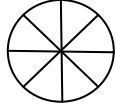


CRITICAL FACTORS INSTALLING A DH ANTENNA

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



3.0M, 3.7M & 3.8M Antenna w/48" Polar Mount 1 PC or Sectional INSTRUCTION MANUAL

CONGRATULATIONS on obtaining your new DH Antenna and mount. The 48" polar mount has been designed with a 48" diameter ring to support both our one-piece and sectional DH 3M, 3.7M and 3.8M antenna. This system is supplied with a "locking bar" for fixed satellite positions. The "locking bar" can be replaced with a 36" actuator for polar tracking. PLEASE COMPLY WITH THE FOLLOWING INSTRUCTIONS.

YOU MAY CONTACT US IF YOU HAVE ANY QUESTIONS AT 1-800-627-9443, 1-608-326-8406, OR EMAIL DHSAT@MHTC.NET

THIS MOUNT IS DESIGNED TO BE USED WITH THE 3.0M – 36" F/L AND THE 3.7M & 3.8M – 57.6" F/L SPUN DH ANTENNA.

PARTS LIST

48" MOUNT TO INCLUDE

- 1 48" BACK RING
- 1 5 1/2" BASE CAN
- 8 BACK BRACES
- 4 FEED STRUTS
- 1 FEED COLLAR (Heavy duty optional)
- 1 BOLT BAG TO INCLUDE ALL HARDWARE (SEE PAGE 11)



TOOLS Suggested for ease of Installation

- | | |
|------------------------------|-----------------------------|
| 2 1 1/8" wrench | 1/2" or 3/8" Drive Ratchet |
| 2 3/4" wrench | Plus the additional sockets |
| 2 9/16" wrench | 3/4" socket |
| 2 1/2" wrench | 9/16" socket |
| 2 7/16" wrench | 1/2" socket |
| 1 adjustable wrench | 7/16" socket |
| (open to 1 1/2") | |
| 2 alignment punches | |
| 1/8" - 5/16" or 5/32" - 3/8" | |

ADDITIONAL TOOLS THAT MAYBE HELPFUL BUT NOT NECESSARY

- | | |
|------------------|---------------------------|
| Cordless drill | 1 or 2 pair of Vise Grips |
| 7/16" nut driver | (locking pliers) |
| 1/2" drill bit | |

***Galvanized back braces please immediately read special note on bolt bag page 11.**



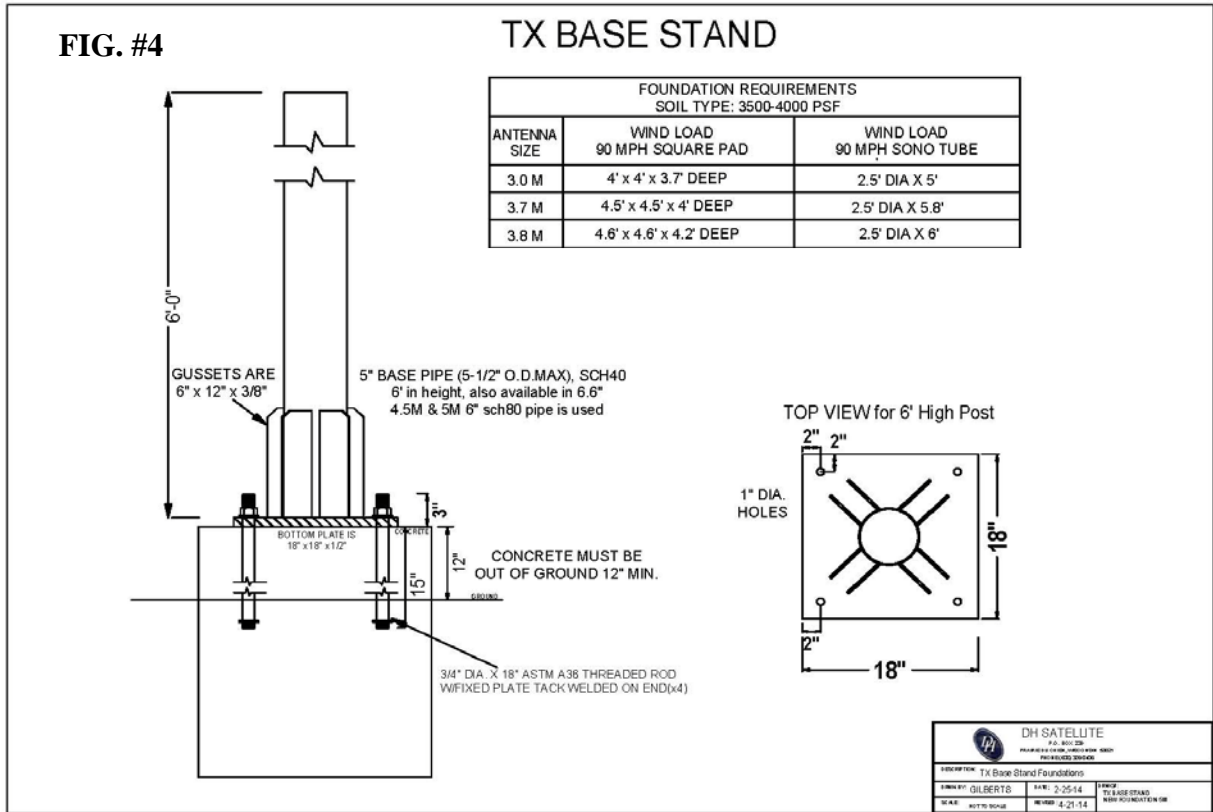
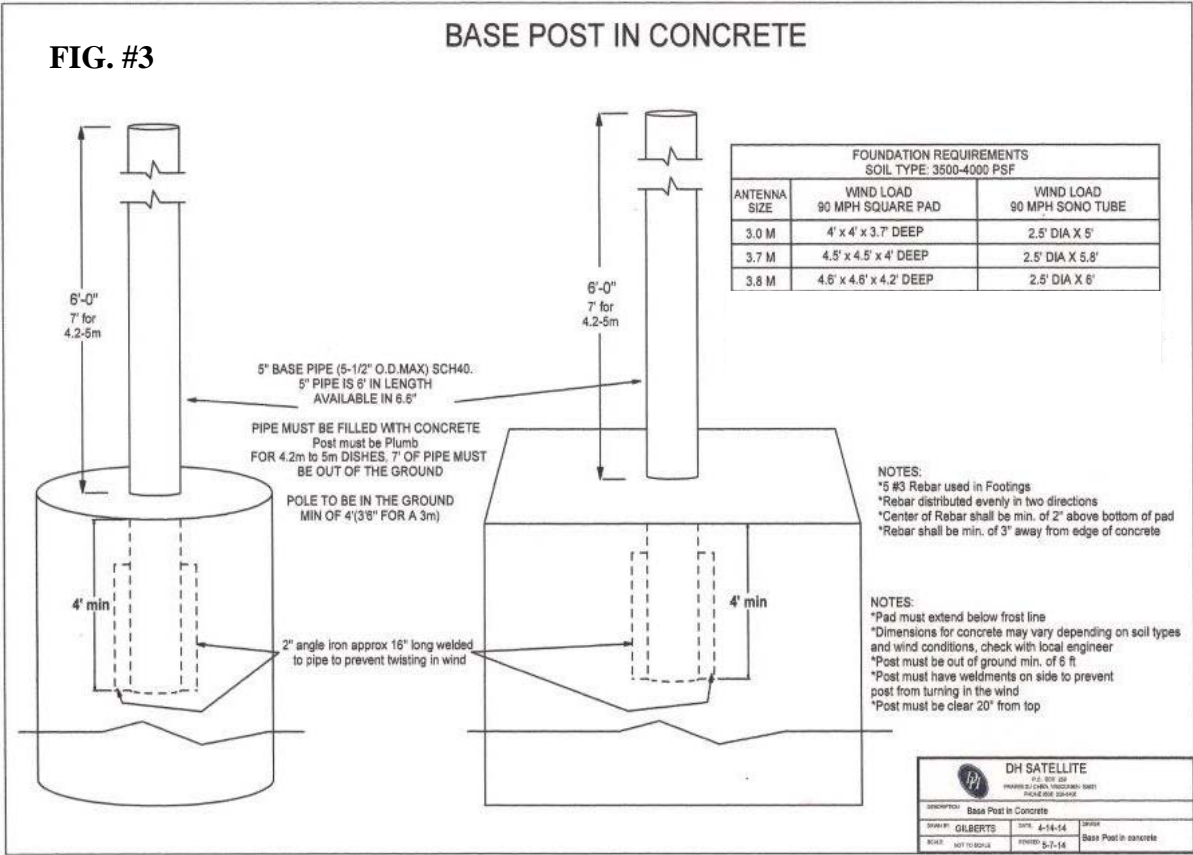
CAUTION!!

**Sectional antennas MUST be handled
with EXTREME CARE.**

INSTALLATION OF BASE:

Look at the figures below, FIG. #3 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 this mount option you have a choice of two different base assemblies. The first is a base post (see FIG. #3). The base post is simply a 5" I.D. / 5 1/2" O.D. pipe that has one or more 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 second option is using either a square foundation or a sono tube shown in FIG. #4.



INSTALLING BASE POST

2.1 Remove nuts from anchor bolts & pry off the wooden template.



2.2 Next, set base post so the holes align with the anchor bolts.



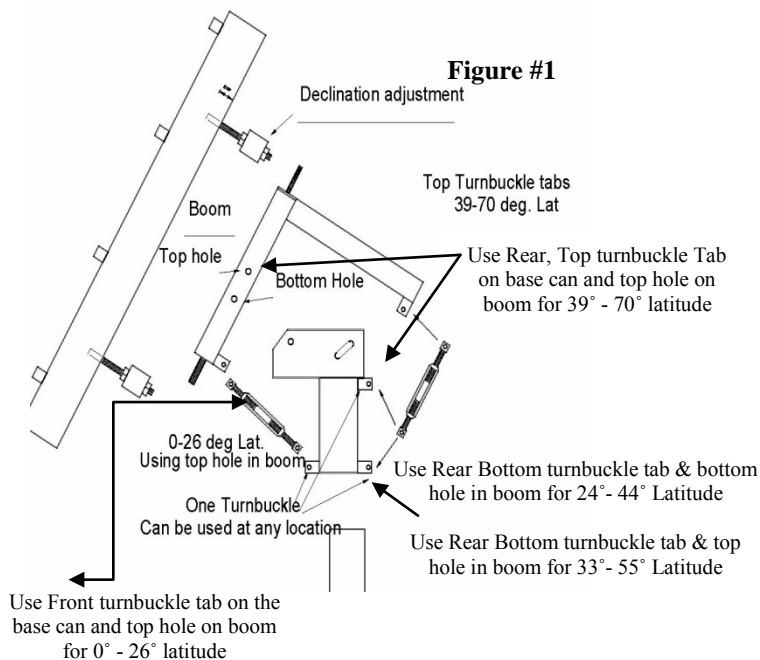
2.3 Once the post is sitting on the concrete pad, fasten and tighten the nuts to the anchor bolts.



ASSEMBLE RING TO BASE CAN

Assembling the 48" Polar mount is very easy as there are only two major parts to put together. Take the base can and set it over the base post. Tighten the set screws on the base can to hold it in place. Then take the ring and attach the 8 bent back brace tabs to the ring. Take the 48" ring, which has the top cross members and the boom tube pre-assembled, and set it up into the base can. You need to line up either the top or bottom hole on the boom with the hole on the base can saddle. **NOTE: If using the top hole in the boom you will not be able to lay the antenna in bird bath position.** (See the various positions in FIG 1 BELOW for placing the hole on the boom with the hole in the saddle) When you have them aligned either the top or bottom hole on the boom with the hole in the saddle, slip in the 3/4"x 4 1/2" bolt. Make sure the bolts are secure but leave them slightly loose until you have lined the antenna on the satellite you will be using. Once you have aligned the antenna please double check all bolts and nuts to be sure they are tight.

Assembling the turnbuckle: Because of International demand this mount has been designed to be used almost anywhere in the world. You will use one of the two locations on the base can to attach the turnbuckle assembly. Please read the below in Fig#1 to determine the correct position you will use for the Turnbuckle assembly for your latitude. You will use the **front tab /position on the base can and the top hole in the boom for setting latitudes of 0 – 26 degrees.** You will use the **back/rear top tab on the base can and the top hole in the boom for setting 39 -70 degree latitudes,** the **back/rear bottom tab on the base can and the bottom hole on the saddle for 24 -44 degree latitudes,** and the **rear/bottom tab on the base can and the top hole in the boom for 33 – 55 degrees latitudes.** We have a longer threaded rod that can be installed in place of the Right Hand threaded rod for higher elevation /look angle needs. (See figure #2 below)



Notes on setting boom: Boom should be set on your Latitude when polar tracking. If using as an AZ-EL or Fixed mount this is not a critical adjustment. The 48" mount is a polar tracking mount with a locking bar for fixed satellite positions.

Elevation numbers are not look angles

To Get look angles of below 10 deg. you can do any of these options:

1. Turnbuckle in front using boom in top hole, using a 6" rods in turnbuckle, elevate to 20 deg. remove locking bar and let antenna rotate to proper look angle and mark the locking bar and drill 1/2" hole and fasten with 1/2" bolt.
2. Turnbuckle in rear top bracket of base can, use top hole in boom, elevate to 70 deg use long rod in turnbuckle, remove locking bar and let antenna rotate to desired look angle mark the locking bar and drill 1/2" hole, now fasten with 1/2" bolt.
3. To get lower look angle at any elevation you can move the declination adjustment bolts out on the top and in on the bottom When doing this adjust the bottom 2 and the top 2 bolts the same.

4 pc 3.7 & 8 pc 4.5 48"
Polar Saddle & Boom Assembly



Tabs on Ring

IMPORTANT!!

Disregard this page if you have purchased a 1 PC antenna and proceed to page 5.

ASSEMBLY OF THE ANTENNA

(On Ground: Lift As One Piece Antenna)

See page 4A for installing antenna as sections to the ring

The antenna will come in 4 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 the 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 with a washer on the head end through the templates. Place a washer, lock washer and nut on the bolt, and only finger tight. Continue on to the next panel in the same manner until finished with all panels. Now tighten all hardware.

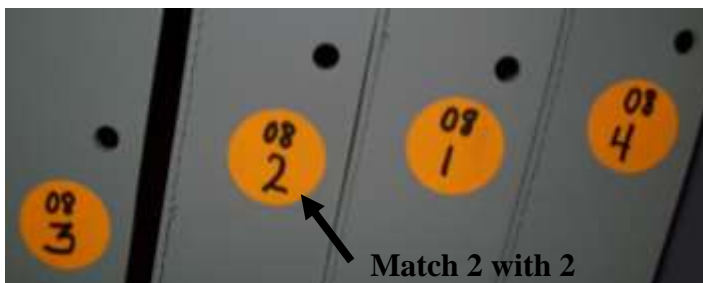


FIG. #9

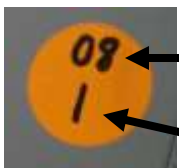
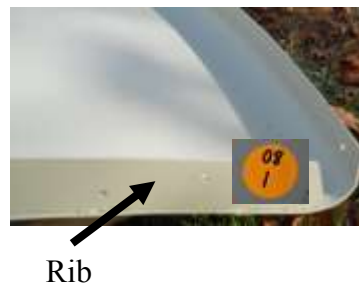


FIG. #10

NOTE:

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

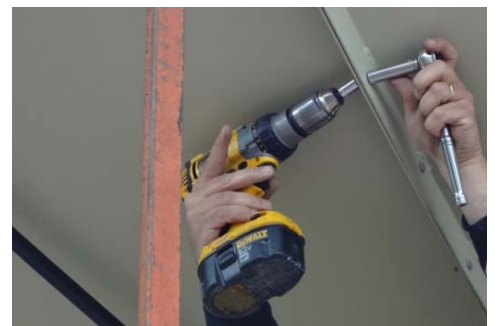
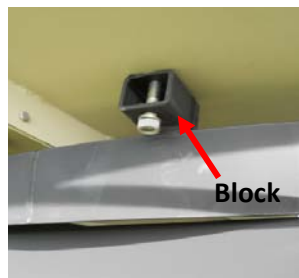
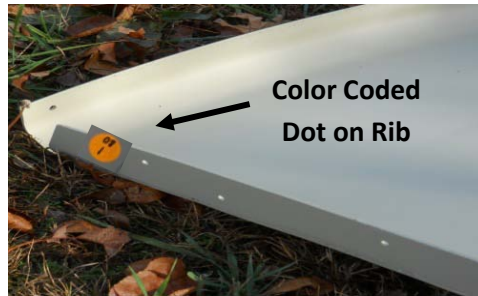
The number stamped on the rib reflects the antenna as a whole for bulk shipping. Each section has one rib stamped. The number will be the same on all ribs making it one complete antenna.



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.

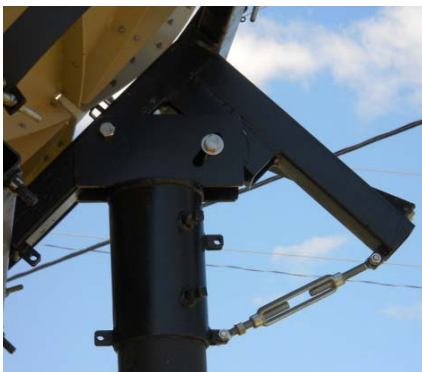
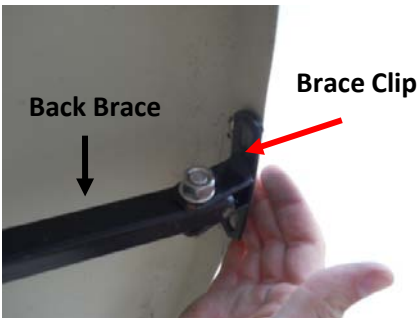
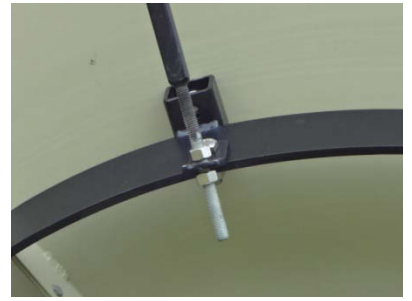
Rib number. ***Example:** On a 4 piece 3.7m antenna the dot will have a 08 on the upper part of the dot (serial number) and the lower number of 1, 2, 3, 4 are the rib numbers.

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



Continue to page 4A for section by section antenna installation
or see page 4AB for additional photo helps

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



Continue to page 4A for antenna section by section installation

"SECTIONAL ANTENNA ASSEMBLY METHOD"

(Install By Sections to ring: Using 2-3 People) SEE Page 4AA & 4AB for photo helps

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 all 8 back braces, using a 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. (details to install in Step 2)

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).

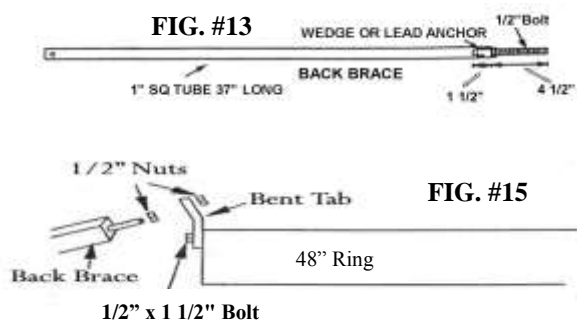
STEP 3: Take the first panel and install it to the ring of the mount **finger tight**. Be sure to find the pilot hole on the mount and on the antenna. The pilot hole is located on the 2nd block from the left of the weld on the ring from the back view of the antenna. The pilot holes are used for a starting point only. (see picture D). Take the back brace that is ready and put the threaded rod through the tab on the ring (see picture 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 from the antenna to the mount. (see FIG. #17) **TIP:** To assist on holding the rubber washer placed between the block and the antenna we suggest using a piece of electrical tape to hold the rubber washer to the block.

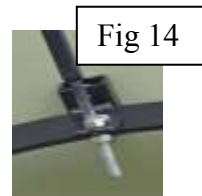
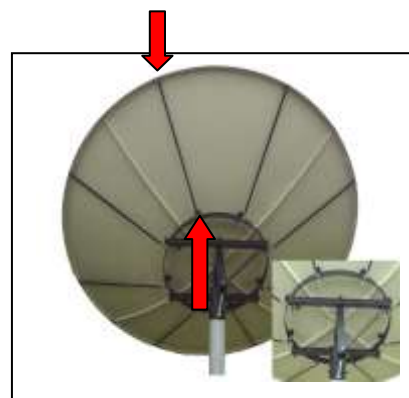
Have one person continue holding the panel in place while the second person attaches the back brace. (Remember the threaded end of the back brace should already have the 1/2" nut on the threaded end about 4-4 1/2" on the threaded rod and the bent tab already installed on the ring, see FIG. #15). Insert 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 1/4" x 3/4" bolts through the templates. Again only finger tight. Continue for remaining panels.

STEP 6 Once the antenna is secured to the ring, install the feed assembly to the antenna. Use the 4 outer mounting holes beyond the 8 bolts that fasten the antenna to the ring. It is best to assemble the feed assembly on the ground and then lift it up to place.



Back braces are measured by tube length only.



Brace Tab Threaded

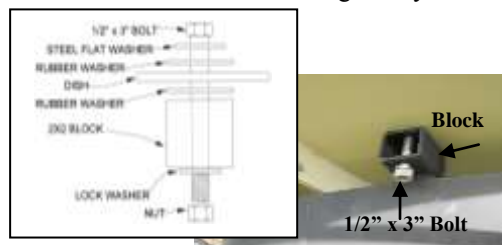


FIG. #17

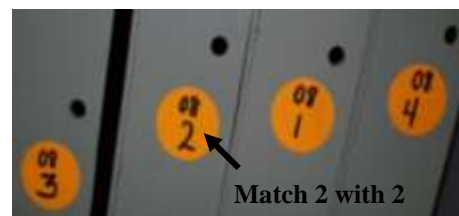
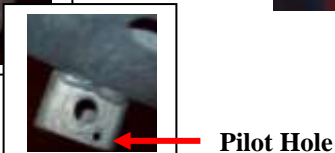


FIG. #9



PREPARING THE MOUNT TO RECEIVE THE ANTENNA

****SPECIAL NOTE: Disregard if you have a sectional antenna and skip to page 6.**

It is time to install the antenna to the mount. You must first elevate the ring to about 60 degrees. Lock it in place. Locate the 1/8" pilot holes; one is located next to one of the 8- 1/2" holes in the dish and the other is found on one of the 8 blocks on the mount next to the 1/2" holes. When you have located these two holes you will need 2-3 people to help pickup the dish and set it into the ring making sure the pilot holes line up. Slip in the 1/2" x 1 1/2" bolts using both a rubber & steel washer, leaving out every other bolt until the feed struts are in place. (see Fig.#1A) Do not tighten these bolts more than just snug. The feed struts should now be installed. Finish installing the remaining bolts, washers, and nuts to complete the assembly of the antenna to the ring mount. (Fig.#1) Please read page 6 & 7 "Preparing the feed".

You are ready to put the dish in a vertical position and use a ladder to assemble and install the feed horn. Install the bolts as in page 8, Fig.#3 for Ku band. DO NOT OVER TIGHTEN.

Install the back braces finger tight. Refer to figures #2, #2A, #3, & #4 below.

NOTE: 3.0m, 3.7m and 3.8m antenna systems have 15/16" galvanized round tube back braces. Please refer to mechanical drawing specifications on page 5A.

There are eight holes around the rear of the 48" ring to accept the braces. See Fig. #3. The angle clip(bent tab, (Fig.#2) 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 48" ring; now thread one 1/2" nut about 2/3rds 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 thru the predrilled holes in the lip (Refer to Fig. #4) of the dish and into the end of the brace and tighten with 1/4" nuts. Repeat this for all eight braces. Set the dish in its normal position for tracking the arc and walk 30 feet away and sight the front surface of the dish. It should be flat. If it is not, adjust any brace that may be holding pressure and try to make the front surface flat. Try to do very little adjusting and try to release pressure to make the antenna as flat as possible.



Fig. 1A
Feed struts

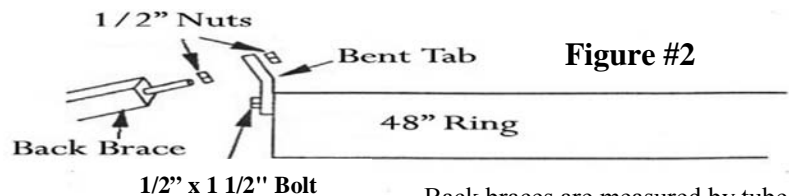


Figure #2

Back braces are measured by tube length only. 37" for both the 3M 1pc & 3M 4pc The 4pc 3.7M has a 3/4" x 50" and the 3.8m brace is 53" long .

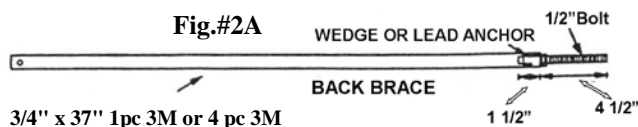
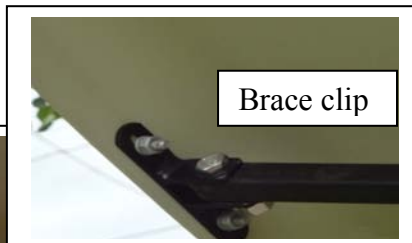


Fig.#2A

Figure #3



Figure #4



Brace clip



Splice strap

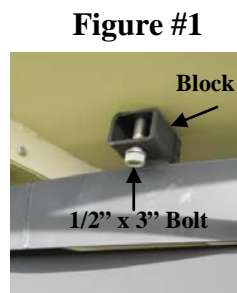
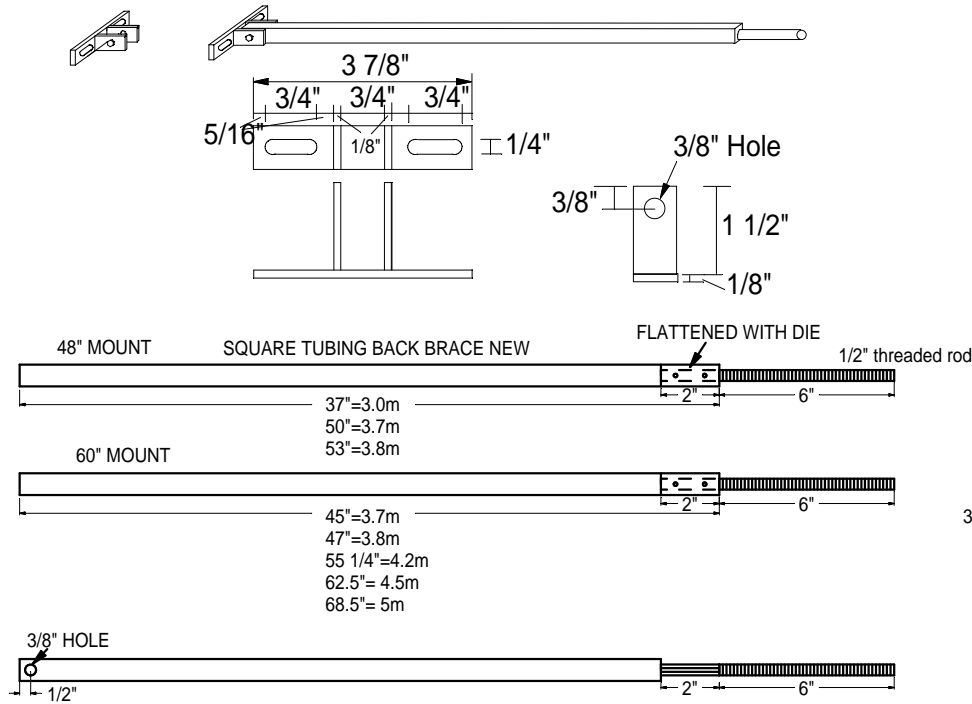


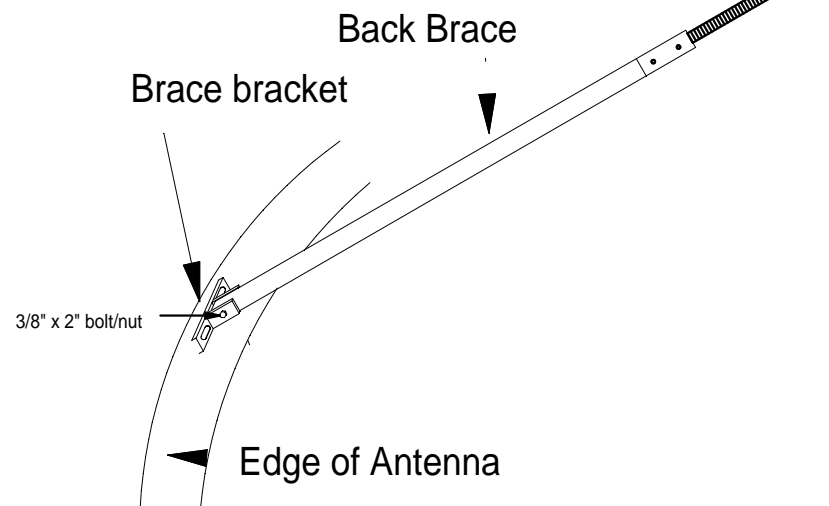
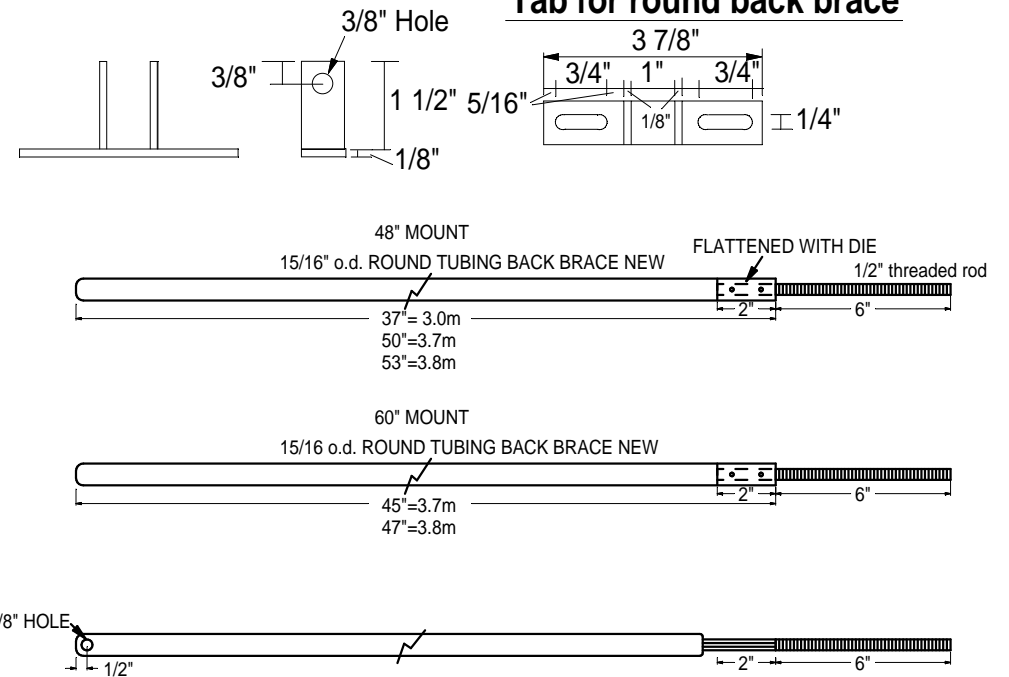
Figure #1




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		

FINE TUNING THE ANTENNA

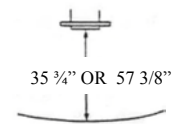
Plan to take an extra hour of your time to get the most from your antenna. We recommend using a Spectrum Analyzer to do this or A1 Turbo S2 made by Applied Instruments.

With each adjustment you make you will be able to see your increase/decrease in gain. To begin you must string the antenna. This is done by simply taking a string, tying it to one brace and running the string across the front of the antenna to the other brace at 180 degrees and tying it so it is taut. Now tie another string to a brace 90 degrees from the first brace and running it to the corresponding brace 180 degrees away. Be sure you put the string on top or under the other string so as to not touch each other. When done you should have two strings at 90 degrees and they should meet in the center of the antenna. (Ideally you should use four strings at approximately 45 deg. apart.) If the strings don't touch at the center, then you will have to do some adjusting with the braces. Be sure your strings are taut. Stand back about 30' and sight the antenna again and see where you must apply pressure with the braces or relieve the pressure from an area. Now go ahead and make small adjustments with the braces, each time checking with the Spectrum analyzer to see that you are increasing the gain of the antenna (See also page 9).

PREPARING THE FEED ASSEMBLY

You will find below the focal lengths and focal length/diameter ratios for our commercial 3M, 3.7M & 3.8M antennas. This information is necessary to set the antenna and feed up properly. Measuring the f/l

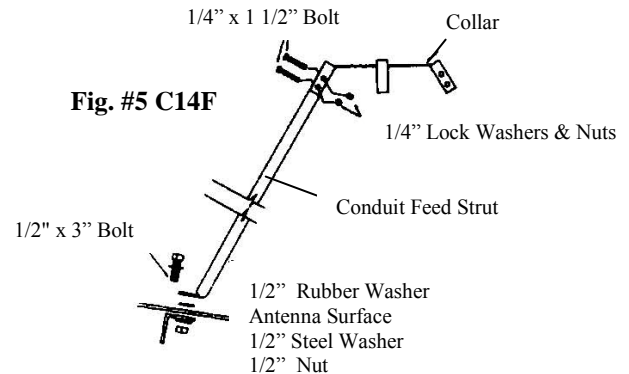
10' (3m) 36"f/l .3 f/d 12' (3.7m) 57.6"f/l .4 f/d 12'5" (3.8m) 57.6"f/l .378f/d



Below you will find a list of feed collars that are available to purchase from DH Satellite. (See Fig #1 - #4) 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. Take the collar and set it on the back of the scaler ring of the feed horn. Turn it until all three holes line up between the two and insert the 1/4" x 3/4" bolts thru the scaler 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 scaler just for this. Now, slide the end of the strut thru the feed bracket as shown in drawing #1 and attach each leg w/ 2-1/4" x 1 1/2" bolt & nut. Do this on all four struts. Refer to Fig.#5. Place the flattened end of the struts onto the antenna and use the 1/2" x 3" bolts to fasten to the dish. Use every other hole. Check to see the feed is at the focal length, and then tighten all bolts. The actual focal length should be 1/4" inside the waveguide for C-band.

DH Collars

- **C14F (Chaparral collar with conduit struts):** C Band
- **C14FHD (Chaparral collar with heavy duty struts):** C Band, C/Ku
- **C24HD (Seavey collar with heavy duty struts):** C Band, C/Ku
- **KU4FL:** Ku Band ONLY



**C14F COLLAR
& STRUTS**



Fig. #1

**KU4FL COLLAR
& STRUTS**

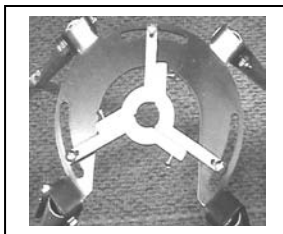


Fig. #2

**C14FHD COLLAR
& STRUTS**

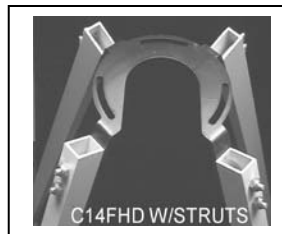


Fig. #3

**C24HD COLLAR
& STRUTS**



Fig. #4

SPECIAL NOTE: Fig. #1 & #3 are used primarily with Chaparral and ADL C band and C/Ku band feed horns. Fig#3 is a special order Heavy Duty feed strut system and may be purchased at an additional cost.

Figure#4: Our C24HD is a special order Heavy Duty system set up for Seavey manufactured C & C/Ku band feeds. This may be purchased at an additional cost.

Refer to the drawing on page 7 for the bolt placement of a C14FHD or C24HD.

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
12' (3.7m)	57.6" f/l	.4 f/d
12'5" (3.8m)	57.6" f/l	.378 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).

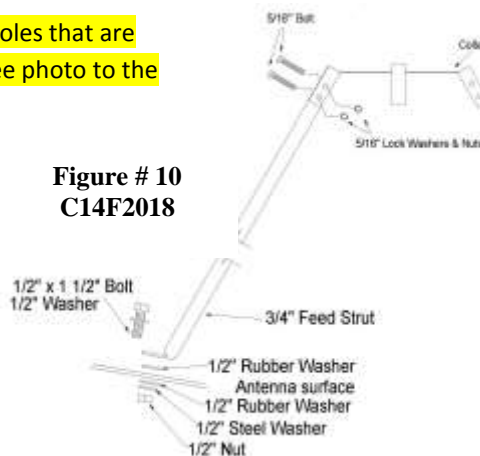
For heavy duty SEAVEY (C24HD) or heavy duty CHAPARRAL (C14FHD) feed assembly please refer to page 10 and page 11.

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 placing all four struts in every other hole, then check and measure the focal length according to instructions and tighten down. Be sure your focal length is set correctly and you're looking at the center of the dish. On a Chaparral style feed the actual focal length should be 1/4" inside the waveguide for C-band and 1/8" for Ku band. Seavey recommends the focal length is measured to front of the scalar ring.

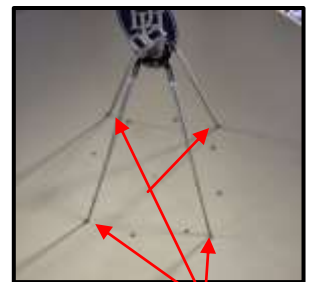
***The Feed Struts will attach to the antenna through the 4 holes that are beyond the 8 bolts used to hold the antenna to the ring. (see photo to the right*)**



C14F2018



**Figure #10
C14F2018**



***Feed strut holes beyond mounting holes of antenna**

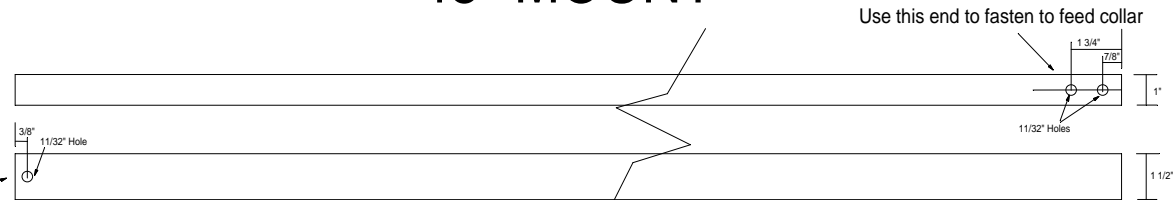
For use of Chaparral Feeds C14F2018

48" MOUNT

Notes

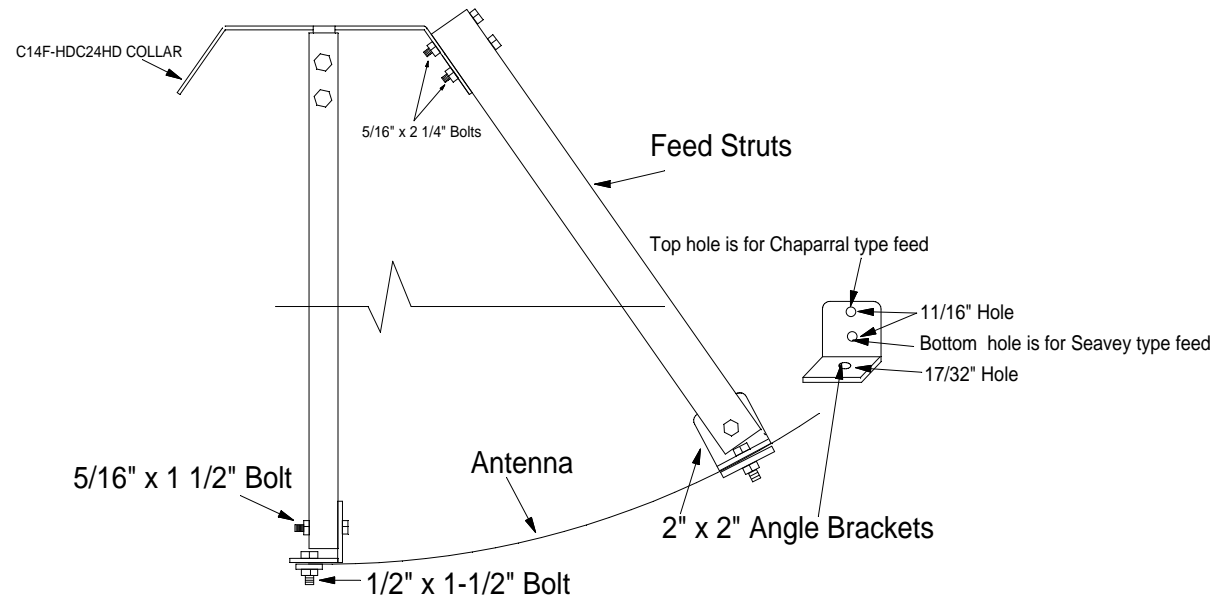
This strut is used for 48" mount that is drilled for 60" with:
HD Feed collar
Use the 2 holes on the strut for the C14HD or C24HD
Bolt goes through the 1-1/2" side of the feed strut

Use this end to fasten to bracked on dish



FOR ANTENNAS: 3.7m, 3.8m 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 48" RING 60" struts		
DRWN BY: MD/GILBERTS	DATE: 10-17-22	DRWGR: C14HD feed for 48 mount drilled for 60 ring
SCALE: NOT TO SCALE	REVISED:	

NOTE: New style collar C14F2018 transition will start April 16th, 2018. Set up instructions on page 6A.

KU BAND FEED ASSEMBLY

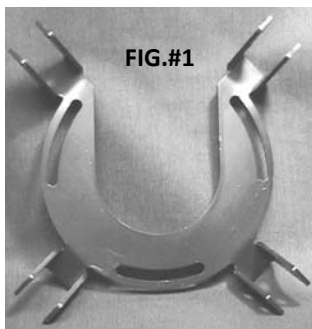
The Ku band collar is only used when you are using Ku band only feeds. You will use our horseshoe collar C14F or C14F2018 (see photos below) and add in a three-piece flat collar to hold the Ku band feedhorn. When using these two pieces together we call it a KU4FL (see figure #2)

First assemble two pieces of the flat tri-collar, slide it onto the feedhorn, and then add the last piece. Attach the flat tri-collar to the horseshoe collar (fig#2). You will notice that you can adjust the polarization of a single feed by rotating your feed to the desired position and then tighten the tri-collar to the feedhorn. This will prevent the feedhorn from sliding. **Major adjustments in your focal length can be made by placing the three-piece collar on either side of the horseshoe collar.**

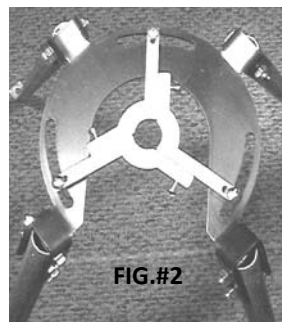
FINE TUNING THE FEED

Set the feed at the exact focal length we recommend. It will either be a 36" or 57.6" f/l. (This does not take into consideration the allowance for the feed manufacturer's recommendation that the focal length be 1/4" inside the waveguide for C-band **and 1/8" for Ku band**). (See Fig.#4)

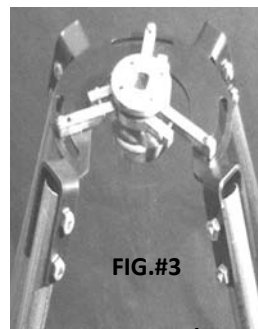
You must set the feed so that you are looking directly at the center of the dish. Use a focal finder or anything handy to assist in aiming the feed to the center of the dish. The feed must not be tilted in any way. DH offers a new focal finder tool to assist in centering the feed. Call for pricing.



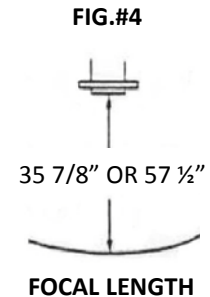
C14F



KU4FL



KU4FL W/ DH STRAIGHT THRU FEED



C14F2018



KU4FL USING C14F2018 COLLAR



KU4FL W/ DH STRAIGHT THRU FEED USING C14F2018 COLLAR

NOTE: New style collar C14F2018 transition will start April 16th, 2018.

The feed plate has flex so that when setting up the collar you will be able to achieve the correct position regardless of the collar you have received. Once you tighten all of the hardware on the feed assembly, the flex will be established and tightened into place. It is VERY important that, 24 hrs after installation, a final inspection is completed on the feed assembly. You will need to recheck the focal length and make sure your feedhorn is looking directly at the center of the dish. This step is necessary 24 hrs after installation and if you make any future adjustments to the feed assembly.

Please take time to read over page 9 on "ADDITIONAL FINE TUNING TECHNIQUES".

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 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.

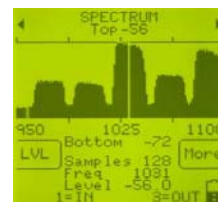
Keep in mind when you are making these last "Additional Fine Tuning Techniques" very small moves will be needed to make the best improvements in signal strength.



PHOTO A
Focal Finder to Locate
Center of Antenna



**A1 Turbo S2 Made By Applied
Instruments**



FINAL ASSEMBLY FOR POLAR TRACKING

Set the axis (mount boom) the approximate same degrees as your latitude. See chart. The dish is tipped forward the amount of declination (from chart). The mount must point south. Some things should be set and some adjusted. The following should be set and then left alone, Dish front surface must be flat. Feed should be centered and have the proper focal length. Declination angle should be set. There are only two adjustments to polar track - 1 is elevation (latitude) the other is pointing south (very critical and very small movements are involved).

Have your A1Turbo S2 by the dish. You need an inclinometer to set declination and boom angle and also a compass to find south.

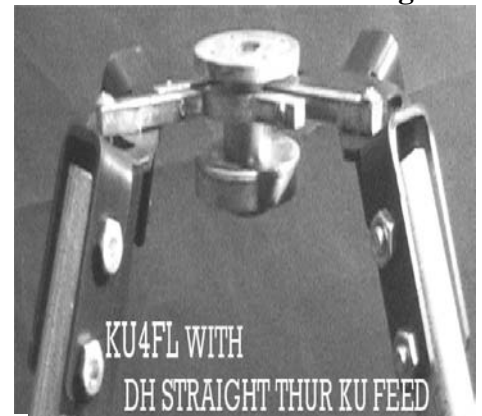
Find a satellite the closest to the south of you. Get a picture, adjust elevation. Try a satellite east or west and if your arc does not match the polar arc, you must adjust the base can east or west. If you go west and are under the satellite, do not raise elevation. Move the mount slightly west, also *the* same for east.

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°	4.838.35°	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°

Fig.#1

A WORD ABOUT KU FREQUENCY

Installing the feed for 12 Gig & Digital is more critical than on C-Band. This is why DH has a special feed collar and struts just for the KU application, (see Fig. 1.) The center of the feedhorn must be exactly at the focal length. Also check to be sure the feedhorn is centered by measuring from edge of dish. Check to see that feed is pointed directly at the center of the dish. The f/l can be adjusted by sliding the feedhorn closer or farther away from the antenna through the three-piece collar. Major adjustments can be made by placing the three-piece collar on either side of the horseshoe collar.



PO BOX 239
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PH: 1-608-326-8406

Polar Tracking a DH Antenna

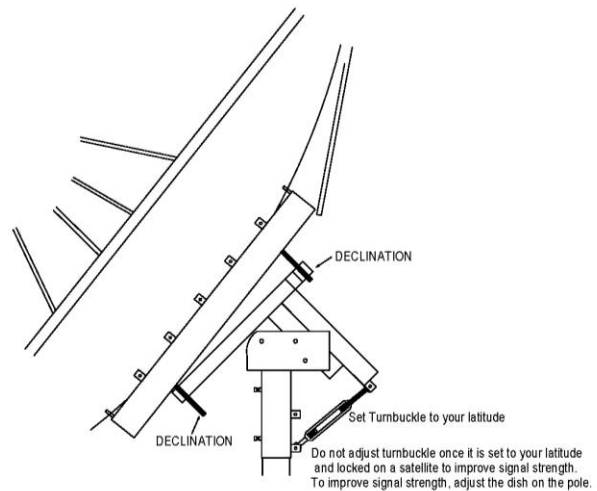
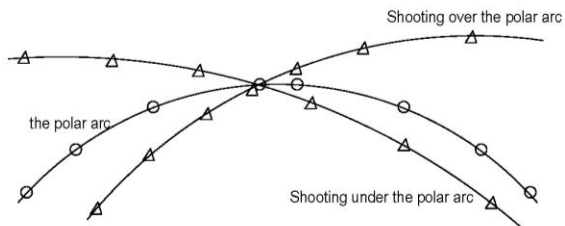
1. Point the Antenna system at your most direct southern satellite for your longitude.
2. Set the boom at your site's latitude.
3. Ensure that the top cross bar of the mount is directly horizontal with the boom and that the boom is pointed north to south.
4. Measure the off-set for your site latitude: (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.



Technical: Cindy Wille or Nate Gilberts

M-F 8AM – 4:30PM CST
1-608-326-8406 or 1-800-627-9443

dhsat@mhtc.net or drafting2@mhtc.net

BOLT BAG FOR: 48" POLAR MOUNT (3.0m, 3.7m and 3.8m)

C14F Feed Assembly

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

*New Style Collar C14F2018

*C14F2018 transition Starts April 16th, 2018

Feed Assembly

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

Feed Struts to Antenna

4- 1/2"x1-1/2" Bolt
8- 1/2" Flat Washers
8- Rubber Washers
4- 1/2" Lock Washers
4- 1/2" Nuts

Back Braces

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

Back Brace Length

3.0m- 37" Long
3.7m- 50" Long
3.8m- 53" Long

Feedhorn to Collar & LNB

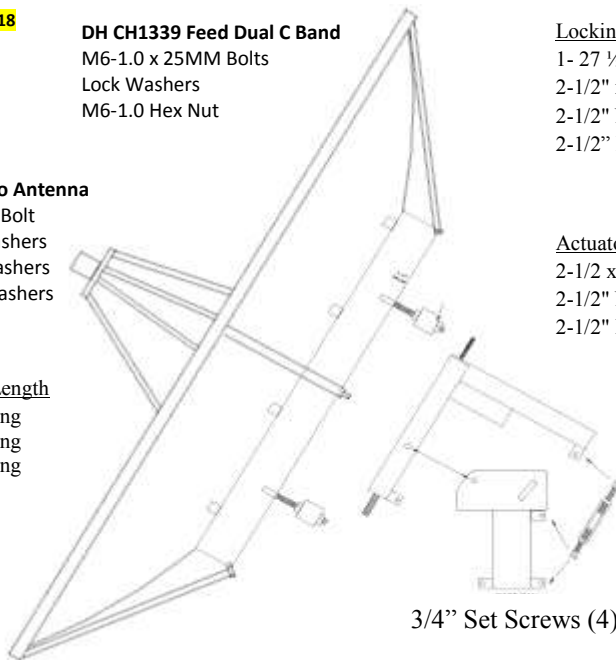
3-1/4" x 1" Bolts
3-1/4" Lock Washers
3-1/4" Nuts

(LNB to Feed)

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

DH CH1339 Feed Dual C Band

M6-1.0 x 25MM Bolts
Lock Washers
M6-1.0 Hex Nut



NOTE: 3.0m, 3.7m and 3.8m antenna systems have 15/16" galvanized round tube back braces.

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:

Stainless steel or DURA-CON® hardware provided.

*DURA-CON® is a corrosion resistant coating.

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

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

Locking Bar

1- 27 1/2" Lock Bar
2-1/2" x 1 1/2" Bolts
2-1/2" Nuts
2-1/2" Lock Washers

Actuator

2-1/2 x 2 1/2" Bolts
2-1/2" Nuts
2-1/2" Lock Washers

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

Turnbuckle

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

Base Can to Mount

2-3/4" x 5" Bolts
2-3/4" Lock Washers
2-3/4" Flat Washers
2-3/4" Nuts

Antenna to Ring

8-1/2" x 3" Bolts
8-1/2" Nuts
8-1/2" Lock Washers
8-1/2" Flat Washers
16-1/2" Rubber Washers

3/4" Set Screws (4)

NOTE: SECTIONAL ANTENNAS INCLUDE ADDITIONAL HARDWARE, SEE TABLES BELOW

Template Rib Hardware: Sectional			
Antenna Size	1/4" x 3/4" Bolts	1/4" Lock Washers	1/4" Nuts
3.0M	44	44	44
3.7M	52	52	52
3.8M	56	56	56

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

Missing parts warranty: Factory warranty on missing parts is 30 days ARO. DH will supply parts and shipping Regular UPS at no charge for 30 days ARO within the continental US. Red label within the US is only covered by DH if notified within three days ARO. Missing parts warranty is void 30 days ARO.

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: _____