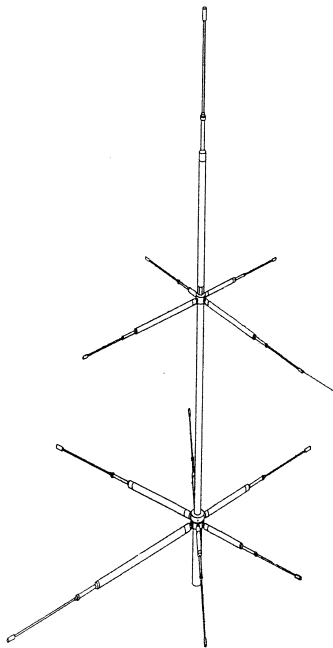


MFJ

MFJ 8 Band Compact Vertical

Model MFJ-2389



INSTRUCTION MANUAL

CAUTION: Read All Instructions Before Operating Equipment

MFJ ENTERPRISES, INC.

300 Industrial Park Road
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MFJ-2389 Compact 8 Band Vertical

The MFJ-2389 is an 8 band compact vertical that is designed to operate on 80, 40, 20, 15, 10, 6, 2M, and 70CM bands. The antenna will handle 200W PEP or 50W CW HF or 150W CW/FM VHF and UHF. Due to the compact design the antenna it requires the use of an antenna tuner to cover the bands completely.

NOTE

When assembling and installing the antenna use caution to avoid mounting the antenna near power lines.

Assemble the antenna on the ground first if possible to make it easier to assemble.

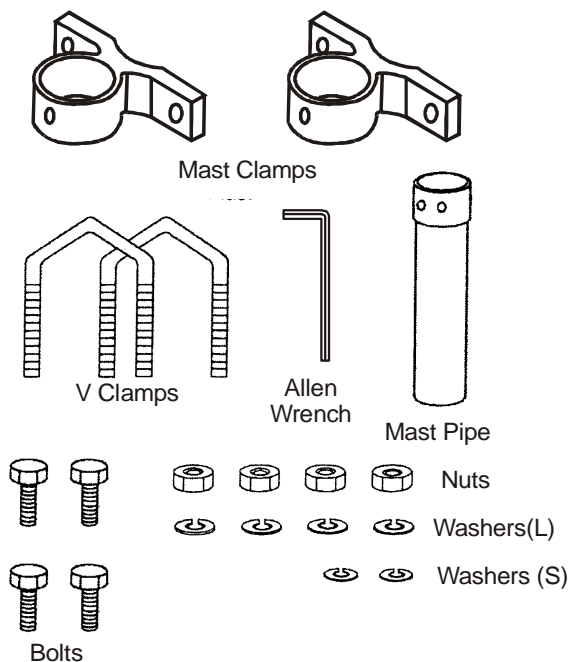
Eye protection is strongly recommended. The elements can be an eye hazard when assembling and installing. Mount the antenna out of normal reach and pedestrian traffic.

When mounting the antenna in high places get assistance. The antenna is not heavy but is awkward when assembled. Some one to assist you may help prevent injuries.

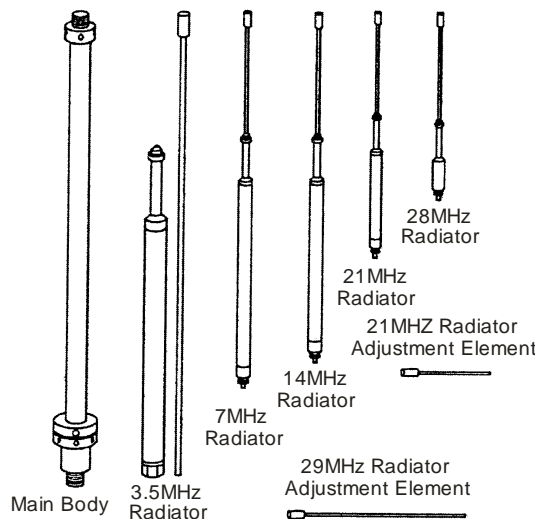
Tools Required

7mm, 8mm, and 10mm open end wrench or Adjustable wrench

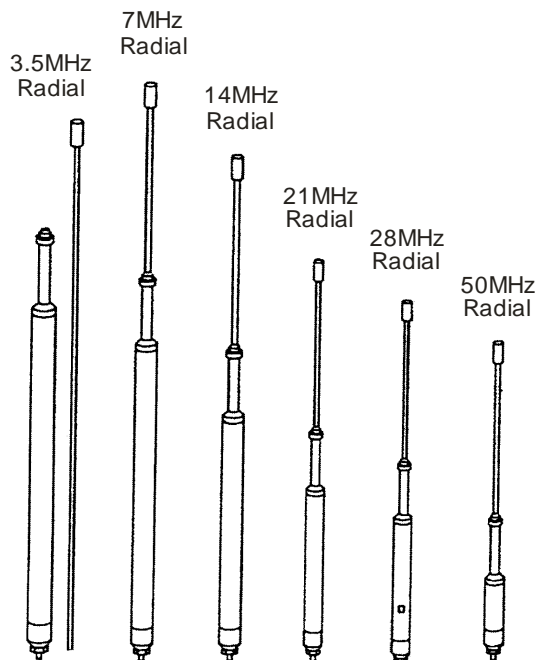
PARTS DESCRIPTION



RADIATING ELEMENTS

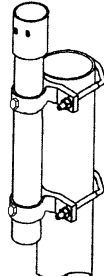


RADIAL ELEMENTS

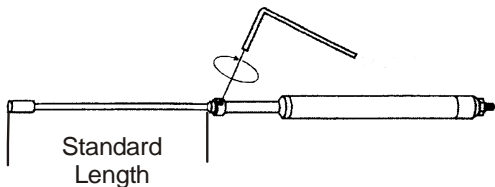


Assembly Instructions

1. Mount the Mast Clamps and the Mast Pipe to the mast. For tuning and testing this can be a temporary mount. Make sure the Mast Pipe and the Mast is parallel to each other so that antenna does not tilt to one side throwing off the mast balance. The mast diameter should be 1.125 to 1.5 inches.



2. Adjust the radials to the Standard Length shown in the chart and then tighten them down with the Allen Wrench.



Each element is labeled with the frequency band and the Radial Elements have a larger size mounting screw than the Radiator Elements.

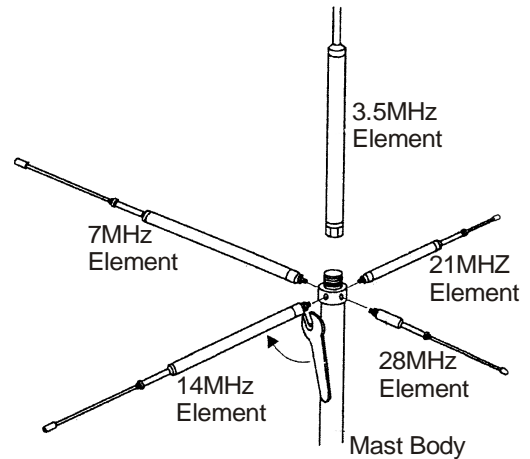
STANDARD LENGTH Table

BAND	Radiator	Radial
3.5 MHz	25.9" (660mm)	20.7" (525mm)
7 MHz	11.4" (290mm)	13.2" (335mm)
14 MHz	11.4" (290mm)	12.0" (305mm)
21 MHz	6.1" (155mm)	20.7" (525mm)
28 MHz	2.6" (65mm)	21.7" (550mm)
50 MHz	none	28.1" (715mm)
21 MHz Adj. Element	10" (255mm)	
29 MHz Adj. Element	14.2" (360mm)	

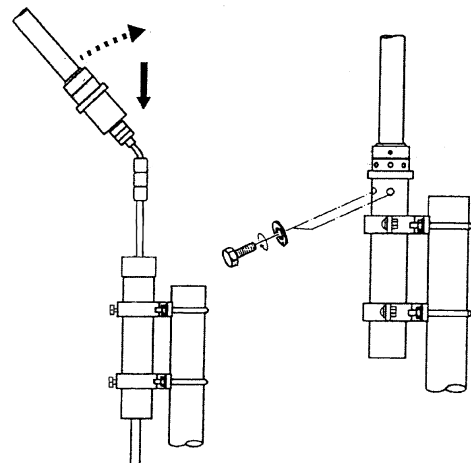
The 21 MHz Radiator Adjustment Element is used when operation on at the top end of the 21 MHz band is desired in place of the 21 MHz Element.

The 29 MHz Radiator Adjustment Element is used when operation on 29 MHz FM is desired in place of the 28 MHz Element.

3. Assemble each Radiator Element to the Main Body. Attach the 3.5MHz element to the top and the other radiators to the top mounting ring.



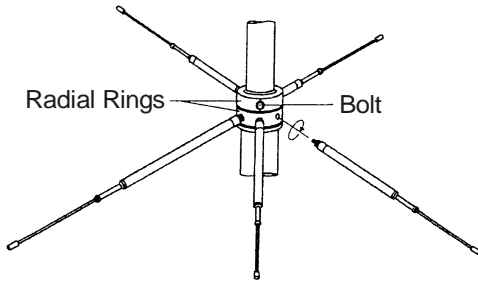
4. It is recommended to make an RF isolating section by placing several clamp-on ferrite chokes such as the MFJ-700 series to fit your cable. Tape the chokes to the cable below the RF connector so they do not slide down the cable. A jumper made up with several ferrite beads and the proper connectors and adapters can also be made up and used.



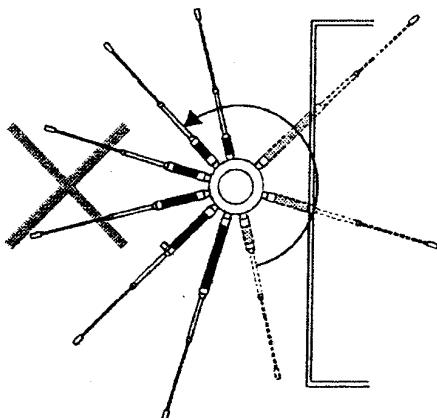
5. Pull the cable and chokes up through the mast tube and attach the RF

connector to the connector on the mast body. Tape the connectors to seal out water from the connector.

- Slide the Mast body onto the Mast Pipe and with two bolts and washers attach the Mast Pipe to the Mast Body. The Radial Rings on the Mast Body are to be mounted above the top of the mast so the radials will clear the mast.



- Attach the 6 radial elements to the radial rings, 3 on each ring. The rings can swivel around on the body to make it easier to attach.
- Swivel the radials so they are evenly spaced around the body. It is possible to move all of the radials to one side but the antenna tuning will not be as good and may not be adjustable to less than 2:1 SWR.

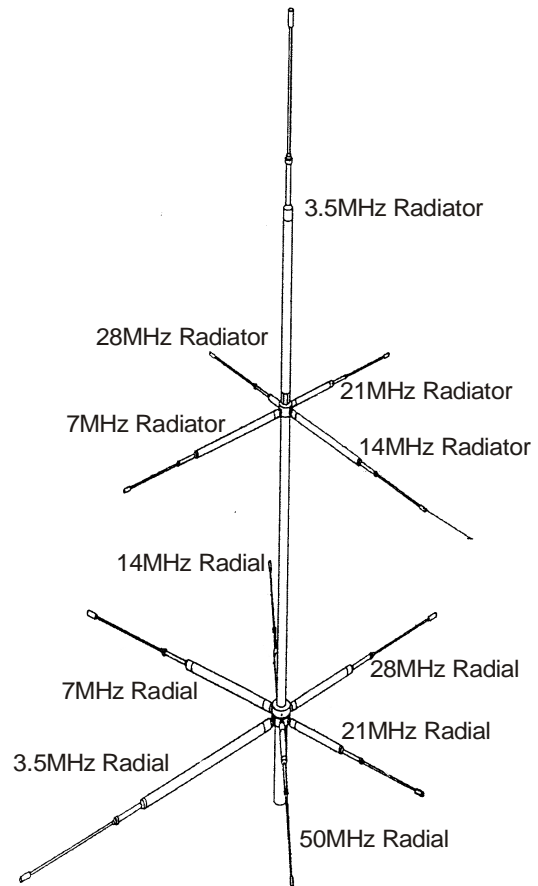


NOT RECOMMENDED

Frequency Change by Change of Element Length

Band	Freq Change per 1 CM
3.5MHz	30 KHz
7MHz	50 KHz
14MHz	20 KHz
21MHz	17 KHz
28MHz	40 KHz

Adjustment



DO NOT touch the antenna when transmitting. Holding the antenna while trying to make adjustments will change the readings. RF Burns can occur when using an SWR meter and transmitter, even at low power levels.

Make test transmissions as short as possible with the minimum power needed to make the readings. The use of an antenna analyzer is recommended to aid in antenna adjustment.

- Confirm the SWR on 146 MHz and 445 MHz

2. Adjust the 50 MHz Radial tuning stub for best SWR at the desired frequency.
3. Tune the Radiator Tuning stubs for lowest SWR starting at 28 MHz and the 21 MHz, 14 MHz, 7 MHz, and 3.5 MHz. It may be difficult to get below 2.0:1 so adjust for the lowest SWR.
4. Tune the Radial Tuning stubs for lowest SWR starting at 28 MHz and the 21 MHz, 14 MHz, 7 MHz, and 3.5 MHz. The SWR should be below 2:1 at the desired frequency for all bands.
5. Check all bands and retune as needed in the same order as above till best SWR is achieved.

Antenna Bandwidth 2:1 SWR Limits

Band	Bandwidth
3.5MHz	22 KHz
7MHz	52 KHz
14MHz	52 KHz
21MHz	144 KHz
28MHz	260 KHz
50MHz	1.3 MHz
146MHz	4 MHz
445MHz	10 MHz

Operation

The antenna in the HF range is a narrow band antenna and as such will require an antenna tuner to operate the antenna over the full width each of the HF Amateur Bands. In the resonant areas that the antenna is tuned to the SWR should be less than 2:1 and most radios should be able to use the antenna without an antenna tuner but in the areas where the SWR is above the limits for the radio an antenna tuner will be needed. The VHF and UHF bands the SWR should be low enough to cover the full band or the normal range of the FM portion of the band. It may not be possible to tune the resonant point of the antenna to the upper part of the 75M or 40M bands.

Safety Notes

Mount the antenna away from places where people or pets may come in contact with the antenna. The whips pose an eye hazard and when transmitting an RF Burn hazard.

Do not mount the antenna where it may come in contact with power lines.

When working on the antenna have help handy when lifting or placing the antenna on the mast. It is not real heavy but very awkward due to its physical size when assembled.

Specifications

Frequency Range: 3.500-3.575 MHz
 7.000-7.100 MHz
 14.00-14.35 MHz
 21.00-21.45 MHz
 28.00-29.70 MHz
 (29 MHz element needed for above 29 MHz)

VSWR at Resonance: Less than 2:1 HF
 Less than 1.5:1 VHF UHF

Designed Impedance: 50 ohms

Max Power: 200W SSB HF-6M
 50W CW HF-6M
 150W FM VHF UHF

Mast Diameter: 1.125" (30mm) min
 1.500" (50mm) max

Length: 107" (2.7M)

Weight: 5.28lb (2.4kg)

Connector: SO-239

Notes:**Actual Element Lengths and SWR**

BAND	Resonant Frequency	Radiator	Radial	Measured SWR
3.5 MHz				
7 MHz				
14 MHz				
21 MHz				
28 MHz				
50 MHz		none		
21 MHz Adj. Element			none	
29 MHz Adj. Element			none	
146 MHz		none	none	
440MHz		none	none	

12 MONTH LIMITED WARRANTY

MFJ Enterprises, Inc. Warrants to the original owner of this product, if manufactured by MFJ Enterprises, Inc. and purchased from an authorized dealer or directly from MFJ Enterprises, Inc. to be free from defects in material and workmanship for a period of 12 months from date of purchase provided the following terms of this warranty are satisfied.

1. The purchaser must retain the dated proof-of-purchase (bill of sale, canceled check, credit card or money order receipt, etc.) describing the product to establish the validity of the warranty claim and submit the original or machine reproduction of such proof-of-purchase to MFJ Enterprises, Inc. at the time of warranty service. MFJ Enterprises, Inc. shall have the discretion to deny warranty without dated proof-of-purchase. Any evidence of alteration, erasure, or forgery shall be cause to void any and all warranty terms immediately.
2. MFJ Enterprises, Inc. agrees to repair or replace at MFJ's option without charge to the original owner any defective product under warranty, provided the product is returned postage prepaid to MFJ Enterprises, Inc. with a personal check, cashiers check, or money order for \$12.00 covering postage and handling.
3. MFJ Enterprises, Inc. will supply replacement parts free of charge for any MFJ product under warranty upon request. A dated proof-of-purchase and a \$8.00 personal check, cashiers check, or money order must be provided to cover postage and handling.
4. This warranty is NOT void for owners who attempt to repair defective units. Technical consultation is available by calling (662) 323-5869.
5. This warranty does not apply to kits sold by or manufactured by MFJ Enterprises, Inc.
6. Wired and tested PC board products are covered by this warranty provided only the wired and tested PC board product is returned. Wired and tested PC boards installed in the owner's cabinet or connected to switches, jacks, or cables, etc. sent to MFJ Enterprises, Inc. will be returned at the owner's expense unrepared.
7. Under no circumstances is MFJ Enterprises, Inc. liable for consequential damages to person or property by the use of any MFJ products.
8. Out-of-warranty Service: MFJ Enterprises, Inc. will repair any out-of-warranty product provided the unit is shipped prepaid. All repaired units will be shipped COD to the owner. Repair charges will be added to the COD fee unless other arrangements are made.
9. This warranty is given in lieu of any other warranty expressed or implied.
10. MFJ Enterprises, Inc. reserves the right to make changes or improvements in design or manufacture without incurring any obligation to install such changes upon any of the products previously manufactured.
11. All MFJ products to be serviced in-warranty or out-of-warranty should be addressed to MFJ Enterprises, Inc., 300 Industrial Park Road, Starkville, Mississippi 39759, USA and must be accompanied by a letter describing the problem in detail along with a copy of your dated proof-of-purchase.
12. This warranty gives you specific rights, and you may also have other rights which vary from state to state.



MFJ ENTERPRISES, INC.
300 Industrial Park Road
Starkville, MS 39759

MFJ-2389 Manual
Version 0A

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