

**TH2-MK3 2-Element
HF Beam 10, 15, 20-
Meter**

Please record the following information for your records:

Date of Purchase: _____

Purchased From: _____

Price Paid: _____

Please retain your copy of the Bill-of-Sale for warranty claims.

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CHAPTER 1 GENERAL INFORMATION

General

This antenna model is a two-element tri-bander designed to cover 10, 15 and 20 meters. Automatic band switching is accomplished through the use of Hy-Gain's "Hy-Q" traps. The exclusive Beta Match system insures optimum transfer of electrical energy. The TH2MK3-S now features stainless steel hardware and clamps for all electrical and most mechanical connections.

The antenna features taper swaged, seamless aluminum tubing for maximum mechanical reliability. The stainless steel tube clamps insure the best possible mechanical and electrical connections. The antenna is small in size but will give big beam performance.

Specifications

Electrical

| | |
|----------------------------|----------------------|
| Forward Gain | 5.5 dBi |
| Front-to-Back Ratio | 15-20 dB |
| Maximum Power Input | Maximum legal |
| VSWR (at resonance) | less than 1.5:1 |
| Frequency Range | 10, 15 and 20 meters |
| Lightning Protection | DC ground |
| Nominal Impedance | 50 ohms |

Mechanical

| | |
|--------------------------|--|
| Boom Length | 72" (1.8 m) |
| Boom Diameter..... | 2" (5.1 cm) |
| Longest Element..... | 27.3 ft. (8.32 m) (approximately) |
| Accepts Mast..... | 1 1/4" - 2 1/2" O.D. (32 mm - 64 mm) |
| Maximum Wind..... | 80 mph (129 kmph) |
| Wind Surface Area..... | 3.25 sq. ft. (3019.3 cm ²) |
| Wind Load (80 mph) | 83.0 lbs. (37.6 kg) |
| Turning Radius | 14.3 ft. (4.35 m) |
| Net Weight | 20 lbs (9.1 kg) |
| Element Tube Clamps..... | stainless steel |
| Hardware | stainless steel (except for 7 long boom-to-mast bolts) |
| Suitable Rotators | Hy-Gain AR-22XL, AR-40 or CD45-II |

CHAPTER 2

Preparation for Assembly

FOR OUR OVERSEAS CUSTOMERS: If you use the Metric System, see the American-to-Metric Conversion Table in the rear of this manual. The United States uses American units of weights and measures.

Choose a large, clear area to assemble the TH2MK3-S. The area must be at least 6'x 30' (1.83 m x 9.14 m). You may wish to use sawhorses or chairs to support the boom during assembly. An alternate method involves driving a 5' (1.5 m) length of mast material into the ground and attaching the boom and boom-to-mast bracket to this mast temporarily during assembly. This permits eye-level installation of parts and allows easy alignment of elements after assembly. If you assemble this antenna over a grassy area, precautions should be taken so that hardware is not accidentally lost during assembly. A

Tools: The following tools are required for easy assembly of the TH2MK3-S.

| QTY | Type Tool |
|-----|---------------------------|
| 1 | Tape Measure, 12-foot |
| 2 | Adjustable Wrench, 8 inch |
| 1 | Nut Driver, 7/16 inch |
| 1 | Nut Driver, 3/8 inch |
| 1 | Nut Driver, 5/16 inch |

When unpacking your antenna, check inside of all tubing parts (traps, smaller tubing, etc.). To conserve space, these smaller articles are sometimes put inside larger pieces. Check all parts against the Parts List to make sure no parts are missing.

All tubing supplied with the TH2MK3-S telescopes together. Make all measurements to the given dimensions, plus or minus, no more than 1/8 inch!

The assembly of this antenna will be easier if you read this manual completely through at least three (3) times before beginning assembly. Allow at least 3 hours for assembly. Double and triple check ALL dimensions after

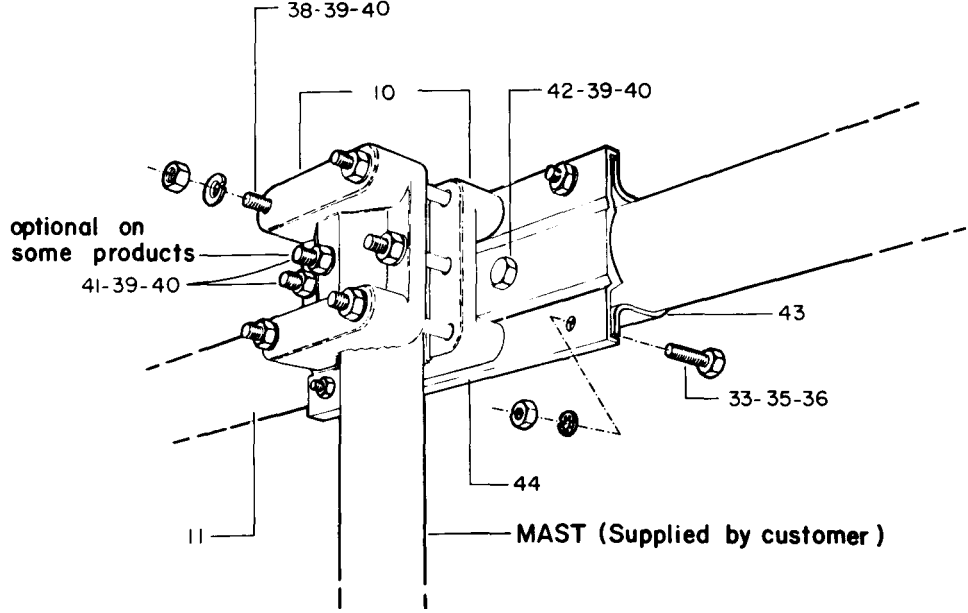
NOTE: An extra Figure 6 has been inserted in this manual for use when assembling the antenna.

Assembly of the Boom-To-Mast Brackets and Boom

Select the boom-to-bracket clamp parts (Item Nos. 44 and 43). Loosely assemble them on the boom ends (Item No. 11), as shown in Figure 1. Line up the holes on both brackets and both boom ends. Secure the two brackets together with four (4) 1/4" - 20 x 3/4" bolts, nuts and lockwashers. Secure the brackets to the boom ends using the 5/16"-18 x 2 3/4"

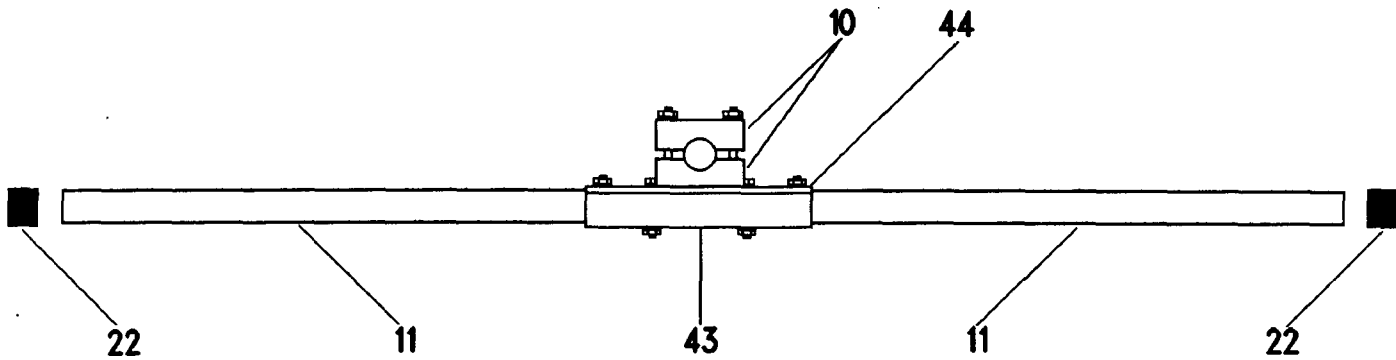
NOTE: One end of the boom has three holes drilled. These holes must face up (skyward) when the boom is assembled in the boom-to-mast bracket. These holes will be used to attach the beta match in a later step as shown

Assemble the two cast aluminum brackets (Item No. 10) on the mast at the desired height above your tower. Secure the two brackets together using the two (2) 5/16"-18 x 31/2" bolts, nuts and lockwashers. You may wish to drill a hole through your mast so that the remaining 5/16"18 x 31/2" bolt may be inserted through the cast brackets and the mast and tightened. This bolt will prevent the antenna from twisting on the mast in high winds. See Figure 1. The four (4) inch bolts



| Item No. | Description | Item No. | Description |
|----------|--------------------------------|----------|-----------------------------------|
| 10 | Bracket, mast, cast aluminum | 39 | Lockwasher, split, 5/16" |
| 11 | Boom Assembly, 2" x 72" | 40 | Nut, hex, 5/16"-18 |
| 33 | Bolt, hex head, 1/4"-20 x 3/4" | 41 | Bolt, hex head, 5/16"-18 x 3 1/2" |
| 35 | Lockwasher, internal, 1/4" | 42 | Bolt, hex head, 5/16"-18 x 2 |
| 36 | Nut, hex, 1/4"-20 | 43 | Clamp, boom-to-bracket |
| 38 | Bolt, hex head, 5/16"-18 x 5" | 44 | Bracket, casting-to-boom |

Figure 1 Boom-to-Mast Bracket



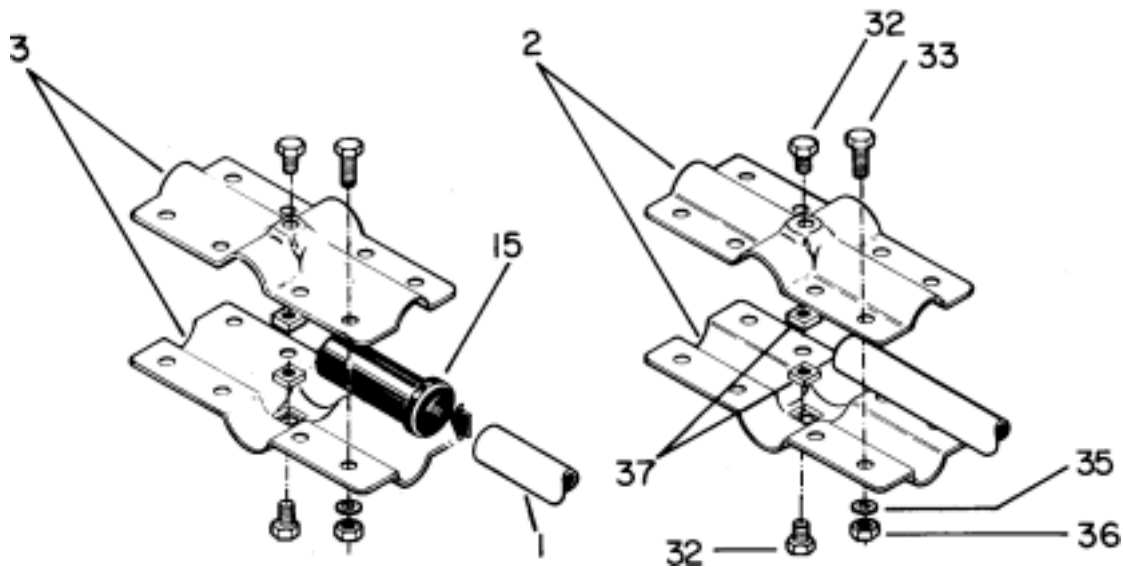
| Item No. | Description | Item No. | Description |
|----------|------------------------------|----------|--------------------------|
| 10 | Bracket, mast, cast aluminum | 43 | Clamp, boom-to-bracket |
| 11 | Boom Assembly, 2" x 72" | 44 | Bracket, casting-to-boom |
| 22 | Caplug, 2" | | |

Figure 2 Assembly of Boom

Element-to-Boom Brackets

To save time, loosely assemble all of the element-to-boom brackets and their appropriate hardware before beginning further installation of the antenna. See Figure 3. The different sized brackets can be identified by a number stamped into the surface of each bracket half. DO NOT tighten the bolts until instructed to do so.

AO-390S-B-009



NOTE: The #13 and #14 brackets use the same size bolts, lockwashers and nuts - identical

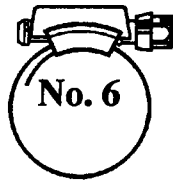
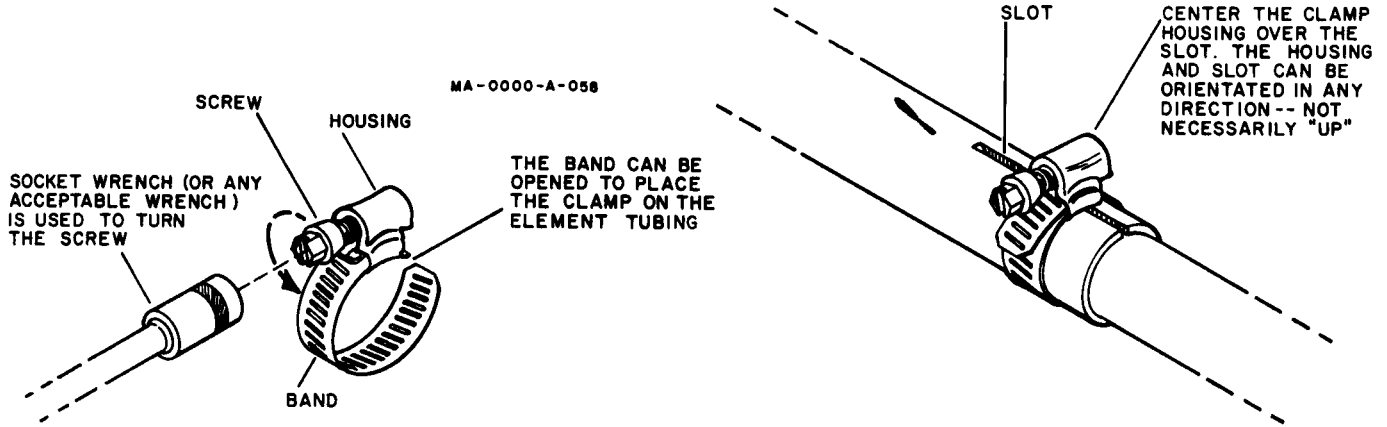
| Item No. | Description | Item No. | Description |
|----------|-------------------------------------|----------|----------------------------|
| 1 | Tube, slotted, 1 1/4" x 48" | 33 | Bolt, hex head, 1/4"-20 x |
| 2 | Bracket #13, reflector-to-boom | 35 | Lockwasher, internal, 1/4" |
| 3 | Bracket #14, driven element-to-boom | 36 | Nut, hex, 1/4"-20 |
| 15 | Insulator, driven element | 37 | Nut, square, 1/4"-20 |
| 32 | Bolt, hex head, 1/4"-20 x 3/8" | | |

Figure 3 Element-to-Boom Brackets

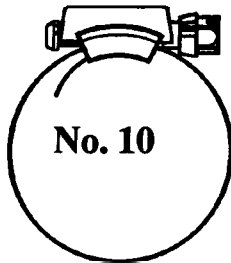
Installation of Tubing

Select the proper size tube clamp as shown in the chart. When installing the clamps, place the clamp near the tube end with the top of the clamp over the slot in the tube as shown in Figure 4.

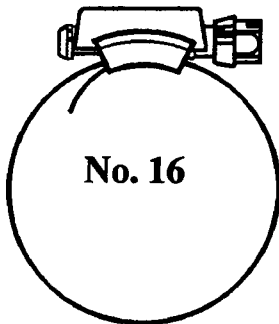
After adjustment of the tubing lengths, tighten the clamp with a 5/16 inch nut driver, socket, or open end wrench until the tubing will not twist or telescope.



| Part No. | Description | Fits Tubing Sizes |
|----------|---|-------------------|
| 358756 | Clamp, Size #6 all stainless steel 5/16" hex head screw | 1/2 and 3/4" |



| Part No. | Description | Fits Tubing Sizes |
|----------|---|-------------------|
| 358757 | Clamp, Size #10 all stainless steel 5/16 hex head screw | 1" |



| Part No. | Description | Fits Tubing Sizes |
|----------|---|-------------------|
| 358758 | Clamp, Size #16 all stainless steel 5/16 hex head screw | 1 1/4" |

Figure 4
Tube Clamps

Driven Element Assembly

Select a large set of element-to-boom brackets (marked with a #14) and loosely assemble on the boom as shown in Figure 3. **DO NOT** forget the 1/4"-20 x 3/8" anchor screws and their associated square nuts. Assemble the bracket on the end of the boom that has the pre-drilled holes for the Beta Match.

Select two (2) 1 1/4" x 48" sections of tubing (Item No. 1). Slip an insulator on one end of each tube, as shown in Figures 3 and 7, and slip the insulated end of the tubing 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.

Select two (2) No. 16 tube clamps and assemble as shown in Figure 4. Slip the clamps onto each of the 1 1/4" tubing sections installed on the boom.

Select the 11/8" x 38" section of tubing and slip the unswaged end into the 11/4" tubing. Adjust the tubing to the dimensions shown in Figure 6 for your mode of transmission, then tighten the clamp securely.

Place a No. 10 clamp on the swaged end. **DO NOT TIGHTEN.**

Select the 10-meter trap. Notice that the part number is marked near one end. This is the shorted end of the trap. Slip the shorted end of the trap into the 1 1/8" tubing. Measure the dimension shown in Figure 6 for your mode of transmission, then tighten the clamp securely. Ensure that the drain holes are facing the ground and trap caps are firmly seated.

Select two No. 10 tube clamps and slip them on the end of the 1" x 5" section of tubing over the 10-meter trap, then slip the unswaged end of the 15-meter, driven element trap into the 1" x 5" section of tubing. Keeping the 5" section of tubing approximately equidistant from the two traps. measure the dimensions shown in Figure 6 for your mode of transmission. **NOW**, tighten the clamps securely.

Select a No. 6 tube clamp and slip the clamp over the swaged end of the 15-meter trap.

Select the 7/16" x 28" section of tubing and slip it into the 15-meter trap. Measure the dimension shown in Figure 6 for your mode of transmission, then tighten the clamp securely.

Place a 7/16" caplug on each end of the driven element.

WARNING

When installing our system take extreme care to avoid any accidental contact with power lines or overhead obstructions. Failure to exercise this care could result in serious or fatal injury.



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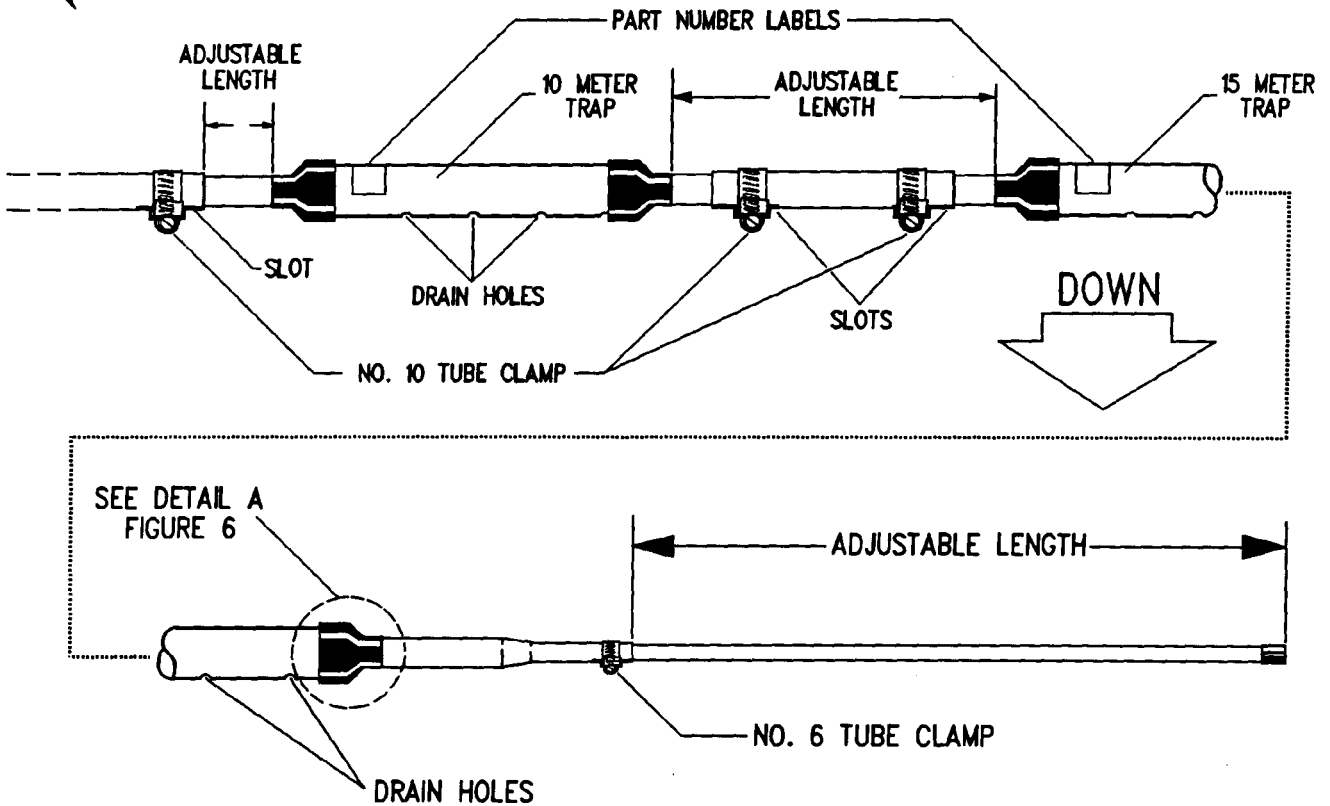


Figure 5 Element Assembly Detail

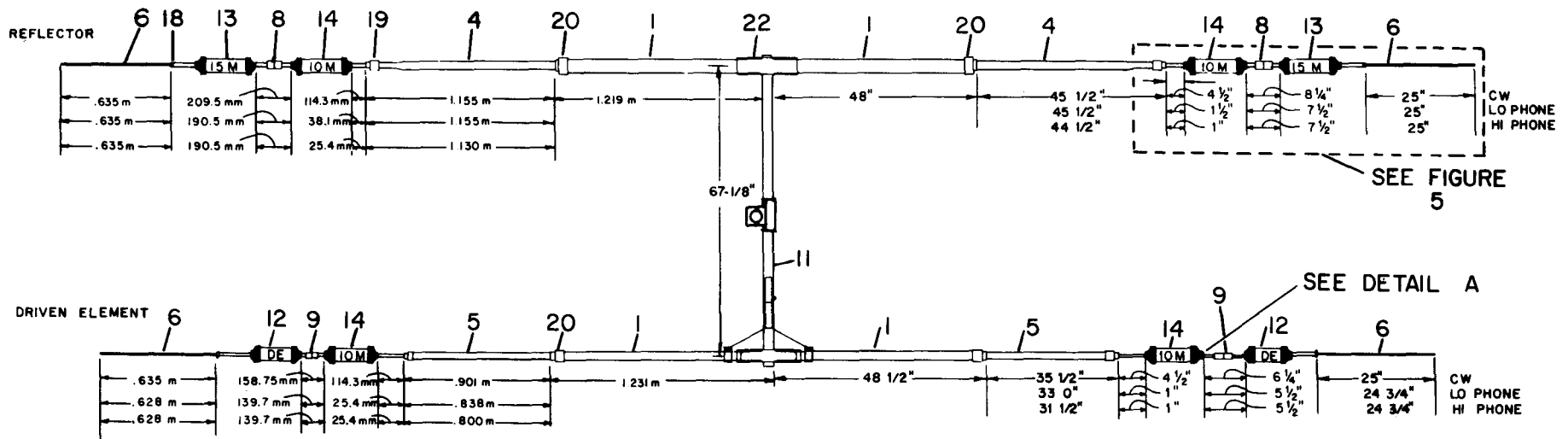
Beta Match Assembly

Select the two "Tombstone" insulators and install on the boom as shown in Figure 7.

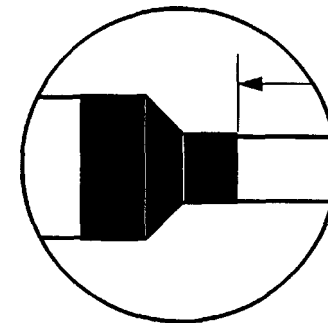
Select the beta shorting strap and the beta rod and assemble on the boom as shown in Figure

Attach the beta rod to the driven element using the tube clamps installed near the insulator. Move the driven element as necessary to insure a proper fit. **DO NOT** tighten the screws at this time as the feedline will attach to this point in a later step.

Check to see that the driven element is level, then tighten the anchor screws in the element-to-boom bracket.



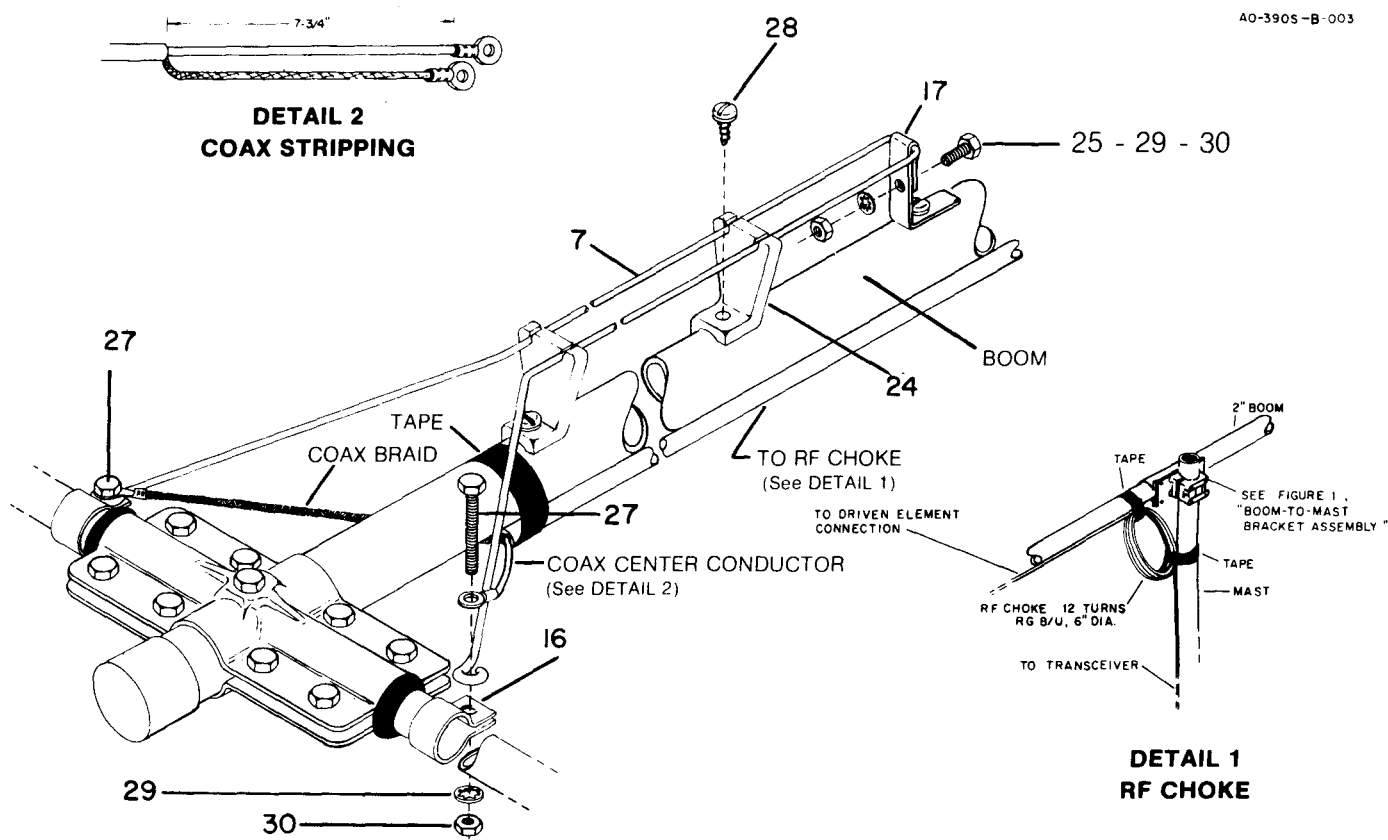
NOTE: Once you have selected your mode of transmission (CW, low phone or high phone) you must use the same mode throughout the assembly of this antenna. Make all measurements accurate to $\pm 1/8$ " inch. Typical VSWR curves (Figure 8) should help determine which mode is best suited for your application.



Dimensions measured as shown.
 DETAIL A
 Tran Detail - Measuring Point

| Item No. | Description | Item No. | Description |
|----------|----------------------------|----------|--------------------------|
| 1 | Tube, slotted, 11/4" x 48" | 12 | Driven Element Trap, 15M |
| 4 | Tube, swaged, 11/8" x 48" | 13 | Trap, 15M |
| 5 | Tube, swaged, 11/8" x 38" | 14 | Trap, 10M |
| 6 | Tube, 7/16" x 28" | 18 | No. 6 Tube Clamp |
| 8 | Tube, 1" x 6" | 19 | No. 10 Tube Clamp |
| 9 | Tube, 1" x 5" | 20 | No. 16 Tube Clamp |
| 11 | Boom Assembly, 2" x 72" | 22 | Caplug, 2" |

Figure 6 Assembly
 Dimensions



| Item No. | Description |
|----------|-------------------------------|
| 7 | Beta Rod, 1/8" x 63 1/4" |
| 16 | Tubing Clamp, 1 1/4" |
| 17 | Beta Shorting Strap |
| 24 | Insulator, "Tombstone" |
| 25 | Bolt, hex head, #10-24 x 1/2" |

| Item No. | Description |
|----------|---------------------------------|
| 27 | Bolt, hex head, #10-24 x 1 1/2" |
| 28 | Screw, pan head, #10 x 5/8" |
| 29 | Lockwasher, internal, #10 |
| 30 | Nut, hex, #10-24 |

Figure 7
Driven Element and Beta Match

Reflector Element

Select the remaining set of element-to-boom brackets (marked with a #13) and loosely assemble on the opposite end of the boom as shown in Figures 3 and 6.

Assemble the reflector in the same manner as the driven element. refer to Figure 6 for tubing description and dimensions.

NOTE: Make certain the shorted end of the 10meter trap is pointed toward the boom. The shorted end is identified by the part number marked near the trap cap. Also, ensure all drain holes are facing down.

When the reflector element is completely assembled, measure 67 1/8" from the center of the driven element bracket to the center of the reflector bracket, then tighten the bracket anchor screws securely.

Final Assembly

A balun is not required for normal operation of this antenna. However, there are three recommended feedpoint configurations, one of which utilizes the Hy-Gain Model BN-86 Balun for increased performance and convenience.

The first feedpoint configuration involves connection of the coaxial feedline directly to the driven element. The recommended feedline is RG-213/u (such as Belden 8267). Other types of coaxial cable may be used if proper selection and careful assembly are utilized. The feedline should be stripped as shown in Figure 7. Attach solder lugs (not supplied) to the center conductor and shield for easy connection to the driven element.

The second feedpoint configuration involves construction and installation of a homemade RF choke. The RF choke will prevent RF from flowing on the outside of the shield. This will block radiation from the coaxial feedline, thereby reducing the risk of TVI and preventing radiation pattern degradation. See Figure 7, Detail 1.

Wind the RF choke from RG-213/u (or equivalent) coaxial cable. The choke should consist of 12 turns with an inside coil diameter of 6 inches. Allow enough cable at the end to reach from the mast to the driven element. Strip the coaxial cable as shown in Figure 7. Attach solder lugs (not supplied) to the center conductor and shield for easy connection to the driven element. Weatherproof all connections.

The third feedpoint configuration involves using a 50 ohm 1:1 balun to connect the feedline to the driven element. (Hy-Gain Model BN-86 is recommended.) A balun will act as an RF choke and will balance the flow of current on the driven element, resulting in a symmetrical radiation pattern. A balun will also have a coaxial connector providing more convenience than a coax splice. Follow the instructions supplied with the balun for connection to the antenna.

NOTE: Use caution when selecting a balun to use with this antenna. Some baluns are designed for 50-75 ohm impedance and may result in a higher SWR when used with this antenna. For best results, use the Hy-Gain NB-86, 50 ohm balun. The Model BN-86 is available at your local Hy-Gain dealer.

The antenna is now ready to be mounted on the mast. Mount the antenna on your mast and attach your coaxial cable to the antenna.

CHAPTER 3

INSTALLATION

.....

IMPORTANT

;; The TH2MK3-S is a moderately large antenna and requires some consideration as to how you are going to get it to the top of the tower. Thoroughly read this section BEFORE beginning to install your antenna. ;;

;; •

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Installation On A Crank-Up Tower

Crank the tower down completely or as low as it will go, and block all sections from moving by using a 2" x 4" piece of wood or a solid iron bar for heavier towers. The block should be inserted through the lattice structure before the tower is completely down, then the tower can be cranked down until the block takes the weight off of the winch.

Use a ladder to reach the top of the tower. **NEVER CLIMB THE LATTICE STRUCTURE OF ANY CRANK-UP TOWER!!** Attach the mast to the tower and rotator. (The cast aluminum boom-to-mast brackets should be installed on the mast as shown in Figure 1. See Chapter 2.) Attach a gin pole to the tower to assist in lifting the TH2MK3-S.

Attach the lifting rope to the balance point of the antenna. The lifting rope should be fed through the gin pole or other pulley arrangement attached to the tower. The other end should be at ground level, available to the ground crew for lifting. Guide ropes may be loosely looped over the boom ends and used by the ground crew to guide the antenna away from the tower and ladder. Each guide rope's two loose ends should be held by the ground crew, so that the guide rope can be retrieved. Always use a nonconductive type of rope if working near power lines.

Attaching The Antenna To The Mast

When the antenna reaches the mast bracket, the four (4) 5" bolts should be inserted through the holes in the mast bracket and secured using 5/16" - 18 lockwashers and nuts. Tighten all bolts securely. You may wish to use a deep well socket set to tighten these

Other Types Of Towers

When installing the TH2MK3-S on a guyed tower, you may wish to use a different guide system. If you have insulators on your guy wires, you will need to keep the antenna away from the guy wires as well as the tower. You may wish to use two ropes attached together at the top of the tower and attached to the ground about 15 feet apart. These two ropes can then be used to slide the antenna on as it is also being lifted. The two ropes will need to be far enough from the tower base to allow some sag and still support the antenna away from the guy wires.

WARNING

Installation of this product near power lines is dangerous. For your safety follow the instructions.

Lightning Protection

For proper lightning protection, you must ground your antenna supporting structure. Grounding will ensure noise-free operation and low SWR. A proper ground consists of a 1/2" x 8' copper clad steel ground rod driven into the ground approximately 12 inches away from the concrete tower base. Connect the tower to the ground rod using #8 copper wire and commercial noncorrosive ground clamps.

Weatherproofing

Weatherproof all coaxial connectors, which will be exposed to rain or ice, with Coax-Seal (R) or another similar substance.

Weatherproof all aluminum to aluminum connections with Krylon (R) or another type of spray. All electrical hardware is stainless steel and will not require further weatherproofing.

VSWR Curves

These VSWR Curves are typical for this antenna mounted 70 feet above the ground, horizontally polarized. Similar curves can be expected for this antenna mounted between 30 and 100 feet above the ground. **DO NOT TRY TO TUNE THIS ANTENNA FOR LOW VSWR AT GROUND LEVEL.**

Higher VSWR can be expected if mounted at less than 30 feet or above a roof or large metallic structure. Forty (40) and eighty (80) meter wire dipoles should be kept at least 6 feet below this antenna.

Guy wires should be broken up into nonresonant lengths (less than 12 foot lengths) and insulated from the tower if mounted within 10 feet of the top the tower.

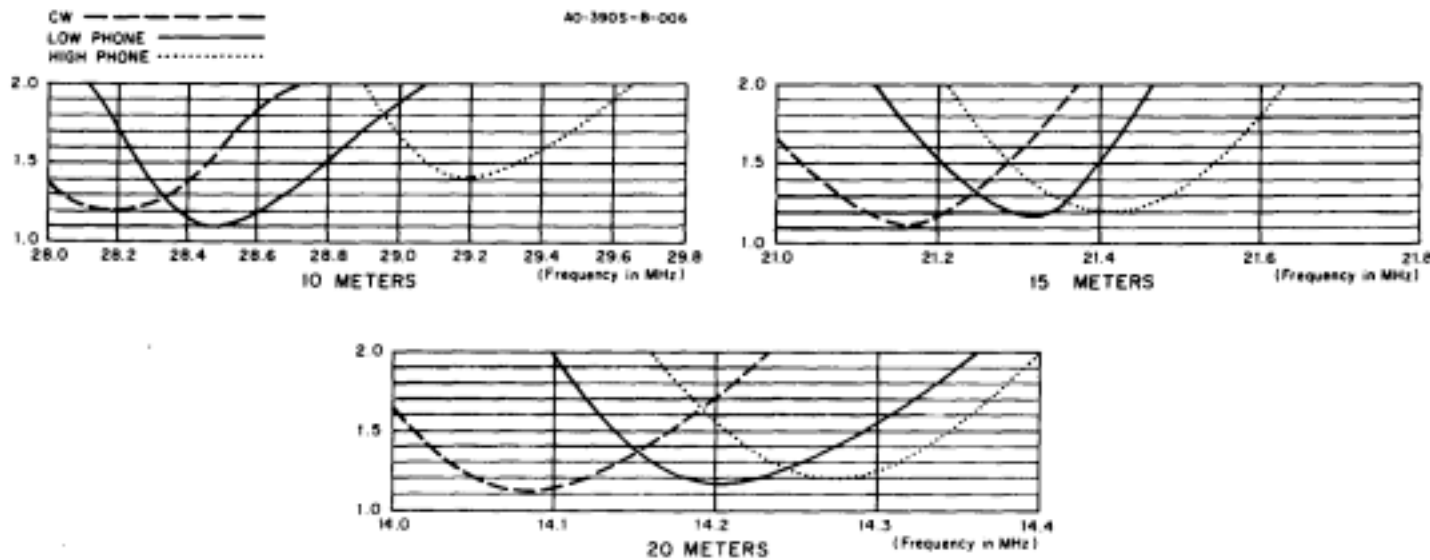


Figure 8 TH2MK3-S Typical VSWR Curves

Service Information

If you are encounter technical problems and need assistance, you should contact Hy-Gain Customer Service Department.

All requests, inquires, warranty claims, or for ordering replacement parts, contact:

Hy-Gain

308 Industrial Park Road Starkville,
Mississippi 39759 USA Phone:
662-323-9538
FAX: 662-323-6551

PARTS LIST

| Item No. | Part No. | Description | Qty |
|----------|----------|---|-----|
| 1 | 190900 | Tube, slotted, 1 1/4" x 48" | 4 |
| 2 | 165919 | Bracket #13, reflector-to-boom | 2 |
| 3 | 165920 | Bracket #14, driven element-to-boom | 2 |
| 4 | 190300 | Tube, swaged, 1 1/8" x 48" | 2 |
| 5 | 190307 | Tube, swaged, 1 1/8" x 38" | 2 |
| 6 | 178558 | Tube, 7/16" x 28" | 4 |
| 7 | 178716 | Beta Rod, 1/8" x 63 1/4" | 1 |
| 8 | 190606 | Tube, 1" x 6" | 2 |
| 9 | 190607 | Tube, 1" x 5" | 2 |
| 10 | 102734 | Bracket, mast, cast aluminum | 2 |
| 11 | 171052 | Boom Assembly, 2" x 72" | 1 |
| 12 | 878637 | Driven Element Trap, 15M | 2 |
| 13 | 878694 | Trap, 15M | 2 |
| 14 | 878749 | Trap, 10M | 4 |
| 15 | 465833 | Insulator, driven element | 2 |
| | 878684 | Parts Pack 390S, Stainless Steel | 1 |
| 16 | 171333 | Tubing Clamp, 1 1/4" | 2 |
| 17 | 173370 | Beta Shorting Strap | 1 |
| 18 | 358756 | Clamp, No. 6, Tube | 4 |
| 19 | 358757 | Clamp, No. 10, Tube | 12 |
| 20 | 358758 | Clamp, No. 16, Tube | 4 |

| Item No. | Part No. | Description | Qty |
|----------|----------|--|-----|
| | 878684 | Parts Pack 390S, Stainless Steel (Continued) | 1 |
| 22 | 455625 | Caplug, 2" | 2 |
| 23 | 455644 | Caplug, 7/16" | 4 |
| 24 | 465470 | Insulator, "Tombstone" | 2 |
| 25 | 500158 | Bolt, hex head, #10-24 x 1/2" | 1 |
| 27 | 500159 | Bolt, hex head, #10-24 x 1 1/2" | 2 |
| 28 | 511083 | Screw, pan head, #10 x 5/8", w/attached washer | 3 |
| 29 | 565697 | Lockwasher, internal, #10 | 11 |
| 30 | 554071 | Nut, hex, #10-24 | 3 |
| 32 | 500156 | Bolt, hex head, 1/4"-20 x 3/8" | 4 |
| 33 | 505266 | Bolt, hex head, 1/4"-20 x 3/4" | 20 |
| 35 | 562961 | Lockwasher, internal, 1/4" | 38 |
| 36 | 554099 | Nut, hex, 1/4"-20 | 22 |
| 37 | 551367 | Nut, square, 1/4"-20 | 4 |
| 38 | 500153 | Bolt, hex head, 5/16"-18 x 5" | 4 |
| 39 | 564792 | Lockwasher, split, 5/16" | 9 |
| 40 | 555747 | Nut, hex, 5/16"-18 | 9 |
| 41 | 500154 | Bolt, hex head, 5/16"-18 x 3 1/2" | 3 |
| 42 | 506968 | Bolt, hex head, 5/16"-18 x 2 3/4" | 2 |
| 43 | 172732 | Clamp, boom-to-bracket | 1 |
| 44 | 172735 | Bracket, casting-to-boom | 1 |

Converting American Measurements To Metric

Use this scale to identify lengths of bolts, diameters of tubes, etc.. The American inch (1") and foot (1') can be converted to centimeters in this way.

$$1 \text{ inch (1")} = 2.54 \text{ cm}$$

$$1 \text{ foot (1')} = 30.48 \text{ cm}$$

Example:

$$42" \times 2.54 = 106.7 \text{ cm}$$

| FRACTION AND METRIC EQUIVALENT FOR ONE INCH | | | |
|---|-------------|-----------------|-------------|
| FRACTIONAL INCH | MILLIMETERS | FRACTIONAL INCH | MILLIMETERS |
| 1/16 | 1.599 | 9/16 | 14.288 |
| 1/8 | 3.174 | 5/8 | 15.875 |
| 3/16 | 4.700 | 11/16 | 17.463 |
| 1/4 | 6.350 | 3/4 | 19.050 |
| 5/16 | 7.937 | 13/16 | 20.638 |
| 3/8 | 9.525 | 7/8 | 22.225 |
| 7/16 | 11.112 | 15/16 | 23.813 |
| 1/2 | 12.700 | 1 | 25.400 |



VSWR RECORD

Type of VSWR Meter _____

| Frequency | Date _____ | Date _____ | Date _____ |
|-----------|------------|------------|------------|
| | VSWR | VSWR | VSWR |
| 14.00 | _____ | _____ | _____ |
| 14.10 | _____ | _____ | _____ |
| 14.20 | _____ | _____ | _____ |
| 14.30 | _____ | _____ | _____ |
| 14.35 | _____ | _____ | _____ |
| 21.00 | _____ | _____ | _____ |
| 21.10 | _____ | _____ | _____ |
| 21.20 | _____ | _____ | _____ |
| 21.30 | _____ | _____ | _____ |
| 21.40 | _____ | _____ | _____ |
| 21.45 | _____ | _____ | _____ |
| 28.00 | _____ | _____ | _____ |
| 28.25 | _____ | _____ | _____ |
| 28.50 | _____ | _____ | _____ |
| 28.75 | _____ | _____ | _____ |
| 29.00 | _____ | _____ | _____ |
| 29.25 | _____ | _____ | _____ |
| 29.50 | _____ | _____ | _____ |
| 29.70 | _____ | _____ | _____ |

Height of Antenna: _____

Types of antennas or guy wires also attached to same tower: _____

NOTES:

hy-gain® LIMITED WARRANTY

by gain Warrants to the original owner of this product, if manufactured by *by gain* and purchased from an authorized dealer or directly from *by gain* to be free from defects in material and workmanship for a period of 12 months for rotator products and 24 months for antenna products from date of purchase provided the following terms of this warranty are satisfied.

1. The purchaser must retain the dated proof-of-purchase (bill of sale, canceled check, credit card or money order receipt, etc.) describing the product to establish the validity of the warranty claim and submit the original or machine reproduction of such proof-of-purchase to *hygain* at the time of warranty [service](#). *by gain* shall have the discretion to deny warranty without dated proof-of-purchase. Any evidence of alteration, erasure, or forgery shall be cause to void any and all warranty terms immediately.
2. *hygain* agrees to repair or replace at *hygain's* option without charge to the original owner any defective product under warranty, provided the product is returned postage prepaid to *hygain* with a personal check, cashiers check, or money order for \$8.00 covering postage and handling.
3. Under no circumstances is *hygain* liable for consequential damages to person or property by the use of any *hygain* products.
4. Out-of-warranty Service: *hygain* will repair any out-of-warranty product provided the unit is shipped prepaid. All repaired units will be shipped COD to the owner. Repair charges will be added to the COD fee unless other arrangements are made.
5. This warranty is given in lieu of any other warranty expressed or implied.
6. *hygain* reserves the right to make changes or improvements in design or manufacture without incurring any obligation to install such changes upon any of the products previously manufactured.
7. All *hygain* products to be serviced in-warranty or out-of-warranty should be addressed to *hygain*, 308 Industrial Park Road, Starkville, Mississippi 39759, USA and must be accompanied by a letter describing the problem in detail along with a copy of your dated proof-of-purchase.
8. This warranty gives you specific rights, and you may also have other rights which vary from state to state.