

avanti

RESEARCH AND DEVELOPMENT, INC.

C.B. ANTENNA CATALOG

INCLUDING

- The Revolutionary

CO-INDUCTIVE

BASE ANTENNAS

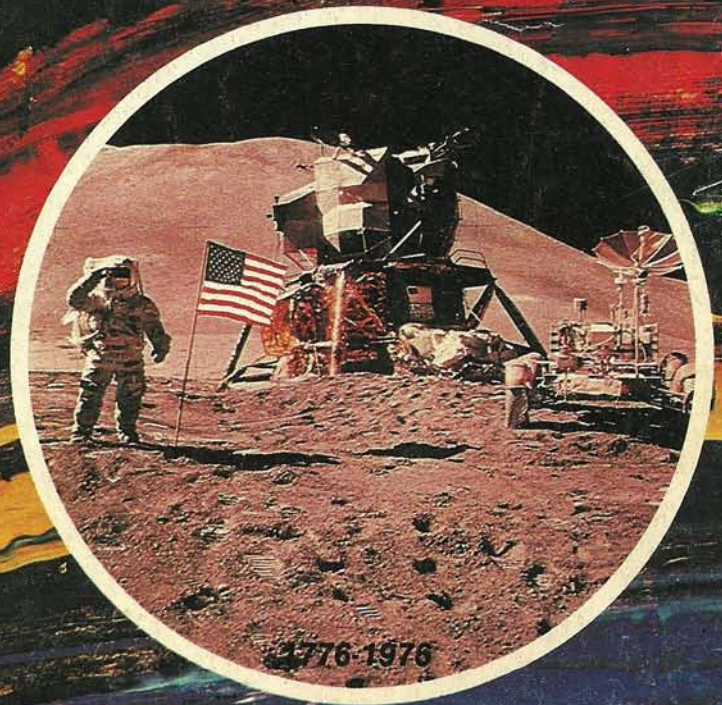
- NEW MOBILE ANTENNAS
- NEW MARINE ANTENNAS
- MOBILE ACCESSORIES
- 40 CHANNEL ENGINEERED

**FOR LONG DISTANCE
COMMUNICATION**

avanti

*a research and development
company dedicated to quality
and performance
in C.B. antennas*

*All Avanti
Antennas
Made In
The U.S.A.*



1976-1976

avanti RESEARCH AND DEVELOPMENT, INC
340 Stewart Avenue, Addison, Illinois 60101

CO-INDUCTIVE™

THE AVANTI CO-INDUCTIVE PRINCIPLE

One of the most common antenna types used in the C.B. field is the Yagi-Uda array, or more simply the Yagi. It derives its name from the professors who first promoted its use.

This type of beam antenna consists of a dipole as a driven element and other dipole parasitic elements that are inductively coupled to the driven element. This is a "super gain" design which indicates that it furnishes a very high gain in relation to its size.

Although the Yagi features a "super gain" for frontal signals, it leaves something to be desired in back rejection (the ability to reject unwanted signals from the back of the antenna). Depending on how much one is willing to sacrifice on gain, the back rejection can be increased nominally. If the elements are adjusted for maximum gain the back rejection suffers.

If instead of using a driven element, all elements of a beam antenna are fed (connected to the coaxial line), it is possible to achieve a very good back rejection, but the gain is poorer than a Yagi.

One antenna type that has been developed on the AVANTI test range is the ASTROPLANE, which has been granted U.S. Patent #3587109. This antenna develops an intense electrical field if the bottom, skirt section, is excited minus the top monopole. If the top monopole is short, little energy is coupled to it. As the monopole is made increasingly longer, more energy is coupled. If the element is made 10% shorter than a quarter wave length, a very strong CO-INDUCTIVE effect is formed between the two elements.

The ASTROBEAM antenna is another good example of co-induction. The ASTROBEAM is formed by combining an ASTROPLANE as a driven (fed) element of an array of dipoles which form a director and a reflector. In this design combination the phenomenon of CO-INDUCTION is extended to encompass all of these elements. The CO-INDUCTIVE effect creates such a phase and magnitude in the parasitic elements that the antenna elements act as though they were directly driven and an unusually high back rejection, greater than 40 db, is achieved. In addition, this effect keeps the antenna "super gain" with the result that gains are achieved that surpass the best designed Yagis.

The ASTROBEAM incorporates these advantages in an antenna that utilizes a dipole as a reflector, which is consistent with the traditional design of Yagi antennas.

Experiments have shown that even higher front to back ratios can be achieved with a "quad reflector" as used in the MOONRAKER. This reflector is really two half wave elements back to back. They are arranged with a 1/2 wave-length "V" and a similar "V" directly opposing it. This means that there are two fields available to couple the driven element and the greater back rejection demonstrates that a CO-INDUCTIVE field exists to furnish optimum phase and magnitude to the combination of the driven and "quad" elements.

The AVANTI principle of CO-INDUCTION is demonstrated by the omni-directional performance of the ASTROPLANE and the directional efficiency of the ASTROBEAM, PDL-II and MOONRAKER antennas. It is this use of the novel co-inductive principle that enables Avanti to offer its customers antennas of unusual design and very high performance.

avanti

FACTS ABOUT C.B. ANTENNAS

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 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 conductive 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 a week later, and expect to make accurate measurements. If the stations being used are using beam type antennas, a slight change in the beams' direction can also be critical. Contacts with mobiles are even less valid. A movement of five feet sometimes makes measureable 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 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 inability 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 60 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 of tower and in some cases, the mast or tower is used as a radiating element.

PROPER CONSTRUCTION — If they could, manufacturers would ship all antennas fully assembled in order to eliminate mistakes in construction often found in antenna installations. Even the best instructions are sometimes mis-read and an antenna condemned only because of an error in assembly. If an antenna does not perform up to par, contact your local distributor or dealer, and if he can't help you, call the manufacturer. Chances are that somebody will get it working.

These are by no means all of the possible variations to consider in antenna measurements; however, they are some of the most important and understanding them will certainly be to the CBer's benefit and may save time in finding a trouble source.

ANTENNA ELECTROCUTIONS — Great care should be exercised in installing any antenna to avoid contact with electrical wires. Assume any overhead lines to be a potential electrocution hazard!!

IMPORTANT SAFETY NOTICE — Any AVANTI base station antenna is designed to be grounded to the support mast using the mounting hardware provided. Grounding of the mast can "bleed off" static. Be sure your antenna mast tripod or tower are properly grounded. Consult the National Electrical Code, your local CB dealer or installation experts for installing a good, safe ground for your location.

ASTRO BEAM Model AV-150

Increased Coupling Makes It . . . the most efficient beam antenna available to the CB'er. We started with our famous Astro Plane (patented) as a radiator, then added a reflector and a director to achieve the beam configuration. The Astro Plane has more gain (4.46 db) to begin with than a dipole which is commonly used as the radiator of a beam and it couples to the director and the reflector more efficiently. This close coupling efficiency results in an unprecedented 40 db front-to-back ratio.

This three element beam is made with an ASTRO PLANE antenna as a driven element, rather than a simple half wave unity gain dipole. The ASTRO PLANE is uniquely suited for the purpose — no radials to interfere with the other elements, 4.46 db gain, and the ability to radiate from the top make it a natural choice.

Because its unusual design allows it to be fitted over the support mast, it allows optimum spacing for gain as well as perfect mechanical balance.

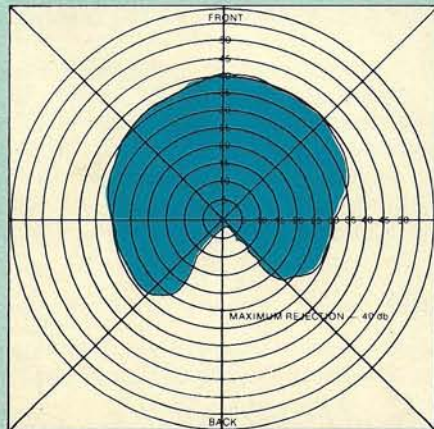
The elements are made from aircraft quality aluminum tubing, as is the boom, while the hubs are molded of high strength weather resistant Cyclocac. These molded hubs feature a pin lock design which aligns the elements. This feature also keeps the elements from twisting once they are up in the air — a problem often encountered with beams. The weight of this antenna is only 14 lbs. so it can easily be rotated by an inexpensive TV rotor without going to the more costly models.

A 40 db+ rejection means that if a signal is coming in at a certain strength and the ASTRO BEAM is turned around so that the back is toward the signal, the signal will drop 40 db or more. See Polar Plot Graph.

Forward gain of 11 db over an isotropic source is a means of rating the antenna's ability to increase, receive and transmit signals. The point here is that the ASTRO BEAM has about 1 db more than the best 3 element beam currently on the market. This gain has the equivalent of multiplying your power about 12.5 times.

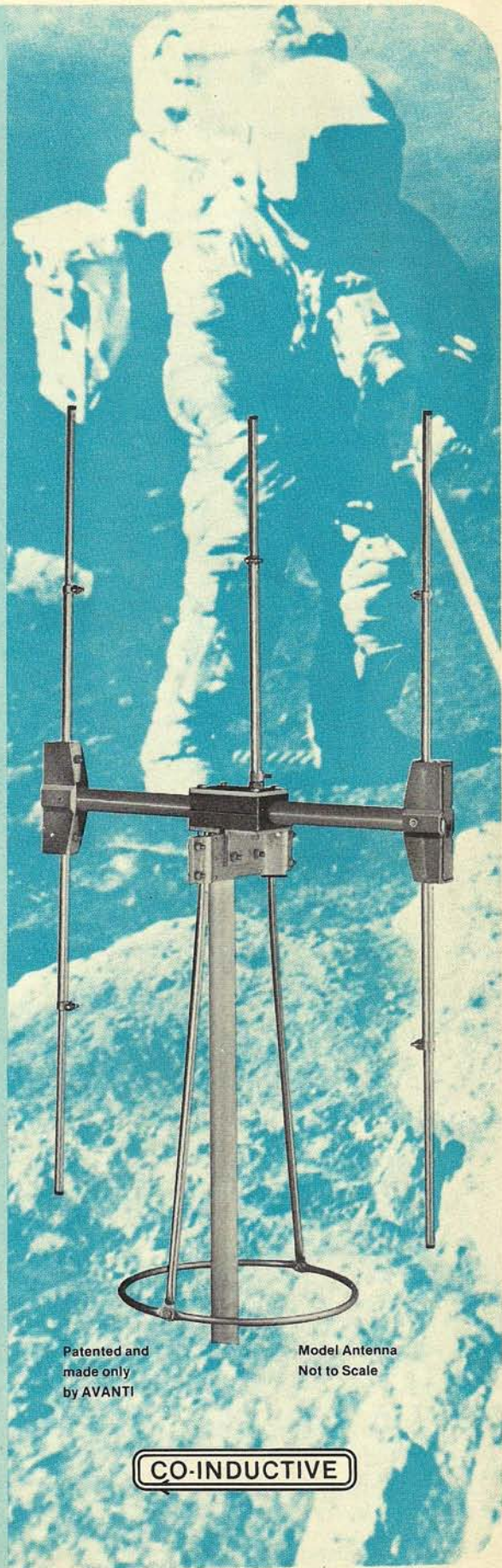
SPECIFICATIONS

- Rejection—40 db + signal drop front-to-back
- Forward Gain—11 db over an isotropic source
- Impedance—50-52 ohms
- Boom length—10½ feet, Weight—14 lbs.
- Mode—Vertical Beam
- Material—Aluminum & Cyclocac
- Light to Medium duty rotor needed
- Wind Load Area — 2.6 sq. ft.
- V.S.W.R.—1.3:1 or less
- Turning Radius—63 inches
- Impedance—50-52 ohms
- Power Multiplication 12.6X



Actual Astro Beam Polar Plot Shows Signal at 41 db Power Level Reduced to Almost 0 db on Back of Antenna. Graph Shows Signal Level. Do Not Confuse with Gain. 40 db is About 7 "s" Units on Most Receivers.

NOTE: Not available as conversion kit for Astro Plane.



Patented and made only by AVANTI

Model Antenna Not to Scale

CO-INDUCTIVE

SIGMA 5/8 Model AV-170

SIGMA 5/8 is full 22' tall 5/8 wave ground plane designed to give strong, noise-free long distance performance. An efficient matching loop, which prevents burn outs and detuning, eliminates the need for coils or transformers. The radiator is adjustable for fine tuning and pre-marked for easy "no-measuring" assembly. This telescoping section uses full circle clamps for positive electrical contact and sturdy construction. The sturdy heavy-duty radials have stainless steel tips for reduced wind loading. Construction is all heavy wall aircraft quality aluminum, aluminum castings, stainless steel and fiberglass.

SPECIFICATIONS

*Gain 5.14 db over isotropic
4.17 db over 1/4 wave ground plane
3.00 db over 1/2 dipole

V.S.W.R. 1.3:1 or less

Power Multiplication Factor—3.3

Impedance—50-52 ohms

Omnidirectional—no rotor needed

Height—22 feet

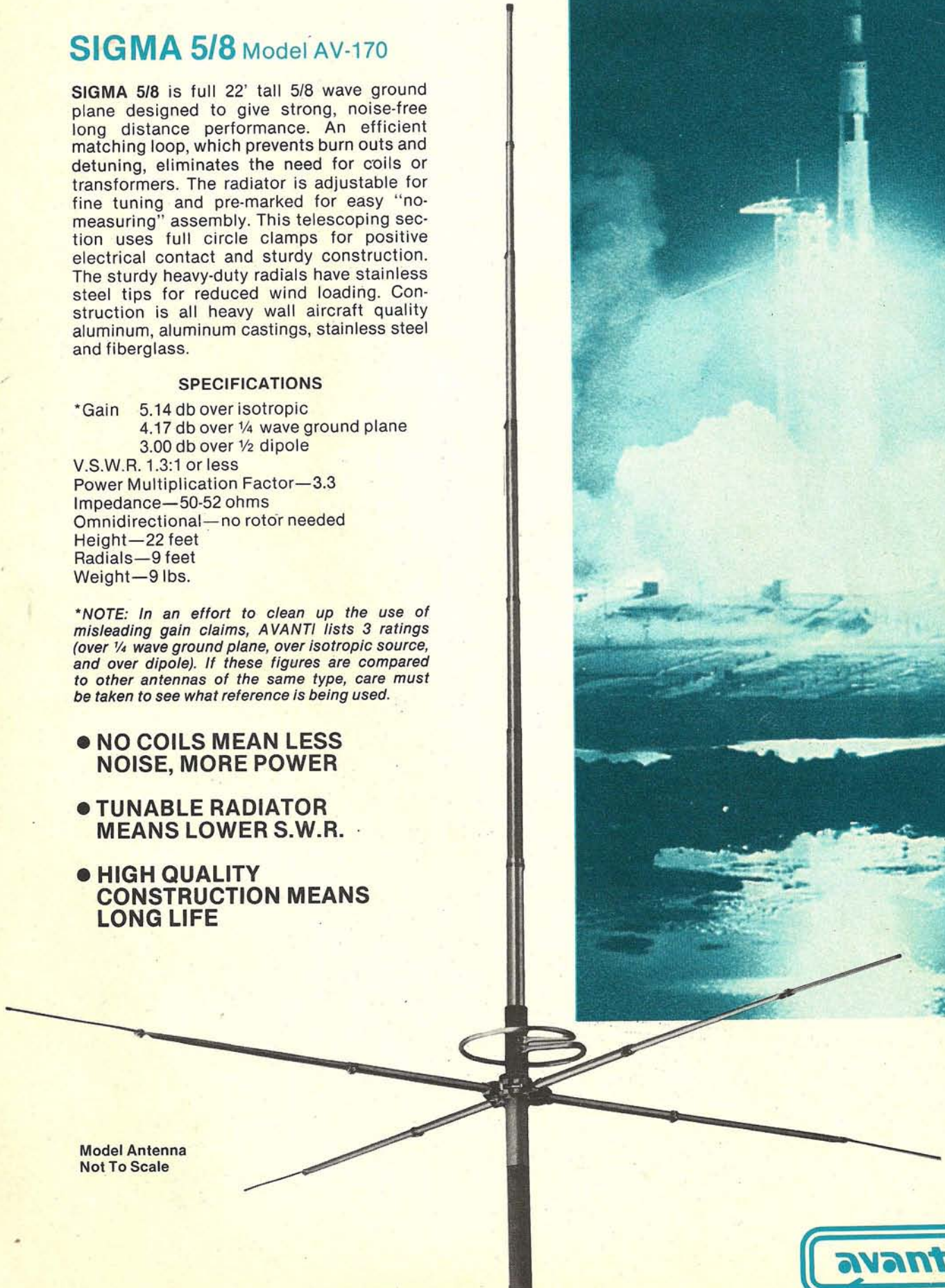
Radials—9 feet

Weight—9 lbs.

**NOTE: In an effort to clean up the use of misleading gain claims, AVANTI lists 3 ratings (over 1/4 wave ground plane, over isotropic source, and over dipole). If these figures are compared to other antennas of the same type, care must be taken to see what reference is being used.*

- **NO COILS MEAN LESS NOISE, MORE POWER**
- **TUNABLE RADIATOR MEANS LOWER S.W.R.**
- **HIGH QUALITY CONSTRUCTION MEANS LONG LIFE**

Model Antenna
Not To Scale



ASTRO PLANE ANTENNA, Model AV-101

6 Good Reasons Why the Revolutionary AVANTI ASTRO PLANE is the best omni-directional C.B. Antenna you can buy.

1. It has top radiation which means that your signal gets out from the highest part of your antenna. This is especially important where antenna height is limited as in C.B. radio because your signal radiates about 15 feet higher than with other antennas which radiate near the bottom. This 15 feet means you get increased range and fewer dead spots just like raising your antenna 15'.
2. The **ASTRO PLANE** has a lower angle of radiation which makes more efficient use of the radiated signal by allowing it to hug the curvature of the earth instead of shooting your power up into the sky. This also gives you greater range than an ordinary omni-directional antenna. Low angle radiation is one thing the professional users really look for.
3. The **ASTRO PLANE** has a 4.46 db gain (over an isotropic source) which gives you a stronger signal and better, clearer reception.
4. You'll get long lasting, trouble free performance because it is compact in design — without long drooping radials, without coils to burn or short out, and with direct ground construction to dissipate static charges and lightning.
5. You'll find it easy to install because of its lightweight construction (less than 5 lbs.) and only 12 feet of total height and 30 inches in diameter.
6. All of these features need not cost you more money. Part of good engineering is to make a better product for less money. So you can buy this advanced antenna for less money.

- Stainless steel radials concentrate signal power on top
- Rigid heavy-duty aluminum tubing
- No long drooping radials to ice up or break off
- So unique it's backed by a U.S. Patent. (Patent #3587109)
- No coils to burn out or detune
- Easy Assembly
- Lightweight — easy to install on simple pipe mast



Ordinary collinear or ground plane antenna signals are blocked . . . they radiate from the bottom.



Astro Plane gets its signal over obstacles . . . it radiates from the top.

SPECIFICATIONS

Total Length—12 feet
Weight—4 lbs.
Power Gain—4.46 dB
over isotropic
SWR—Pre-Tuned—
Less than 1.2:1 on
23 CB Channels

Polarization—Vertical
Aircraft Quality Aluminum
Impedance—50-52 ohms
Omni-directional—
needs no rotor
Power Multiple Factor 2.8

CO-INDUCTIVE

Revolutionary breakthrough in CB antenna design



CO-INDUCTIVE

NEW SATURN AV-190

- New Tri-Gamma™ Matching Network ● New Cam-Lock Radial Hub ● Co-Inductive Design
- Dual-Polarity ● No Coils ● Pre-Cut and Pre-Measured Circumference Wire ● There is a Patent Pending on this unique antenna.

About ten years ago, AVANTI first pioneered the use of dual polarity beams with the invention of the patented PDL antenna. Since then, dual polarity has become the most popular type of beam on the market. Now, after years of research, AVANTI has invented the Saturn, a dual polarity **omni-directional** base antenna that's sure to become a CB milestone.

By taking advantage of their CO-INDUCTIVE principle AVANTI engineers were able to combine a 5/8 wave omni-directional antenna and a specially designed omni-directional horizontal antenna into one high performance CB base unit.

Why two polarities? A vertical to communicate with other omni-directional base antennas and mobiles; and a horizontal to communicate with horizontal beams and other Saturn antennas.

Why crowd all your CBing on vertical polarity when you can use the quieter, more efficient horizontal mode? By switching to horizontal, you can cut unwanted mobile chatter by 12-20 DB.

Its always been a problem trying to pick up horizontal transmissions when your beam is pointed the wrong way. Now you can pick them up on your Saturn and switch over to a beam if desired or keep talking on the Saturn.

Dual polarity also allows you to follow or avoid skip. Especially important when sun spot activity is high. Note: (Skip often changes polarity no matter what original mode of transmission is used. Talking on skip is illegal but long distance listening can be alot of fun).

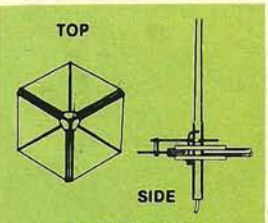
An antenna with these performance features should also be mechanically superior and this one is. The Saturn is constructed with the finest materials available. The stranded copper circumference wire is pre-cut and pre-measured for easy assembly. All elements are made of heavy wall seamless aluminum tubing.

A special cast aluminum hub is the center of the whole antenna. This unique hub uses a cam lock device developed by AVANTI to hold the support mast securely.

Another exclusive Saturn feature is the efficient (tri-gamma™) matching network which makes the Saturn tune to a low V.S.W.R. across the 40 channels. The (tri-gamma™) network also avoids the use of troublesome coils found in so many antennas.

Each Saturn Antenna comes with an AV-501 Vertical and Horizontal switchbox which employs a make before break switch to prevent arcing and subsequent burnout.

AVANTI engineering has done everything to bring you a mechanically and electrically superior antenna.

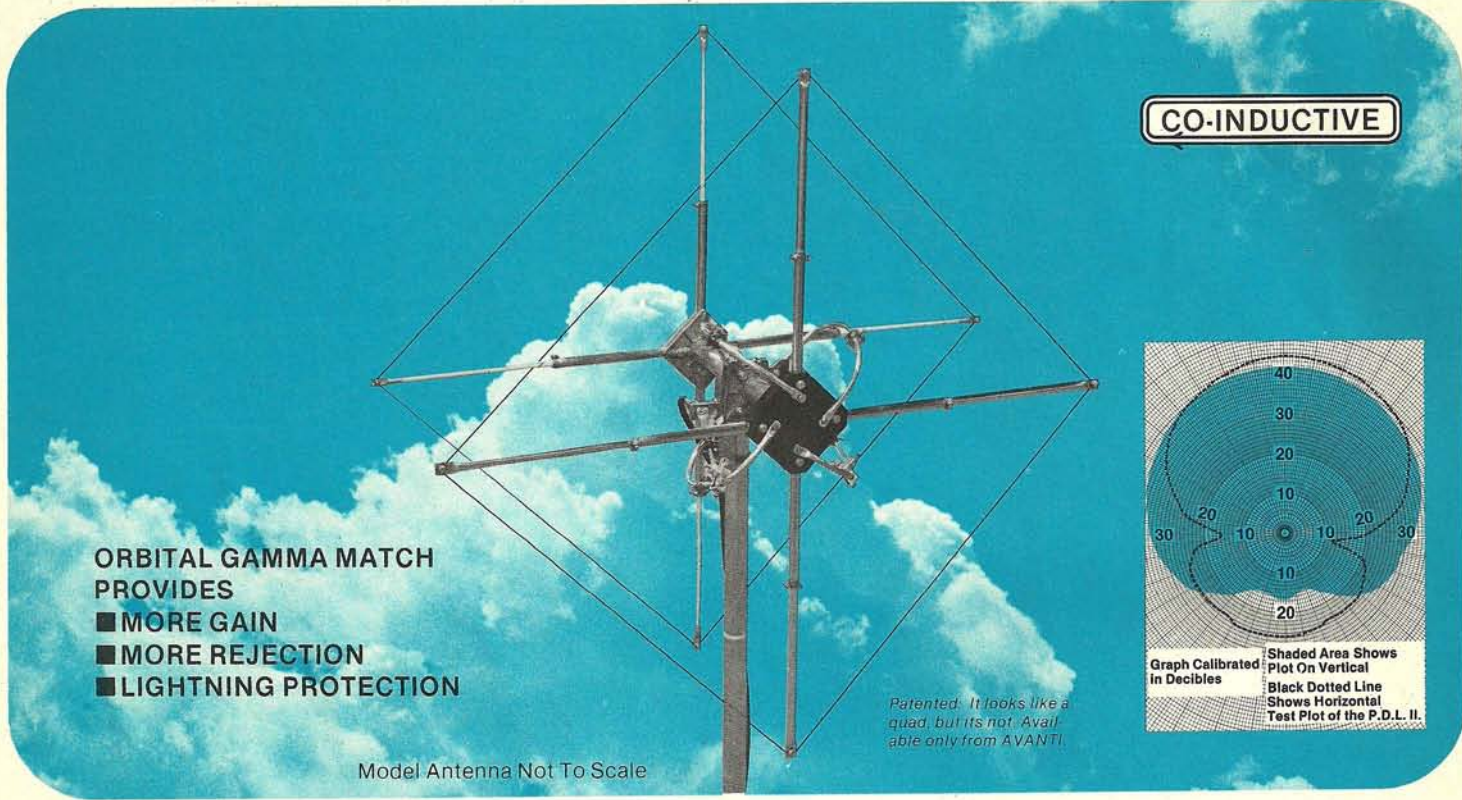


- SPECIFICATIONS**
- Length = 22' 6"
 - Matching — Tri-Gamma™
 - V.S.W.R. = 1.2:1 on Design Frequency
 - DC Grounded
 - Omni-Directional (No-Rotor) Both Polarities
 - Radials = 9'
 - Polarity = Vertical and Horizontal Switchbox Included
 - Weight = 25 lbs.
 - Co-Inductive Design

THE ULTIMATE OMNI-DIRECTIONAL ANTENNA

P.D.L. II (Polar Diversity Loop) ANTENNA Model AV-120-2

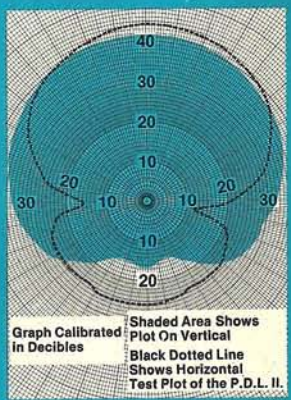
CO-INDUCTIVE



ORBITAL GAMMA MATCH PROVIDES

- MORE GAIN
- MORE REJECTION
- LIGHTNING PROTECTION

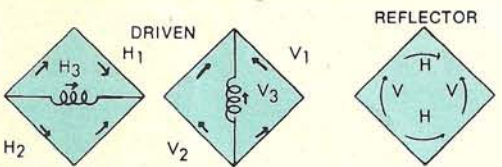
Model Antenna Not To Scale



Patented: It looks like a quad, but it's not. Available only from AVANTI.

ARRANGEMENT OF ELEMENTS

Radiation is emitted from three sub-elements of the main driven element as shown:



In either vertical or horizontal modes the reflector has current induced to form two (2) more elements. The arrows indicate direction of induced radiation.

H₁, H₂, and H₃ and V₁, and V₃ are major currents resulting in radiation at these areas. (The ordinary quad antenna does not possess metallic cross arms, therefore, in ordinary quads no radiation exists at H₃ or V₃.)

ANGLE OF RADIATION

Numerous tests and actual experiences prove conclusively that the PDL possesses a low take off angle of radiation. Measurements indicate that it produces a stronger signal than stacked 3 element Yagi's.

FRONT TO BACK RATIO

The front to back is easily better than a two element ordinary quad because of the extra co-inductive elements.

DUAL POLARITY

This unique feature enables considerable improvements to be realized in the following types of communications.

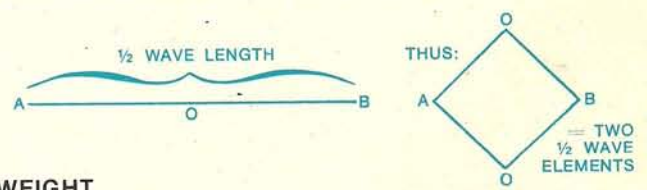
- A. Line of sight transmission:
 1. By shifting polarity 90°, thereby cross polarizing the interfering signal, it reduces the interfering signal as much as 25 db and still maintains a gain with the other station if similarly polarized.
 2. Good front to back and front to side rejection of unwanted signals in both polarities.

B. Optimum transmission to either mobiles or base stations:

1. At CB frequencies mobile antennas invariably use vertically polarized whip antennas. Switching to the vertical mode of the PDL allows effective communications with these mobiles.
2. Base to base transmissions are most effective using horizontal polarization. This mode is readily accomplished by flicking a switch. But when vertical is desired due to horizontal congestion it can also be used.

COMPACT CONSTRUCTION

In a Yagi antenna the elements are close to a half wave length long. In the PDL or quad antenna the half wave length is developed around a corner; therefore the arm masses are closer to the mast enabling easier rotations and minimizing strain on the rotor.



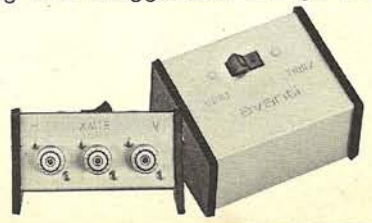
WEIGHT

The low weight (13.5 lbs.) allows simpler, low cost supporting structures and rotors.

INTEGRAL SUPPORT

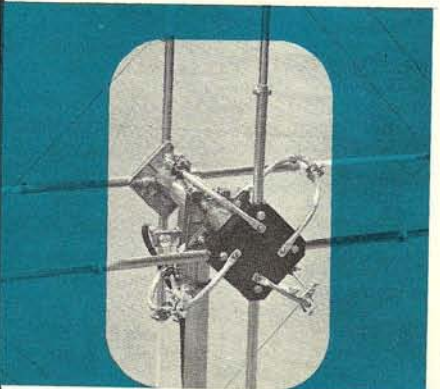
Because the arm ends are held by the radiator wires, a strong structure results. The ends in this way are arrested from going into exaggerated swings due to wind buffeting.

Includes Model AV-501 Single Switch





Heavy duty extruded boom to mast clamp



Orbital Gamma Match

Patent #3475756

SPECIFICATIONS

Electrical

Frequency	27 MHZ
Forward Gain	12 db over standard reference isotropic
Band Width	Entire CB Band
Front-to-back ratio	32 dB
Polarity Isolation	23dB Vertical to Horizontal
VSWR	1.2:1
Switch Box Included	Low VSWR co-axial change-over to effect switching horizontal to vertical.
Suggested coax Impedance	Foam-filled RG-8-U 50-52 ohms
Directional Beam	Light or Medium duty rotor
Lightning Protection	D.C. Ground
Power Multiplication	16X
Wind Load Area	2.0 sq. ft.

Mechanical

Size:	Cross arm spread and height: 13' Aperture: 90 sq. ft. Boom Length: 4'10"
Weight:	13.5 lbs.
Hubs	Unmodified stress relieved A.B.S. with special formulation for ultraviolet suppression.
Aluminum Type:	6061 and 3003. Boom: 1-5/8" x .058 Wall Thickness Spreaders 5/8" x .058 and 1/2" x .035
Fiberglass rod:	1/2" x 600,000 fiber/35% polyester resin.

STACKING KIT FOR PDL-II's Model AV-130

FEATURES

Avanti's unique thrust construction makes this stacking kit strong and versatile. Designed specifically for stacking PDL-II's, the boom can be easily adjusted from 12½' to 19' to accommodate most antennas.

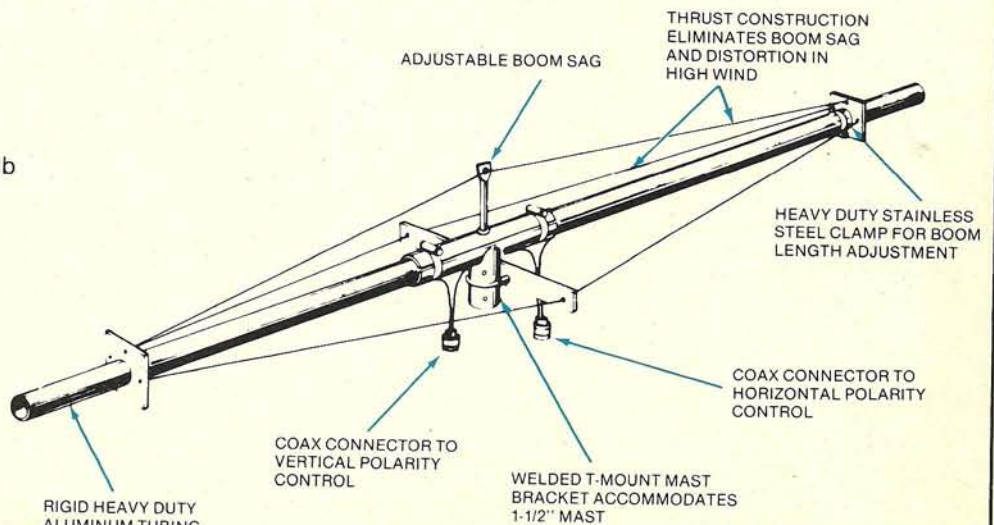
STACKED PDL-II's SPECIFICATIONS

Electrical:

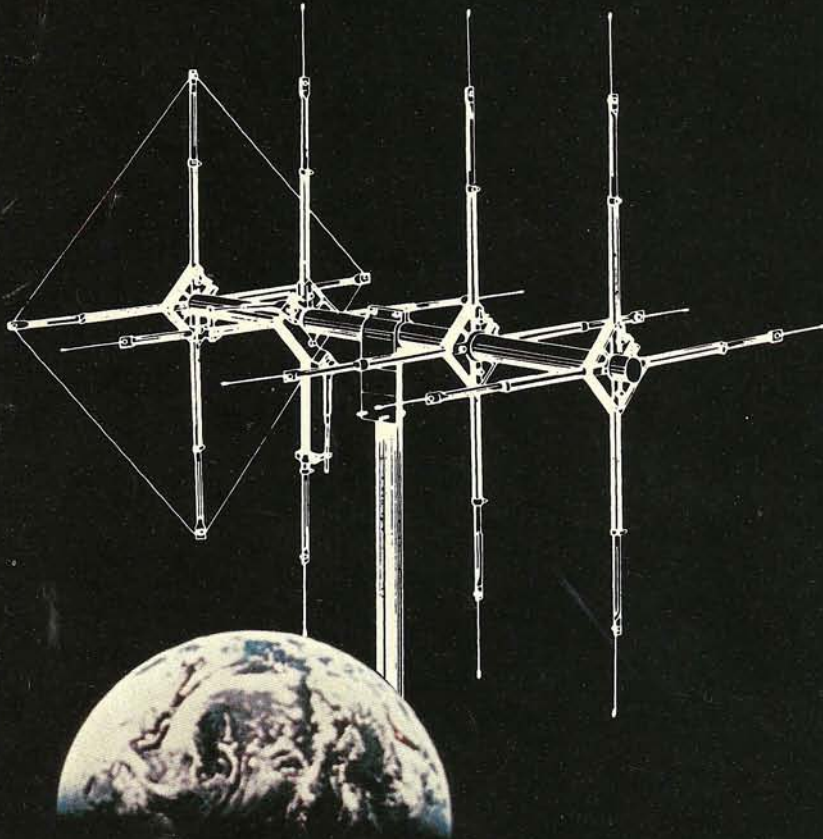
Front-to-Back Ratio—40 db
Side Rejection—in excess 40 db
SWR—Less than 1.4:1
Coax Feedline—50 Ohm
Gain—15 db
Impedance—50-52 ohms
Heavy duty rotor needed

Mechanical:

Element Height—13'
Boom Length—4'10"
Cross Boom Length—18'
Boom Diameter—1-5/8"
Cross Boom Diameter—
Telescoping 1-5/8" to 1-1/2"
Turning Radius—16'
New Weight—35 lbs.



AV-130 INCLUDES CO-PHASING HARNESS



THE MOONRAKER

Model AV-140

KING OF C.B. ANTENNAS

The Moonraker was developed to fill the need for the ultimate in dual polarity antennas. Its design follows that of the Moonbounce antennas used to rebound signals off the moon using a combination of $\frac{1}{2}$ wave dipoles and a Quad type reflector.

This design allows for a short boom and light weight as opposed to a 4-element quad design where more length is needed. The close spacing of the elements increases coupling and signal excitation while the Quad type reflector is the best available. Power handling is facilitated by using gamma matches to derive the correct feeding impedance, thereby eliminating coils. This prevents the detuning usually due to coils, as well as allowing a 2 kw. power capability without burning out.

The mechanical construction is typical of Avanti's "Rolls Royce" craftsmanship, using cast aluminum hubs, extrusions, and aircraft quality aluminum throughout.

A fine point: the ends of each dipole element are extended by the use of stainless steel wire, rather than tubing, thereby decreasing wind loading.

Each antenna comes with the new Avanti switchbox which allows instant switching between vertical and horizontal modes. Avanti's switchbox has a switch that makes contact before it breaks, therefore eliminating RF arcing and subsequent burn-out or loss of efficiency.

Why dual polarity? With the crowded channels these days, a vertical is needed to work mobiles and other verticals but those in the know go to horizontal when they wish to quiet things down a little. The horizontal seems especially valuable when you realize that most hash from automobiles, etc. is vertically polarized and can be quieted by about 25 db when operating horizontal.

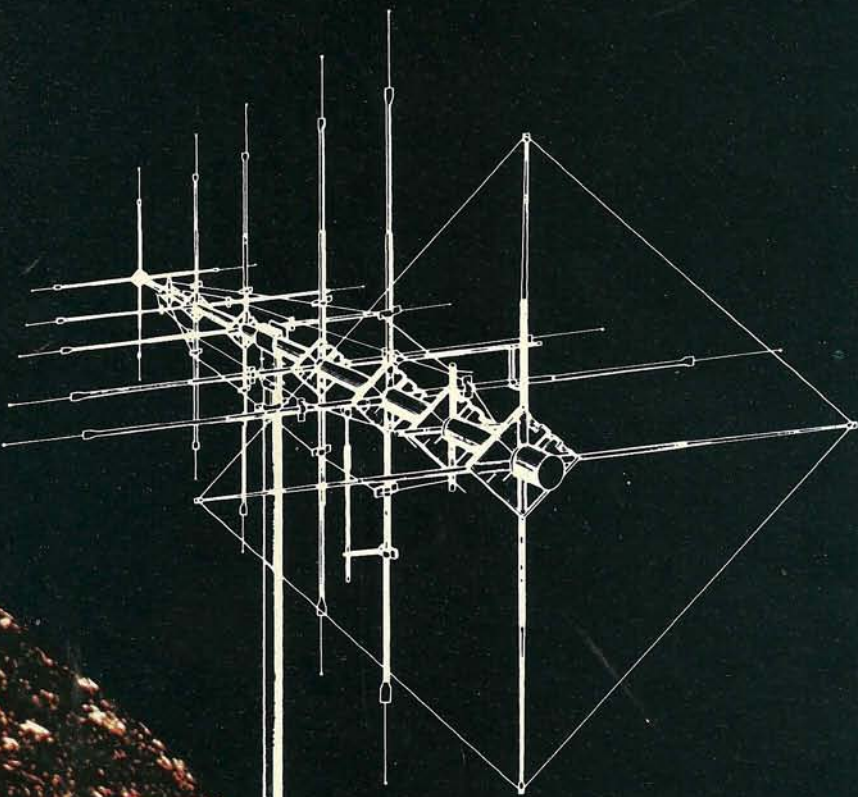
SPECIFICATIONS FOR MOONRAKER 4

Gain — 14.5 dB over isotropic (14.5 dBi)
 Front to back separation — 38 dB
 VSWR — 1.2:1
 Impedance — 50-52 ohms
 Vertical to horizontal separation — 25 dB
 Weight — 24 lbs.
 Length — 16.5 ft.
 Rotor required — medium to heavy duty
 Power multiplication — 28X
 Bandwidth — existing 23 CB channels (will also operate on new proposed expanded channels)
 Wind Load (sq. ft.) of beams — 5 sq. ft.

Antenna Not To Scale

CO-INDUCTIVE

31.5-Ft. Boom!
Tunable Gamma Matching!



NEW MOONRAKER 6

Model AV-146

This is it! The new 6-element MOONRAKER. Avanti's strongest, lightest, most powerful CB antenna of its size ever built, designed specifically for the most serious and demanding CBers.

The new MOONRAKER 6 is a 6-element dual polarity beam combining five sets of crossed dipole type elements as in a Yagi antenna, plus a quad type reflector for better rejection and gain . . . a total of 14 separate elements (see diagram page 14).

Why dual polarity? Because it offers many advantages over the conventional single polarity Yagi type. One big advantage is the ability to follow or avoid skip signals which are bounced off the ionosphere. When the skip changes you can change the polarity and eliminate the unwanted interference. And if you're a DX listener you can switch back and forth and follow the conversation without the usual fade-out.

Dual polarity also means you can carry on communications with mobile units or vertically polarized base stations, and switch to horizontal when desired to contact horizontal bases. The quad reflector element acts as two 1/2 wave elements, depending on how current is induced by the driven element (see diagram page 14).

The 31.5-ft. boom is responsible for much of MOONRAKER 6's impressive performance. Normally a boom this long would present installation and weight versus strength problems. AVANTI solved these problems by using fiberglass rods as inner guy wire supports for the boom. In this way, a light boom tube can be used, yet great strength can be achieved. The 3/16" solid fiberglass rods (90" in all!) interlock the elements for exceptional rigidity, eliminate boom sag, and help insure proper performance by keeping the elements in perfect alignment (see diagram page 14).

Another feature is the 24 in. long, 1/8" diameter stainless steel wire tips on the ends of the aircraft quality aluminum elements, these tips greatly reduce the wind load area and ice prone surfaces.

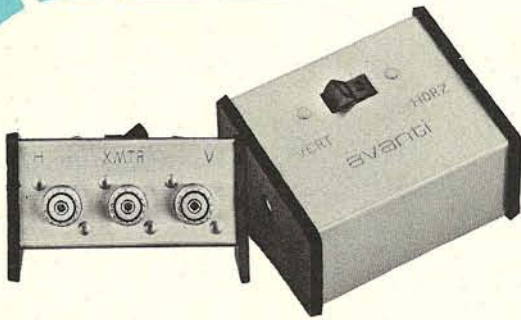
Tunable gamma matching on both vertical and horizontal elements gets the lowest possible SWR, provides excellent lightning protection, and is virtually trouble-free.

SPECIFICATIONS FOR MOONRAKER 6

Gain — 17 dB over isotropic (17 dB)
Front to back separation — 44 dB
VSWR — 1.2:1
Impedance — 50-52 ohms
Side rejection — 24 dB
Weight — 39 lbs.
Length — 31.5 ft.
Rotor required — Heavy duty
Power Multiplication 50X
Bandwidth — Existing 23 CB channels (will also operate on new proposed expanded channels)
Wind Load (sq. ft.) of beams — 9 sq. ft.

Antenna Not To Scale

MOONRAKER 4 & 6 GENERAL INFORMATION



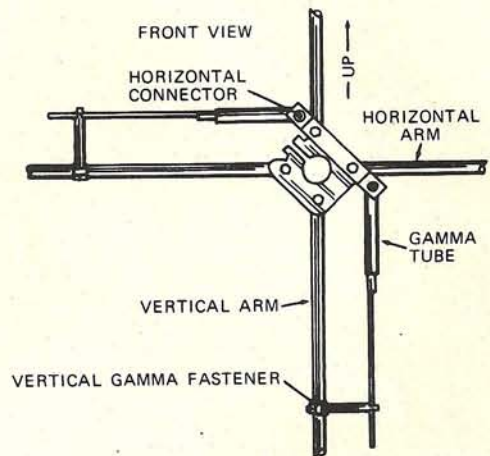
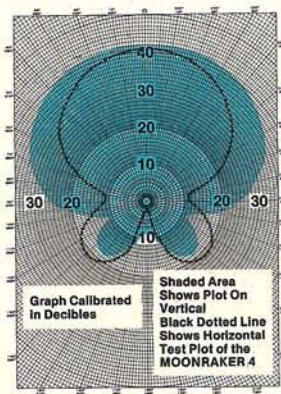
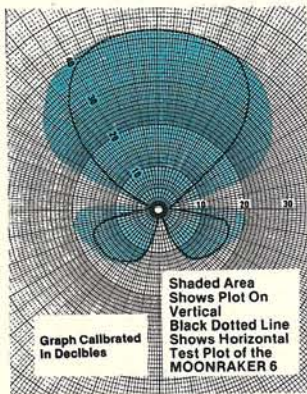
A beautifully styled switchbox comes with each PDL, Moonraker 4 or 6. This box uses a special switch that makes contact on one polarity before it breaks contact on the other.

Another double switchbox* is also available so you can switch polarity of your PDL, Moonraker 4 or 6 or go to an omni-antenna when desired.

*See page 11 for AV-502

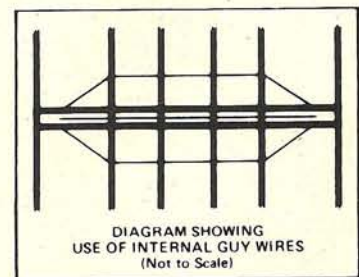
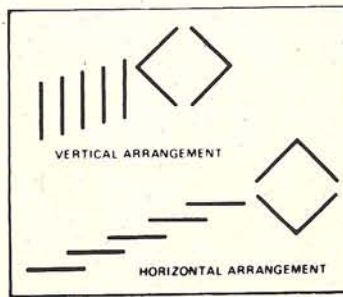
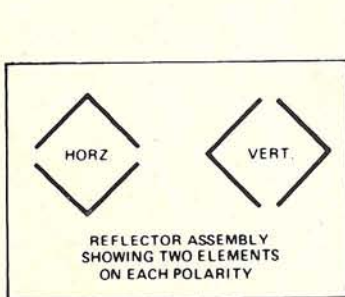
The polar plots below show you just how effective your Moonraker 4 or 6 is in any direction. You can see that these antennas have tremendous back and side rejection.

This is an artist's view of the Moonraker gamma-match assembly. No coils to give trouble and strong construction for durability.



These diagrams show the electronic configuration of the Moonraker 6 when switched from vertical to horizontal. Actually 7 elements are present on each polarity due to the unique **CO-INDUCTIVE** design.

The strength of the Moonraker 6 is readily apparent when viewing this diagram of the truss arrangement of internal guy wires.



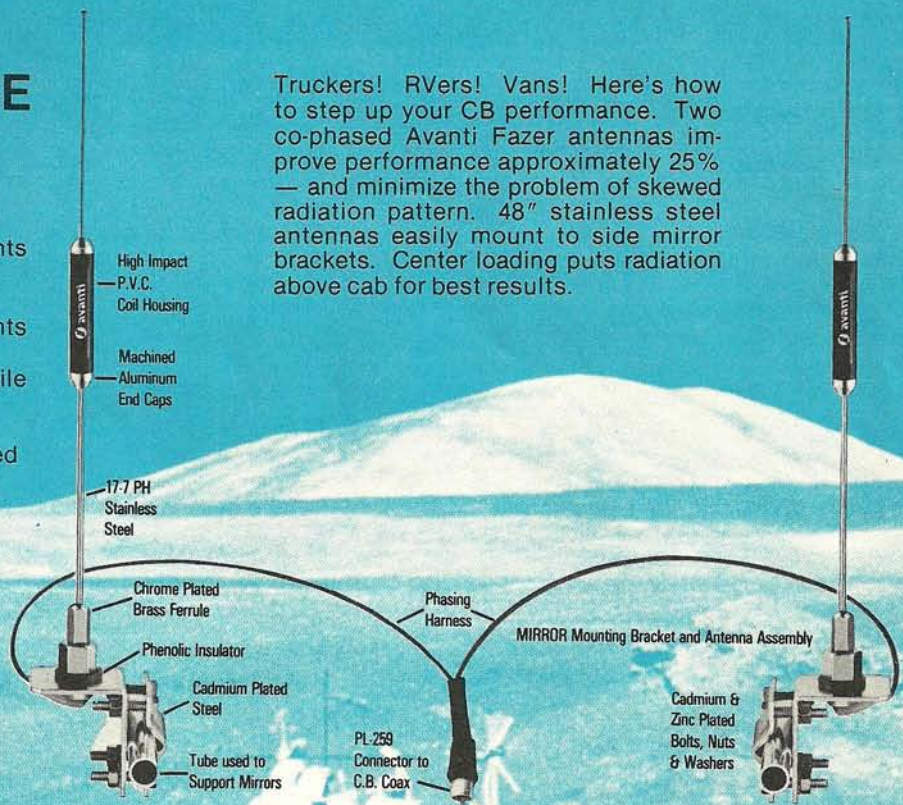
MOONRAKER

AVANTI CO-PHASED CB ANTENNA SYSTEMS

AVANTI CO-PHASE PACKAGES

- AV-526 — 2 Hippo Top Loaded 4' Mobile 2 Truck Mirror Mounts Co-phasing Harness Kit
- AV-528 — 2 Fazer Top Loaded 48" Mobile 2 Truck Mirror Mounts Co-phasing Harness Kit.
- AV-529 — 2 Fiberglass Racer 4' Mobile 2 Truck Mirror Mounts Co-phasing Harness Kit
- AV-535 — 2 18" Mini Fazer Top Loaded Mobile 2 Gutter Clips Co-phasing Harness Kit

Truckers! RVers! Vans! Here's how to step up your CB performance. Two co-phased Avanti Fazer antennas improve performance approximately 25% — and minimize the problem of skewed radiation pattern. 48" stainless steel antennas easily mount to side mirror brackets. Center loading puts radiation above cab for best results.



CO-PHASING...

A most efficient mobile antenna installation for CB use would be one 9 ft. antenna mounted in the center of a vehicle. But, because of the height limitations this type installation is impractical. If an antenna is mounted near the edge of the vehicle body or bumper style, serious nulls or dead spots will be present in the antenna's radiation patterns.

Co-phasing offers the advantages of using shorter, more practical antennas and having a desirable omni-directional radiating pattern, not obtainable using a single side or corner mounted antenna.

When antennas are co-phased an increase in efficiency is achieved thru the coupling effect between the antennas. So two short (4 ft. or less) antennas can be co-phased near the middle of a vehicle offering the performance advantages without the height disadvantages of a long antenna.

Co-phasing is accomplished by combining two identical antennas by means of a coaxial matching harness. The harness insures that each antenna receives equal power and that the overall standing wave ratio remains low.

Avanti engineers have found that a single matching harness will not give optimum results in all installations, as a result a number of harnesses are available. A 12 ft. harness should be used with Avanti antennas 4 ft. or shorter. The Avanti 24 ft. harness should be used with Avanti antennas over 4 ft. long.

In certain installations such as trucks, where the distance between the two antennas is approximately 8 ft. or greater, co-phasing the short antennas, AV-304 and AV-324 will be difficult because of the short physical length of the 6 ft. harness. If such an installation is anticipated, two 12 ft. lengths of solid dielectric RG59u may be added to each side of the harness to alleviate this problem. Because of the longer length of the 12 ft. harness this problem is not developed when using the antennas recommended for this harness. See page 20.



RACER 27 MOBILE ANTENNA SYSTEM

AV-327

A high performance mobile antenna with these features:

A.B.S. (ACRYLONITRILE—BUTADIENE—STYRENE) — A tough material used to form the base of the antenna and cover the coil. Since it is not affected by temperature, sun, or humidity, and has a low thermal expansion rate, it reduces the liability of coil variations.

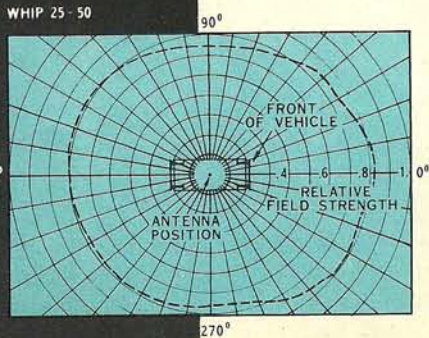
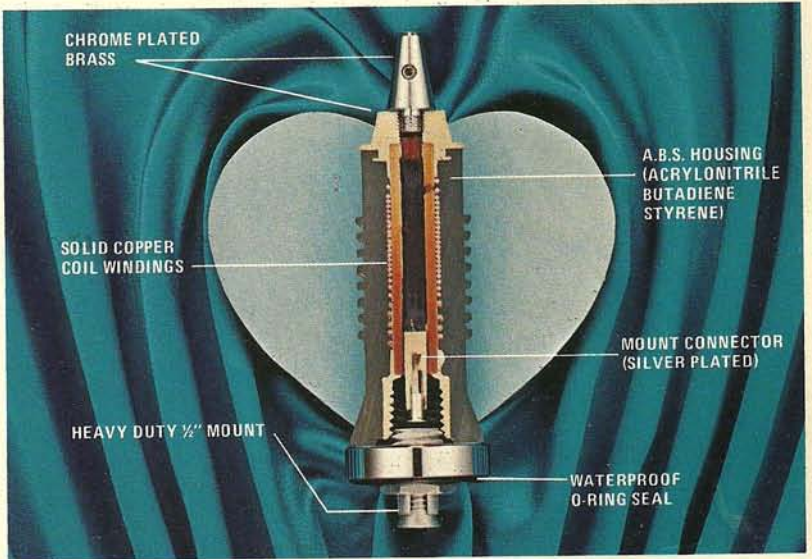
HERMI-COIL (HERMETICALLY SEALED COIL) — A special molding process provides a weather-proof coil environment. Helps maintain the characteristic antenna impedance, even in damp or salt water atmospheres. Hermi-Coil also helps eliminate internal surface leakage. (See cutaway below)

RIBBED BASE — Provides a long leakage path used in high voltage insulators, spark plugs, etc. This keeps external R.F. currents from leaking across the surface between the radiating element to ground, especially when moisture or grit accumulates on the base.

CONDUCTOR BRAID — Look inside the spring on our mobile, you'll find a tin plated copper braid directly connecting to the top and bottom. This assures a positive, constant value connection during spring flexure.

HEAVY DUTY BASE — 1/2" hole mounting provides for greater metal purchase while wide base gives greater support against lateral thrust by tree branches and other obstacles.

100% TESTING — Beside the regular mechanical inspection, each mobile antenna is tested for V.S.W.R. and "Q" before shipping.



SPECIFICATIONS

Electrical

1/4 Wave Length Unity Gain 27 MHz
V.S.R.F. — 1.3:1 or Better
Impedence — 50-52 ohms
Coil — Shunt Fed Hermicoil
Includes 18' RG58-U

Mechanical

Radiator — 17-7PH Stainless Steel
Spring — Stainless Steel
Whip Length — Max. 48"
Metallic Base Material — Chrome Plated Brass
Base Material — A.B.S.

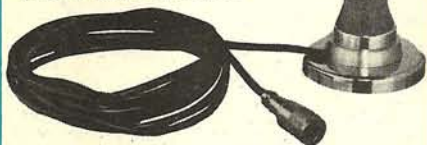
NEW RACER 27 CB MOBILE ANTENNA WITH MAGNETIC MOUNT

Easy to mount on roof or trunk for car, van or truck — no holes to drill — fast removal for hide away or car washing. Strong magnet assures position. Mylar pad guards vehicle finish.

Hermi-coil (Hermetically sealed coil) — A special molding process provides a weather-proof coil environment. Helps maintain the characteristic antenna impedance, even in damp or salt water atmosphere. Hermi-coil also helps eliminate internal surface leakage.

Ribbed base — Provides a long leakage path used in high voltage insulators, spark plugs, etc.

Specifications: Electrical ¼ wave length • Unity gain • 27 MHz • S.W.R. 1.3:1 or better • Coil — shunt fed hermicoil



MODEL AV-727 Mobile Antenna System with 48" whip, 18' coaxial cable with magnetic mount.

NO-HOLE TRUNK MOUNT

AV-527

Racer 27 base loaded mobile (AV-327) with pre-assembled no-hole trunk mount (AV-521). Includes 18' of plug-in coax, PL-259. Shipping weight — 3 lbs.



FAZER ANTENNAS

AV-318
Mini-Fazer top loaded 18" mobile antenna 3/8-24 mount

AV-328
Fazer top loaded 48" mobile antenna 3/8-24 mount

HIPPO 4 — HIPPO 6

**High Power
POtential antennas**

HEAVY DUTY

Designed to give better performance at higher power capacity. These are the hottest mobiles on the market today.

TOP LOADING — putting the coil up higher gives you a higher, more efficient radiating point for longer range.

TUNABLE TIP — A sliding stainless steel tuning rod allows the antenna length to be adjusted for the proper resonance in your particular installation. This feature allows you to get an almost



perfect match so you can get your set to load up with the most power.

HERMI COIL — A thick A.B.S. housing covers the coil to protect it from the elements. It is hermetically sealed in an exclusive Avanti process. This positively keeps out moisture and dirt which cause detuning and possible burn outs.

INTERCHANGEABLE PARTS — The Hippos easily disassemble into 6 parts. If any one part is damaged, you don't have to replace the whole antenna — just 1 piece of it. But don't think it will damage easily. The anodized tempered aluminum shafts and the heavy duty coil will take a beating.

SPECIFICATIONS

HIPPO 4 (AV-324)

Length — 4'

Mount — 3/8-24 Thread

HIPPO 6 (AV-326)

Length — 6'

Mount — 3/8-24 Thread

HIPPO 5

**Higher Power
POtential antenna**

HEAVY DUTY

This is the one that's powerful enough to brag about — a base loaded top performer for today's mobile market.

TUNABLE TIP — telescoping stainless steel tuning rod permits adjusting antenna length for the lowest possible SWR in your particular installation.

HIGH POWER POTENTIAL — heavy copper wire winding space wound for maximum insulation insure durability under extreme conditions.

HERMI-COIL — a tough, molded A.B.S. covering hermetically seals the coil and protects it against the elements. An exclusive Avanti process that keeps noise down, and performance up.

TOP QUALITY MATERIAL — 17-7 PH spring tempered stainless steel whip and chrome plated brass hardware coupled with heavy copper windings in injection molded A.B.S. housing provides maximum durability and corrosion resistance even in damp or salt water atmospheres.

SNAP MOUNT — The Hippo 5 is furnished complete with its own snap mount, and needs no other mounting hardware.

SPECIFICATIONS

HIPPO 5 (AV-325)

Length — 6'

Supplied with 18' of plug-in coax and connector.

This antenna looks almost the same outside as the AV-327 but inside is a much heavier coil & heavy duty construction



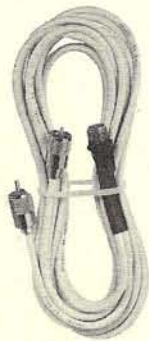
mobile accessories

Co-Phasing Harnesses *

Avanti co-phasing harness kits consist of a precision co-axial cable harness and connectors to mount any two CB mobile antennas in correct relation to provide a 25% increase in performance.

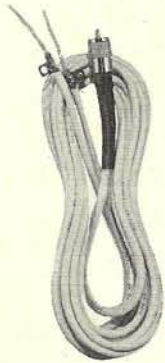
These kits provide a wide aperture in mounting the two antennas to eliminate directional characteristics and give omni-directional performance.

Full instructions included.



* AV-504

Co-Phasing Harness With SO239 Connector and 2-PL259 Connectors, 24' Length. Shipping weight 2 lbs.



* AV-504-5

Co-Phasing Harness With PL259 Connector and Solder Lugs, 24' Length. Shipping weight 2 lbs.



* AV-504-6

Co-Phasing Harness With PL259 Connector and Solder Lugs, 12' Length. Shipping weight 2 lbs.



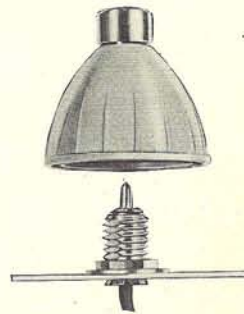
* AV-504-7

Co-Phasing Harness With SO239 Connector and Solder Lugs, 12' Length. Shipping weight 2 lbs.



* AV-505

Co-Phasing Harness With SO239 Connector and Solder Lugs, 24' Length. Shipping weight 2 lbs.



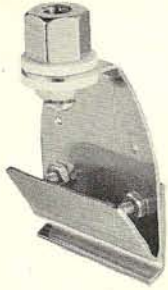
AV-503

Snap-Mount — mounts easily and quickly from outside of 1/2" hole. Heavy duty molded ABS with "O" ring. Accepts any 3/8"-24 thread mobile antenna.



AV-506

Chrome Plated Brass Adapter for 3/8-24 Thread Antennas to all Standard Brackets. Includes Glass Filled Polyester Insulator Washers. Shpg. wt. 1 lb.



AV-507

Gutter Clip, Chrome Plated Steel Mount With AV-506 for 3/8-24 Thread Antennas. Shipping weight 1 lb.



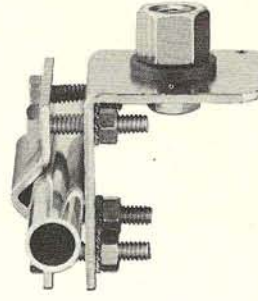
AV-515

CAMPER MOUNT With 3/8-24 Threads — Fold Down Feature. Shipping weight 1 lb.



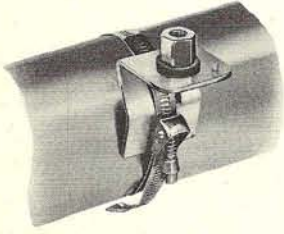
AV-508

AV-506 Installed in AV-521 NO-HOLE Trunk Lip Mount. Shipping weight 1 lb.



AV-516

MIRROR BRACKET MOUNT With 3/8-24 Threads. Shipping weight 1 lb.



AV-509

Bumper Strap Mount For Compact Cars, 3/8-24 Threads. Shipping weight 1 lb.



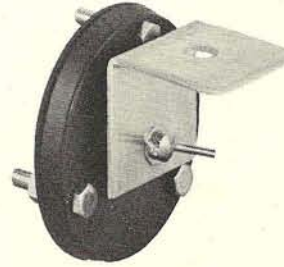
AV-517

Camper Bracket Mount For Installation of AV-327. Shipping weight 1 lb.



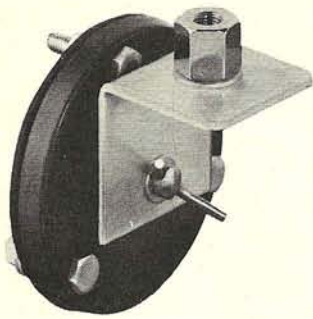
AV-510

Bumper Strap Mount For Standard Cars, 3/8-24 Threads. Shipping weight 2 lbs.



AV-518

"Thumb Screw" Fold-Over Side Mount For AV-327 or Baseloads. Shipping weight 1 lb.



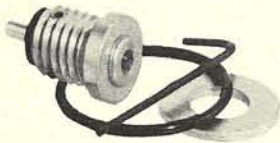
AV-519
 "Thumb Screw" Fold-Over Side Mount With 3/8-24 Threads. Shipping weight 1 lb.



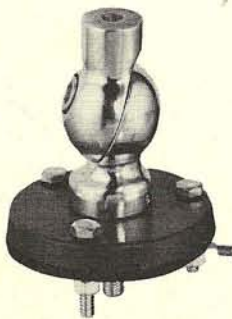
AV-521
 NO-HOLE Trunk Lip Mount. Shipping weight 1 lb.



AV-702
 Replacement mounting group for 1/2" mount on AV-327 and 503



AV-703
 Replacement mounting group for 3/8" mount on AV-327 and 503



AV-540
 Polished Aluminum Swivel Ball Mount 3/8-24 Threads. Shipping weight 2 lbs.



AV-531
 Medium duty electro-polished stainless steel spring suitable for antennas up to 6' in length

AV-701
 Special Light Duty Spring For AV-304 And Other Small Antennas 3/8-24 Threads. Shipping weight 1 lb.

AV-704
 Replacement spring for AV-327

MOBILE MONITOR FOR LOW BAND AND V.H.F., 25-50 MHz AND 140-174 MHz.

A high performance antenna designed to improve reception of mobile monitor sets. Works on both the VHF and Low band ranges commonly used by police, fire, and other government agencies.

This antenna used a tough A.B.S. coil housing and 17-7ph stainless steel to assure durability and long life. Total length 32".

Available on our AV-503 snap mount AV-610

Available on our AV-508 trunk mount AV-608

Available on our AV-506 mount AV-606

Available with 3/8-24 thread adapter for common mounts used as the ball or bumper mounts AV-604

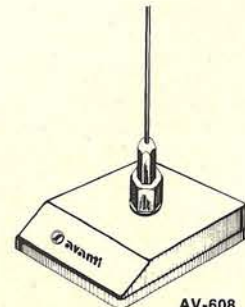
The AV-610, AV-608, AV-606 also include 17' of coax cable and connector at no extra charge.



AV-606



AV-610



AV-608



AV-604

MARINE ANTENNAS

Ocean RACER Model AVS-6 and Model AVS-8

A unique marine antenna. Comes as either a 6 foot or 8 foot fiberglass version.

1/2 wave design means that there is no need for any special mounting procedure. Can be mounted on any wood, metal or fiberglass deck area.

This antenna has a specially designed tuning sleeve which allows you to get top efficiency and the lowest possible SWR on any boat no matter what size.

All fittings are chrome plated brass. Sturdily built to withstand abuse and salt water.

SPECIFICATIONS

AVS-6: Length 6 ft.

AVS-8: Length 8 ft.

Impedance: 50-52 ohms

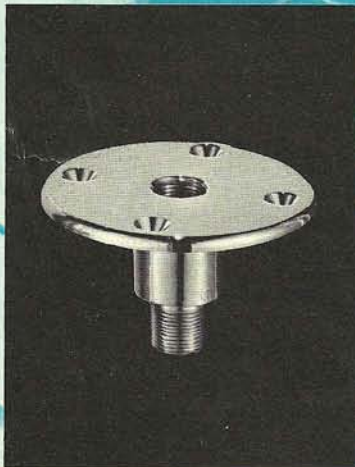
Power Handling: Heavy Duty

Material:

Chrome plated brass, aluminum, & fiberglass

SWR: Tunable

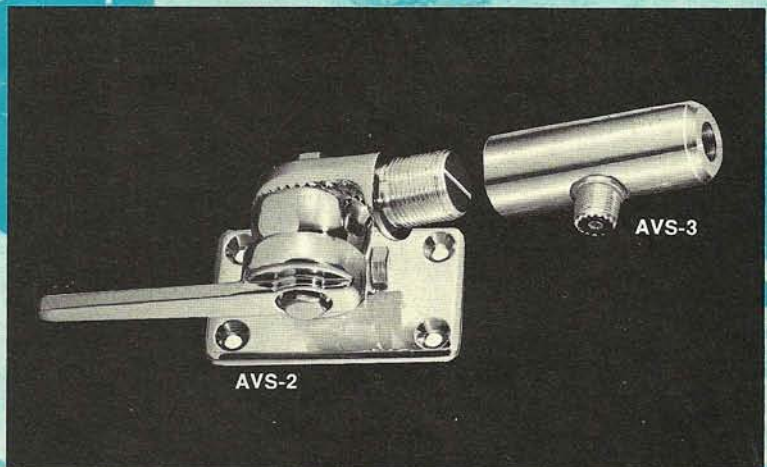
NO GROUND PLANE REQUIRED.



AVS-1

Unique flush fitting deck mount for AVANTI Ocean RACERS 6 & 8. Antenna can be easily removed leaving only a flat plate to prevent danger of tripping, etc. which usually occurs on dangerous projections.

Streamlined profile of mount does not impair looks of any boat. Requires 1" hole through deck area. Chrome plated brass construction. Stainless steel screws included.



AVS-2

Swivel mount attaches with 4 bolts to any deck. Will adjust to any angle. Ratchet device allows easy layover and instand adjustment. Has 1"-14 standard thread. Will mount to side or top decks. Requires AVS-3 for use with AVANTI Ocean RACERS. Chrome plated brass. Stainless steel screws included.

AVS-3

Swivel adaptor for Ocean RACER 6 & 8 marine antennas. Allows use of standard 1" swivel mount such as AVS-2. Has an SO-239 connector so antenna can be disconnected without twisting up the coax. This device is needed to use the Ocean RACER on the AVS-2 swivel mount. Chrome plated brass throughout.

Patent No. 3798654