MFJ-1624 MOBILE HF ANTENNA

Introduction

The MFJ-1624 mini bug-catcher HF Mobile Antenna was designed to provide operation on 40 meters through 10 meters and VHF 6 meters at 300 watts PEP. The antenna is made up of the loading coil assembly that includes an inductive matching network designed to keep the SWR low. With a maximum height of 5 1/2 feet the antenna can be quickly removed from its mounting position for quick storage. The antenna is equipped with a 3/8 x 24 inch bolt for easy attachment to most mounts.

Weekender Operation

The design of the MFJ-1624 makes it easy to become an "HF Mobileer" instantly. Have fun DXing or just rag-chewing on the HF bands. Simply attach one of the mounts listed below and follow the assembly and grounding instructions. Throw your rig into the car and plug it into the cigarette lighter and turn down the power to 20 Watts or so (to avoid overloading your cigarette lighter: MFJ-1624 handles 300 Watts PEP). Now you will be ready to work the world HF Mobile!

WARNING: Operation of the radio should begin with the output power of the radio at the lowest setting to avoid damage or fire in the vehicle electrical system. Slowly increase the power to no more than 20 Watts. If more than 20 Watts of output power is necessary a direct connection from the radio to the battery should be made to avoid overloading the vehicle wiring.

Choosing a Mounting Position

The MFJ-1624 should be mounted in a location on the vehicle as high and in the clear as possible, while still remaining close to a good ground point. The ground connection should be less than 1 foot away from the antenna. Several positions may need to be tested to find a suitable ground. Refer to the Grounding section of this instruction manual for more information.

Many different types of mounts can be used with the MFJ-1624 antenna. MFJ offers several mounts that will securely hold the antenna in place. These are listed below.

MFJ-338T (Tri-Mag Mount)
MFJ-342 (Pipe/ Mirror Mount)
MFJ-343 (Permanent Mount)
MFJ-344 (Heavy Duty Mirror Mount)
MFJ-347 (Lip Mount)

Required Tools

[ ] #1 flat head screwdriver
[ ] #1phillips head screwdriver
[ ] 3/8" wrench
[ ] 12mm wrench

Additional Items Needed for Operation

[ ] Antenna Mount
[ ] Coax
[ ] SWR Analyzer / SWR Bridge

Parts List

[ ] Antenna Whip
[ ] Loading Coil Assembly
[ ] Ground Kit
[ ] (2) 3/8" x 24 split lock washer
[ ] 1/2" self tapping screw

Assembly

[ ] 1. Remove the antenna parts from the packaging and check to see that all are present using the list above.

[ ] 2. Place the 3/8" split lock washer onto the threaded end of the whip.

[ ] 3. Screw the antenna whip into the coupling nut on top of the loading coil as shown in figure 1.

[ ] 4. Secure the whip into place using a 12mm or equivalent wrench.

Figure 1

WARNING: Road vibration will cause the whip to become loose if the above instructions are not followed.

Placing The Mount

Choose your mounting position. Place the mount in the chosen location. **REMEMBER TO KEEP THE MOUNT WITHIN ONE FOOT OF A GOOD GROUND CONNECTION!**

Grounding

A *Ground Connection* is critical for operation of this antenna!

The ground connection should be made to a point on the vehicle connected directly to the vehicle frame. It is recommended that the wire making the connection be kept to a length not exceeding 1 foot. This will affect the resonance of the antenna. The shield of the coax being used also must be connected to ground.

Possible Grounds

1. Grounds were placed during assembly of the vehicle. These are sometimes difficult to find but are very usable.
2. Make a connection to the frame of the vehicle or to a metal surface connected to the frame.

The ground harness supplied with the MFJ-1624 was designed for simple installation. Both the coax braid and vehicle ground will be connected to the ground bolt on the antenna.

[ ] 1. Attach the soldering lug of the long(1 foot) ground wire to the vehicle in the chosen ground position. Secure the lug to the vehicle using the _ " self-tapping screw.

[ ] 2. Connect the other second ground wire with the larger _" solder lug to the mounting bracket by removing the 3/8 coupling nut from the mounting bracket. **Take a close look at the assembly of the parts before you begin.** This may be different with some mounts.

[ ] 3. Place the solder lug so that it is directly in contact with the coax ground depending on the mount being used. The following list gives helpful information when connecting the MFJ-1624 Antenna to MFJ mounts.

MFJ-338T: Remove the coupling nut and hardware from the mount. Reassemble the hardware with the solder lug between the bushing containing the coax and the 11/4" Flat bar.

MFJ-342, 342, 344: Remove the coupling nut and hardware from the mount. Place the solder lug between the SO-239 connector and the Bracket.

MFJ-347: Remove the coupling nut and hardware from the mount. Place the lug between the plastic bushing and the bracket surface.

WARNING: Check to see that the center conductor of the coax is insulated from the coax braid/ground.

[ ] 4. Re-assemble the mount and tighten all hardware firmly.

Note: The ground wire to the vehicle was pre-assembled to be one foot in length. If required this length can be changed. **Remember a short ground is better.**

WARNING: The hardware connections on the antenna and mount should be checked periodically to be sure they are firmly secure. Road vibration could cause the antenna to become loose and result in damage.

Mounting the MFJ-1624

[ ] 1. Install the antenna mount in the chosen location. (Close to the Ground Point)

CAUTION: Be sure the mount is firmly secured to the vehicle.

[ ] 2. Place the supplied 3/8" lock washer onto the 3/8 x 24" bolt on the loading coil assembly.

[ ] 3 Remove the wing nut, lock, and one flat washer from the ground bolt shown in figure 2.

[ ] 4 Place the solder lug located on the ground wire harness onto the bolt. Replace the flat, lock, and wing nut to secure the ground in place.

Figure 2

Tuning

Note: The matching network of the MFJ-1624 was designed to be adjustable to allow a usable SWR to be obtained. This will be the first step in tuning the antenna. 40 and 30 meters are affected the most by the matching network. A point should be determined where both of these bands is usable.

[ ] 1. Extend the whip to full length.

[ ] 2. Begin by placing the MHz TAP on turn 27 of the coil. Place the SWR TAP approximately on turn 30 of the coil. Check the resonant point This point will more than likely be a dip on the SWR meter but unusable. It should be at or just below 7 MHz. Figure 3 shows the numbered turns.

[ ] 3 If a usable SWR is not found, adjustment of the matching network is needed. This is adjusted by moving the SWR tap on the base of the antenna. Turns 29-32 should be used to adjust this. Move the SWR tap in small increments to find

Figure 3

the correct point.

Note: A permanent marker may be used to mark desired resonant points on the coil for easy adjustment.

[ ] 4. When a usable SWR is found secure the clip in place. Slight adjustment of the SWR tap may be needed for some bands.

Note: If a usable SWR cannot be obtained the Ground may not be satisfactory or to long. Another ground or antenna location may be necessary.

[ ] 5. Resonance on the higher HF bands is found by moving the MHz tap up the coil(more turns shorted). The approximate MHz Tap position for each band is given in table 1. Refer to figure 3 for the coil number.

Band (Meters)	Coil Turn
6	0
10	4
12	7
15	9
17	10
20	12
30	16
40	27

Table 1

[ ] 6. Resonance on 6 meters is reached by shortening the whip to approximately 40 inches and placing the tap on turn 0 of the coil. Slight adjustment of the whip may be needed.

STRAY RF

One common problem with mobile HF operation is stray RF in the electronics system. This can be dangerous as well as damaging to the vehicle. The following section describes how to detect and eliminate stray RF **BEFORE HIGHWAY OPERATION BEGNS!.**

WARNING: Never operate mobile HF with stray RF present in the electronics of a vehicle.

1. Park the vehicle in a location clear of power lines and trees.

2. Tune the antenna according to the section above.

3. With the engine running make a few contacts on several different bands or bands of interest to you.

4. If anything abnormal is detected such as warning lights on the dash or other improper operation of electronics stray RF is present.

5. RF can be kept out of the electronics by using a Toroid Choke or a Choke formed from a coil of coax close to the output of the radio.

6. Using extra coax from the installation or an extra piece, form a coil 5-6 inches in diameter. A minimum of 10 turns should be used. It is likely that more turns will be needed. The number of turns will be unique to the installation and the vehicle.

Technical Assistance

If you have any problem with this unit first check the appropriate section of this manual. If the manual does not reference your problem or your problem is not solved by reading the manual, you may call *MFJ Technical Service* at **662-323-0549** or the *MFJ Factory* at **662-323-5869**. You will be best helped if you have your unit, manual and all information on your station handy so you can answer any questions the technicians may ask.

You can also send questions by mail to MFJ Enterprises, Inc., 300 Industrial Park Road, Starkville, MS 39759; by Facsimile (FAX) to 662-323-6551; or by email to techinfo@mfjenterprises.com. Send a complete description of your problem, an explanation of exactly how you are using your unit, and a complete description of your station.