

INSTRUCTION MANUAL

ORDER NO. 337S

MODEL V-4S

**Collinear Gain Vertical
for 420-450 MHz**

PN 801910

General Description

The new Hy-Gain V-4S 70 cm antenna is a collinear, dual $\frac{1}{2}$ wave, omnidirectional, vertical antenna for the 420-450 MHz Amateur band. The V-4S features two sets of $\frac{1}{4}$ wave radials which properly decouple the lower $\frac{1}{2}$ wave radiator from the mast. It also features a 100 watt enclosed coil that matches the antenna to a normal 50 ohms. The feedpoint is a high quality "N" type connector that is protected from the weather within the lower radiator. The V-4S also features a mast-to-mast bracket that will accept up to a two inch O.D. mast.

The V-4S can also be used outside of the 70 cm Amateur band. Graphs are supplied so that the antenna can be set to any frequency between 420 and 470 MHz.

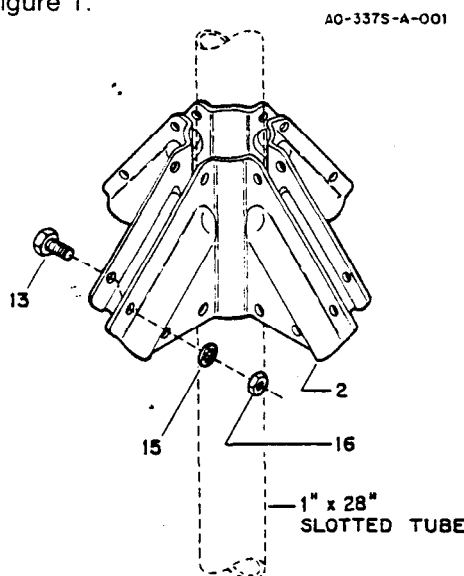
Specifications

VSWR at resonance	less than 1.5:1
2:1 VSWR bandwidth	27 MHz minimum
Power gain	3 dBd, 5.2 dBi
Antenna/Mast isolation	20 dB
Power input	100 watts continuous
Lightning protection	DC ground
Height	45 inches (1.14 m)
Wind area	0.28 sq. ft. (0.026)
Maximum mast O.D.	2 inches (5.08 cm)
Hardware	18-8 stainless steel except for U-bolts

Assembly

Unpack the antenna and check the parts against the Parts List and drawings.

Select four of the radial clamps and associated hardware and loosely assemble them as shown in figure 1.



Item No.	Description
2	Radial clamp, 45°
6	Tube, 1" x 28", slotted
13	Bolt, #10-24 x 1/2" hex
15	Lockwasher, #10, internal
16	Nut, #10-24, hex

Figure 1

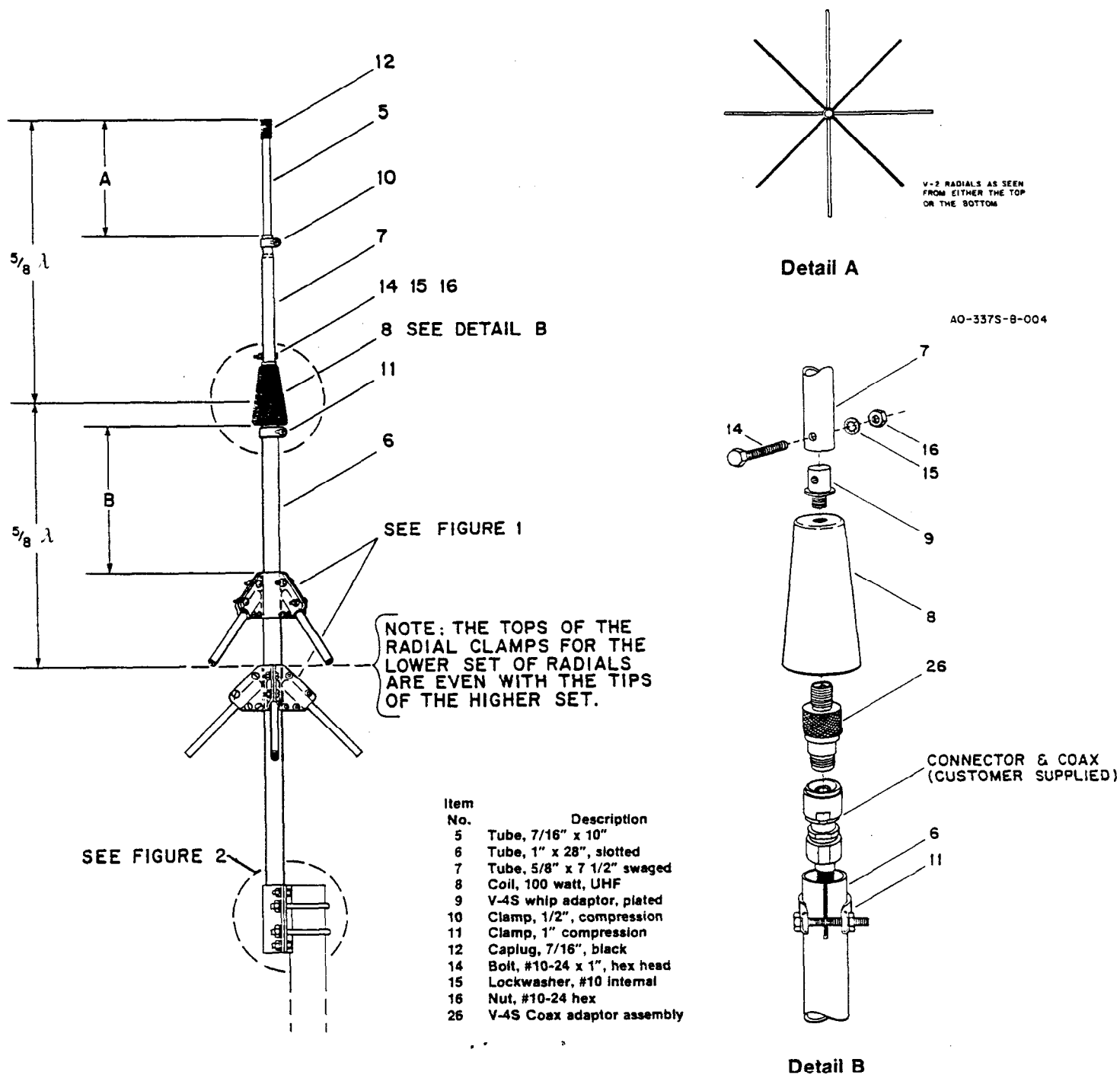


Figure 3
Overall View

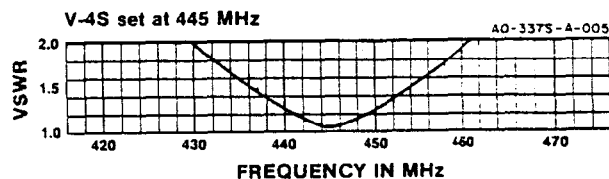


Figure 4

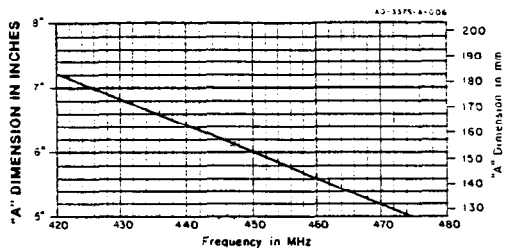


Figure 5

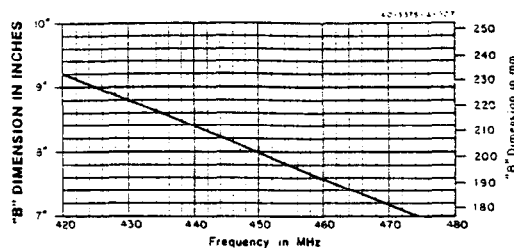


Figure 6

Select the $\frac{5}{8}$ " x $7\frac{1}{2}$ " tube and slip the unswaged end over the whip adaptor.

Line up the holes in these two parts and secure using a #10-24 x 1" hex head screw, #10 internal lockwasher and #10-24 hex nut. Tighten securely.

Assemble the two compression clamps as shown in Figure 7.

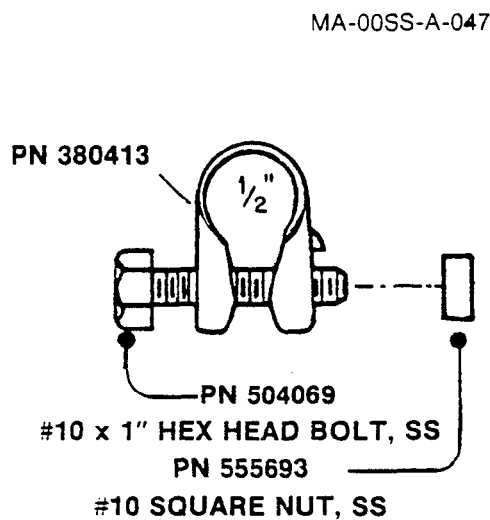
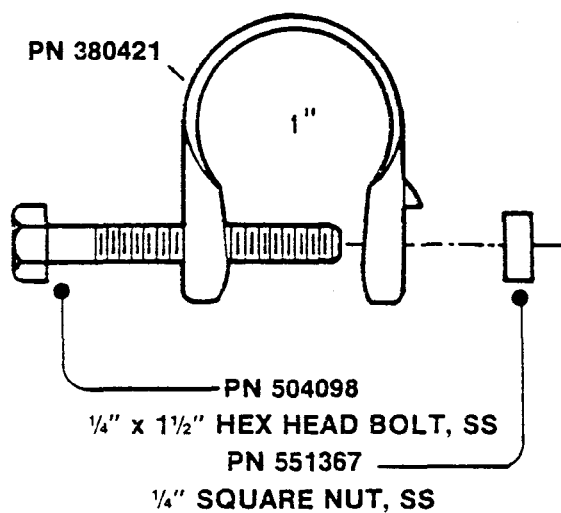


Figure 7

Slip the $\frac{1}{2}$ inch compression clamp over the swaged end of the $\frac{5}{8}$ x $7\frac{1}{2}$ " tube as shown in Figure 8.

Select the $\frac{7}{16}$ " x 10" tube and insert it into the $\frac{5}{8}$ " tube, to Dimension "A". Refer to Figures 3 and 5. For example, at 445 MHz, A= $6\frac{3}{16}$ " (157 mm).

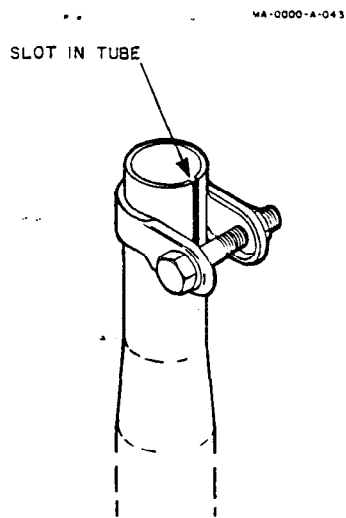


Figure 8

Tighten the compression clamp securely.

Select the 7/16" caplug and slip over the end of the 7/16" tube.

Select the assembled one inch compression clamp and slip it over the top end of the 1" x 28" tube. Position it as shown in Figure 8 and tighten it just enough to prevent it from sliding down the tube.

There are two ways to attach your coax to the V-4S antenna. The first method involves attaching a short length of coax to the antenna before attaching the antenna to the supporting mast. The remaining length of coax can then be attached and routed to the radio. The short length of coax must be at least 3 feet long so the connection between coax lengths can be made below the mast-to-mast bracket.

The second method involves attaching the complete length of coax to the antenna before attaching the antenna to the supporting mast. In this method, the antenna and entire coax length must be carried up the tower or mast.

Choose one of the suggested methods of attaching the coax to the V-4S.

Insert one end of the coax into the bottom of the 1" x 28" tube. Push the coax through until the connector emerges from the top of the tube.

Screw the connector onto the V-4S coax adaptor.

Push the coax adaptor into the top of the 1" x 28" tube until the matching coil rests on the one inch tube. Tighten the one inch compression clamp.

The antenna can now be mounted on a mast (2" O.D. max.). For adequate lightning protection, the antenna supporting structure must be well grounded.

WARNING: Installation of this product near power lines is dangerous. For your safety, follow the installation directions.

Several antennas may be mounted on the same mast. Your V-4S should be mounted above the other antenna for best performance. When side mounting the V-4S on a tower, it should be kept at least 10 inches away from the tower.

Parts List

Item No.	Part No.	Description	Qty
1	160011	Mast-to-mast bracket plate, 1 1/8"	1
2	160012	Radial clamp, 45°	8
3	160047	Mast-to-mast bracket clamp, 1 1/8"	1
4	170474	Tube, 7/16" O.D. x 6"	8
5	170475	Tube, 7/16" x 10"	1
6	191003	Tube, 1" O.D. x 28" Slotted	1
7	191004	Tube, 5/8" x 7 1/2" swaged, drilled & slotted	1
8	872202	Coil, 100 watt, UHF	1 - \$20.20
	872203	Parts Pack, (stainless steel) V-4S	1
9	280168	V-4S whip adaptor, plated	1
10	380413	Clamp, 1/2", compression	1
11	380421	Clamp, 1", compression	1
12	455644	Caplug, 7/16", black	1
13	500158	Bolt, #10-24 x 1/2", hex head	33
14	504069	Bolt, #10-24 x 1", hex head	2
15	565697	Lockwasher, #10, internal	33
16	554071	Nut, #10-24, hex	33
17	555693	Nut, #10-24, square	1
18	505266	Bolt, 1/4"-20 x 3/4", hex head	4
19	504098	Bolt, 1/4"-20 x 1 1/2", hex head	1
20	562961	Lockwasher, 1/4", internal	5
21	554099	Nut, 1/4"-20, hex	4
22	551367	Nut, 1/4"-20, square	1
23	540036	U-bolt, 5/16"	2
24	564792	Lockwasher, 5/16", split	4
25	555747	Nut, 5/16"-18, hex	4
26	872205	V-4S coax adaptor assembly	1 - \$29.60