow the ensuing instructions. First you must elevate the ring to about 60 degrees. Lock it in place. Now locate the 1/8" pilot holes; one is located next to one of the 12 - 1/2" holes in the dish and the other is found on one of the 12 tabs on the mount next to the 1/2" holes. See drawing #5. (These pilot holes are only to locate the two 1/2" holes they will not line up from the mount to the dish.) When you have located these two holes, use 4-5 people and pickup the dish and set it into the ring making sure the pilot holes lineup. BE EXTREMELY CAREFUL IN HANDLING THE ANTENNA WHEN SETTING IT INTO THE MOUNT. Now slip in the 1/2" x 1-1/2" bolts, (leave out every third bolt when using a C, Ku, C/Ku, or S-band feed.) Do not tighten these bolts more than just snug. Now put the dish in a very flat position (birdbath). Have the smallest worker (installer) get into the dish and install the feed and hold the bolts while they are tightened. Install the bolts as in drawing #6. DO NOT OVER TIGHTEN.

Figure #5



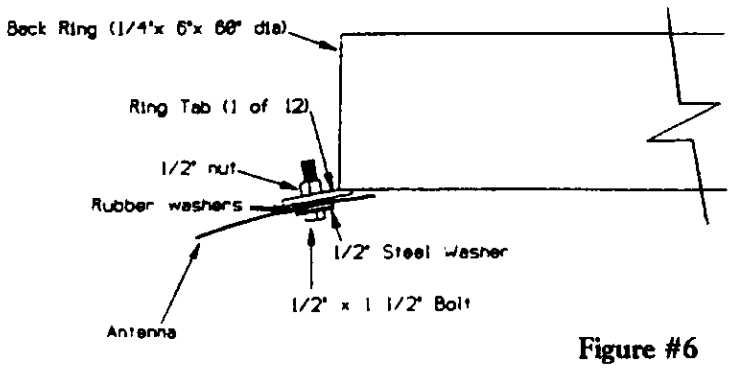


Figure #6

NOTE:

THE WELD OF THE ANTENNA IS ALWAYS LINED UP WITH THE BOOM OF THE MOUNT