

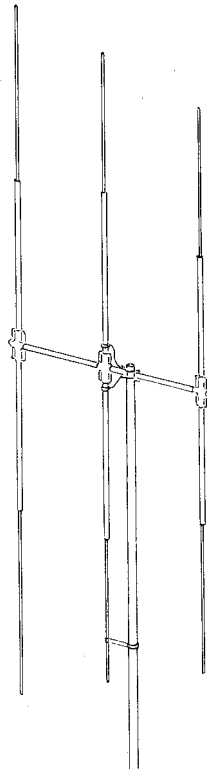
# INSTRUCTION MANUAL

**ORDER NO. 533**

Model CB-3  
CB, 3-element beam

PN 805667

AO-0533-A-001



**Figure 1**

**General Description** The Hy-Gain Model CB-3 is a 3-element beam designed to operate over the entire frequency range (26.9 to 27.3 mc). It develops a forward gain of 8 dB, has a front-to-back ratio of 20 dB and front-to-side ratio of 40 dB.

**Assembly Instructions** Unpack the antenna from the carton and check the parts against the parts list. Use the drawings to help you in identifying the parts.

**Boom-to-Mast Bracket Assembly** Select the boom-to-mast body and the boom-to-mast clamp and loosely assemble using four 1/4"-20 x 3/4" screws in the outside holes only. The inside holes will be used later for the U-bolts. Insert the boom tubes (ends not drilled) into boom-to-mast clamp. Holes in tubes must be horizontal. Now, tighten the four screws in the boom-to-mast bracket securely. See Figure 2.

**Element-to-Boom Bracket Assembly** Select the two sets of small element-to-boom brackets and mount them on each end of the boom in the pre-drilled holes using 10-24 x 1-3/4" screws, nuts, and lockwashers as shown in Figure 3.

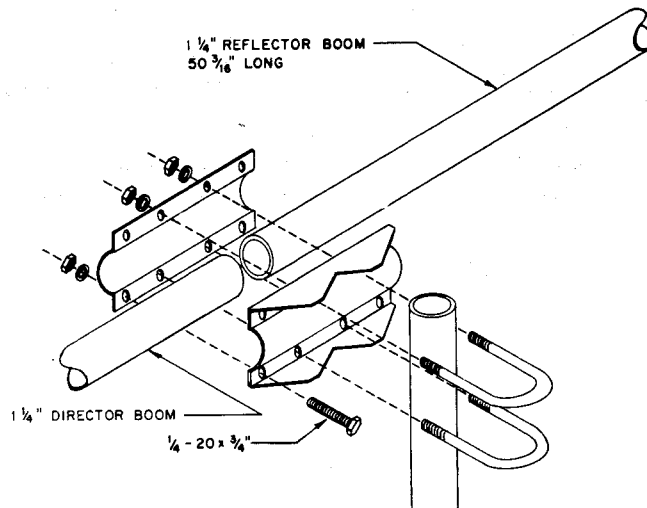


Figure 2. Boom-to-mast detail

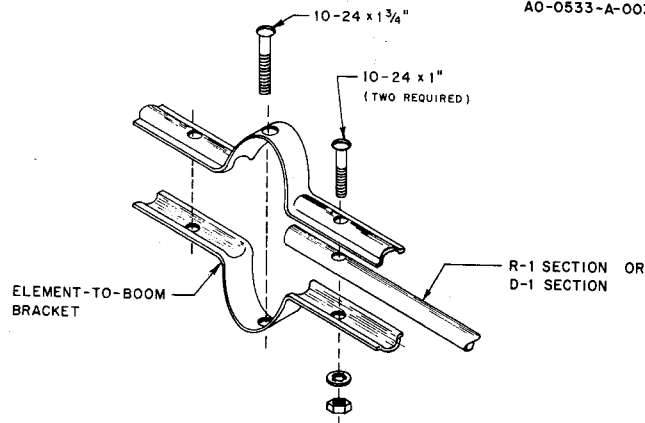


Figure 3. Element-to-boom detail

**Reflector Assembly**

( ) Select the two R1 sections (7/16'' x 57-1/2'') and slip the end with a hole drilled through both walls into the element-to-boom bracket that you just installed on the end of the boom (long end). Fasten securely using two 10-24 x 1'' screws, nuts, and lockwashers. See Figure 3.

( ) Select the two R2 sections (3/8'' x 57-1/4'') and slip the drilled end into the R1 section. Line up the holes and secure using #8 x 3/8'' self-tapping screws.

**Direction Element Assembly**

( ) Now select the two D1 sections (7/16'' x 48'') and slip the end with the hole drilled through both walls into the element-to-boom bracket that you just installed on the end of the boom (short end). Fasten securely using two 10-24 x 1'' screws, nuts, and lockwashers.

( ) Now select the D2 sections (3/8" x 53-1/4") and slip the drilled end into the D1 section. Line up the holes and fasten securely using #8 x 3/8" self-tapping screws.

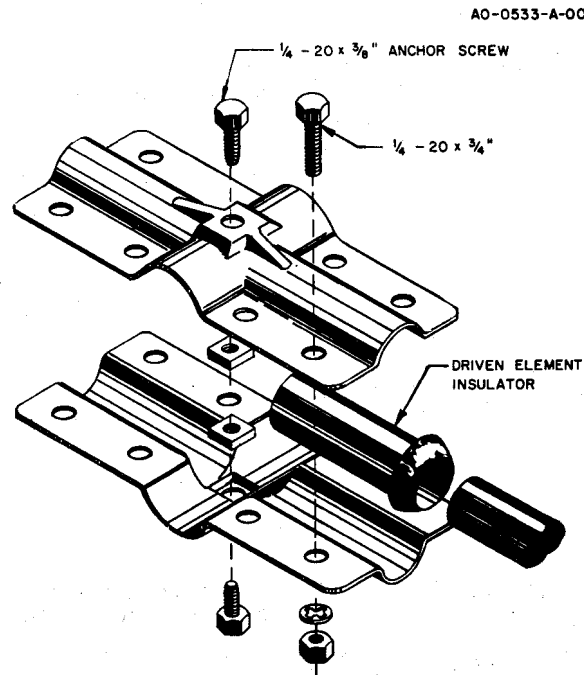


Figure 4. Driven Element detail

#### Driven Element Assembly

( ) Select the two Driven Element brackets and install a 1/4"-20 x 3/8" anchor screw and square nut in each of the center holes as shown in Figure 4. **Do not tighten at this time.**

( ) Assemble the Driven Element bracket on the reflector end of the boom 41-5/8" from the center of the reflector bracket to the center of the Driven Element bracket as shown in Figure 5. **Do not tighten the anchor screws at this time.**

( ) Select the two DE1 sections 7/16" x 58" and slip an insulator over the undrilled end of each, then slip the insulated end into the Driven Element bracket. Tighten the screws to hold the element securely. Tighten the anchor screws securely.

( ) Select the DE2 sections 3/8" x 50" and note that one has a hole drilled 1" from the end and the other has a hole drilled 2-1/2" from the end. The tube with a hole drilled 1" from the end is for the top Driven Element and the tube with a hole drilled 2-1/2" from the end is for the bottom Driven element.

( ) Insert the top DE2 section (hole drilled 1" from end) into the top DE1 section, align the holes and secure with a #8 x 3/8" self-tapping screw.

( ) Insert the bottom DE2 section (hole drilled 2-1/2" from end) into the bottom DE1 section, align the holes and secure with a #8 x 3/8" self-tapping screw.

REFLECTOR

A0-0533-C-005

DRIVEN ELEMENT

DIRECTOR

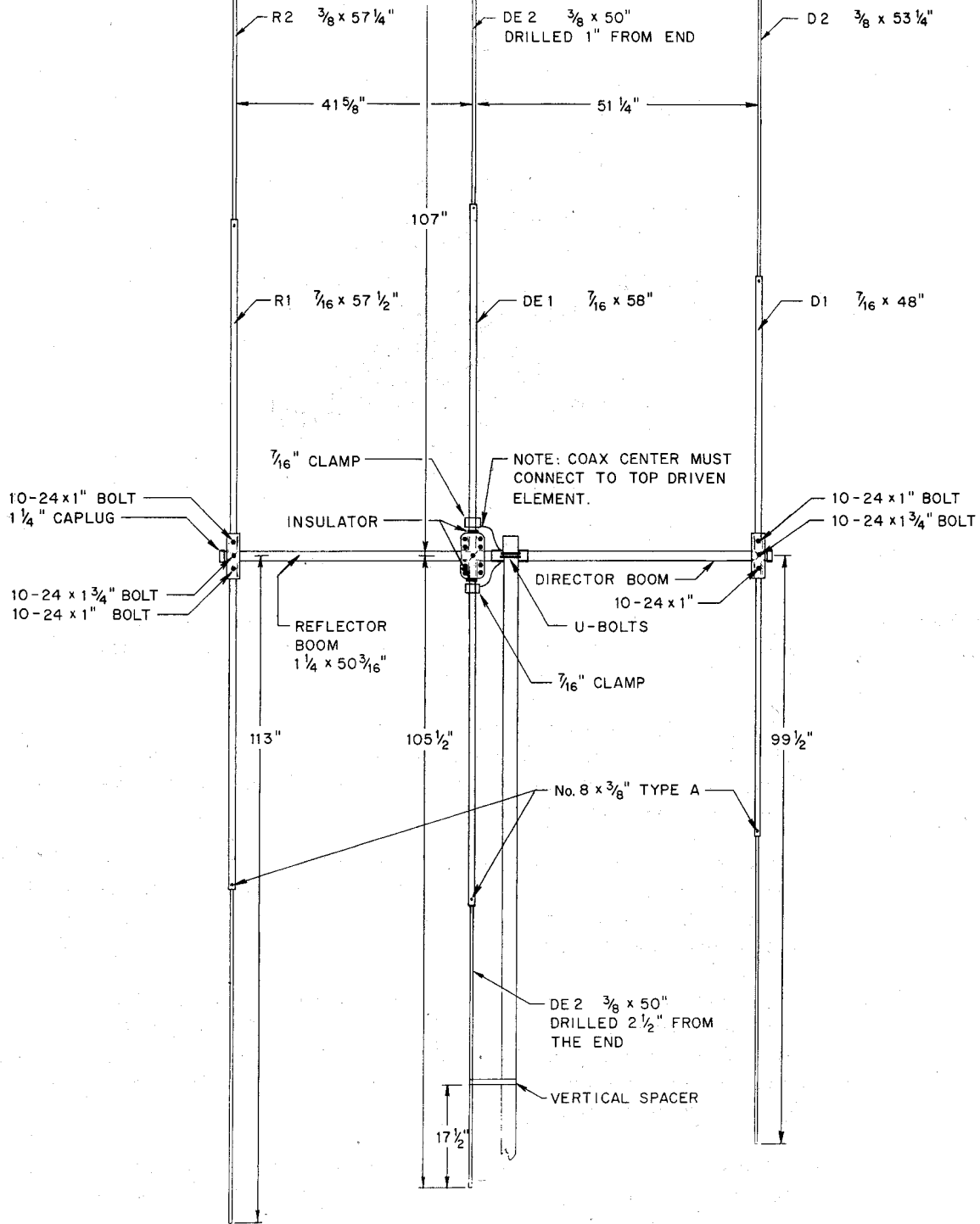


Figure 5

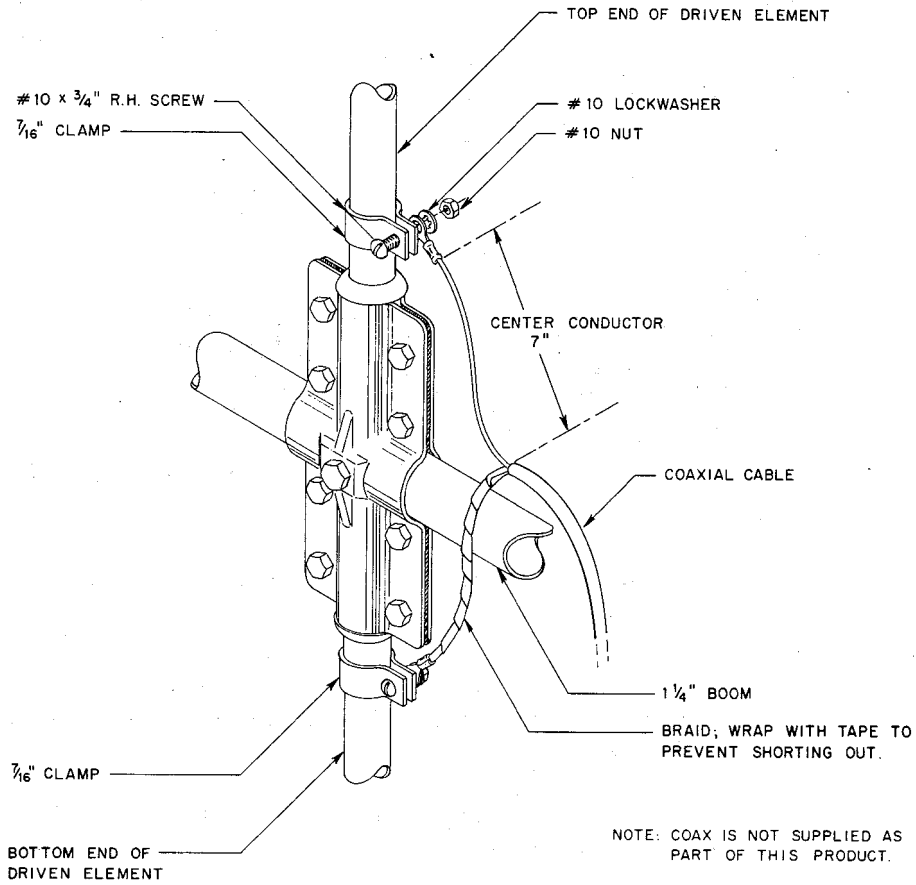
**Coax Trimming**

( ) Trim back the coaxial cable approximately 7" and solder one # 10 solder lug on the center conductor and one on the braid as shown in Figure 6.

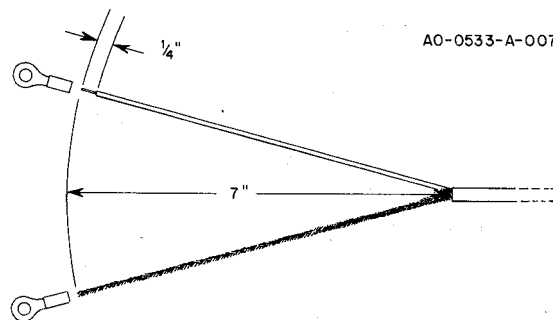
**Connecting Coax**

( ) Refer to Figure 6; place 7/16" clamp around the top and bottom Driven Element tubes near the Driven Element insulator.

AO-0533-C-006



**Connecting coax to Driven Element**



**Coax stripping detail**

**Figure 6**

( ) Using a #10 x 3/4" bolt, nut, and lockwasher, connect the coax to these two brackets as shown. Make sure the braid is attached to the bottom end of the Driven Element and the coax center conductor attached to the top end of the Driven Element.

( ) Wrap the braid with weatherproof tape to prevent it from shorting out. Weatherproof the connection using Pli-O-Bond, neoprene or some similar substance.

### Mounting

Now, mount the antenna on a mast and tighten securely using the U-bolts supplied. This antenna can be rotated with any common TV rotator. If the antenna is mounted on a tower, make certain the mast extends above the tower sufficient distance to allow the lower tip of the Driven Element to be above the tower.

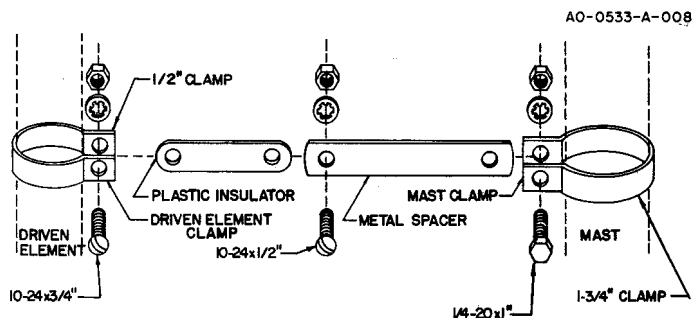


Figure 7. Vertical spacer assembly

### Vertical Spacer Assembly

Attach the Driven Element to the mast with the vertical spacer.

Figure 7 shows the correct assembly and all parts needed to assemble the vertical spacer.

This connection should be made 17-1/2" from the end of the bottom Driven Element as shown in Figure 5.

### Stacking Two Model CB-3 Antennas

( ) Construct an 18 ft. boom as shown in Figure 10

( ) Form a beta match out of 1/8" wire as shown. Four will be necessary (two on each antenna). The beta match will help properly tune the antenna to the phasing lines. See Figure 8.

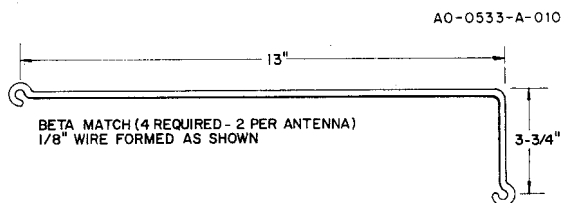
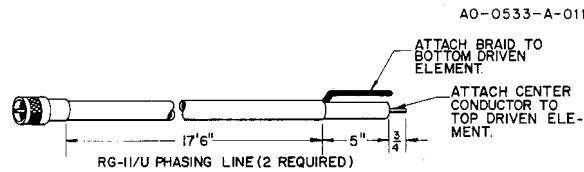


Figure 8

( ) When assembling the antenna, the Driven Element must be slightly modified to complete the antenna tuning. Do this by adjusting each side of the Driven Element to 106-3/8" from center of boom to tip of element.

( ) Install the beta match (two per antenna) on the antenna boom as shown in the drawing. This will require drilling the boom and inserting a 2" screw.



**Figure 9**

( ) Construct the phasing lines made of RG-11/U coaxial cable. Two phasing lines are required and make all measurements accurate. See Figure 9.

( ) Install the phasing lines onto the antennas making certain the center conductor attaches to the top Driven Element and the braid attaches to the bottom Driven Element. Attach the phasing line to the Driven Element using the tubing clamp which attaches the beta match.

**NOTE:** Insulate braid with tape to prevent it shorting out on element bracket or boom.

( ) Bring the phasing lines back to the center and down the mast. Connect them together using a "T" connector. Feed the antenna at this point using RG-8/U coaxial cable.

( ) Be certain to weatherproof all connections using Pli-O-Bond, neoprene or some similar substance. Securely tape all coaxial cable to the boom and mast using weatherproof tape installed every 12 in.

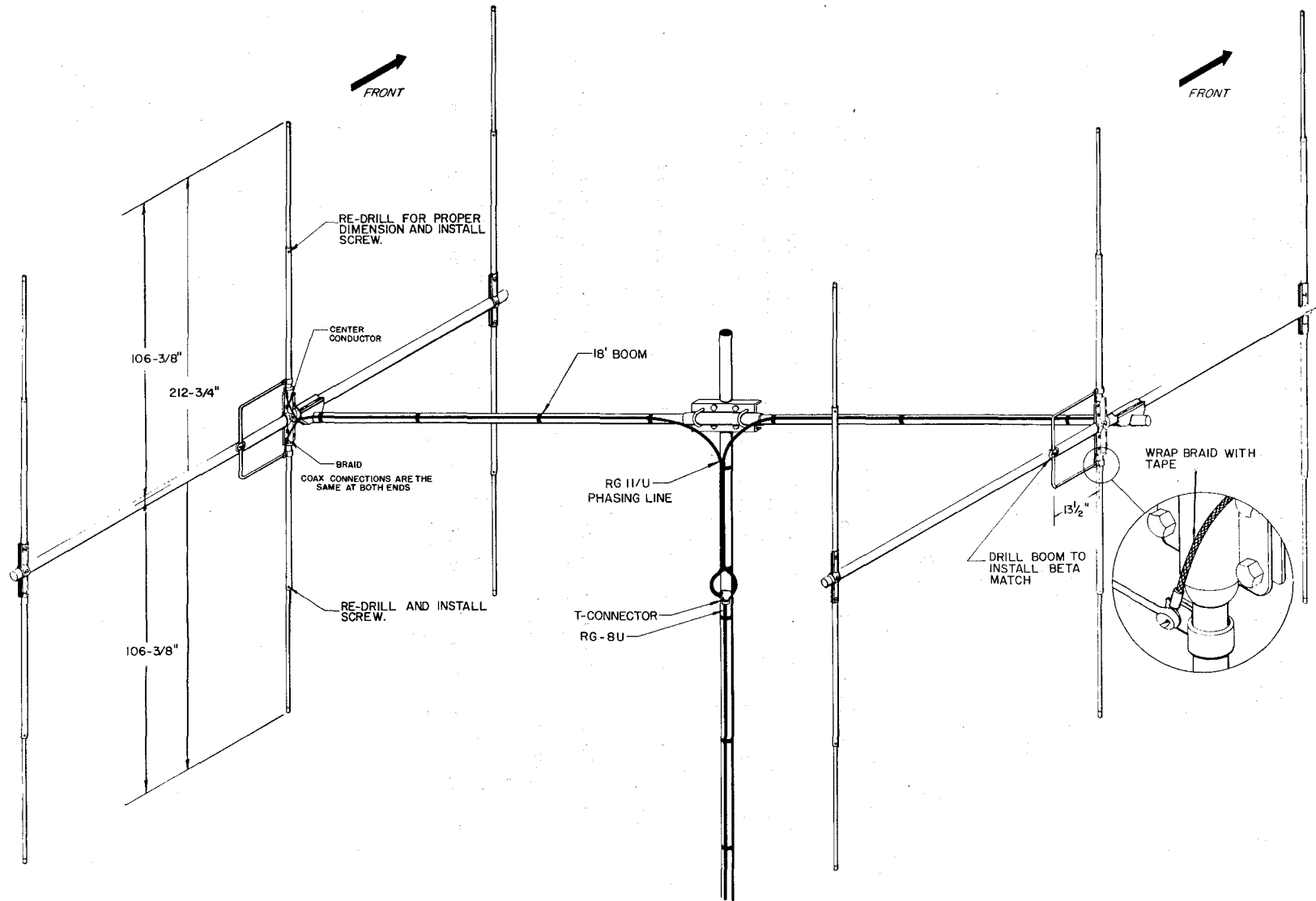


Figure 10



## Parts List

Part No.	Description	Qty
171481	boom, ref. 1-1/4" x 50-3/16"	1
175198	boom, dir, 1-1/4" x 45-13/16"	1
175199	R1, 7/16" x 57-1/2" drl.	2
175207	R2, 3/8" x 57-1/4" drl	2
175208	D1, 7/16" x 48" drl.	2
175209	D2, 3/8" x 53-1/4" drl.	2
175874	DE1, 7/16" x 58"	2
175875	DE2, bottom, 3/8" x 50" drl. 2-1/2"	1
175876	DE2, top, 3/8" x 50" drl. 1"	1
165141	Driven Element bracket	2
385142	boom-to-mast bracket	1
385144	boom-to-mast bracket clamp	1
384640	element-to-boom bracket	4
872330	Parts Pack	1
163307	7/16" clamp	2
506455	screw, 10-24 x 1" RH	4
506460	screw, 10-24 x 3/4" RH	3
506440	screw, 10-24 x 1-3/4" RH	2
163314	1-3/4" clamp	1
171508	2-1/2" strip, formed	1
165372	spacer, 5/8"	1
455630	caplug, 1-1/4"	2
465216	insulator driven element	2
473781	insulator, spacer	1
506325	screw, 1/4-20 x 3/4" HH	12
506389	screw, 1/4"-20 x 1" HH	1
506485	screw, 10-24 x 1/2" RH	1
519386	screw, #8 x 3/8" type A	6
545146	U-bolt, 5/16"-18	2
505540	screw, 1/4"-20 x 3/8"	2
556945	nut, 5/16"-18	4
556960	nut, 1/4"-20 hex	13
556970	nut, 10-24 hex	10
558685	nut, 1/4"-20 square	2
567075	lockwasher, 5/16"	4
567110	lockwasher, 1/4"	13
567125	lockwasher, #10	10
567135	lockwasher, #8	6
698922	#10 solder lug	2

## 90-DAY LIMITED WARRANTY

Hy-Gain Electronics Corporation warrants each new product manufactured to be free from defects in material and workmanship and agrees to remedy any such defect or to furnish a new part in exchange for any part of any unit which under normal installation, use, and service, discloses such defect within the ninety-day term of this warranty, dated from the date of purchase by the original owner. This warranty applies only to the original purchaser.

This warranty does not extend to any of our products which have been subjected to misuse, neglect, accident, incorrect wiring not our own, improper installation, or to use in violation of instructions furnished by us. Nor does it extend to units which have been repaired or altered outside of our factory, nor to accessories used therewith not of our own manufacture.

Upon receipt of equipment, the purchaser is responsible for checking the contents for damage. Any shipping damage should be referred to the carrier.

Hy-Gain Electronics Corporation reserves the right to make any changes deemed necessary or desirable without advance notice or incurring any obligation to make like changes in units previously manufactured or sold.

This warranty does not cover transportation costs that may be incurred. Hy-Gain Electronics Corporation's sole liability is the remedy of any defect for the ninety-day period of this warranty. Hy-Gain Electronics Corporation is not responsible for

personal injury or property damage resulting from improper or careless installation, or usage not intended by the manufacturer.

No person is authorized to assume for us any other liability in connection with the sale of our products.

All warranties are void and terminated one year after the last unit of its type and design has been manufactured by us.

All claims of defect or shortage should be addressed to:

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

You must furnish model number, date, place, and proof of purchase, such as a copy of the sales receipt to establish warranty. Your letter should include all pertinent details along with part or item numbers involved. Do not return anything until requested to do so. No warranty card is furnished; you must supply the above information.

Any returned items must have prior authorization. Unexpected returns are greatly delayed in handling. These delays can be avoided by writing in advance and furnishing the necessary information.