

# MFJ

## *80/40 Meter Dipole*

*Model MFJ-17758*



### INSTRUCTION MANUAL

**CAUTION: Read All Instructions Before Operating Equipment !**

## **MFJ ENTERPRISES, INC.**

300 Industrial Park Road  
Starkville, MS 39759 USA

Tel: 662-323-5869 Fax: 662-323-6551

The **MFJ-17758** is a two band, 80- and 40-Meter center-fed dipole antenna capable of handling 1500 watts. Its total length is 85 feet. Each side of the dipole is broken up by a coil that presents a high impedance at 40 meters and acts as a loading coil on 80 meters, allowing the antenna to resonate on 80 meters even though it is physically shorter than a half-wavelength (approximately 130 feet at 3.7 MHz).

Because this antenna acts as a dipole on both bands its impedance is around 50 to 70 ohms, permitting it to be fed with coaxial cable. The use of a current balun between the coaxial feedline and the antenna is highly recommended, to help prevent stray RF from traveling down the coaxial cable's outer shield. This is easily accomplished with an MFJ-915 RF Isolator and a "double male" coaxial connector (MFJ-7702).

## **Assembly**

This antenna comes assembled and ready to install, but may require adjustment of wire lengths once in place. Nylon ropes are needed to support the ends of the antenna from suitable structures or trees.

The antenna comes with the outer ends of the two sides of the antenna "loose." For initial installation, wrap these two ends loosely around the provided ceramic end insulators and back on themselves, using about six inches of wire on each end. ***Do not cut these wires;*** they are provided extra-long to allow for all possible installation situations. Wrapping the wire back on itself without cutting it shortens the electrical length of the wire while saving the full length for possible use later. Be sure to install your RF isolator or balun, if you choose to use one.

## **Installation**

The best location for this antenna is as high and far away as possible from utility wires, other antennas, and other structures. It is impossible to find a perfect location, so the best compromise usually must be accepted. The antenna can be installed in three basic ways:

***WARNINGS: Always mount antennas so that they are out of the reach of adults and children. Contact with any part of this antenna can cause RF burns or other injuries.***

***Constructing or erecting antennas where they may contact electrical power lines can result in injury or death.***

**Horizontal Antenna:** Requires two tall supports separated by more than 85 feet. Suspend the antenna with at least a 50 pound working load nylon rope or equivalent strength weather resistant non-metallic rope. Never use wire or wire core rope to support the ends of any antenna. Attach the rope to the end insulators through the empty holes.

Try to keep the antenna as horizontal (level) as possible. The antenna should be at least 35 feet above ground to give acceptable performance on 80 Meters, and as high as possible for the best overall performance. The coaxial cable should drop vertically from the horizontal section of the antenna as far as is practical.

If you are using trees for end supports, be sure to allow enough slack or use some type of pulley and counterweight system to prevent the antenna or rope from breaking when the trees sway in the wind. It is also possible to use masts, towers, or other tall structures for supports. Try to keep the ends of the antenna at least five feet from metallic supports.

**Inverted "V" Antenna:** Requires only one tall support and places the least strain on the antenna. Hang the center insulator of the antenna from the support using a nylon rope or other non-conductive rope tied to the center hole of the center insulator. The center insulator will be the highest point of the antenna. If possible, position the two ends of the antenna so the inside angle they form is at least 120 degrees and not less than 90 degrees. Secure the antenna ends with nylon or weather resistant non-metallic rope to suitable supports.

**Sloper Antenna:** This antenna also can be suspended as a sloping dipole. This requires one tall support and one short support. The center of the antenna must be at least 40 feet above the ground in this configuration. A sloping dipole radiates mainly in the direction of the downward slope. The optimum angle of "slope" will vary with the desired coverage and the frequency of operation, but will almost always be somewhere between 45 degrees and almost vertical.

## **Tuning**

This antenna comes with the inner sections of wire (between the feedpoint and the coils) cut to resonate near the center of the 40-meter band. For operation at only one end of 40 Meters, the 40-meter wires can be lengthened or shortened to lower or raise the resonant frequency. Do this *before* adjusting the lengths of the 80 meter wires (the wires from the coils to the ends of the antenna) – and after you temporarily install the antenna and determine its resonant point on 40 Meters.

If you have followed the instructions and installed the antenna with about one foot of the ends wrapped back on themselves, the resonant frequency on 80 Meters should be somewhere near the bottom of the band (3.5 MHz). You can determine the resonant frequency of the antenna using an antenna analyzer or a transmitter and SWR bridge. The amount the 80-meter wires will need to be shortened to raise the resonant frequency a certain amount will depend on the type of installation (level, inverted vee, sloper) and on surrounding metal objects. A very rough rule of thumb is one foot per side for 100 kHz. When shortening the antenna, simply wrap more of the two wires back on themselves; do not cut them.

On 40 Meters this antenna should cover the entire 7.0 to 7.3 MHz range with an SWR below 2:1. On 80 Meters, because it is a shortened antenna, the 2:1 bandwidth is much less: 30 to 50 kHz, depending on surrounding objects, etc. The usable range of the antenna on 80 Meters can be extended by using an antenna tuner at the transmitter.

## **Maintenance**

This antenna is constructed of heavy duty materials and should withstand normal climates for many years. General Electric makes a pure silicone grease called "*silicone dielectric compound*" that can be applied ***sparingly*** to the soldered connections at the antenna's center insulator. This is the same type of sealer that commercial antenna installers and CATV companies use with great success. A less desirable but adequate sealer is the automobile seam sealer commonly marketed as "coax seal," a pliable black sealing compound.

## **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, 300 Industrial Park Road, MS 39759; by FAX to **662-323-6551**; or by email to [techinfo@mfjenterprises.com](mailto: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.