

MODEL DB-1015A 10- and 15-Meter  
Duo-Band Antenna

Order No

HY-GAIN ELECTRONICS CORPORATION  
8601 Northeast Highway 6 Lincoln,  
Nebraska 68505 Telephone 464-9151 Area  
Code 402

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## SECTION 1 GENERAL DESCRIPTION

General The Hy-Gain Model DB-1015A is a three element, duo-bander that operates on 10 and 15 meters. Hy-Gain's Hy-Q traps allow multibanding. The antenna fits a 1 1/4" – 2 1/2" O.D. mast and can be rotated with a heavy duty TV rotator.

### Specifications

#### Electrical

Input impedance .....52 ohms  
Gain ..... 8 dB minimum  
Front-to-back ratio ..... 20 - 25 dB  
Maximum power input ..... 1 kW AM  
VSWR (at resonance) ..... 1.2:1  
Lightning protection .....DC ground

#### Mechanical

Boomlength..... 12'9"  
Boom diameter ..... 2"  
Longest element ..... 23' maximum  
Maximum wind survival ..... 80 mph  
Net weight..... 32 lbs. approximately  
Accepts mast ..... 1 5/8" O.D.  
Wind surface area .....3.8 sq. ft.  
Wind load (80 mph) .....97.3 lbs.

### Theory of Operation

Hy-Gain Hy-Q traps are air dielectric parallel resonant circuits which operate as electronic switches. On 10 meters the "switch" is open so only the inner portions of the elements are operative, giving a three element, 10-meter beam. On 15 meters the "switch" is closed and the entire element is operative, giving a three element, 15-meter beam.

The exclusive beta match matches the antenna input impedance to 52-ohm coaxial cable and puts the entire structure at DC ground for lightning protection.

## SECTION 11 ASSEMBLY AND INSTALLATION

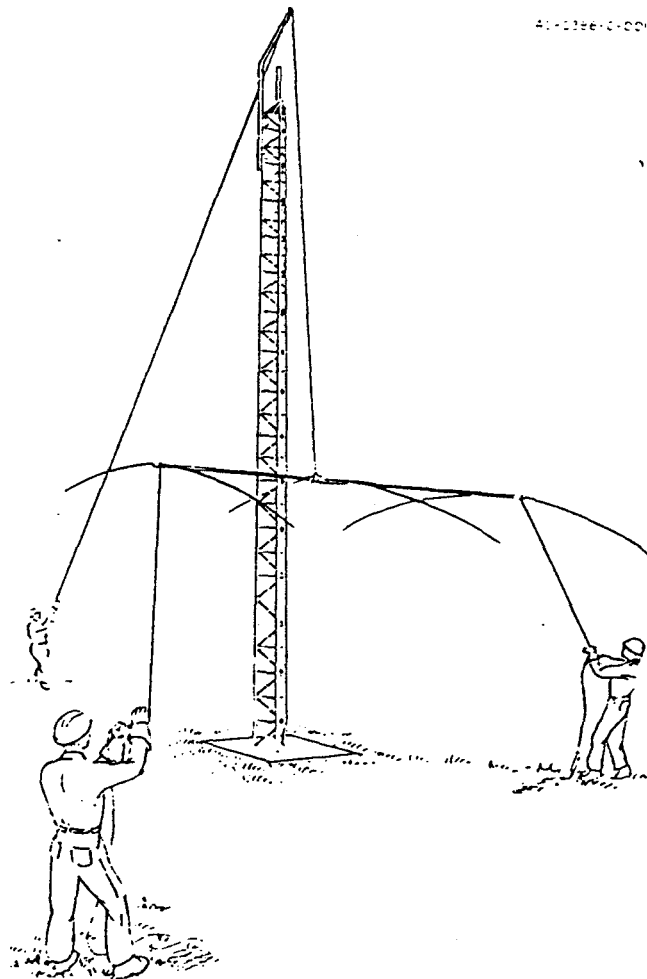
### WARNING

***Avoid any accidental contact with power lines or any overhead obstructions by ladders or Installation equipment. Failure to exercise care could result in serious injury.***

## Preparation for Assembly

Before assembling the antenna, read through the instructions and familiarize yourself with the procedures.

The easiest method of erecting the antenna is to completely assemble the antenna on the ground, then hoist it into position using a block and tackle as shown in Figure



Figure

### **CAUTION**

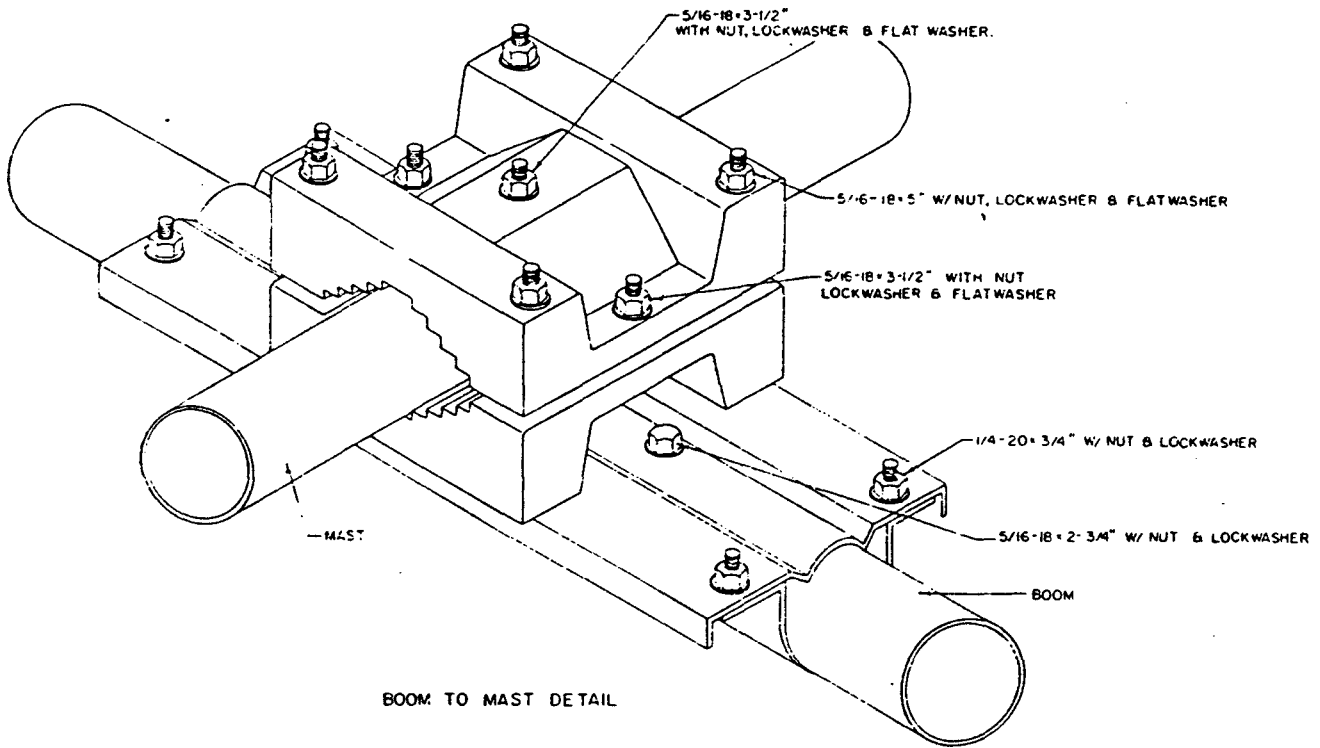
*Measure tubing length carefully.*

All tubing supplied with the DB-1015A is designed to telescope together. Make all measurements as accurate as possible using the dimensions given in this manual for optimum results from your antenna.

## Boom Assembly

( ) Select the two boom sections (2" diameter tubing) and the boom-to-mast brackets. Loosely assemble the boom-to-mast bracket using the  $\frac{1}{4}$ "-20 x  $\frac{3}{4}$ " screws, nuts, and lockwashers as shown in Figure 2. Slip the drilled end of each boom section into the boom-to-mast bracket and line up the holes. Attach the boom to the bracket using the two  $\frac{5}{16}$ "-18 x 2  $\frac{1}{2}$ " screws, nuts, and lockwashers provided.

**NOTE:** The boom-to-mast bracket has a hole drilled in it for connecting to the mast. This connection will prevent the rotation of the antenna in severe wind storms. Drill the mast before raising the antenna into place.



Figure

Reflector Element Assembly

( ) Loosely assemble a small set of element-to-boom brackets on the *longest* end of the boom as shown in Figures 3 and 4. Do not forget the  $1/4" - 20 \times 3/8"$  anchor screws with their associated square nuts as shown in Figure 4. Position the bracket  $3 1/4"$  from the tip of the boom to the center of the bracket. This will be the Reflector end of the boom.

NOTE: The following steps will be done one at a time. Do them first for one side of the boom, then for the other side.

( ) Select the R-1 section of tubing ( $1 1/2" \times 46"$ ). Slip the R-1 section into the bracket assembled on the boom. Tighten the screws to hold the R=1 section securely but *do not* tighten the anchor screw at this time.

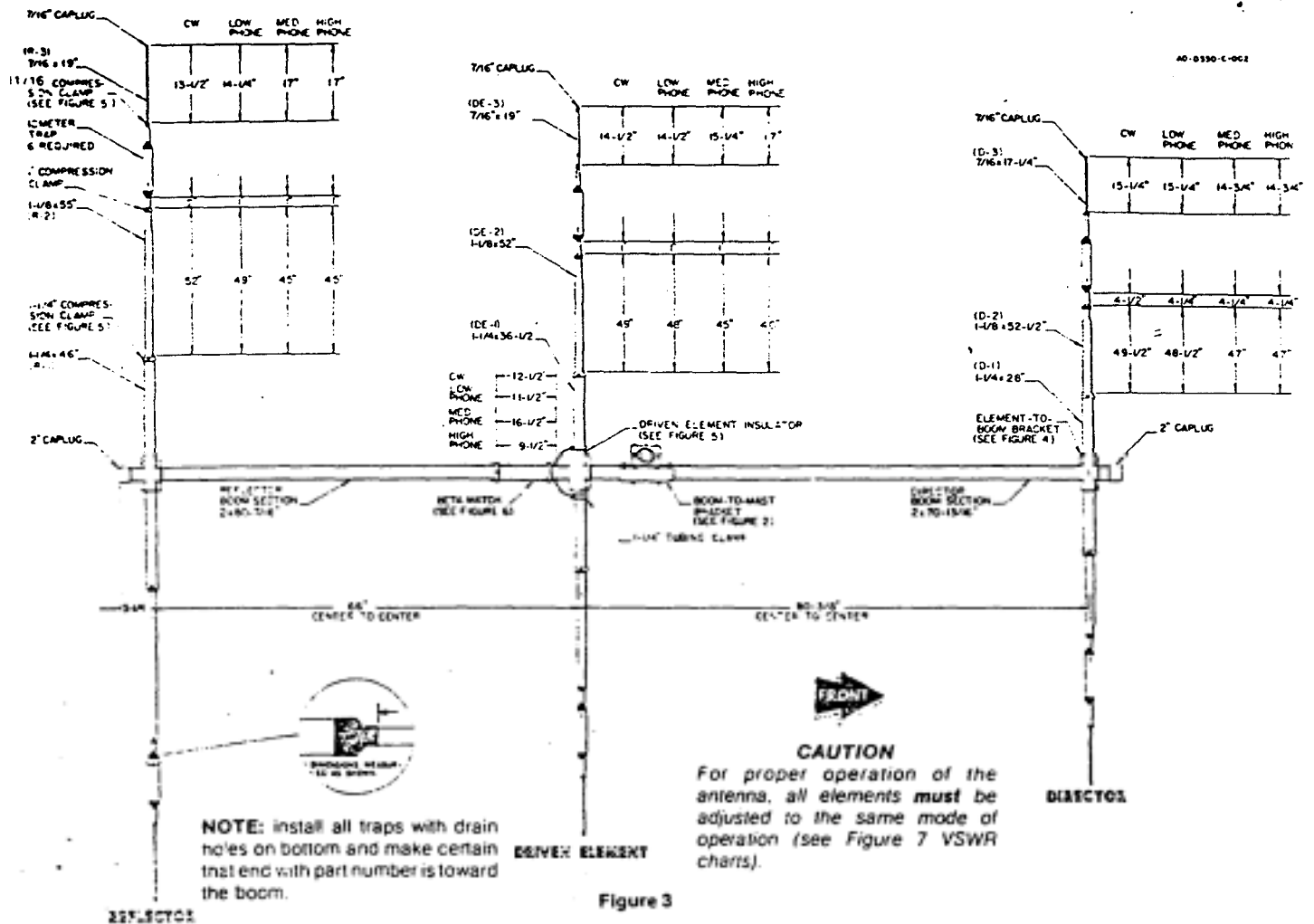
( ) Check to see that the Reflector element will lie in a plane horizontal to the earth when the antenna is mounted on your mast. Do this by observing the position of the element with respect to the boom-to-mast bracket. Make any adjustments necessary keeping the center of the bracket  $3 1/2"$  from the tip of the boom then tighten the anchor screws securely.

Compression Clamps

Take care when measuring the tubing lengths for your mode of transmission. Place the clamp near the end of the tube with the joint even with the slot in the tube. Tighten the clamp until the inner tube cannot be turned in the outer tube.

Do not over tighten the compression

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



( ) Assemble 1 1/4" compression clamp and slip it onto the R-1 section. Refer to Figure 5. Select the R-2 section (11/8" x 55"). Slip the unswaged (untapered) end of the R-2 section into the R-1 section and measure the dimension shown on Figure 3 for your mode of transmission. Tighten the compression clamp slightly.

NOTE: Decide which mode of transmission you will use. Figure 3 shows dimensions for CW and Phone, but you must use only one mode throughout the antenna assembly.

If you tried to use the Low Phone dimension on one band and the Medium Phone dimension on another band, the antenna wouldn't give optimum performance.

To decide which transmitting mode is best for your purposes, refer to the VSWR charts in Figure 7.

( ) Assemble a 1" compression clamp and slip it onto the unswaged end of the R-2 section. Select the 10-meter trap and slip the unswaged end into the R-2 section. Measure the dimension shown on Figure 3 for your mode of transmission. Make certain the trap drain holes are facing downward. Tighten the compression clamp slightly.

( ) Assemble 11/16" compression clamp and slip it over the swaged end of the 10-meter trap. Select the R-3 section (7/16" x 19") and slip it into the 10-meter trap. Measure the dimension shown in Figure 3 for your mode of transmission. Tighten the compression clamp *slightly*.

( ) Carefully recheck all measurements and be sure the trap drain holes are pointed down. Now tighten all compression clamps securely.

Driven Element  
Assembly

( ) Select the large set of element-to-boom brackets and loosely assemble on the boom 66" from the center of the reflector element-to-boom bracket as shown in Figure 3. Do not forget the anchor screws as shown in Figure 4.

( ) Select the DE-1 section of tubing (1 1/4" x 36 1/2") and the Driven Element insulators. Slip the insulator over the DE-1 section then slip the insulated end of DE-1 into the bracket assembled on the boom. Tighten the screws to hold the element securely but *do not* tighten the anchor screws at this time. Refer to Figure 4.

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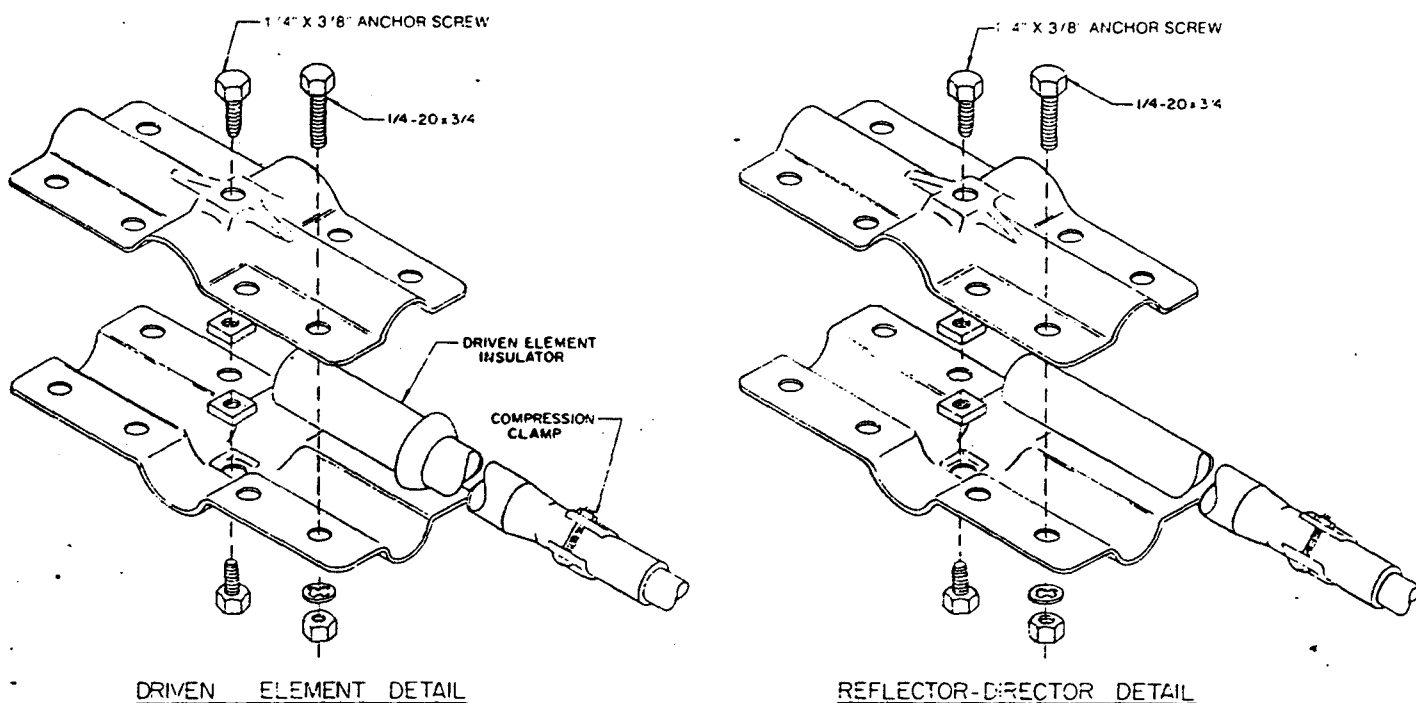


Figure 4

( ) Check to see if the Driven Element will lie in the same plane as the Reflector and make certain it is still 66" from the center of one bracket to the center of the other. Now tighten the anchor screws *securely*.

( ) Assemble a 1 1/4" compression clamp and slip it over the DE-1 section. Select the DE-2 section (1 1/8" x 52"). Slip the unswaged end of the DE-2 section into the DE-1 section and measure the dimension shown on Figure 3 for your mode of transmission. Tighten the compression clamp *slightly*.

( ) Assemble a 1" compression clamp and slip it over the swaged end of the DE-2 section. Select a 10-meter trap and slip the unswaged end into the DE-2 section. Measure the dimension shown on Figure 3 for your mode of transmission. Make certain the trap drain holes are facing downward. Tighten the compression clamp

( ) Assemble a 11/16" compression clamp and slip it over the swaged end of the trap. Select the DE-3 section (7/16" x 19") and slip it into the swaged end of the trap. Measure the dimension shown on Figure 3 for your mode of transmission. Tighten the compression clamp *slightly*.

( ) Carefully recheck all measurements as shown in Figure 3 and make certain the drain holes are facing downward. Tighten all compression clamps *securely*.

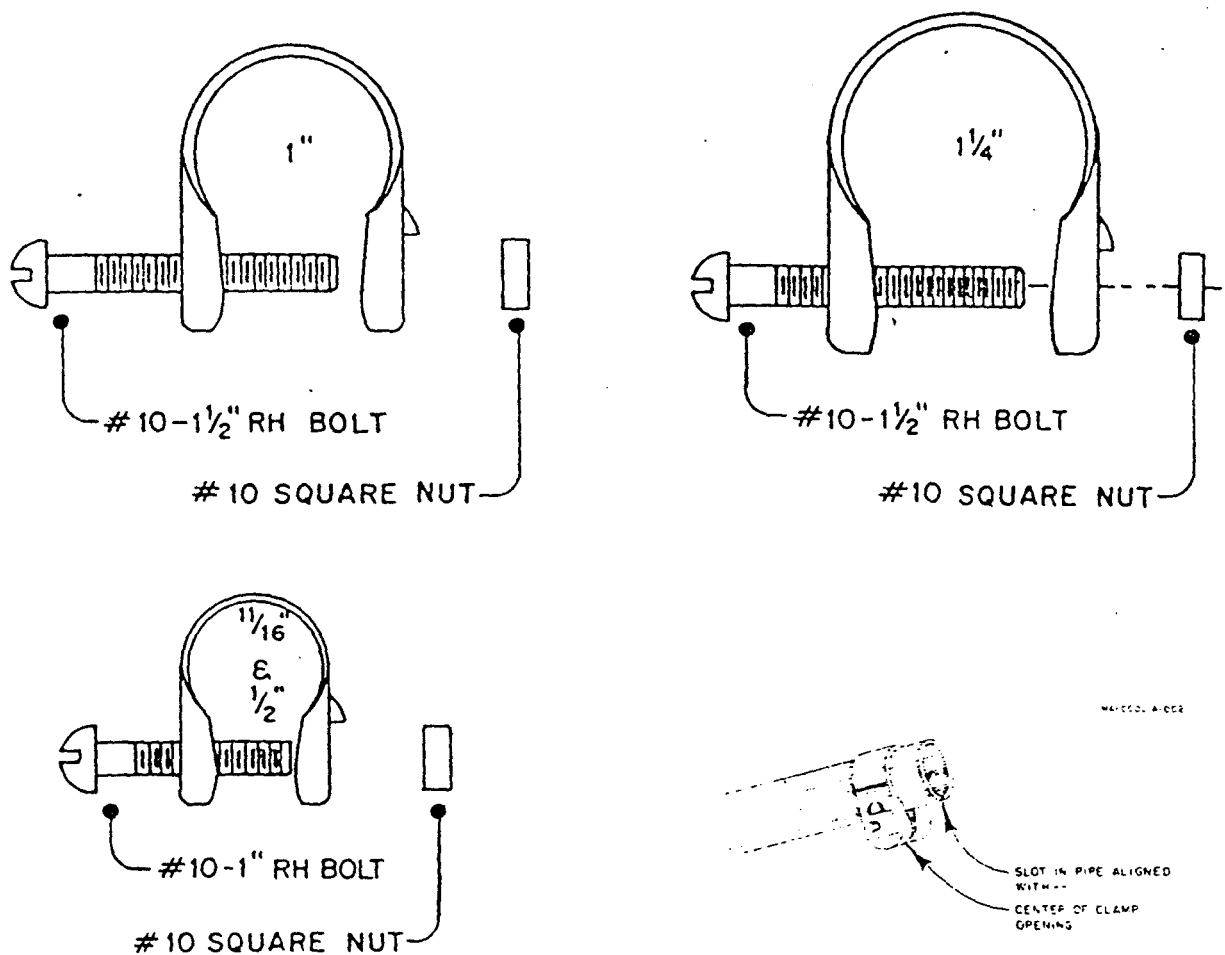


Figure 5

#### Beta Match

( ) Select the Beta Match tubes (3/4" x 17"), the beta support insulator and clamp as shown in Figures 3 and 6. Make certain the drilled ends of the beta tubes are pointed towards the Driven Element.

( ) Select the Beta Match shorting strap and the shorting clamp and assemble as shown in Figure 6. Notice that the 10-24 x 1 1/2" screw attaching the shorting straps to the clamp has a sleeve slipped over it. This allows you to install the shorting straps without causing undue strain on the Beta Match tube.

( ) Install the pigtail assembly (wire with solder lug on each end) on the Beta Match tubes using the two #10 metal screws and lockwashers. Slip the 1 1/4" tubing clamps on the driven element near the insulators. Loosely attach the pigtails to the tubing clamps using the 1/4"-20 x 1 1/2" screws as shown in Figure 6. Do not tighten the connection at this time. The coaxial feedline will connect to this point in a later step.

#### Director Element Assembly

( ) Select the remaining set of element-to-boom brackets and loosely assemble on the boom 80 3/8" from the center of the driven element-to-boom bracket to the center of the Director Element-to-boom bracket. Refer to Figure 3 and 4. Do not forget the anchor screws as shown in Figure 4.

( ) Select the D-1 section of tubing (1 1/4" x 28"). Insert the D-1 section into the bracket assembled on the boom. Tighten the screws to hold the element securely but do *not* tighten the anchor screws at this time.



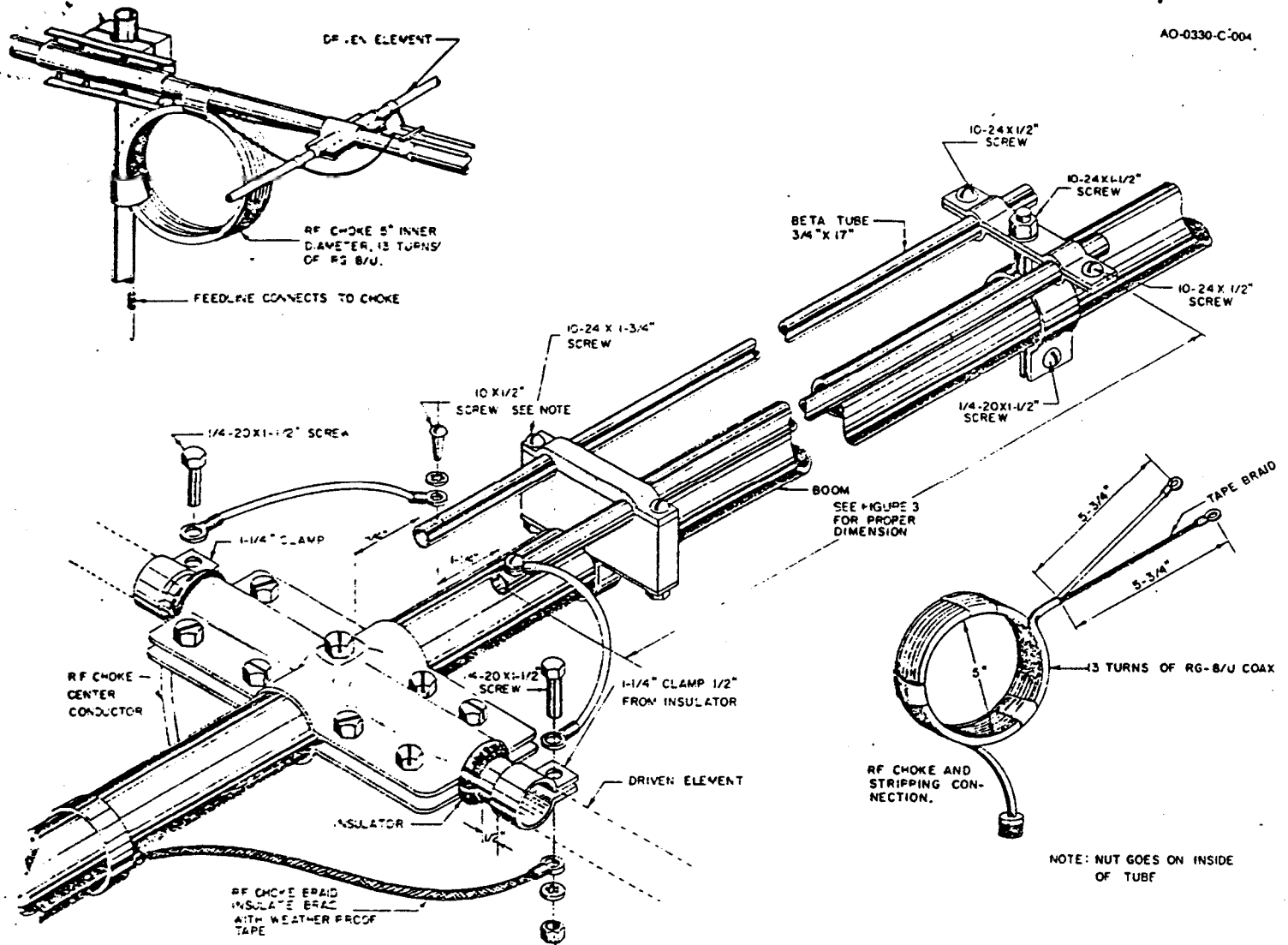


Figure 6

- ( ) Carefully recheck the 80 3/8" measurements from the center of the Driven Element bracket to the center of the Director Element bracket. Make certain the Director Element lies in the same plane as the other elements, then tighten the anchor securely.
- ( ) Assemble a 1 1/4" compression clamp and slip it over the D-1 section. Select the D-2 section (1 1/8" x 52 1/2"). Slip the unswaged end of the D-2 into the D-1 section and measure the dimension shown in Figure 3 for your mode of transmission. Tighten the compression clamps slightly.
- ( ) Assemble a 1" compression clamp and slip it over the swaged end of D-2. Select a 10-meter trap and slip the unswaged end into the D-2: Measure the dimension shown in Figure 3 for your mode of transmission. Make certain the trap drain holes are facing downward and tighten the compression clamp slightly.
- ( ) Assemble a 11/16" compression clamp and slip it over the swaged end of the 10-meter trap.
- ( ) Select the D-3 section (7/16" x 17 1/4") and slip it into the swaged end of the 10-meter trap. Measure the dimension shown on Figure 3 for your mode of transmission, then tighten the compression clamp slightly.
- ( ) Carefully recheck all measurements as shown in Figure 3 and make certain the trap drain holes are facing downward. Tighten all compression clamps securely.

Final Assembly

( ) Place 7/16" caplug on each element tip and a 2" caplug on each end of the boom. Wind an RF choke using RG-8/u coaxial cable as shown in Figure 6. This choke must consist of 13 turns with a 5" diameter. Strip one end of the choke as shown in Figure 6 and connect to the tubing clamps on the Driven Element. Tape the choke securely to the boom and weatherproof the connection to the Driven Element using Pli-O-Bond, Neoprene, or some similar substance. Also, tape the coaxial braid to prevent it from shorting out on the element bracket or the boom. A choke is necessary to keep unbalanced currents from flowing down the coax and decreasing the efficiency of the

NOTE: In place of the RF choke it is recommended that you obtain a Hy-Gain balun, Model BN-86, available at your local Hy-Gain dealer. The BN-86 allows the DB-1015A to operate with an efficiency greater than is possible with a "homemade" choke.

( ) Your DB-1015A is now ready to be installed on a 1 5/8" O.D. mast. Use one of the methods explained at the beginning of this section. When mounting the completed antenna, be certain to pin the bracket to the mast as explained in the section "Boom Assembly." Tape the coaxial feedline to the mast every 6" using waterproof tape.

( ) For lightning protection and noise free reception' ground the base of your tower. Use an 8' copper clad, steel ground rod driven into the ground as close to the base of the tower as possible. Attach the tower to the ground rod using #8 or larger copoer or aluminum wire. for total protection of your equipment from lightning it is recommended that you obtain a Hy-Gain Model LA-1, lightning arrestor.

This completes the **installation of your DB-1015A**. Happy DX'ing.

### SECTION III PARTS LIST

Part No.	Description	Qty	Part No.	Description	Qty
102734	cast aluminum bracket	2	509173	screw, 5/16"-18 x 2 1/4"	2
165919	bracket #13, 2" x 1 1/2"	4	506455	#10 x 1" bolt	6
165920	bracket #14, 2" x 1 1/2"	2	555362	nut, 10-24 square	18
171934	tubing, 2" x 70-13/16" drilled	1	556945	nut, 5/16"-18 hex	9
171935	tubing, 2" x 80-7/16" drilled	1	556960	nut, 1/4"-20 hex	31
171936	tubing, 7/16" x 19", R-3, DE-3 sections	4	556970	nut, 10-24 hex	8
171937	tubing, 7/16" x 17", D-3 section	2	558685	nut, 1/4"-20 square	6
171938	tubing, 3/4" x 17" drilled, Beta Match	2	567080	lockwasher, 5/16" split	9
172732	boom-to-bracket clamp	1	567085	flat washer, 5/16"	7
172735	casting-to-boom bracket	1	567110	lockwasher, 1/4" int.	44
190303	tubing, 1 1/4" x 52", DE-2 section	2	567125	#10 lockwasher, int.	16
190304	tubing, 1 1/4" x 52 1/2", D-2 section	2	879225	Parts Package B contains:	
190305	tubing, 1 1/4" x 55", R-2 section	2	360284	compression clamp, 11/16"	6
190902	tubing, 1 1/4" x 28", D-1 section	2	380287	compression clamp, 1 1/4"	6
190903	tubing, 1 1/4" x 36 1/2", DE-1 section	2	380286	compression clamp, 1"	6
190904	tubing, 1 1/4" x 46", R-1 section	2	168695	tubing clamp, 1 1/4" feedpoint	2
872804	trap, 10-meter assembly	6	872805	pigtail assembly	2
879244	Parts Package A contains:		171077	shorting clamp, boom-to-beta, 2" I.D.	1
501541	screw, 5/16"-18 x 3 1/2"	3	171131	beta sleeve, 5/16" x 1/2"	1
501543	screw, 5/16"-18 x 5"	4	171162	shorting strap, Beta Match	2
506325	screw, 1/4"-20 x 3/4"	28	177888	beta clamp, 1/2" x 2" Dia.	1
506335	screw, 1/4"-20 x 1 1/2"	3	872982	Parts Package C contains:	
505540	screw, 1/4"-20 x 3/8"	6	455625	caplug, 2"	2
506440	screw, 10-24 x 1 1/4"	2	455644	caplug, 7/16"	6
506445	screw, 10-24 x 1 1/2"	13	465595	support insulator, Beta Match	1
506485	screw, 10-24 x 1/2"	4	465600	top insulator, Beta Match	1
			465833	Driven Element insulator	2

## CAUTION

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Both bands must be adjusted to the same mode for proper operation of the antenna,

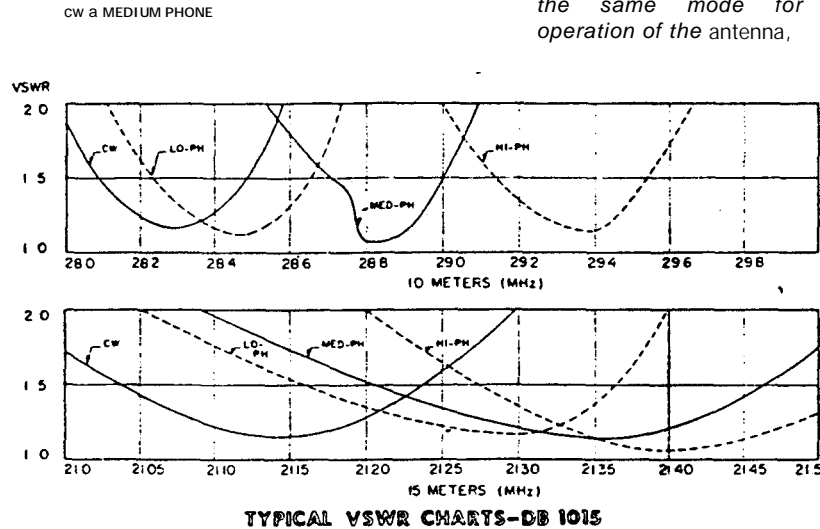


Figure 7

## 110-DAY LIMITED WARRANTY

Hy-Gain Electronics Corporation Hy-Gain warrants for a period of 90 days from the date of purchase by the original consumer purchaser as products manufactured by it and bearing my-Gam model numbers to be free from defective material and workmanship under normal use and service and agrees to repair or replace at our option such products, if investigation discloses the defect to be the fault of our manufacture Hy-Gain's obligation under this warranty is limited to repairing or replacing any such product which upon out examination proves to be so defective

This warranty applies only to the original consumer purchaser Upon receipt of equipment the buyer is responsible for checking the contents for damage Any shipping damage should be referred to the Garner

This warranty does not apply to any Hy-Gain products which have been repaired, worked on, or altered by persons not authorized by Hy-Gain to do so, or products the stability or reliability of which have been injured by such repair or which have been the Subject of misuse negligence or accident Neither does this warranty apply to any of our products which has been connected installed used, or otherwise adjusted other than in accordance With instructions furnished by Hy-Gain

HY-GAIN ELECTRONICS DOES NOT ASSUME ANY LIABILITY FOR INCIDENTAL, SPECIAL AND/OR CONSEQUENTIAL DAMAGES OF ANY KIND WHATSOEVER, AND IN ANY EVENT, OUR LIABILITY SHALL IN NO CASE EXCEED THE ORIGINAL PURCHASE PRICE OF THE PRODUCT

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you

Accessories Supplied by, but not manufactured by Hy-Gain Electronics Corporation, shall carry only such warranty as is available from the manufacturer of such goods and are specifically excluded from this warranty

This warranty is void if Hy-Gain shall inspect our equipment and find it to have been modified or improperly installed or used The warranties contained herein are the sole express warranties made by Hy-Gain Electronics Corporation on this product

LIMITATION OF DURATION OF IMPLIED WARRANTIES - IMPLIED WARRANTIES INCLUDING WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS ARE EXPRESSLY LIMITED IN DURATION TO THE 90-DAY PERIOD OF THIS

Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you

No Person, Including any dealer, agent, distributor or representative of Hy-Gain is authorized to assume for Hy-Gain any liability on its behalf or in its name, except to refer purchasers to this warranty

All claims of defect or shortage should be sent postage prepaid to

Hy-Gain Warranty Service Hy-Gain Electronics Corporation 4900 Superior Avenue Lincoln, Nebraska 68504

To speed up your claim you should mail the warranty card in immediately, though it is not a condition of this warranty. That places your name on file and speeds up handling of any claim you may have in the future However, for some reason you do not mail in the card, a copy of a document such as a sales receipt recording the date, place, and proof of purchase will, if satisfactory to the service department, also serve to establish your warranty rights Your warranty claim should include all pertinent details- along with the part or item numbers involved

All products subject to repair or replacement under such warranty must be mailed or returned to the above my-Gain Electronics Warranty Service Station, transportation prepaid by the purchaser within ninety days from the date of purchase by the original consumer purchaser. We suggest that you notify the Warranty Service Station and obtain prior authorization before you return the product Unexpected returns are greatly delayed in handling These delays can be avoided by writing in advance and furnishing the necessary information

Hy-Gain reserves the right to ship new and/or improved products which are similar to the form, fit, and function of (Products originally ordered or purchased)

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state

HY-GAIN ELECTRONICS CORPORATION  
8601 Northeast Hwy 6  
Lincoln Nebraska 68505