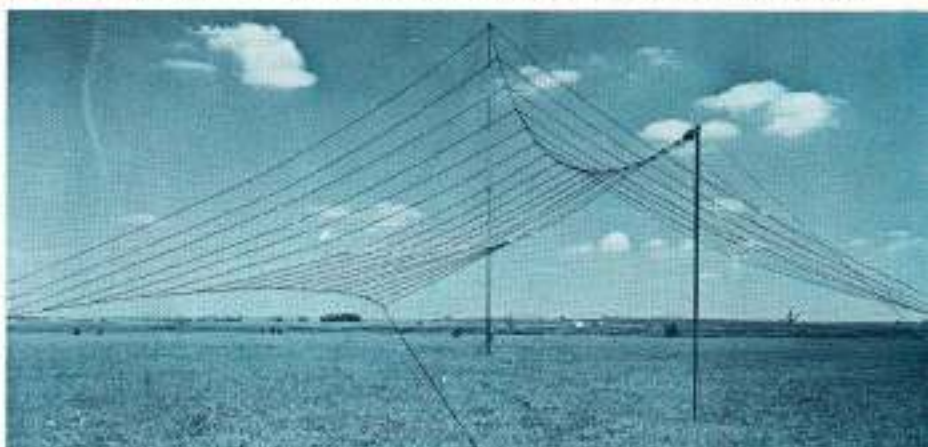
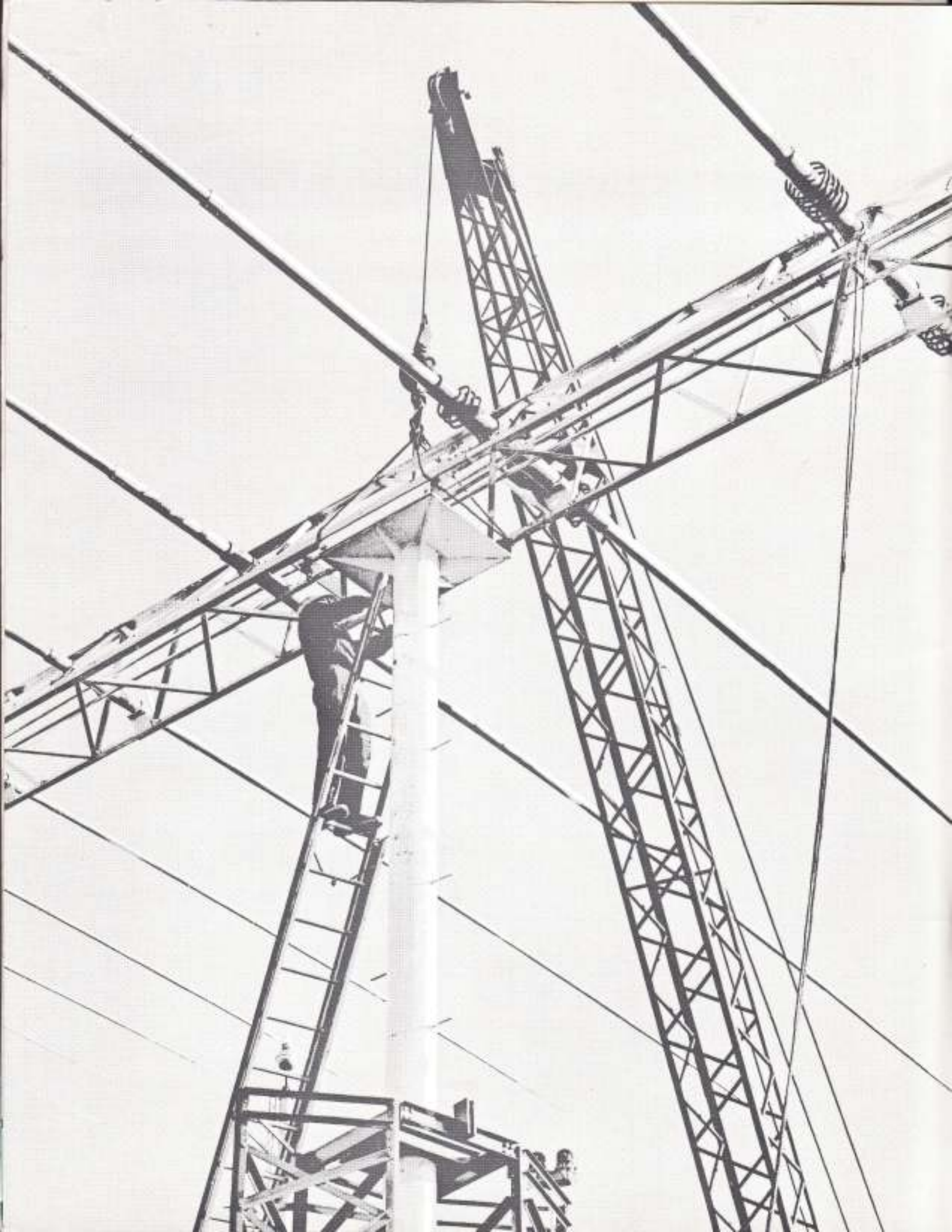


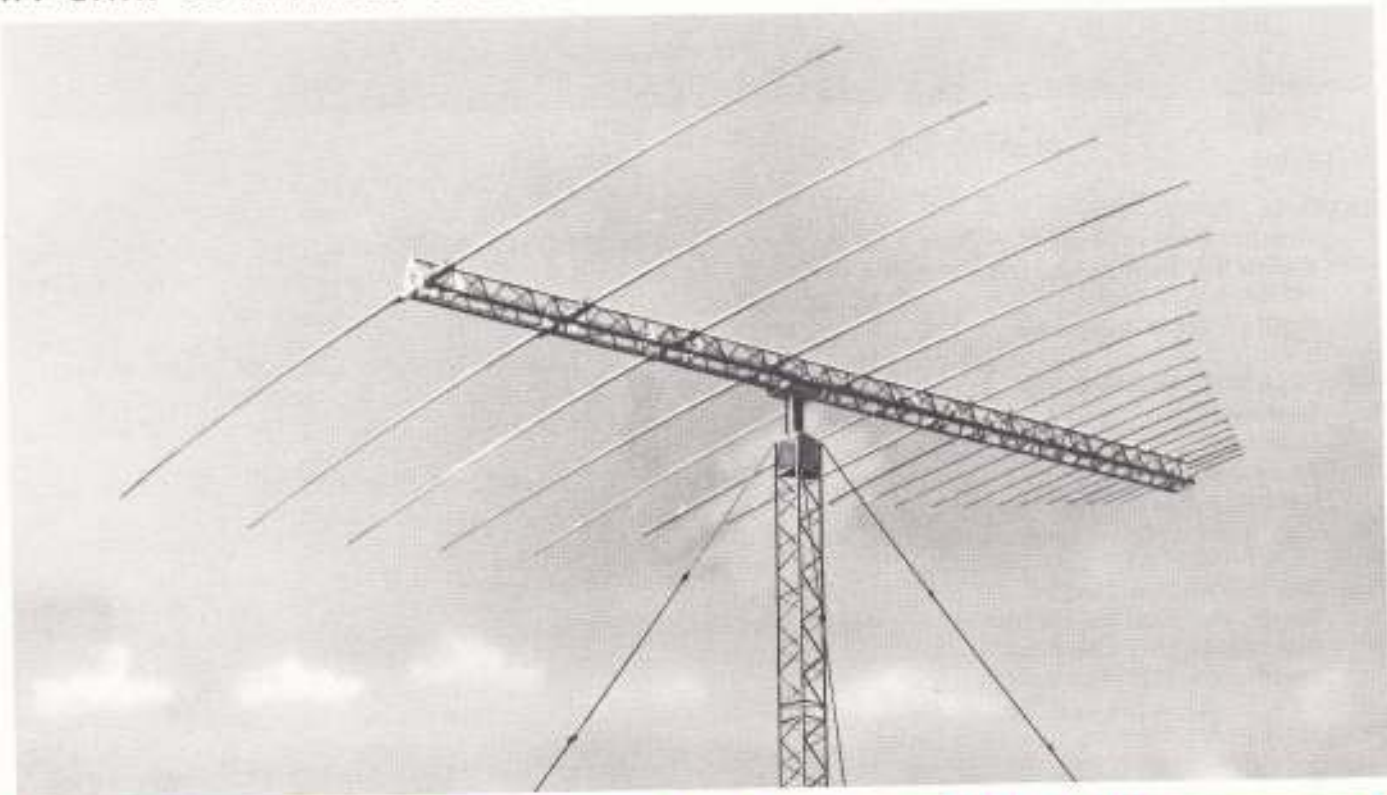


HF/VHF/UHF COMMUNICATIONS ANTENNA SYSTEMS FOR MILITARY AND COMMERCIAL APPLICATIONS





HY-GAIN ROTATABLE LOG PERIODIC ANTENNA SYSTEMS



MODEL 5001

4 thru 30 MHz 25 KW Average: 50 KW P.E.P.

MODEL 5003

4 thru 30 MHz 50 KW Average: 100 KW P.E.P.

SINGLE SUPPORT STRUCTURE CONFIGURATIONS

- PROVIDES HIGH POWER CAPABILITIES
- CONSTRUCTED TO MILITARY STANDARDS
- THE ONLY ROTATABLE ANTENNA WITH A BANDWIDTH OF 4.0 THRU 30 MHz

DESCRIPTION & APPLICATION

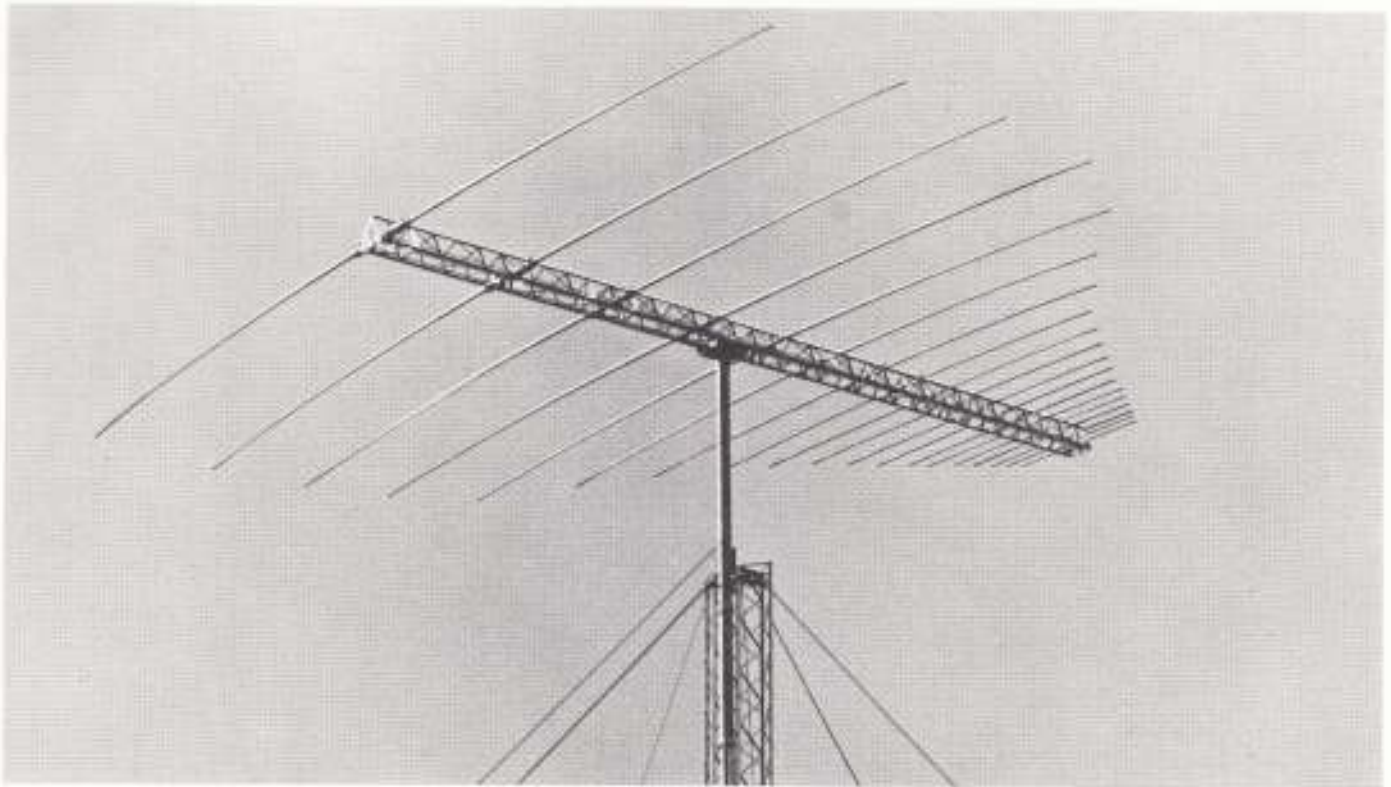
The Hy-Gain 4 through 30 Megahertz Rotatable Log Periodic Antenna Systems offer a performance capability previously unavailable. The unique design characteristics of these systems provide reliable communications over short, medium and long-range paths. Design innovation incorporates broad frequency coverage of 4 through 30 MHz together with a mechanically stable structure.

Four models of Rotatable Log Periodic Antenna Systems covering the frequency range of 4 through 30 Megahertz are available. Engineered and developed by Hy-Gain, these are the first antennas of their type to offer the operational and

performance capability over the entire 4 through 30 Megahertz frequency range. The systems are complete with antenna array, support structure, all necessary guys and guy anchors, rotor assembly and remote control unit. Models 5001 and 5003 are equipped with quick-erectable, single tower support structures. Models 5002 and 5004 are equipped with dual support structures and utilize the same arrays as Models 5001 and 5003. Installation of these systems may be accomplished without the use of cranes, boom trucks or other heavy equipment. In addition to standard tools, the dual tower system requires only a winch, while the single tower system may be fully erected with a winch and gin pole. Approximately 0.31 acres is required for any of the systems. Assembly and erection can be effected in about 80 man-hours for Models 5001 and 5003. Models 5002 and 5004 require about 110 man-hours. Erection time is exclusive of the time required to install foundations, since this will vary geographically with soil conditions. All components are crated for shipment via any mode of transportation, including air. The performance specifications and operational characteristics have been authenticated by actual field tests. A complete test evaluation report is available to prospective users.

**ALL ANTENNA SYSTEMS ARE AVAILABLE WITH A 75 OHM CHARACTERISTIC IMPEDANCE
OTHER TOWER SYSTEMS AVAILABLE IN 60 AND 80 FT. HEIGHTS**

HY-GAIN ROTATABLE LOG PERIODIC ANTENNA SYSTEMS



MODEL 5002

4 thru 30 MHz 25 KW Average; 50 KW P.E.P.

MODEL 5004

4 thru 30 MHz 50 KW Average; 100 KW P.E.P.

DUAL SUPPORT STRUCTURE CONFIGURATIONS

SPECIFICATION SUMMARY

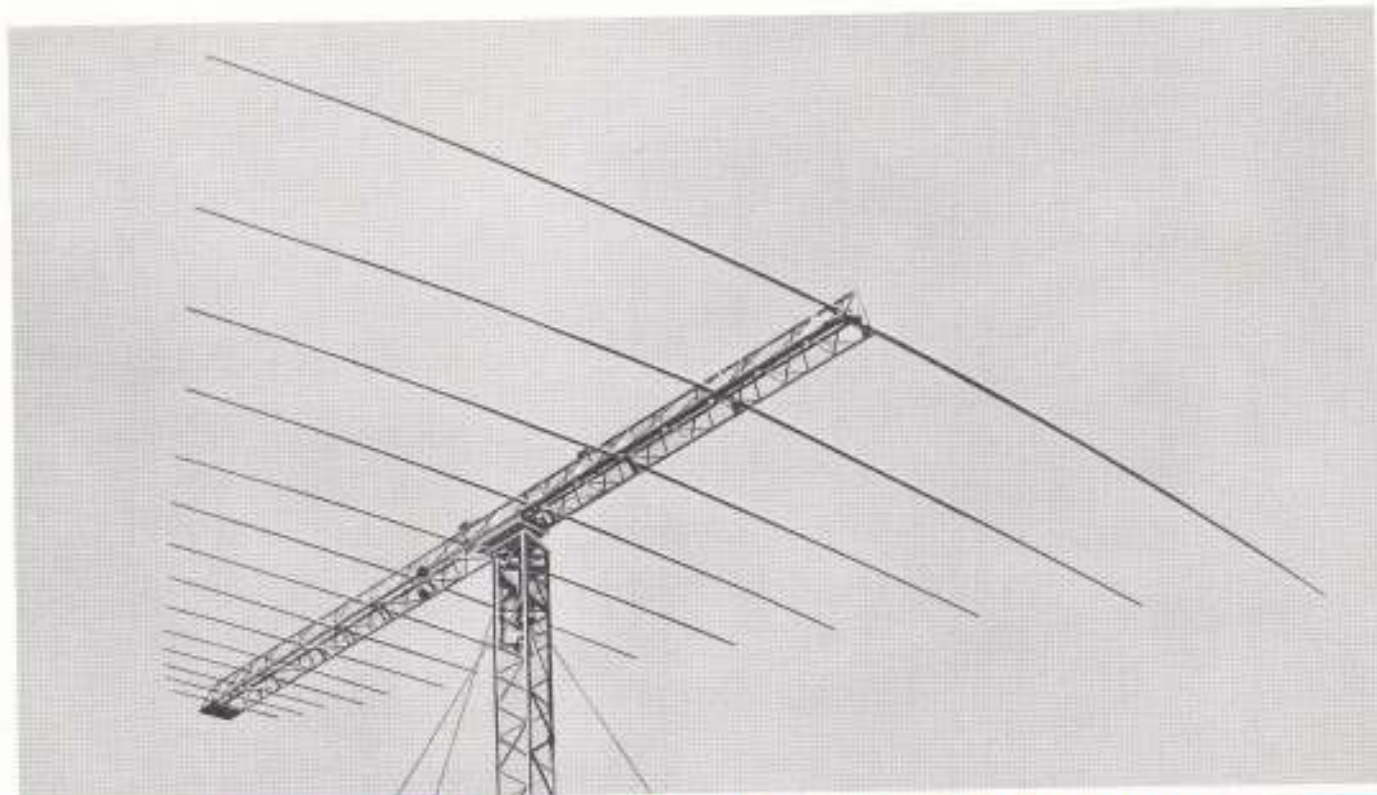
HY-GAIN MODEL NO.	5001	5002	5003	5004
Electrical:				
Frequency Range (in MHz)	4.0-30.0	4.0-30.0	4.0-30.0	4.0-30.0
Power Handling Capability Average/P.E.P. (in KW)	25/50	25/50	50/100	50/100
Polarization	Horizontal	Horizontal	Horizontal	Horizontal
Cross Polarization (in db down)	20	20	20	20
Forward Gain over Average Soil Conditions (in db)	10-13.5	10-13.5	10-13.5	10-13.5
Front-to-Back Ratio (in db, nominal)	14	14	14	14
Max. VSWR (with respect to 50 ohms)	2:1	2:1	2:1	2:1
Input Impedance (in ohms)	50	50	50	50
Input Connector	1-5/8"EIA	1-5/8"EIA	3-1/8"EIA	3-1/8"EIA
Azimuth half power beam width Average	70°	70°	70°	70°

HY-GAIN MODEL NO.	5001	5002	5003	5004
Vertical:				
Angle of Max. Radiation				
4 MHz	32°	32°	32°	32°
30 MHz	5°	5°	5°	5°
Structural:				
Overall Height	100 ft.	100 ft.	100 ft.	100 ft.
Boom Length	74 ft.	74 ft.	74 ft.	74 ft.
Longest Element	82 ft.	82 ft.	82 ft.	82 ft.
Total Number of Elements	19	19	19	19
Shipping Weight of System (in lbs)	9,681	13,731	9,781	13,892
Shipping Volume (in cu. ft.)	473.8	610.3	484.4	635.4
Wind Loading Capability:				
No Ice (in MPH)	140	140	140	140
1/4" Radial Ice (in MPH)	100	100	100	100

AZIMUTH ROTATION SPEED—1 RPM
OPTIONAL ACCESSORIES:

Remote Control Cable
Tower Lighting Kit
Tower Erection Kit

HY-GAIN ROTATABLE LOG PERIODIC ANTENNA SYSTEMS



MODEL 5005

6 thru 40 MHz 25 KW Average; 50 KW P.E.P.

MODEL 5007

6 thru 40 MHz 50 KW Average; 100 KW P.E.P.

SINGLE SUPPORT STRUCTURE CONFIGURATIONS

- FOR MEDIUM AND LONG PATH COMMUNICATIONS
- MINIMUM SPACE INSTALLATION
- RUGGED MILITARIZED CONSTRUCTION
- UNIDIRECTIONAL RADIATION

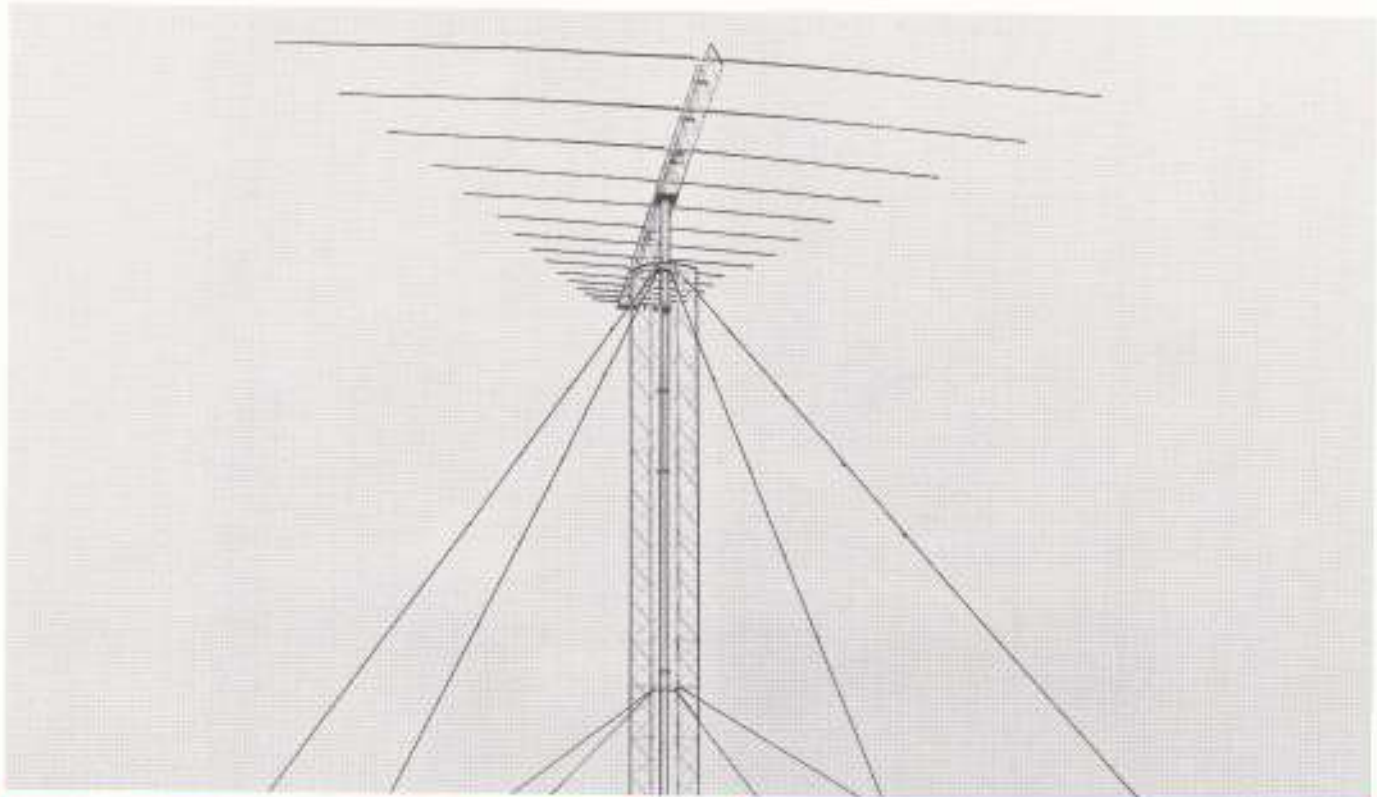
DESCRIPTION & APPLICATION

The Hy-Gain 6.0 through 40 Megahertz Rotatable Log Periodic Antenna Systems exhibit excellent performance throughout their band width. These systems are recommended for medium and long-range communications paths. High directive gain concentrates the radiated signal in the desired direction, while high power capability, combined with low take-off angles, result in optimum signal strength at the receive location.

Hy-Gain Electronics offers a complete selection of antenna systems to meet your specific requirements, in the frequency range of 6.0 through 40 Megahertz. Engineered and developed by Hy-Gain, these systems are furnished in complete kit form consisting of: Antenna Array, support structure, all necessary guys and guy anchors, rotor assembly and remote control unit. Models 5005 and 5007 are equipped with a quick-erectable single tower support structure. Models 5006 and 5008 have dual tower support structures. Installation requires an area of 0.31 acres and may be accomplished in 80 man-hours for Models 5005 and 5007, and 110 man-hours for 5006 and 5008. Cranes or other heavy equipment are not required to effect complete installation. Erection time is exclusive of the time required to install concrete foundations since this will vary with geographical soil conditions. All antenna system components are crated for shipment via any mode of transportation, including air. The operational performance of these antenna systems have been proven in actual field testing at Hy-Gain and their wide usage by military and governmental users.

ALL ANTENNA SYSTEMS ARE AVAILABLE WITH A 75 OHM CHARACTERISTIC IMPEDANCE
OTHER TOWER SYSTEMS AVAILABLE IN 60 AND 80 FOOT HEIGHTS

HY-GAIN ROTATABLE LOG PERIODIC ANTENNA SYSTEMS



MODEL 5006

6 thru 40 MHz 25 KW Average; 50 KW P.E.P.

MODEL 5008

6 thru 40 MHz 50 KW Average; 100 KW P.E.P.

DUAL SUPPORT STRUCTURE CONFIGURATIONS

SPECIFICATION SUMMARY

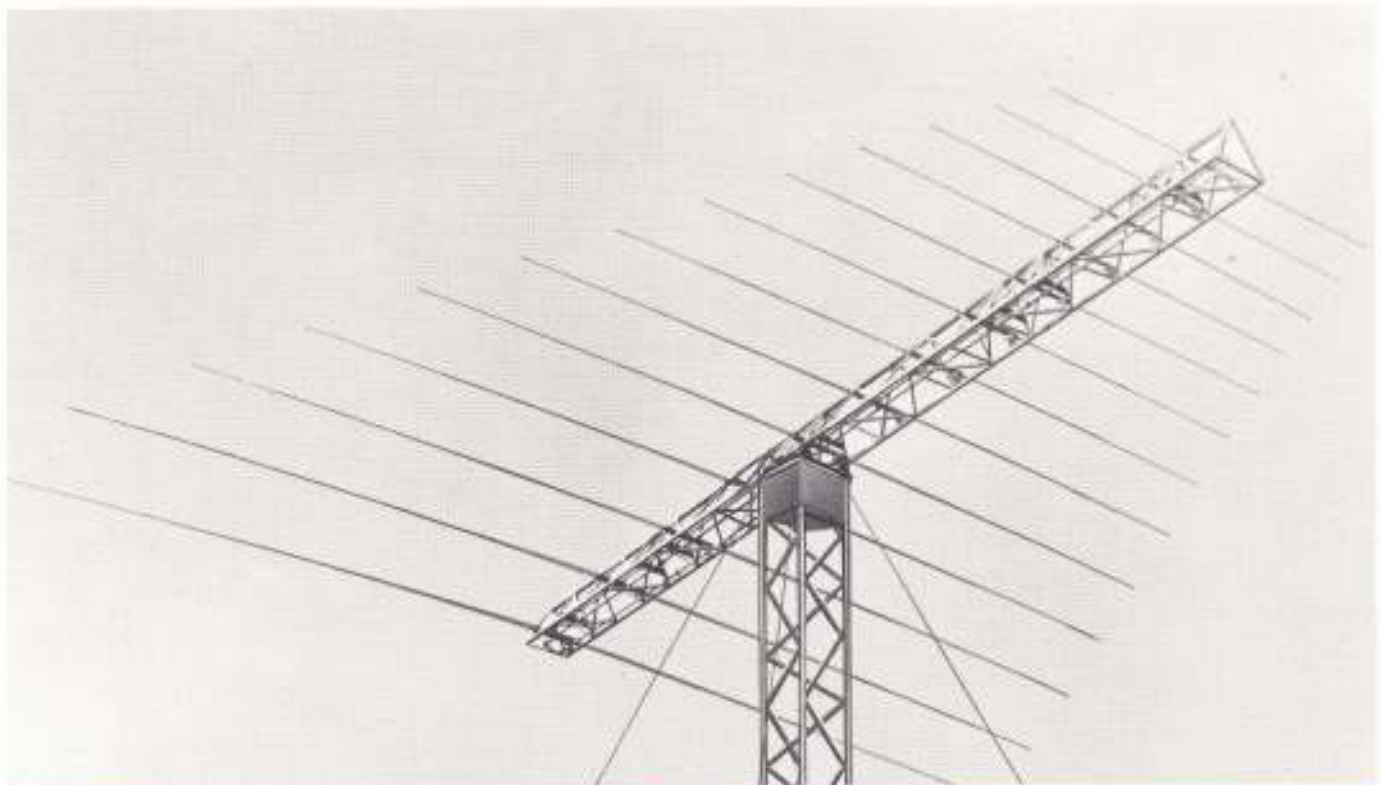
HY-GAIN MODEL NO.	5005	5006	5007	5008
Federal Nom.		AS-2176/G	AN-FRA53	
Electrical:				
Frequency Range (in MHz)	6.0-40.0	6.0-40.0	6.0-40.0	6.0-40.0
Power Handling Capability Average/P.E.P. (in KW)	25/50	25/50	50/100	50/100
Polarization	Horizontal	Horizontal	Horizontal	Horizontal
Cross Polarization (in db down)	20	20	20	20
Forward Gain over Average Soil Conditions (in db)	13.5	13.5	13.5	13.5
Front-to-Back Ratio (in db, nominal)	14	14	14	14
Max. VSWR (with respect to 50 ohms)	2:1	2:1	2:1	2:1
Input Impedance (in ohms)	50	50	50	50
Input Connector	1-5/8"EIA	1-5/8"EIA	3-1/8"EIA	3-1/8"EIA
Azimuth half power beam width Average	64°	64°	64°	64°

HY-GAIN MODEL NO.	5005	5006	5007	5008
Vertical Angle of Maximum Radiation				
6 MHz	23°	23°	23°	23°
40 MHz	3°	3°	3°	3°
Structural:				
Overall Height	100 ft.	100 ft.	100 ft.	100 ft.
Boom Length	63.5 ft.	63.5 ft.	63.5 ft.	63.5 ft.
Longest Element	82 ft.	82 ft.	82 ft.	82 ft.
Total Number of Elements	14	14	14	14
Shipping Weight of System (in lbs)	8,458	12,506	9,131	13,242
Shipping Volume (in cu. ft.)	356.5	493	414.4	564.4
Wind Loading Capability:				
No Ice (in MPH)	140	140	140	140
¼" Radial Ice (in MPH)	100	100	100	100

OPTIONAL ACCESSORIES:

Remote Control Cable
Tower Lighting Kit
Tower Erection Kit

HY-GAIN ROTATABLE LOG PERIODIC ANTENNA SYSTEMS



MODEL 5009

10 thru 30 MHz 25 KW Average; 50 KW P.E.P.

MODEL 5010

10 thru 30 MHz 25 KW Average; 50 KW P.E.P.

SINGLE SUPPORT STRUCTURE CONFIGURATIONS

DESCRIPTION & APPLICATION

Hy-Gain Electronics offers a choice of two system configurations that provide high forward gain and directivity from 10 through 30 MHz. Model 5009 is equipped with a 60 ft. tower support structure and Model 5010 has an 80 ft. support structure. The systems are complete including support structure, guys, anchors, rotator, rotator remote control and hardware, and are crated for domestic or export shipment. Either system is erectable with hand tools and hand or motor driven winch. Cranes or other heavy equipment are not required. Field operation by government and military users verify the excellent performance of these systems.

SPECIFICATION SUMMARY

HY-GAIN MODEL NUMBER	5009	5010
Electrical:		
Frequency Range (in MHz)	10.0 thru 30.0	10.0 thru 30.0
Power Handling Capability Average/P.E.P. (in KW)	25/50	25/50
Polarization	Horizontal	Horizontal
Cross Polarization (in db down)	20	20
Forward Gain over Average Soil Conditions (in db)	14	14
Front-to-Back Ratio (in db, nominal)	15	15
Maximum VSWR (with respect to 50 ohms)	1.8:1	1.8:1

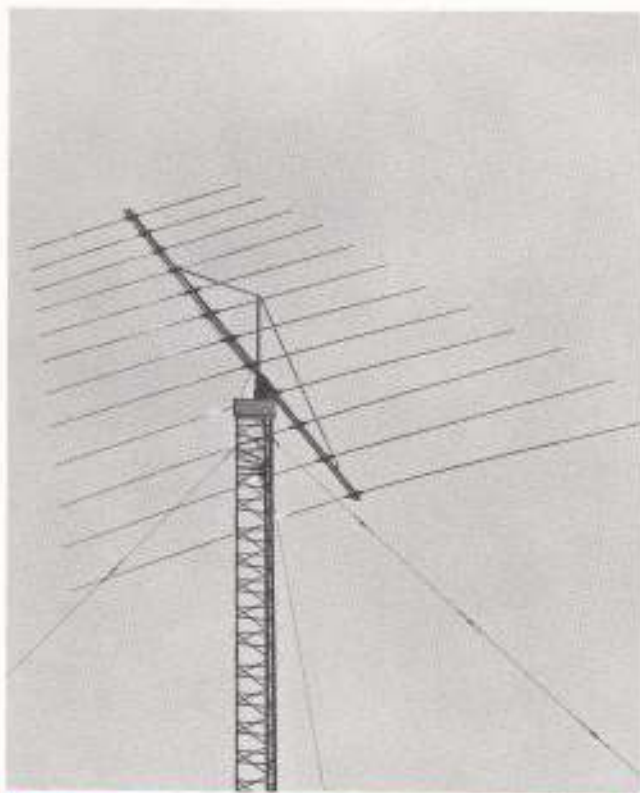
HY-GAIN MODEL NUMBER	5009	5010
Input Impedance (in ohms)	50	50
Input Connector	1-5/8" EIA	1-5/8" EIA
Azimuth half power beam width Average	62°	62°
Vertical		
Angle of Maximum Radiation		
10 MHz	24°	18°
30 MHz	7.8°	5.8°
Structural:		
Tower Height	60 ft.	80 ft.
Boom Length	40 ft.	40 ft.
Longest Element	52 ft.	52 ft.
Turning Radius	32.6 ft.	32.6 ft.
Total Number of Elements	13	13
Shipping Weight of System (in lbs.)	3987	4700
Shipping Volume (in cu. ft.)	266	297
Wind Loading Capability:		
No Ice (in MPH)	130	130
1/2" Radial Ice (in MPH)	100	100

AZIMUTH ROTATION SPEED—1 RPM OPTIONAL ACCESSORIES:

Remote Control Cable
Tower Lighting Kit
Tower Erection Kit

ALL ANTENNA SYSTEMS ARE AVAILABLE WITH A 75 OHM CHARACTERISTIC IMPEDANCE

HY-GAIN ROTATABLE LOG PERIODIC ANTENNA SYSTEMS



MODEL 5011

13 thru 30 MHz 2 KW Average; 4 KW P.E.P.



MODEL 5012

18 thru 60 MHz 5 KW Average; 10 KW P.E.P.

SINGLE SUPPORT STRUCTURE CONFIGURATIONS

DESCRIPTION & APPLICATION

Model 5011 exhibits excellent performance throughout the 13 through 30 Megahertz frequency range. This system is utilized throughout the world by U.S. military communications systems, as well as many embassies, governmental and industrial users. Model 5012 offers excellent performance from 18 through 60 Megahertz frequency range. Both systems provide high forward gain and directivity. Systems are complete including tower, guys, anchors, rotator, rotator remote control and all hardware. Packaging is suitable for either domestic or export shipment.

SPECIFICATION SUMMARY

HY-GAIN MODEL NUMBER	5011	5012
Electrical:		
Frequency Range (in MHz)	13.0 thru 30.0	18.0 thru 60.0
Power Handling Capability		
Average/P.E.P. (in KW)	2.0/4.0	5/10
Polarization	Horizontal	Horizontal
Cross Polarization (in db down)	20	20
Forward Gain over Average		
Soil Conditions (in db)	13.5	14.0
Front-to-Back Ratio (in db, nominal)	15.0	16.0
Maximum VSWR (with respect to 50 ohms)	2:1	2:1
Input Impedance (in ohms)	50	50

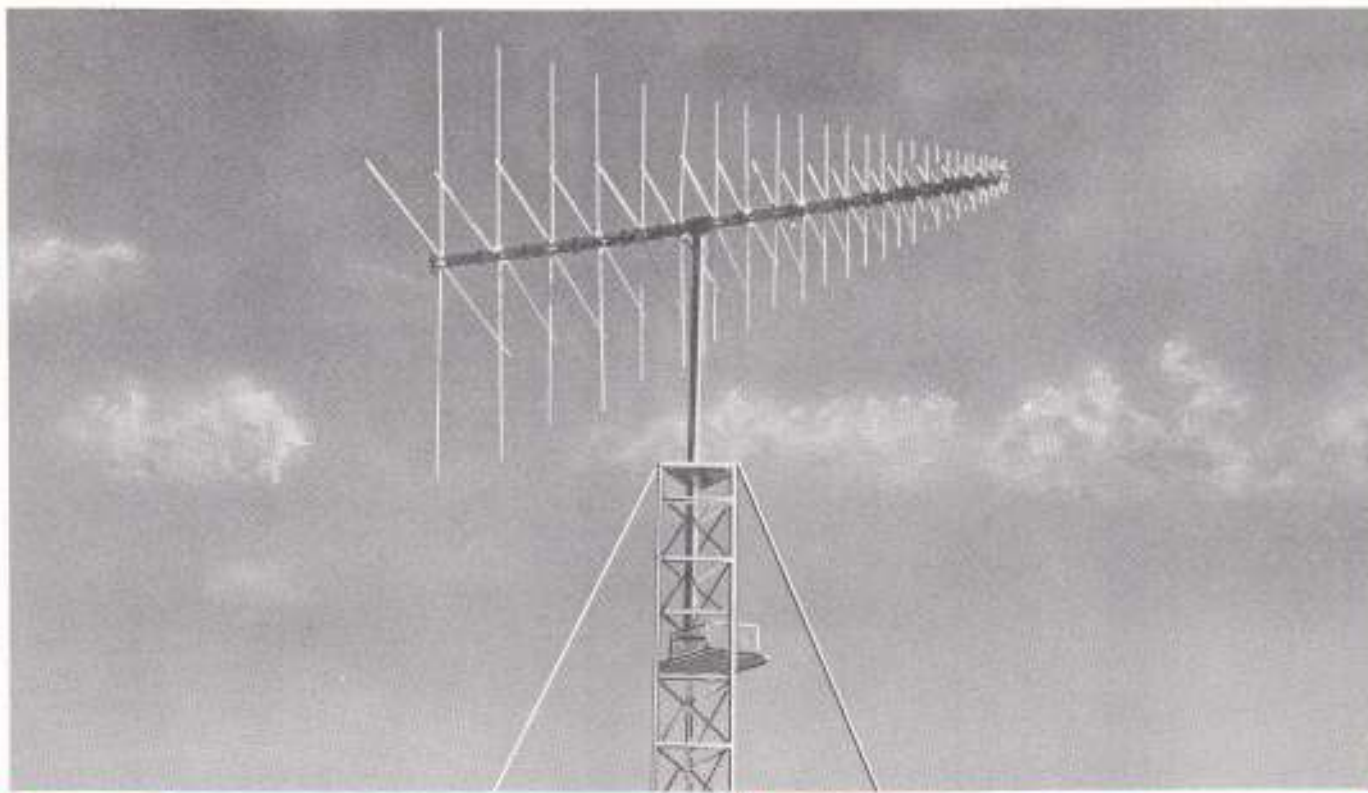
HY-GAIN MODEL NUMBER	5011	5012
Input Connector	Type "N"	7/8" EIA
Azimuth half power beam width Average	60°	60°
Vertical		
Angle of Maximum Radiation		
Low Frequency	18.5°	13°
High Frequency	8°	4°
Structural:		
Tower Height	60 ft.	80 ft.
Boom Length	28.5 ft.	24 ft.
Longest Element	38 ft.	27.5 ft.
Turning Radius	22.5 ft.	18.2 ft.
Total Number of Elements	12	13
Shipping Weight of System (in lbs.)	3,241	3,322
Shipping Volume (in cu. ft.)	411.3	438
Wind Loading Capability:		
No Ice (in MPH)	80	100
¼" Radial Ice (in MPH)	60	80

AZIMUTH ROTATION SPEED—1 RPM

OPTIONAL ACCESSORIES:

Remote Control Cable

HY-GAIN ROTATABLE LOG PERIODIC ANTENNA SYSTEMS



MODEL 5013

30 thru 300 MHz 250 Watts Average; 500 Watts P.E.P.

MODEL 5014

30 thru 1000 MHz 50 Watts Average; 100 Watts P.E.P.

SINGLE SUPPORT STRUCTURE CONFIGURATIONS

DESCRIPTION & APPLICATION

The Hy-Gain Models 5013 and 5014 are rotatable wide-band log periodic antenna systems that have been designed primarily for use in VHF ground intercept circuits. Outstanding performance is provided throughout the band width of either model. These systems are extremely versatile in that they provide high directivity and front-to-back ratio, plus polarization diversity. Dual plane elements permit selection of horizontal or vertical polarization. These systems are provided, complete, with dielectric support mast, tower support structure, rotar assembly and remote control unit. Installation on a site of approximately 0.18 acres, requires about 115 man-hours. Mechanical construction provides survivability in the most extreme climatic conditions found anywhere in the world.

SPECIFICATION SUMMARY

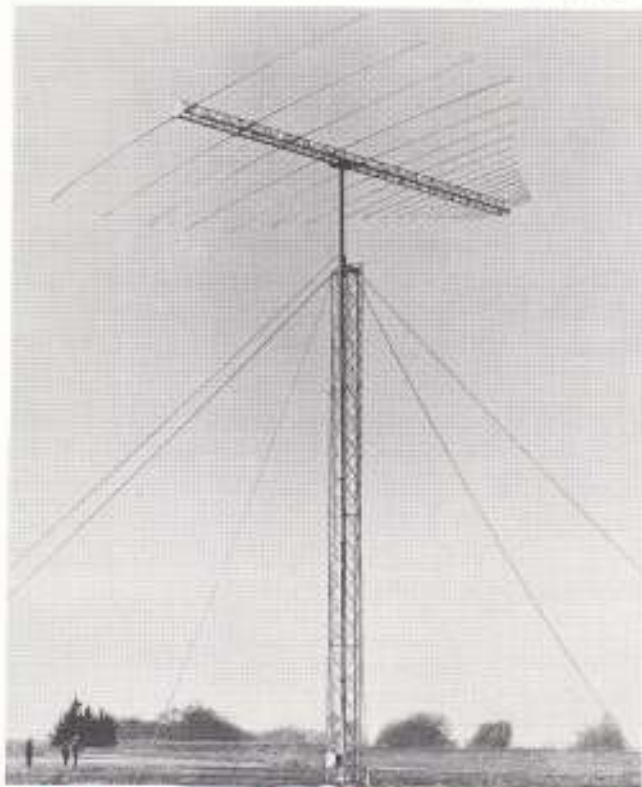
HY-GAIN MODEL NUMBER	5013	5014
Electrical:		
Frequency Range (in MHz)	30.0 - 300.0	30.0 - 1000.0
Power Handling Capability Average/P.E.P. (in Watts)	250/500	50/100
Polarization	Horizontal or Vertical	Horizontal or Vertical
Forward Gain over Isotropic (in db)	8	8

HY-GAIN MODEL NUMBER	5013	5014
Front-to-Back Ratio (in db, nominal)	20	20
Maximum VSWR (with respect to 50 ohms)	2:1	2:1
Input Impedance (in ohms)	50	50
Input Connector 2 Type "N" fittings	1 for vertical 1 for horizontal	1 for vertical 1 for horizontal
Half Power Beam Widths (Free Space)		
E Plane (Average)	58°	58°
H Plane (Average)	120°	120°
Structural:		
Tower Height	60 ft.	60 ft.
Boom Length	28 ft.	29.5 ft.
Longest Element	16 ft.	16 ft.
Turning Radius	14 ft.	14 ft.
Total Number of Elements	29 horizontal 30 vertical	42 horizontal 43 vertical
Shipping Weight of System (in lbs.)	3,876	3,892
Shipping Volume (in cu. ft.)	460	462
Wind Loading Capability		
No Ice (in MPH)	150	150
½" Radial Ice (in MPH)	100	100

OPTIONAL ACCESSORIES:

Tower Lighting Kit
Remote Control Cable

HY-GAIN LOG PERIODIC DIPOLE ANTENNA ARRAYS

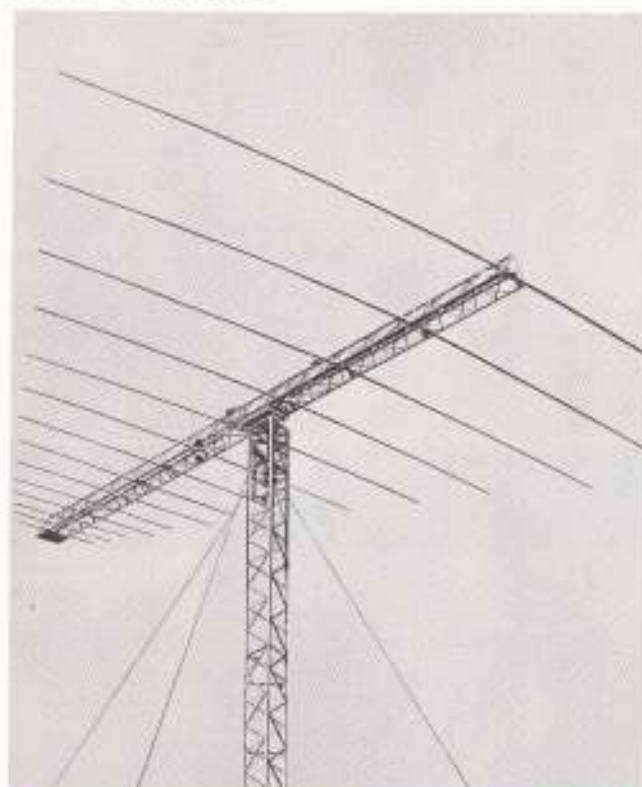


MODEL LP-1000

4 thru 30 Megahertz

MODEL LP-1001

4 thru 30 Megahertz



MODEL LP-1002

6 thru 40 Megahertz

DESCRIPTION & APPLICATION

The Hy-Gain Models LP-1000 and LP-1001 are an established leader in the field, providing an unprecedented bandwidth of 4.0 through 30.0 MHz. The unique design characteristics of these antennas provide reliable high power capabilities for communications over short, medium, and long range distance point to point circuits. Antennas can be equipped with a Hy-Gain rotor assembly to provide 360° azimuth coverage.

Hy-Gain's Model LP-1002 has been designed for high power HF/VHF coverage for commercial, industrial, and military applications. It exhibits high gain and reliability for medium to long range communications.

SPECIFICATION SUMMARY

HY-GAIN MODEL NO.	LP-1000	LP-1001	LP-1002
Electrical:			
Frequency Range (in MHz)	4.0-30.0	4.0-30.0	6.0-40.0
Power Handling Capability			
Average/P.E.P. (in KW)	50/100	25/50	25/50
Polarization	Horizontal	Horizontal	Horizontal
Cross Polarization (in db down)	20	20	20
Forward Gain over Average Soil Conditions (in db)*	13.5	13.5	13.5
Front-to-Back Ratio (in db, nominal)	14	14	14

HY-GAIN MODEL NO.	LP-1000	LP-1001	LP-1002
Maximum VSWR (with respect to 50 ohms)	2:1	2:1	2:1
Input Impedance (in ohms)	50	50	50
Input Connector	3-1/8"EIA	1-5/8"EIA	1-5/8"EIA
Half Power Beam Widths (Free Space)			
E Plane (Average)	70°	70°	64°
H Plane (Average)	125°	125°	112°
Vertical			
Angle of Max. Radiation*			
High	32°	32°	23°
Low	5°	5°	3°
Structural:			
Boom Length	74 ft.	74 ft.	63.5 ft.
Longest Element	82 ft.	82 ft.	82 ft.
Turning Radius	54 ft.	54 ft.	51 ft.
Total Number of Elements	19	19	14
Shipping Weight of System (in lbs.)	2,750	2,673	1,450
Shipping Volume (in cu. ft.)	230	220.3	103.0
Wind Loading Capability:			
No Ice (in MPH)	140	140	140
¼" Radial Ice (in MPH)	100	100	100
Wind Surface Area	95 sq. ft.	83 sq. ft.	72 sq. ft.
Wind Loading at rated wind load capability	7,450 lbs.	6,500 lbs.	5,650 lbs.

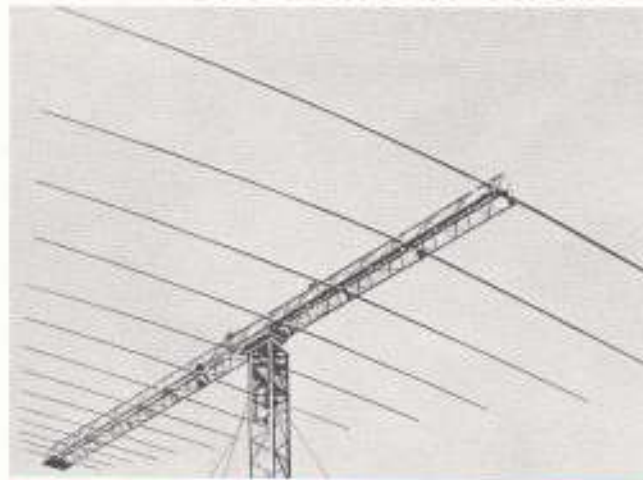
OPTIONAL ACCESSORIES

See rotatable log periodic antenna systems for recommended support structures and rotator assemblies.

ALL ANTENNA SYSTEMS ARE AVAILABLE WITH A 75 OHM CHARACTERISTIC IMPEDANCE
*AT PHASE CENTER HEIGHT OF 100 FT.

HY-GAIN LOG PERIODIC DIPOLE ANTENNA ARRAYS

DESCRIPTION & APPLICATION



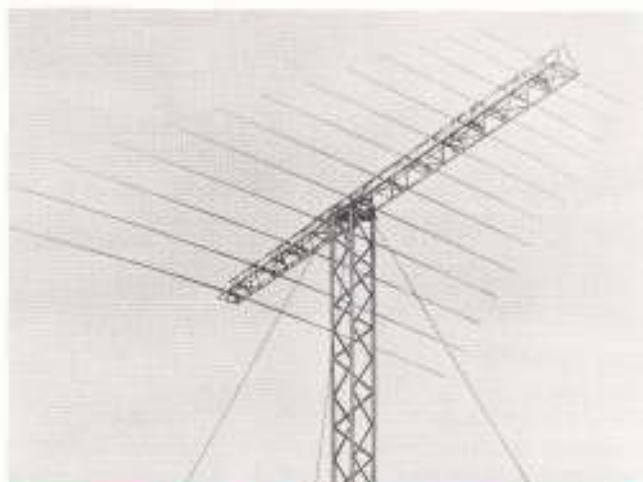
MODEL LP-1003

6 thru 40 Megahertz

The Hy-Gain Model LP-1003 has been designed for very high power HF/VHF coverage, primarily for military applications. This antenna, like the LP-1002 exhibits high gain and reliability for medium to long range communication paths at high power levels.

The Model LP-1006 provides medium to high power reliable communications. The antenna provides a mechanically reliable structure covering the upper HF frequencies of 10 thru 30 MHz.

Hy-Gain's Model LP-1007 is designed for applications where low to medium power, upper HF band performance is required. This model combines high gain performance and rugged dependability with an economical cost.



MODEL LP-1006

10 thru 30 Megahertz

SPECIFICATION SUMMARY

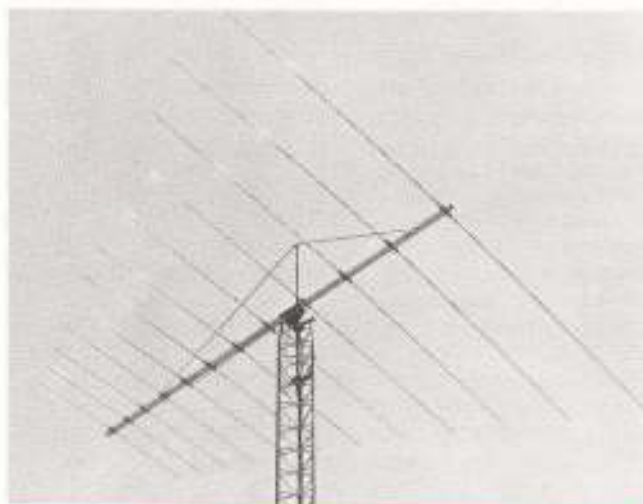
HY-GAIN MODEL NO.	LP-1003	LP-1006	LP-1007
Electrical:			
Frequency Range (in MHz)	6.0-40.0	10.0-30.0	13.0-30.0
Power Handling Capability Average/P.E.P. (in KW)	50/100	25/50	2.0/4.0
Polarization	Horizontal	Horizontal	Horizontal
Cross Polarization (in db down)	20	20	20
Forward Gain over Average Soil Conditions (in db)	13.5*	13.5**	13.5**
Front-to-Back Ratio (in db, nominal)	14	15	15
Maximum VSWR (with respect to 50 ohms)	2:1	1.8:1	2:1
Input Impedance (in ohms)	50	50	50
Input Connector	3-1/8"EIA	1-5/8"EIA	Type "N"
Half Power Beam Widths (Free Space)			
E Plane (Average)	64°	62°	60°
H Plane (Average)	112°	120°	125°
Vertical			
Angle of Max. Radiation			
Low Frequency	23°*	24°**	18.5°**
High Frequency	3°*	7.8°**	8°**
Structural:			
Boom Length	60 ft.	40 ft.	26.5 ft.
Longest Element	82 ft.	52 ft.	38 ft.
Turning Radius	51 ft.	32.6 ft.	22.5 ft.
Total Number of Elements	14	13	12
Shipping Weight of System (in lbs.)	2,100	995	335
Shipping Volume (in cu. ft.)	160	46	18.9
Wind Loading Capability:			
No Ice (in MPH)	140	130	80
1/2" Radial Ice (in MPH)	100	100	60
Wind Surface Area	82 sq. ft.	40 sq. ft.	13 sq. ft.
Wind Loading at Rated Wind Load Capability	6,450 lbs.	2,700 lbs.	340 lbs.

*At a Phase Center Height of 100 ft.

**At a Phase Center Height of 60 ft.

OPTIONAL ACCESSORIES

See rotatable log periodic antenna systems for recommended support structures and rotator assemblies.



MODEL LP-1007

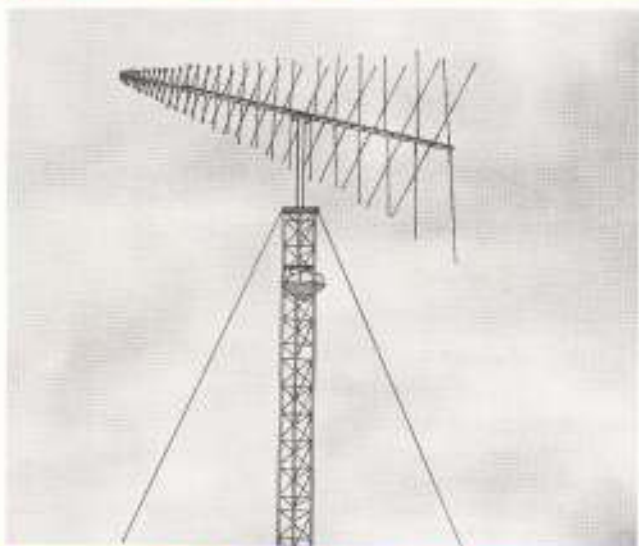
13 thru 30 Megahertz (FSN 5820-ND 00-8932H)

HY-GAIN LOG PERIODIC DIPOLE ANTENNA ARRAYS



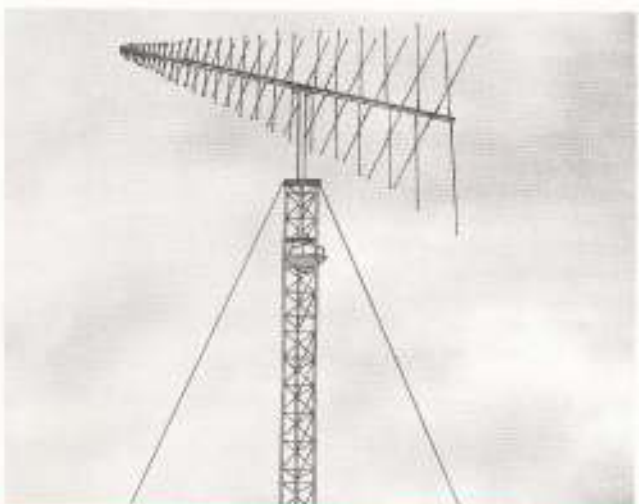
MODEL LP-1008

18 thru 60 Megahertz



MODEL LP-1013

30 thru 300 Megahertz



MODEL LP-1014

30 thru 1000 Megahertz

DESCRIPTION & APPLICATION

Providing excellent short to medium range communications, the Model LP-1008 exhibits high gain and provides HF/VHF band performance. Ruggedly constructed, this model offers reliable service and economy in installation.

Hy-Gain Models LP-1013 and LP-1014 offer a selection of one antenna for the entire VHF frequency band (LP-1013) or the combination of VHF/UHF coverage (LP-1014), in vertical, horizontal polarization modes. Exceptional performance of these models has been demonstrated by extensive use throughout the free world for short to medium range, low power communications under widely varied climatic and environmental conditions. The antenna includes a non conductive support mast easily adaptable to your support structure.

SPECIFICATION SUMMARY

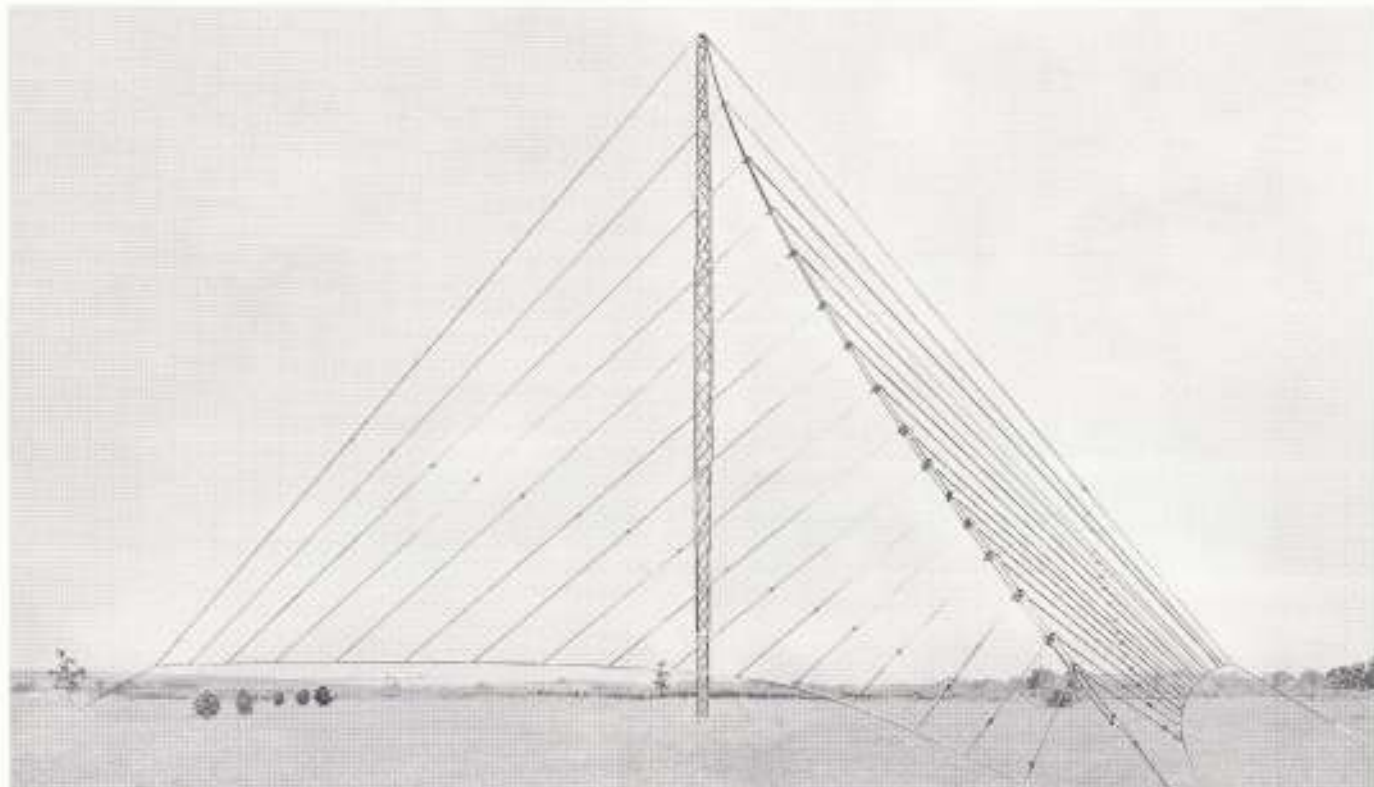
HY-GAIN MODEL NO.	LP-1008	LP-1013	LP-1014
Electrical:			
Frequency Range (in MHz)	18,0-60,0	30,0-300,0	30,0-1000,0
Power Handling Capability Average/P.E.P.	5KW/10KW	250W/500W	50W/100W
Polarization	Horizontal	Horizontal or Vertical	Horizontal or Vertical
Cross Polarization (in db down)	25		
Forward Gain over isotropic (in db)	8	8	8
Front-to-Back Ratio (in db, nominal)	16	20	20
Maximum VSWR (with respect to 50 ohms)	2:1	2:1	2:1
Input Impedance (in ohms)	50	50	50
Input Connector	7/8" EIA	2 Type "N"	2 Type "N"
		1 for vertically polarized mode 1 for horizontally polarized mode	
Half Power Beam Widths (Free Space)			
E Plane (Average)	60°	58°	58°
H Plane (Average)	105°	120°	120°
Vertical			
Angle of Max. Radiation*			
Low Frequency	13°	6°	6°
High Frequency	4°	2°	1°
Structural:			
Boom Length	24 ft.	28 ft.	29.5 ft.
Longest Element	27.5 ft.	16 ft.	16 ft.
Turning Radius	18.2 ft.	14 ft.	14 ft.
Total Number of Elements	13	30 Vert. 29 Hor.	43 Vert. 42 Hor.
Shipping Weight of System (in lbs.)	360	904	920
Shipping Volume (in cu. ft.)	38	60	62
Wind Loading Capability:			
No Ice (in MPH)	100	150	150
1/2" Radial Ice (in MPH)	80	1/2" Ice 100	1/2" Ice 100
Wind Surface Area	22 sq. ft.	37 sq. ft.	39 sq. ft.
Wind Loading at Maximum rated wind load capability	880 lbs.	3,340 lbs.	3,520 lbs.

OPTIONAL ACCESSORIES

See rotatable log periodic antenna systems for recommended support structures and rotator assemblies.

*AT A PHASE CENTER HEIGHT OF 60 FT.

HY-GAIN TRANSPORTABLE HF LOG PERIODIC ANTENNA SYSTEMS



MODEL LP-1505

2 thru 30 Megahertz

MODEL LP-1506

4 thru 30 Megahertz

Available in Receive, Transmit 2.5, 5.0 and 10 KW Average Power Ratings

DESCRIPTION & APPLICATION

The Hy-Gain Models LP-1505 and 1506 exhibit excellent performance and have been specifically designed to meet all of the operational requirements of a transportable HF antenna system. Elevation patterns are ideally suited for short, medium and long range paths, since they are made to vary in such a manner that lower take-off angles are favored at the higher frequencies and higher take-off angles are favored at the lower frequencies. Complete assembly and erection can be effected in less than one and one-half hours by a team of four men. These antenna systems are designed so that in transit configuration they weigh less than 900 pounds and consume less than 90 cubic feet. The antenna is easily steerable by walking the curtain radially around the support mast. The support mast nests during transit.

SPECIFICATION SUMMARY

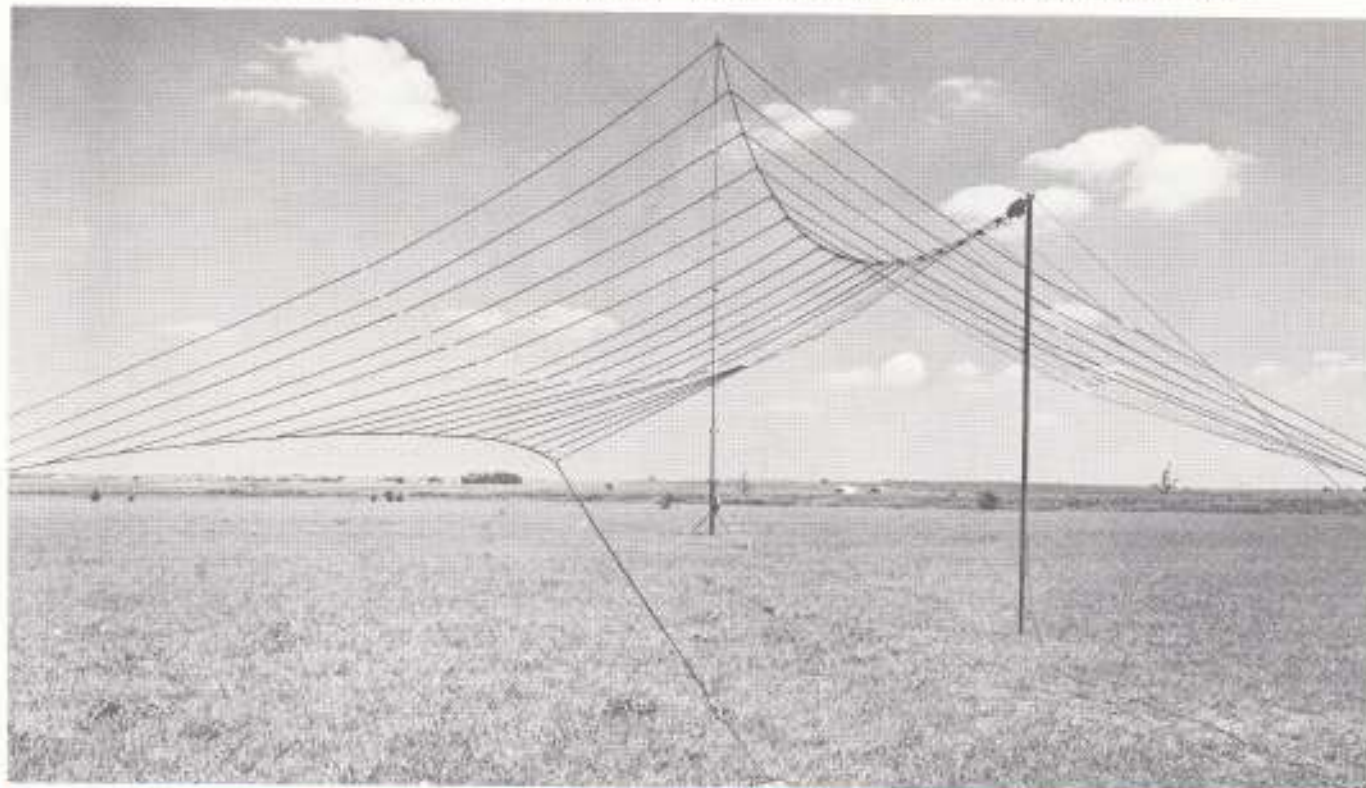
HY-GAIN MODEL NUMBER	LP-1505	LP-1506
Electrical:		
Frequency Range (in MHz)	2.0-30.0	4.0-30.0
Power Handling Capability	Refer to Note Below	
Polarization	Horizontal	Horizontal
Cross Polarization (in db down)	20	20
Forward Gain over Average Soil Conditions (in db)	6 at 2 MHz to 13 at 30 MHz	10 at 4 MHz to 13 at 30 MHz
Front-to-Back Ratio (in db, nominal)	12	12

HY-GAIN MODEL NUMBER	LP-1505	LP-1506
Maximum VSWR (with respect to 50 ohms)	2:1	2:1
Input Impedance (in ohms)	50	50
Input Connector	Refer to Note below	
Azimuth half power beam width Average	60°	60°
Vertical		
Angle of Maximum Radiation		
2 MHz	90°	
4 MHz	54°	54°
30 MHz	32°	32°
Structural:		
Tower Height	75 ft.	75 ft.
Turning Radius	120 ft.	120 ft.
Shipping Weight of System (in lbs.)	900	850
Shipping Volume (in cu. ft.)	87	87
Wind Loading Capability:		
No Ice (in MPH)	100	100
½" Radial Ice (in MPH)	50	50

Note: Use appropriate sub model number when specifying or ordering a system (ie LP 1505-1)

-1 Equipped to Receive	50 ohm input	Type "N" Connector
-2 Transmit 2.5 KW/5 KW	50 ohm input	7/8" EIA Connector
-3 Transmit 5 KW/10 KW	50 ohm input	7/8" EIA Connector
-5 Transmit 10 KW/20 KW	50 ohm input	1 5/8" EIA Connector
-6 Transmit 20 KW/40 KW	50 ohm input	3 1/8" EIA Connector

HY-GAIN TRANSPORTABLE LOG HF PERIODIC ANTENNA SYSTEMS



MODEL LP-1509

6 thru 30 Megahertz

Available in Receive, Transmit 2.5, 5.0 and 10 KW Average Power Ratings

DESCRIPTION & APPLICATION

Hy-Gain's Model LP-1509 is an exceptionally versatile, lightweight transportable log periodic antenna system, exhibiting excellent operational characteristics throughout the 6.0 through 30 Megahertz frequency range. Designed specifically to meet all operational requirements of an HF transportable antenna system, the Model LP-1509 is unique in that it employs a mechanical telescopic mast section which extends to 50 feet in height for operation. Retracted for transportation, the telescopic mast is 10 feet in length. Elevation patterns are ideally suited for short, medium and long range paths, since they are made to vary in such a manner that lower take-off angles are favored at the higher frequencies. Complete assembly and erection can be effected by a team of 3 men in less than one and one-half hours. The Model LP-1509 antenna system is designed such that in the transit configuration, it consists of four transit cases weighing no more than 600 pounds and consuming less than 40 cubic feet. The antenna azimuth is easily changed in the field after erection.

SPECIFICATION SUMMARY

HY-GAIN MODEL NUMBER

LP-1509

Electrical:

Frequency range (in MHz)
Power Handling Capability
Polarization

6.0 thru 30.0
Refer to Note below
Horizontal

HY-GAIN MODEL NUMBER

LP-1509

Forward Gain over Average
Soil Conditions (in db)

10.5 at 6 MHz,
Increasing to 13 at 30 MHz

Front-to-Back Ratio (in db, nominal)

12

Maximum VSWR (with respect to
50 ohms)

2:1

Input Impedance (in ohms)

50

Input Connector

Refer to Note below

Azimuth half power beam width

Average

60°

Vertical

Angle of Maximum Radiation

6 MHz

62°

30 MHz

32°

Structural:

Tower Height

50 ft.

Turning Radius

120 ft.

Shipping Weight of System (in lbs.)

600

Shipping Volume (in cu. ft.)

40

Wind Loading Capability:

No Ice (in MPH)

80

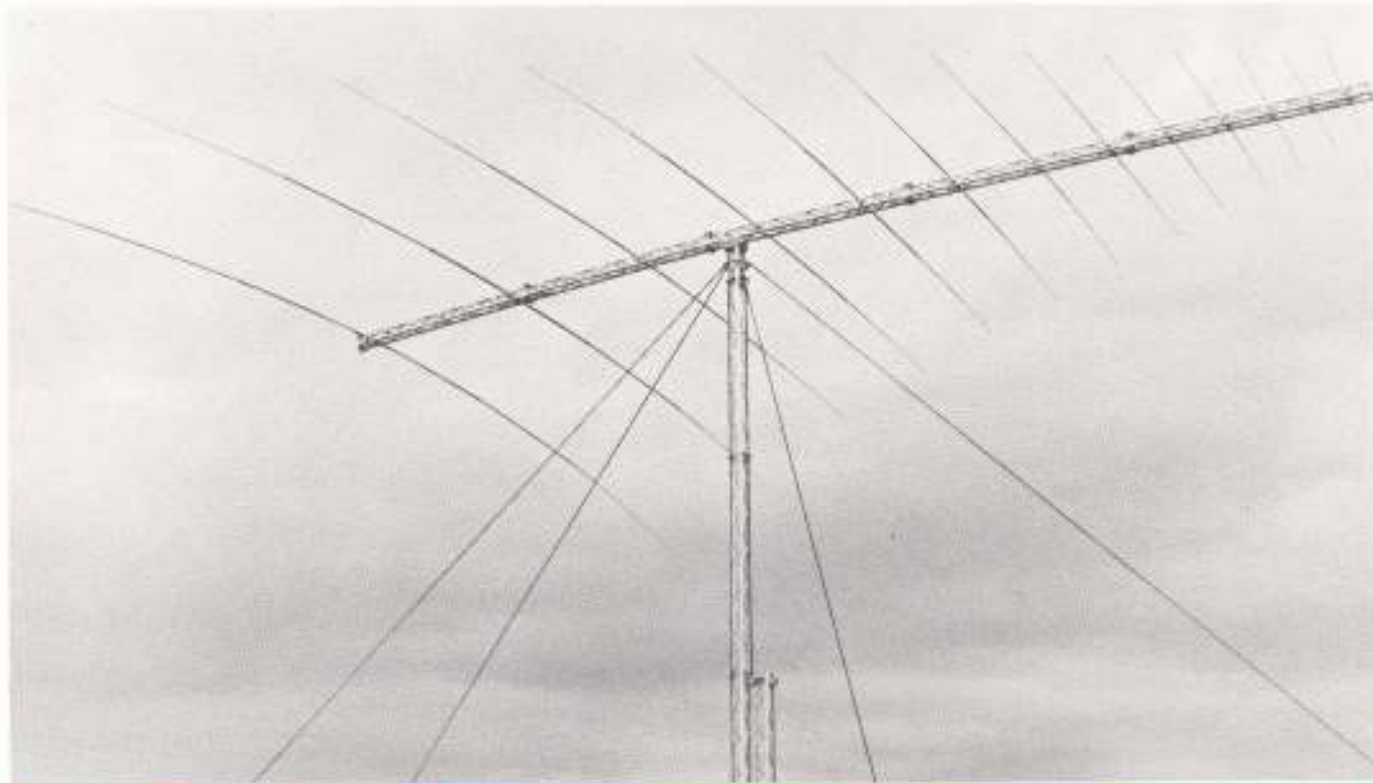
¼" Radial Ice (in MPH)

60

Note: Use appropriate sub model number when specifying or ordering a system (ie LP-1509-1)

- | | | |
|-------------------------|--------------|----------------------|
| -1 Equipped to Receive | 50 ohm input | Type "N" Connector |
| -2 Transmit 2.5 KW/5 KW | 50 ohm input | 7/8" EIA Connector |
| -3 Transmit 5 KW/10 KW | 50 ohm input | 7/8" EIA Connector |
| -5 Transmit 10 KW/20 KW | 50 ohm input | 1 5/8" EIA Connector |
| -6 Transmit 20 KW/40 KW | 50 ohm input | 3/8" EIA Connector |

HY-GAIN TRANSPORTABLE HF LOG PERIODIC ANTENNA SYSTEMS



MODEL LP-1110 6.5 thru 30 MHz

DESCRIPTION & APPLICATION

The Hy-Gain Model LP-1110 is a complete rotatable log periodic HF antenna system that can be quickly installed for temporary or permanent applications in establishing long range communications throughout the 6.5 through 30 MHz frequency range. The system includes the antenna, tower support structure, base mounted rotator, rotator controls and all necessary fittings and hardware for installation on a minimum site of 0.25 acres. All components are crated for shipment via any mode of transportation, including air. The entire system can be erected and installed within four hours by two men using standard hand tools. It can also be quickly dismantled and recrated for shipment to other sites. Performance characteristics outlined in the specifications below have been authenticated in actual field tests. The Model LP-1110 is constructed to Department of Defense specifications and is currently in use providing reliable, permanent and contingency communications capability in all parts of the world.

SPECIFICATION SUMMARY

HY-GAIN MODEL NUMBER

LP-1110

Electrical:

Frequency Range (in MHz)

6.5 thru
30.0

HY-GAIN MODEL NUMBER

5985 LP-1110
922 9129

Federal Nom.

Power Handling Capability

Average/P.E.P. (in KW)

2.5/10

Polarization

Horizontal

Cross Polarization (in db down)

20

Forward Gain over Average

Soil Conditions (in db)

13.0

Front-to-Back Ratio (in db, nominal)

15

Maximum VSWR (with respect to 50 ohms)

2:1

Input Impedance (in ohms)

50

Input Connector

7/8" EIA

Azimuth half power beam width

Average

60°

Vertical

Angle of Maximum Radiation

6.5 MHz

55°

30 MHz

32°

Structural:

Tower Height

50 ft.

Boom Length

60 ft.

Turning Radius

48 ft.

Total Number of Elements

13

Shipping Weight of System (in lbs.)

2250

Shipping Volume (in cu. ft.)

260.1

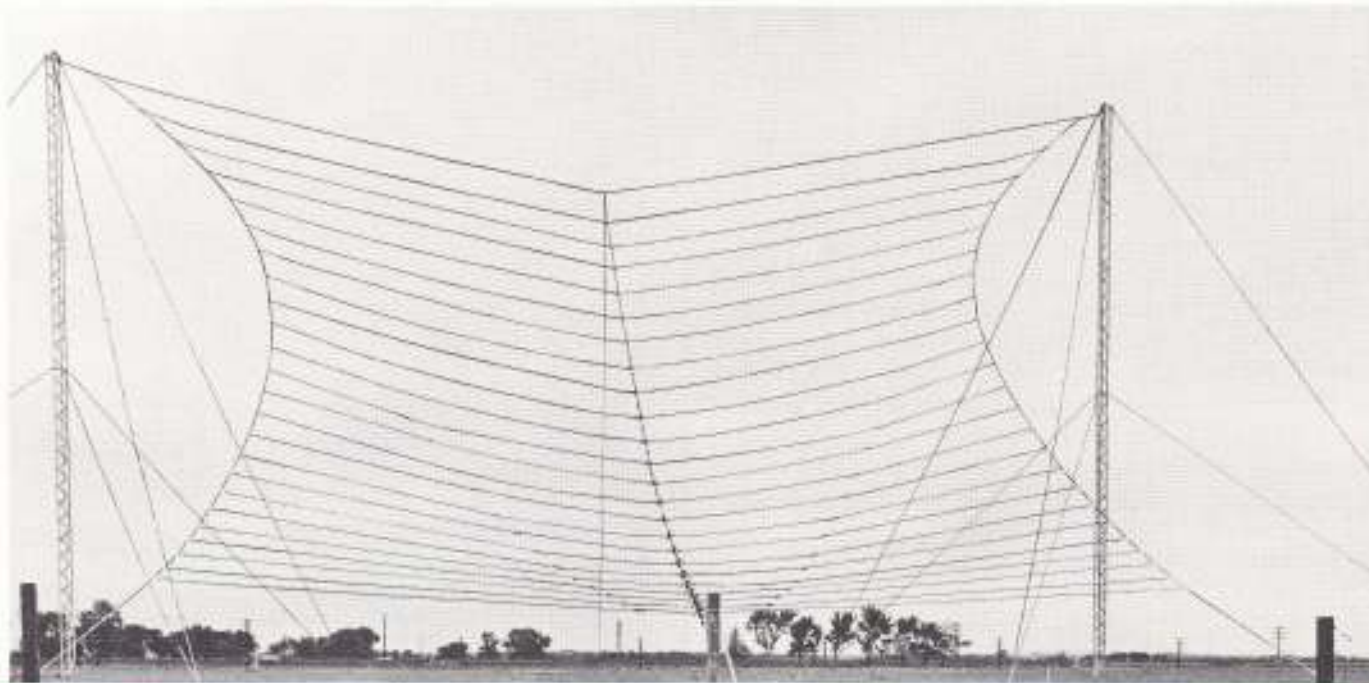
Wind Loading Capability:

No Ice (in MPH)

60

¼" Radial Ice (in MPH)

50



MODEL LP-1503, 1504, 1510, 1511

DESCRIPTION & APPLICATION

The Hy-Gain Short-Medium Range 1500 Series systems have been designed to provide, unsurpassed, short to medium range performance throughout their respective frequency ranges. Due to the characteristics inherent in log periodic designs, these systems provide radiation efficiency which is maintained at a high level. This high radiation efficiency assures that maximum input power is radiated rather than partially dissipated. These systems exhibit VSWR characteristics below 2.0:1 across the designed frequency spectrum with the VSWR remaining below 1.6:1 over 90 percent of the specified bandwidth. The radiation pattern of these antennas exhibits a front-to-back ratio exceeding -12 db with front-to-side ratios exceeding 20 db relative to the principle lobe intensity. These characteristics assure a minimum of off-path interference. Radiation pattern characteristics are shown in the Specification Summary and have been examined through computer calculations to provide maximum directive gain at take-off angles optimum to specified or required path distances. Ground screens are not a part of these systems nor are they required, due to insignificant effects upon performance over perfect ground, versus performance over average or poor earth.

Four distinct bandwidths models are available in order to supply the user with a design specifically tailored to the station frequency and installation requirements. These systems are designed to provide ease of assembly through consideration of human engineering factors, with a maximum emphasis placed on reliability and electrical integrity which requires the minimum amount of maintenance. All

components have been specifically selected to withstand and resist the effects of highly corrosive atmospheres in addition to being capable of withstanding wind velocities of 130 MPH (No Ice) and 100 MPH with 1/2 inch radial ice. All support structures are composed of hot-dip, galvanized, high strength steel components joined together with galvanized, extra high-strength steel hardware. All catenaries are composed of high strength fiberglass cable terminated on the ends with easily installed and maintained performed end fittings. Feedline and radiator assemblies are composed of non-corrosive aluminum coated steel cables terminated and insulated into high strength fiberglass and L 624 steatite insulators. Wherever practicable, sub-assemblies have been preassembled in order to reduce installation costs.

Class III wooden front poles are ordinarily excluded, in order to reduce shipping weight and volume, unless otherwise specified, since utility poles are generally available at the installation local.

All systems are packaged ready for shipment via any mode of transportation with towers fully disassembled in order to reduce shipping volume.

Note: Use appropriate sub model number when specifying or ordering a system (ie LP-1503-1)

-1 Equipped to Receive	50 ohm input	Type "N" Connector
-3 Transmit 5 KW/10 KW	50 ohm input	7/8" EIA Connector
-4 Transmit 10 KW/20 KW	50 ohm input	7/8" EIA Connector
-6 Transmit 20 KW/40 KW	50 ohm input	1 5/8" EIA Connector
-7 Transmit 40 KW/80 KW	50 ohm input	3 1/8" EIA Connector
-8 Transmit 40 KW/80 KW	300 ohm input	Open Wire
-9 Transmit 40 KW/80 KW	600 ohm input	Open Wire

SPACE SAVING WIDE BAND LOG PERIODIC ANTENNAS

- MEDIUM TO LONG RANGE PATHS
- HIGH RELIABILITY
- POINT TO POINT COMMUNICATIONS
- GROUND SCREEN NOT REQUIRED
- HORIZONTALLY POLARIZED

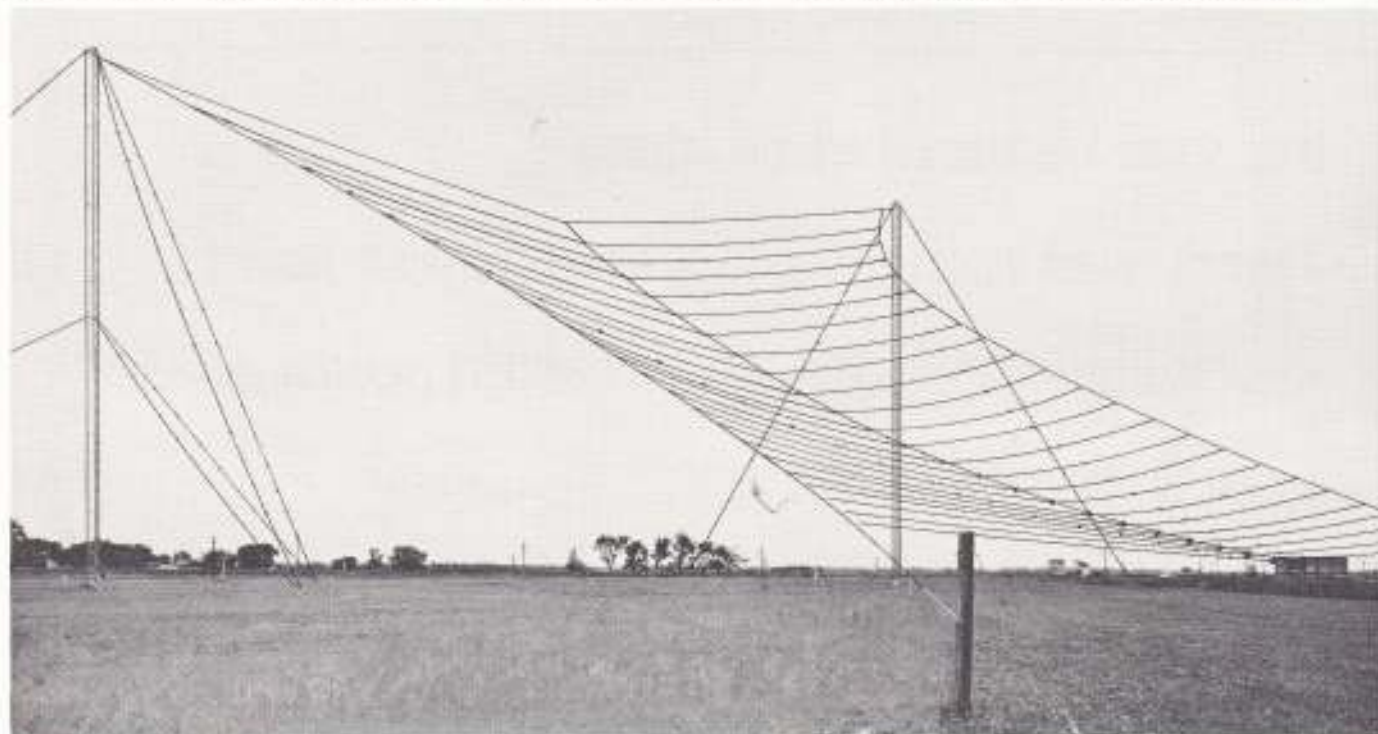
AVAILABLE IN RECEIVE, TRANSMIT 5 KW, 20 KW AND 40 KW AVERAGE POWER RATINGS
WITH INPUT IMPEDANCES OF 50, 300 or 600 OHMS

HORIZONTAL SHORT MEDIUM RANGE 1500 SERIES

SPECIFICATION SUMMARY

HY-GAIN MODEL NUMBER	LP-1503	LP-1504	LP-1510	LP-1511
Electrical:				
Frequency	2.5 thru 32	3 thru 32	4 thru 32	6 thru 32
Power Handling Capability (Refer to note on opposite page.)				
Polarization				
Cross Polarization (in db down)	Horizontal 20	Horizontal 20	Horizontal 20	Horizontal 20
Forward Gain over Average Soil Conditions (in db)	10-12	12	12.5	12
Front-to-Back Ratio (in db, nominal)	11-13	12	12	12
Maximum VSWR (with respect to 50, 300 or 600 ohms)	2:1	2:1	2:1	2:1
Input Impedance (in ohms) (Refer to note on opposite page.)				
Input Connector (Refer to note on opposite page.)				
Azimuth half power beam width				
Average	70°	65°	65°	65°
Vertical Angle of Maximum Radiation				
**High Frequency	45°	36°	38°	38°
Low Frequency	45°	36°	38°	36°
Vertical Plane				
Half Power Point Angles	78° & 18°	70° & 20°	68° & 18°	70° & 18°
Structural:				
Tower Height	140 ft.	140 ft.	100 ft.	70 ft.
Length (Horizontally)	396 ft.	353 ft.	325 ft.	200 ft.
Installation Area Required	5.2 acres	3.2 acres	2.3 acres	1.2 acres
Shipping Weight or System (in lbs.)	10,620	9,850	8,000	6,800
Shipping Volume (in cu. ft.)	342	319	270	228
Wind Loading Capability:				
No Ice (in MPH)	130	130	130	130
½" Radial Ice (in MPH)	100	100	100	100

**May be increased or decreased as required by increasing or decreasing front pole heights.



MODEL LP-1513,1514,1520,1521

DESCRIPTION & APPLICATION

Hy-Gain's Medium to Long range 1500 Series antenna systems have been designed to provide unparalleled performance for medium to long range communication paths, throughout their respective broad bandwidths ranging from 2.5 thru 32 MHz up to 6.0 thru 32 MHz in four models. Two characteristics in Hy-Gain's 1500 Series antenna systems, which are of significant importance to effective communications, are low VSWR characteristics remaining less than 1.6:1 throughout 90 percent of the bandwidths without hiatus, and optimum elevation half power beamwidths and take-off angles which yield extremely effective medium to long range performance. The high performance characteristics and radiation efficiency exhibited by these antenna systems assure maximum input power is radiated rather than partially dissipated. These characteristics combined with a front-to-back ratio exceeding -14 db with a front-to-side ratio exceeding 20 db, relative to the principle lobe intensity, assure a minimum of off-path interference. Azimuth and elevation radiation pattern characteristics have been examined through extensive measurements both in the field and computer analysis to assure optimum characteristics to achieve reliable medium to long path reliability. Ground screens are not a part of these systems, nor are they required due to insignificant effects upon performance over perfect ground versus performance over average or poor earth.

Four distinct standard bandwidth models are available in order to supply the user with a design specifically tailored to the station frequency and installation requirements. Ease of assembly is a major installation characteristic of the 1500 Series systems. Maximum emphasis has been placed

on human engineering factors in conjunction with reliability standards yielding antenna systems which require a minimum of maintenance. All components have been specifically selected to withstand and resist the effects of highly corrosive atmospheres, in addition to being capable of withstanding velocities of 130 MPH (No Ice) and 100 MPH with 1/2 inch Radial Ice. Support structures are composed of hot-dip, galvanized high strength steel components joined together with galvanized extra high strength steel hardware. Catenaries are composed of high strength coated fiberglass cable terminated on the ends with easily installed and maintained preformed end fittings. Feedline and radiator assemblies are composed of non-corrosive aluminum coated cables. Insulators are high strength fiberglass and L 624 Steatite. Wherever practical, sub-assemblies have been pre-assembled in order to reduce installation costs.

Class III wooden front poles are ordinarily excluded in order to reduce shipping weight and volume, unless otherwise specified, since utility poles are generally available at the installation local.

All systems are packaged, ready for shipment, via any mode of transportation with towers fully disassembled in order to reduce shipping volume.

Note: Use appropriate sub-model number when specifying or ordering a system (ie LP-1513-1).

-1 Equipped to Receive	50 ohm input	Type "N" Connector
-3 Transmit 5 KW/10 KW	50 ohm input	7/8" EIA Connector
-4 Transmit 10 KW/20 KW	50 ohm input	7/8" EIA Connector
-6 Transmit 20 KW/40 KW	50 ohm input	1 5/8" EIA Connector
-7 Transmit 40 KW/80 KW	50 ohm input	3 1/8" EIA Connector
-8 Transmit 40 KW/80 KW	300 ohm input	Open Wire
-9 Transmit 40 KW/80 KW	600 ohm input	Open Wire

- A COMPLETE PRODUCT LINE OF HORIZONTAL FIXED LOG PERIODIC DIPOLE ANTENNA SYSTEMS
- HIGHLY RELIABLE COMMUNICATIONS OVER MEDIUM TO LONG RANGE DISTANCE POINT TO POINT CIRCUITS

AVAILABLE IN RECEIVE, TRANSMIT 5 KW, 20 KW AND 40 KW AVERAGE POWER RATINGS WITH INPUT IMPEDANCES OF 50, 300 or 600 OHMS

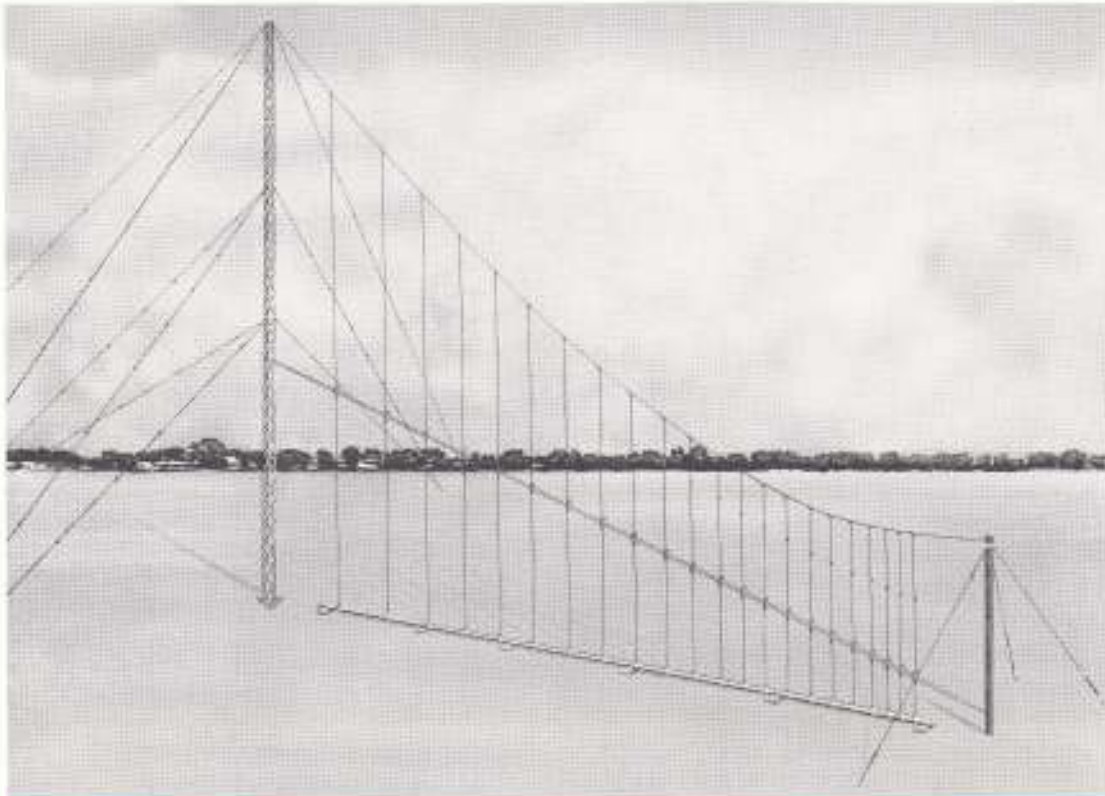
HORIZONTAL MEDIUM LONG RANGE 1500 SERIES

SPECIFICATION SUMMARY

HY-GAIN MODEL NUMBER	LP-1513	LP-1514	LP-1520 AS-1834 A/G	LP-1521
Federal Nomenclature				
Electrical:				
Frequency (In MHz)	2.5 thru 32	3 thru 32	4 thru 32	6.0 thru 32
Power Handling Capability (Refer to note on opposite page.)				
Polarization	Horizontal	Horizontal	Horizontal	Horizontal
Cross Polarization (in db down)	20	20	20	20
Forward Gain over Average				
Soil Conditions (in db)	13	13	13	13
Front-to-Back Ratio (in db, nominal)	14	14	14	14
Maximum VSWR (with respect to 50, 300, 600 ohms)	2.0:1	1.8:1	1.8:1	2.0:1
Input Impedance (ohms) (Refer to note on opposite page.)				
Input Connector (Refer to note on opposite page.)				
Structural:				
Azimuth half power beam width:				
Average	60°	65°	65°	65°
Vertical Angle of Maximum Radiation				
** Low Frequency	24,3°	27°	26°	25°
High Frequency	13°	31°	25°	31°
Vertical Plane				
Half Power Point Angles	51° & 12°	50° & 10°	41° & 9°	50° & 12°
Tower Height	240 ft.	180 ft.	140 ft.	100 ft.
Length (Horizontally)	512 ft.	380 ft.	345 ft.	220 ft.
Installation area required	7.2 acres	6 acres	3.3 acres	1.6 acres
Shipping Weight of System (in lbs.)	12,750	11,650	10,975	8,950
Shipping Volume (in cu. ft.)	375	345	310	230
Wind Loading Capability:				
No Ice (in MPH)	130	130	130	130
½" Radial Ice (in MPH)	100	100	100	100

** May be increased or decreased as required by increasing or decreasing front pole height.

HY-GAIN VERTICAL LOG PERIODIC DIPOLE ANTENNA SYSTEMS



MODEL LP-1703,1704,1705,1706

DESCRIPTION & APPLICATION

The Hy-Gain Electronic 1700 Series, vertical log periodic antenna systems have been designed to provide maximum efficiency and performance for long path HF applications. These systems are characterized by low take-off angles, high gain and unidirectional radiation patterns, resulting in excellent performance regardless of changing ionospheric conditions. High front-to-back and front-to-side ratios provide minimum off path interference. Ground screens are not generally required with these antenna systems, however, in instances where exceptionally poor ground conductivity is encountered, it may be desirable and beneficial to add a ground screen in order to maintain low take-off angles.

The 1700 Series antenna systems are intended for use throughout a wide variety of applications due to their low take-off angles which are constant over their entire respective bandwidths. These antennas are ideally suited for a wide variety of circuits, ranging in path lengths of from 700 miles to 4500 miles long, although maximum range or path length is a function of several factors such as input power, propagation variation, signal to noise ratios at the receive terminal.

The 110 degree azimuth coverage of the 1700 Series antenna systems generate numerous applications of these systems for communications with aircraft and ships at sea or other mobile stations within a broad area. The comparatively small installation area characteristics of these arrays, in addition to low comparative costs, versus high performance offer the user numerous advantages in an economical installation.

All materials have been selected for maximum resistance to corrosion under exposure to severe environmental conditions. Included within the system kits are disassembled tower components, radiator curtains, guys, anchors, and necessary hardware to effect a complete installation. The wooden front poles have been excluded for the purpose of reducing shipping weight and volume, since poles of this type are generally available at the construction local.

Note: Use appropriate sub model number when specifying or ordering a system (ie LP-1703-1).

-1 Equipped to Receive	50 ohm input	Type "N" Connector
-3 Transmit 5 KW/10 KW	50 ohm input	7/8" EIA Connector
-4 Transmit 10 KW/20 KW	50 ohm input	7/8" EIA Connector
-6 Transmit 20 KW/40 KW	50 ohm input	1 5/8" EIA Connector
-7 Transmit 40 KW/80 KW	50 ohm input	3 1/8" EIA Connector
-8 Transmit 40 KW/ 80 KW	300 ohm input	Open Wire
-9 Transmit 40 KW/ 80 KW	600 ohm input	Open Wire

SPACE SAVING LOG PERIODIC DIPOLE ANTENNA SYSTEMS

- VERTICALLY POLARIZED
- MEDIUM TO LONG HAUL CIRCUITS
- FIXED STATION
- NO GROUND SCREEN REQUIRED

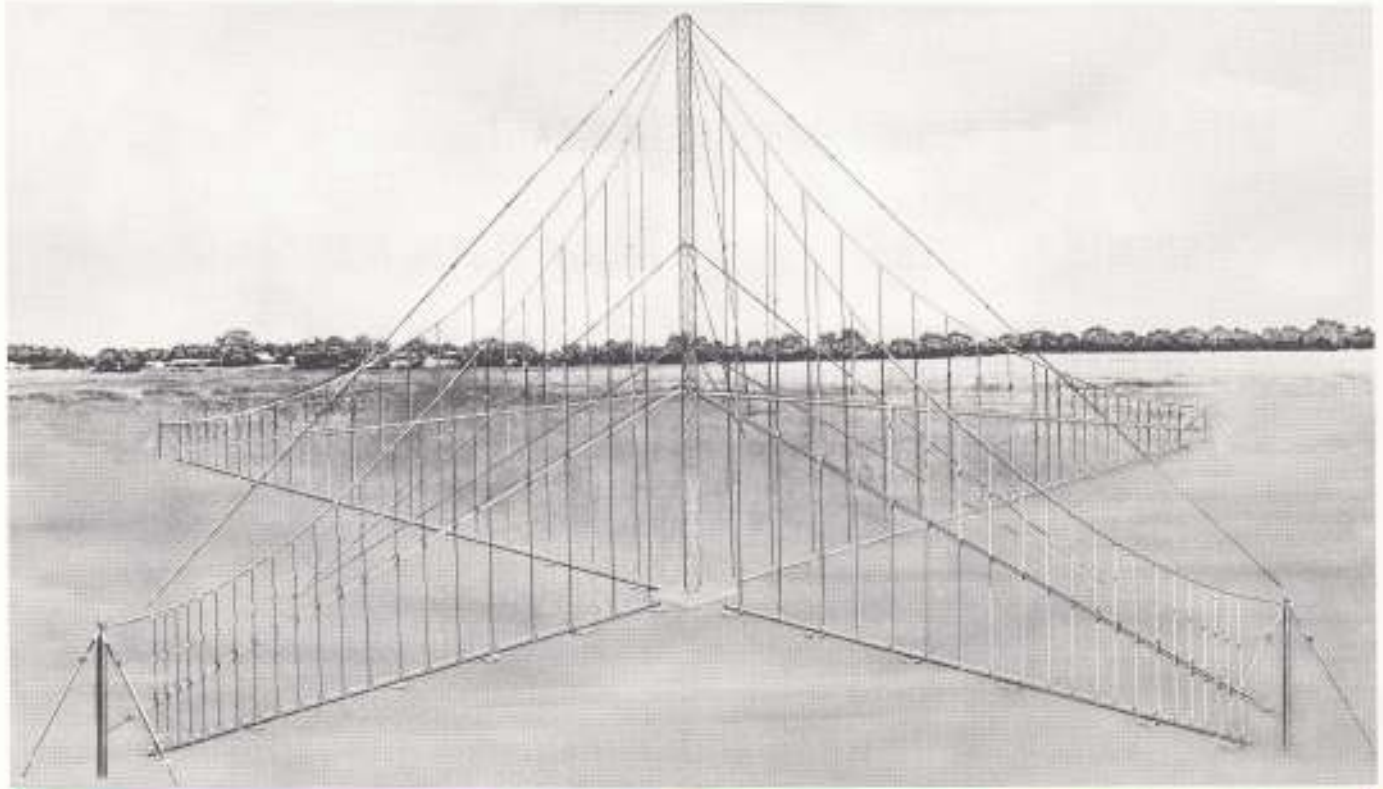
AVAILABLE IN RECEIVE, TRANSMIT 5 KW, 20 KW AND 40 KW AVERAGE POWER RATINGS
WITH INPUT IMPEDANCES OF 50, 300 or 600 OHMS

VERTICAL MEDIUM LONG RANGE 1700 SERIES

SPECIFICATION SUMMARY

HY-GAIN MODEL NUMBER	LP-1703	LP-1704	LP-1705	LP-1706
Electrical:				
Frequency Range (in MHz)	2.5 thru 32	3 thru 32	4 thru 32	6 thru 32
Power Handling Capability (Refer to note on opposite page.)				
Polarization	Vertical	Vertical	Vertical	Vertical
Cross Polarization (in db down)	20	20	20	20
Forward Gain over Average				
Soil Conditions (in db)	12	12	12	12
Front-to-Back Ratio (in db, nominal)	14	14	14	14
Maximum VSWR (with respect to 50 ohms)	2.0:1	2.0:1	2.0:1	2.0:1
Input Impedance (in ohms) (Refer to note on opposite page.)				
Input Connector (Refer to note on opposite page.)				
Azimuth half power beam width				
Average	110°	110°	110°	110°
Elevation Plane Radiation Pattern				
Over Perfect Ground:				
Angle of Maximum Gain	0°	0°	0°	0°
Angle of Half Power Points	23°	22°	22°	21°
Over Average Ground:				
Angle of Maximum Gain	12°	12°	12°	12°
Angle of Half Power Points	2° & 21°	3° & 22°	3° & 22°	3° & 22°
Structural:				
Curtain Length	250 ft.	213 ft.	160 ft.	107 ft.
Structure Height				
Back	263 ft.	220 ft.	165 ft.	110 ft.
Front	50 ft.	50 ft.	50 ft.	50 ft.
Installation Area Required	3.5 acres	3 acres	2.3 acres	1.5 acres
Shipping Weight of System (in lbs.)	10,270	7,680	6,740	6,030
Shipping Volume (in cu. ft.)	365	328.3	292	260
Maximum Wind Load Capability:				
No Ice (in MPH)	120	120	120	120
½" radial Ice (in MPH)	100	100	100	100

HY-GAIN QUAD SECTOR LOG PERIODIC DIPOLE ANTENNA SYSTEMS



MODEL SLP-1902, 1903, 1904, 1905

DESCRIPTION & APPLICATION

The 1900 Series (SLP) Quad Sector Log Periodic Dipole Antenna systems, consist of four separate dipole arrays spaced 90 degrees apart about a single support structure. These systems, having characteristics as outlined on the adjoining page, have been designed for applications requiring full 360° azimuth coverage selectable in four overlapping sectors.

Each of the four antenna arrays are independent of one another, providing its own individual sector coverage of 115 degrees azimuth beam width and optimum elevation beamwidth producing gain in the order of 12 db throughout its band width.

These systems are available for a broad range of power requirements ranging from receiving to transmit capabilities in the order of 40 KW Average; and 80 KW P.E.P. Input impedance options are also available, ranging from 50 ohms unbalanced to 600 ohms balanced for both receive and transmit versions. Each of these systems are provided in kit

form with towers completely disassembled in order to reduce assembly time and provide the purchaser with an economical system for shipping, as well as erection. These systems are designed for rugged dependable use with the minimum of required maintenance.

Components within these systems consist of extra environmental resistant materials proven by rigorous testing and application prior to their use within these systems. All materials are included within these systems, with exception of wooden front poles, which are generally available at the ultimate installation locations. Other optional accessories available on special order are: Tower obstruction lighting kits, Tower obstruction painting and tower gin pole erection fixtures.

Note: Use appropriate sub-model number when specifying or ordering a system (ie SLP-1902-1).

-1 Equipped to Receive	50 ohm input	Type "N" Connector
-3 Transmit 5 KW/10 KW	50 ohm input	7/8" EIA Connector
-4 Transmit 10 KW/20 KW	50 ohm input	7/8" EIA Connector
-6 Transmit 20 KW/40 KW	50 ohm input	1 5/8" EIA Connector
-7 Transmit 40 KW/80 KW	50 ohm input	3 1/8" EIA Connector
-8 Transmit 40 KW/80 KW	300 ohm input	Open Wire
-9 Transmit 40 KW/80 KW	600 ohm input	Open Wire

SECTOR COVERAGE LOG PERIODIC DIPOLE ANTENNAS

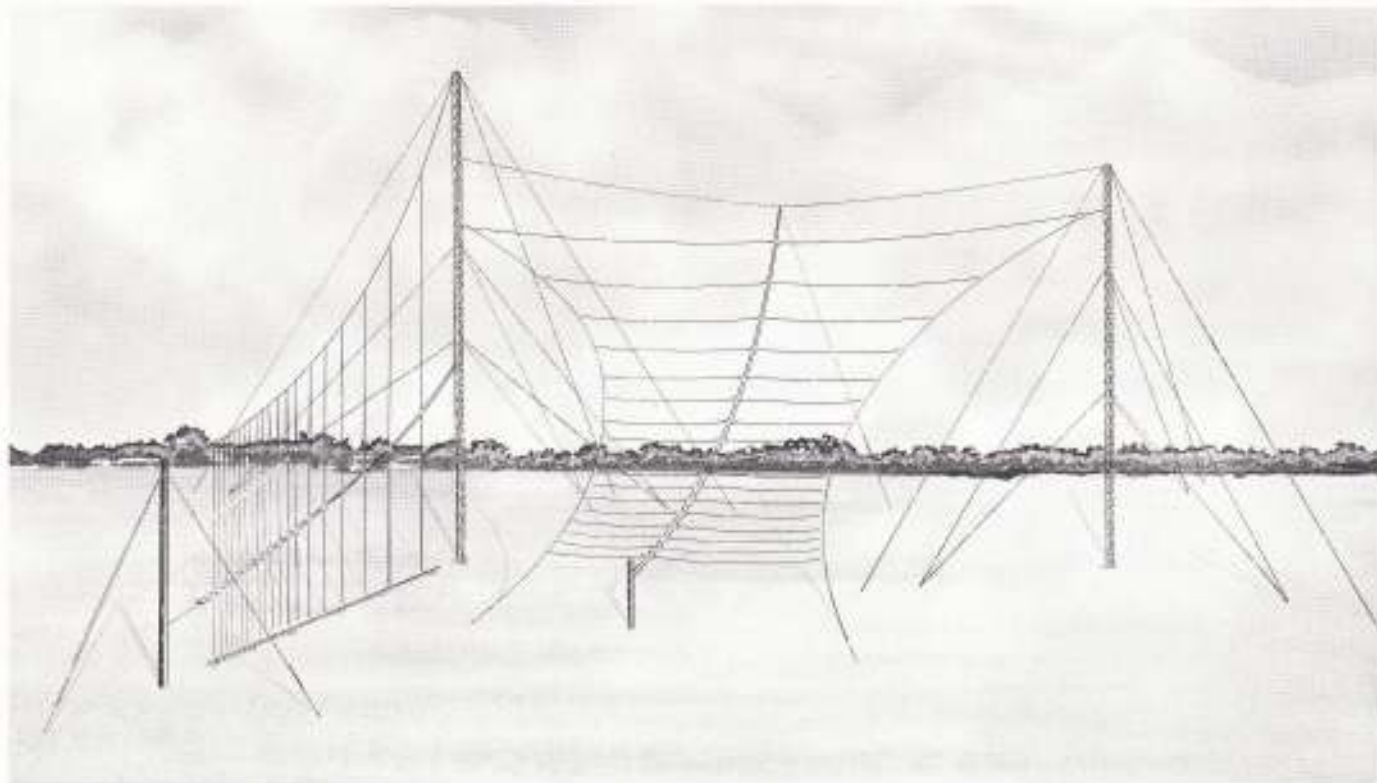
- FULL 360 DEGREE COVERAGE IN FOUR 115 DEGREE SECTORS
- TRANSMIT OR RECEIVE
- POINT TO POINT FOR MEDIUM OR LONG PATHS CIRCUITS

AVAILABLE IN RECEIVE, TRANSMIT 10 KW AND 20 WK AVERAGE POWER RATINGS WITH INPUT IMPEDANCE OF 50 OHMS

VERTICAL MEDIUM LONG RANGE 1900 SERIES

SPECIFICATION SUMMARY

HY-GAIN MODEL NUMBER	SLP-1902	SLP-1903	SLP-1904	SLP-1905
Electrical:				
Frequency Range (in MHz)	2.5 thru 32	3 thru 32	4 thru 32	6 thru 32
Power Handling Capability (Refer to Note on opposite page)				
Polarization	Vertical	Vertical	Vertical	Vertical
Forward Gain over Average Soil Conditions (in db)	12	12	12	12
Front-to-Back Ratio (in db, nominal)	14	14	14	14
Maximum VSWR (with respect to 50 ohms)	2.0:1	2.0:1	2.0:1	2.0:1
Input Impedance (in ohms)	50	50	50	50
Input Connector (Refer to note on opposite page.)				
Azimuth Half Power Beamwidth	115 ^o	112 ^o	112 ^o	112 ^o
Elevation Angles to Half Power Points	2 ^o & 21 ^o	3 ^o & 22 ^o	3 ^o & 22 ^o	3 ^o & 22 ^o
Structural:				
Curtain Radius	250 ft.	213 ft.	160 ft.	107 ft.
Overall Height	268 ft.	220 ft.	170 ft.	110 ft.
Installation Area Required	4.9 acres	4.2 acres	3.1 acres	2.1 acres
Shipping Weight of System (in lbs.)	15,300	12,100	9,750	7,510
Shipping Volume (in cu. ft.)	910	755	585	430
Maximum Wind Loading Capability				
No Ice (in MPH)	120	120	120	120
1/2" Radial Ice (in MPH)	100	100	100	100



MODEL LP-1803, 1804, 1805, 1806

DESCRIPTION & APPLICATION

The 1800 Series polarization diversity antenna systems consist of two separate log-periodic dipole antenna arrays, one vertically polarized and one horizontally polarized. When coupled together through the applications of diversity combining techniques, they provide the receive terminal with optimum reliability against fading. The advantages from these systems may be derived from the fact that fading of vertically polarized waves and horizontally polarized waves does not occur simultaneously. Therefore, through simultaneous monitoring techniques of both polarization modes, greater reliability is achieved in addition to reduced receive data errors.

These systems are recommended for use on applications where incoming circuit paths have reception elevation angles arriving between 2 degrees and 22 degrees incident to the antenna ground level. Therefore, effective communications are effected from transmit terminals having path distances in excess of 1,000 miles.

In addition to their relatively small installation area requirements, these systems are suitable for installation at almost any receive site, regardless of uneven or rough terrain conditions. All materials have been specifically selected to provide rugged reliable performance under exposure to the most severe environmental conditions, such as salt spray, wind, ice, humidity and ultra-violet radiation.

Five different models are available, providing maximum reliability and efficiency with the minimum of real estate required. These systems are shipped in kit form, ready for erection. Prefabricated sub-assemblies have been provided wherever practicable, however, towers and other major assemblies are shipped disassembled in order to reduce packaged volume.

Aircraft obstruction lighting kits, tower painting kits and gin-pole erection fixtures are available as optional accessories to be ordered separately.

POLARIZATION DIVERSITY LOG PERIODIC ANTENNA SYSTEMS

- BOTH HORIZONTAL AND VERTICAL POLARIZATION
- FOR MEDIUM AND LONG PATH CIRCUITS
- IMPROVES RELIABILITY BY REDUCING POLARIZATION FADING

MEDIUM LONG RANGE 1800 SERIES

SPECIFICATION SUMMARY

HY-GAIN MODEL NUMBER

Electrical:

Frequency Range (in MHz)

Power Handling Capability*

Polarization

Cross Polarization Level Relative to Beam

Maximum: (in db down)

Vertical Array

Horizontal Array

Forward Gain over Average

Soil Condition (in db)

Vertical Array

Horizontal Array

Front-to-Back & Front-to-Side

Ratio

Vertical Array (in db nom)

Horizontal Array (in db nom)

Maximum VSWR (with respect to 50 ohms) (Both Arrays)

Output Impedance (in ohms)

(Both Arrays)

Output Connector

Structural:

Curtain Length

Vertical Array

Horizontal Array

Tower Height:

Vertical Array

Horizontal Array

Installation area Required

Shipping Weight of System (in lbs.)

Shipping Volume (in cu. ft.)

Maximum Wind Loading Capability:

No Ice (in MPH)

½" Radial Ice (in MPH)

LP-1803

2.5 thru 32
Receive
Horizontal
or Vertical

20

15

12

13

14

15

2.0:1

50

unbalanced

Type "N"

female

250 ft.

212 ft.

270 ft.

220 ft.

5.2 acres

17,750

560

120

100

LP-1804

3.0 thru 32
Receive
Horizontal
or Vertical

20

15

12

12

14

15

2.0:1

50

unbalanced

Type "N"

female

213 ft.

175 ft.

220 ft.

190 ft.

3.6 acres

15,400

480

120

100

LP-1805

4.0 thru 32
Receive
Horizontal
or Vertical

20

15

12

12

14

15

2.0:1

50

unbalanced

Type "N"

female

160 ft.

130 ft.

170 ft.

140 ft.

3.2 acres

13,300

405

120

100

LP-1806

6.0 thru 32
Receive
Horizontal
or Vertical

20

15

12

12

14

15

2.0:1

50

unbalanced

Type "N"

female

107 ft.

88 ft.

110 ft.

100 ft.

2.2 acres

9,200

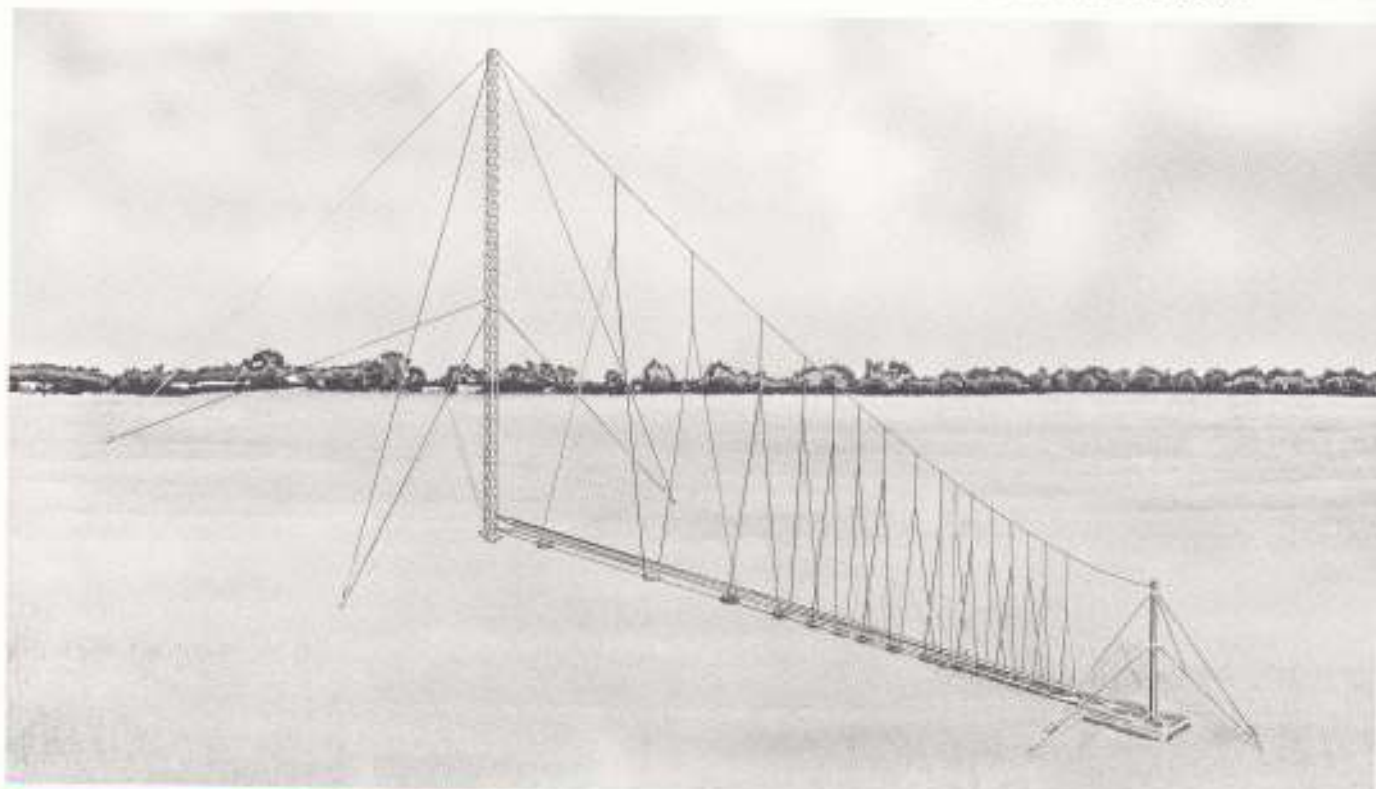
329

120

100

*Transmit Capability Available Upon Request.

HY-GAIN UNIDIRECTIONAL LOG PERIODIC MONOPOLE ANTENNA SYSTEMS



MODEL - 1601, 1602, 1603, 1604, 1605

DESCRIPTION & APPLICATION

The Hy-Gain Model 1600 series log periodic monopole antenna systems are unidirectional, vertically polarized systems providing excellent performance throughout the 2 thru 32 MHz frequency range. Low angle radiation characteristics exhibited by these systems make them ideally suited for medium and long range skywave transmission. These systems have incorporated, within their design, unique new concepts relating to element and feed design which provide performance far exceeding that presently obtainable with other monopole log periodic designs. The radiation patterns for these systems are characterized by high gain unidirectional lobes which remain essentially on the horizon throughout the frequency range. Current and phase relationships, within each cell, are well defined throughout the bandwidth resulting in high efficiency and consistent operation characteristics. The VSWR of all systems is consistently low throughout the frequency range, occasionally rising to 2.0:1 but remaining well below 1.6:1 over 90 percent of the band. Although 50 ohms unbalanced input impedances are standard, these systems are also available in 72 ohms, unbalanced or 200 ohms balanced. A wide choice of power ratings are also available, ranging from receive versions to transmit versions with power capabilities up to 40 KW Average, and 80 KW P.E.P.

Five distinct bandwidth models are available in order to supply a design specifically tailored to the purchaser's frequency

range requirements. Hot-dip, galvanized, high strength steel tower and structural components, assembled with galvanized extra high strength steel hardware, characterize selective structural components. Aluminum coated element cable, high voltage ceramic insulators, aluminum jacketed coaxial feed capacitors, die stamped aluminum locking clamps, and stainless steel hardware provide strength combined with long life in extreme atmospheric conditions, such as salt spray, abrasive blowing sand, heat and icing conditions.

The Hy-Gain 1600 Series systems are supplied, complete, with pre-cut, assembled components where practical. Included are tower support structures, radiation curtain, ground screen kit, all hardware and guy assemblies. In order to hold shipping weight and volume to a minimum, all tower support structures are shipped in unassembled kit form. Gin-pole tower erection kits are optional, allowing the purchaser to eliminate the use of crane for tower erection. Obstruction light kits and tower obstruction painting are also available as accessory items.

Note: Use appropriate sub-model number when specifying or ordering a system (ie SLP-1601-1).

-1 Equipped to Receive	50 ohm input	Type "N" Connector
-3 Transmit 5 KW/10 KW	50 ohm input	7/8" EIA Connector
-4 Transmit 10 KW/20 KW	50 ohm input	7/8" EIA Connector
-6 Transmit 20 KW/40 KW	50 ohm input	1 5/8" EIA Connector
-7 Transmit 40 KW/80 KW	50 ohm input	3 1/8" EIA Connector
-8 Transmit 40 KW/80 KW	300 ohm input	Open Wire
-9 Transmit 40 KW/80 KW	600 ohm input	Open Wire

UNIDIRECTIONAL MONOPOLE LOG PERIODIC ANTENNA SYSTEMS

- FOR MEDIUM AND LONG RANGE CIRCUITS
- MINIMUM LAND AREA AND TOWER HEIGHT REQUIREMENTS
- UNIQUE FEED SYSTEM PROVIDES TRUE LOG PERIODIC PERFORMANCE IN A MONOPOLE CONFIGURATION

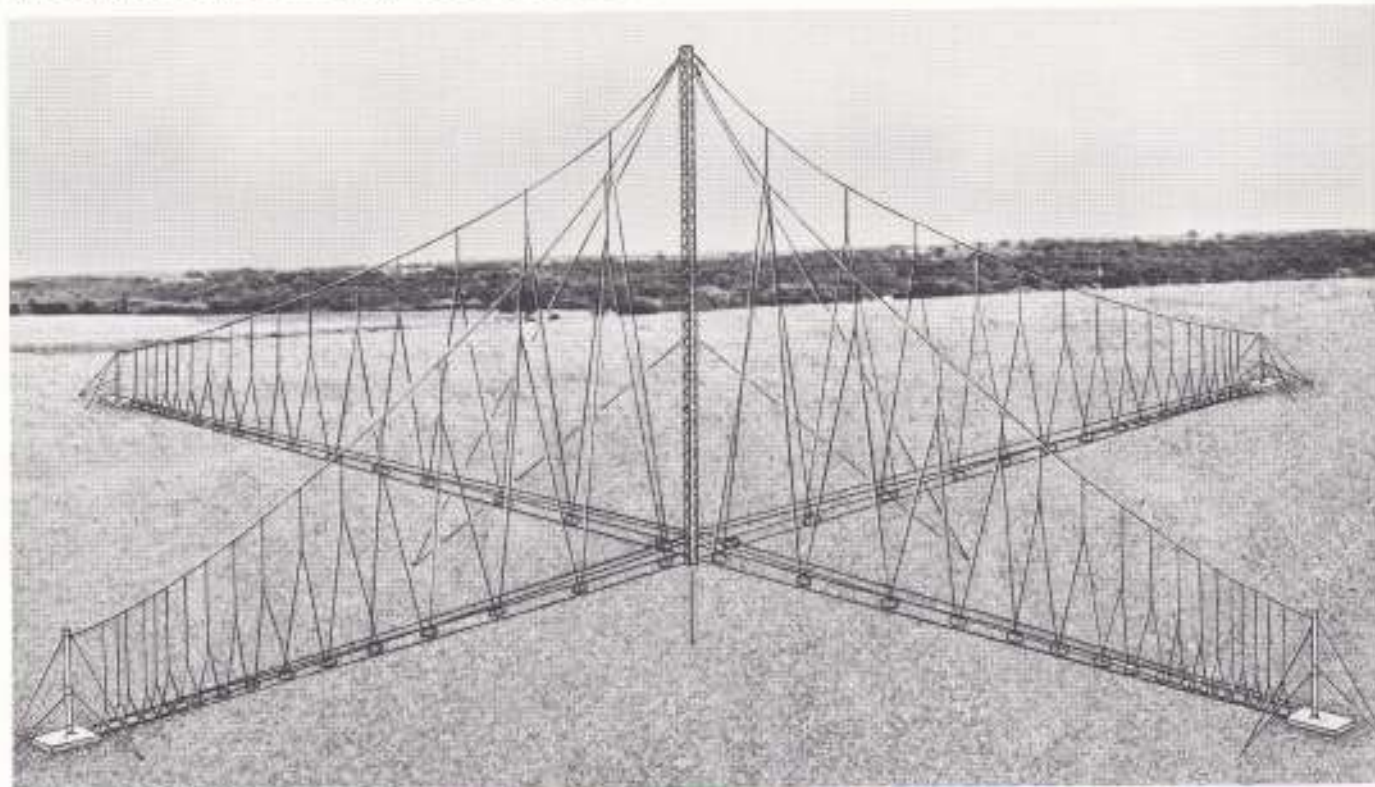
AVAILABLE IN RECEIVE, TRANSMIT 10 KW 20 KW AND 40 KW AVERAGE POWER RATINGS WITH INPUT IMPEDANCE OF 50 OHMS

VERTICAL, MEDIUM-LONG RANGE 1600 SERIES

SPECIFICATION SUMMARY

HY-GAIN MODEL NUMBER	LP-1601	LP-1602	LP-1603	LP-1604	LP-1605
Electrical:					
Frequency Range (in MHz)	2.0-32	2.5-32	3.0-32	4-32	6-32
Power Handling Capability (Refer to note on opposite page)					
Polarization	Vertical	Vertical	Vertical	Vertical	Vertical
Cross Polarization (in db down)	20	20	20	20	20
Forward Gain over Average Soil Conditions (in db)	10	10	11	11	11
Front-to-Back Ratio (in db, nominal)	13	13	13	13	13
Maximum VSWR (with respect to 50 ohms)	2.0:1	2.0:1	2.0:1	2.0:1	2.0:1
Input Impedance (in ohms)	50	50	50	50	50
Input Connector (Refer to note on opposite page)					
Azimuth Half Power Beam Widths (Average)	110°	110°	110°	110°	110°
Elevation Plane Radiation Pattern:					
Over Perfect Ground:					
Angle of Maximum Gain	0°	0°	0°	0°	0°
Angle of 1/2 Pwr. Points	38°	35°	38°	38°	38°
Over Average Ground:					
Angle of Maximum Gain	18°	18°	18°	18°	18°
Angle of 1/2 Pwr. Points	3° & 28°	3° & 28°	4° & 29°	4° & 30°	4° & 30°
Structural:					
Curtain Length	285 ft.	230 ft.	200 ft.	150 ft.	105 ft.
Structure Height:					
Rear Support	190 ft.	150 ft.	120 ft.	90 ft.	60 ft.
Front Support	20 ft.	20 ft.	20 ft.	20 ft.	20 ft.
Installation Area Required	1.2 acres	1 acre	.8 acres	.6 acres	.45 acres
Shipping Weight of System (in lbs.)	7,200	6,830	5,100	4,300	3,700
Shipping Volume (in cu. ft.)	412	358	302	275	320
Maximum Wind Loading Capability:					
No Ice (in MPH)	120	120	120	120	120
1/2" Radial Ice (in MPH)	100	100	100	100	100

HY-GAIN QUAD SECTOR LOG PERIODIC MONOPOLE ANTENNA SYSTEMS



MODEL SLP - 1906, 1907, 1908, 1909, 1910

DESCRIPTION & APPLICATION

The 1900 Series (SLP) Quad Sector Log Periodic Monopole antenna systems consist of four separate monopole arrays spaced 90 degrees apart about a single support structure. Having characteristics as outlined on the adjoining page, these systems have been designed and built for installation where ground screens may be easily installed and where low profile is an installation requirement. Each of the four antenna arrays are independent of one another providing full, overlapping azimuth coverage. Each individual sector has a sector coverage of 110° (azimuth beamwidth) and optimum elevation beamwidths providing gain in the order of from 10 to 12 db. (Two other design versions are available for applications requiring bidirectional sector coverage of two modes 180 degrees apart or right angle coverage of two sectors 90 degrees apart.) These systems are available for a broad range of input impedances ranging from 50 ohms unbalanced to 200 ohms balanced. Other input power capabilities are also available from receiving to 40 KW average, 80 KW P.E.P.

The unique design of this system places the entire array at DC ground. This provides a path for noise resulting in

extremely low noise levels on one antenna. Therefore, the 1900 Series SLP antenna systems are ideally suited for receiving applications where high signal to noise ratio is an absolute essential requirement.

Components within these systems consist of extra environmental resistant materials which have been rigorously laboratory and application tested to assure long life and performance in the field. In order to reduce assembly time in the field, these systems have been provided in preassembled sub-assemblies wherever practicable. All towers, however, are provided in kit form in order to reduce shipping volume and weight. The 1900 Series (SLP) systems are supplied complete with all materials required for installation including antenna curtains, towers and hardware, guy and anchors and ground screen with ground rods, all packaged for transportation via any commercial carrier.

Note: Use appropriate sub-model number when specifying or ordering a system (ie SLP 1906-1).

-1 Equipped to Receive	50 ohm input	Type "N" Connector
-3 Transmit 5 KW/10 KW	50 ohm input	7/8" EIA Connector
-4 Transmit 10 KW/20 KW	50 ohm input	7/8" EIA Connector
-6 Transmit 20 KW/40 KW	50 ohm input	1 5/8" EIA Connector
-7 Transmit 40 KW/80 KW	50 ohm input	3 1/8" EIA Connector
-8 Transmit 40 KW/80 KW	300 ohm input	Open Wire
-9 Transmit 40 KW/80 KW	600 ohm input	Open Wire

SECTOR COVERAGE LOG PERIODIC MONOPOLE SYSTEMS

- FULL 360 DEGREE AZIMUTH COVERAGE IN FOUR 110° INCREMENTS
- MINIMUM TOWER HEIGHT
- FOR MEDIUM AND LONG PATH CIRCUITS
- TRANSMIT OR RECEIVE

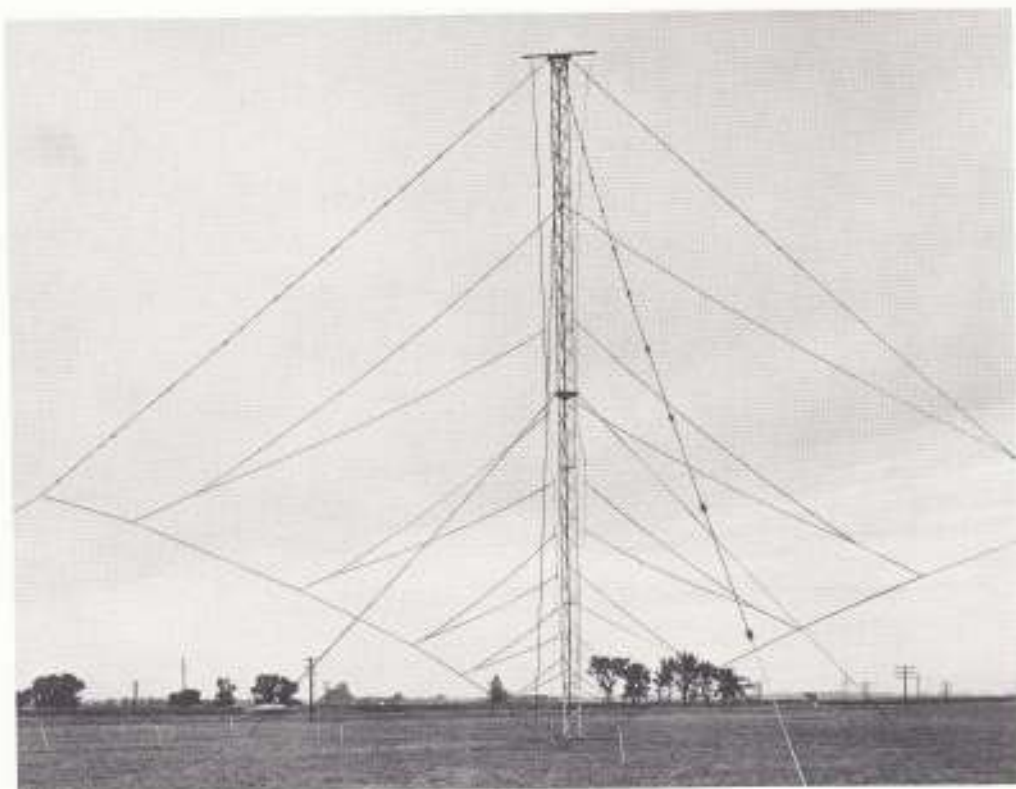
AVAILABLE IN RECEIVE, TRANSMIT 10 KW 20 KW AVERAGE POWER RATINGS WITH INPUT IMPEDANCE OF 50 OHMS

1900 SERIES SLP

SPECIFICATION SUMMARY

HY-GAIN MODEL NUMBER	SLP-1906	SLP-1907	SLP-1908	SLP-1909	SLP-1910
Electrical:					
Frequency Range (in MHz)	2 thru 32	2.5 thru 32	3 thru 32	4 thru 32	6 thru 32
Power Handling Capability (Refer to note on opposite page.)					
Polarization	Vertical	Vertical	Vertical	Vertical	Vertical
Forward Gain over Average Soil Conditions (in db)	10	10	11	11	11
Front-to-Back Ratio (in db, nominal)	14	14	14	14	14
Maximum VSWR (with respect to 50 ohms)	2.0:1	2.0:1	2.0:1	2.0:1	2.0:1
Input Impedance (in ohms) (Refer to note on opposite page.)					
Input Connector (Refer to note on opposite page.)					
Azimuth Half Power Beam Width (Average)	110°	110°	110°	110°	110°
Elevation Plane Radiation Pattern:					
Over Perfect Ground					
Angle of Maximum Gain	0°	0°	0°	0°	0°
Angle of 1/2 Pwr. Points	35°	35°	38°	38°	38°
Over Average Ground					
Angle of Maximum Gain	18°	18°	18°	18°	18°
Angle of 1/2 Pwr. Points	3° & 28°	3° & 28°	4° & 29°	4° & 30°	4° & 30°
Structural:					
Curtain Radius	285 ft.	230 ft.	200 ft.	150 ft.	105 ft.
Tower Height	190 ft.	150 ft.	120 ft.	90 ft.	60 ft.
Installation Area Required (in acres)	4.3	3.5	2.9	2.2	1.5
Shipping Weight of System (in lbs.)	15,200	12,210	9,800	7,750	5,450
Shipping Volume (in cu. ft.)	972	795	640	510	372
Maximum Wind Loading Capability					
No Ice (in MPH)	120	120	120	120	120
1/2" Radial Ice (in MPH)	100	100	100	100	100

HY-GAIN BIDIRECTIONAL LOG PERIODIC ANTENNA SYSTEMS



MODEL LP-1507

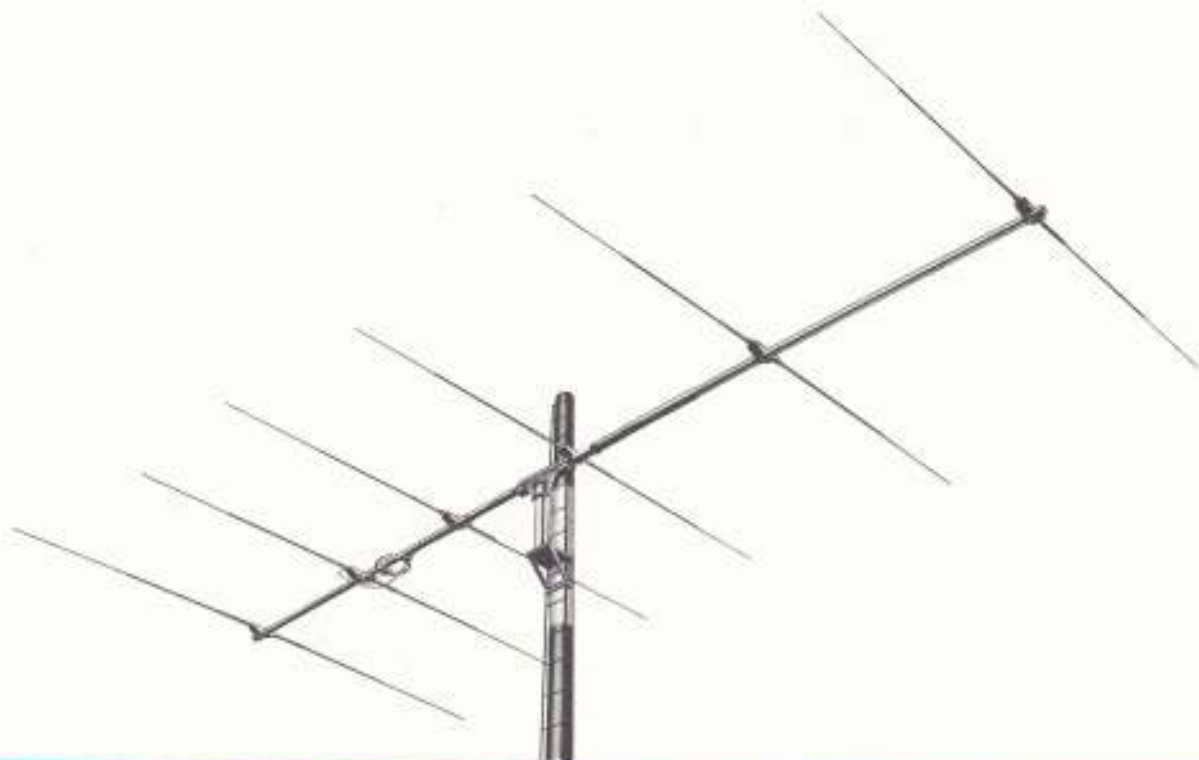
DESCRIPTION & APPLICATION

The Hy-Gain Model LP-1507 is a high frequency, bidirectional log periodic antenna system that exhibits excellent performance throughout the 3 through 30 MHz frequency range. Horizontally polarized bidirectional radiation patterns produced by the Model LP-1507 are ideally suited for short and medium path skywave communications circuits. Of particular significance is the capability of the Model LP-1507 to reject signals at extremely low angles thereby reducing undesirable ground and low angle skywave signals. The broadband characteristics and low VSWR exhibited over the entire operating range make the Model LP-1507 an ideal replacement in situations where several antennas have been previously required. Structurally, the antenna supported by a single 100 foot galvanized steel tower. One set of guys forms a catenary to which the horizontal elements are secured. Installation on site of approximately .95 acres requires about 150 man-hours. All antenna components are packaged for shipment via any standard cargo carrier.

SPECIFICATION SUMMARY

HY-GAIN MODEL NUMBER	LP-1507
Electrical:	
Frequency Range	3 thru 30 MHz
Power Handling Capability	Refer to Note at bottom of page
Polarization	Horizontal
Gain	Comparable to 1/2 Wave Dipole
Radiation Pattern	Bidirectional (Essentially omnidirectional)
VSWR	2.5:1 Maximum
Input Impedance	50 ohms
Feed Point Connector	Refer to Note at bottom of page
Structural:	
Tower Height	100 ft.
Tower Construction	Galvanized Steel, bolted
Number of Elements	13
Shipping Weight	4,000 lbs.
Shipping Volume (packaged BCP)	225 cu. ft.
Wind Load	130 MPH (No Ice)
Note: Use appropriate sub-model number when specifying or ordering a system (ie LP-1507-1)	
-1 Equipped to Receive	50 ohm input Type "N" Connector
-3 Transmit 5 KW/10 KW	50 ohm input 7/8" EIA Connector
-4 Transmit 10 KW/20 KW	50 ohm input 7/8" EIA Connector
-6 Transmit 20 KW/40 KW	50 ohm input 1 5/8" EIA Connector
-7 Transmit 40 KW/80 KW	50 ohm input 3 1/8" EIA Connector
-8 Transmit 40 KW/80 KW	300 ohm input Open Wire
-9 Transmit 40 KW/80 KW	600 ohm input Open Wire

HY-GAIN UNIDIRECTIONAL YAGI ANTENNAS



MODEL SERIES Y

DESCRIPTION & APPLICATION

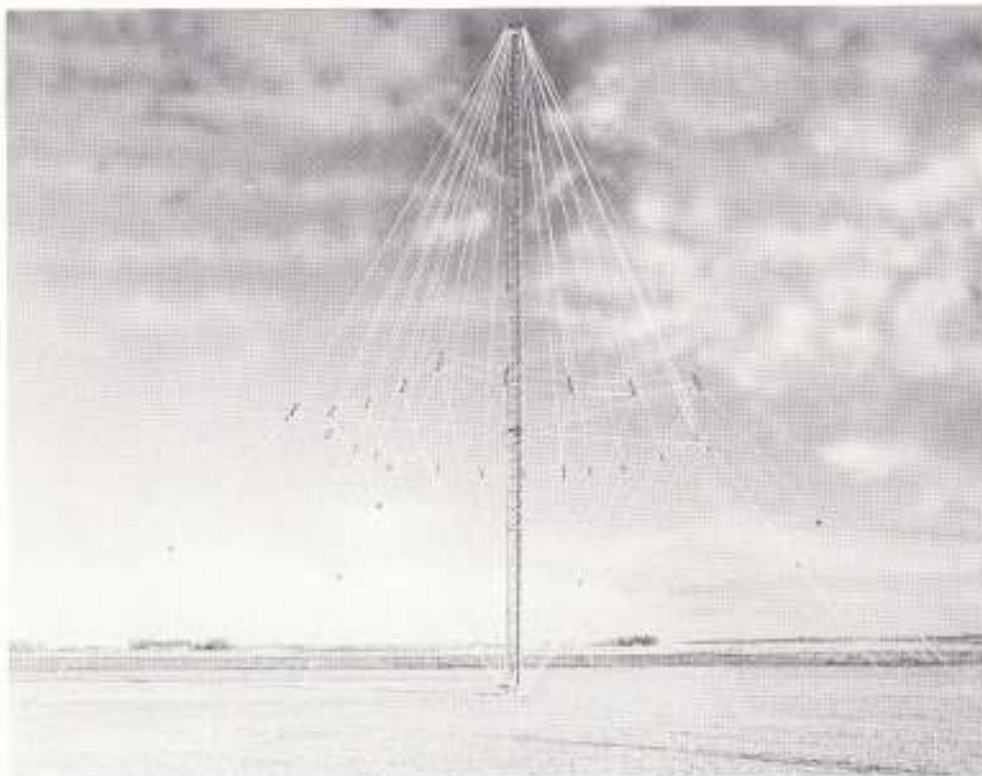
Hy-Gain's Y Series of unidirectional Yagi beam antennas have been specifically designed and built to satisfy the most stringent military and commercial requirements, where directivity and gain are of prime consideration and discrete frequency of operation is desired. All antennas are designed and built to optimize the electrical performance of the system. The Yagi Series consists of a dipole driven array with a reflector and multiple directors spaced at optimum distances from the dipole, resulting in maximum gain, front-to-back, and side lobe rejection obtainable. Additionally, these beams may be stacked for increased gain and directivity.

Construction consists of aluminum tubing elements and booms, with high strength steel and hot-dip galvanized hardware. The antenna is complete, with a 5 KW unbalanced to balanced transmit balun. Bandpass on these antennas with a 2.0:1 VSWR, is approximately 2.5 percent of the operating frequency.

SPECIFICATION SUMMARY

HY-GAIN MODEL NO.	3Y-7/14	4Y-14/21	5Y-14/21	5Y-21/30
Electrical:				
Frequency Range (in MHz) adjustable	7-14	14-21	14-21	21-30
Band Width at Resonance	2.5%	2.5%	2.5%	2.5%
Power Capability (Average/P.E.P.)	5/10	5/10	5/10	5/10

HY-GAIN MODEL NO.	3Y-7/14	4Y-14/21	5Y-14/21	5Y-21/30
Polarization	Horiz.	Horiz.	Horiz.	Horiz.
Cross Polarization	-40 db	-40 db	-40 db	-40 db
Front-to-Back Ratio	25 db	25 db	25 db	25 db
Forward Gain over Avg. Earth	13 db	15 db	18 db	18 db
VSWR at Resonance	1.2:1	1.2:1	1.2:1	1.2:1
Input Impedance	50 ohms	50 ohms	50 ohms	50 ohms
Structural:				
Boom Length:				
Low Frequency	47 ft.	31 ft.	46 ft.	32 ft.
High Frequency	24 ft.	21 ft.	31 ft.	22.5 ft.
Turning Radius:				
Low Frequency	40 ft.	24 ft.	30 ft.	32 ft.
High Frequency	20 ft.	16 ft.	20 ft.	22.4 ft.
Longest Element:				
Low Frequency	73 ft.	38 ft.	38 ft.	21 ft.
High Frequency	37 ft.	25.4 ft.	25.4 ft.	14.7 ft.
Number of Elements:	3	4	5	5
Net Weight:				
Low Frequency	590 lbs.	145 lbs.	480 lbs.	235 lbs.
High Frequency	400 lbs.	90 lbs.	160 lbs.	135 lbs.
Shipping Weight BCP:				
Low Frequency	645 lbs.	165 lbs.	480 lbs.	250 lbs.
High Frequency	480 lbs.	110 lbs.	170 lbs.	145 lbs.
Wind Survival Rating:				
No Ice (in MPH)	120	120	120	120
1/4" Radial Ice (in MPH)	80	80	80	80
Recommended Hy-Gain Rotator	R-3501	R-3501	R-3501	R-3501



MODEL CM-2010, 2011, 2012

DESCRIPTION & APPLICATION

The Hy-Gain Models CM-2010, CM-2011 and CM-2012 are omnidirectional HF, vertically polarized antennas designed to provide a broadband and high power radiation capability for fixed transmitting and receiving sites. These broadband HF monopole antennas are useful throughout the frequency ranges of 2-20, 2.5-25 and 3-30 Megahertz. The antennas have a low angle radiation pattern and provide both short and long range HF communications by ground wave and skywave, respectively. The radiation pattern in the azimuth plane is essentially omnidirectional, while the elevation pattern varies with frequency.

The antennas are formed by two vertical cones, attached together at the base and supported by a vertical tower running through the center of each antenna. The antennas are series fed at the bottom apex against a ground screen with an unbalanced 50 ohm transmission line. The VSWR is

nominally 2.5:1. To prevent radiation pattern deterioration at the higher frequencies, the upper cone is electrically decoupled so that only the lower cone can radiate. At these frequencies, the antenna assumes the characteristics of an inverted discone. In this manner, each model provides continuous coverage over its specified frequency range with no switching required.

Each model of the Hy-Gain broadband monopole has the same configuration but varies in size for different operating frequency bands. The two cones are formed by a wire cage fabricated of alumaweld wires. The upper cone consists of 6 wires while the lower cone uses 24 wires to improve the impedance characteristics. The structural triangular support tower rests on a steel base plate. The monopole is guyed at six places around the periphery of the antenna at the junction of the cones. The upper radiating elements also serve as guys for the upper portion of the structure. One hundred and twenty radials form the ground plane.

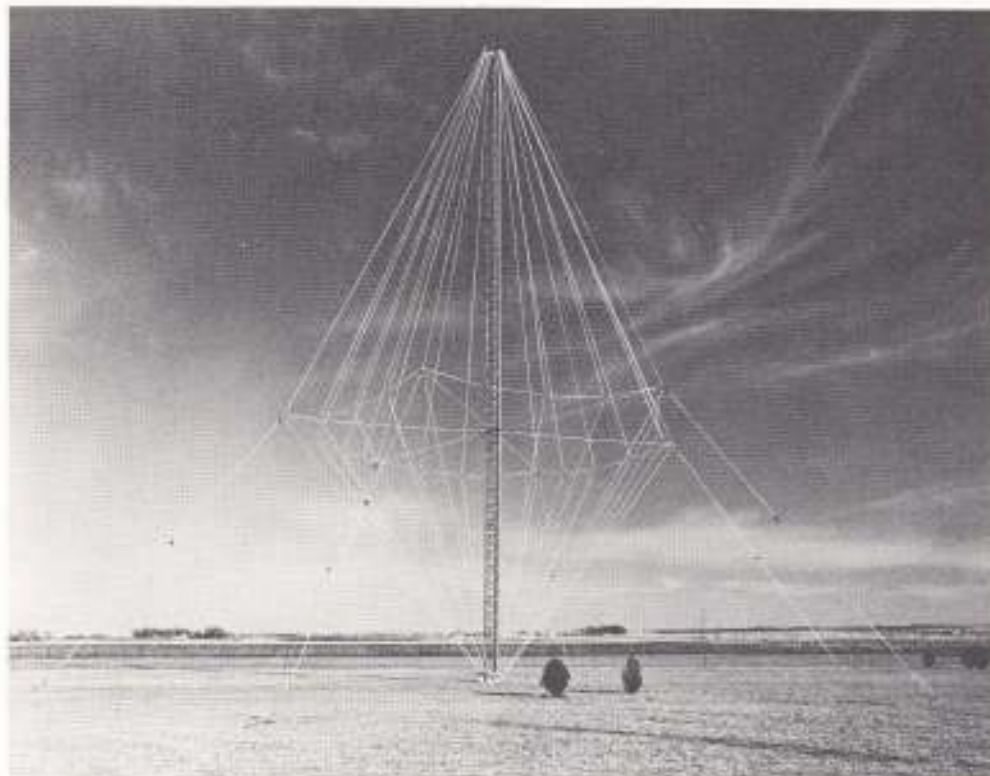
BROADBAND MONOPOLE ANTENNAS

- RECEIVE OR TRANSMIT UP TO 50 KW
- FOR SHORT, MEDIUM OR LONG RANGE CIRCUITS
- 4 DB GAIN
- 10 TO 1 BANDWIDTH
- EXTREME ENVIRONMENTAL CAPABILITY

MODEL CM-2010, 2011, 2012

SPECIFICATION SUMMARY

HY-GAIN MODEL NUMBER	CM-2010	CM-2011	CM-2012
Electrical:			
Frequency Range (in MHz)	2 thru 20	2.5 thru 25	3 thru 30
Power Capability	50 KW	50 KW	50 KW
Polarization	Vertical	Vertical	Vertical
Gain over Isotropic (in db)	4	4	4
Nominal VSWR (with respect to 50 ohms)	2.5:1	2.5:1	2.5:1
Azimuth Plane Radiation			
Pattern Circularity (in db)	± .75	± .75	± .75
Input Impedance (in ohms)	50 unbalanced	50 unbalanced	50 unbalanced
Structural:			
Antenna Height	110 ft.	90 ft.	70 ft.
Guy Radius	115 ft.	95 ft.	72.5 ft.
Ground Screen Radius	250 ft.	220 ft.	170 ft.
System Shipping Weight (in lbs.)	2175	1975	1625
Packaged Shipping			
Volume BCP Cu. Feet	270	256	240
Wind Survival Rating			
No Ice (in MPH)	140	140	140
1/2" Radial Ice (in MPH)	100	100	100



MODEL CM 2027, 2028, 2029, 2030, 2031, 2032

DESCRIPTION & APPLICATION

Hy-Gain's Conical Monopole antennas are complete antenna systems which exhibit excellent omnidirectional performance with a choice of bandwidths from 2-8, 2.5-10, 4-16, 4.5-18, 6-24 and 7-28 Megahertz. Utilized as high power transmitting/receiving antennas, they provide low angle radiation patterns ideally suited for medium to long range applications as well as short ground wave coverage. Azimuth radiation patterns are essentially omnidirectional within .75 db. These antenna systems are characterized by low VSWR throughout their respective band widths of less than 2.5:1, relative to 50 ohms unbalanced.

Offered in six different models, all models are essentially the same configuration, except for physical size. For each model, a shaped radiator curtain forms a cage about the aluminum vertical support tower. Since the upper portion of the radiator curtain is connected directly to the tower, the main upper elements also serve as guys for the upper portion of the structure, while the waist spoke cables serve as mid-structure guys; all of which terminate into the main guy suspension insulators at the waist periphery forming a six sided guyed system.

The vertical radiators are terminated into the feed hoop assembly at the base of the antenna and insulated above

ground by ceramic suspension insulators. RF feed is accomplished through connection between the feed hoop assembly. End seal mounting plates are provided for a wide selection of power requirements. Maximum utilization of electro-mechanical components provide an extremely reliable system, electrically and mechanically. The use of cranes are not required for erection of Hy-Gain conical Monopole Antenna Systems, since all systems are supplied with permanent tilt-over hinged base and falling gin pole.

The antennas operate over a ground screen of 120 soft drawn copper radials that are bonded to the center base plate and grounded at the perimeters by a series of copper clad ground rods. Installation of any of the six models requires approximately 45 man-hours excluding time required for pouring and curing of concrete foundations and anchor emplacements. These systems are supplied in kit form with towers fully disassembled and radiator curtain in preassembled sub-assemblies. All components are packaged for shipment via any standard cargo carrier.

Note: Use appropriate sub-model number when specifying or order a system (ie CM 2027-1)

-1 Equipped to Receive	50 ohm input	Type "N" Connector
-6 Transmit 20 KW/40 KW	50 ohm input	1 5/8" EIA Connector
-7 Transmit 40 KW/80 KW	50 ohm input	3 1/8" EIA Connector

HY-GAIN OMNIDIRECTIONAL BROADBAND CONICAL MONOPOLE ANTENNAS

CONICAL MONOPOLE ANTENNAS

- 4 TO 1 BANDWIDTH OVER 6 H.F. FREQUENCY RANGES
- RECEIVE OR HIGH POWER TRANSMIT
- 50 OR 75 OHM OPERATION AT 2.5 TO 1 VSWR MAXIMUM
- 4.5 DB GAIN
- EASILY ERECTED

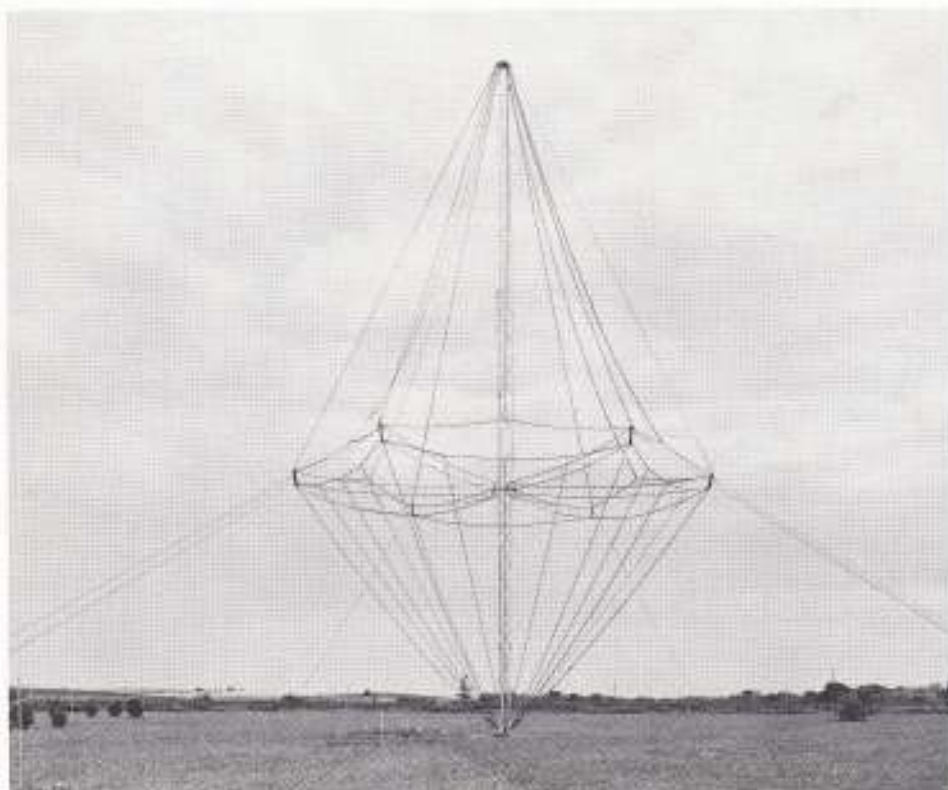
AVAILABLE IN RECEIVE, TRANSMIT 20 KW 40 KW AVERAGE POWER RATINGS

MODEL CM 2027, 2028, 2029, 2030, 2031, 2032

SPECIFICATION SUMMARY

HY-GAIN MODEL NUMBER	CM-2027	CM-2028	CM-2032	CM-2029	CM-2030	CM-2031
Federal Nomenclature	AS-2204/FRC					AS-2205/FRC
Electrical:						
Frequency Range	2-8 MHz	2.5-10 MHz	4-16 MHz	4.5-18 MHz	6-24 MHz	7-28 MHz
Power Handling						
Capability (Refer to Note on Opposite Page)						
Gain over Isotropic Source (minimum) (in db)	4.5	4.5	4.5	4.5	4.5	4.5
Maximum VSWR	2.5:1	2.5:1	2.5:1	2.5:1	2.5:1	2.5:1
Azimuth Plane Radiation						
Pattern Circular within:	±.75 db	±.75 db	±.75 db	±.75 db	±.75 db	±.75 db
Input Impedance* (in ohms)	50	50	50	50	50	50
Structural:						
Antenna Height	84 ft.	65 ft.	42 ft.	37 ft.	28 ft.	24 ft.
Guy Radius	56.5 ft.	45.2 ft.	28.2 ft.	25 ft.	18 ft.	16 ft.
Ground Screen Radius	123 ft.	98 ft.	62 ft.	52 ft.	41 ft.	35 ft.
System shipping Weight (in lbs.)	1700	1595	1230	410	988	850
Packaged Shipping Volume BCP Cu. Feet	62	55	50	48	44	42
Wind Survival Rating						
No Ice (in MPH)	125	125	125	125	125	125
1/2" Radial Ice (MPH)	90	90	90	90	90	90

*Also available in 75 ohms unbalanced input impedance



MODEL CM-200

DESCRIPTION & APPLICATION

The Hy-Gain Model CM-200 is a transportable conical monopole antenna system designed to provide a broad bandwidth and high power radiation capability for tactical and emergency communication sites. This broadband HF monopole antenna provides an omnidirectional radiation pattern and covers the frequency range of 3 to 30 Megahertz. The antenna has a low angle radiation pattern and provides both short and long range HF communications by ground wave and skywave, respectively. The radiation pattern in the azimuth plane is essentially omnidirectional, while the elevation pattern varies with frequency. The VSWR does not exceed 2:1 throughout the bandwidth.

The single support tower is a 7-section nested aluminum structure, constructed in a triangular truss configuration. It stores in three sections, two nested and one center section. A falling gin pole is used to erect the support tower on a hinged base plate.

The ground screen consists of 30 wires, fabricated of No. 10 gauge copperweld wires, each 80 feet long. The conductors are laid out radially from the tower base with the help of a transit device and terminated at the outer end with copperweld ground rods. The total diameter of the ground plane is 160 feet.

The CM-200 is completely prefabricated for installation by four men in two hours, excluding anchor layout. Reusable aluminum transit cases with closing fasteners and carrying handles are included in the system for stowing all items that cannot be stowed inside the tower sections.

- 1 Equipped to receive 50 ohm input type N connector
- 4 Transmit 10KW/20KW 50 ohm input 7/8" EIA connector
- 6 Transmit 20KW/40KW 50 ohm input 1-5/8" EIA connector

TRANSPORTABLE MONOPOLE ANTENNA SYSTEMS

- RECEIVE OR HIGH POWER TRANSMIT
- FOR TACTICAL & EMERGENCY COMMUNICATION SITES
- 4db GAIN
- 2:1 VSWR MAXIMUM
- OMNI DIRECTIONAL
- EASILY ERECTED BY 4 MEN, 2 HOURS

MODEL CM-2020

SPECIFICATION SUMMARY

Electrical:

Frequency
 Polarization
 Directive Gain
 Radiation Pattern
 VSWR
 Input Impedance
 Power Handling Capability
 (refer to note on opposite page)

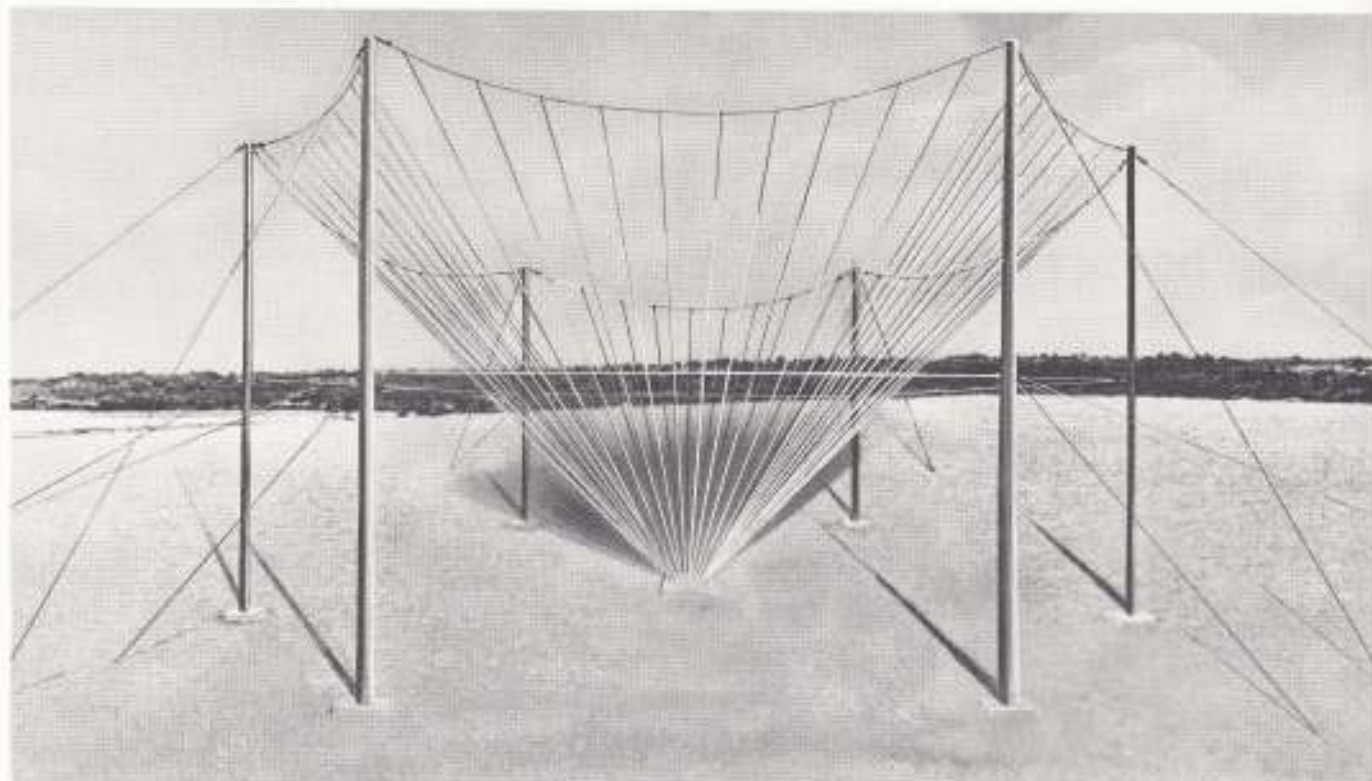
3-30 MHz
 Vertical
 4db min.
 Omnidirectional in Azimuth
 2.0:1 max.
 50 ohms unbalanced

Mechanical:

Total Height
 Maximum Diameter
 Ground Screen Diameter
 Guy Circle Diameter
 Wind Loading
 Net Weight
 Storage Volume
 Erection Time

70 ft.
 46 ft.
 160 ft.
 140 ft.
 75 MPH, No Ice
 400 lbs.
 35 cu. ft.
 4 men, 2 hours
 (Not including anchor layout)

HY-GAIN OMNIDIRECTIONAL BROADBAND INVERTED DISCONE ANTENNAS



MODEL V 4201, 4202, 4203

DESCRIPTION & APPLICATION

The Hy-Gain Models, V-4201, V-4202 and V-4203 are vertically polarized inverted cone antenna systems that exhibit excellent omnidirectional HF band performance in frequency ranges of 2 thru 32, 2.5 thru 32, and 3 thru 32 MHz. They have been designed for high power transmission, ideally suited for such applications as ground to air, shore to ship, station to mobile or other HF broadcast applications. Low angle radiation patterns produced by these antenna systems also provide highly desirable characteristics for ground wave circuits. VSWR characteristics for all systems are less than 2.0:1 throughout their respective bandwidths, nominally averaging less than 1.5:1 relative to 50 ohms unbalanced input impedance.

Each model is supplied complete, ready for installation. Vertical radiators of all models are composed of high strength, environment resistant aluminum coated steel wire. The radiators terminate in a feeding assembly at the center

base of the antenna. The upper end of the vertical radiators is terminated into a cable catenary, which is supported by six standard utility poles that are in turn securely guyed. These systems operate over a ground screen of copper radials that are grounded at the perimeter by a series of copper clad ground rods. Installation of any of the three models require approximately 90 man-hours, excluding time required for excavation, pouring and curing of a concrete foundation and guy anchor emplacements. These systems are available with or without utility poles since utility poles are generally available at the installation local. All components of each system (exclusive of utility pole supports) are packaged for shipment via any standard cargo carrier.

Note: Use appropriate sub-model number when specifying or ordering a system (ie V-4201-1)

-1 Equipped to Receive	50 ohm input	Type "N" Connector
-6 Transmit 20KW/40KW	50 ohm input	1-5/8" EIA Connector
-7 Transmit 40KW/80KW	50 ohm input	3-1/8" EIA Connector

BROADBAND INVERTED DISCONE ANTENNA SYSTEMS

- RECEIVE OR HIGH POWER TRANSMIT
- LOW ANGLE RADIATION CHARACTERISTICS
- OMNIDIRECTIONAL 4 DB GAIN
- MAXIMUM VSWR 2.0 TO 1

AVAILABLE IN RECEIVE, TRANSMIT 20 KW 40 KW AVERAGE POWER RATINGS
WITH INPUT IMPEDANCE OF 50 OHMS

MODEL V 4201, 4202, 4203

SPECIFICATION SUMMARY

HY-GAIN MODEL NUMBER	V-4201	V-4202	V-4203
Electrical:			
Frequency Range (in MHz)	2 thru 30	2.5 thru 32	3 thru 32
Power Handling Capabilities (Refer to note on opposite page.)			
Polarization	Vertical	Vertical	Vertical
Gain over Isotropic Source	Greater than 4 db 2:1 Maximum	Greater than 4 db 2:1 Maximum	Greater than 4 db 2:1 Maximum
VSWR			
Azimuth Plane Radiation Pattern Circular Within:	± 0.75 db	± 0.75 db	± 0.75 db
Input Impedance (in ohms)	50	50	50
Input Connector (Refer to note on opposite page.)			
Structural:			
Antenna Height	75 ft.	60 ft.	52 ft.
Antenna Radius	75.6 ft.	60.5 ft.	52.5 ft.
Ground Screen Radius	123 ft.	98.5 ft.	82.0 ft.
Net Weight of System w/o Utility Poles (in lbs.)	2685	2340	2100
Shipping Weight of System w/o Utility Poles (in lbs.)	2860	2468	2225
Shipping Weight of System With Utility Poles (in lbs.)	7241	6010	5057
Shipping Volume Packaged BCP (exclusive of utility poles)	131 cu. ft.	129 cu. ft.	125 cu. ft.
Maximum Wind Velocity for Survival No Ice (in MPH)	130	130	130
1/4" Radial Ice	110	110	110

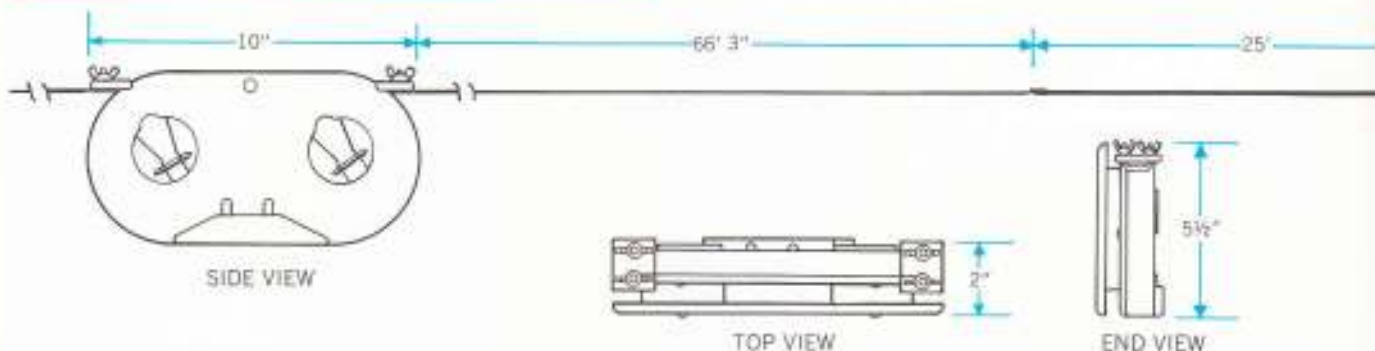
HY-GAIN PORTABLE REEL TAPE DOUBLET

DESCRIPTION & APPLICATION

The Hy-Gain Model H-4000 is a highly portable doublet antenna system that exhibits outstanding performance for both transmit and receive applications on any discrete frequency throughout the 3.5 through 30 MHz frequency range. It is ideally suited for establishing reliable HF communications for military maneuvers, temporary or semi-permanent field operations where permanent antenna installations are impractical. The Model H-4000 employs two stainless steel tape elements which reel out of a cyclocac housing to form a full one-half wavelength dipole antenna installation at any desired frequency within the 3.5 through 30 MHz spectrum. The tape elements are calibrated in meters to provide ready reference in establishing the length to which each should be extended for desired frequencies. A "frequency-to-length" conversion chart, correlated with the meter calibrations on the tape elements, is an integral part of the antenna housing. By referring to the "frequency-to-length" conversion chart, the installer immediately knows the prescribed distance the tape elements should be extended for a desired frequency. 25 foot lengths of high strength polypropylene rope attached to the end of each tape provide a means of securing the extended elements to posts, trees or buildings. The antenna is center fed with 52 ohm coaxial cable. The stainless steel tape elements rewind into the compact antenna housing on plated steel drums that are driven by fold away hand cranks for ease of portability.



MODEL H-4000
PORTABLE REEL TAPE
DOUBLET ANTENNA
FOR 3.5 through 30 MHz



SPECIFICATION SUMMARY

Electrical:

Frequency	Any discrete frequency from 3.5 to 30 MHz
Power Handling Capability	1 KW CW 2 KW P.E.P.
Polarization	Horizontal
VSWR	Less than 2:1 relative to 50 ohms with standard height variation
Input Impedance	52 ohms unbalanced
Input Connector	Type "N"

Structural:

Element Length fully extended	132 ft.
Elements	Stainless steel .5" wide x .006 thick
Housing	Injection molded high impact cyclocac
Hardware	Chromium plated steel
Dimensions (retracted)	10" x 5 1/2" x 2"
Mounting rope	Braided polypropylene—2 .25' lengths
Shipping Weight	5 1/2 lbs. (net wt. 3 1/2 lbs.)
Shipping Volume	.21 cu. ft.

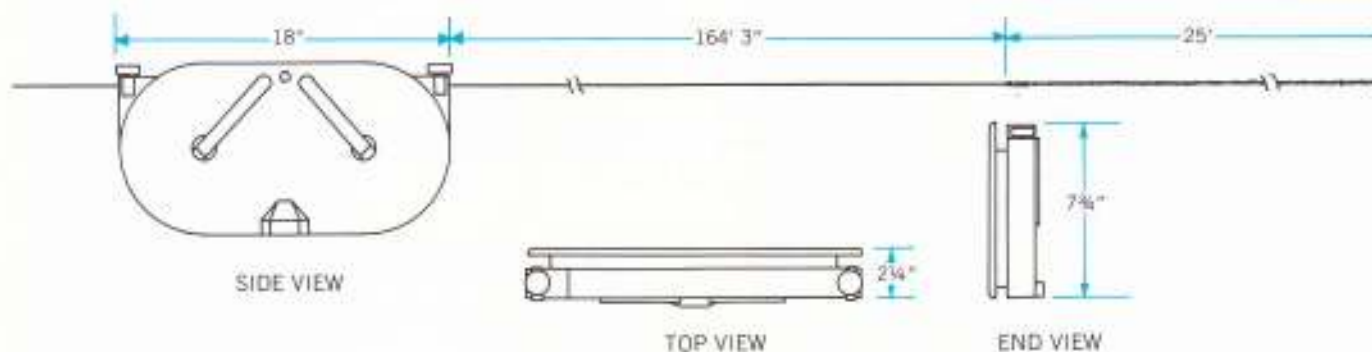
HY-GAIN PORTABLE REEL TAPE DOUBLET

DESCRIPTION & APPLICATION

The Hy-Gain Model H-4001 is a highly portable doublet antenna system that exhibits outstanding performance on both transmit and receive on any discrete frequency throughout the 1.5 through 30 MHz frequency range. It is ideally suited for establishing reliable HF communications for military maneuvers or temporary or semi-permanent field operations where permanent antenna installations are impractical. The Model H-4001 employs two stainless steel tape elements which reel out of a cyclolac housing to form a full one-half wavelength antenna installation at any desired frequency within the 1.5 through 30 MHz spectrum. The tape elements are calibrated in meters to provide ready reference in establishing the distance each should be extended for desired frequencies. A "frequency-to-length" conversion chart, correlated with the meter calibrations on the tape elements, is an integral part of the antenna housing. By referring to the "frequency-to-length" conversion chart, the installer immediately knows the prescribed distance the tape elements should be extended for a desired frequency. 25 foot length of high strength polypropylene rope attached to the end of each tape provide a means of securing the extended elements to posts, trees or buildings. The antenna is center fed with 52 ohm coaxial cable. For ready portability, the stainless steel tape elements rewind into the compact antenna housing using attached hand cranks.



MODEL H-4001
PORTABLE REEL TAPE
DOUBLET ANTENNA
FOR 1.5 through 30 MHz



SPECIFICATION SUMMARY

Electrical:

Frequency Spectrum	Any Discrete frequency from 1.5 to 30 MHz
Power Handling Capability	1 KW CW 2 KW P.E.P.
Polarization	Horizontal
VSWR	Less than 2:1 relative to 50 ohms with standard height variations
Input Impedance	52 ohms unbalanced
Input Connector	Type "N"

Structural:

Element length, fully extended	330 ft.
Elements	Stainless steel, .5" wide x .014 thick
Housing	Injection molded high impact cyclolac
Hardware	Chromium plated steel
Mounting Rope	Braided polypropylene—2 25-ft. lengths
Dimensions (retracted)	18" x 7 3/4" x 2 1/4"
Shipping Weight (in lbs.)	29 lbs. (net wt. 14 lbs.)
Shipping Volume (in cu. ft.)	1.14 cu. ft.

HY-GAIN MULTIBAND DOUBLET ANTENNAS



MODEL S-1903

DESCRIPTION & APPLICATION

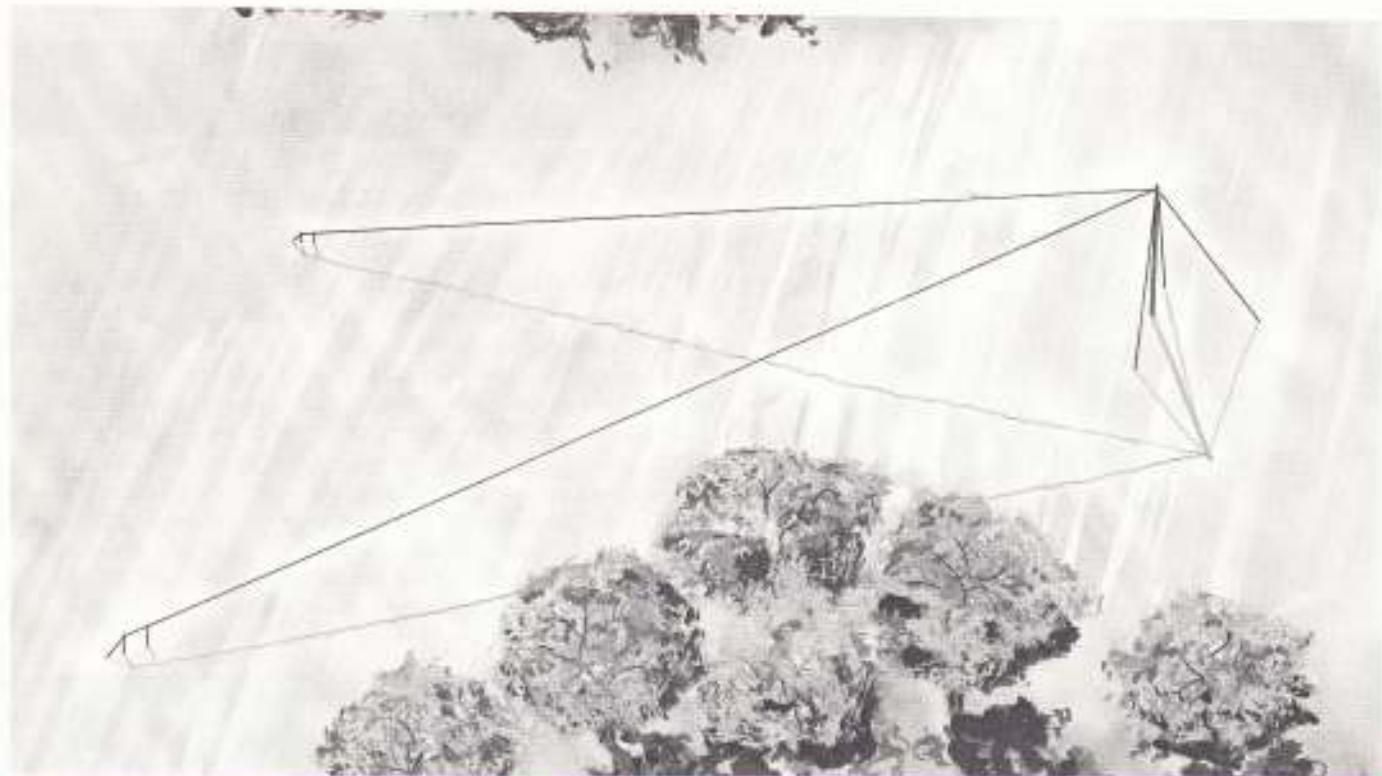
The Model S-1903 is an ultra-lightweight portable doublet antenna that operates anywhere in the 3 to 30 MHz frequency range. The elements are fabricated from braided nylon rope which has conductors woven directly into it. This provides a highly flexible and very lightweight element. The elements are calibrated in 0.5 MHz increments for simple adjustment in the field. The doublet comes complete with 30 feet of RG-58 A/U coaxial cable. A flat storage spool for each element is an integral part of the antenna. During operation, the unused portion of each element is shorted out and remains on the storage spool. The input connector and connections to the elements are molded in a Cylolac center insulator. The antenna is supported at each end by 25 ft. lengths of braided polypropylene rope which can be tied to trees, buildings, poles, etc. to elevate the antenna above the ground. A weight is attached to each end of the support rope for throwing the rope up into the overhead support.

SPECIFICATIONS

Electrical:

Frequency Range (in MHz)	Any discrete frequency from 3 to 30 MHz
Power Handling Capability	1 KW average 2 KW P.E.P.
Polarization	Horizontal
VSWR	2:1 maximum relative to 50 ohms

Input Impedance	52 ohms unbalanced
Input Connector	SO-239 at center of doublet PL-259 at input of coaxial cable
Coaxial Cable	RG-58A/U-30 ft. length
Mechanical:	
Element Length, fully extended	154 ft.
Element Material	Braided nylon wire rope
Spool Material	Polypropylene
Connector Housing	Injection molded high impact Cylolac — 1-3/8" wide x 1-1/4" thick x 3" long
Hardware	Chromium plated steel
Mounting Rope	Braided polypropylene in two 25 ft. lengths
Dimensions (during transit)	2" wide x 2-1/2" thick x 12" long
Shipping Weight	4 lbs. (net wt. 2 lbs.)
Shipping Volume	.25 cu. ft. (6" x 6" x 1')



MODEL S-2951, S-2952

DESCRIPTION & APPLICATION

The Hy-Gain Models S-2951 and S-2952 are lightweight, transportable, quickly erectable sloping V antennas designed for the requirements of tactical HF communications. Reliable performance is provided over medium and long range communication paths. Features are: broad bandwidth, simple and rapid erection, minimum weight and stowed volume, and reliability. Can be completely erected and made operational by 2 men within 2 hours.

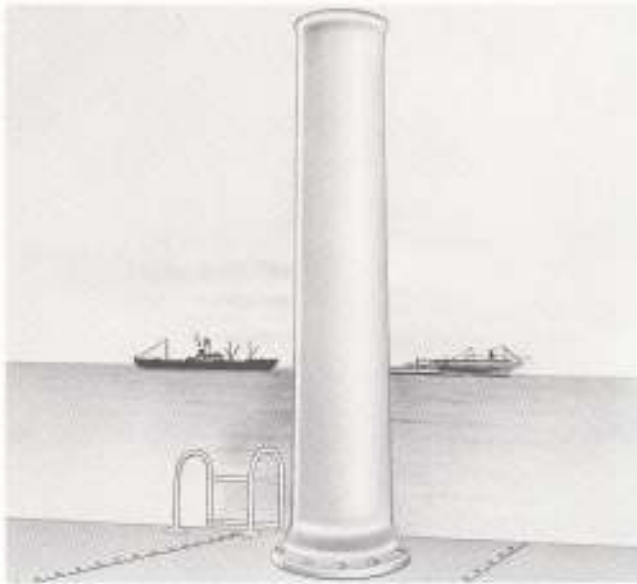
The center fed, balanced antennas cover the 2-30 MHz frequency range and have maximum gain along a line bisecting the V angle. They are horizontally polarized; hence the take-off angle varies with frequency. Over average ground conditions, the take-off angle is approximately 32° at 3 MHz, reducing to about 12° at 30 MHz. The Model S-2951 has a power handling capability of 10 KW average and P.E.P., the Model S-2952 will safely handle 1 KW average and P.E.P. Both are fed with a ferrite balun located at the ground level at the apex of the V.

The single support tower is a nesting aluminum structure 44 feet high, guyed at one level, and erected with a furnished gin pole. The radiating arms of the V are 3/16 inch diameter phosphor bronze cables 500 feet long, and are terminated into a 300 ohm resistive load to provide unidirectional pattern.

All guys, guy anchors and necessary hardware, as well as site layout equipment are supplied with each antenna.

SPECIFICATION SUMMARY

Electrical:	
Frequency	2-30 MHz
Polarization	Horizontal
Radiation Pattern	Unidirectional
Input Impedance	50 ohms, unbalanced
VSWR	2.5:1 maximum 2.0:1 nominally
Power Handling Capability	
Model S-2951	10 KW average and P.E.P.
Model S-2952	1 KW average and P.E.P.
Input Connector (on Balun)	
Model S-2951	LC
Model S-2952	Type "N"
Mechanical:	
Erected Size	
Height	44 ft.
Length	555 ft. (including rear guy)
Width	275 ft.
Tower Construction	Triangular aluminum truss, 5 nesting sections, each section extends 9 ft.
Elements	500 ft. (3/16 in. diameter phosphor bronze)
Net Weight	
Model S-2951	425 lbs.
Model S-2952	350 lbs.
Stowed Volume	
Model S-2951	35 cu. ft.
Model S-2952	25 cu. ft.
Permissible Wind Loading	80 MPH, no ice 50 MPH, 1/4 inch radial ice
Erection Time	2 men, 2 hours



MODEL V-4215

AS-1018/URC FSN 5985 613 5647

HY-GAIN OMNIDIRECTIONAL MARINE ANTENNA

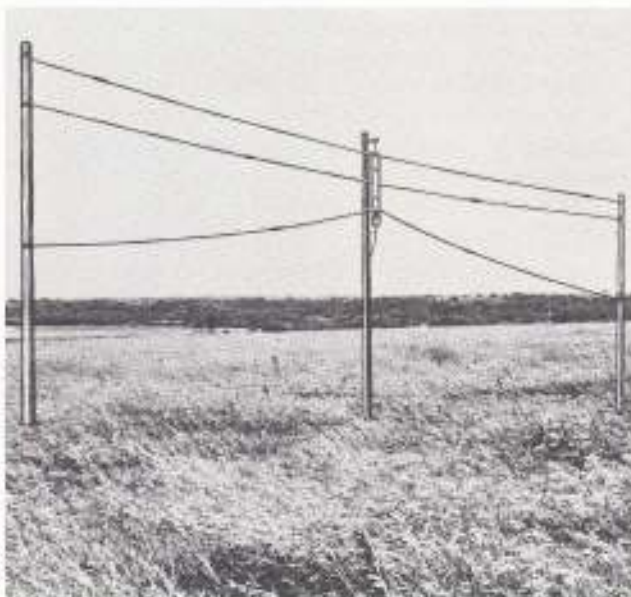
The V-4215 is a vertically polarized collinear UHF antenna that exhibits excellent performance for surface to air communications in the 225 thru 400 megacycle frequency range. Unique configuration eliminates overhead cone of silence. Omnidirectional gain averages 4.5 db over an isotropic. Power rating is 1 KW average with VSWR less than 2:1. Rigid, compact, pressurized weatherproof construction for installation in unsheltered areas... aboard ship, on existing land towers, or for land-based mobile applications. Input impedance is 50 ohms—overall dimensions, 13-1/4" in diameter; 72-3/8" high. Shipping Wt. — 118 lbs., shipping volume — 11.6 cu. ft.



MODEL BN-1242

BROAD BAND BALUN 3 thru 30 MHz

Model BN-1242 significantly improves the transfer of energy to an antenna, eliminating stray RF from the feedline and supporting structure. This balun transforms a 52 ohm unbalanced system into a 52 ohm balanced system. Low insertion loss allows continuous operation at a power level of 1 KW average. Encased in high impact black cycloac plastic case, it is provided with the required hardware for mounting on a beam or for use as a center insulator in a doublet antenna. Input connector is SO-239.



S - SERIES

HY-GAIN MULTIBAND DOUBLET ANTENNAS

Available in 2, 3, 4 or 5 frequency configurations, the Hy-Gain S-Series Multiband Doublets consist of either fan or fan and trapped versions depending on frequency relationships between bands. These antennas exhibit outstanding performance on any combination of discrete frequencies throughout the 3 thru 30 MHz range. Operation is single feedline. No switching required. VSWR characteristics for these designs are less than 2:1 at each resonance relative to 50 ohms unbalanced. All models are supplied with a BN-86 balun and have a power capability of 1KW average and 2KW P.E.P. All models of the S-Series are available on special order and built to frequency specifications.

HY-GAIN MULTI-CHANNEL HF ANTENNAS



MODEL V-4210



MODEL V-4220



MODEL V-4221

The V-4210 is a multi-band omnidirectional antenna system for use in receiving WWV transmissions. It employs a unique stub decoupling system to provide automatic band selection on 5, 10, 15, 20 and 30 megacycles. VSWR less than 2:1 on all frequencies. Rugged hot-dipped galvanized tower, heavy gauge aluminum elements, all hardware iridite treated to MIL specs. Self supporting, wind survival, 125 MPH.

The V-4220 is a vertically polarized base station antenna built for transmission or reception on 10 discrete frequencies within the 2 through 30 MHz band. The antenna presents a 50 ohm match to the transceiver. Thus, external matching devices or tuners are not required for use with 50 ohm transceivers. The VSWR at each frequency is less than 2:1 relative to 50 ohms. The V-4220 system is designed to withstand severe environmental conditions, such as those found in arctic and tropical locations. Provided with a tiftover base for ease of erection, this antenna may be permanently installed on a concrete base or temporarily installed on stakes driven into the ground.

The V-4221 is a vertically polarized mobile antenna designed for transmission or reception on 10 discrete frequencies within the frequency range of 2 through 16 Megahertz. VSWR at each channel is less than 2:1 relative to 50 ohms unbalanced with an input power capability of 250 watts average and 500 watts P.E.P. Universal mounting provisions have been provided in order that this unit may be easily installed on any vehicle or used for shipboard applications. This unit is designed for use with standard HF SSB transceivers or similar applications.



MODEL A-3705

DESCRIPTION & APPLICATION

The A-3705 is a coaxial rotary joint that provides connection between a stationary and rotary feedline permitting continuous rotation of antenna systems. The A-3705 has a power capability of 25 KW Average and 50 KW P.E.P. with an insertion loss averaging less than .1db. VSWR for this rotary joint is 1.05:1 maximum. Built to EIA specifications, all conducting surfaces are composed of silver plated brass and beryllium copper. All RF electrical insulators in the rotary joint are machined and molded teflon for maximum resistance to high voltage. Free rotation with minimum friction and maximum conductivity is assured through the use of graphite grease filled stainless steel bearings. Pressure integrity is assured through the employment of neoprene seals used in the rotary joint body. High conductivity combined with minimum friction are assured in the mating center conductor parts by using precision machined special alloy parts. All component parts within the construction of the A-3705 are manufactured to exacting tolerances in order to provide maximum reliability and service. The A-3705 is flanged to standard 1 5/8 inch EIA specifications and exhibits an impedance of 50 ohms.



MODEL A-3706

DESCRIPTION & APPLICATION

The A-3706 is a high power coaxial rotary joint facilitating rotation of a high power antenna when connected to a stationary feedline. The power handling capability of the A-3706 is 50 KW Average and 100 KW P.E.P. with an insertion loss of less than .1db and a maximum VSWR of 1.04:1. Built to EIA standards, exacting tolerances and precision workmanship assure long life reliable operation. All electrical insulators are machined and molded teflon. Silver plated brass and beryllium copper comprise the mating conducting components. Free rotation with minimum friction and maximum conductivity are assured through employment of graphite grease filled stainless steel bearings. Pressure integrity is obtained through the use of neoprene seals in the rotary joint body. Precision machined special alloy materials are used wherever mating parts are essential to conductivity. Manufactured to exacting standards of workmanship, the A-3706 is an established leader in reliability and service. The A-3706 is flanged to standard 3 1/8 inch EIA specifications and exhibits an impedance of 50 ohms.

HY-GAIN COAXIAL TRANSMISSION LINE AND ACCESSORIES



MODEL 3800

DESCRIPTION & APPLICATION

Hy-Gain 3800 Series, 1-5/8" EIA 50 ohm transmission line is built to exacting electro-mechanical tolerances using high conducting, corrosion resistant materials. Excellent electro-mechanical uniformity is achieved through Hy-Gain's special non-weld process of securing flanges to the ends of the transmission line tube. Center conductor assemblies are built of high conductivity brass tubes with fixed Teflon Delta spacers, spaced every 30 inches.

Hy-Gain 3800 Series, 50 ohm transmission line is available in standard 20 ft. lengths complete with center conductor, hardware and O-ring gasket. Power rating and attenuation characteristics of 3800 Series transmission line versus frequency is shown on page 50.

Other transmission line lengths are also available upon special order at an additional cutting charge. Special lengths should be ordered by specifying length in inches.

1-5/8" — 50 ohm characteristics

Outer Conductor (Aluminum)	1.625 O.D. x 1.527 I.D.
Inner Conductor (High Conductivity Brass)	.664 O.D. x .588 I.D.
Velocity percent	99.7
Insulator Supports	Teflon Deltas, 30" spacing
Weight/20 ft. lgth.	13 lbs.
Flange configuration	Standard EIA
Ave. Power Rating	See Page 50
Attenuation	See Page 50
60 Cycle RMS Voltage Rating	8 KV



MODEL 3850

DESCRIPTION & APPLICATION

Hy-Gain 3850 Series, 3-1/8" EIA 50 ohm transmission line is designed for use for medium to high power applications. Built to precise, electro-mechanical tolerances, the 3850 Series transmission line provides maximum transmission efficiency with maximum resistance to corrosion through the use of aluminum outer conductors and flanges. Center conductors consist of precision high conductivity brass tubing with fixed Teflon Delta spacers spaced 60 inches apart.

Hy-Gain 3850 Series transmission line is available in standard 20' lengths with center conductor. O-ring gasket and hardware included. Power rating and attenuation characteristics versus frequency are shown on page 50.

Other transmission line lengths are also available on special order at an additional cutting charge. Special lengths should be ordered by specifying length in inches.

3-1/8" — 50 ohm characteristics

Outer Conductor (Aluminum)	3.125 O.D. x 3.027 I.D.
Inner Conductor (High Conductivity Brass)	1.315 O.D. x 1.231 I.D.
Velocity percent	99.7
Insulator Supports	Teflon Deltas, 60" spacing
Weight/20 ft. lgth.	28 lbs.
Flange Configuration	Standard EIA
Ave. Power Rating	See Page 50
Attenuation	See Page 50
60 Cycle RMS Voltage Rating	15 KV

1- 5/8 " RIGID COAXIAL TRANSMISSION COMPONENTS



90° Miter Elbow, aluminum outer, brass inner conductor construction. Flanged type only, includes one inner connector.
50 ohm Model A-4301



45° Miter Elbow, aluminum outer, brass inner conductor construction. Flanged type only, includes one inner connector.
50 ohm Model A-4302



Adaptor (male to male), for joining 1-5/8" components with captivated inner connectors. Length 6".
50 ohm Model A-4305



Reducer, 1-5/8" EIA to 7/8" EIA. Includes two inner connectors.
50 ohm Model A-4306



180° Coaxial Union aluminum outer, brass inner conductor construction. Flanged type only includes one inner conductor.
50 ohm Model A-4303



End Terminal for strap connection. Gas tight with vent plug. Includes one inner connector.
50 ohm Model A-4307



Inner Connector with Teflon anchor bead.
50 ohm Model A-4304

All flanged items are EIA standard and include inner connector, "O" ring, silicone grease and hardware kit.

Hardware Kit consists of four hex head bolts, nuts and lockwashers for one connection,
Model A-4308

"O" Ring Gasket for 1-5/8" EIA Flange.
Model A-4309

3 - 1/8 " RIGID COAXIAL TRANSMISSION COMPONENTS



90° Miter Elbow, aluminum outer, brass inner conductor construction. Flanged type only, includes one inner connector.
50 ohm Model A-4310



45° Miter Elbow, aluminum outer, brass inner conductor construction. Flanged type only, includes one inner connector.
50 ohm Model A-4312



Adaptor (male to male) joins two components having captivated inner connectors. Length 6".
50 ohm Model A-4315



Reducer, 3-1/8" EIA to 1-5/8" EIA. Has captivated 3-1/8" inner connector.
50 ohm Model A-4316



180° Coaxial Union aluminum, brass inner conductor construction flanged type only which includes one inner conductor.
50 ohm Model A-4317



End Terminal for strap connector. Gas tight with vent plug. Includes one inner connector.
50 ohm Model A-4313



Inner Connector with Teflon anchor bead.
50 ohm Model A-4314

All flanged items are EIA standard and include inner connector, "O" ring, silicone grease and hardware kit.

Hardware Kit consists of six hex head bolts, nuts and lockwashers for one connection,
Model A-4319

"O" ring gasket for 3-1/8" EIA flange.
Model A-4319

POWER RATING OF RIGID ALUMINUM TRANSMISSION LINES

Power ratings based on:

VSWR 1.0:1

Ambient Temperature 40°C (104°F)

Inner conductor temperature 102°C (216°F)

One atmosphere absolute dry air pressure (0 psig)

Conversion Data:

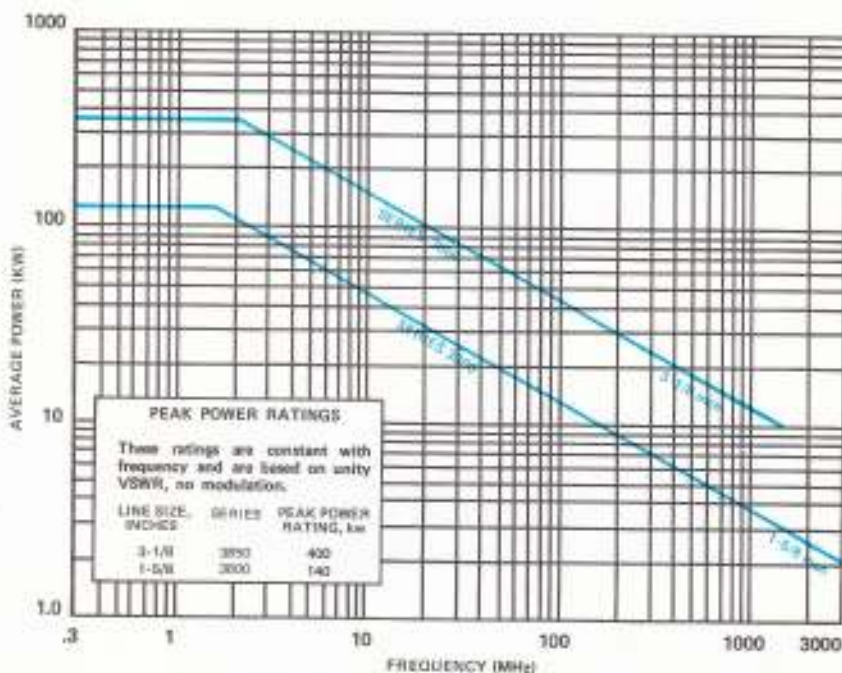
For ambient temperature 35°C (95°F), multiply values by 1.08

For 5 psig dry air pressure, multiply values by 1.07

For 15 psig dry air pressure, multiply values by 1.2

Note:

Power must be derated for VSWR.



ATTENUATION OF RIGID ALUMINUM TRANSMISSION LINES

Attenuation curves based on:

VSWR 1.0:1

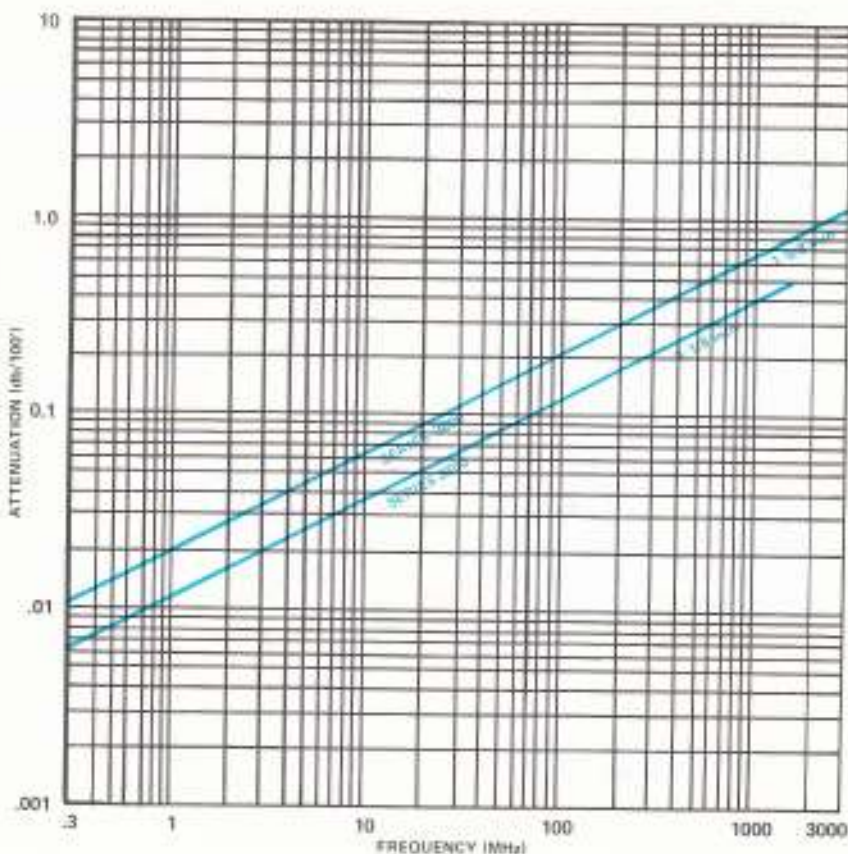
Ambient Temperature 24°C (75°F)

One atmosphere absolute dry air pressure (0 psig)

Conversion Data:

1 dB/100 feet = 3.28 dB/100 meters

For ambient temperature 20°C (68°F), multiply values by .99



HY-GAIN ANTENNA ROTOR ASSEMBLIES



MODEL R-3500

DUAL AXIS ROTOR SYSTEM
(AN/AB-991-B&C-7120/G)
(AZ and EL Antenna Positioner)

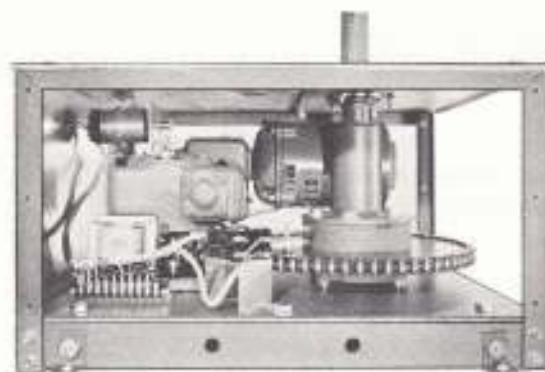
DESCRIPTION & APPLICATION

Model R-3500 is designed for tactical/portable or permanent installation. This antenna positioning system provides 0° – 360° Azimuth coverage combined with $+90^{\circ}$ elevation angle orientation. Sealed in a weather proof case, the R-3500 is built to withstand severe environmental conditions. The Rotator/pedestal is designed to mount on any vertical mast ranging in diameter from 2– $3/4$ " to 3– $1/2$ ". The R-3500 system comes complete with dual axis rotator, feed through panel, two lengths of coaxial cable totaling 75', two lengths of control cable totaling 75' and the remote control unit.

The R-3501 Universal Rotator system is designed for medium duty antenna rotation applications where economy, versatility and reliability are emphasized. Designed for universal applications, the R-3501 will mount on any tower of sufficient face width with the minimum of adaptation required, or may be mounted on the side or on top of towers, poles or other support structures.

The rotator may be used as a $\pm 180^{\circ}$ rotation system or rotated continuously with the use of the Hy-Gain Model A-3705 Rotary Joint Kit.

The output shaft adaptor casting will accept any mast shaft



MODEL R-3501

UNIVERSAL ROTATOR SYSTEM
(FSN 5820 ND 00 8931H)

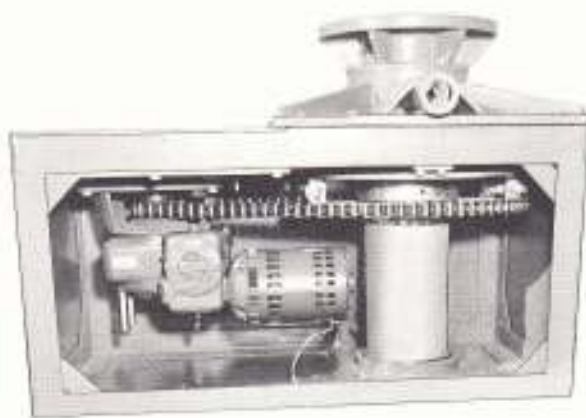
diameter from 1 $1/4$ " to 2 $1/2$ " and the drive shaft will accept up to 1 $5/8$ " diameter transmission lines concentrically within the drive shaft. The R-3501 is supplied complete with rotator, adaptor angles and azimuth indicator/control unit.

SPECIFICATION SUMMARY

HY-GAIN MODEL NO.	R-3500	R-3501
Rotating Torque	550 in lbs.	9000 in lbs.
Braking Torque	1300 in lbs.	23,000 in lbs.
Maximum Vertical Load	75 lbs.	1000 lbs.
Rotation Speed	Azimuth 1.5 RPM Elev. 1.5 RPM	1 RPM
Control Accuracy	$\pm 2^{\circ}$	$\pm 5^{\circ}$
Drive Type	Gear	Gear & Chain
Motor Horse Power	1/15 H.P.	1/4 H.P.
Power Requirements	115 V.A.C.	115/230 V.A.C.
Total Reduction	1170:1	7200:1
Operating Temperature	-55° to $+65^{\circ}$ C	-40° to $+71^{\circ}$ C
Forward/reverse Delay	2 seconds	5 seconds
Shipping Weight	140 lbs.	330 lbs.
Shipping Volume BCP	8.2 cu. ft.	7.9 cu. ft.
Dimensions	6"wx18"l x 20" h	19"wx24"l x 14.5" h

CONTROL CABLE KITS ARE AVAILABLE
AS OPTIONAL ACCESSORIES

HY-GAIN ANTENNA ROTOR ASSEMBLIES



MODEL R-3502 HEAVY DUTY ROTATOR SYSTEM

DESCRIPTION & APPLICATION

The R-3502 universal heavy duty rotator system is designed to rotate antennas requiring a high starting/braking torque, however, representing medium vertical loads. The R-3502 is readily adaptable to any tower of sufficient face width with the minimum of structural adaptation. The main output shaft will concentrically accommodate coaxial transmission lines up to 1-5/8" in diameter. Optional rotary joint and feedline kits mating with the rotator unit are available as accessories. This system is supplied complete with rotator pedestal, adaptor angles and azimuth indicator/control unit.

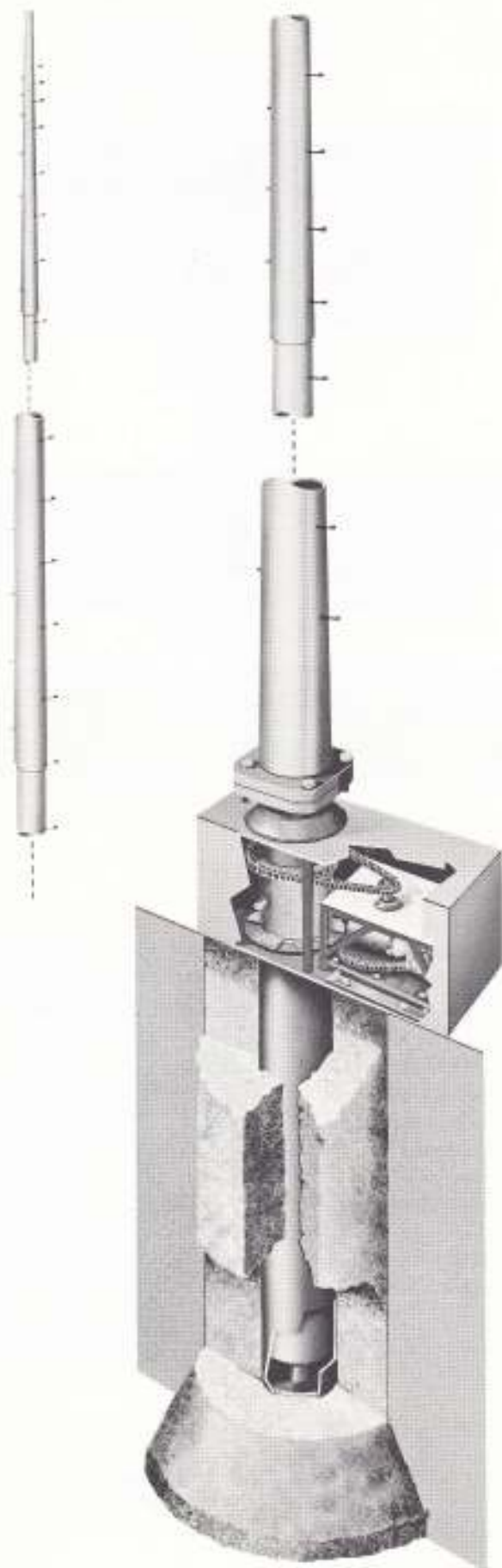
The R-3503 Rotator System is designed for heavy duty applications where medium to high rotating/braking torques and high vertical loads are imposed. Provided with two point trunnion mounting fixture, this rotator may be easily adapted to most applications. The output shaft is a 12 bolt flange mount casting. The rotator drive shaft will concentrically accommodate coaxial transmission lines up to 6-1/8" diameter with provisions for rotary joints at the base which are available as optional accessories. This system is supplied complete with rotator pedestal and azimuth indicator/control unit.

MODEL R-3503 HEAVY DUTY ROTATOR SYSTEM

SPECIFICATION SUMMARY

HY-GAIN MODEL NO.	R-3502	R-3503
Rotating Torque	16,000 in lbs.	23,700 in lbs.
Braking Torque	45,000 in lbs.	60,000 in lbs.
Maximum Vertical Load	7,000 lbs.	20,000 lbs.
Rotation Speed	1 RPM	1 RPM
Control Accuracy	$\pm 5^\circ$	$\pm 3^\circ$
Drive Type	Gear & Chain	Gear & Chain
Motor Horse Power	3/4 H.P.	3/4 H.P.
Power Requirements	115/230 V.A.C.	115/230 V.A.C.
Total Reduction	1800:1	1800:1
Operating Temperature	$-54^\circ + 71^\circ\text{C}$	$-54^\circ + 71^\circ\text{C}$
Forward/reverse Delay	5 seconds	5 seconds
Shipping Weight	608 lbs.	1340 lbs.
Shipping Volume BCP	17.7 cu. ft.	28.4 cu. ft.

CONTROL CABLE KITS ARE AVAILABLE
AS OPTIONAL ACCESSORIES



MODEL RP-75H, RP-100, RP-100H

All models of the Hy-Gain rotating support masts have been carefully engineered to provide maximum dependability in the support and rotation of large antenna arrays.

The system consists of a base stabilizing unit extending 10' below the surface, a rotator, rotator remote control and a heavy duty steel support mast. The system is capable of supporting and rotating extremely large antenna arrays or multiple stacked antennas in confined areas without the necessity for guy wires of any kind. Azimuth pointing accuracy is $\pm 5^\circ$.

SPECIFICATIONS Rotating Mast Systems

Model
RP-75H, RP-100, RP-100H

Self Supporting Mast

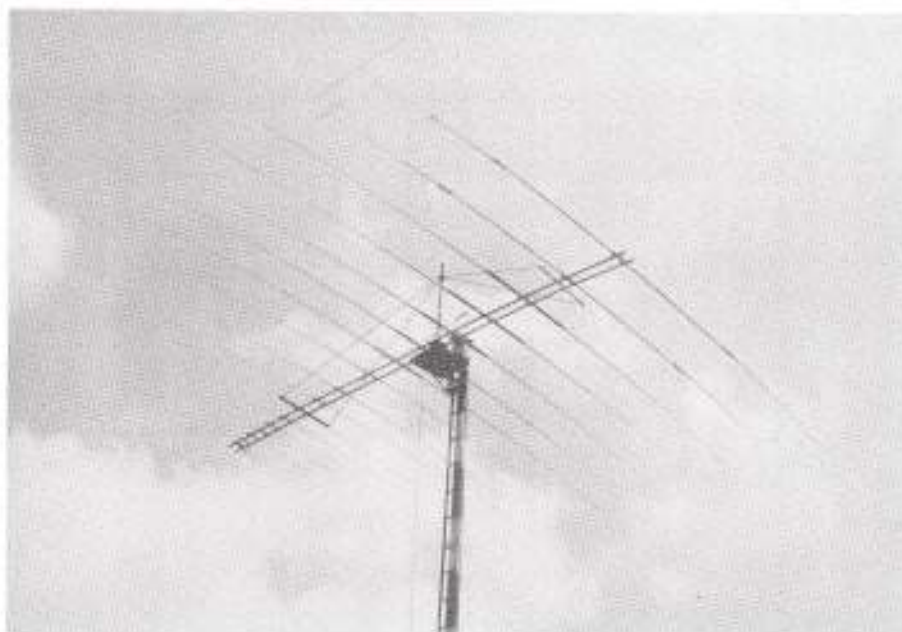
Total Height	75 ft. above ground
Model RP-75H	102 ft. above ground
Model RP-100 & RP-100H	
Number of Sections	
Model RP-75H	3 (25 ft. each tapered)
Model RP-100 & RP-100H	4 (25 ft. each tapered)
Construction	Cold rolled steel (minimum yield-strength 48,000 lbs. per square inch)
Mounting Flange	26-1/2" Square
Climbing Steps	Heavy duty galvanized steel on 15" centers
Exterior Finish	Heavy coat of zinc chromate-iron oxide primer carried in alkylid resin vehicle
Interior Finish	Red lead in linseed oil
Wind Survival	
Model RP-75H	110 MPH No Ice
Model RP-100	120 MPH No Ice
Model RP-100H	130 MPH No Ice
Rotating Base Stabilizing Unit	
Total Length	10 ft.
Construction Material	Steel
Outer Cylinder Wall Thickness	3/8"
Inner Cylinder Wall Thickness	3/8"
Diameter Outer Cylinder	20"
Diameter Inner Cylinder	18"
Horizontal Thrust Bearings	Nylatron strip 3" wide backed by Oilite bronze bearing
Motor Operating Current (at 110v)	4.2 amps
Motor Operating Voltage	110/220 vac
Control Cable Required (Control cable available to your required length)	6 conductor
Vertical Thrust Bearing	Triple sealed ball bearing 6 inch diameter
Rotating Torque	16,000 inch pounds
Braking Torque	48,000 inch pounds
Rotation Rate	1 RPM
Operating Temperature	-40 ^o to +120 ^o F



electronics corporation
LINCOLN, NEBRASKA 68505

TECHNICAL DATA REPORT

Model LP-1017 Commercial HF Log Periodic Antenna 6.2 to 30 MHz



The Hy-Gain Model LP-1017 log periodic antenna is specifically designed for use in HF commercial communications applications such as Marine High Seas, Embassy and Government long haul voice circuits, MARS, petroleum service communications and similar SSB circuits. For lack of appropriate antenna systems, this type of communications circuit has generally used vertical whip antennas or dipole antennas in conjunction with antenna tuners. Consequently, operating efficiency has been very low (on the order of 15 to 50%). The new LP-1017, however, requires no tuner, thereby eliminating tuner losses and providing much higher operating efficiency and reliability.

The Hy-Gain Model LP-1017 is a unique log periodic configuration which has reduced the physical size required to cover 6.2 to 30 MHz to nearly half of the full sized array. While there is some sacrifice in gain and directivity, still the operating efficiency provided by the LP-1017 is far greater than whip/tuner or dipole/tuner systems.

No tuning is required for operation anywhere from 6.2 through 30 MHz. Only a single feedline connecting the antenna to the communications equipment is necessary. The antenna may be mounted fixed in azimuth or rotated with the use of the Hy-Gain Model R-3501 rotator.

Construction is all aluminum for maximum weatherability. All hardware is steel plated or irridite treated.

LP-1017

COMMERCIAL HF LOG-PERIODIC ANTENNA

Small Size
30 x 40 ft. Overall
Low Cost

Continuous Frequency Coverage
6.2 to 30 MHz
Light Weight, 480 lbs. net weight

SPECIFICATIONS:

Electrical:

Frequency Coverage	6.2 thru 30 MHz
Polarization	Horizontal
VSWR	2.5 to 1 maximum
Forward Gain	8 db at 6.2 MHz increasing to 12 db at 30 MHz
Front to Back Ratio	10 db average
Power Handling	1 KW Average 2 KW PEP
Input Impedance	50 ohms
Input Connector	Type N

Mechanical:

Boom Length	37 feet
Longest Element	40 feet
Net weight	480 lbs.
Shipping Weight	540 lbs.
Wind Survival	80 MPH
Construction	High strength aluminum ele- ments and boom.

Optional Rotator—Hy-Gain Model R-3501

Optional 20 foot tower—Hy-Gain Model T-3037 twenty foot tower complete with guys and hardware for roof top mounting

Optional 60 foot tower—Hy-Gain Model T-3040—60 foot tower complete with guys and hardware for ground mounting



electronics corporation

R.R. 3, LINCOLN, NEBRASKA 68505

Ph.: (402) 434-9151 - Telex: 48-6424

HY-GAIN MOBILE ANTENNA ACCESSORIES



ENVOY MOBILE ANTENNA COLOR BASES

Attractive color bases go with most modern automotive finishes. Replace standard black base furnished with the Envoy. Six colors available: Model 567—Pastel Blue, 568—International Orange, 569—Bright Red, 570—White, 571—Light Brown, 572—Pastel Green.



NEW ENVOY TRUNK MOUNT MODEL 555

This mount provides a quick installation to any automobile trunk lid, hood, box cover or other vehicular removable enclosures. Adapts to any of the ENVOY antennas by attachment to the claws. Molded skirt disguises mount. Two set screws hold to lip.



LIGHTNING ARRESTER MODEL 229

Will safely bypass 10 or more direct lightning strokes, UHF connectors. Reduces static buildup. Not just a spark gap. Precision made of plated brass. Four mounting holes. A necessity for protecting equipment.



DELUXE FLUSH BODY MOUNT MODEL 499

Replaces old style split ball mount with new modern body mount that compliments any car. A heavily chrome plated mount with molded gray cyclocac base. A heavy gauge back-up plate is furnished with a rubber washer for sealing to the mounting surface. Has 3/8-24 thread. Standard four-hole pattern, Allen set screw angle adjustment.



STAINLESS STEEL BUMPER MOUNT MODEL 415

A non-marring stainless steel mount which will support the heaviest mobile antennas. Has 3/8-24 thread. Threaded holes and screws provided for lug connection of center and ground conductors.



EXTRA HEAVY DUTY CHROME SPRING MODEL 511

The Model 511 is a double tapered chrome plated steel spring for heavy antenna installations. Has 3/8-24 threads at both ends. Net weight is 3 lbs.



STAINLESS STEEL JIFFY MOUNT MODEL 548

The Jiffy bolts to any narrow grooved surface on the vehicle. Quickly mounted; easily adjustable to any required angle of the antenna. Requires two 7/32 holes. Has 3/8-24 thread. Designed for the medium to light weight antennas. Useful for trunk groove mounting, tractor mounting, etc.



INSULATED GUTTER CLIP MODEL 573

Handsome gutter clip secures mobile whip for low garaging. Mounts on car with single screw without piercing car body. Key hole whip anchor is plastic. It won't rattle and won't short.



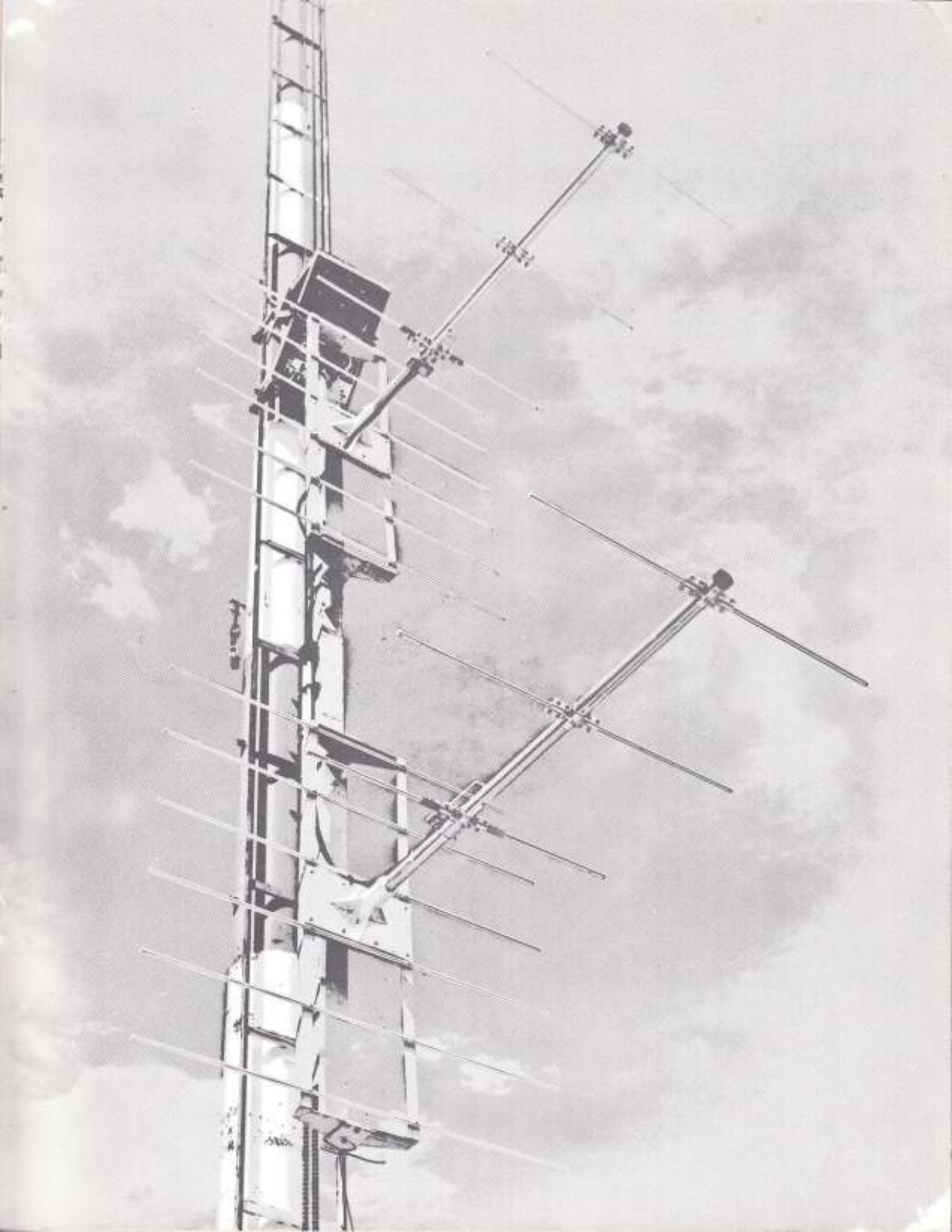
HEAVY DUTY CHROME SPRING MODEL 417

A double-tapered chrome plated steel spring for use with medium weight antennas. Has 3/8-24 threads at both ends. Ends are hex shaped for tightening during installation. Net weight is 2 lbs.



HY-GAIN BODY MOUNT COAXIAL ADAPTER MODEL 493

Readily converts exposed terminals of mobile antenna body mounts to standard 50-239 coaxial fitting. Net weight, 6 oz.



hy-gain

hy-gain electronics corporation
R.R. 3 Lincoln, Nebraska 68505
Telephone: (402) 434-9151 • Telex: 48-6424

HF/VHF/UHF COMMUNICATIONS ANTENNA SYSTEMS FOR MILITARY AND COMMERCIAL APPLICATIONS

