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Home / Products / Antenna AS-3900A/VRC



Antenna AS-3900A/VRC

Category: Ground Based Vehicular Antennas

The AS-3900A/VRC Antenna is the standard Vehicular Antenna System designed to work with 30-88 MHz Radios. This antenna is center-fed and can withstand the application of 20,000 VRMS to its upper section and 10,000 VRMS to its center section without adverse effect to the antenna or the radio.

REQUEST A QUOTE



Product Specifications

Model Number :	AS-3900A/VRC
NSN/Cage :	5985-01-308-8988
Application :	Communications
Frequency :	30 - 88 MHz
Impedance :	50 Ohms Nominal
Gain :	-7.6 dBmp @ 30 MHz to -1.1 dBmp @ 88 MHz
VSWR :	3.5:1 Maximum
Polarization :	Vertical
Pattern :	Omni-Directional
RF Power Capacity :	150 Watt CW
Color :	CARC Green CARC Tan

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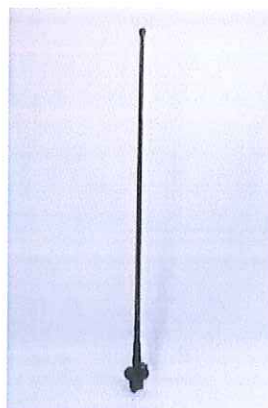
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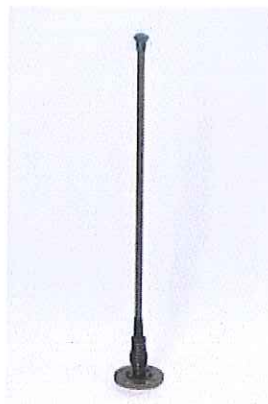
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GENERAL AVIATION ANTENNAS MILITARY ANTENNAS TRANSPORTATION

ABOUT US

RAMI began engineering and manufacturing antenna systems in 1956 for the U.S. Military. A precedent was set for the way we would conduct every aspect of our business that continued throughout our expansion into the aviation and transportation industries. Today, holding to that tradition of high standards, RAMI offers the industry's most reliable and highest performance antenna systems. It's why we can boast "Loud & Clear®" transmission.

RAMI operates to the strictest engineering and quality requirements, including: Environmental Testing: MIL-STD-810, Calibration: ISO 10012-1, FAA Technical Standard Order (TSO), ISO 9001, ISO 14001, and Government TQM.

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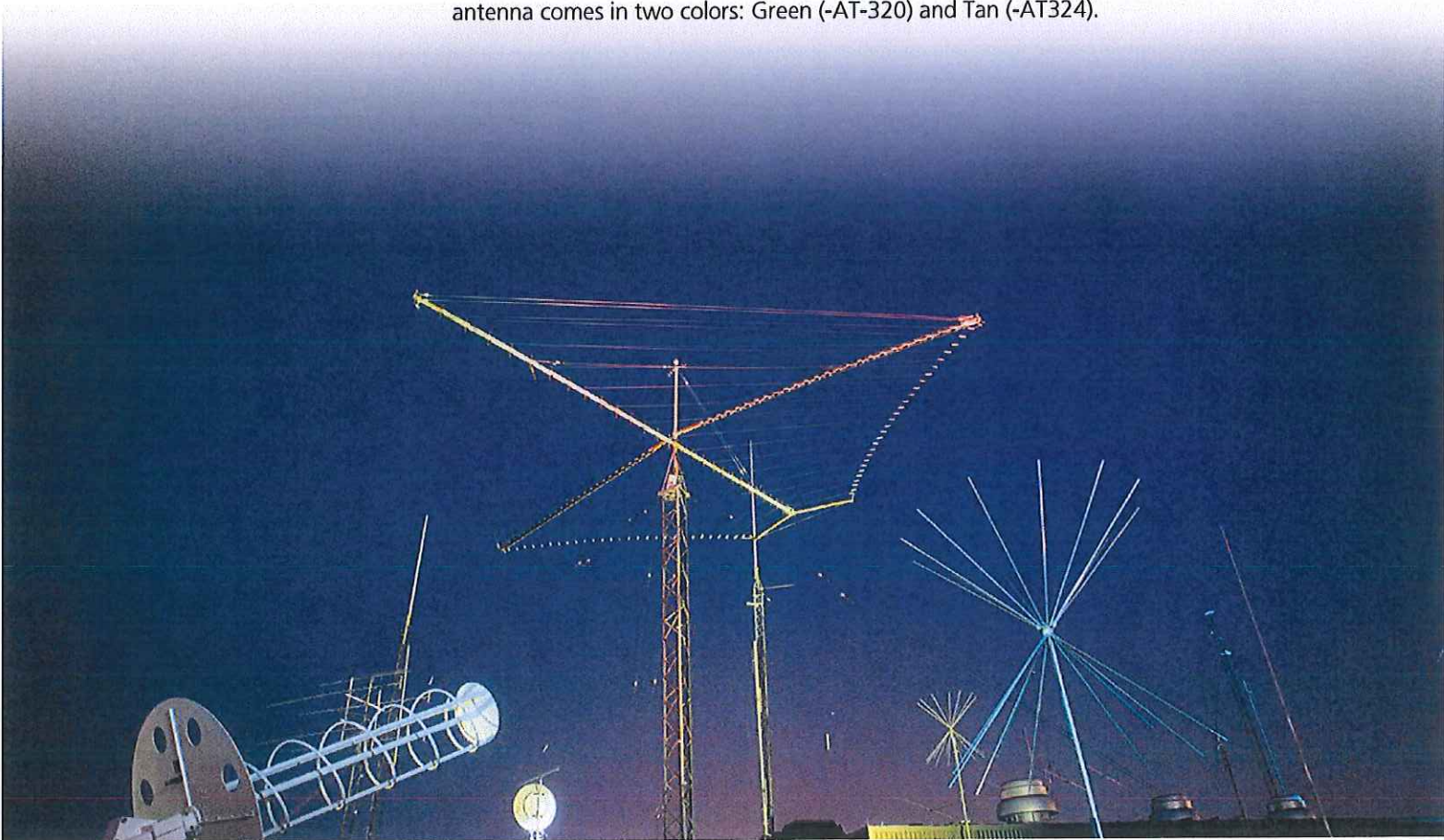


RF-3187-AT320/4**30-2000MHZ VEHICULAR****WHIP**

The RF-3187-AT320/4 is a vehicular 30 to 2000 MHz multiband whip antenna for use with the Falcon III radio products. The RF-3187 is the cutting edge of broadband performance in a single whip package. It provides the functionality of three antennas: VHF, UHF, and High Band; effectively reducing the antenna count on the already over populated vehicles.

Each of the two center-feed dipoles are designed for maximum radiated energy on the horizon with omni-directional coverage without the need for an extensive ground plane. The High Band dipole is located at the whip tip for greatest height to maximize range. The lower antenna covers from 30-512MHz which is diplexed allowing for two Low Band feeds. In total, the antenna has two BNC connectors (VHF and UHF) and a Type N connector for the High Band.

Besides connecting to a vehicular amplifier, the antenna can be directly connected to Harris AN/PRC-117G or RF-7800M-MP manpack radios. It can be mounted on all standard NATO (4) hole, 4.5-in bolt circle mounts or a Harris RF-292-01 Universal Antenna Mount (order separately). The antenna comes in two colors: Green (-AT-320) and Tan (-AT324).



Specifications for the RF-3187-AT320

<i>Electrical</i>	
Frequency Range	Banded 30-2000 MHz 30 MHz – 88 MHz, 108 MHz – 512 MHz 550 MHz – 2000 MHz
Polarization	Linear
Impedance	50 ohm (nominal)
Isolation	>20 dB
VSWR	< 3.0:1
Gain	30 MHz – 88 MHz > -8 dBi
	108 MHz – 512 MHz > -1 dBi
	550 MHz – 2000 MHz > 0 dBi
Power Rating	100 W CW

<i>Environmental</i>	
Designed and Tested to Mil-Std-810F and Oak Beam	

<i>Mechanical</i>	
Dimensions	~ 1 inch (2.4 cm) diameter x 85 inches (2.2 m) long (above mounting plate), 2.5-in below mounting plate
Weight	~ 13 lbs (5.9 kg)
RF Connector	Color Coded
	30 MHz – 88 MHz BNC female (blue)
	108 MHz – 512 MHz BNC female (green)
	550 MHz – 2000 MHz Type-N female (red)

<i>Features</i>	
Minimum Ground plane required	
Tri-port	
Instantaneous Broadband for hopping and scanning	
Standard NATO (4) hole bolt pattern	
Rugged	
Can be used in a tactical environment with tripod or mast (sold separately)	
Feed through spring base	
Comes complete with: single whip (84-in), spring base, 8 bolts (3/8-24 and 3/8-16), 8 washers, 4 Nuts, ground strap, rubber gasket, dust cover, and instructions.	



MULTIBAND VEHICULAR ANTENNA SERIES

RF-390

FEATURES

- > For tactical, C3I, or battlefield conditions using new broadband antenna technology
- > Instantaneous bandwidth for ECCM waveforms
- > Dual or single port
- > Multi-sectional
- > Feed through base with spring
- > High voltage protection
- > Standard NATO bolt pattern

The RF-390 multiband vehicular whip antenna series is designed for tactical, C3I, or battlefield conditions using new broadband antenna technology. Its design provides maximum performance for the latest in multimission military radios; the AN/PRC-117F, RF-5800M, RF-5800V, and RF-5800U. Now, a single antenna can provide exceptional gain and instantaneous bandwidth performance over the 30 to 512 MHz spectrum. This unique electrical design puts the power pattern on the horizon allowing exceptional LOS and BLOS communications even in the harshest conditions.

The bandwidth is achieved by distributive passive components avoiding lumps to provide a mechanically strong but flexible structure. Being passive, there is no need for an antenna tuner, bandswitching, or operator intervention. The RF-390 is designed to meet and exceed the rigors of MIL-STD-810 tests for both mechanical and environmental characteristics, as well as SINCGARS standards for tactical survivability along with high-voltage power line protection.

The RF-390 is the ideal choice for multiband radios because it reduces the vertical signature by replacing multiple antennas with a single antenna. Its feed through spring base mounts directly to a NATO standard 4.5" bolt circle or Harris RF-292 Universal Antenna Mount.

HARRIS[®]
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SPECIFICATIONS FOR: RF-390

SPECIFICATIONS

Height	2.8 m (110 in)
Weight	3.5 kg
Color	CARC 383 Green or CARC Tan

ENVIRONMENTAL

Wind Rating	70 mph
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MECHANICAL

RF Connector	BNC female or Type N
HV Protection	20 kV RMS
Mounting	Four 0.5 in holes spaced on 4.5" BHC (Hardware included) Bolts directly to RF-292 (not included)

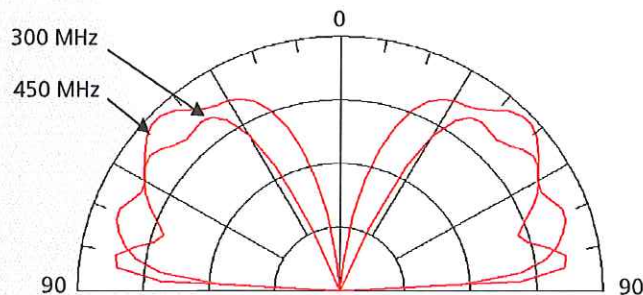
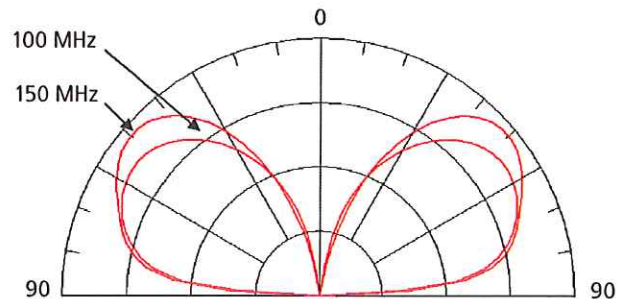
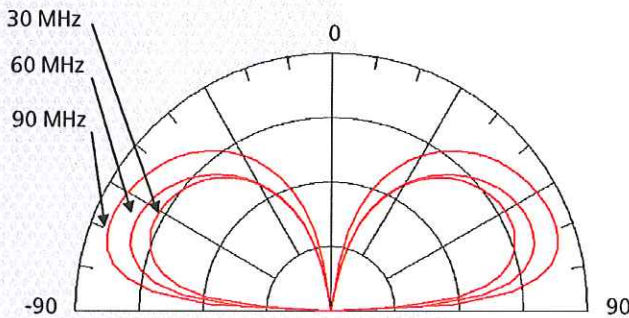
ELECTRICAL

Frequency Range	30 to 512 MHz
Polarization	Vertical
Impedance	50 Ω (nominal)
VSWR	3.5:1 (30-90), 2.5:1 (90-512)
Gain	-6 dB to +1 dB ref 1/4 Wave radiator on 10'x10'x10' Ground Plane
Power Rating	50 W continuous
Matching	Passive, distributive
Radiation Pattern	Omnidirectional

MODELS

Antenna	Connector	Color Matrix
RF-390-AT001	Dual BNC port	CARC Green 383
RF-390-AT002	Dual BNC port	CARC Tan
RF-390-AT003	Single Type N port	CARC Green 383
RF-390-AT004	Single Type N port	CARC Tan
RF-390-AT005	Single BNC port	CARC Green 383
RF-390-AT006	Single BNC port	CARC Tan

RADIATION PATTERNS OVER AVERAGE GROUND



HARRIS

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Rochester, NY 14610, USA

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harris.com

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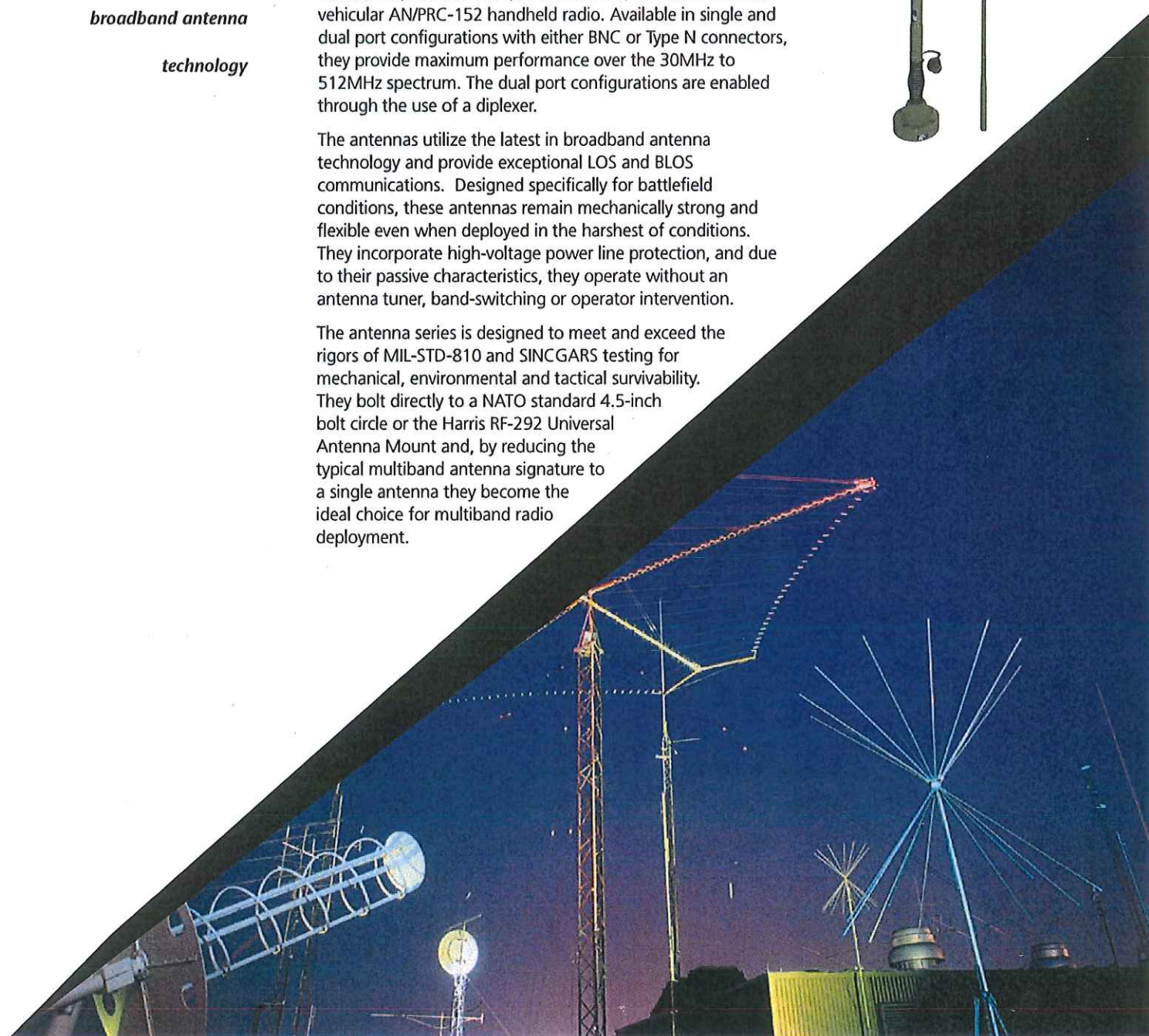
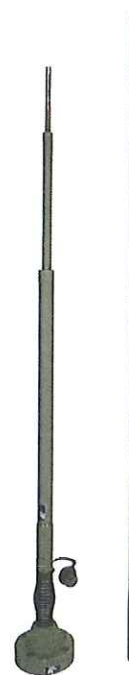
RF-3183-ATOXX MULTIBAND VEHICULAR ANTENNA SERIES

*for tactical, C3I, or battlefield
conditions using new
broadband antenna
technology*

The RF-3183 vehicular whip antennas are a series of tactical, multiband antennas that are designed for use with Harris multi-mission military radios, including the RF-300M-MP, RF-7800M-MP, AN/PRC-117F, RF-5800M-MP, RF-5800V and the vehicular AN/PRC-152 handheld radio. Available in single and dual port configurations with either BNC or Type N connectors, they provide maximum performance over the 30MHz to 512MHz spectrum. The dual port configurations are enabled through the use of a diplexer.

The antennas utilize the latest in broadband antenna technology and provide exceptional LOS and BLOS communications. Designed specifically for battlefield conditions, these antennas remain mechanically strong and flexible even when deployed in the harshest of conditions. They incorporate high-voltage power line protection, and due to their passive characteristics, they operate without an antenna tuner, band-switching or operator intervention.

The antenna series is designed to meet and exceed the rigors of MIL-STD-810 and SINCGARS testing for mechanical, environmental and tactical survivability. They bolt directly to a NATO standard 4.5-inch bolt circle or the Harris RF-292 Universal Antenna Mount and, by reducing the typical multiband antenna signature to a single antenna they become the ideal choice for multiband radio deployment.



Electrical

- **Frequency Range:** Without Diplexer: 30 to 512 MHz
With Diplexer: 30 to 88 MHz
108 to 512 MHz
- **Polarization:** Vertical
- **Impedance:** 50 Ω (nominal)
- **VSWR:** <3.5:1 over 95% of the pass band
- **Gain:** -5 dB to +1.5 dB rel 1/4 Wave radiator on 10'x10'x10' Ground Plane
- **Power Rating:** 50 W, 1 hour
- **Matching:** Passive, distributive
- **Radiation Pattern:** Omnidirectional

Mechanical

- **Height:** 2.7 m (105 in., 8.75 ft.)
- **Weight:** 4 kg. (8.75 lbs.)
- **RF Connector:** Single connector, BNC female or Type N
Dual feed, Diplexer BNC Female only
- **Wind Rating:** 123 mph
- **HV Protection:** 20 kV RMS
- **Mounting:** Four 0.5 in holes spaced on 4.5" BHC
(Hardware included)
Bolts directly to RF-292 (not included)

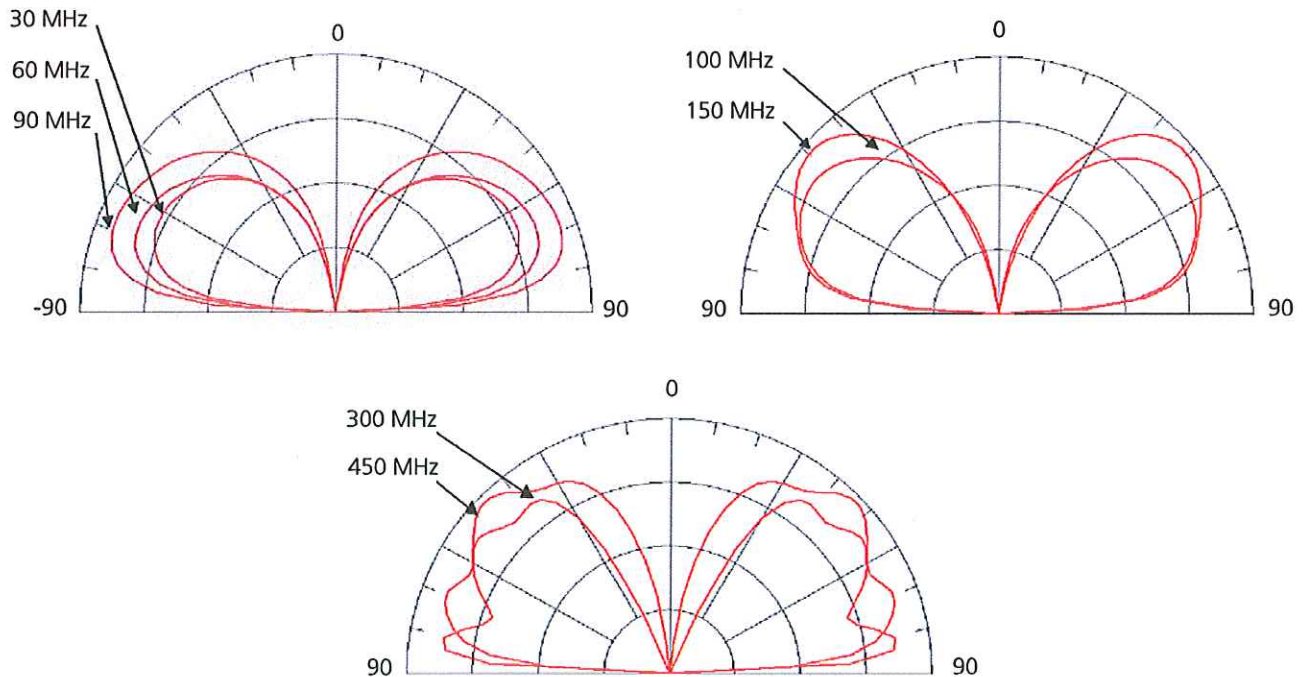
Models

Antenna	Port / GPS / Diplexer	Color Matrix
RF-3183-AT001	Dual BNC / Yes / Yes	Green
RF-3183-AT002	Dual BNC / Yes / Yes	Tan
RF-3183-AT003	Type N / Yes / No	Green
RF-3183-AT004	Type N / Yes / No	Tan
RF-3183-AT005	BNC / Yes / No	Green
RF-3183-AT006	BNC / Yes / No	Tan
RF-3183-AT011	Type N / No / No	Green
RF-3183-AT012	Dual BNC / No / Yes	Tan
RF-3183-AT013	Dual BNC / No / Yes	Green
RF-3183-AT014	Type N / No / No	Tan
RF-3183-AT015	BNC / No / No	Green
RF-3183-AT016	BNC / No / No	Tan

Features

- Instantaneous bandwidth for ECCM waveforms
- Dual or single port
- Multi-sectional
- Standard NATO bolt pattern
- Feed through base with spring
- High voltage protection

Radiation Patterns Over Average Ground



Specifications are subject to change without notice.

RF-3120-AT360

HF TILT WHIP ANTENNA

INSTRUCTION MANUAL

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CHAPTER 1

GENERAL INFORMATION

1.1 INTRODUCTION

The RF-3120-AT360 HF Whip Antenna is a self-supported, vertical, 35-foot (9.8-m), fiberglass, whip antenna attached to a tilt whip adapter to allow for Near Vertical Incident Skywave (NVIS) communications.

The RF-3120-AT360 HF Whip Antenna will be referred to throughout this manual by its common name, antenna.

The antenna has a heavy-duty spring base that features a high-voltage protection device should the antennas come in contact with power lines. Thread-mounted to this base is the tilt whip adapter which supports the 35-foot (9.8 m) whip. The tilt whip adapter has a pull pin which allows tilting of the antenna from full upright through several positions to horizontal, about a 180 degree arc. This allows for desired NVIS positioning. A flexible rubber boot covers the spring base, tilt whip adapter, and the lower portion of the mating antenna section, providing Radio Frequency (RF) burn protection. The tip of the antenna provides eye protection. An antenna tie-down kit is also included.

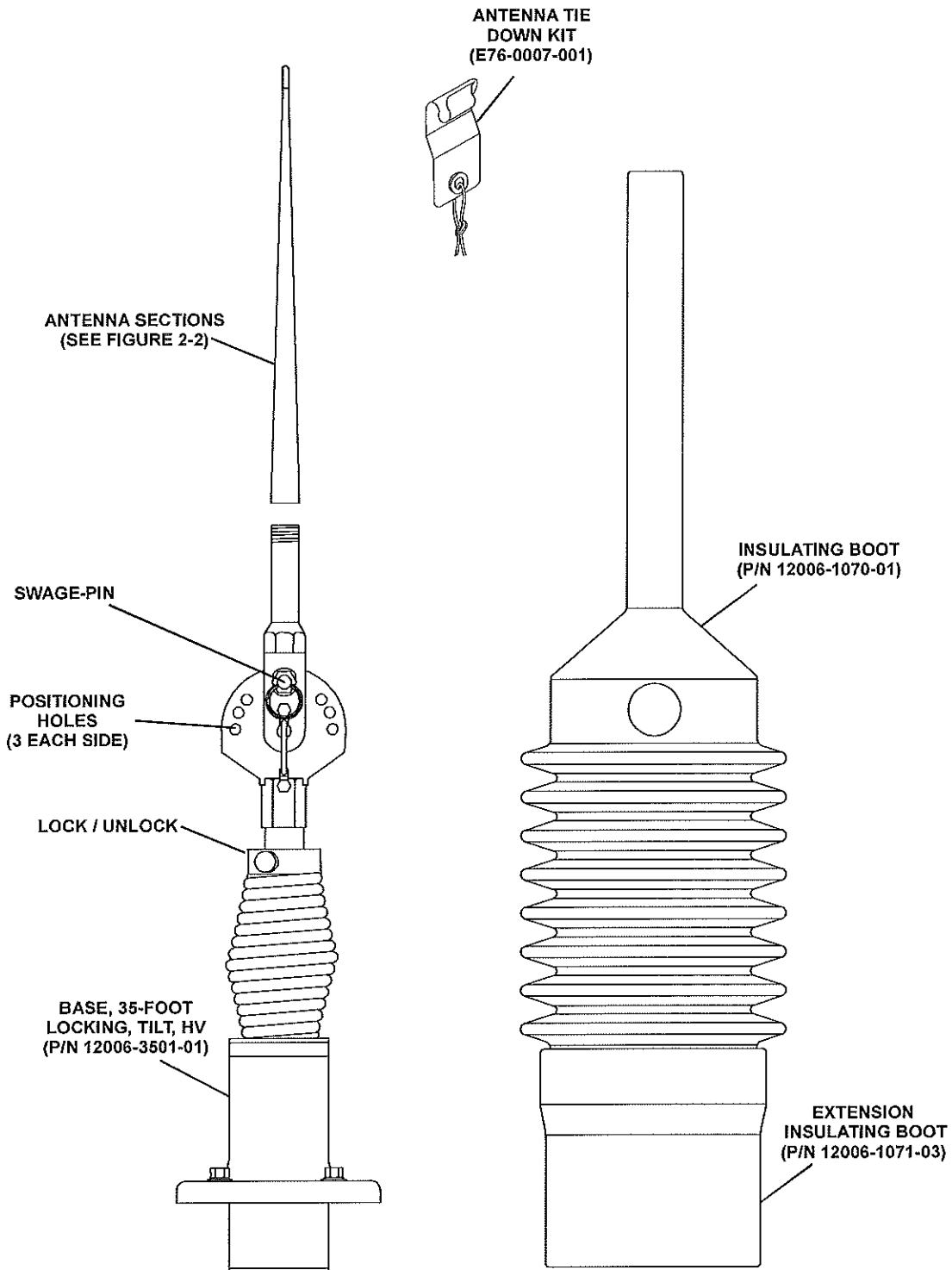
The antenna may be used in conjunction with the RF-292 Antenna Mount.



When using eight sections (35-foot configuration), it is recommended that the antenna be guyed if prevailing winds exceed 50 miles/hour (80.7 km/hour), or if the antenna is to be installed for an extended period of time.

1.2 SPECIFICATIONS

- Frequency Range: 1.5 MHz to 30.0 MHz
- Impedance: Refer to Chapter 3.
- Power Rating: 400 W
- Environmental: MIL-STD-810
- Wind Rating: Refer to Chapter 3.



CL-0361-4100-0001

Figure 2-1. RF-3120-AT360 Whip Antenna (12006-3500-01)

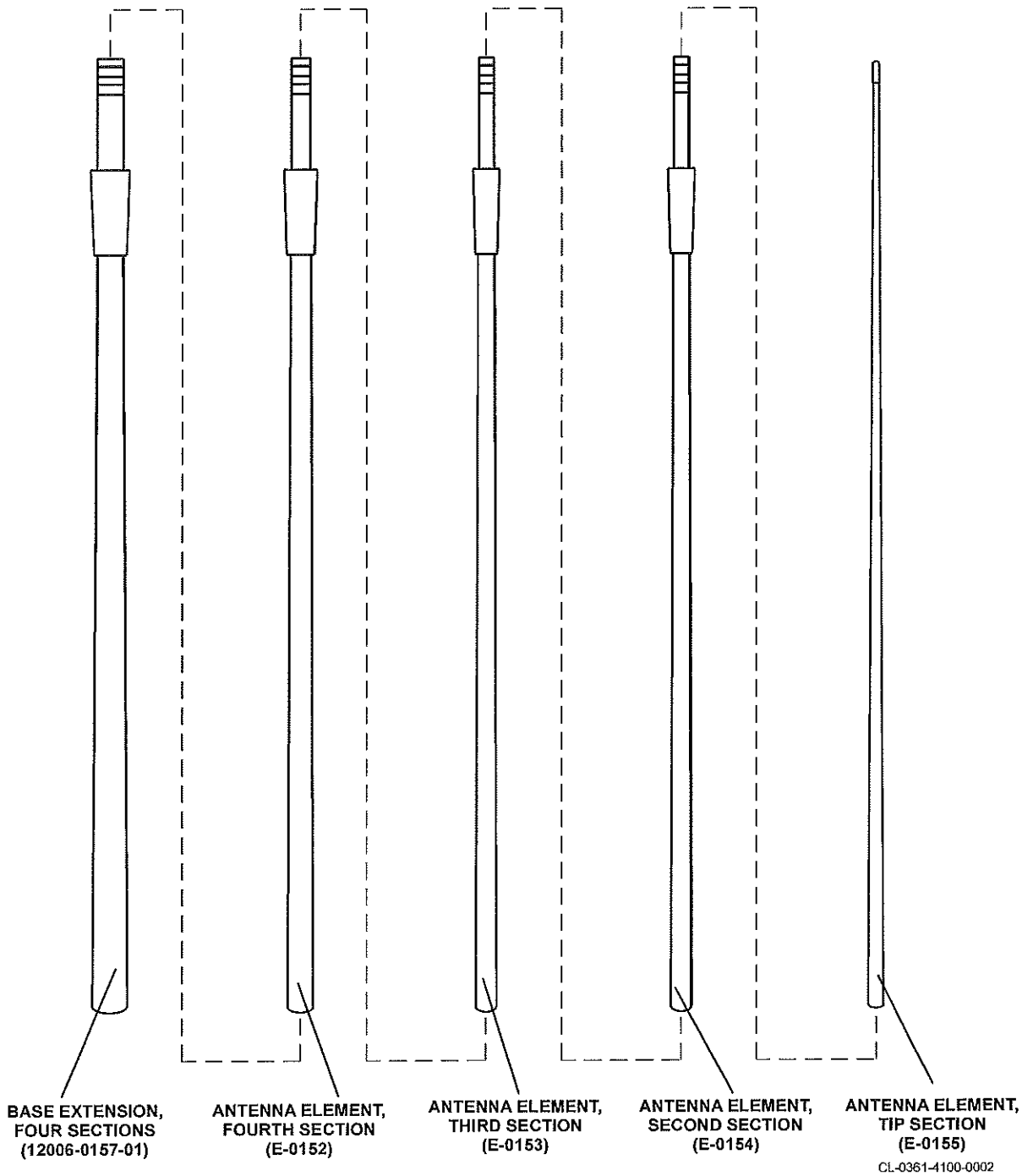


Figure 2-2. Antenna Elements

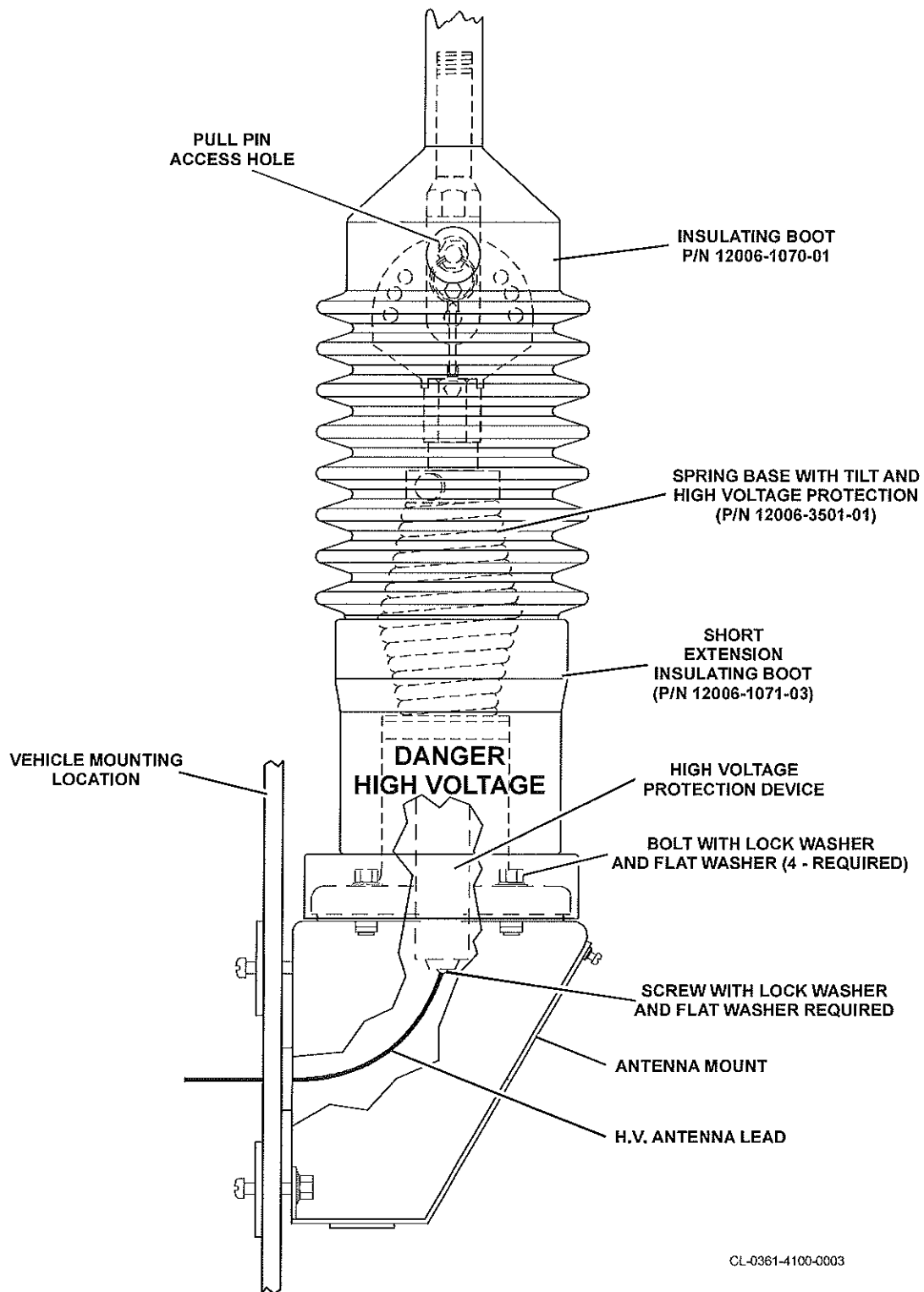


Figure 2-3. Antenna Installed on RF-292 Antenna Mount

2.4 MAINTENANCE

Check antenna for damage as necessary.



7000 Volts RF. Remove all power before servicing.

The Whip End Protector, E76-0003-001, is installed on older antenna element tip sections. This is not permanently mounted like current protectors. Check that it is secure. See Figure 2-4.

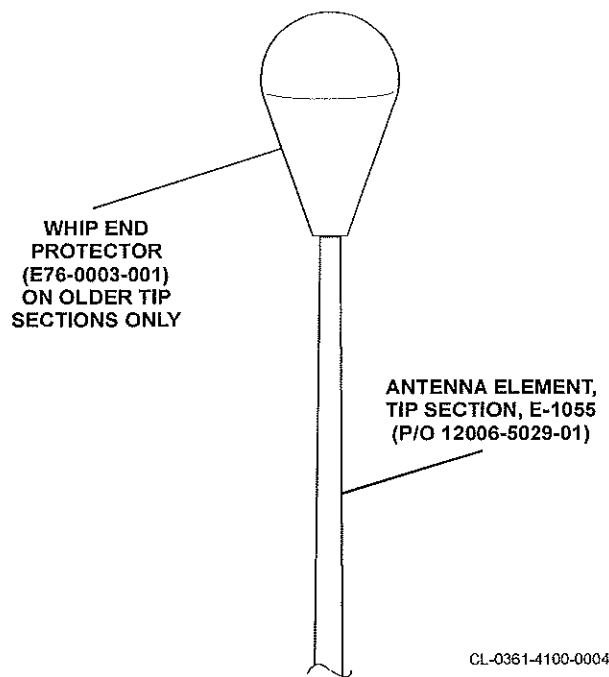


Figure 2-4. Whip End Protector (Older Tip Sections)

2.5 TILT WHIP ADAPTER ROTATION

The TWA comes factory aligned being centered between two of the antenna bases mounting holes. For most installations, this is the appropriate alignment necessary for proper installation and no further action is required.

For those incidents where the TWA must be rotated, a jam nut located below the TWA must be loosened. This jam nut is factory set at 180 ft-lbs (244 Newton-meters) and requires a 1-3/8 inch open end wrench set with at least foot long extensions to loosen.

- Prior to loosening the jam nut, remove the two safety wires between the TWA and antenna base.
- The jam nut is loosened by placing one wrench on the jam nut and another on the TWA flats (bottom of the TWA) and applying opposing force on the two wrenches until the nut is loose.
- Upon loosening the jam nut, rotate the TWA to the desired position.

CHAPTER 3

ELECTRICAL AND PHYSICAL DATA

3.1 IMPEDANCE CHARTS

Table 3-1 is an impedance chart for the eight-section RF-3120-AT360 antenna in two typical mounting situations. Note that R=DC resistance, X=RF impedance.

Table 3-1. RF-3120-AT360 Eight-Section Antenna Impedance Chart

F (MHz)	Mounted on 24-ft x 24-ft Ground Plane Tied Into Factory Roof Girders		Mounted On Vehicle Over Dry Soil	
	R (Ohms)	X (Ohms)	R (Ohms)	X (Ohms)
1.5	3.3	-1170	58	-1270
2.0	4.9	-845	85	-886
4.0	40	-304	33	-370
6.0	43	-93	48	-94
8.0	112	+95	110	+140
10.0	237	+323	307	+407
12.0	763	+874	1650	+579
14.0	530	-1130	492	-933
16.0	83	-469	89	-451
18.0	45	-236	60	-200
20.0	39	-80	90	-2
22.0	48	+99	230	+180
24.0	170	+500	548	+286
26.0	1600	-680	1000	-262
28.0	238	-561	295	-580
30.0	94	-322	93	-310

3.2 WIND LOAD DATA

Table 3-2 shows wind load data for eight-section antennas under varying circumstances.

Table 3-2. Antenna Wind Load Data

Wind, MPH	Tip Deflection, inches	Maximum Stress, PSI	Max Momentum, ft-lbs
Eight-Section Antenna, Unguyed, Free Standing No Ice Load			
23	80	8500	45
35	150	18000	90
45	205	25000	140
60	250	35000	200
Eight-Section Antenna, Unguyed, Free Standing with 0.5-inch Radial Ice			
40	265	35000	200
Eight-Section Antenna, Guyed 18 Feet From the Base, Free Standing, No Ice Load			
60	55	12000	65
80	81	19500	104
100	105	27000	150
Eight-Section Antenna, Guyed 18 Feet from the Base, Free Standing with 0.5-inch Radial Ice			
60	110	25000	140
80	135	35000	200

NOTE

Maximum stress on antenna should not exceed 35,000 psi.
Calculations assume an even, steady wind. Variable and gusty winds will increase stress on the antenna.