

# INSTRUCTION MANUAL

## ORDER NO. 500

The Penetrator

PN 801244

### General Description

The Penetrator is a full size  $\frac{5}{8}$ -wave, omnidirectional antenna. A full sized radiator with a lower radiation angle concentrates power closer to the ground. The antenna accepts AM, FM, SSB, and DSB signals. It can be fed by any standard 52-ohm coaxial cable such as RG-8/U and RG-58/U. For runs over 50 ft. RG-8/U is recommended.

The Penetrator fits any masting material up to 1 $\frac{5}{8}$ " O.D. A 1 $\frac{1}{4}$ " plumbers pipe is highly recommended for mast use due to its low cost and high strength.

### Specifications

Frequency range .....	27 MHz Class D citizens band
Maximum power input .....	1500 watts
Maximum VSWR .....	1.1:1
Nominal input impedance .....	52-ohms
Lightning protection .....	DC ground
Height .....	22' 9 $\frac{1}{2}$ "
Radial length .....	8'9"
Wind (survival) .....	75 mph
Accepts mast .....	1 $\frac{5}{8}$ " O.D.

### Installation Instructions

Unpack the antenna and check the parts against the parts list.

( ) Select the base assembly (item 12), the two radial plates (item 1), the M1 assembly (item 13), and the upper insulator (item 11).

( ) Refer to Figure 1 and loosely assemble these parts as shown, using the  $\frac{1}{4}$ " x 1" screws and associated hardware. Do not tighten at this time.

**NOTE:** Make certain the end with  $\frac{1}{4}$ " diameter holes, located  $\frac{3}{8}$ " from the end, are down and aligned with the holes in the insulator. Remember to point the two smaller holes, (located 5 $\frac{3}{8}$ " and 13" from the bottom end) away from the base bracket. These will be used to attach the matching rod assembly.

( ) Fasten the M1 assembly to the insulator with the #10 x 1 $\frac{3}{4}$ " screw (item 26) and associated hardware (item 35 and 41). Tighten securely.

( ) Referring to Figure 2, assemble the  $\frac{7}{8}$ " x 25" R1 tubes (item 3) into brackets, align the holes and fasten with  $\frac{1}{4}$ " x 1 $\frac{1}{2}$ " screws, nuts, and lockwashers (items 24, 34, and 40).

( ) Tighten the  $\frac{1}{4}$ " x 1" screws holding the base brackets and radial plates.

( ) Remove the two rod support insulators (item 21) and the two #10 x  $\frac{5}{8}$ " type T screws from the parts pack and attach them to the M1 assembly as shown in Figure 3.

( ) Attach the matching rod and beta rod exactly as shown in Figure 3\*

( ) Refer to Figure 6 and assemble the radiator tubes M2, M3, M4, the top radial assembly and the radial elements. Refer to the compression clamp detail for their proper assembly.

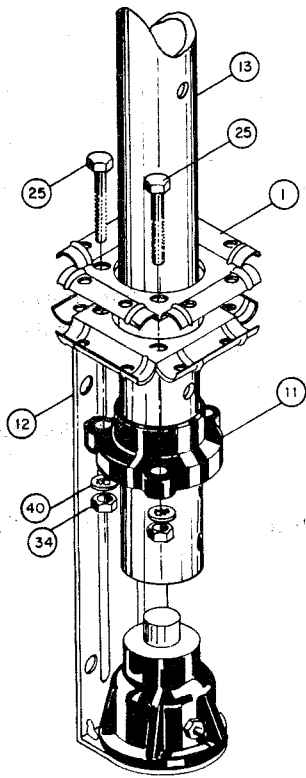


Figure 1

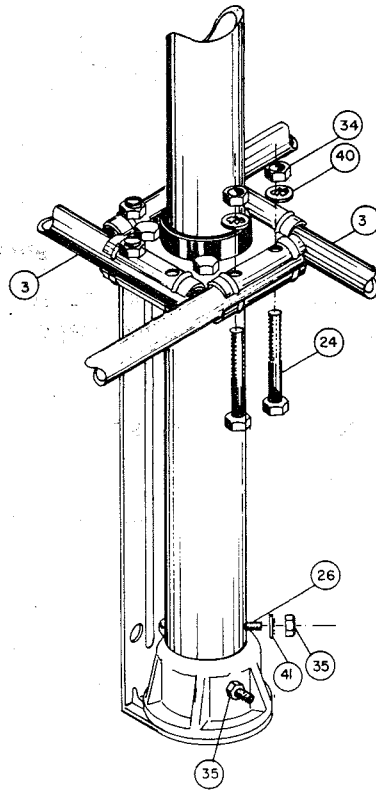


Figure 2

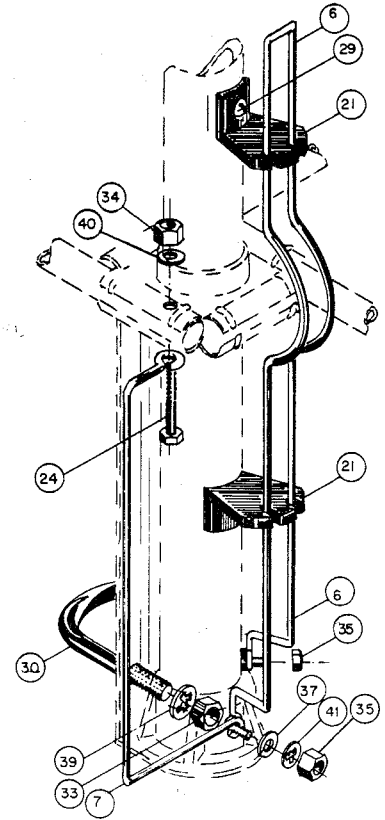
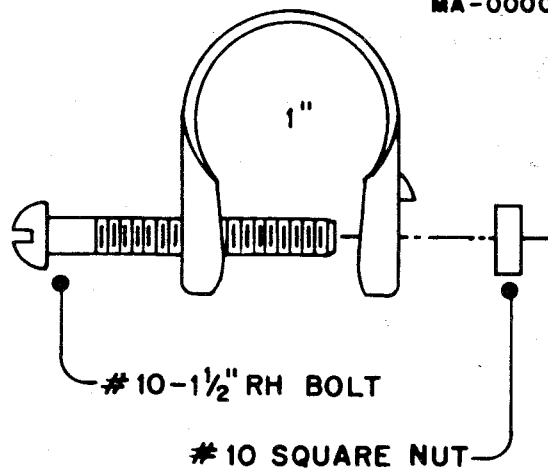
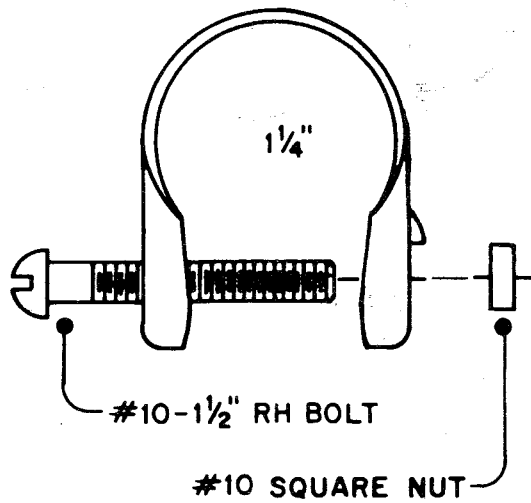


Figure 3

**NOTE:** The bolt in the compression clamp should be even with the slot in the tubing.

( ) Make sure all the compression clamps are tightened securely.



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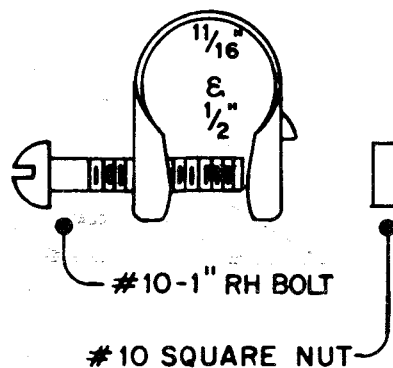
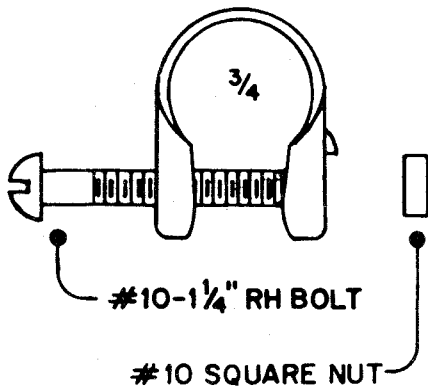
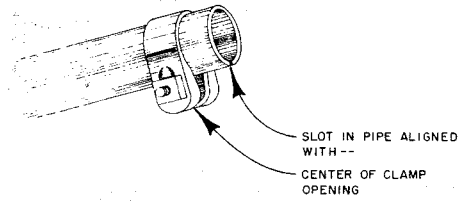


Figure 4



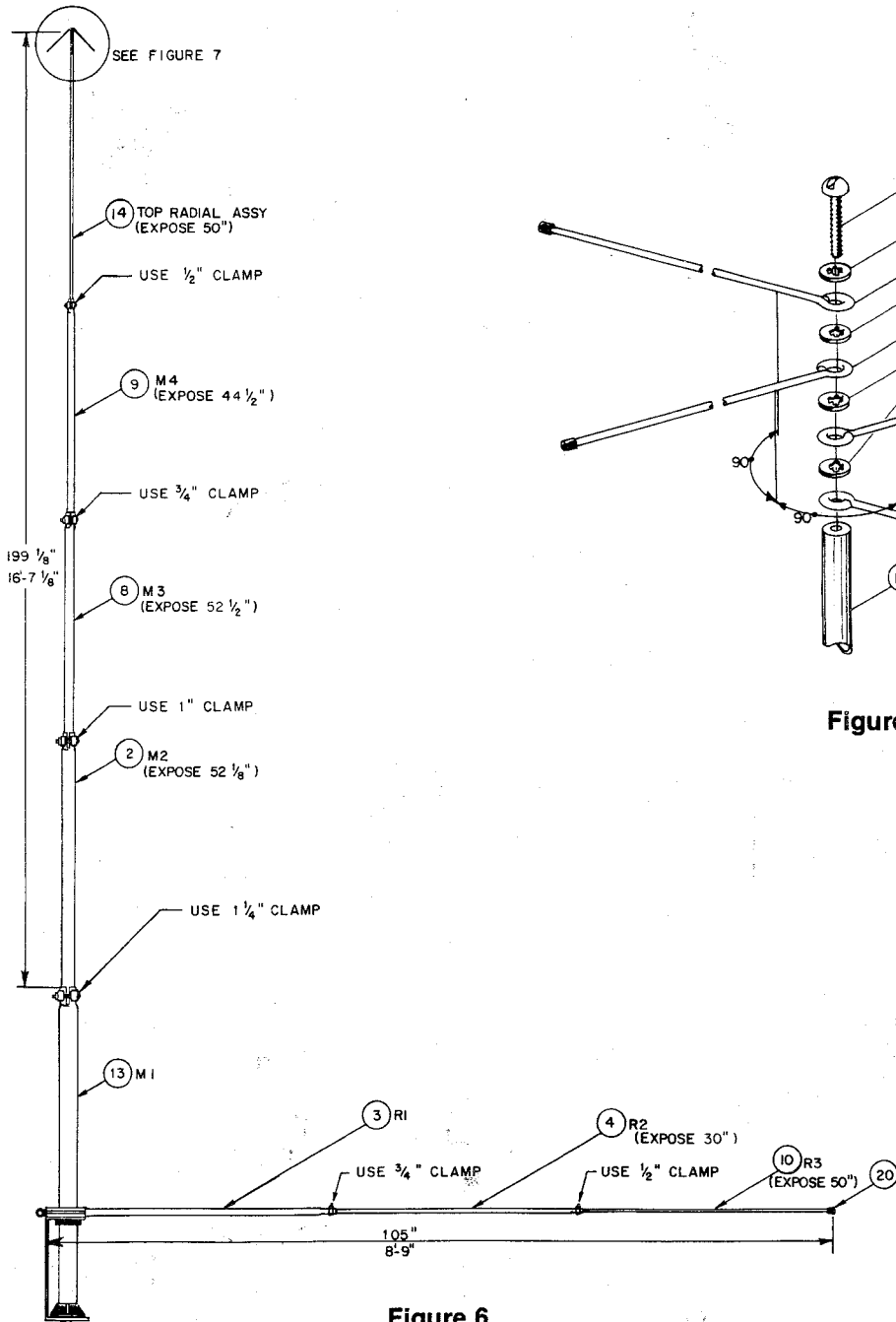
**Figure 5**

When assembling the tubes in either the radiator or the radials, slip the smaller tube inside the larger tube until the black mark disappears. This is necessary for proper operation of the antenna.

( ) Assemble the top hat radials as shown in Figure 7. They should be spaced 90 degrees apart.

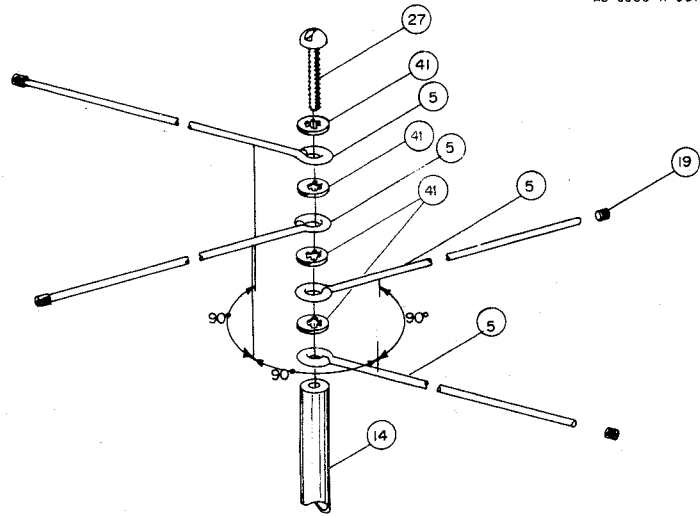
( ) Attach the four 1/8" caplugs on the end of the top hat radials and the 7/16" caplugs on the end of the R3 tubes.

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**Figure 6**

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**Figure 7**

- ( ) Check all hardware and tighten securely.
- ( ) Loosely assemble the 5/16" U-bolts on the bracket as shown in Figure 3.
- ( ) Mount the antenna on your mast and tighten the U-bolts securely.
- ( ) Attach your coax to the connector, located on the bottom of the base bracket and hook to your transceiver.
- ( ) This completes your installation.

### Parts List

Item	Part No.	Description	Qty	Item	Part No.	Description	Qty
1	165002	radial bracket	2	21	463642	rod support	2
2	170770	M2 1 1/8" x 55"	1	22	506445	screw, #10 x 1 1/2"	2
3	170301	R1, 7/8" x 25"	4	23		not applicable	
4	170302	R2, 5/8" x 32 1/2"	4	24	506335	screw, 1/4" x 1 1/2"	8
5	170773	top hat radials	4	25	506389	screw, 1/4" x 1"	3
6	170774	matching rod	1	26	506440	screw, #10 x 1 3/4"	1
7	170775	beta rod	1	27	506455	bolt, #10 x 1"	6
8	170300	M3, 7/8" x 55"	1	28	506450	screw, #10 x 1 1/4"	5
9	170295	M4, 5/8" x 47"	1	29	526530	screw, #10 x 5/8", type T	2
10	175165	R3, 7/16" O.D. x .368 I.D. x 52 mark	4	30	543792	U-bolt, 5/16" x 1 5/8"	2
11	463056	upper insulator	1	31		not applicable	
12	870253	base assembly	1	32	555362	nut, #10 square	12
13	878804	M1, assembly, 1 1/4" x 71" tube	1	33	556945	nut, 5/16" hex jam	4
14	875810	top radiator assembly	1	34	556960	nut, 1/4" hex	12
	879239	Parts Pack	1	35	556970	nut, #10 hex	3
15	380284	compression clamp, 1/2"	5	36		not applicable	
16	380285	compression clamp, 3/4"	5	37	567130	flatwasher, #10 zmi	1
17	380287	compression clamp, 1 1/4"	1	38		not applicable	
18	380286	compression clamp, 1"	1	39	567075	lockwasher, 5/16 int.	4
19	455624	1/8" caplug	4	40	567110	lockwasher, 1/4" int.	14
20	455644	7/16" caplug	4	41	567125	lockwasher, #10 int.	6

### 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.