INSTALLATION INSTRUCTIONS

EM-M10001 (108-520 MHz)
BROAD BAND VHF/UHF QUARTER-WAVE
ROOF MOUNT ANTENNA

Congratulations on your selection of another quality antenna product from E/M Wave.
E/M Wave 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. Spring
C. NMO Base Mount Adapter
D. O-Ring

2. Tools:

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.

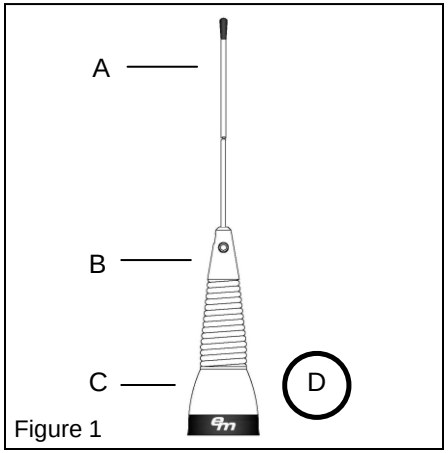

Figure 1

3. Pre-Installation (Figure 2):

a. The EM-M10001 is designed for vehicular ground plane installation with a standard NMO mount.
b. Ensure O-ring is properly seated within O-ring groove as shown in Figure 3.
c. **Note:** Always cut the whip longer than specified chart dimension to verify ground plane effects do not cause whip to resonate higher than desired frequency of operation.

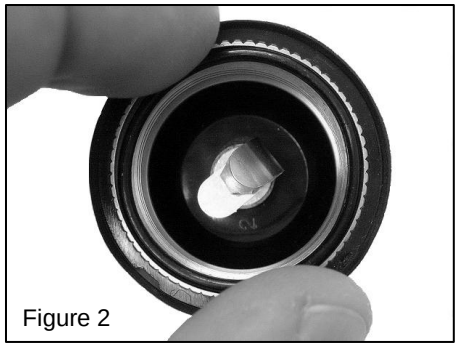
Figure 2

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 Mount Adapter onto the vehicle NMO mount. Tighten by hand until O-Ring is completely seated.
c. Thread Spring onto NMO Base Adapter. Firmly torque by hand.
d. Refer to EM-M10001 whip cutting instructions. Cut whip to length according to desired frequency of operation.
e. Verify VSWR. Apply firm torque to whip adapter set screws (2 ea.).

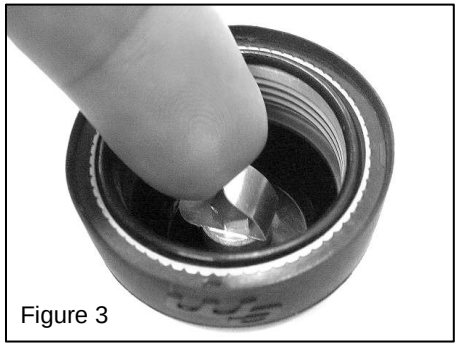
Figure 3

WHIP CUTTING INSTRUCTIONS FOR TUNING EM-M10001

VHF (108-245 MHz)

PLEASE CAREFULLY READ ALL INSTRUCTIONS BEFORE CUTTING THE WHIP.

1. **IMPORTANT: Before Cutting.** It is recommended to cut whip longer than the required dimension to verify actual performance. Then trim the whip in 1/8" (3mm) increments to fine tune the desired VSWR response. 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".
3. Identify the desired center frequency of operation in the left column of Table 1.
4. **Note:** For frequencies not listed in Table 1, interpolation of Tuned Length "W" is permitted. Mounting location and vehicle (ground plane) size will affect actual VSWR performance.
5. Cut the whip length required to establish the specified Tuned Length "W" as shown in Figure 4. Imperial and Metric Length units are given for convenience.
6. Verify VSWR. Secure set screws (2 ea.).

FREQUENCY	TUNED WHIP LENGTH "W"	
(MHz)	(inches)	(mm)
108	25	635
110	24-3/8	619
115	22-7/8	581
120	21-1/4	540
125	19-3/4	502
130	18-7/8	479
135	17-7/8	454
140	17	432
145	16-3/8	416
150	15-3/4	400
155	15-1/8	384
160	14-1/2	368
165	13-7/8	352
168	13-5/8	346
170	13-1/2	343
175	13	330
180	12-5/8	321
185	12-1/8	308
190	11-3/4	298
195	11-3/8	289
200	11	279
205	10-5/8	270
210	10-3/8	264
215	10	254
220	9-3/4	248
225	9-1/2	241
245	8-5/8	219

Table 1

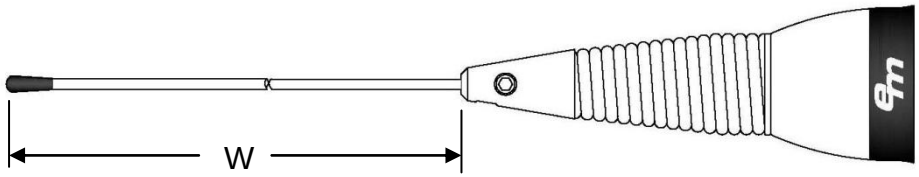

Figure 4

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

WHIP CUTTING INSTRUCTIONS FOR TUNING EM-M10001

UHF (380-520 MHz)

PLEASE CAREFULLY READ ALL INSTRUCTIONS BEFORE CUTTING THE WHIP.

1. **IMPORTANT: Before Cutting.** It is recommended to cut 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. 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 5.** Cut length dimension will be approximately 1" (25mm) longer than Tuned Length "W".
3. Identify the desired center frequency of operation in the left column of Table 2.
4. **Note:** For frequencies not listed in Table 2, interpolation of Tuned Length "W" is permitted. Mounting location and vehicle (ground plane) size will affect actual VSWR performance.
5. Cut the whip length required to establish the specified Tuned Length "W" as shown in Figure 5. Imperial and Metric Length units are given for convenience.
6. Verify VSWR. Secure set screws (2 ea.).

FREQUENCY	TUNED WHIP LENGTH "W"	
(MHz)	(inches)	(mm)
380	4-9/16	116
385	4-17/32	115
390	4-1/2	114
395	4-7/16	113
400	4-5/16	110
405	4-1/4	108
410	4-7/32	107
415	4-3/16	106
420	4-1/8	105
425	4-3/32	104
430	4-1/16	103
435	3-31/32	101
440	3-7/8	99
445	3-13/16	97
450	3-3/4	95
455	3-21/32	93
460	3-19/32	91
465	3-1/2	89
470	3-7/16	87
475	3-11/32	85
480	3-9/32	83
485	3-3/16	81
490	3-1/8	79
495	3-1/32	77
500	2-15/16	75
505	2-7/8	73
510	2-25/32	71
515	2-23/32	69
520	2-11/16	68

Table 2

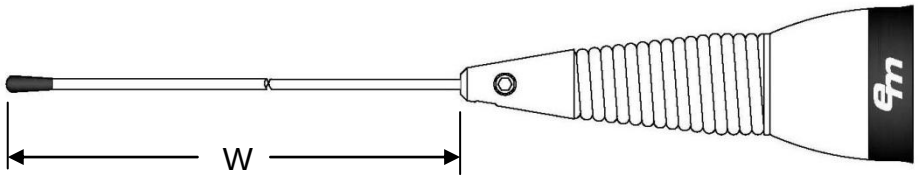

Figure 5

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