



## 3 dB Tunable Poly Spring Vehicular Antenna 144-174 MHz NMO Mount Connector

### Antennas Technical Data Sheet

PE51MP1004

#### Features

- 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 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	Required
Connector Type	NMO Mount

#### Electrical Specifications

Description	Minimum	Typical	Maximum	Units
Frequency Range (Tunable Range)	144		174	MHz
Input VSWR (@ Operating Frequency)			1.5:1	
Impedance		50		Ohms
Gain		3		dB
Horizontal (Azimuth) Beam Width		Omnidirectional		
Vertical (Elevation) Beam Width		50		Degrees
Input Power			150	Watts

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [3 dB Tunable Poly Spring Vehicular Antenna 144-174 MHz NMO Mount Connector PE51MP1004](#)



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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**

**PE51MP1004 (144-174 MHz)**

**3 dB VHF ROOF MOUNT 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 w/Vinyl Protective Cap
- B. e/m-Flex™ Poly Spring Assembly
- C. NMO Base Coil Adapter
- D. O-Ring

**2. Tools/Materials Required:**

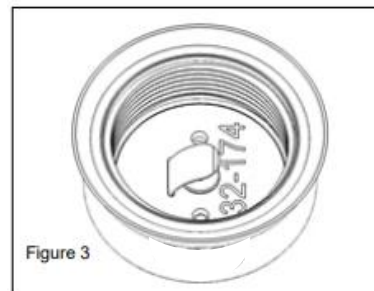
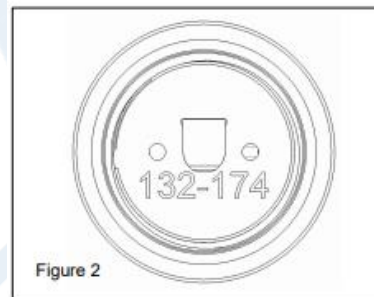
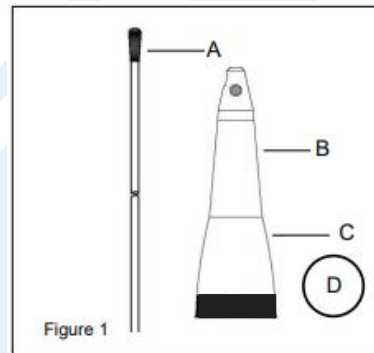
- A. Tool for cutting stainless steel whip
- B. Hex Wrench (3/32")
- C. **Note:** Special tools are not required to install the antenna. The antenna is intended to be installed using a firm hand torque until the sealing O-ring is completely compressed against the installation surface.

**3. Pre-Installation (Figure 2):**

- A. The PE51MP1004 is designed for installation to a standard NMO mount.
- B. Ensure O-ring is properly seated within O-ring groove as shown in Figure 2.
- C. **Important:** Verify proper operational frequency is stamped on the base of the coil as shown in Figure 2.
- D. Remove vinyl protective cap from end of whip. 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. (Figure 3)
- 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 of operation.
- E. Verify VSWR. Apply firm torque to whip adapter set screws. (2 ea.).



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**WHIP CUTTING INSTRUCTIONS**

FOR TUNING PE51MP1004  
(144-174 MHz)

PLEASE CAREFULLY READ ALL  
INSTRUCTIONS BEFORE CUTTING  
THE WHIP.

1. **IMPORTANT:** Before Cutting.

It is recommended to cut the whip longer than the required dimension to verify actual performance. Then trim the whip in 1/16" (1.5mm) increments to fine tune the desired VSWR response.

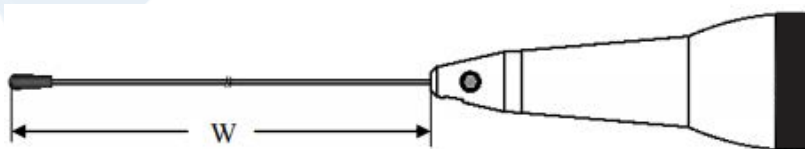
**CUTTING NOTE:** The whip can be cut using a grinding wheel or shearing tool designed for this purpose.

2. **Note:** The 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.** Cut length dimension will be approximately 1" (25mm) longer than Tuned Length "W".

FREQUENCY (MHz)	TUNED WHIP LENGTH "W"	
	(inches)	(mm)
144	44-11/16	1135
147	43-1/4	1098
150	41-3/4	1060
153	40-7/16	1027
156	39-1/16	993
159	37-11/16	957
162	36-7/16	925
165	35-1/16	890
168	33-15/16	862
171	32-13/16	834
174	31-3/4	806

Table 1

- Identify the desired center frequency of operation in the left column of TABLE 1. Imperial and Metric units are given for convenience.
- TUNING NOTE:** For frequencies not listed in TABLE 1, interpolation of Tuned Length "W" is permitted. When interpolating intermediate frequencies, the antenna frequency response increases by approximately 1 MHz for:
  - Each 7/16" (11mm) increment of cut length between 144-164 MHz.
  - Each 3/8" (10mm) increment of cut length between 164-174 MHz.
- Cut the whip as required to establish the specified Tuned Length "W" as shown in Figure 4.
- Verify VSWR. Secure set screws (2 ea.).



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

Figure 4

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [3 dB Tunable Poly Spring Vehicular Antenna 144-174 MHz NMO Mount Connector PE51MP1004](#)



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**Environmental Specifications**

**Temperature**

Operating Range

-40 to +85 deg C

Humidity

95%

Corrosion

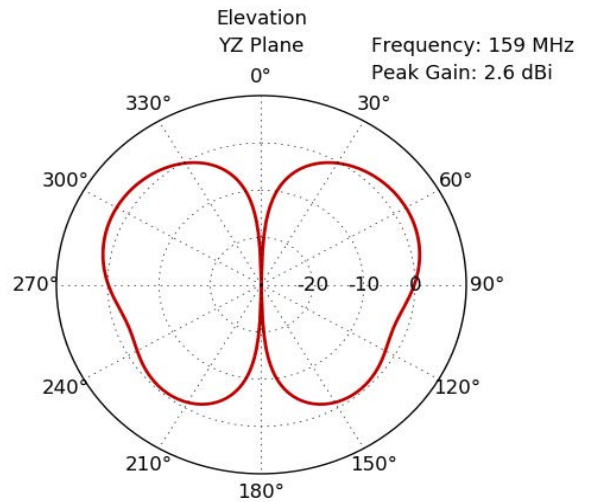
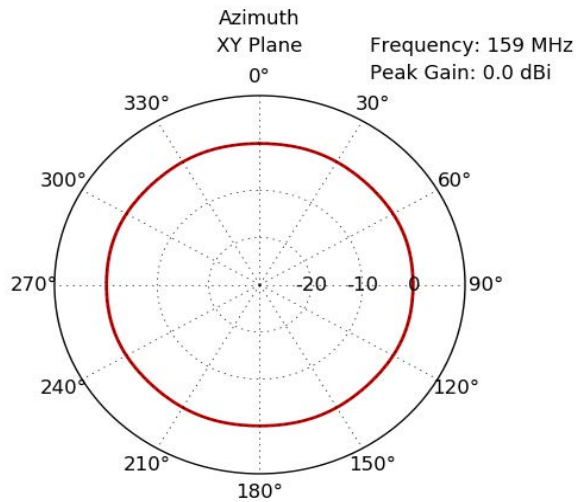
Salt Fog

**Compliance Certifications** (see [product page](#) for current document)

**Plotted and Other Data**

Notes:

**Typical Radiation Pattern**



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3 dB Tunable Poly Spring Vehicular Antenna 144-174 MHz NMO Mount Connector from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99.4% availability and are part of the broadest selection in the industry.

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [3 dB Tunable Poly Spring Vehicular Antenna 144-174 MHz NMO Mount Connector PE51MP1004](https://www.pasternack.com/single-antenna-144-174-mhz-3-db-gain-nmo-mount-pe51mp1004-p.aspx)

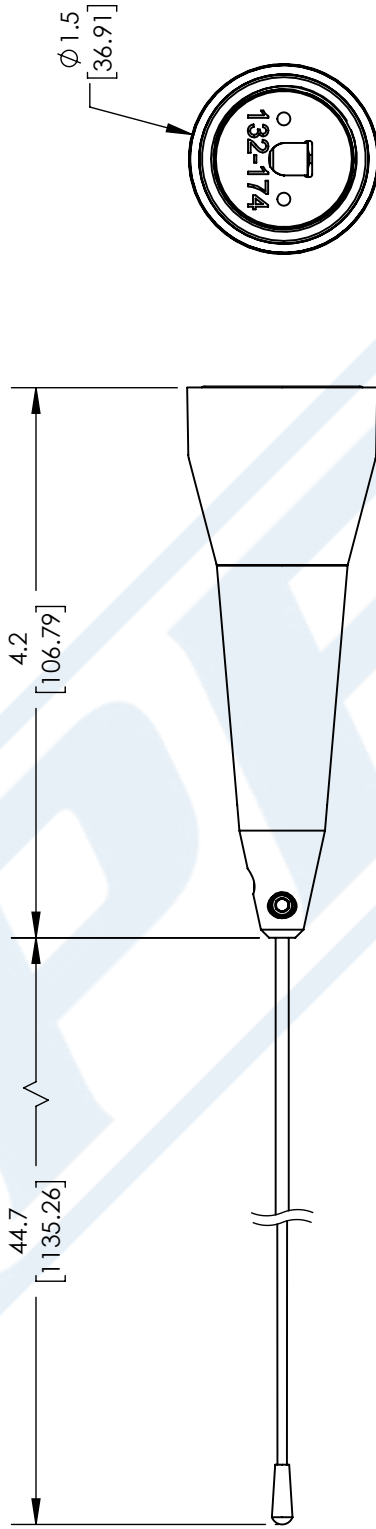
URL: <https://www.pasternack.com/single-antenna-144-174-mhz-3-db-gain-nmo-mount-pe51mp1004-p.aspx>

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# PE51MP1004 CAD Drawing

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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	07/18/2019	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]  
A 53919 BPUCHASKI PE51MP1004

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SHEET 1 OF 1  
SCALE N/A  
REV A

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