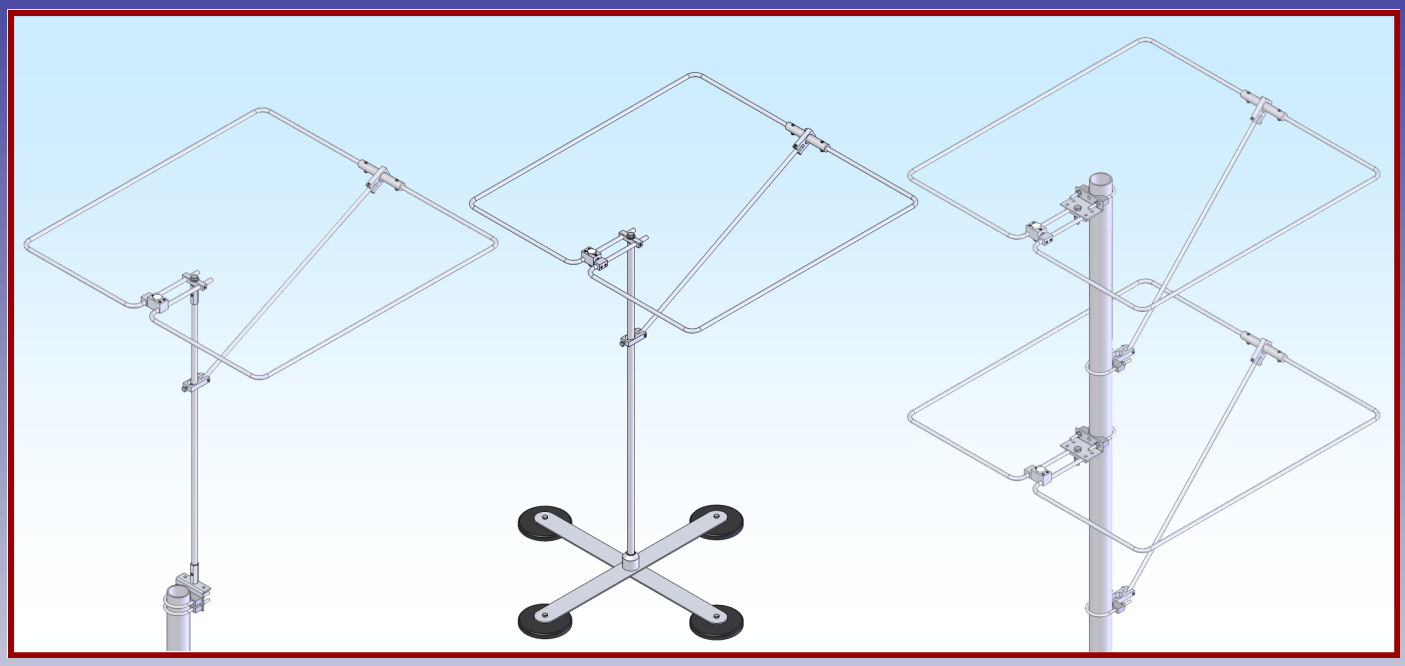
M2 Antenna Systems, Inc.
Model No: 6M HO LOOP



SPECIFICATIONS:

Model	6M HO LOOP
Frequency Range	50 To 50.3 MHz
Gain, Typical @ 11 ft.	6.3 dBi @ 25 deg.
Gain, 2 Stack @ 40 & 52 ft.	10.3 dBi @ 6 deg.
Polarity	Horizontal
Impedance	50 Ohms, Unbalanced
Power Handling.	800W, 1.5 kW stacked
Feed Connector	SO-239
Mounting	3/8-24 or 1-1/2”-2”
Vehicle Mounting Height	30” or more
Stacking Distance	9ft to 12ft
Maximum Element Length	29-1/2”
Wind Area	0.1 sq ft.
Weight	2 lbs.

***Subtract 2.14 from dBi for dBd**

FEATURES:

Our 6M HO Loop is the result of a continued development of reduced size, omni-directional horizontally polarized loop-style antennas. This new design is easy to match in any situation. Performance is better than anything in its class and its design makes it immune to nearly all weather conditions. Power handling is often a problem with small loops but this design can handle 800 watts with ease and a stacked pair can easily handle 1.5 kW. The patterns contained in the manual will give you a good idea of how well the 6M HO Loop will perform in your system.

As with all horizontally polarized antennas, performance is usually tied to height above ground but even at ten feet the HO Loop yields an amazing 5.9 dBi at an angle of 27 degrees. Mounted on a vehicle at eleven feet above ground, the gain jumps to 6.3 dBi at 25 degrees. Stacked for base or portable use, twelve foot spacing is optimum. Note that the gain jumps over 3 dB for a stacked pair of these unique antennas, yielding as much as 10.3 dBi!

Physically the HO Loop is 29.5 inches square with a wind area of just 0.1 square foot. The 3/8” diameter tubing keeps it light but plenty rugged for mobile operation. Our precision machined aluminum feed block is sealed and potted with silicon gel for extreme reliability and low loss. The feed block slides on the tubes for frequency adjustment and the shorting bar adjusts for a perfect match into 50 ohm feedline. Two HO Loops can be stacked using a coaxial power divider.

Optional items include our line of lightweight aluminum mobile masts and our “Big-Foot” heavy duty magnetic base. We also offer coaxial power dividers and phasing cables for stacking HO Loops.

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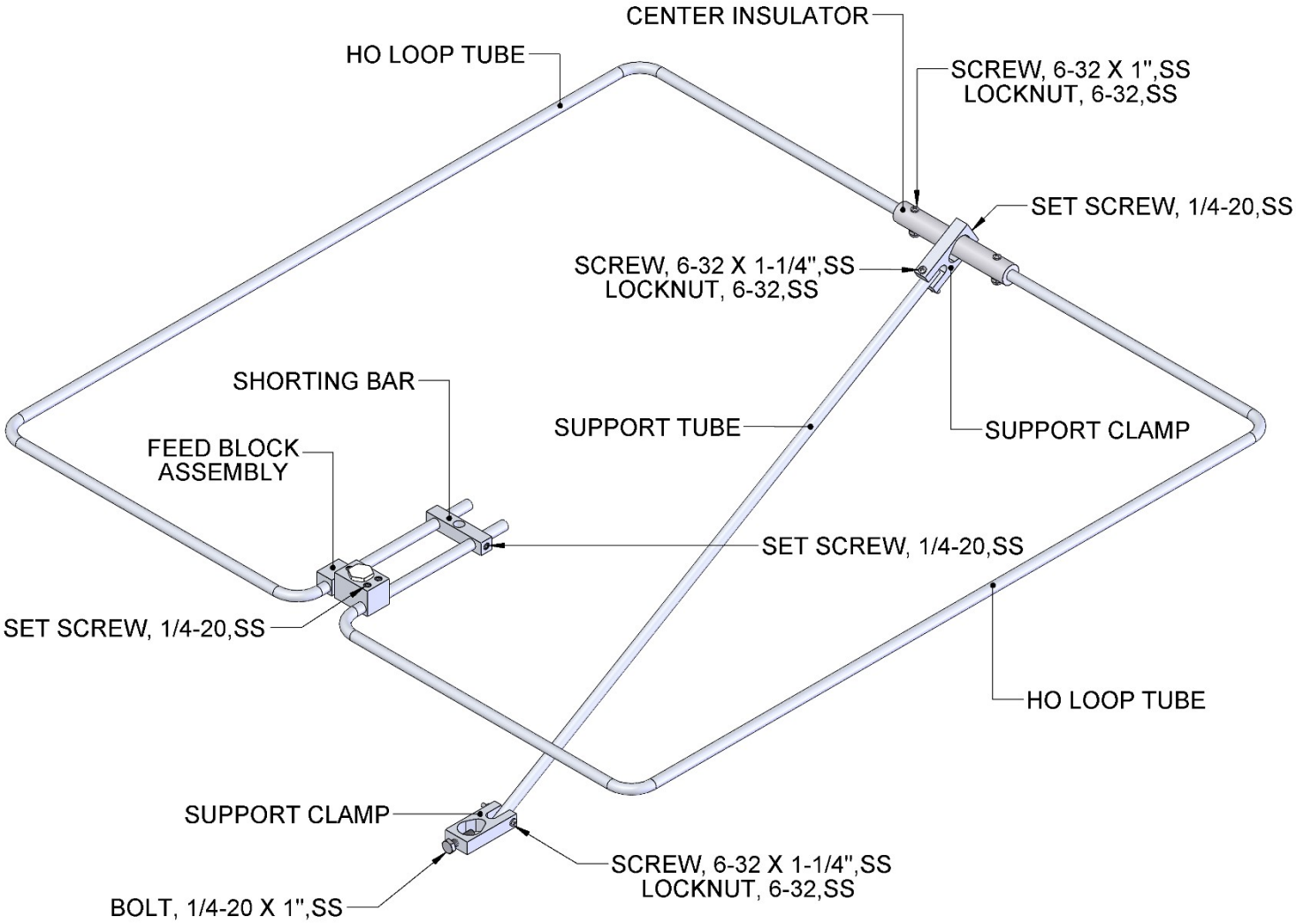
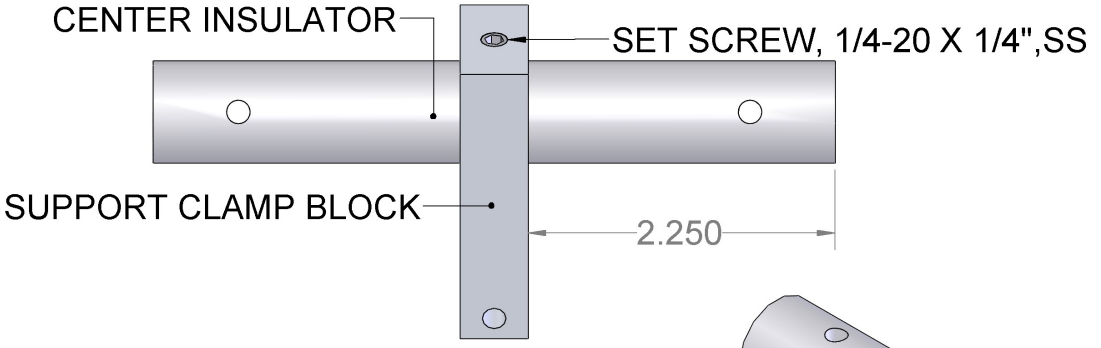
08/29/12
Rev.03

6M HO LOOP ASSEMBLY OVERVIEW

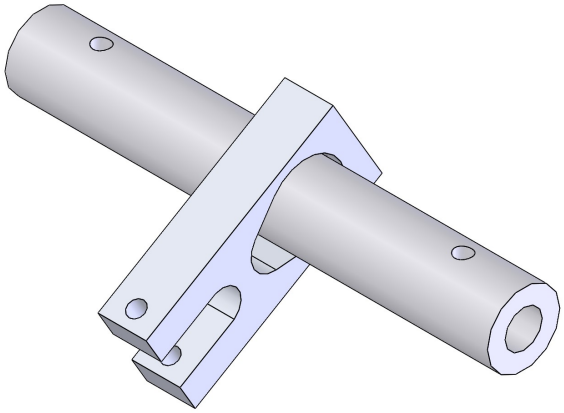


6M HO LOOP ASSEMBLY MANUAL

1



1. Slide on (1) support clamp and center it at 2-1/4” on to the white center insulator. Install a 1/4-20 X 1/4 set screw into support clamp block and tighten gently.



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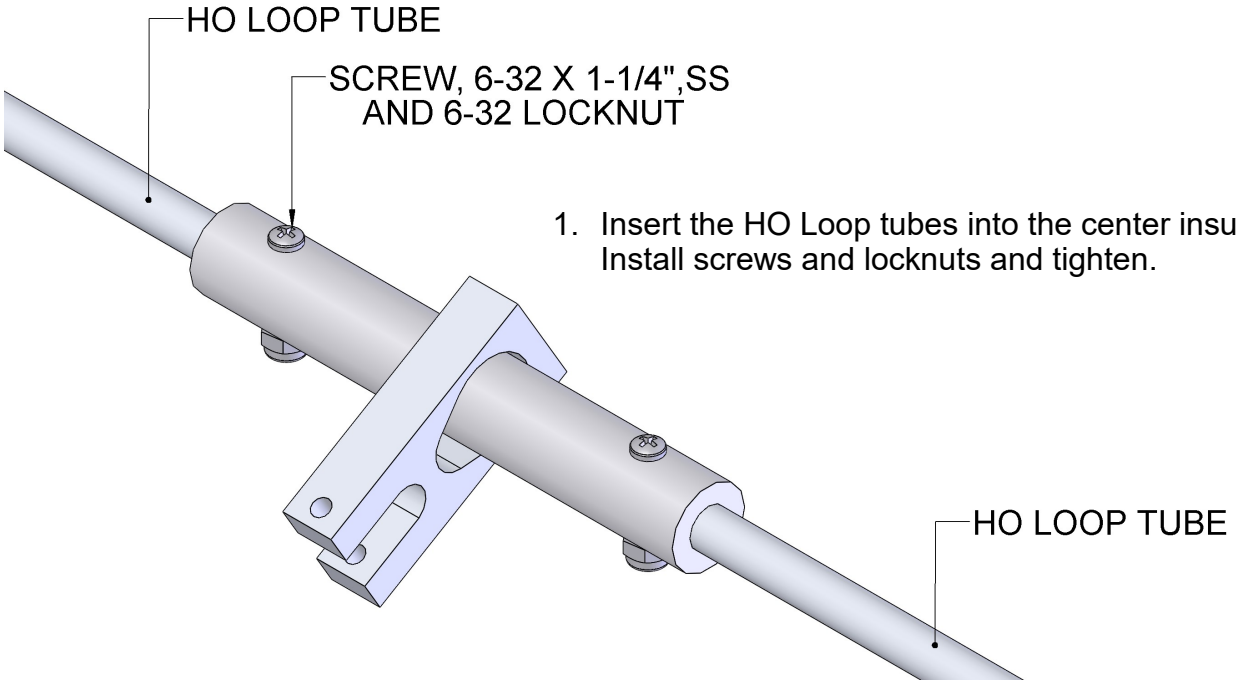
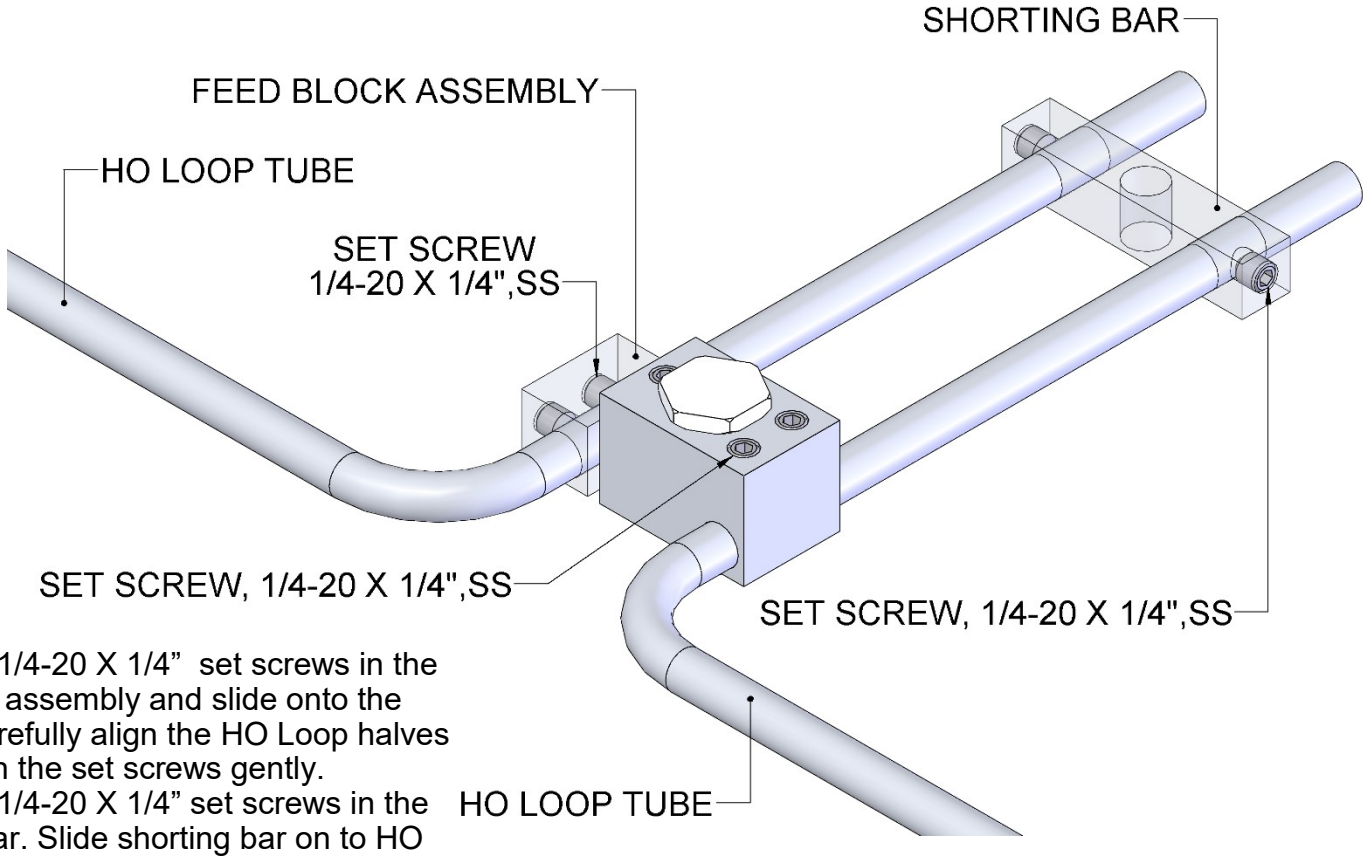


1. Insert the HO Loop tubes into the center insulator. Install screws and locknuts and tighten.

6M HO LOOP ASSEMBLY MANUAL

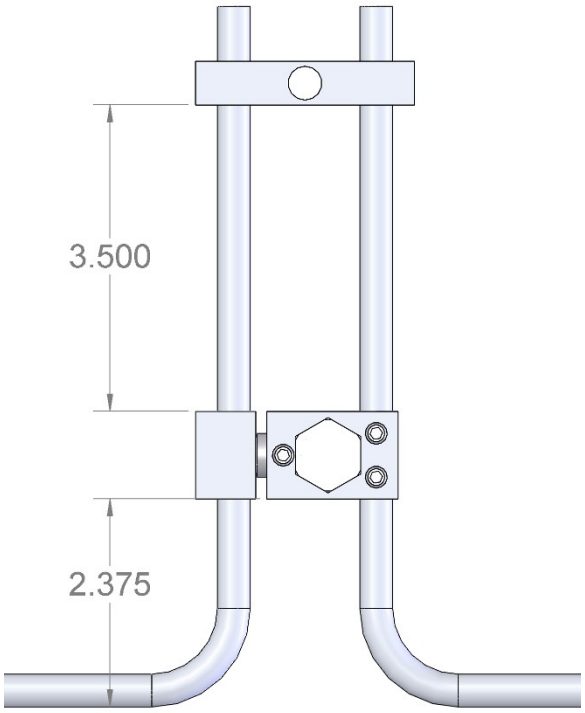
3



1. Install the 1/4-20 X 1/4” set screws in the feed block assembly and slide onto the tubes. Carefully align the HO Loop halves and tighten the set screws gently.
2. Install the 1/4-20 X 1/4” set screws in the shorting bar. Slide shorting bar on to HO Loop tubes and tighten the screws gently.

4

1. Position feed block assembly and shorting bar to the starting dimensions. Refer to the tuning detail page for more information.



6M HO LOOP ASSEMBLY DETAILS

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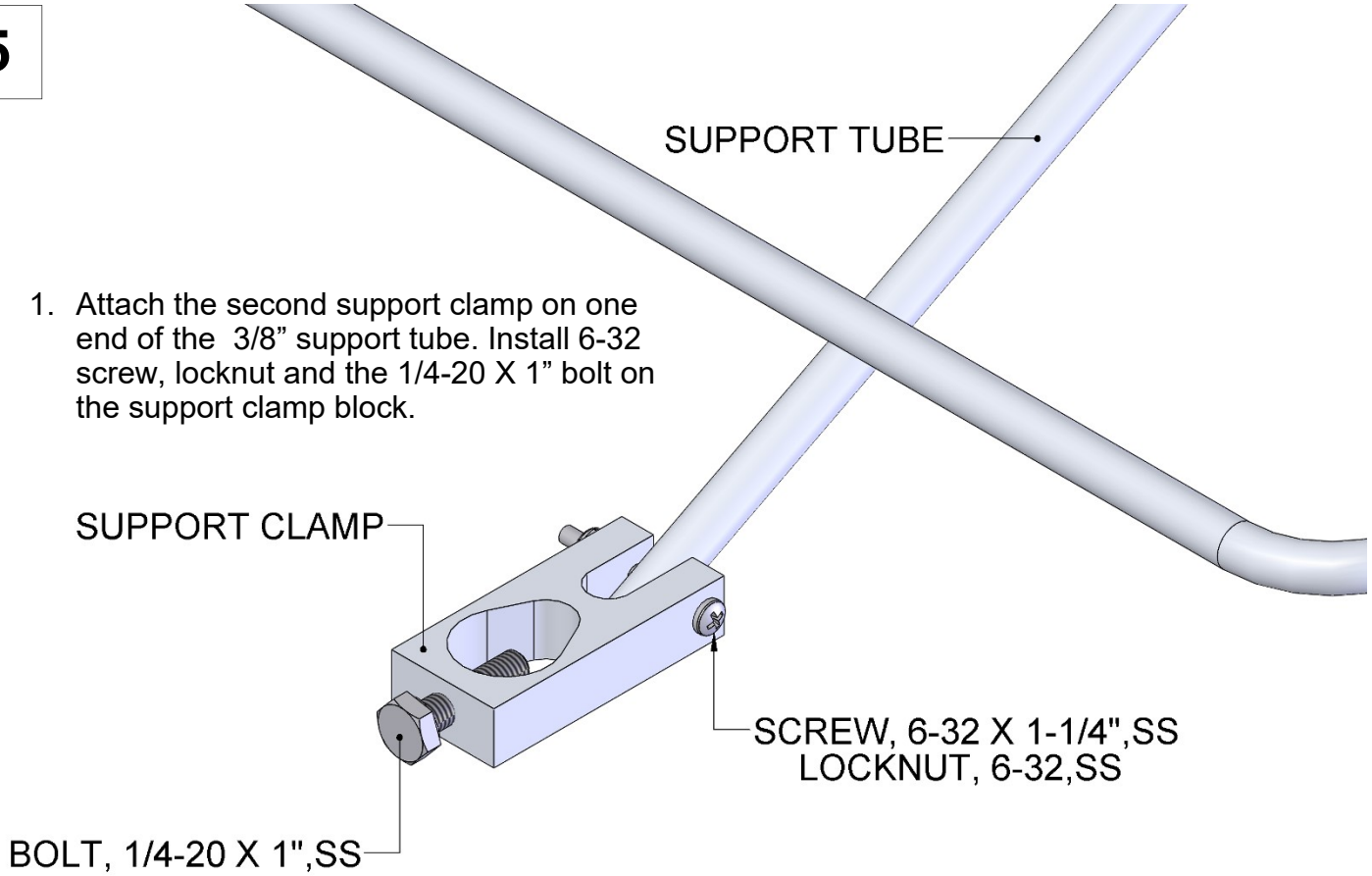
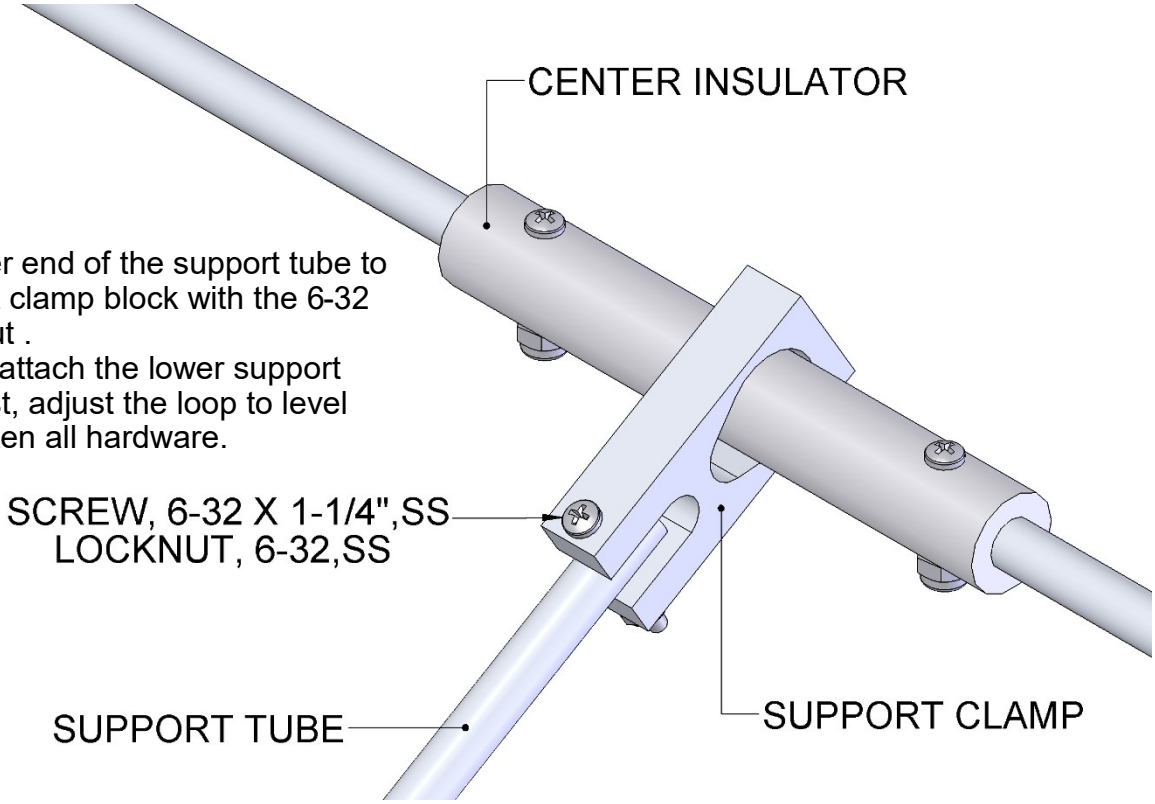


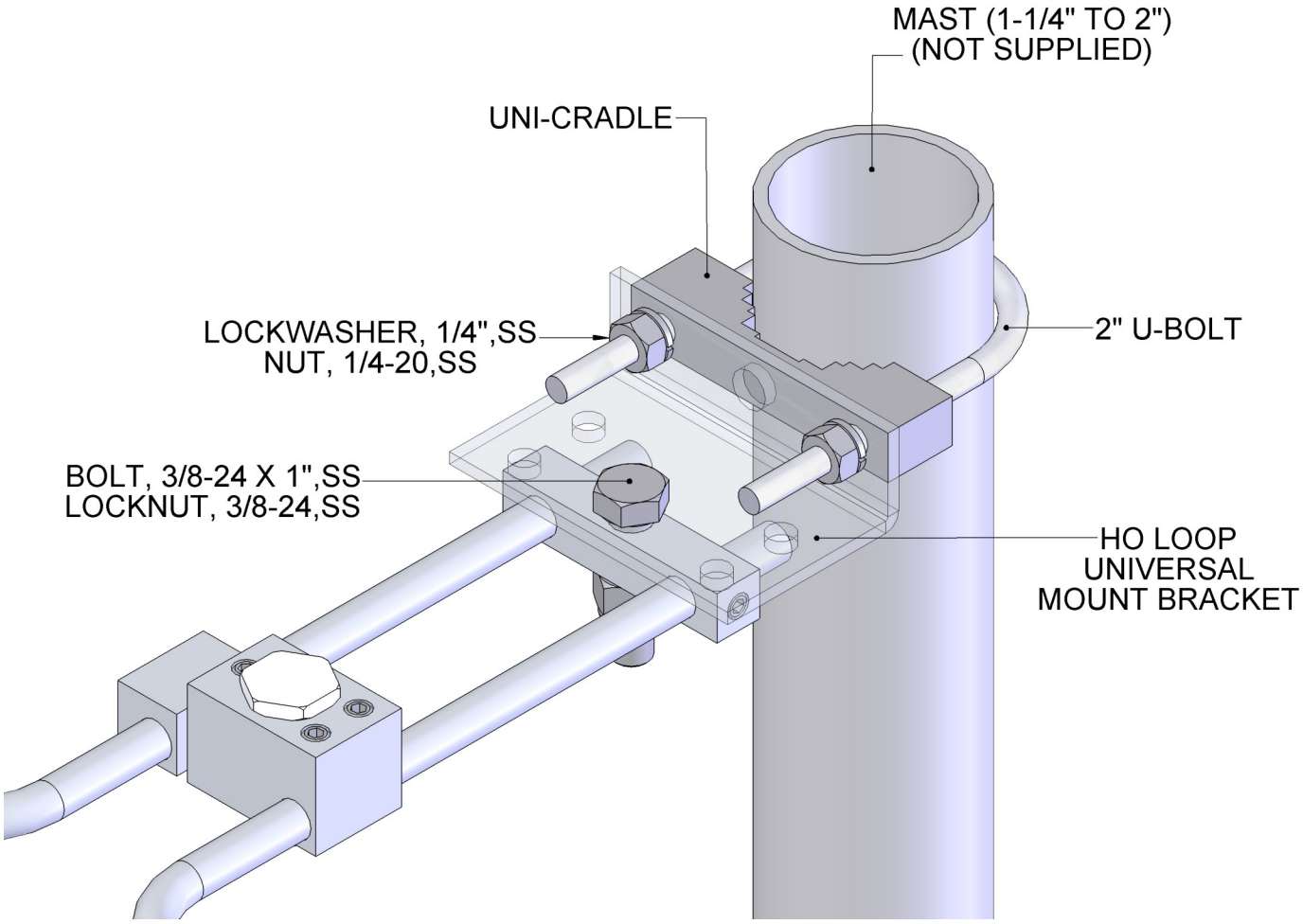
1. Attach the second support clamp on one end of the 3/8” support tube. Install 6-32 screw, locknut and the 1/4-20 X 1” bolt on the support clamp block.

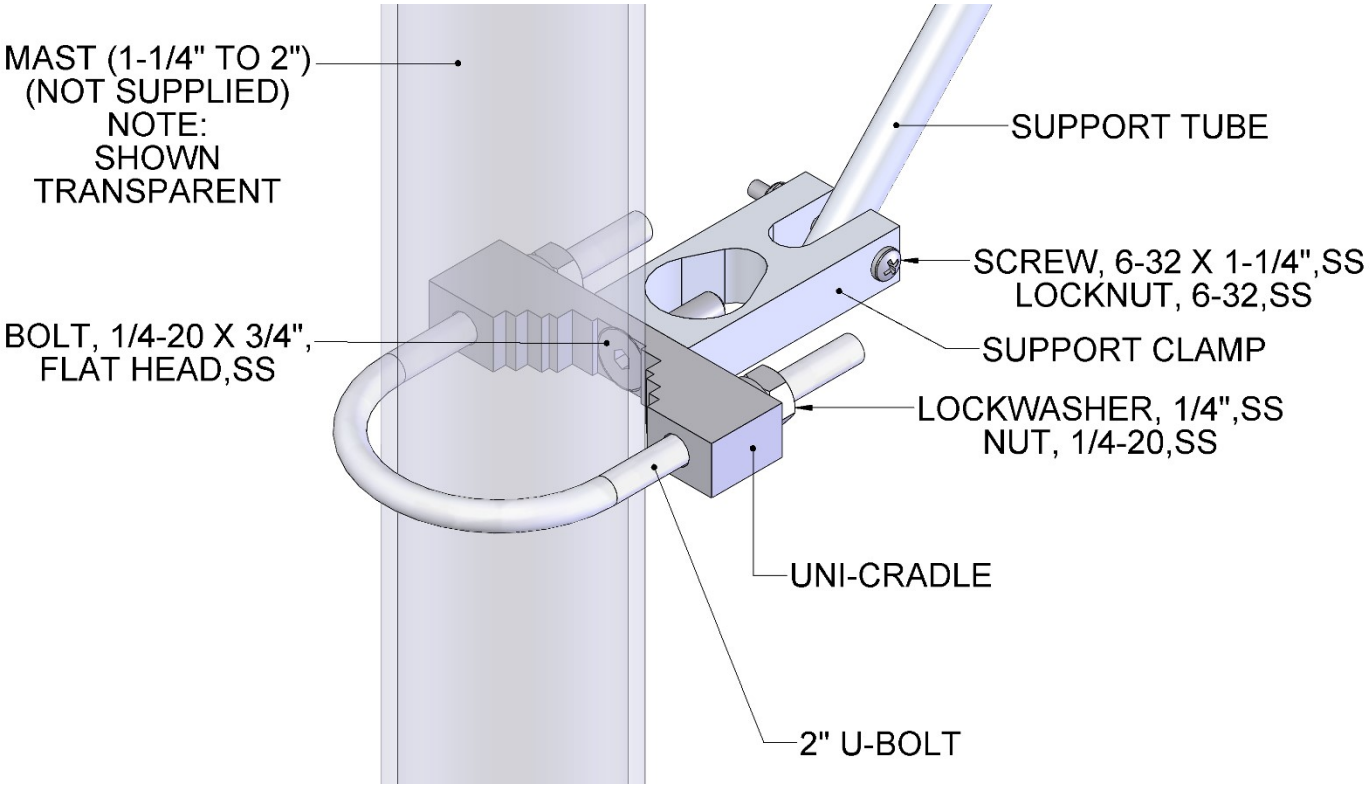
6



1. Connect the other end of the support tube to the other support clamp block with the 6-32 screw and locknut .
2. After final tuning attach the lower support clamp to the mast, adjust the loop to level position and tighten all hardware.

6M HO LOOP BASE MOUNTING DETAIL





6M HO LOOP TUNING DETAIL

For base station installations, objects such as towers, large diameter masts, trees, roofs or buildings near the HO Loop can cause some detuning. Be aware that some tuning of the HO Loop or HO Loops in their final position or under similar conditions may be necessary. For mobile installations, tune the HO Loop in its final position on your vehicle.

When tuning multiple HO Loops in a stacked array, tune each HO Loop individually and recheck them in their final positions. After individual tuning and testing, add the phasing lines and power dividers and re-test the complete system one final time, making fine adjustments as needed.

Note: Be sure to reverse one feed block to account for the 180° phase shift in the 6M HO Loop 2 Port Power Divider. See "Mounting and Stacking Options" for more information.

BASIC TUNING

Be sure the feed block assembly is set to the starting dimension in figure 4. This dimension controls the FREQUENCY. Likewise, ensure the shorting bar is set to the starting dimension provided. The shorting bar position controls feed point IMPEDANCE, and also has a small effect on frequency.

Tune the frequency first by adjusting the feed block assembly. Increasing the dimension will lower the HO Loop in frequency; decreasing it will raise the frequency. Once the HO Loop is at the desired frequency, make small adjustments to the shorting bar for best match. After tuning is complete attach the support tube as shown and tighten all hardware.

REMEMBER: HORIZONTALLY POLARIZED ANTENNAS ARE AFFECTED BY THE GROUND SO THE HIGHER YOU GET YOUR *HO LOOP,* THE BETTER. The ground can be your friend as well, providing as much as 6 dB additional ground gain at some angles above the horizon. That angle is defined by the frequency and height above ground. At one wavelength (236" at 6 meters), the typical angle of maximum radiation will be about 14 degrees. At two wavelengths, the angle is 7 degrees and at four wavelengths the angle is 3.5 degrees. Net gain improves with height because the pattern hits the ground at a shallower angle, giving up less energy to the ground.

In most mobile installations 10 to 11 feet is about the practical limit for most driving conditions. The HO Loop can be tuned to work as low as 18" above a vehicle roof with some compromise in performance. However, you will find more people to talk to and more DX if you can get the HO Loop up to at least the 10 foot level.

POWER CONSIDERATIONS

An HO Loop can handle up to 800 watts and a stacked pair can handle up 1.5 kW. Users often report long distance QSO's using HO Loops and modest power. We hope you enjoy your new ***HO Loop*** and please keep an ear out for those rare but wonderful 6 meter openings to other parts of the world!

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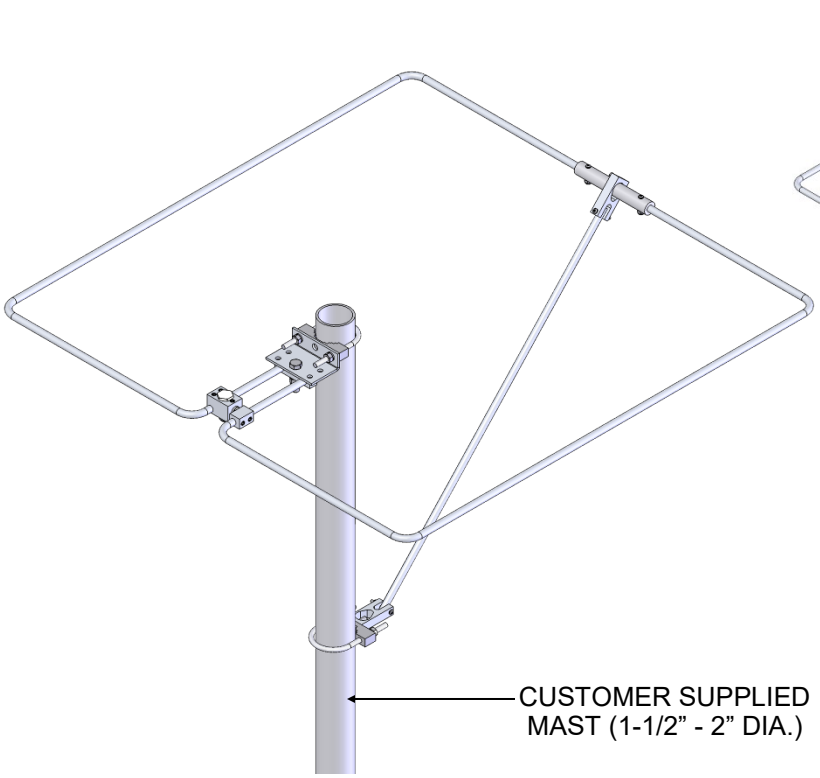
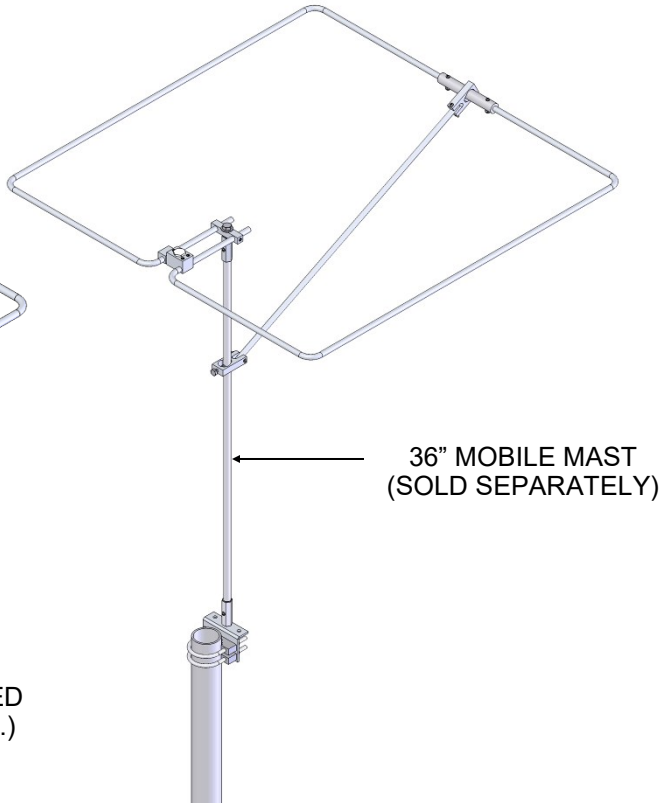
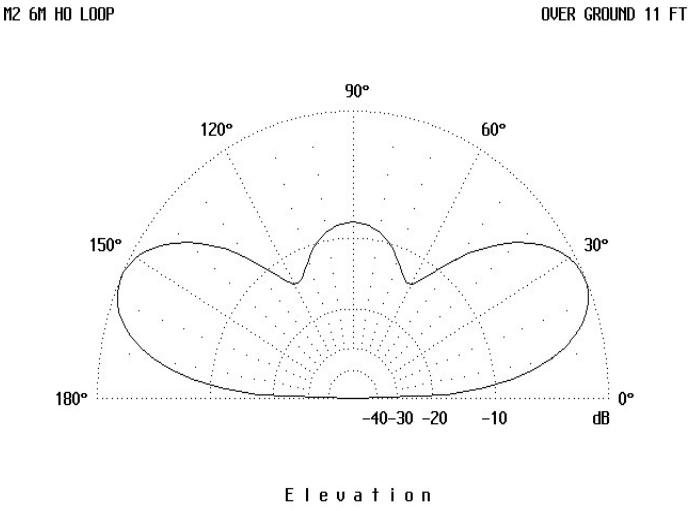
MAST MOUNTING OPTIONS



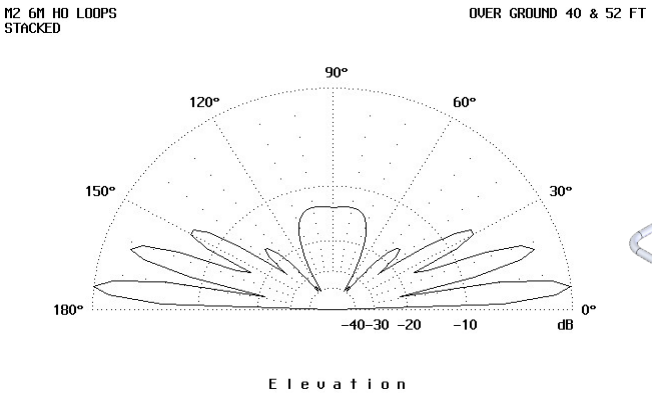


SINGLE 6M HO LOOP PERFORMANCE

HEIGHT ABOVE GROUND	GAIN	ANGLE OF RADIATION
8 FT MOBILE	4.74 dBi	33°
12 FT MOBILE	6.54 dBi	22°
30 FT BASE STATION	6.64 dBi	9°
50 FT BASE STATION	6.84 dBi	5°



MOUNTING AND STACKING OPTIONS

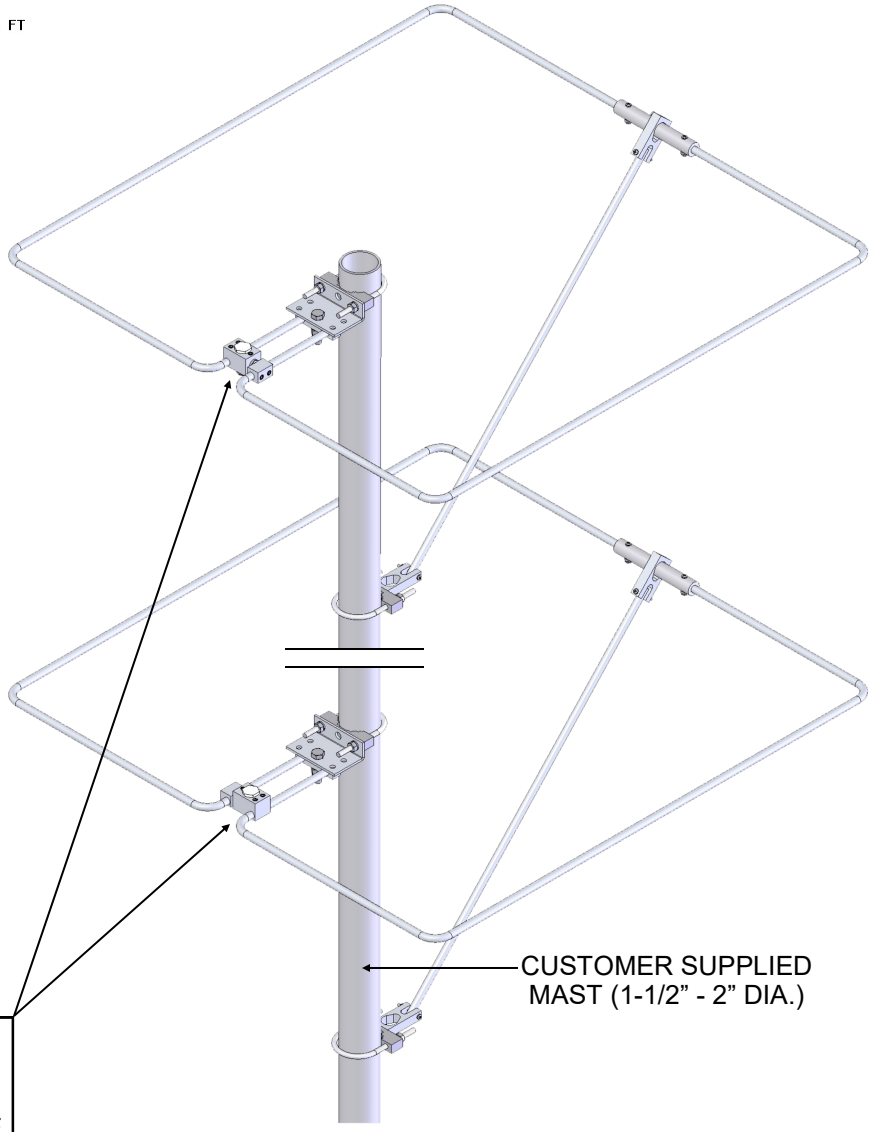


SHOWN IS AN EXAMPLE OF A BASE STATION SYSTEM OF 2 STACKED AND PHASED 6M HO LOOPS

PARTS NEEDED:

- (2) 6M HO LOOPS
- 6M HO LOOP 2 PORT POWER DIVIDER (OMITTED FOR CLARITY)

Order online at http://www.m2inc.com



NOTE:
A 180° REVERSAL OF ONE FEED BLOCK IS NECESSARY TO ACCOMMODATE THE EXTRA HALF WAVE (λ/2) OF COAX IN THE LONG PHASING LINE OF THE 6M HO LOOP 2 PORT POWER DIVIDER.

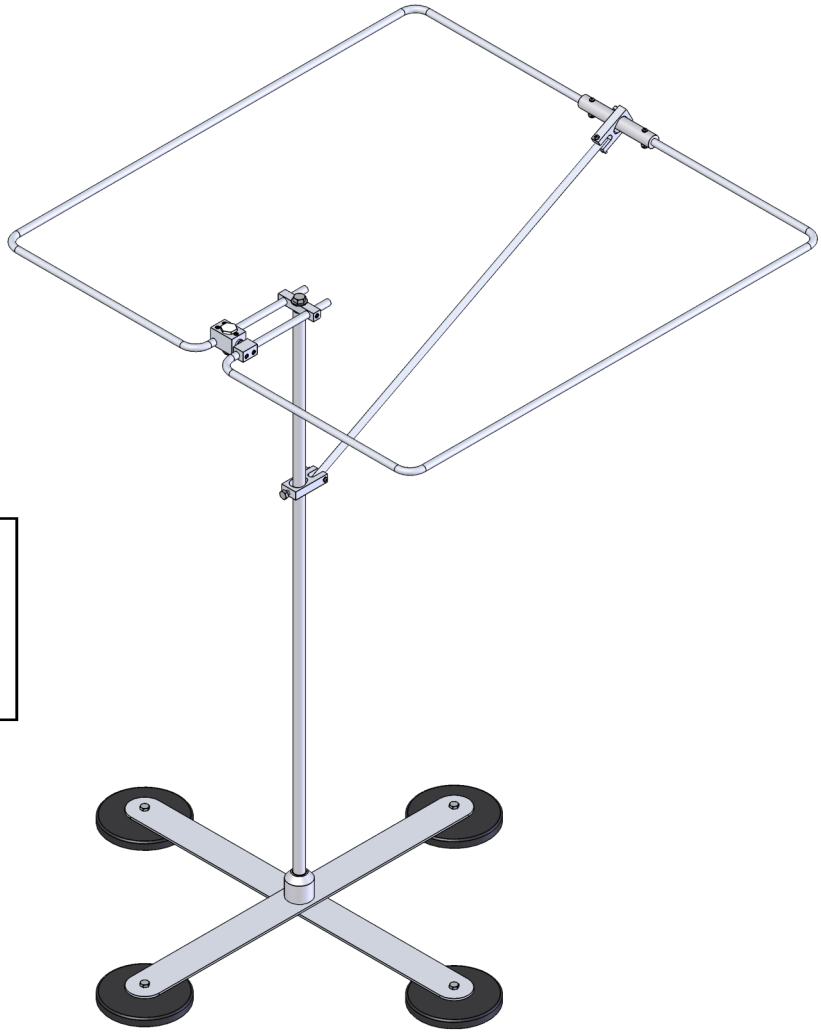
2 STACKED 6M HO LOOP PERFORMANCE

HEIGHT ABOVE GROUND	GAIN	ANGLE OF RADIATION
8 FT AND 18 FT	8.03 dBi	17°
8 FT AND 20 FT	8.47 dBi	16°
20 FT AND 32 FT	9.96 dBi	10°
40 FT AND 52 FT	10.54 dBi	6°

MOBILE MOUNTING OPTIONS

CAUTION:
DEPENDING ON THE MAKE AND MODEL OF YOUR VEHICLE AND THE THICKNESS AND COMPOSITION OF THE VEHICLE BODY, ADDITIONAL GUYING OR SUPPORT MAY BE NECESSARY.

SHOWN IS AN EXAMPLE OF MOBILE HO LOOP MOUNTING
(YOUR INSTALLATION MAY DIFFER)



PARTS NEEDED

- 6M HO LOOP
- 36” ALUMINUM MAST
- “BIG-FOOT” MAGNET MOUNT

Order online at http://www.m2inc.com

6M HO LOOP PARTS & HARDWARE

DESCRIPTION	QTY
HOLOOP TUBE (BENT) 3/8" OD	2
SUPPORT TUBE, 3/8"	1
FEED BLOCK ASSEMBLY	1
SHORTING BAR, 1/2" X 1/2" X 2-1/2"	1
CENTER INSULATOR, 3/4" UHMW	1
SUPPORT CLAMP, 1/2" X 1" X 2-1/4"	2
HOLOOP UNIVERSAL MAST BRACKET	1
UNI-CRADLE, (M2AMC0176)	2
U-BOLT, 2" HINDLEY	2
ASSEMBLY MANUAL	1

HARDWARE:

BOLT, 3/8-24 X 1", SS	1
LOCKNUT, 3/8-24, SS	1
BOLT, 1/4-20 X 1", SS	1
BOLT, 1/4-20 X 3/4", FLAT HEAD PHILLIPS, SS	1
SET SCREW, 1/4-20 X 1/4", SS	7
LOCKWASHER, 1/4", SS	4
NUT, 1/4-20, SS	4
SCREW, 6-32 X 1-1/4", SS	2
SCREW, 6-32 X 1", SS	2
LOCKNUT, 6-32, SS	4
ALLEN WRENCH, 1/8"	1

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