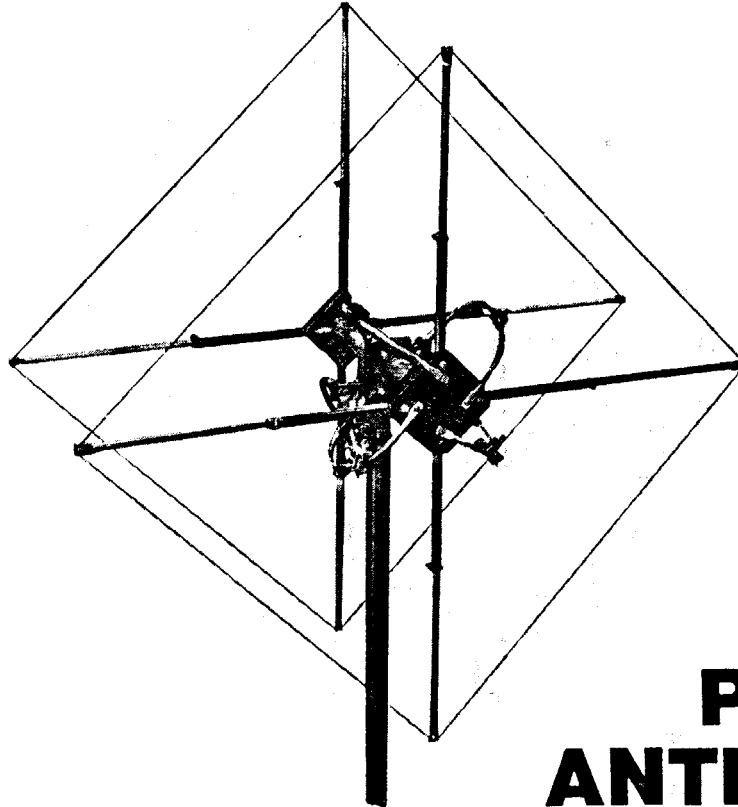


INSTRUCTION

MANUAL



PDL-IITM
ANTENNA

MODEL AV-122

a **CO-INDUCTIVETM**
antenna

avanti[®]

“WARNING: INSTALLATION OF THIS PRODUCT NEAR POWER LINES IS DANGEROUS. FOR YOUR SAFETY, FOLLOW THE INSTALLATION DIRECTIONS.”

**YOU, YOUR ANTENNA,
AND SAFETY**

Hundreds of accidental deaths and permanent injuries occur each year as a direct result of carelessly installing an antenna. The following information is to help insure your safety and achieve a good installation.

Here are a few simple precautions for you to take. PLEASE read them. Read them again. FOLLOW THEM! They may save your life.

SITE SELECTION:

Before attempting to install your antenna, or if you are taking it down, think how you can best place your antenna for **safety** and performance.

To determine a safe distance from wires and power lines:

1. Measure the length or height of your antenna, whichever is longer,
2. Add this length to the length of your tower or mast, and then
3. Double this total for the minimum recommended **safe** distance.

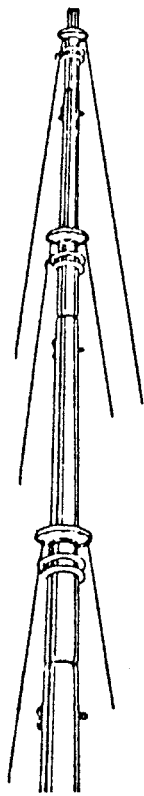
If you are unable to maintain this safe distance, **STOP!**

Call your electric power company. Tell them your plans and ask them to come look at your proposed installation. **This is a little inconvenience, considering your life is at stake.**

CHOOSE A PROPER MOUNTING METHOD:

When a particular type of mounting method is recommended by the manufacturer or a professional antenna installer, follow those specific recommendations.

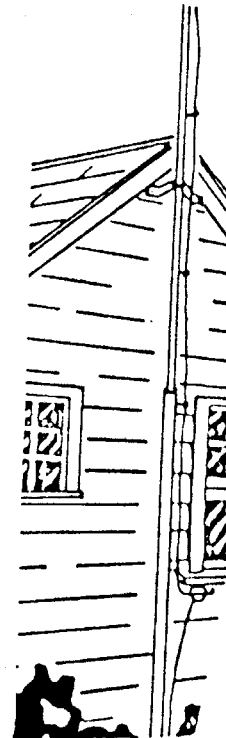
Following are some familiar antenna mountings:



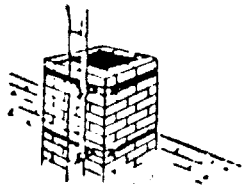
Telescoping Mast



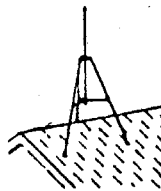
Tower



Ground Up Mast



Chimney Strap



Tripod



Eave Mount

Although there are many variations to the examples, all appear to be simple — but don't believe it! If you are installing an antenna for the first time, please, for your own safety as well as others, seek professional assistance. Never use plastic pipe, conduit, wood poles or thin walled tubing. Use only masting that is specifically made for antenna support and has a length and wall thickness that is designed to carry the weight and wind load of your antenna.

Hundreds of people have been killed or mutilated trying to install a simple antenna. Consult your dealer. He can explain which mounting method to use for the size and type antenna you are about to install.

To help **remember safety**, you will find a **warning label** in your parts bag. Put this label on your mast, tower or tripod near its base. It will help remind you of safety while installing your antenna. After you have installed your new antenna, you may wish to take it down — This label will again remind you of **safety**.

EMERGENCY AID FOR SHOCK

It is advisable to work with another person when installing or removing antennas. If your partner does receive a shock, don't touch him since his body could conduct the electricity to you; instead, try to pry or pull him away from the source of electricity with a length of dry wood, rope, a blanket, or another non-metallic object.

If breathing has stopped, use mouth-to-mouth resuscitation until the doctor or ambulance arrives and relieves you. If the heart has stopped, closed-chest cardiac massage must be done simultaneously. The ambulance should be informed when called that an electric shock has occurred; it can bring proper equipment such as an intensive care or cardiac care mobile unit equipped with a heart defibrillator and carrying trained personnel.

PARTS LIST

AV-122

NOTE: CHECK ALL PARTS WITH THIS LIST BEFORE DOING ANYTHING.
MAKE SURE YOU KNOW WHAT EACH PART IS AND WHAT IT LOOKS LIKE.

Part No.	QTY.	DESCRIPTION
Sub 240	4	Loop Section Swaged
Sub 105	1	Connector Bracket
Sub 106	1	Gamma Match — 24% — Coded Black
Sub 109	1	Gamma Match — 26% — Coded Brown
Sub 110	4	F.G. Reflector Element
Sub 107	1	H-V Switchbox
1000	4	5/8 x 36 Inner Driven Element
1001	4	1/2 x 48 Outer Element
T007	4	Alum. Hub Half
1008	1	5" x 5" Plastic Hub
1050	4	Loop Section, Flat One End
1305	1	Mast Mount
1311	2	Roll Radiation Wire
1766	4	5/8 x 36 Inner Reflector Element
1996	1	1-5/8 x 58" Boom
Sub 111	1	Hardware Bag Complete
1003	1	Red Boom Plug
1004	1	Black Boom Plug
1005	4	Curved Retainer Plate
1060	8	5/8" Tube Clamp
1071	2	5/16 x 1-3/4 U-Bolt
1090	14	1/4" Hex Nut
1091	14	10-32 Hex Nut
1092	4	5/16 Hex Nut
1098	2	1/4" Square Nut
1099	8	10-32 Square Nut
1151	20	#10 Ext. Star Washer
1152	14	1/4" Flat Washer
1153	14	1/4" Star Washer
1156	4	5/16" Star Washer
1165	14	#10 Flat Washer
1187	10	1/4-20 x 1 1/4 Bolt
1188	2	1/4-20 x 1 Bolt
1189	4	1/4-20 x 1 1/2 Bolt
1195	20	10-32 x 1/2 Screw
1196	1	10-32 x 3/4 Screw
1197	4	10-32 x 1 1/2 Screw
1306	4	5/16 Bushing
1307	2	Gamma Fastener
1308	2	Gamma Fastener Swivel Insert
1774	1	10-32 Nylon Lock Nut

MOUNTING RECOMMENDATION

Proper mounting requires a stable support. For proper support of the PDL II antenna we recommend the use of a tower, tripod, telescoping mast, eavemount, chimney strap, or ground up mast. This structure must withstand the various weather conditions in your local area. For information regarding which of these supports would best suit your particular point of installation, consult a manufacturer of these products, a professional installer, or your local CB dealer for specific recommendations. Mention that the PDL II weighs 13.5 lbs. and has a windload area of 2 sq. feet. For your assistance in determining a safe site selection as listed on page 2, the longest dimension of the PDL II is 14 feet. For best performance and maximum safety mount your antenna away from trees and electric lines of any type.

**THE AV501 SWITCHBOX IS NO LONGER
INCLUDED. WE RECOMMEND YOU PURCHASE
AN AV502 SWITCHBOX.
CONTACT YOUR DEALER.**

ASSEMBLY INSTRUCTIONS FOR MODEL AV-122

STEP 1: DRIVEN ELEMENT SUB-ASSEMBLY

- a) Turn to Figure 11.
- b) Take four 5/8" O.D. tubes (elements). Put the ends with two holes into each of the corner slots of the black hub.
- c) Insert ¼-20 x 1¼" bolts with ¼" flat washers through plastic hub in outer holes only. On the other side, place curved retainer plates over bolts. Put nuts and starwashers on bolts and tighten. **WARNING:** See Fig. 11.

STEP 2: REFLECTOR SUB-ASSEMBLY

- A.) Locate two of the four aluminum hub halves and four 5/8" x 36" tubes with one hole (part #1766).
- B.) Assemble the hubs and 5/8"x36" inner elements using four ¼-20x1¼" bolts, nuts and washers in the sequence shown, Fig. #10. Leave hardware loosely fastened.
- C.) Install ¼-20 x 1½" bolt in slot in top of assembled alum. hubs according to figure 7. Do not tighten.
- D.) Tighten the four bolts holding the hub halves securely. Do not overtighten.

STEP 3: BOOM ATTACHMENT

- A.) Slip the mast mount (part #1305) onto the boom. Do not install any hardware at this time.
- B.) Insert end of the boom into the large hole in the hub of the assembly just completed.
- C.) 1-7/8" of the boom should extend out from the edge of the metal hub, to the end of the boom.
- D.) Lightly secure the bolt shown in Figure #7 as reflector assembly will be realigned in later steps.
- E.) Set assembly aside.

STEP 4: CONSTRUCTION OF THE CURVED MATCHING SECTION IN FIGURE 1

- a) Place the ends with holes of the four swaged curved sections in the two metal hub halves.
- b) Position the connector bracket on the hub as shown. Use ¼ x 1½" bolts to fasten both hub halves and the connector bracket together. Insert ¼ x 1¼" bolts in the two remaining holes. Use flatwashers under the heads of the bolts and a ¼" starwasher under each nut.

NOTE: TIGHTEN NUTS ONLY FINGER TIGHT.

- c) Slide this assembly 26¾" onto boom. The curved sections should be pointing away from the mast mount (or toward the front). Measurement is taken from the edge of the boom to the face of the metal hub as shown in Figure 2. Position the connector bracket parallel with the horizontal spreaders of the reflector.
- d) Place driven element sub-assembly (the one set aside in Step 1) onto the remaining end of boom, the side printed AVANTI R&D surface to the outside.
- e) Align hole on side edge of hub with hole in boom.

- f) Insert 10-32 x $\frac{3}{4}$ " screw into hole in edge of hub, through hub, and through the hole in the boom.
- g) Place 10-32 nylon self-locking insert nut on screw and tighten as in Step 3. Boom will be flush with hub.

STEP 5: INSTALLING THE CURVED MATCHING SECTIONS TO THE PLASTIC HUB

- a) Turn to Figure 11. Figures 3, 7, and 9 will also be helpful.
- b) Insert 4 blushings into the 4 remaining holes of the driven element hub.
- c) Attach the four curved sections to the driven element hub as shown in Figure 10. Use all starwashers in their proper place as per drawing.
- d) Leave hardware loosely fastened.

STEP 6:

See Figure 4. Prepare gamma fasteners as shown. Leave all hardware loose. Swivel insert should be flush with the edge of the gamma fastener after insertion.

STEP 7:

Prepare four junction clamps as shown in Figure 5. Bend both sides of the clamp so the sides are parallel with each other.

STEP 8:

Place gamma fasteners on both curved matching sections that point downward as shown in Figures 3 & 6. Leave loose.

STEP 9:

After sliding the gamma fasteners onto the curved sections, slide on a junction clamp - one clamp on each of the four joints as in Figures 3 & 6.

STEP 10:

Push the curved sections coming from the front plastic hub together with the curved sections which are attached to the rear metal hub as in Figures 3 & 6.

STEP 11:

Place the junction clamps over the joint and tighten the screw until the joint is tight. See Figure 12.

STEP 12:

Tighten all other bolts and nuts on the metal hub.

STEP 13:

Tighten the 4 screws left loose in Step 5 (d).

STEP 14: TO SECURE THE METAL HUB TO THE BOOM. Figure 7.

- a) Start a $\frac{1}{4}$ " nut onto a $1\frac{1}{2}$ " bolt after a flatwasher and starwasher have been placed on the bolt. The flatwasher should be under the head of the bolt and the starwasher should be under the nut.
- b) Place this bolt in the hub assembly as shown.
- c) Tighten with a $\frac{7}{16}$ " open end wrench. Place the wrench on the HEAD of the bolt (not the nut). The starwasher will keep the nut from turning while tightening. **Do not overtighten.**

STEP 15: TO INSTALL GAMMA MATCHES

There are two gamma matches. One is for horizontal and the other is for vertical. They are both different and care must be taken to insure that both of them are installed in their respective places.

The overall length of the vertical gamma is 24 $\frac{1}{4}$ inches and is coded a black color.

The horizontal gamma is 26 $\frac{1}{4}$ inches long with a brown color code.

Referring to Figure 9, the vertical gamma (black) will be attached to the vertical connector, the horizontal to the remaining connector.

After determining where each gamma is to be installed, follow these construction details:

- a) Place the small end of one gamma rod into the hole of the swivel insert (Figure 6).
- b) Attach the large flattened end of the gamma tube with the hole in it, to the lug on the connector bracket. Use hardware as shown in Figure 8. Tighten finger tight only.
- c) Position the edge of the VERTICAL gamma fastener 2 $\frac{3}{4}$ inches from the joint as in Figure 6. Tighten all three screws on the gamma fastener.
- d) In a similar manner: Position the edge of the HORIZONTAL gamma fastener 6 $\frac{3}{4}$ inches from the joint.
- e) Tighten screw that was left loose in Step 15b.

STEP 16: MAST MOUNT ATTACHMENT

- a) Insert $\frac{1}{4}$ " x 1" bolts through two holes in top of mast mount. NOTE: One side of the mast mount has groove for square nut. Place $\frac{1}{4}$ " square nuts on bolts.
- b) At this point, measure from the back of the metal hub on reflector (RED) end of boom a distance of 22" (Figure 13) and put a mark on boom. On this mark, locate the edge of the mast mount which is closest to the RED end.
- c) If a short pipe or mast is available, it is recommended that it be fastened to the mast mount. This will enable you to better align the antenna spreaders with the mast.
- d) Rotate boom in the mast mount until elements are lined up with the mast. Tighten the top two bolts.
- e) Remove the temporary mast.

STEP 17: DRIVEN OUTER ELEMENT INSTALLATION

- a) Place a 5/8" tube clamp over the slotted end of each of the four 5/8" O.D. inner driven elements . . . NOT THE RED END.
- b) Locate the four $\frac{1}{2}$ x 48" elements with the flattened ends. Measure 43-11/16" from the center of the hole and make a mark at this point.
- c) Slide these four $\frac{1}{2}$ " O.D. aluminum outer elements into the inner elements of the driven sub-assembly. Insert them up to marks you have made.
- d) Before tightening tube clamps, rotate outer element so that the flattened end of the tube is lined up with the flat side of the hub. Check to see that this aluminum tubing is on the unpainted end of the boom and NOT the red-coded end.

- e) Take three of the four aluminum elements and install hardware on the tips of these as in Figure 15.
- f) Install hardware on the tips of three fiberglass elements as in Figure 15, also.
- g) On the two elements remaining (one fiberglass and the other aluminum) install hardware as shown in Figure 16. Notice that there are TWO flat washers installed on these.
- h) Leave hardware loose.

STEP 18: REFLECTOR OUTER ELEMENTS INSTALLATION

- a) Place a tube clamp on the slotted end of each of the four reflector inner elements (RED end of boom). See Figure 14. Leave clamps loose.
- b) Locate the four fiberglass element rods. Measure 43-11/16" from center of hole in aluminum tip on fiberglass element and make a mark.
- c) Slide each of the four fiberglass outer elements into the inner elements of the reflector sub-assembly. They should be inserted up to the mark you have made. (Figure 14).
- d) Place reflector (RED) end of antenna on floor and rotate fiberglass elements such that flattened ends are parallel with floor.
- e) Tighten 5/8" tube clamps securely.

STEP 19: WIRE INSTALLATION. Figures 20 & 21.

IMPORTANT

Extreme care must be exercised in stretching and marking the radiation wire. The dimension of 9'6 1/2" is critical and should be held within 1/16". Proper operation of the antenna depends largely on the care taken in making this measurement. The wire length cannot be measured correctly when it is installed on the fiberglass elements. The wire **must** be measured and marked, stretched out **straight**. It is suggested that a flat surface be used for making this measurement, such as a sidewalk or floor. It is necessary to have a 50 foot tape measure to mark the wire.

Follow this procedure and refer to Figure 20.

- a) Fasten one end of wire to a nail, or clamp the end in a vise.
- b) At the opposite end, wrap the wire around a pair of pliers or a stick so the wire won't slip loose when pulling.
- c) Pull on stick so wire stretches a few inches. If done correctly, wire will be perfectly straight.
- d) Lay the tape measure next to the wire on the floor and mark the wire with a black magic marker or paint spot as shown.

Note: Put all five marks on the wire without moving the tape measure or wire. See Figure 20. The total length of wire from the first mark to the fifth should measure exactly 38'2".

- e) "String" the wire around the fiberglass elements. Figure 21. Make sure the mark on the wire is in the center of the screw before tightening. (Figure 17). The fiberglass element which has 2 flatwashers in its tip, is the tip which will terminate the two free ends of the wire. Wrap both ends around the screw. One end should be under one flatwasher, the other end should be under the other flatwasher. See Figure 18. Note: The marks on both ends of the wire should be positioned in the center of the screw. See Fig. 18 & 21.

STEP 20:

Place the red plastic boom cap on the red coded end of the boom.

STEP 21:

Place the black plastic plug on the other end of the boom.

STEP 22:

After you have completed assembly, check to see if the wire is too tight. This will cause bowing as shown in Figure 19. To check this, have someone hold the antenna off the ground as shown. By sight, line up the wire. The wire closest to you and the one on the far side should cross the hub.

To adjust, first make sure you position the sharp bends of the wire under the washer, at the flattened end of each outer element. Then see if the mark on the $\frac{1}{2}$ " element is correct. If all this checks out and the element is still bowed, loosen $\frac{5}{8}$ " clamp as shown in Figure 14 and move the $\frac{1}{2}$ " element in $\frac{1}{8}$ " and re-tighten. Adjust all four spreaders equally. This should correct the bowing; if not, repeat once again. If wire is too loose and it sags, use the same method, extend all four elements $\frac{1}{8}$ " at a time.

STEP 23: IMPORTANT

Upon completion of Step #22 the reflector section should be aligned with the driven element.

Be sure to allow 1-7/8" of the boom to extend past the edge of the reflector hub. It is important to allow 55-1/8" between the center of the driven and reflector hubs. Tighten bolt illustrated in Fig. #7 rechecking to see that the reflector is aligned with the driven element. Tighten the bolt until hub is secure on the boom using caution not to over tighten.

STEP 24: CONNECTION OF ANTENNA

- a) Connect two type RG8-U coax lines of a length long enough to reach your transceiver location. The vertical and horizontal connections are shown in Figure 9. The vertical coax is attached to receptacle marked "V" on switch console, the horizontal coax to the "H" receptacle on the switch console.
- b) Using vinyl tape, tape the two cables to the mast at frequent intervals down along the length to prevent loosening by the wind.
- c) Connect a length of 58U or 8U coax between the center "XMTR" terminal of the switch console box and your transceiver antenna terminal (any length).

PREPARING THE COAXIAL CABLES

To insure optimum results, we recommend that the vertical and horizontal coax be cut to the same length and to follow the prescribed lengths listed below. By using the lengths described below, the best horizontal to vertical separation will be achieved.

Connectors should be installed tightly and carefully so that they do not come loose. Tighten all connectors with pliers. Make sure to check that the connectors don't short out when the cables are wiggled after they are installed.

ON THE AIR CHECKS

With the V-H switch on V, turn the antenna with the rotor to attempt to pick up

a signal coming in about 6 S-Units. Carefully determine that the antenna is pointing to him by noting slight decreases as you rotate each side of him. Then switch to horizontal (H). If he is vertically polarized, his signal should drop at least 3 S-Units. As you rotate the antenna in either the vertical or horizontal mode, you will notice that the signal is greatly diminished at the rear of the beam.

Try doing the same thing to the other stations; similar minimum drops should be experienced. If you can contact another PDL-equipped station, you will note that if he also switches to horizontal, you will be able to carry on a very improved conversation.

Generally on skip, signals will come in better on horizontal than vertical. The manifold benefits of the PDL will be more apparent as you learn to use it. Often when man-made noise is rampant, switching to horizontal is the only alternative to getting out.

Sometimes depending on the installation, the V.S.W.R. on the horizontal mode will be a little high. This can usually be corrected by sliding the gamma rod out of the gamma tube $\frac{1}{2}$ ".

LENGTH OF COAX TO BE USED

Coax cables using solid dielectric deteriorates in time and is not recommended, but lengths should be any multiple of 12 feet if this is to be used. If RG58U or RG8U foam insulated coax is used, lengths of each coax should be a multiple of 14 feet.

NOTE: In order to achieve the extra gain in the horizontal polarization over the vertical, it is recommended that the antenna be situated 36-feet above the ground or more if this is legally possible.

FIGURE 1

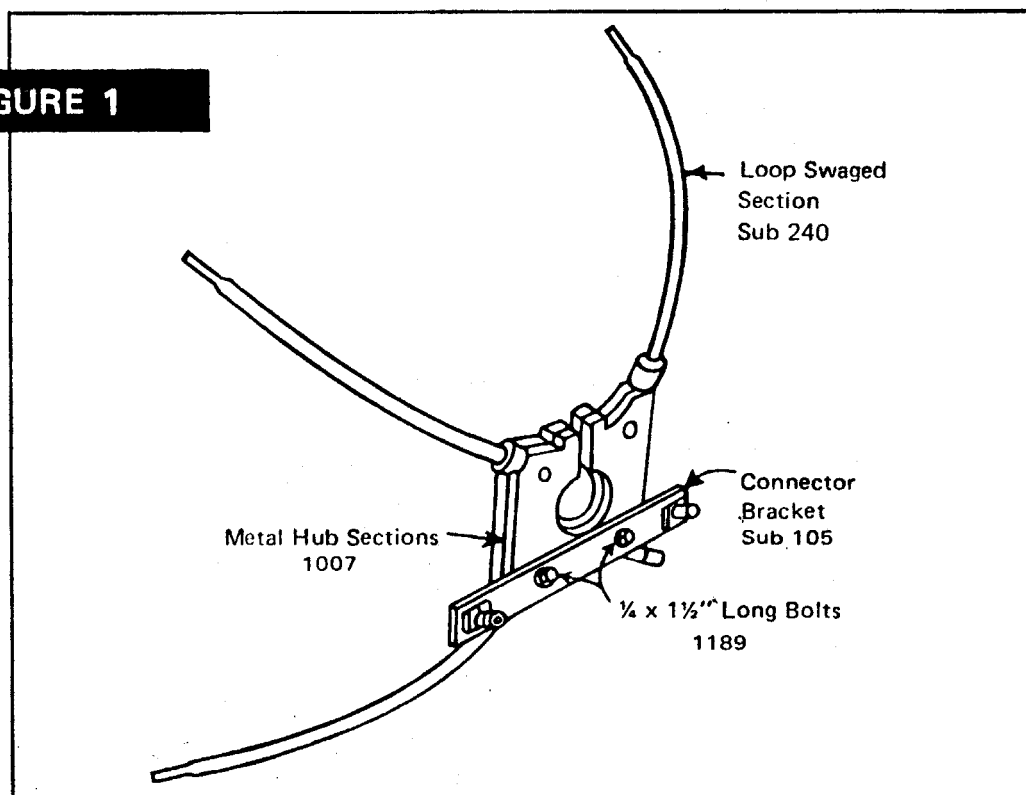


FIGURE 2

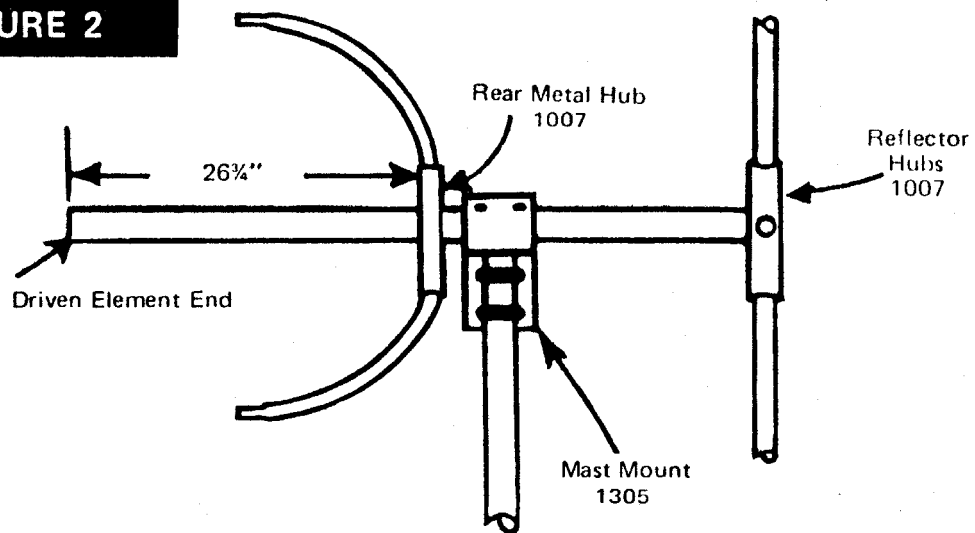


FIGURE 3

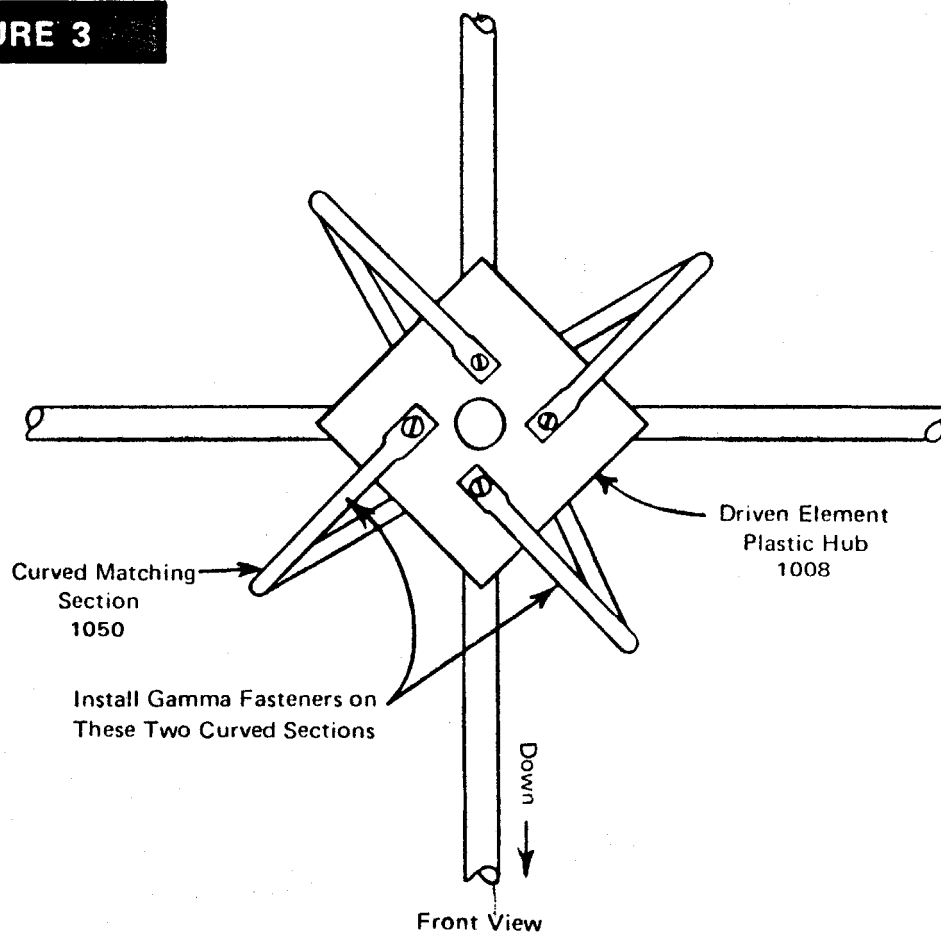


FIGURE 4

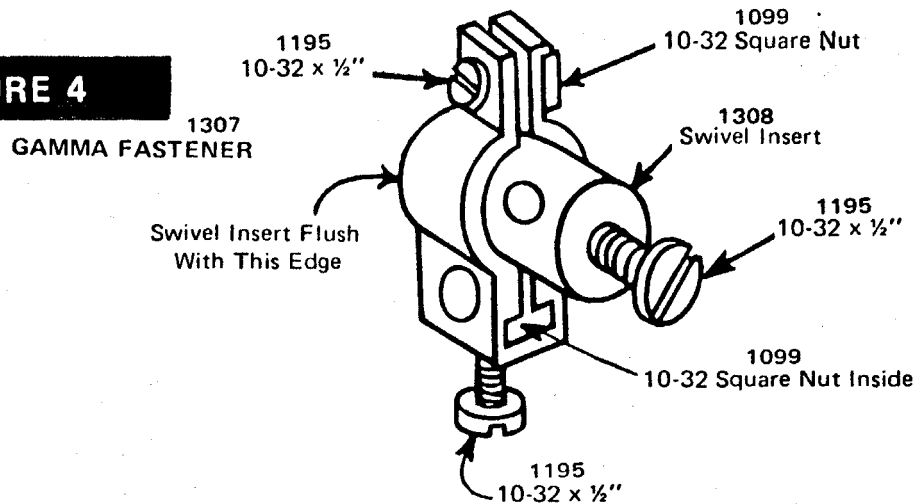


FIGURE 5

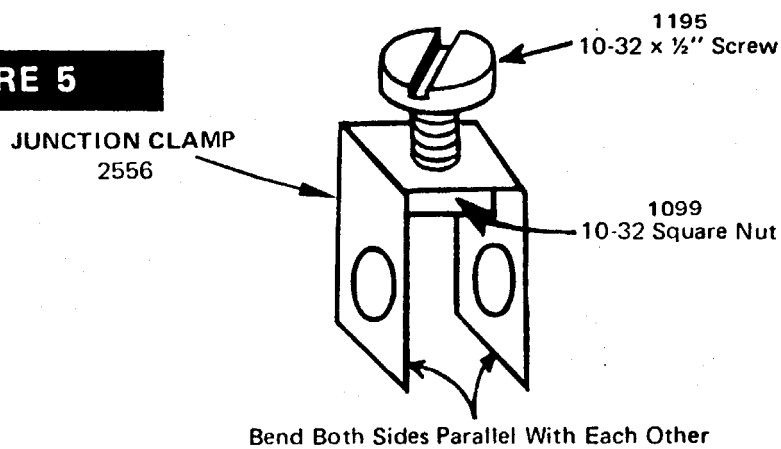


FIGURE 6

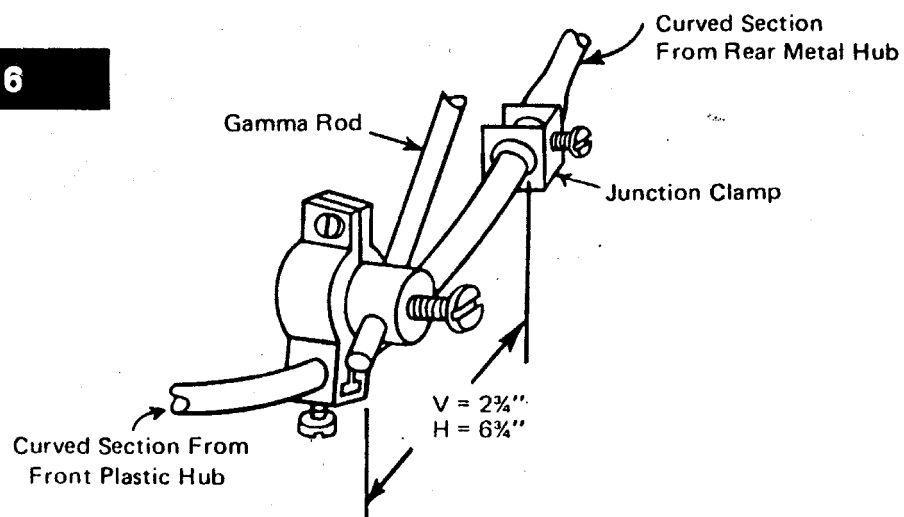


FIGURE 7

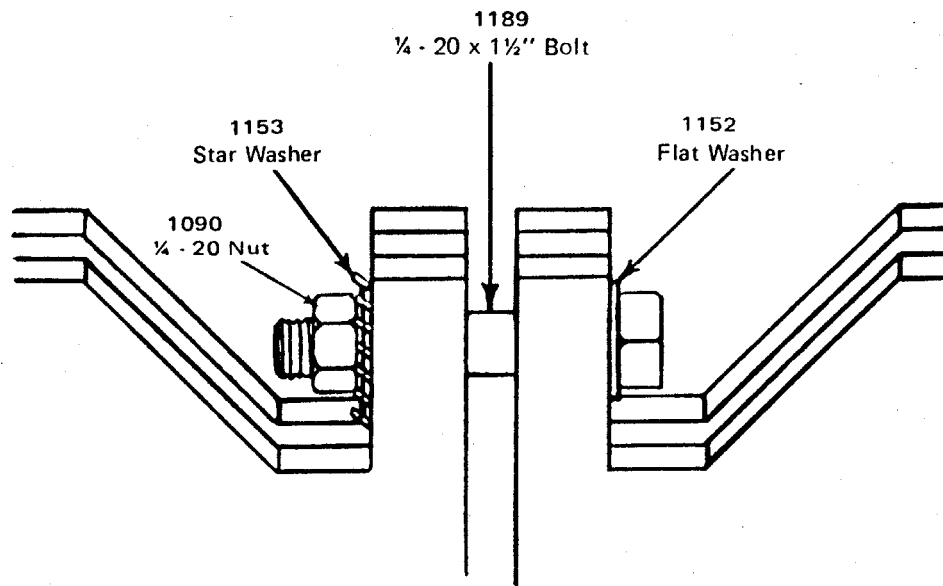


FIGURE 8

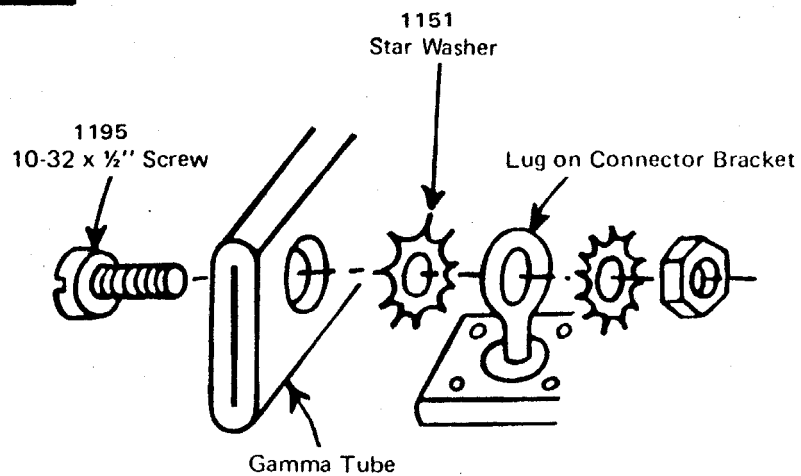


FIGURE 9

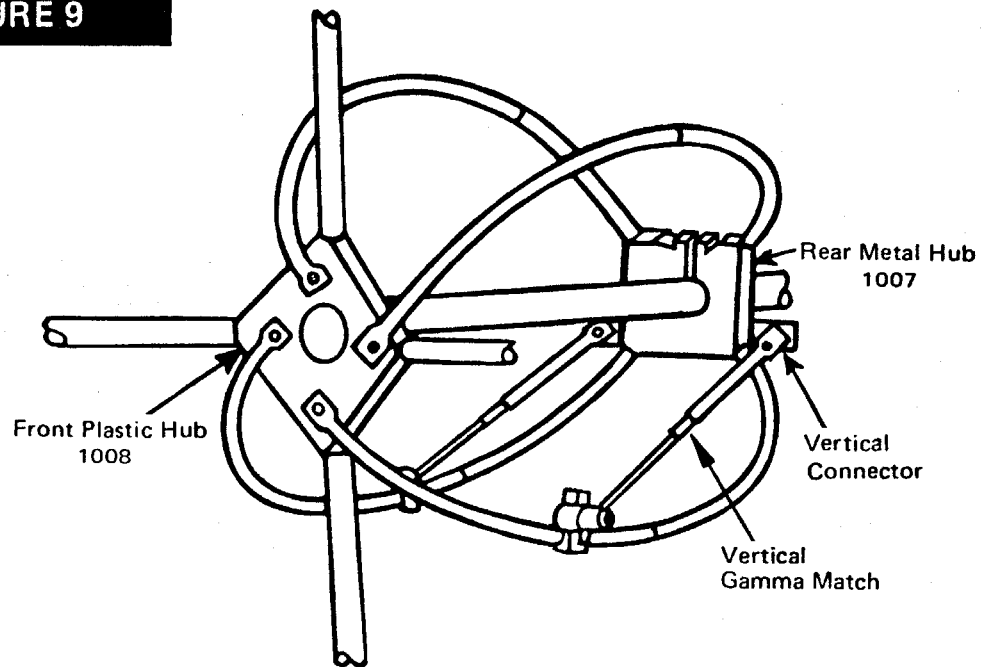


FIGURE 10

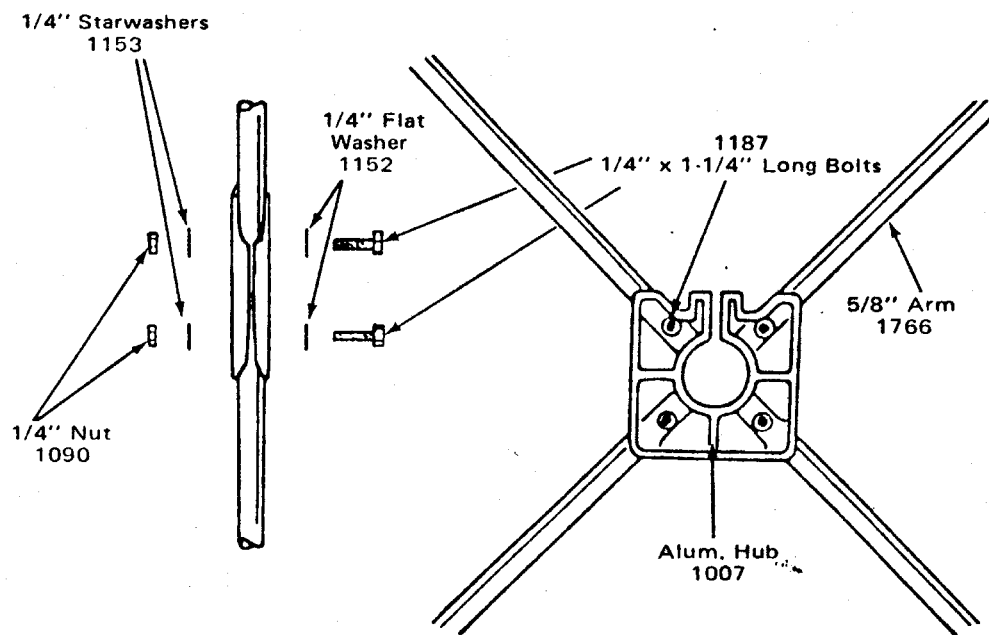


FIGURE 11

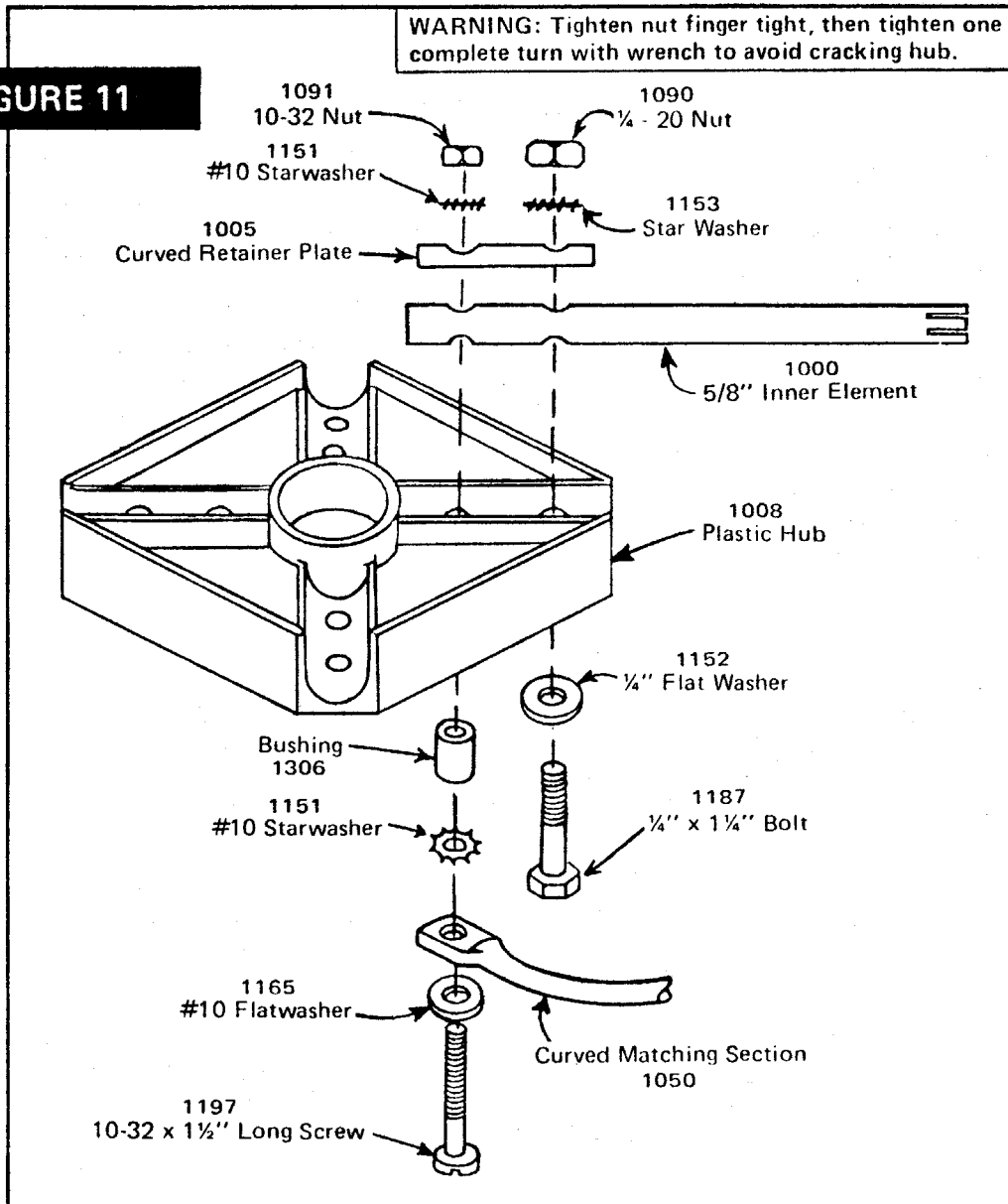


FIGURE 12

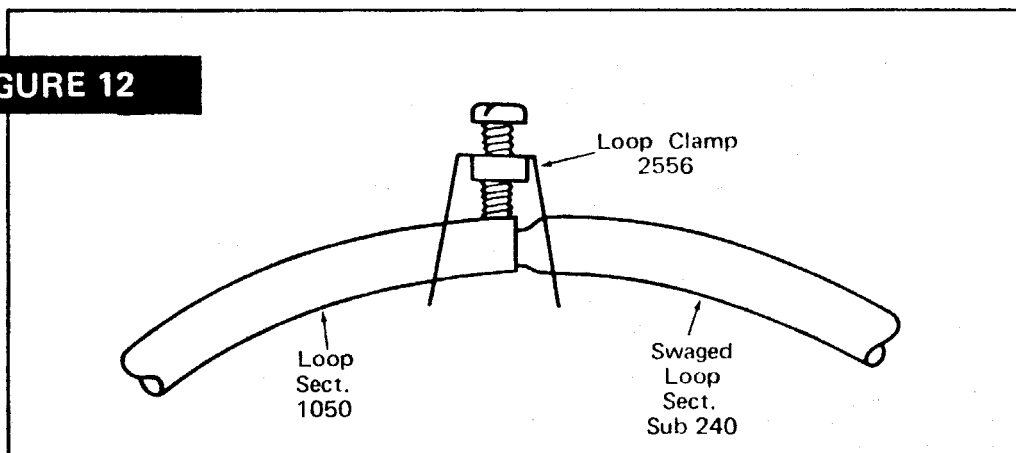


FIGURE 13

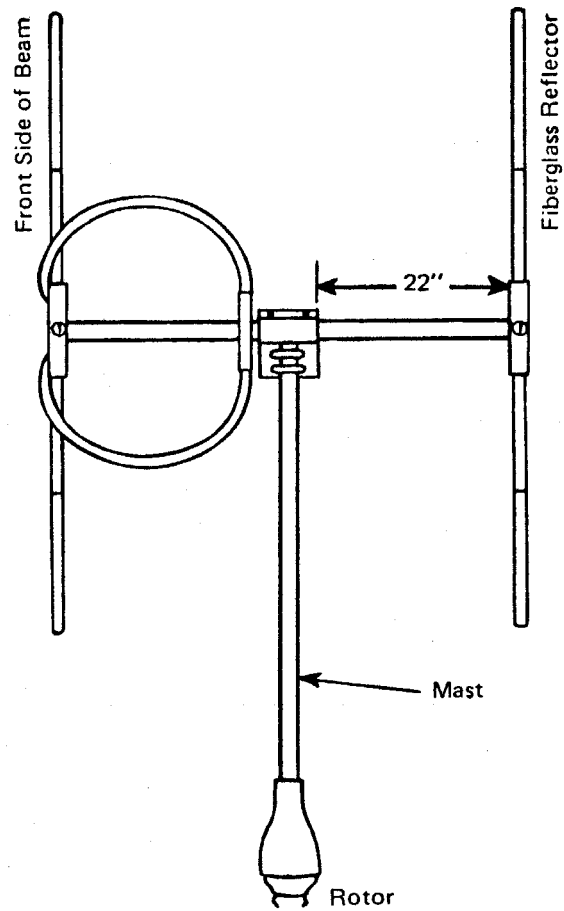


FIGURE 14

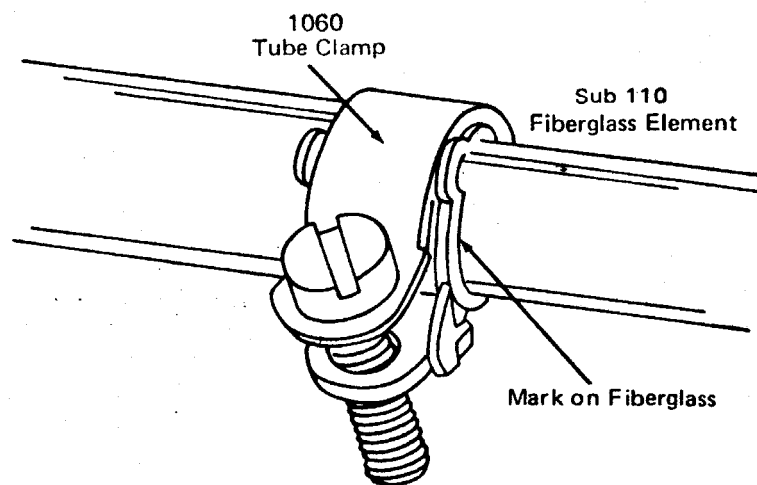


FIGURE 15

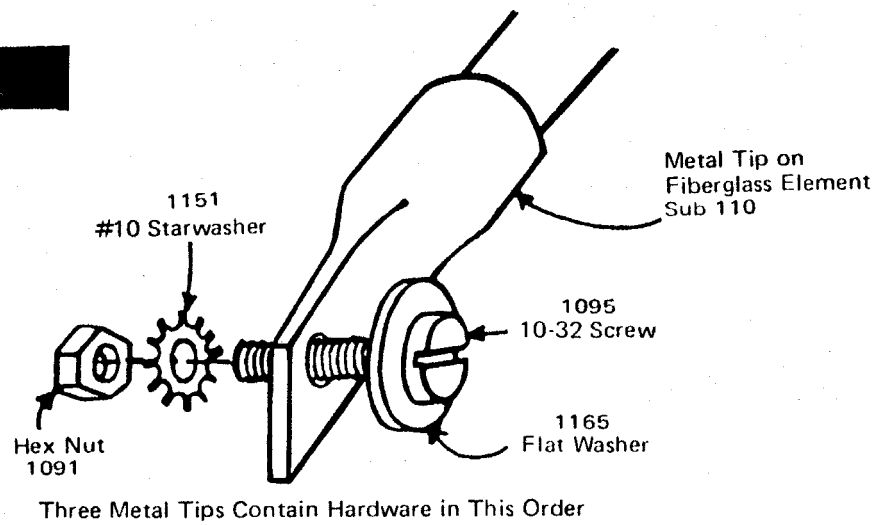


FIGURE 16

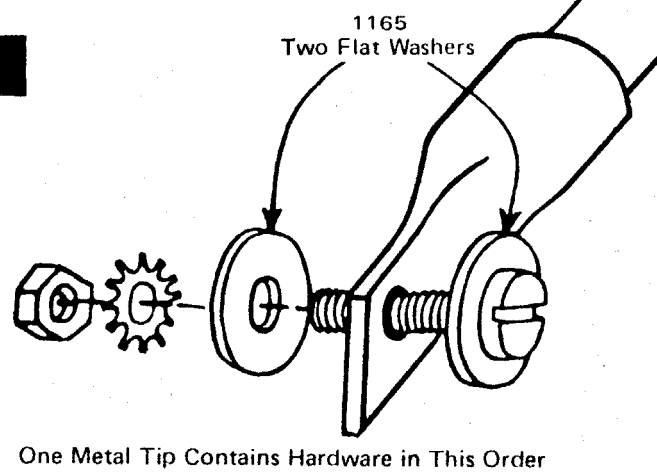


FIGURE 17

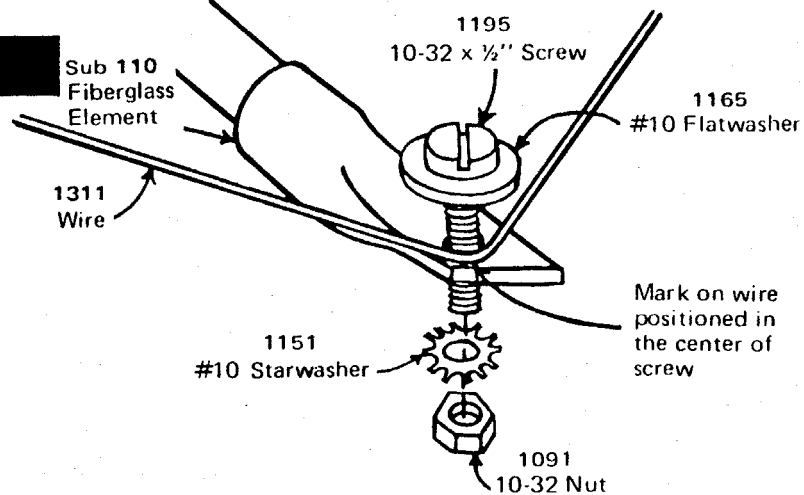


FIGURE 18

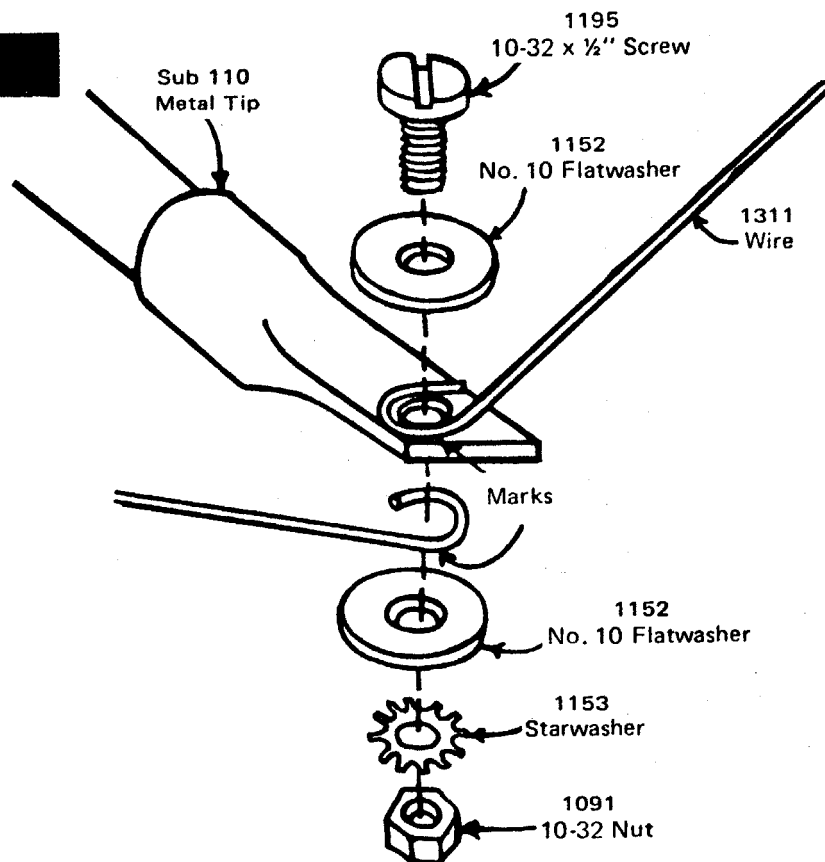


FIGURE 19

Wrong

Right

Wrong

Right

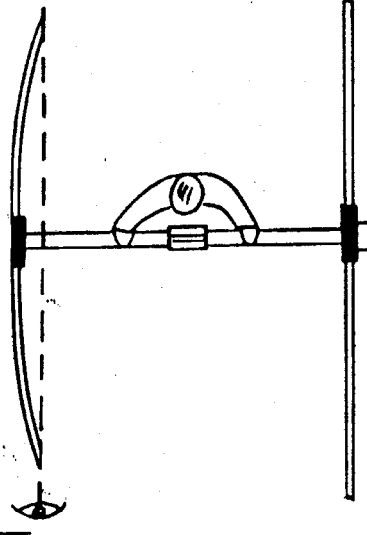
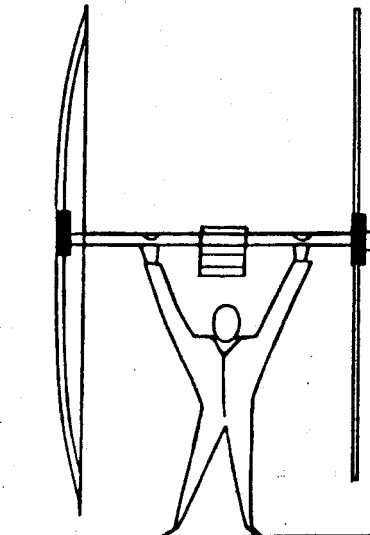


FIGURE 20

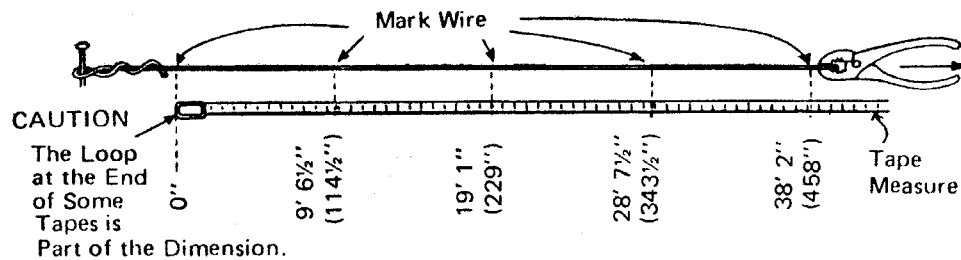
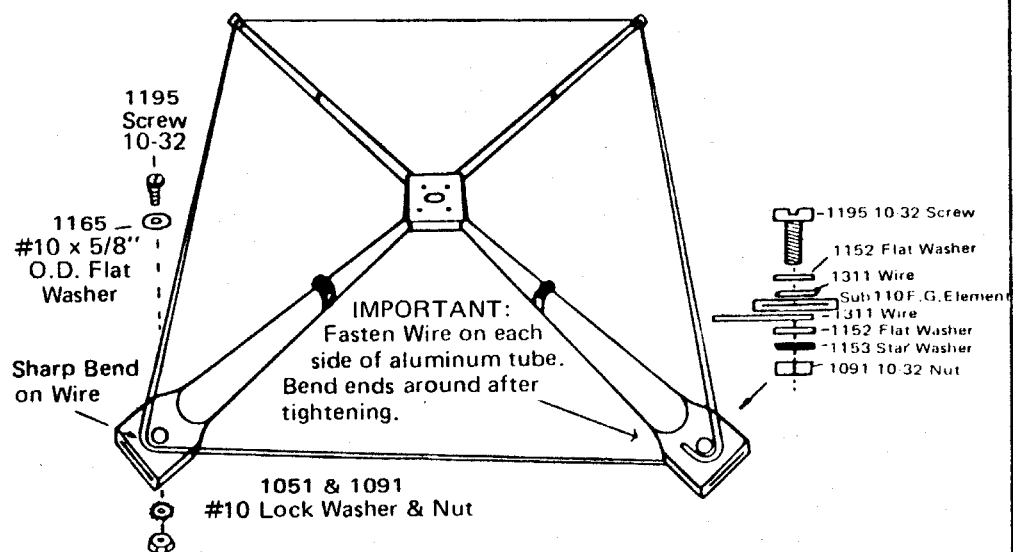


FIGURE 21



GAMMA ADJUSTMENTS FOR THE PDL-II

All S.W.R. measurements and adjustments should be made without using any switchboxes or any other devices in the coax line that is being checked. Connect the S.W.R. meter between the transmitter and the vertical or horizontal coax, whichever gamma you are adjusting.

It would be best if the S.W.R. readings are taken with the antenna mounted at its approximate operating height. An antenna being too close to the ground will change the S.W.R. readings. If the antenna must be tuned near the ground, it would be best if the antenna were aimed straight up into the air with no objects surrounding it. This will approximate the conditions when the antenna is mounted at its operating height.

Note: Do not stand near the antenna while making S.W.R. measurement. This will affect the readings.

For accurate S.W.R. readings, it is advisable to use $\frac{1}{2}$ wave multiples of your coax line. If you are using regular RG-8U coax, it should be cut in multiples of 12 feet. If you are using RG-8U low loss foam type, the multiple should be 14 feet.

The gamma setting for the lowest S.W.R. consists of two adjustments on each (horizontal and vertical) gamma.

The vertical and horizontal adjustments will not interact. In other words, you may make adjustments on the vertical gamma without affecting the horizontal match and vice-versa. Refer to Figures 4 and 6 in the AV-120-2 instruction manual.

The two gamma adjustments are:

- (1) The location of the gamma fastener on the curved section
 - (2) The distance the $\frac{1}{4}$ " gamma rod is inserted into the plastic of the gamma tube (not shown in Fig.).
-
- (1) Before making any adjustments, check the S.W.R. at the factory recommended settings and record the reading on paper.
 - (2) Remove the spring clamps on the gamma tube and loosen the 10-32 screw in the swivel insert. (Fig. 4)
 - (3) Adjust the gamma rod by sliding the rod in or out of the plastic tube $\frac{1}{4}$ " at a time, taking readings after each adjustment. The swivel insert screw should be tightened slightly after each adjustment so good contact is made. When the lowest S.W.R. has been achieved, temporarily lock into this position at the plastic end.
 - (4) If S.W.R. is still too high, loosen the screw that holds the gamma fastener to the curved section and also the swivel insert screw again.
 - (5) Adjust by sliding the gamma fastener back or forth $\frac{1}{2}$ " at a time taking S.W.R. checks after each $\frac{1}{2}$ " adjustment. Adjust until the lowest S.W.R. is obtained. If the lowest S.W.R. attained is still too high, repeat Step 3 followed by Step 4.
 - (6) These two steps can be repeated as many times as it takes to obtain a good match.
 - (7) After all adjustments have been made, retighten all screws and install the spring clamps.

ANTENNA TESTING VARIABLES

From time to time, many CBer's are heard to make the remark that a particular antenna is not living up to the advertised performance figures such as gain, S.W.R., or front-to-back ratio. These statements are usually founded on their personal field tests; often based on comparisons between one antenna and another. The disparity in the results between the tests of the CBer and the factory usually stems from the conditions under which the tests were run. The following is a short discussion of some of the variable conditions that do occur and how they affect antenna performance.

EFFECT OF OTHER ANTENNAS

When two antennas are mounted near each other (even if they are used for different frequencies), a coupling usually results which in some way alters their operation. This coupling is even more pronounced when the antennas are mounted less than one wavelength apart. So, if another antenna is less than 36 feet from your CB antenna, there is a good chance that it changes its performance in some way.

THE EFFECT OF METAL STRUCTURES

Not only antennas, but water towers, power lines, buildings, or any material of a metallic nature has the ability to misdirect transmission. Sometimes these obstacles will act as directors and sometimes as reflectors - causing the signal to increase or decrease in the intended direction.

Complaints of poor front-to-back ratio or lower than expected gain can usually be traced to this above circumstance - especially in beam-type operation.

SIGNAL INTENSITY

The signal strength of a remote transmitting station can never be assumed to be of the same strength as in previous transmissions. Signals of incoming stations should be recalibrated to the antennas being compared. For this reason, you cannot take down one antenna, put up another one week later, and expect to make accurate measurements. If the stations being used are using beam type antennas, a slight change in the beams' directions can also be critical. Contacts with mobiles are even less valid. A movement of five feet sometimes makes measurable differences in mobile communications.

S METER CALIBRATION

Depending upon the CB set, an S meter is calibrated so that one S unit is equal to 6 db. Therefore, an antenna responsible for 1 S unit gain over another has also about 6 db gain over that other antenna. Some S meters, however, are calibrated at only 3 db per S unit and others at 3 or 4 at the low end, and 6 or 7 at the top of the scale.

Another problem encountered with S meters is the ability to measure high strength inputs. Some bounce back at a powerful signal and appear erratic in operation even reading lower on the scale with an increased signal.

COAX AND CONNECTORS

The quality of the coax and connectors and especially the soldering of the coax to the connector can affect S.W.R. and gain. Many times an unsuspecting CBer will buy a low grade coax and lose 2 or 3 db after paying good money for an expensive transceiver and antenna. A quick check for good coax and connections can be run by substituting a dummy load on the antenna end of the coax. If all is right, the S.W.R. with the dummy load should be a 1 to 1 match.

CRYSTAL VARIATIONS

Mr. A. and Mr. B. are neighbors and they are comparing the performance of their antennas by their ability to transmit to Mr. C. about 20 to 30 miles away. If Mr. A. has a crystal slightly high on frequency, he might show a weaker signal to Mr. C. even though his operation has more power. This would make A's antenna seem inferior to B's. This problem can be eliminated by Mr. C's having a tunable receiver on his transceiver to match A's variation.

ANTENNA HEIGHT

Whenever antennas are being compared, they should be installed at the proper distance above the ground and preferably in an open field. This operation is not even legal for CB'ing when using a horizontal beam, because the proper distance above ground for this mode of transmission is 36 feet or more. Only the test of a vertical antenna may be run at a legal height of 20 feet in an open field.

TIME VARIATION

Any test of antennas should be performed with a time variation of about 15 minutes or less to eliminate variations due to tropospheric shifts and other changes that affect performance.

GUY WIRES AND SUPPORTING STRUCTURES

Guy wires should preferably be of the non-metallic type using ski tow rope or other plastic lines. If metallic guy wires are used, they should be broken up at uneven intervals along their length to avoid interference and possible high S.W.R. In many cases, a manufacturer intends his antenna to be mounted on a metal mast or tower and in some cases, the mast or tower is used as a radiating element.

LIMITED WARRANTY

AVANTI warrants all products manufactured by it to be free from defects in material and workmanship under normal use. This warranty shall apply only to defects appearing within one year from date of purchase. This warranty also does not extend to damage caused by misuse, abrasion, corrosion, negligence, accident nor shall it apply to any item which shall have been altered in any way so as to affect its use and operation.

In the event the products manufactured by AVANTI are found to be defective in workmanship or material, AVANTI will repair or replace free of charge such defective material if delivered freight prepaid within the above stated one year period to the factory at 340 Stewart Avenue, Addison, Illinois 60101, with proof of purchase and if found by AVANTI's inspection to be truly defective in workmanship or material.

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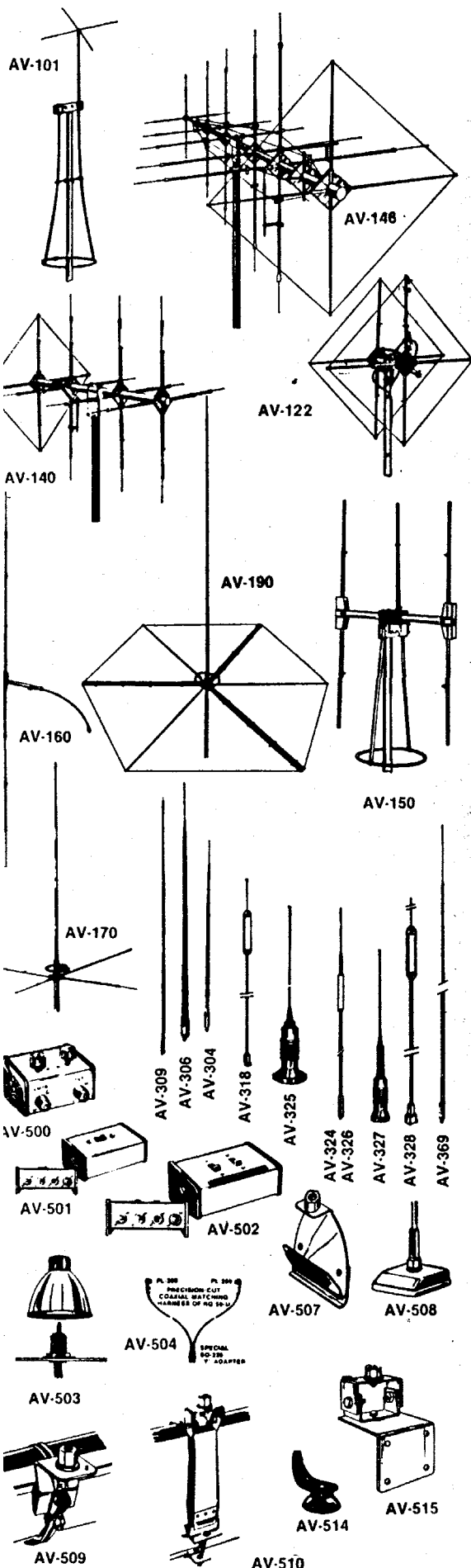
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AV-101 ASTRO-PLANE Base Station,
4.46 db, over Isotropic

AV-122 PDL II "Orbital Gamma Match"
And AV-501 Switchbox, Dual Polarity

AV-130 STACKING KIT For 2 AV-120's
Complete With Harness (Not Illust.)

AV-140 MOONRAKER® Base Station With
Switchbox, 14.5 db, over Isotropic

AV-146 MOONRAKER® 6 Base Station With
AV-502 Switchbox, 17 db over Isotropic

AV-150 ASTRO BEAM Base Station, 40 db
Front to Back, 11 db over Isotropic

AV-160 RAMROD Multi-Purpose Base
Station (Tunable 27-170 MHz)

AV-170 SIGMA 5/8 Base Station — Full
5/8 Wave Length, 5.14 db over Isotropic

AV-190 SATURN — Combination Vertical
and Horizontal Omni Directional Base

AV-304 4' Fiberglass RACER with
Tunable Tip

AV-306 6' Fiberglass RACER with
Tunable Tip

AV-309 96" Fiberglass RACER Whip

AV-318 18" MINI-FAZER

AV-324 4' HIPPO Top Loaded Mobile
Antenna — 250 Watts Maximum Power

AV-325 6' HIPPO Base Loaded Mobile
500 Watts Maximum Power

AV-326 6' HIPPO Top Loaded Mobile
Antenna — 350 Watts Maximum Power

AV-327 RACER 27 Base Loaded Mobile
With Spring, High Durability Tunable Whip

AV-328 48" FAZER Top Loaded Mobile

AV-369 GATOR-WHIP (Tunable 25-40 MHz)

AV-500 500 Watt AVANTI Matchbox

AV-501 CS-1 Coaxial Switchbox

AV-502 CS-2 Coaxial Switchbox For Use
With Standby Antenna

AV-503 RACER 1/2" SNAP MOUNT With
Standard 3/8-24 Thread

AV-504 Co-Phasing Harness For Install-
ation Of 2 Mobile Antennas

AV-506 3/8-24 Adapter For Use With
AV-521's Or Other Trunk Mounts

AV-507 Gutter Clip 3/8-24 Thread Mount

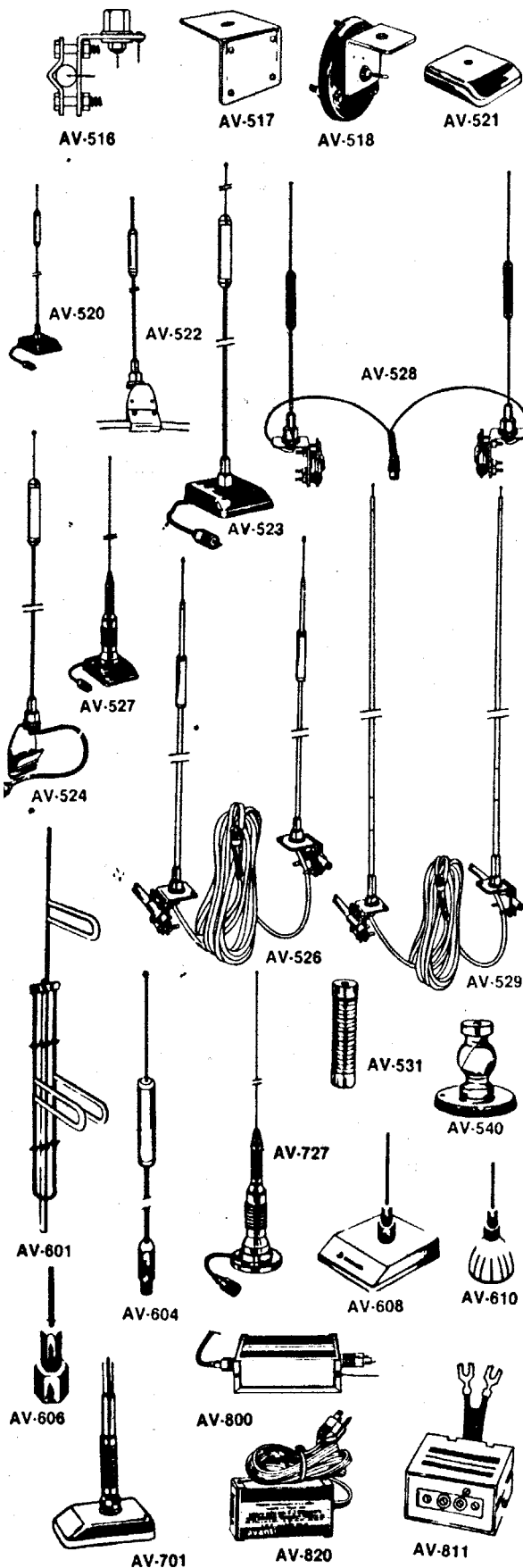
AV-508 AV-506 Installed In AV-521
No-Hole Trunk Lid Mount

AV-509 Bumper Strap Mount For Compact
Cars 3/8-24 Threads

AV-510 Bumper Strap Mount For Standard
Cars 3/8-24 Threads

AV-514 Suction Cup Tie Down — No Tools
Necessary For Installation

AV-515 Camper Mount With 3/8-24
Threads — Fold-Down Feature



AV-516 Truck Side Mounted Mirror Bracket With 3/8-24 Threads

AV-517 Camper Bracket Mount With 1/2\" Hole For AV-327

AV-518 Thumb Screw Fold-Over Camper Mount

AV-519 Thumb Screw Camper Mount

AV-520 18\" MINI-FAZER With No-Hole Trunk Mount

AV-521 No-Hole Trunk Lid Mount

AV-522 18\" MINI-FAZER With Gutter Clip

AV-523 48\" FAZER With No-Hole Trunk Mount

AV-524 48\" FAZER Top-Loaded With Gutter Clip

AV-526 4' HIPPO Mirror Mount Co-phase Package

AV-527 AV-327 With AV-521 No-Hole Trunk Mount

AV-528 48\" FAZER Stainless Steel Top-Loaded Mirror Mount Co-phase Package

AV-529 4' Fiberglass RACER Mirror Mount Co-phase Package

AV-531 Rubber Shock 3/8-24 Threaded Medium Duty Spring

AV-535 Dual 18\" MINI-FAZER With Gutter Clips

AV-537 RACER 27 Thumb Screw Camper Mount

AV-540 Cast Aluminum Swivel Ball Mount 3/8-24 Thread

AV-601 25-50 & 140-174 MHz Base Station Monitor (Dual Banded)

AV-604 25-50 & 140-174 MHz Mobile Monitor 3/8 Thread (Dual Banded)

AV-606 Same as AV-604 With AV-506 Mount And 17' Coax

AV-608 Same as AV-604 With AV-508 Mount And 17' Coax

AV-610 Same as AV-604 With AV-503 Mount And 17' Coax

AV-701 Special PROTECTIVE SPRING For AV-304's, AV-306's, and AV-328's.

AV-727 RACER 27 Magnetic Mount Base Loaded Mobile With Spring

AV-800 Low Pass TV Interference Filter

AV-811 CB Signal Rejection Filter, 27 MHz

AV-820 A.C. Line Filter

PK120 PDL (AV-120) Power & Gain Kit Also Adds 1 db Gain For Older PDL's!

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