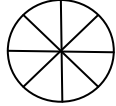


CRITICAL FACTORS INSTALLING A DH ANTENNA

1. **READ INSTRUCTIONS** before disassembling the crate.
2. **RIBS:** Look for color coded dot on the rib. Dots indicate correct order to assemble panels. Number is stamped in the lip of the antenna too.
3. **PILOT HOLE:** Locate pilot hole on the ring and antenna. **THIS IS YOUR STARTING POINT!** Pilot hole is located on the 2nd block from the left of the weld on the ring from the back view of the antenna. **MATCH** mount pilot hole to panel with pilot hole.
4. **FINGER TIGHT:** Installing the panels to the ring and installing the ribs on the panel sections. **DO NOT OVERTIGHTEN.**
5. **TIGHTEN DOWN** all ribs to become a solid antenna. (Once all panels installed)
6. **STRING THE ANTENNA.** Strings should just touch. Adjust the braces so front surface is exactly flat. 
7. **TIGHTEN DOWN ALL BOLTS:** Ring to antenna.
8. **SET FEEDHORN TO EXACT FOCAL LENGTH & TO EXACT CENTER OF THE ANTENNA.** Use a laser tool or cut a piece of wood to the focal length of your antenna. Feedhorn must be flat to antenna surface. Please consider feedhorn manufacturer's recommendation. See "Preparing the Feed Assembly" in manual.

CALL 1-608-326-8406 WITH QUESTIONS

Installation Instructions for the Horizon-to-Horizon Mount

Congratulations, you have now purchased the finest Horizon-to-Horizon Mount available. This unit will not only track the Geosynchronous Arc, but when equipped with the Power Declination option, it will work very well for satellites that are in inclined orbit or elliptical orbit. Assemble using these instructions. If you have any questions please call 1-608 326-8406 or 1-800-627-9443 for help.

The Horizon-to-Horizon Mount is designed to go with the 3.0m, 3.7m, 3.8m, 4.2m, 4.5m and the 5.0m 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!



Sectional antennas must be handled with care not to twist or distort sections while handling for installation.

PARTS LIST

- 1- DH Antenna
- 1- Horizon-to-Horizon Mount
 - 60" Back Ring
 - 5 1/2" Base Can
- 4- Back Braces for 3.3m- **See Note***
(8 Back Braces for 3.7m-5m)
(No Back Braces for 3.0m)
- 4- Feed Struts
- 1- 36V Motor
- 1- Feed Collar
- 1- Bolt Bag to include all Hardware listed on page 14.

***Galvanized back braces please immediately read special note on bolt bag page 14.**

***3.3m Discontinued After 1-1-2013**

***3.9m Discontinued After 1-1-2013**

***Optional: Power Declination
Instructions are on page 15.



DH Satellite

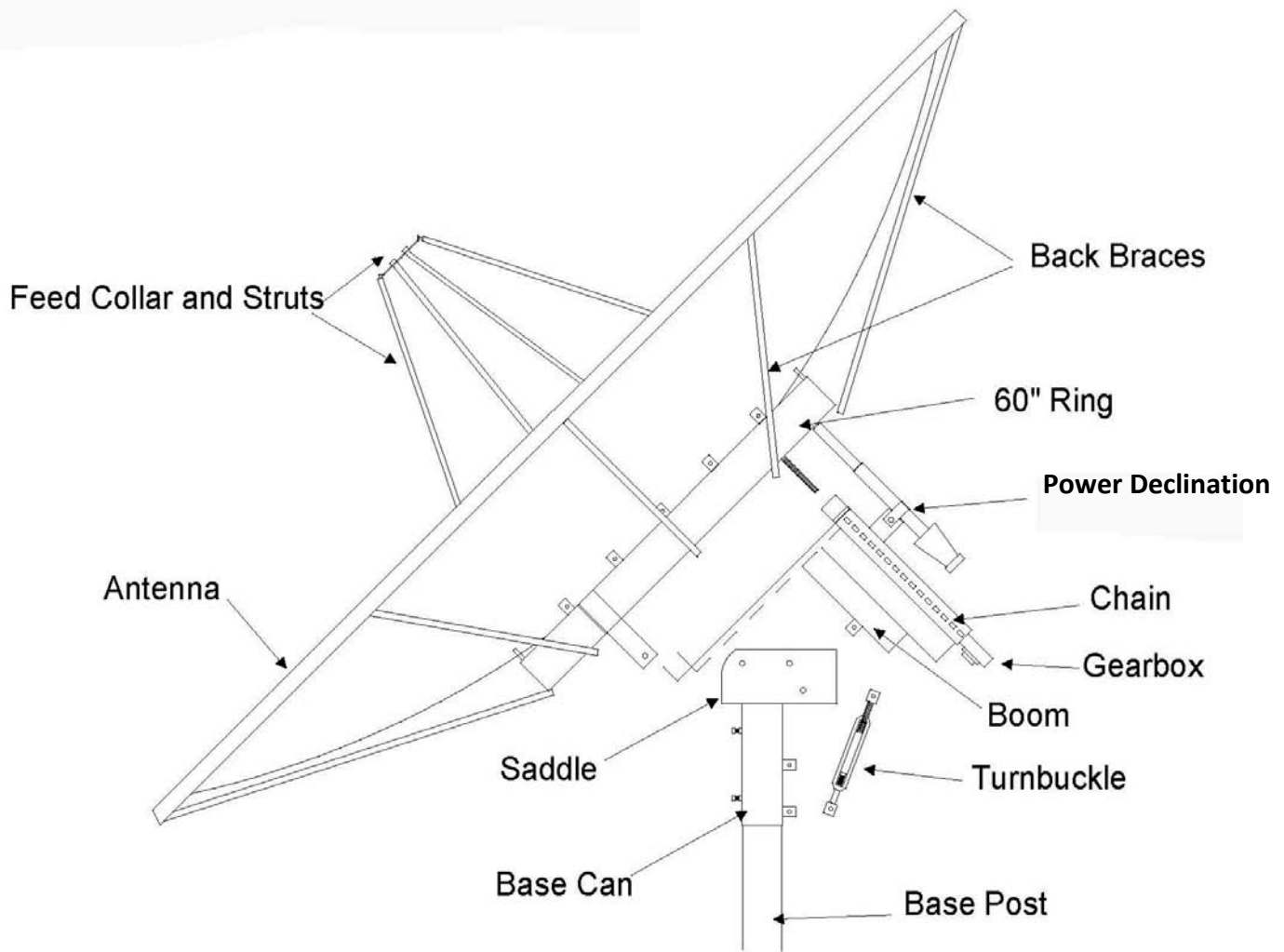
PO Box 239

Prairie du Chien, WI 53821

Phone: (608) 326-8406

Fax: (608) 326-4233

Horizon-to-Horizon Mount

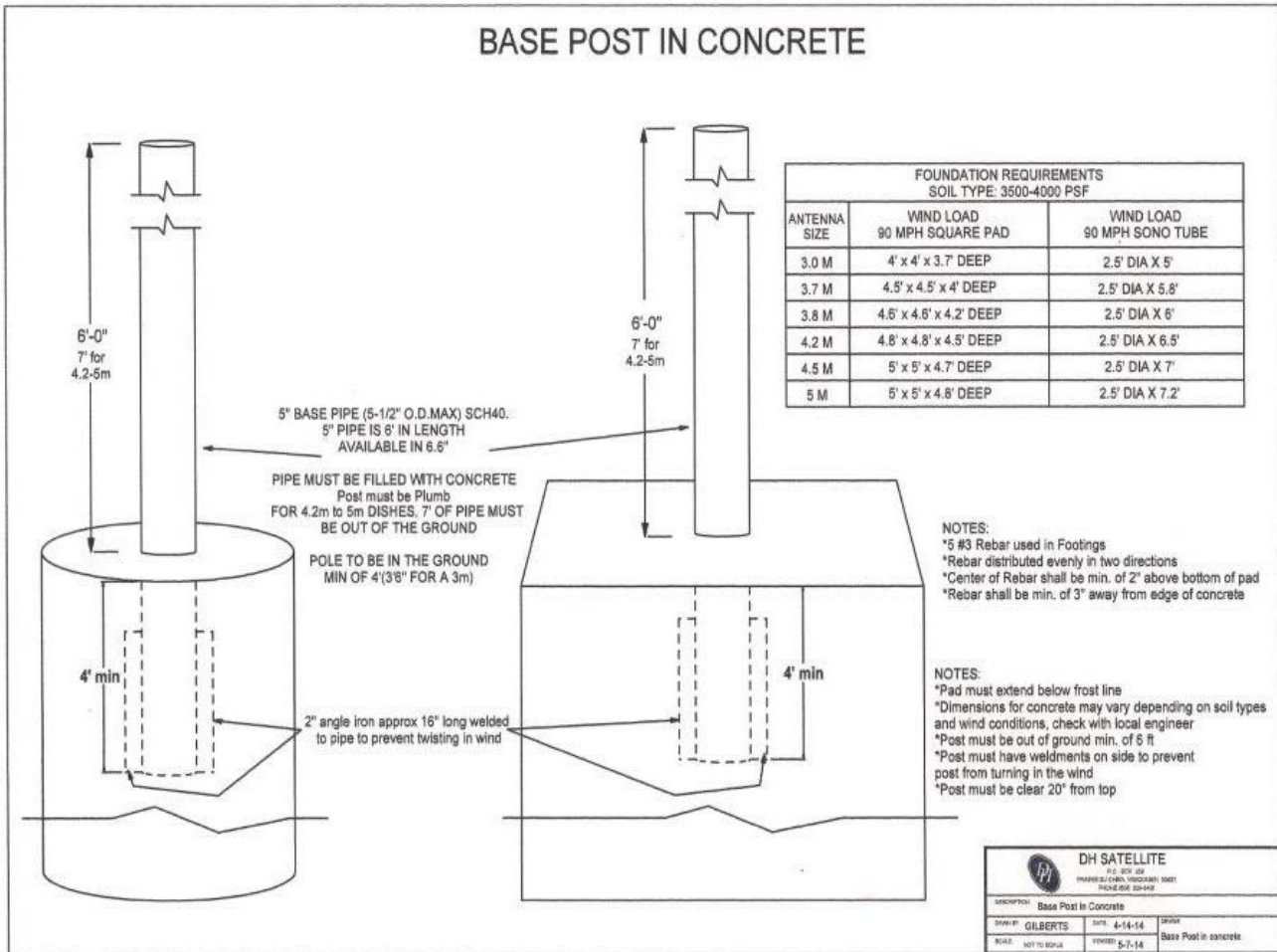


MGD
11/28/95
Revised: 4/28/99
Revised 2/22/13

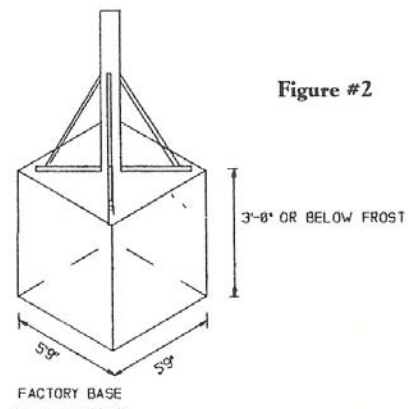
Installation of Base

Look at the drawings below, the first drawing shows the recommended concrete base. In areas of deep frost we recommend that this base go below frost levels. 1/2" rebar can be used to reinforce the structure, if required; contact your local concrete people or a local engineer to give you an idea of how much steel to use. **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.**

With the Horizon-to-Horizon mount you have a choice of two different base assemblies. The first is a base post (see figure #1). The base post is simply a 5" I.D. / 5 1/2" O.D. pipe that has weldments on the lower section. We recommend that the post be in the concrete at least 4'-0". When the post is set in concrete, be sure it is plumb.



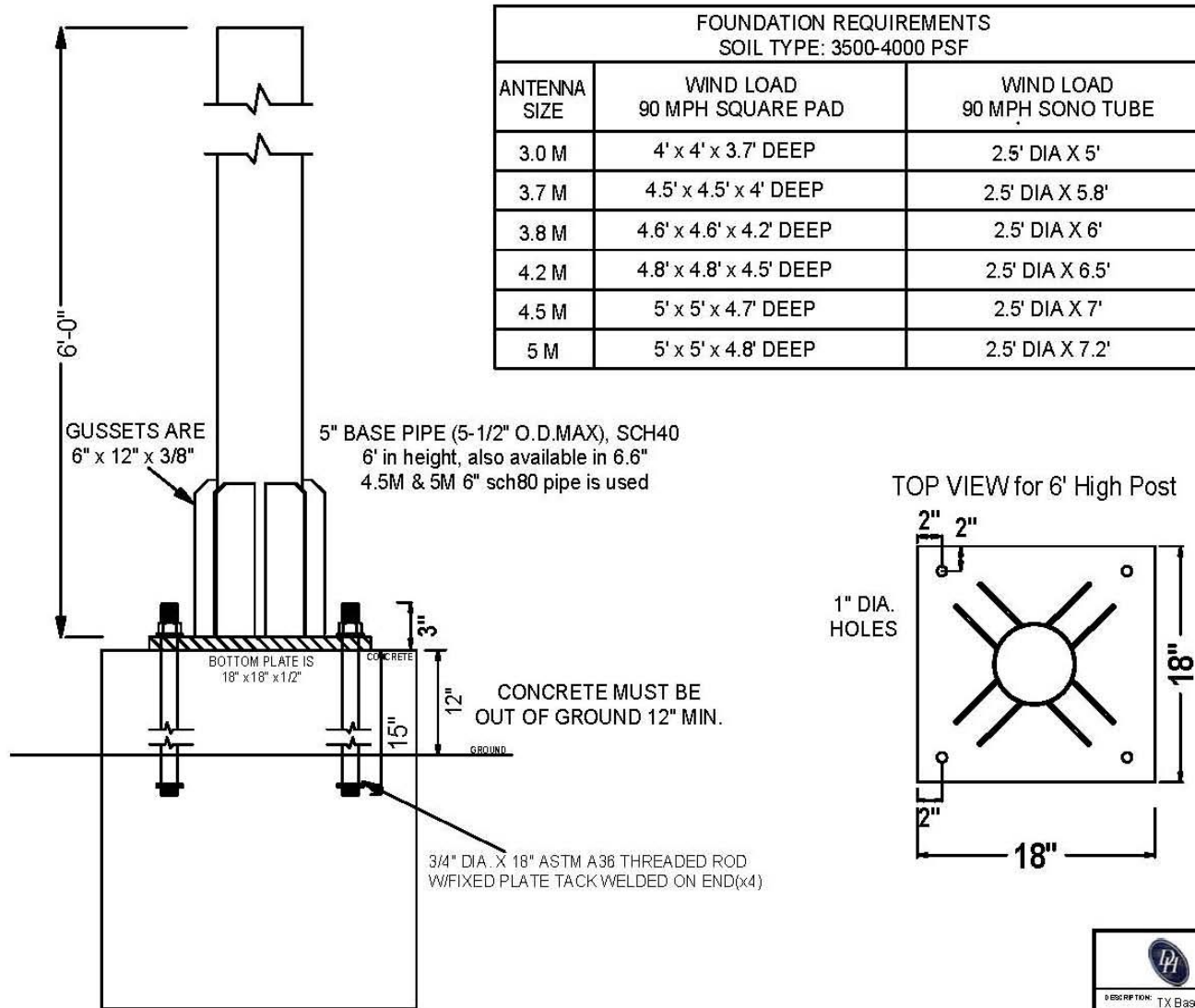
The four leg base stand assembly option is currently discontinued as of June 1st, 2013, but should you need to use this method please refer to figure #2 below. This base stand is designed to go above the ground and is installed on the concrete pad instead of in it. You can install this in either of two 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 the pad) and drill the holes into the concrete using the stand as the template. You must use a type of lead head, Garonite or a Parafast resin mortar to secure the bolts.




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.

Optional Base Post Sono Tube Installation

TX BASE STAND



 DH SATELLITE P.O. BOX 209 PARKFIELD CENTER, WINDO HORN, SIDA PHO: 85223 205408		
DESCRIPTION: TX Base Stand Foundations		
DRAWN BY: GILBERTS	DATE: 2-25-14	DRAWN: TX BASE STAND NEW FOUNDATION SIM
SCALE: NOT TO SCALE	REVISION: 4-21-14	

Assembly of the Ring to the Mount

Most of the time the mount will be assembled at the factory, unless the truck load won't allow for the extra room required when assembled. If your mount is not assembled, look at the sketch on page 1 and familiarize yourself with the orientation of the mount. Notice that the upper crossmember has two holes to slide over the declination adjustment bolts where the lower crossmember has the two holes in the end to attach to the swivel.

First put one 3/4" nut on each of the two declination bolts, then slide the 3" top frame over the bolt and thread on the second nut. Now go to the 3" bottom frame and line it up with the hole in the bracket on the lower section of the mount. Install the 3/4" x 2" bolts through the bracket and tighten into the end of the 3" lower frame member. (There should be a factory installed bushing in the bracket, make sure this is in place before installing the bolt.)

Once the unit is assembled and all bolts are tightened down, you can set the declination. To do this, set the angle of the boom the same as your latitude. Refer to the declination adjustment chart in the back of this manual on page 13. Now, adjust the top of the ring away from the boom by the amount of degrees you find on the chart. You do this by using the nuts on the upper 3" tube, first loosen both nuts and then tighten or loosen the inside nut or the outside nut to give you the offset angle (declination) you need.

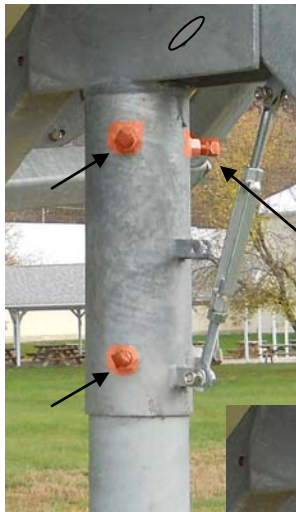
For example, our factory is located at 43 degrees north latitude. The chart on page 13 tells you that we must have 6.6 degrees declination. We first use the turnbuckle and elevate the boom to 43 degrees, now you tilt the ring ahead another 6.6 degrees. Your reading on the boom is 43 degrees and 49.6 degrees on the ring.

PREPARING THE BASE POST

Before setting the base can over the base post, please loosen the four set screws on the base can. With some assistance from another person lift this base can over the base post. Set the base can 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 the ring 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 over drilled this hole. 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.

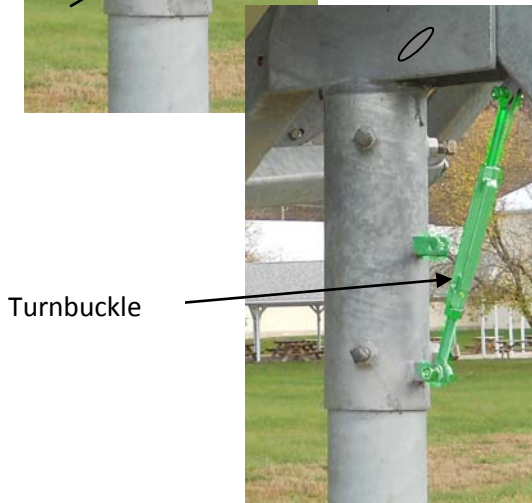
In most locations you will use the top hole in the boom. The lower hole in the boom is for areas below 20 degrees latitude. Use the second 3/4" x 5 1/2" bolt in the back top of the saddle and tighten it until the sides of the saddle compress against the boom. (See below).



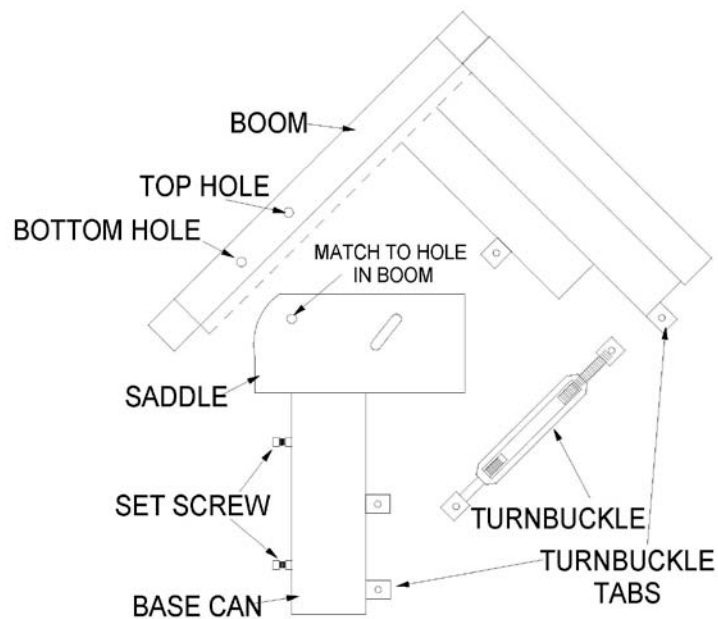
Base Can Set Screws



Saddle Elongated Hole



Turnbuckle



ASSEMBLING THE ANTENNA TO THE RING

This section/page is for assembly of a 1pc solid antenna or a sectional antenna assembled to install as a 1pc antenna.

(3M-5M)

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 option is using the Ground method.

Place the antenna face down and with a person under the antenna, you will place the ring on the antenna. Put the bolt from under side up through the dish and ring tabs. Attach the 8 back braces, clips, and tabs on the ring and tighten, but not too tight as we need to allow for flex. 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.

The second option is the Bird Bath method.

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 on the ring and the antenna. One is located next to one of the 16 1/2" holes in the dish and the other is located on one of the 16 blocks next to 1/2" holes on the mount. See figure #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 pick up the dish and set it into the ring making sure the pilot holes line up. **BE EXTREMELY CAREFUL IN HANDLING THE ANTENNA WHEN SETTING IT INTO THE MOUNT.** Now slip in the 1/2" x 3" bolts, (leave out every fourth 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 figure #6. **DO NOT OVER TIGHTEN.**

Figure #5

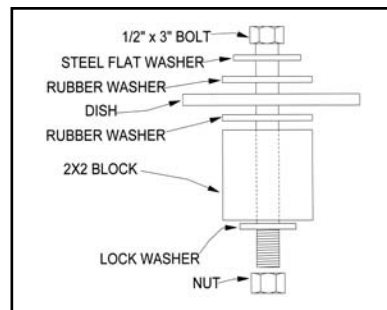
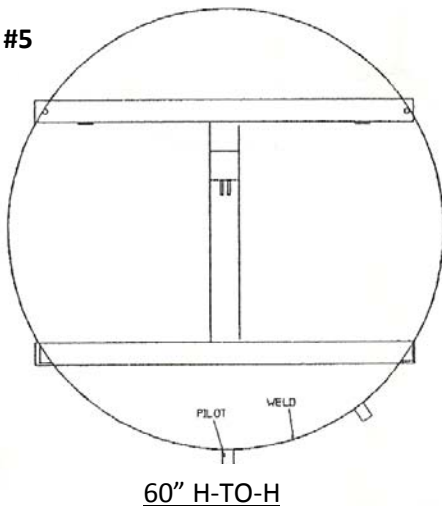
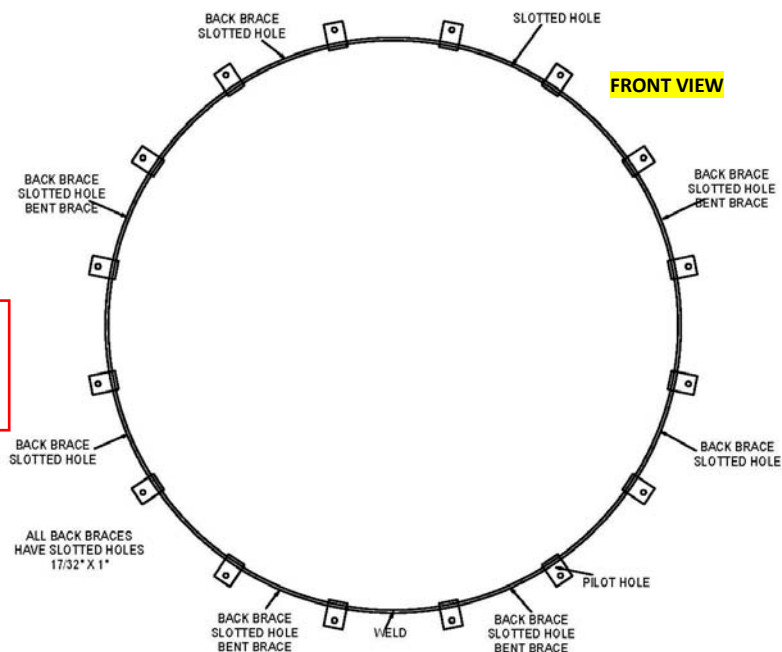


Figure #6

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

***FROM THE BACK VIEW OF ANTENNA**
Pilot hole is located on the 2nd block from the left of the weld on the ring.



IMPORTANT!!

If you have purchased a 4 piece or 8 piece sectional antenna follow the instructions on page 7A and 7B.

ASSEMBLY OF THE ANTENNA

(On Ground: Lift As One Piece Antenna)

The antenna will come in 4 or 8 pieces each having a color coded dot on the rib (see FIG. #9). **NOTE: After complete installation you will no longer see the colored dots.** You must take two sections and place them on a flat surface face down allowing for the installer to work on attaching the numbered ribs. The antenna must always stay in crate until assembled. (see FIG. #10). Take panel one labeled 08/1 and 08/2 and attach it to panel 2 which is labeled 08/2 on one rib and 08/3 on the other rib. Connect panel 1 with rib #2 (labeled 08/2) to panel 2 with rib #2 (labeled 08/2), matching the #2 on each rib of the two panels (See photos below). Install 3/8" x 1" bolts in all holes, finger tight. Continue on to the next panel in the same manner until finished with all panels. Now tighten all hardware.

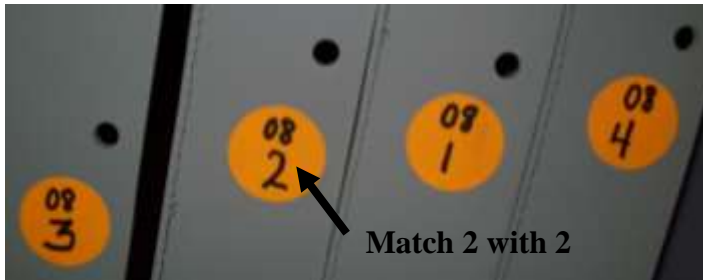


FIG. #9



FIG. #10

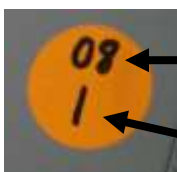
NOTE:

The aluminum antenna is also stamped in the lip. This number reflects the position of the panel.

The number stamped on the rib reflects the antenna as a whole for bulk shipping. Each section has one rib stamped. The number will be the same on all ribs making it one complete antenna.



Rib

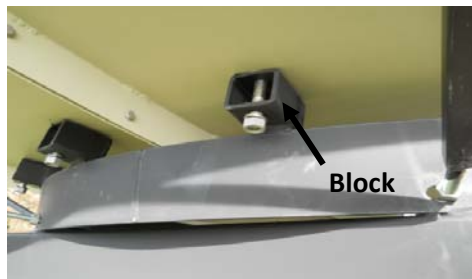
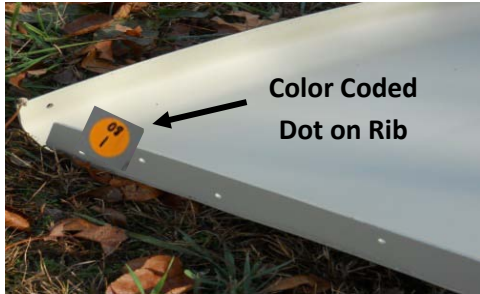


The top number represents the serial number of the antenna. **Example:* In FIG. #9 you will see 4 sections with the top number 08. You will take all four pieces of 08 to make one complete antenna.

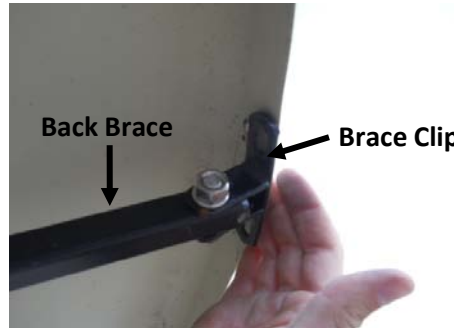
Rib number. **Example:* On a 4 piece 3.0m antenna the dot will have a 08 on the upper part of the dot (serial number) and the lower number of 1, 2, 3, 4 are the rib numbers.

See optional sectional installation on page 7B: "Installing by Sections to Ring"

Installation Photos: Additional Help for Installing by Sections to the Ring



Installation Photos: Additional Help for Installing by Sections to the Ring



“OPTIONAL ASSEMBLY METHOD”

(Install By Sections: Using 2-3 People)

Assemble mount and put mount in birdbath position. Be sure to lock the mount with ratchet straps once in birdbath position. (See picture C, birdbath below)

Step 1: Install the brace clips to the back braces with 3/8” x 2” bolt, 3/8” nut and 3/8” lock washer before placing on the antenna lip and ring. Have all 8 brace clips installed on the brace before going to the next step. See brace clip and back brace photos below.

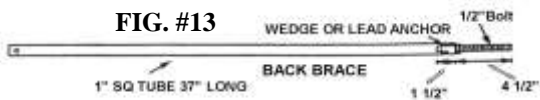
Step 2: Install brace clips to the ends of the 8 back braces and install the 1/2” nut on the threaded rod end of the back brace, threading it down approximately 4 to 4 1/2” down the threaded rod (see FIG. #13 and #14).

Step 3: Take the first panel and install it to the ring of the mount finger tight. Be sure to find the pilot hole on the mount and on the antenna. Take the back brace that is ready and put the threaded rod through the tab on the ring (see photo A). Take the other end of the rod with the clip and attach the brace and clip to the lip of the antenna section (see picture B).

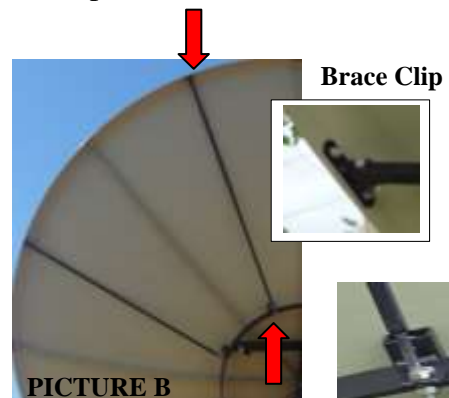
Step 4: Insert 1/2” x 3” bolt (see FIG. #17 for washers and rubber placement) from the antenna to the mount. Have one person continue holding the panel in place while the second person attaches the back brace. (Remember the threaded end of the back brace should already have the 1/2” nut on the threaded end about 4-4 1/2” on the threaded rod and the bent tab already installed on the ring, see FIG. #15). Insert the threaded rod of the back brace into the bent tab and bolt brace clip on the edge of the antenna with 1/4”x 3/4” bolt, 1/4” nut and 1/4” lock washer. Make sure everything is finger tight.

Step 5: Pick up the second antenna panel and be sure the numbers line up and bolt in place just like the first panel. (see FIG. #9) Once secure you can begin bolting the two units together by placing the 3/8” x 1” bolts through the templates. Again only finger tight. Continue for the next 6 panels.

STEP 6: You will notice all 8 bolts in the face of the antenna have been installed from the antenna to the ring at his point. You now remove every other bolt from the face of the antenna and replace them with a feed strut. (See preparing the feed assembly on page 9)



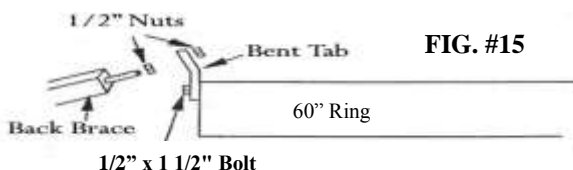
PICTURE A



PICTURE B



Brace Tab Threaded



Back braces are measured by tube length only.



PICTURE AA

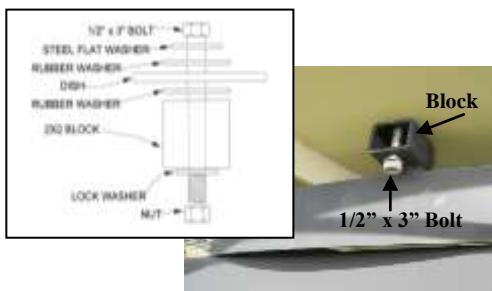


FIG. #17



PICTURE C

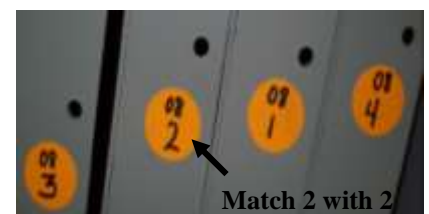


FIG. # 9

ASSEMBLING AND INSTALLING THE BACK BRACES

NOTE: 3.7m and 3.8m antenna systems have 15/16" galvanized round tube back braces. 4.2m, 4.5m and 5.0m antenna systems have square tube back braces. Please refer to mechanical drawing specifications on page 8A.

There are eight holes around the rear of the 60" ring to accept the braces. First install the bent tabs to the ring. (See figures #7 and #8). The angle clip is a piece of steel, bent in the middle approximately 1 1/2" x 3" long with two 1/2" holes; you will find these in the bolt bag. First fasten the clip with 1/2" bolts to the 60" ring; now thread one 1/2" nut about 2/3 of the way down on the 1/2" rod end of the brace. Slip the rod end through the clip and install another 1/2" nut. **Only tighten these finger tight.** Now go to the edge of the dish and place the two 1/4" x 3/4" bolts through the dish and into the end of the brace clip and tighten with 1/4" nuts. Repeat this on all eight braces on the 3.7M, 3.8M, 4.2M, 4.5M and 5.0M Antenna.

The following is a list of the different back braces for the different size antennas. Check this chart to be sure you have the right length braces. Listed is tube length only and does not include the bracket or the bolt in this measurement. Refer to figure #9.

Dish Size	Focal Length	Tube Length	
10' (3.0m)	36" f/l	None	
11' (3.3m)	36" f/l	40"	Discontinued
12' (3.7m)	57.6" f/l	45"	
12'5" (3.8m)	57.6" f/l	47"	
12' 9" (3.9m)	57.6" f/l	50"	Discontinued
14' (4.2m)	57.6" f/l	55 1/4"	
14' 9" (4.5m)	57.6" f/l	62 1/2"	
16' (5.0m)	57.6" f/l	68 1/2"	



Figure #9

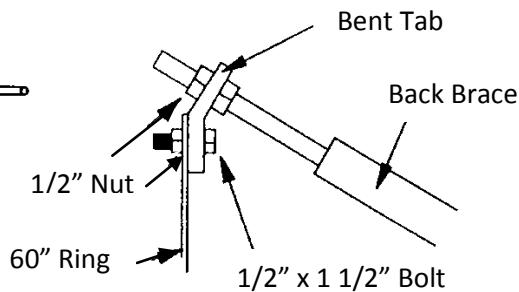
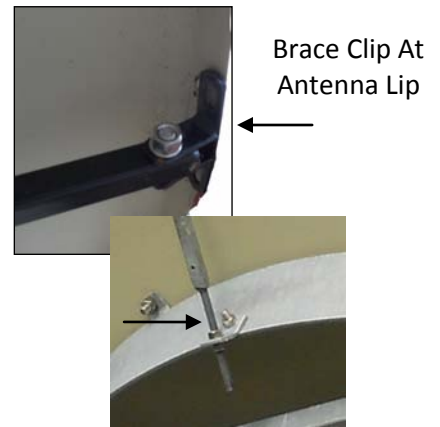


Figure #8



Brace Tab Threaded At Ring

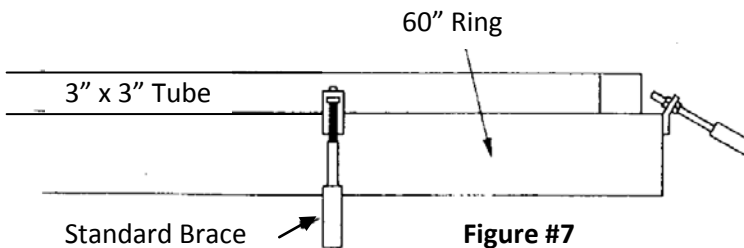
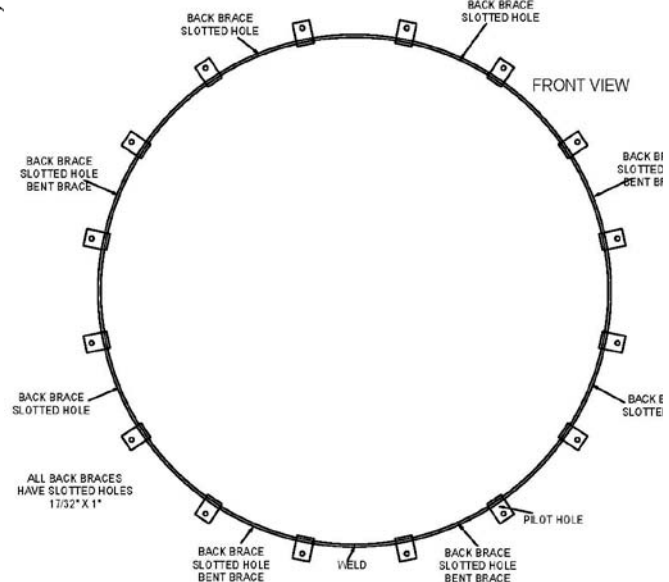


Figure #7

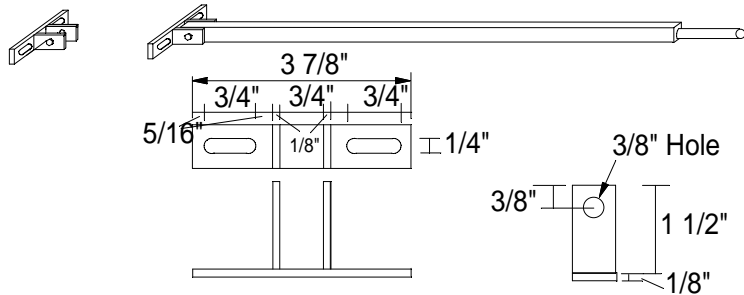


Back Brace To Clip

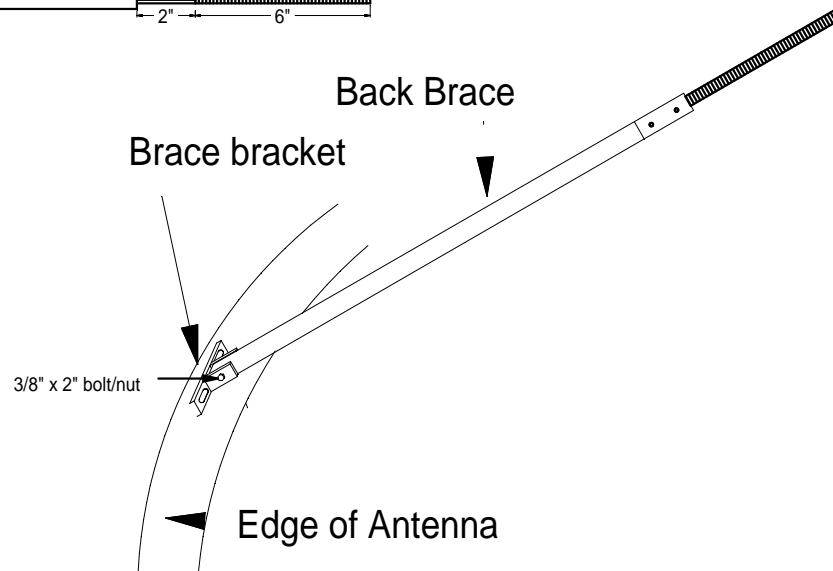
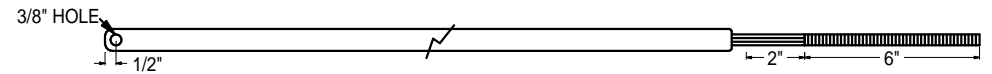
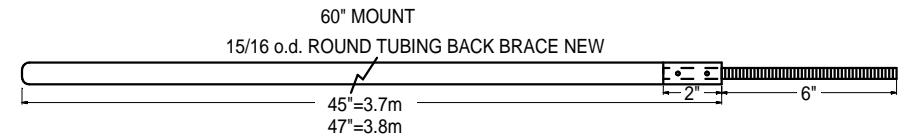
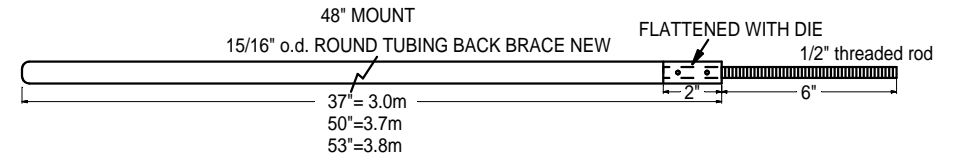
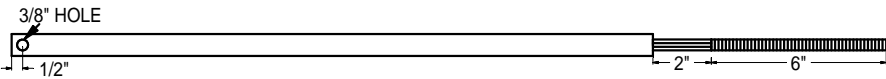
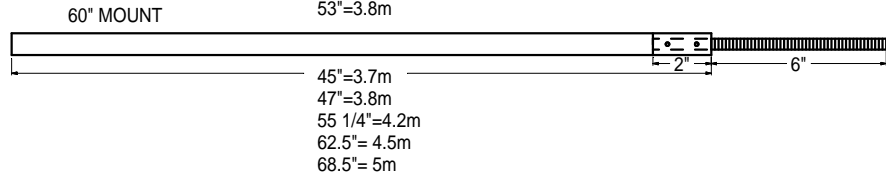
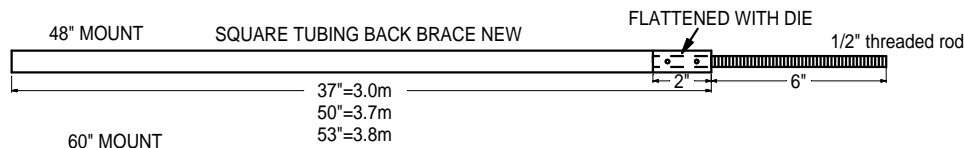
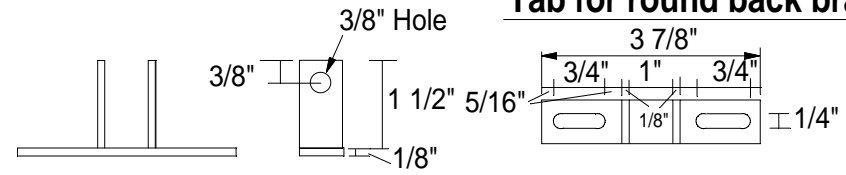



***FROM THE BACK VIEW
Pilot hole 2 tabs to the left from weld on the ring.**

Tab for square back brace



Tab for round back brace



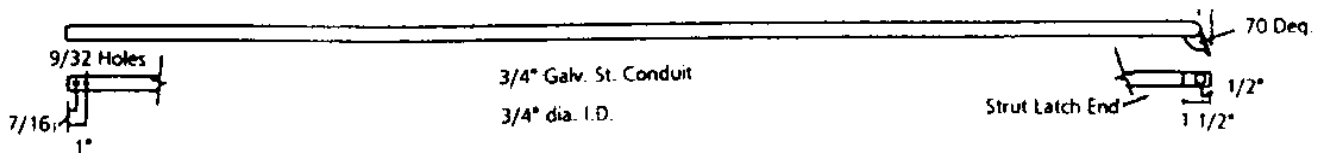
 DH SATELLITE P.O. BOX 239 PRAIRIE DU CHIEN, WISCONSIN 53821 PHONE (608) 326-8406		
DESCRIPTION: BACK BRACES NEW DESIGN		
DRWN BY: GILBERTS	DATE: 12-12-17	DRWGR: back brace new
SCALE: NOT TO SCALE	REVISED: 4-9-18	

New style collar C14F2018 transition will start April 16th, 2018 please refer to page 9A for setup.

Preparing the C Band Feed Assembly C14F

If the feedhorn you have selected has an adjustable scalar ring, move it to the proper wave guide setting as per the manufacturer's instructions. Below we have listed the focal lengths and focal length diameter ratios for our commercial antennas. Just find your antenna and you will have the information to set the scalar properly. **Special Note: More critical than setting the wave guide to the manufacturer's recommendations is to make sure you are setting the feedhorn at the correct focal length of the antenna.**

Antenna Size	Focal Length	Focal Distance
10' (3.0m)	36" f/l	.3 f/d
11' (3.3m)	36" f/l	.28 f/d Discontinued
12' (3.7m)	57.6" f/l	.4 f/d
12'5" (3.8m)	57.6" f/l	.378 f/d
12'9" (3.9m)	57.6" f/l	.375 f/d Discontinued
14' (4.2m)	57.6" f/l	.34 f/d
14'9" (4.5m)	57.6" f/l	.33 f/d
16' (5.0m)	57.6" f/l	.3 f/d

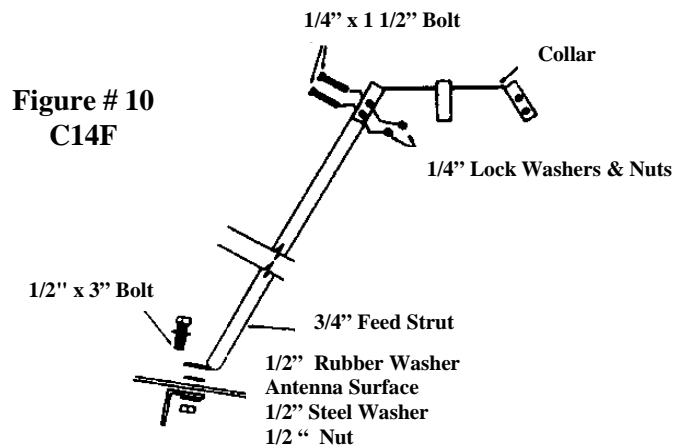


NOTE: C14F Strut length includes bent end.

Your DH representative should have asked you what type feed you will be using. We need this information to be assured we are sending the proper collar to attach your feed to our struts. A DH C14F is supplied as standard unless you have made a request for another style collar. Place the C14F collar or collar supplied on the back of the feedhorn scalar ring. Turn the scalar plate off the feedhorn so that all three holes line up between the slotted holes on the feed collar. Insert the 1/4" x 3/4" bolts through the scalar ring and then thru the collar; fasten with the 1/4" nuts. (Most C-band and dual feeds have a 3-bolt pattern on the scalar ring as described above).

For heavy duty SEAVEY (C24HD) or heavy duty CHAPARRAL (C14FHD) feed assembly please refer to page 10 and page 11.

For CHAPARRAL type feeds, refer to Figure #10. Slip the feed strut into a tab on the collar and line up the two holes. Insert the 2 – 1/4" x 1 1/2" bolts into the holes and tighten with the 1/4" nuts. Proceed with all four struts then check focal length and tighten down. Use every fourth hole. The actual focal length should be 1/4" inside the waveguide for C-band and 1/8" for Ku band.

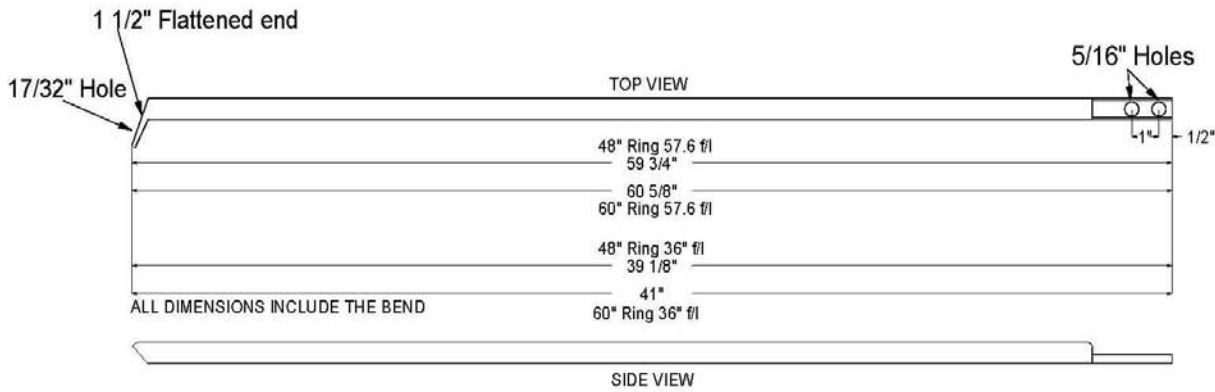


For use of Chaparral Feeds C14F

Preparing the C Band Feed Assembly C14F2018

If the feedhorn you have selected has an adjustable scalar ring, move it to the proper wave guide setting as per the manufacturer's instructions. Below we have listed the focal lengths and focal length diameter ratios for our commercial antennas. Just find your antenna and you will have the information to set the scalar properly. **Special Note: More critical than setting the wave guide to the manufacturer's recommendations is to make sure you are setting the feedhorn at the correct focal length of the antenna.**

Antenna Size	Focal Length	Focal Distance
10' (3.0m)	36" f/l	.3 f/d
11' (3.3m)	36" f/l	.28 f/d Discontinued
12' (3.7m)	57.6" f/l	.4 f/d
12'5" (3.8m)	57.6" f/l	.378 f/d
12'9" (3.9m)	57.6" f/l	.375 f/d Discontinued
14' (4.2m)	57.6" f/l	.34 f/d
14' 9" (4.5m)	57.6" f/l	.33 f/d
16' (5.0m)	57.6" f/l	.3 f/d

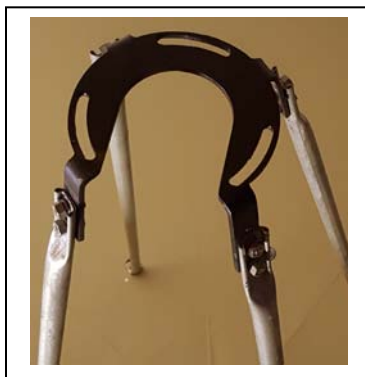


NOTE: C14F2018 Strut length includes bend in measurement.

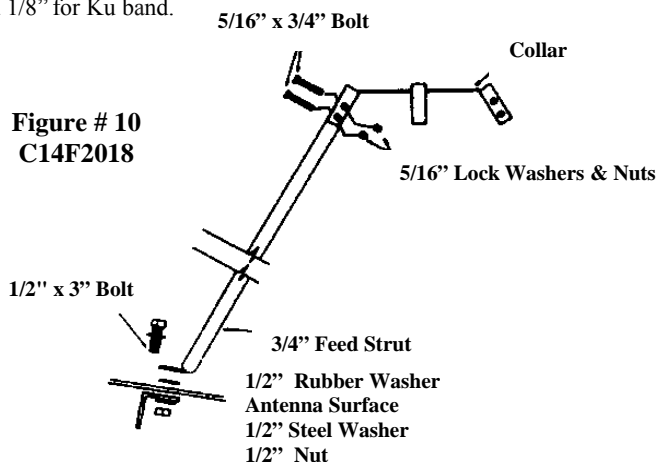
Your DH representative should have asked you what type feed you will be using. We need this information to be assured we are sending the proper collar to attach your feed to our struts. A DH C14F2018 is supplied as standard unless you have made a request for another style collar. Place the C14F2018 collar or collar supplied on the back of the feedhorn scalar ring. Turn the scalar plate off the feedhorn so that all three holes line up between the slotted holes on the feed collar. Insert the 1/4" x 3/4" bolts through the scalar ring and then thru the collar; fasten with the 1/4" nuts. (Most C-band and dual feeds have a 3-bolt pattern on the scalar ring as described above).

For heavy duty SEAVEY (C24HD) or heavy duty CHAPARRAL (C14FHD) feed assembly please refer to page 10 and page 11.

For CHAPARRAL type feeds, refer to Figure #10. Slip the feed strut into a tab on the collar and line up the two holes. Insert the 2 – 5/16" x 3/4" bolts into the holes and tighten with the 5/16" nuts. Proceed with all four struts then check focal length and tighten down. Use every fourth hole. The actual focal length should be 1/4" inside the waveguide for C-band and 1/8" for Ku band.



C14F2018



For use of Chaparral Feeds C14F2018

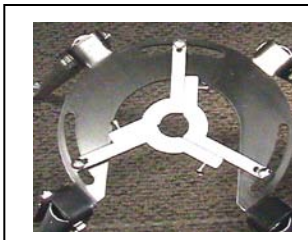
Heavy Duty Feed Strut

We have developed a new feed strut and collar for the heavier 4 Port Seavey and Chaparral feed assemblies. This utilizes the rectangular aluminum tube for the feed strut. **Refer to the drawing on page 11 for the bolt placement of a C14FHD or C24HD.** Each strut has 2 - 5/16" x 2 1/4" bolts to attach to the feed collar. Attach one of the angle brackets (2" x 2") to the antenna with the 1/2" x 3" bolts. Notice that angle brackets have two holes. The bottom hole is for a Seavey type feed (C24HD). The top hole is for a Chaparral type feed (C14FHD). Next, attach the base of the strut to the angle brackets with the 5/16 x 1 1/2" bolts supplied. Align the feed to point directly at the center of the antenna. Measure the focal length to the front of the scalar rings. **(Seavey recommends f/l is measured to front of scalar ring.) (Chaparral measures 1/4" inside the wave guide.)**

Ku Band Feed Assembly-----

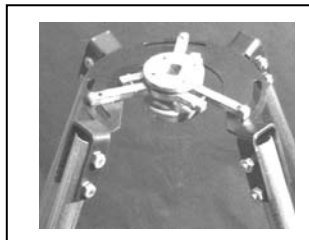
When using the Ku only feeds, you will be using the C14F or C14F2018 feed plate and tri-collar. See Figure 13 and Figure 15 below. First, **attach the flat tri-collar to the feedhorn** as follows: attach the first two pieces by using the 8-32 x 1" screws provided. Now slide the collar onto the feedhorn and add the third piece; tighten evenly. Attach the tri-collar to the larger horseshoe collar by the 8-32 x 3/4" bolts and nuts; tighten down. You can adjust polarity by loosening these nuts and rotating the feed. Finish by assembling the struts to the feed collar as shown in Figure 14 for C14F feed plate and Figure 16 for C14F2018 feed plate. (Fig#14, Fig#16 shows a single Ku feed inserted in a collar)

Figure #13



C14F with Ku tri-collar

Figure #14



C14F with single Ku feed

Figure #15



C14F2018 with Ku tri-collar

Figure #16



C14F2018 with single Ku feed

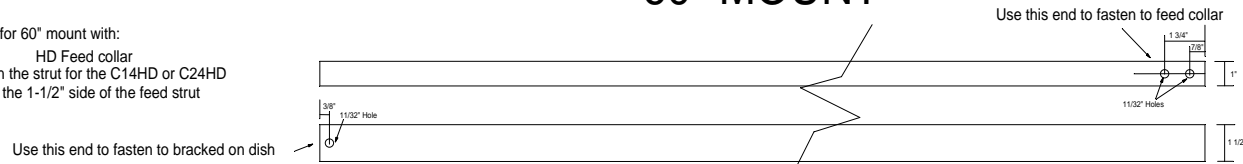
NOTE: New Style Collar C14F2018 Transition Starts April 16th, 2018

Fine Tuning the Antenna-----

After the assembly is complete, we recommend you "string the antenna." Simply run a string from a back brace across the front of the antenna to the brace 180 degrees apart. Now do this with each brace. If the strings all meet in the middle and no pressure is on any of them, the antenna is perfect and no further work needs be done. If one of the strings is not close to the others, then step back and sight across the dish and see where you will have to push with the back braces. Only make small adjustments at a time and remember to start with all braces loose. After you are sure the antenna surface is flat, you should double check to see that the feedhorn *is* set at the proper distance, then check to see that it is pointed at the center of the antenna. In our years of setting up antennas, these three items seem to cover over 98% of all problems of picture quality (See also page 12).

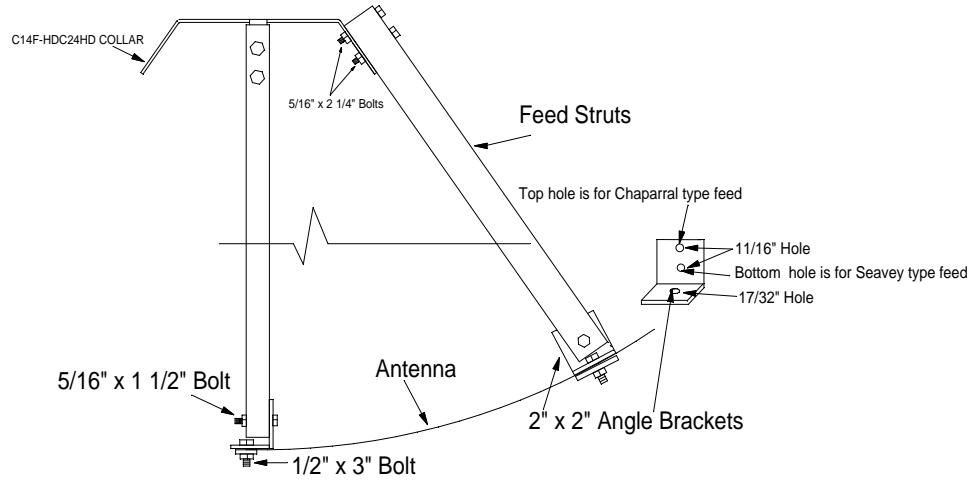
60" MOUNT


Notes
 This strut is used for 60" mount with:
 HD Feed collar
 Use the 2 holes on the strut for the C14HD or C24HD
 Bolt goes through the 1-1/2" side of the feed strut



FOR ANTENNAS: 3.7m, 3.8m, 4.2m, 4.5m, 5m use 59"x1"x1.5" struts
 FOR 3 METER Antenna use 39"x1"x1.5" struts

C14F-HD or C24HD



 DH SATELLITE P.O. BOX 239 PRAIRIE DU CHIEN, WISCONSIN 53821 PHONE (608) 326-8406		
DESCRIPTION: FEED ASSEMBLY FOR C14F-HD & C24HD 60" RING		
DRWN BY: MD/GILBERTS	DATE: 12-15-14	DRWGR:
SCALE: NOT TO SCALE	REVISED: 3-2-16	C14HD feed for 60ring

ADDITIONAL FINE TUNING TECHNIQUES

To receive the optimum from your antenna, you must take time to fine tune the antenna. What are the antenna adjustments? They are: make the front surface flat, be sure the feed looks at the center of the dish, and set the proper focal length. You must also be pointed at the satellite and have the feedhorn skew properly adjusted.

Many of the adjustments are done without any measurement of the signal, and in fact require no signal at all. The adjustment of making the front surface flat, adjusting the focal length, and aligning the feed will be done without signal. You will use the strings and the back braces to make the dish flat, a focal finder and measure tape to align the feedhorn to find center, and set the focal length using a measure tape to measure from dish to feedhorn. You will use a satellite tool to locate signal in further steps of fine tuning.

We feel that you must use strings to assure the front of the dish is flat. The strings must be taut and run from brace to the opposite brace at 180 degrees. A larger dish with 8 braces needs four strings. Do all adjustments with the braces loose. The strings must touch at the center, if they do not, sight the dish from the side to see which braces should be slightly adjusted to make the front surface of the antenna perfectly flat. **CAUTION: do not over tighten the 12 bolts that hold the dish to the ring as they can distort the dish.**

The easiest way to assure yourself that the feedhorn is looking directly at the center of the antenna is to use a Focal Finder (SEE PHOTO "A" BELOW) or to make a tool to assist in finding the center of the antenna. You can if no focal finder is available, cut a 1" X 4" board to the length of the antenna's focal length. Held vertically against the feed it should point at the center of the antenna, this will be true at the horizontal plane as well.

DH recommends using an A1 Turbo S2 made by Applied Instruments or another tool such as a spectrum analyzer to locate your satellite signal in order to complete the following steps:

Setting the Azimuth: To set the azimuth of the system you will use the base can and a tool to locate and measure signal. Find a satellite signal using the A1-Turbo or another satellite tool that will show signal spiking. Any signal strength will work. This is your reference point. Now you will go from bad signal to bad signal. From this reference point you will move the antenna left of the reference point to see if the signal gets better or worse and right of the reference point to see if this makes it better or worse. When you see the location of the base can for the best signal, you will tighten down the set screws on the base can. **(Special Note: It is best to make a mark on the pole and base can to reference your starting point before making any moves with the base can. Remark your base can and pole so that you now know the location that is allowing the strongest satellite signal.)**

Setting the Elevation: You will use the turnbuckle assembly to make this adjustment and again you will go from bad to bad signal and find the center point with the best signal strength. Again, to make this adjustment you will only use the turnbuckle. **It is best to mark the starting point of the threaded rod or count the turns so you know exactly where you started before making slight adjustments with the turnbuckle assembly.**

Skewing the feedhorn: You will rotate the feedhorn again going from left or right of the marked reference location for your feedhorn to find your strongest signal. Once you find your strongest signal tighten down into place.

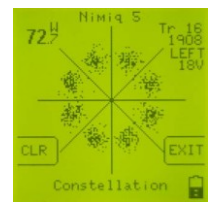
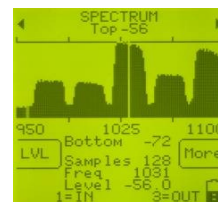
Keep in mind when you are making these last "Additional Fine Tuning Techniques" very small moves will be needed to make the best improvements in signal strength.



PHOTO A
Focal Finder to Locate
Center of Antenna



**A1 Turbo S2 Made By Applied
Instruments**



Polar Tracking a DH Antenna

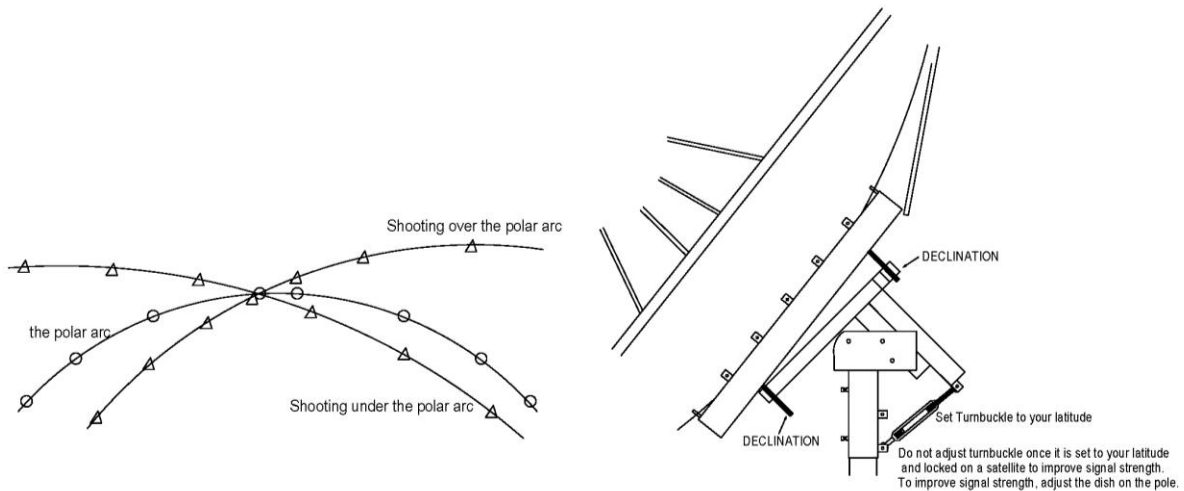
1. Point the Antenna system at your most direct southern satellite for your longitude.
2. Set the boom at your site's latitude.
3. Ensure that the top cross bar of the mount is directly horizontal with the boom and that the boom is pointed north to south.
4. Measure the off-set for your site latitude: (if the site is at 43 deg. Lat and 91 deg. Long): Set the boom to 43 degrees and ensure the top bar is horizontal with the boom, measuring the rings position with a digital inclinometer. This particular site would have a 6 degree off-set. This means the ring should be around 49 degrees. (if you need to make adjustments to the offset, use the declination adjustment on the left and right side of the ring near the top of the ring and the bar).
5. Aim the antenna at the most southern satellite and then peak the signal from this satellite with the Applied Instruments Turbo S2 or your test instrument. Then you will need to move the base can on the pole very slightly to the left or right to peak the signal even further.
6. Once you are satisfied with the location of the base can, mark the base can and base post to reference your spot. This will also be your reference satellite that you will return to in the next steps.
7. Track to the next satellite using the drill to motor the antenna over east or west. Once a signal is obtained on the Turbo S2 or other instrument, slightly move the antenna east or west with the drill. Once this signal has peaked, choose another satellite that is 10 to 20 degrees further and motor over to its position to see if a signal can be obtained (for the site referenced 43 deg. Lat and 91 w long, the most southern satellite used was 91 deg, then the next satellite used to peak was 97 deg. Moving 10 or 20 degrees AMC11(131 deg.) was used.) Peak this satellite signal until you are happy with the signal.
8. Once you have peaked, make a slight turn on the turnbuckle, slightly moving the dish up and down. Using your Turbo S2 or other testing device, note if these adjustments make the signal better or worse. This will indicate if you are over or under the polar arc. Remember where the turnbuckle position started as you will need to put it back to this position.
If you increased the signal strength lowering the dish, this indicates that you were shooting over the arch. If you increased the signal by raising the dish, this indicates you were shooting under the arc. The following will correct that.

Adjusting arc

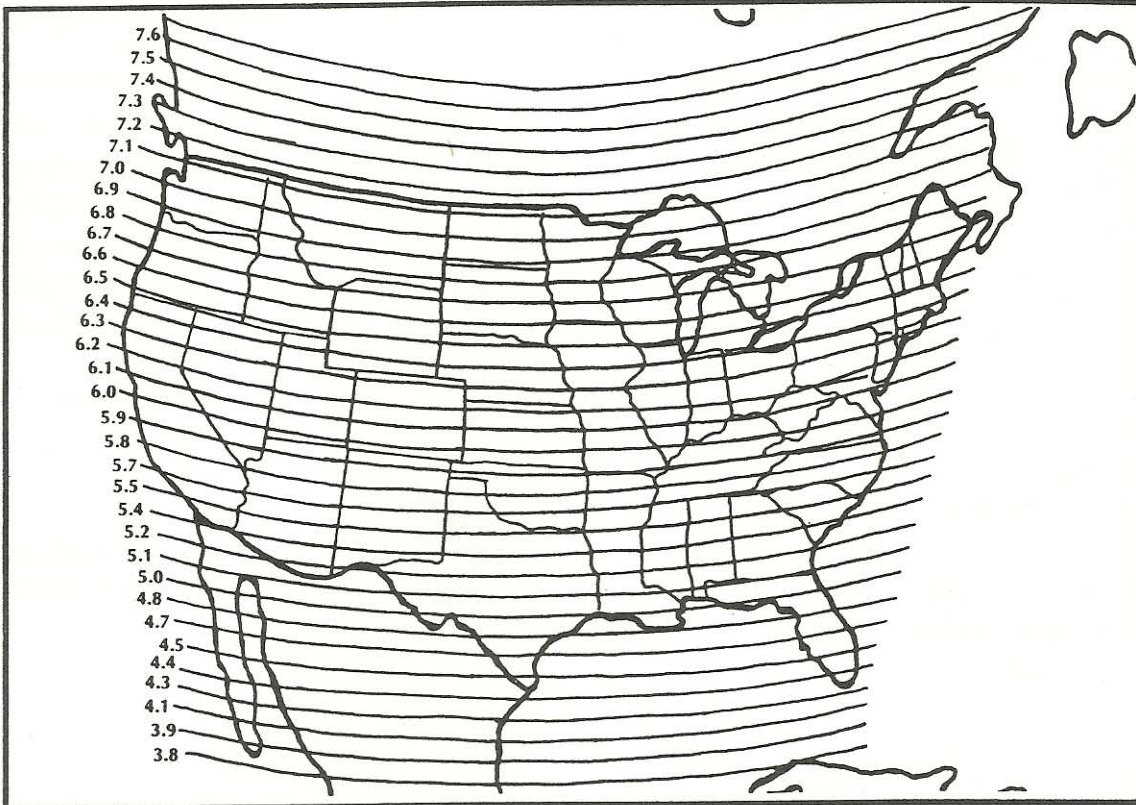
1. First, adjust the turnbuckle back to where it was before you made the move either up or down. Drive the dish back using a drill back to the most southern satellite that you started on and peak this signal out. Note: you must be peaked on your most southern satellite signal.
Looking at the mark that was previously made on the can/pole, rotate the dish assembly and base can.
2. If the last satellite you attempted to peak the signal on had a better signal by turning the turnbuckle and dish down, you will need to move the base can to the East about 1/8". If the signal was stronger when you raised the dish, you will need to move the base can to the West about 1/8".
3. Tighten down a set screw and mark on the can and pole where you just moved it. Motor the dish slightly east or west to repeak the southern most satellite you used as your reference satellite. Slightly adjust the turnbuckle if needed to peak the signal even further.

4. Once you obtain the best signal strength, drive the dish over with a drill to the last few satellite signals that you had done previously. Note if the signal strength has improved from the adjustments that were just made.

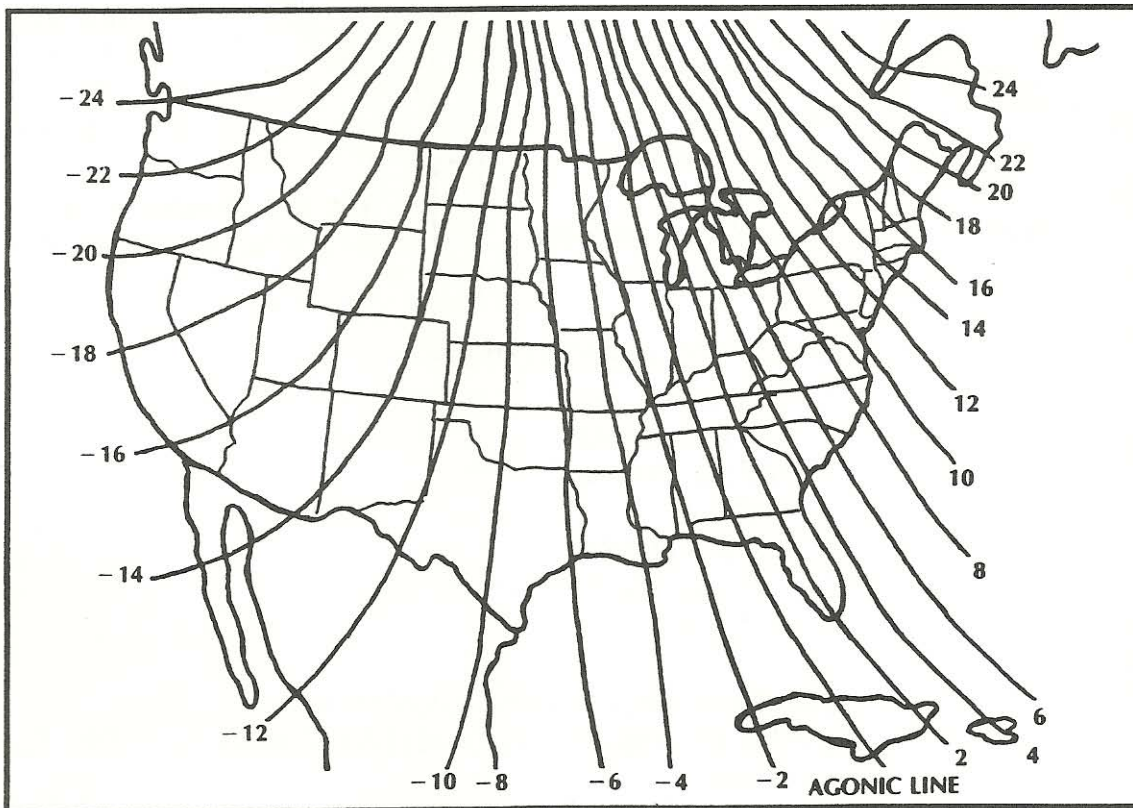
5. Peak the satellite signal out on the farthest satellite you are trying to obtain (we used 131W). Note the signal and then adjust the turnbuckle again either up or down seeing if this increases or decreases the signal strength. If it does, you will need to repeat the steps under **Adjusting arc** until you are satisfied with the signal strengths with the satellite signals you are trying to obtain.



Declination & Magnetic Variation Charts



Variation of Declination Offset Angle



Magnetic Variation

Horizon-to-Horizon Mount

With Power Declination Option

C14F

Feed Assembly

- 1- Set of 4 Struts
- 1- Collar (C, Ku)
- 8- 1/4" x 1 1/2" Bolts
- 8- 1/4" Lock Washers & Nuts

*C14F2018 **New Style Collar C14F2018**

Feed Assembly **transition Starts April 16th, 2018**

- 1- Set of 4 Struts
- 1- Collar (C, Ku)
- 8- 5/16" x 3/4" Bolts
- 8- 5/16" Lock Washers & Nuts

Feedhorn to Collar & LNB

- 3-1/4" x 3/4" Bolts
- 3-1/4" Lock Washers
- 3-1/4" Nuts

(LNB to Feed)

- 20-1/4" x 3/4" Bolts
- 20- 1/4" Nuts
- 20- 1/4" Lock Washers

Ku4FL: 3PC

Add to C14F

- 3- Section to 3pc collar
- 3 8-32 x 1" Bolts

3PC Collar to Horseshoe

- 3 8-32 x 3/4" Bolts
- 3- #8 Fender Washers
- 3 8-32 Nuts

Heavy Duty Feed Struts

C14F or C24

- 1- Set of 4 Struts
- 1- Collar (C, Ku)
- 12 - 5/16" Lock Washers & Nuts
- 4- 2' x 2' Angle Brackets
- 4- 5/16" x 1 1/2" Bolts
- 8- 5/16" x 2 1/4" Bolts

Back Braces

- 8- Back Braces
- 8- Brace Clips
- 8- Bent Tabs
- 8- 1/2" x 1 1/2" Bolts
- 24- 1/2" Nuts
- 8- 1/2" Lock Washers
- 8- 3/8" x 2" Bolts
- 8- 3/8" Nuts
- 8- 3/8" Lock Washers
- 16- 1/4" x 3/4" Bolts
- 16- 1/4" Nuts
- 16- 1/4" Lock Washers

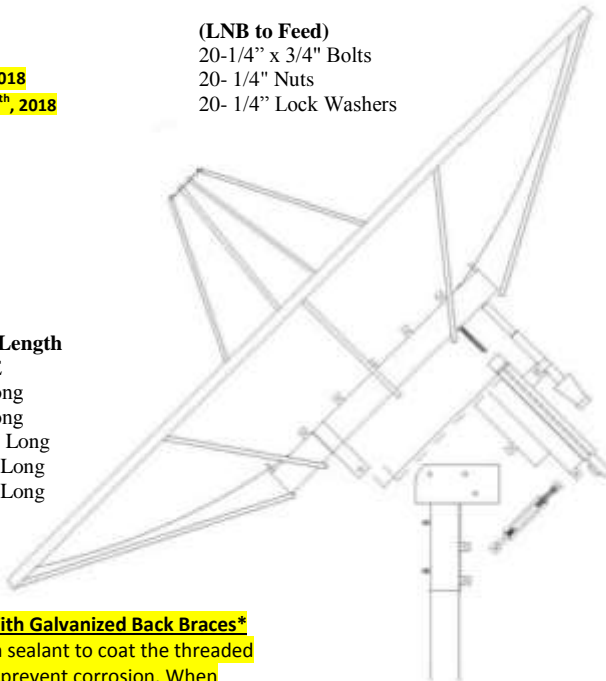
Back Brace Length

- 3.0m- NONE
- 3.7m- 45" Long
- 3.8m- 47" Long
- 4.2m- 55 1/4" Long
- 4.5m- 62 1/2" Long
- 5.0m- 68 1/2" Long

Highly Recommended On Systems With Galvanized Back Braces

Please use a rubberized spray or silicon sealant to coat the threaded rods on the end of back braces to help prevent corrosion. When doing annual maintenance on your antenna system please make sure to check as it may need to be reapplied.

NOTE: 3.7m and 3.8m antenna systems have 15/16" galvanized round tube back braces. 4.2m, 4.5m and 5.0m antenna systems have square tube back braces.



Power Declination

- 1- 1/2" x 3 1/2" Bolt
- 1- 1/2" Nut
- 1- 1/2" Lock Washer
- 1- 3/4" x 2 1/2" Bolt
- 1- 3/4" Lock Washer
- 1- 3/4" Nut
- 2- 3/4" Washers

Turnbuckle

- 1- Turnbuckle
- 2- 1/2" x 1 1/2" Bolts
- 2- 1/2" Lock Washers
- 2- 1/2" Nuts
- 1- 8" Spade Bolt

Antenna to Ring

(16 Block)

- 16- 1/2" x 3" Bolts
- 16- 1/2" Flat Washers
- 32- 1/2" Rubber Washers
- 16- 1/2" Lock Washers
- 16- 1/2" Nuts

Base Can to Mount

- 2- 3/4" x 7" Bolts
- 2- 3/4" Nuts
- 2- 3/4" Lock Washers
- 2- 3/4" Flat Washers

NOTE: SECTIONAL ANTENNAS INCLUDE ADDITIONAL HARDWARE, SEE TABLES BELOW

Template Rib Hardware: Sectional				
Antenna Size	3/8" x 1" Bolts	3/8" Lock Washers	3/8" Nuts	3/8" Flat Washer
3.0M	24	24	24	48
3.7M	28	28	28	56
3.8M	28	28	28	56
4.2M	64	64	64	128
4.5M	72	72	72	144
5.0M	72	72	72	144
Splice Straps: Sectional				
Antenna Size	Splice Straps	1/4" x 3/4" Bolts	1/4" Lock Washers	1/4" Nuts
3.0M	4	8	8	8
3.7M	4	8	8	8
3.8M	4	8	8	8
4.2M	8	16	16	16
4.5M	8	16	16	16
5.0M	8	16	16	16

If you have upgraded to an 8PC 3.7M sectional antenna please refer to the tables below for additional hardware needed.

Template Rib Hardware: Sectional				
Antenna Size	1/4" x 3/4" Bolts	1/4" Lock Washers	1/4" Nuts	
3.7M	104	104	104	
Splice Straps: Sectional				
Antenna Size	Splice Straps	1/4" x 3/4" Bolts	1/4" Lock Washers	1/4" Nuts
3.7M	8	16	16	16

NOTE:

Stainless steel or DURA-CON® hardware provided.

*DURA-CON® is a corrosion resistant coating.

DURA-CON®: Problem of thread-galling is eliminated.

Power Declination Option

Look carefully at the drawing on page 14. This shows where the declination actuator is placed on the mount. This mount must be ordered from the factory with this option as it is not a retrofit kit. The end of the actuator attaches between the two tabs that are welded to the square tube attached to the ring using a $3/4"$ x $2\ 1/2"$ bolt, flatwashers, lockwasher and nut. The actuator clamp is attached to the actuator as per the manufacturer's recommendation. This clamp is then attached to the power declination bracket connected to the boom end of the mount using a $1/2"$ x $3\ 1/2"$ bolt, lockwasher and nut.



MISSING PARTS WARRANTY

You have obtained one of the best antennas on the market today! We hope that you will be happy with your new DH Antenna.

To better acquaint you with our system, we ask that you read the instruction manual and verify that all of the equipment has been supplied in your shipment. Please check the hardware as well as the parts list and compare to what you have received. It is our policy to make every effort to assure you that you have received all parts necessary to make this a pleasant experience.

While checking over your parts it is possible to find that you are missing pieces that are necessary to complete the installation. You will find below our shipping policy and charges if any.

Notify Factory within 5 days ARO (Delivery): Red / no charge

Notify Factory 5 to 30 days ARO: Regular / no charge

Notify Factory 31 days ARO: Your cost for parts and shipping.

Please note we are only able to ship out from our location if notified by 12:00 PM CST. Calls received after this time will ship the following business day.

International shipping will need to be discussed prior to shipping.

Call us M-F 7:00 am to 4 pm 1-608-326-8406

In the event that you need touch up paint for your antenna or mount, these colors from any Sherwin Williams store are the best match to our colors.(Due to shipping restrictions, we are not able to ship paint).

Antenna color: Sherwin Williams Custom Beige product number **0110339-001**

Black Mount color: Sherwin Williams Black **6509-00780**



PHONE: 1 (608) 326-8406
FAX: 1 (608) 326-4233
EMAIL: dhsat@mhtc.net

Please make notes below to help in future years with replacement needs.

Size of antenna: _____

Date: _____

Feedhorn make: _____

Model: _____

LNB Make: _____

Model: _____