PASTERNACK
an INFINITE brand

2 dBi Ground Independent Tunable Poly Spring Vehicular Antenna 144-174 MHz NMO Mount Connector

Antennas Technical Data Sheet PE51MP1009

Features

- Broadband performance; ground independent
- NMO Mount, Black Chrome Finish
- Flexible Black Polymer Alloy Spring
- O-ring seal for waterproof construction
- Durable Xenoy™ base with TPV over mold dust seal and grip ring

Applications

- Service Vehicles
- Public Safety
- Public Transportation
- Mining & Construction

Description

This wide band ground independent VHF mobile omnidirectional antenna is ideally suited for multipoint mobile applications including service vehicles, public transportation, public safety, mining and construction vehicles, as well numerous other commercial and industrial applications where mobility and wide coverage is desired. This antenna features a flexible Poly Spring base. Unlike the traditional metal spring base, the Poly Spring will not corrode and does not generate electrical noise when flexed during use. It has a standard TAD/NMO Motorola-type mobile base.

Configuration

Design	Vehicular
Application Band	VHF
Band Type	Single
Radiation Pattern	Omni Directional
Polarization	Linear, Vertical
Ground Plane	Independent
Connector Type	NMO Mount

Electrical Specifications

Description	Minimum	Typical	Maximum	Units
Frequency Range (Tunable Range)	144		174	MHz
Operational Bandwidth (Frequency Dependent)		15-20		MHz
Input VSWR (across operational bandwidth)			2:1	
Center Frequency VSWR			1.2:1	
Impedance		50		Ohms
Gain		2		dBi
Horizontal (Azimuth) Beam Width		Omnidirectional		
Vertical (Elevation) Beam Width		70		Degrees
Input Power			150	Watts

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Mechanical Specifications

Base Material	Xenoy™ w/TPV over mold grip ring
Whip Material	17-7 SS
Whip Finish	Black Chrome
Mounting Application	¾ inch thru-hole NMO Mount
Spring Material	Black Molded Polymer Alloy

Size by Frequency

Length @ 144 MHz	46 in [116.84 cm]

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Installation Instructions

PE51MP1009 (144-174 MHz) 2 dBi
VHF GROUND PLANE INDEPENDENT ANTENNA

Congratulations on your selection of another quality antenna product from Pasternack.
Pasternack is committed to continually provide the greatest antenna VALUE for your wireless applications.

1. **Parts (Figure 1):**
   Verify all parts are included with the Antenna as shown in Figure 1.
   A. Antenna Whip
   B. e/m-Flex™ Poly Spring Assembly
   C. NMO Base Adapter
   D. O-Ring
2. **Tools/Materials Required:**
   A. Tool for cutting stainless steel whip
   B. Hex Wrench (3/32")
   C. **Note:** Special tools are not required to install the antenna. The antenna is intended to be installed using a firm hand torque until the sealing O-ring is completely compressed against the installation surface.
3. **Pre-Installation (Figure 2):**
   A. **Optimal VSWR and Bandwidth:** Best performance is achieved when mounted to a non-metallic surface or small metal L-Bracket.
   B. **Mounting Option:** Metallic ground plane surface.
   C. Ensure O-ring is properly seated within O-ring groove as shown in Figure 2.
   D. **Important:** Verify proper operational Frequency, as labeled. (Figure2).
   E. Read and follow all Whip Cutting Instructions supplied for this model.
4. **Tuning and Installation (Figure 3):**
   A. Verify contact spring is completely extended. If necessary, adjust by pulling the contact outward.
   B. Thread NMO Base Coil Adapter onto the vehicle NMO mount. Tighten by hand until O-Ring is completely seated.
   C. Thread Spring onto NMO Base Coil Adapter. Firmly torque by hand.
   D. Refer to whip cutting instructions. Cut whip length according to desired frequency and either ground plane or no ground plane installation.
   E. Verify VSWR. Apply firm torque to whip adapter set screws. (2 ea.).

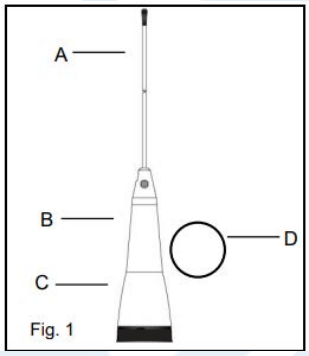

Fig. 1

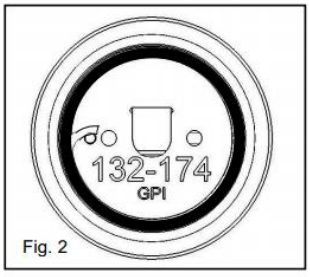

Fig. 2

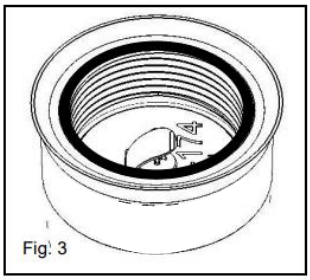
Fig. 3

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WHIP CUTTING INSTRUCTIONS

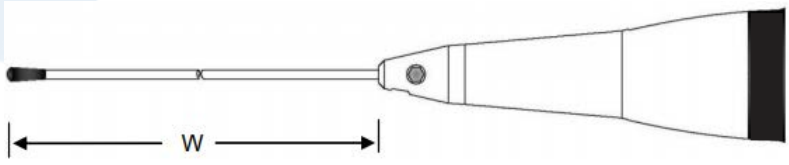
"Ground Plane" and "No Ground Plane" Installations

PLEASE CAREFULLY READ ALL INSTRUCTIONS BEFORE CUTTING THE WHIP

CENTER FREQUENCY (± BANDWIDTH)	TUNED WHIP LENGTH "W" NO GROUND PLANE		TUNED WHIP LENGTH "W" GROUND PLANE	
(MHz)	(inches)	(mm)	(inches)	(mm)
144 (± 7.5)	41-5/16	1050	37-7/8	963
150 (± 7.5)	38-9/16	980	35-5/8	905
155 (± 8)	36-1/2	928	34-1/4	870
160 (± 8)	34-1/2	876	32-1/2	826
165 (± 8)	32-3/4	833	30-3/4	781
170 (± 9)	31-1/16	789	29-5/16	745
174 (± 9)	30-1/16	763	28-1/4	714

Table 1

1. **IMPORTATN: Before Cutting.**
   OPTIMAL PERFORMANCE: This antenna is specifically designed for precision VSWR performance at the desired frequency. Tuning the whip per Table 1will provide optimal VSWR match across the bandwidth specified. VSWR bandwidth may vary depending on the actual installation surface material, location, bracket type and size.
   CUTTING NOTE: The whip can be cut using a grinding wheel or shearing tool designed for this purpose. Due to a large variation of installations without a conductive ground plane surface, it is strongly recommended to cut the whip slightly longer than the specified dimension in Table 1. If necessary, continue to trim for best VSWR match. Always verify actual VSWR or Return Loss performance after cutting and installation.
   TUNED LENGTH "W": is determined by measuring the distance between the top of the whip adapter and the top of the whip. **See Figure 4. NOTE: The actual cut length will be approximately 1" (25mm) longer than TUNED WHIP LENGTH "W".**
2. Choose the column in Table 1 for "Ground Plane" or "NO Ground Plane" installation.
3. Identify the desired center frequency of operation.
4. Imperial and Metric units are given for convenience. Cut the whip as required to establish the specified **TUNED WHIP LENGTH "W"** as shown in Figure 4.
5. Verify VSWR. Secure set screws (2 ea.).



[**Note:** Add 1" (25mm) to Tuned Length "W" when cutting whip.] Fig. 4

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Environmental Specifications

Temperature

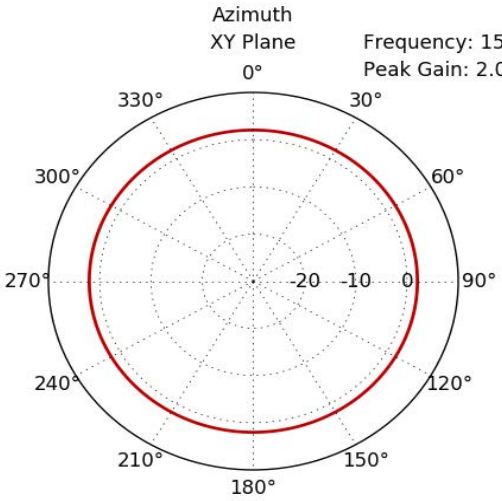
Operating Range	-40 to +85 deg C
Humidity	95%
Corrosion	Salt Fog

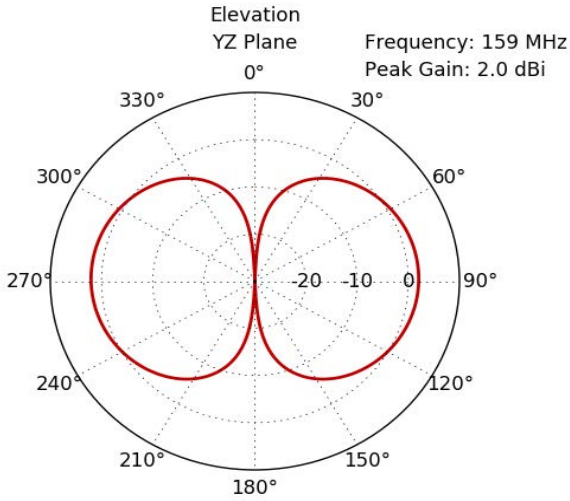
Compliance Certifications (see product page for current document)

Plotted and Other Data

Notes:

Typical Radiation Pattern





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URL: https://www.pasternack.com/single-antenna-144-174-mhz-2-dbi-gain-nmo-mount-pe51mp1009-p.aspx

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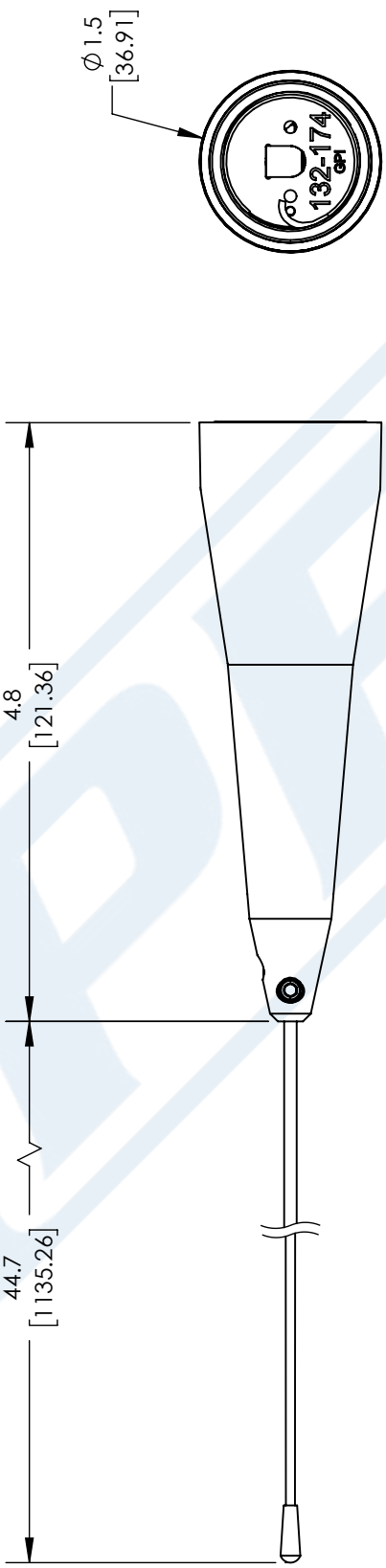
PE51MP1009 CAD Drawing

2 dBi Ground Independent Tunable Poly Spring Vehicular Antenna 144-174 MHz NMO Mount Connector

REVISIONS

REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	08/02/2019	MMILLER



UNLESS OTHERWISE SPECIFIED
LEADING DIMENSIONS ARE INCHES
DIMENSIONS IN [ ] ARE MILLIMETERS
TOLERANCES:
X=± .2 [5.08] | FRACTIONS ± 1/32
.XX=± .01 [.25] | ANGLES ± 1°
.XXX=± .005 [.13]
ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.
THIRD-ANGLE PROJECTION

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SIZE	CAGE	DRAWN BY	PART NUMBER	REV
A	53919	BPUCHASKI	PE51MP1009	A

SCALE N/A | SHEET 1 OF 1

T-Rev.B