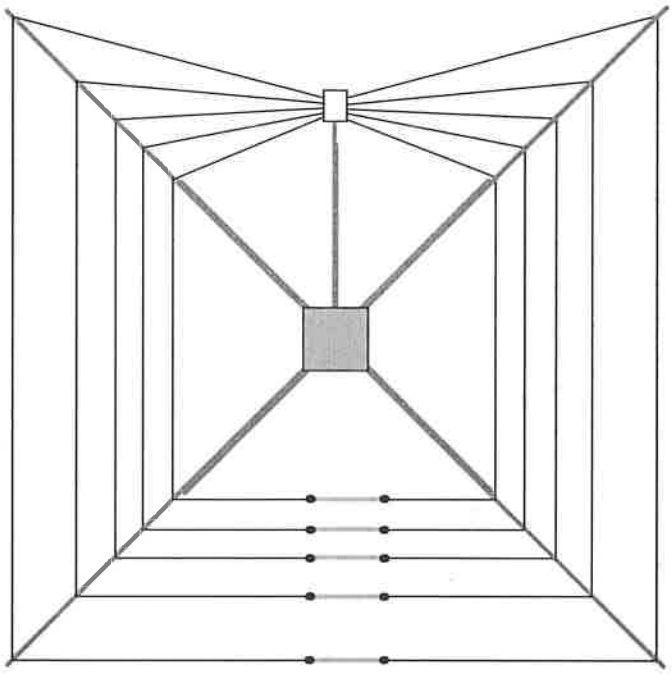
MFJ-1836, MFJ-1836H

6, 10,12,15,17,20 Meter

Cobweb Antenna



Instruction Manual

Caution: Read All Instructions Before Assembling and Using This Product!

MFJ

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MFJ-1836 (300-W) and 1836H "Cobweb" (1500-W) HF Antenna

Introduction: The horizontally polarized MFJ-1836 and MFJ-1836H Cobweb antennas cover 20,17,15, 12,10, and 6 Meters in a compact 9-foot by 9-foot "neighbor-friendly" package. Both are carefully designed using heavy-gauge formed-aluminum components, stainless-steel hardware, and premium fasteners to deliver years of trouble-free performance.

Parts List: Before beginning assembly, check the package contents against the parts list below to ensure all items have been included.

Materials:

[ ]	2	8" x 8" Aluminum Mounting Plate (737-1836)
[ ]	4	72" Fiberglass Element Support Tube (811-1836-1)
[ ]	1	43" Fiberglass Feed Tube (811-1836-2)
[ ]	1	50-Ohm to 12.5 Ohm Match Box (10-1836-1 or 10-1836-1H)
[ ]	1	Mast-Mounting Bracket (735-1836)
[ ]	5	Element End-insulators, 12" x .5" (737-0115)
[ ]	1	Pack, 6-Meter Element Wire (13-1836-6)
[ ]	1	Pack, 10-Meter Element Wire (13-1836-10)
[ ]	1	Pack, 12-Meter Element Wire (13-1836-12)
[ ]	1	Pack, 15-Meter Element Wire (13-1836-15)
[ ]	1	Pack, 17-Meter Element Wire (13-1836-17)
[ ]	1	Pack, 20-Meter Element Wire (13-1836-20)
[ ]	1	Hardware Pack (17-1836-1)

Hardware Pack Contents:

[ ]	10	6-32 x 1-1/4" screw (656-1250S)
[ ]	20	6-32 x 1" screw (656-1000S)
[ ]	4	6-32 x 1/2" screw (656-0500S)
[ ]	14	6-32 x 3/8" screw (656-0375S)
[ ]	52	6-32 nylon-insert lock nut (705-0632S-NL)
[ ]	4	6-32 Kep nut (705-0632S-K)
[ ]	38	#6 Flat Washer (561116)
[ ]	2	U-Bolt Assembly (758-9199)
[ ]	5	Cable Tie (745-2158B)
[ ]	4	#10 worm clamps with hole for 6-32 hardware (030410)

If any parts are missing or damaged, refer to the Warrantee page for replacement instructions and have the MFJ part number listed above available.

Preparation and Site Safety: To assure smooth assembly, sort the parts-bag hardware in advance and follow the step-by-step instructions. Construction through Step-3 can be completed almost anywhere, but installing the spreaders and stringing the element wires will require a flat 12-foot by 12-foot work area. For initial tuning, mount the cobweb 5 to 6 feet off the ground on a temporary mast or tripod, and be sure to wear safety glasses when working around the element wires and spreaders. Also, enlist a helper or observer for final installation, and never work near power lines or entrance cables!

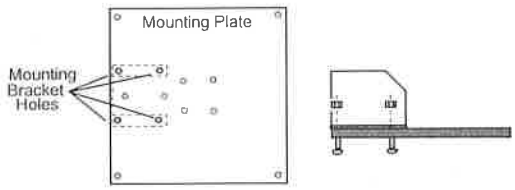
Important Warning: The Cobweb is an electrical conductor. If it comes in contact with power lines or entrance cables during assembly or installation, you could be KILLED.

Tools:

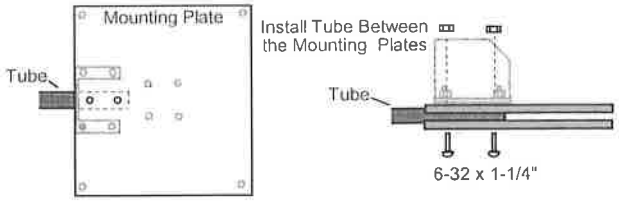
[ ] 5/16" and 7/16" nut drivers for 6-32 and 1/4-20 hardware.
[ ] Phillips-head screwdriver (#2)
[ ] Diagonal cutters or "nippy" shears (for trimming cable ties).
[ ] Safety glasses or prescription eye protection

1. Pre-assemble the Antenna Hub. Use the parts listed below:

[ ]	2	8" x 8" aluminum base plate
[ ]	2	6-32 x 1-1/4" screw
[ ]	4	6-32 x 3/8" screw
[ ]	6	6-32 lock nut
[ ]	1	43" fiberglass tube



[ ] Install the mast-mount bracket using four 3/8" screws and nuts. Insert screws as shown above:

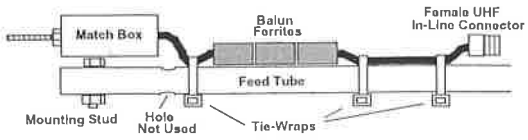


[ ] Position the second base plate opposite the first so all mounting holes align. Install the 43" feed tube by sliding it in between the two plates. Secure using two 1-1/4" screws and nuts (see above):

2. Install the Match Box:

For MFJ-1836: Use parts listed below

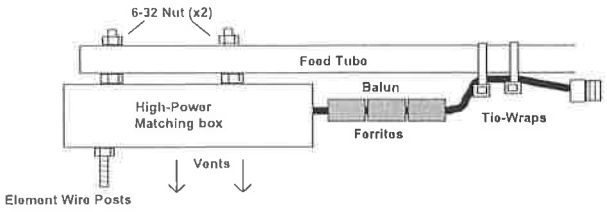
[ ]	1	50-ohm to 12.5 ohm match box
[ ]	1	6-32 lock nut
[ ]	5	Cable tie wrap



[ ] Mount the match box at the opposite end of the feed tube using a 6-32 nut. Secure the coax pigtail with three cable tie wraps. Note that the box mounts on top side of the feed pole. Use the remaining two cable ties to secure your feedline later on.

For MFJ-1836H: Use parts listed below.

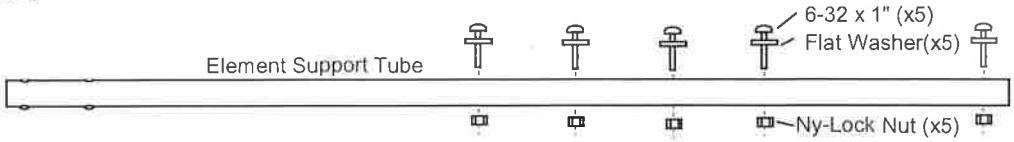
[ ]	1	High-power 50-ohm to 12.5 ohm Match Box
[ ]	2	6-32 lock nuts
[ ]	2	Cable tie wrap



[ ] Mount the match box at the end of the feed tube using two 6-32 nuts. Note that the high-power match box mounts on the bottom side of the feed pole so the screened air-vents will face toward the ground when the antenna is installed. Secure the feed line with two cable tie wraps. Use the remaining three to secure your feedline later on.

3. Prepare Spreader Tubes. Use the parts listed below.

[ ]	4	72" fiberglass element support tube
[ ]	20	6-32 x 1" screw
[ ]	20	6-32 lock nut
[ ]	20	#6 flat washer



[ ] Install a 6-32 x 1" screw and flat washer at each wire attachment point on all four spreader arms. Tighten each lock nut only enough to retain the screw.

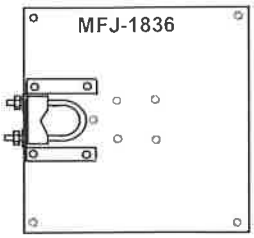
4. Install Spreaders in the Base: This step requires a 12'x12' flat work area. Use the following items:

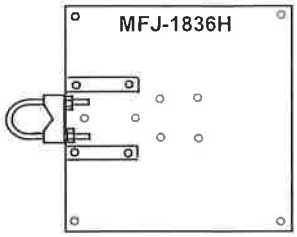
[ ]	8	6-32 x 1-1/4" screw
[ ]	8	6-32 lock nut

When installing spreaders, orient so the wire-guide washers are on top.

[ ] Loosen (but don't remove) the two nuts securing the feed tube.
[ ] Loosely install all four spreader arms using two 1-1/4" screws for each.
[ ] Once all four spreaders installed are in place, tighten all hardware securely.

5. Install Mast-mount U-bolts: The MFJ-1836H matching network weighs slightly more than the MFJ-1836 network, so the mast U-bolts are installed differently to maintain the antenna's center of gravity.





For MFJ-1836:
[ ] Install the two U-bolt assemblies so the mast inserts *inside* the mast mount bracket.

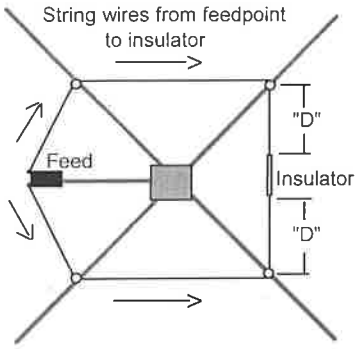
For MFJ-1836H:
[ ] Install the two U-bolt assemblies so the mast inserts on the *outside* of the bracket.

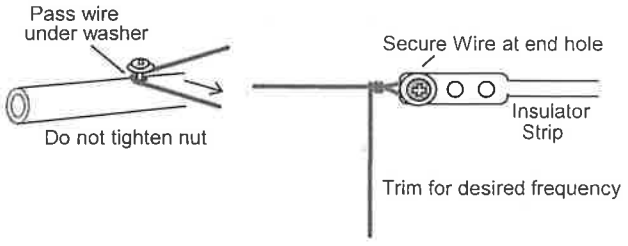
6. Install Wire Elements: Before you begin, mount the antenna on a temporary mast or tripod with the base 5 or 6 feet above ground (near eye level). Wire installation will begin with the 10-meter (inner) element wires and work outward to 20 meters. The 6-meter element will be installed later. Use the following parts:

[ ]	5	Insulator strips
[ ]	1	6-Meter wire pack
[ ]	1	10-Meter wire pack
[ ]	1	12-Meter wire pack
[ ]	1	15-Meter wire pack
[ ]	1	17-Meter wire pack
[ ]	1	20-Meter wire pack
[ ]	10	6-32 x 3/8" screw
[ ]	12	6-32 nut
[ ]	10	#6 Flat Washer

[ ] 0pen the 10-meter wire pack, uncoil the wires, and carefully remove tangles or kinks.
[ ] Attach the element wires to the matchbox terminals.
[ ] Start a 6-32 nut over each terminal to hold lugs in place while stringing the wires.
[ ] Route element wires around to the opposite side of the spreader frame.

Catch each wire under the inner-most set of flat washers (see below). Do not tighten screws yet, wires should remain free to slide back and forth.

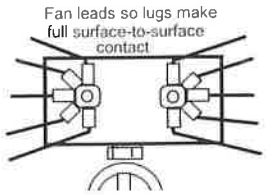




[ ] Connect each wire to a insulator strip as shown, using 6-32 screws and nuts.

Be sure to center the insulator between the two spreaders. For the 10-meter element, dimension "D" will be about 19". When setting wire tension, *minimize but do not completely eliminate* wire sag. If the element wires are pulled too tightly, they could stretch or break under stress when the frame is buffeted by high winds. Excess wire should hang straight down. These ends will be pruned to tune the antenna in Step 8.

Once the 10 meter element wires are installed, repeat the same procedure for the other four HF bands. As you add additional element wires to the match box terminals, fan the ring lugs out to maintain flat metal-to-metal contact (see below).



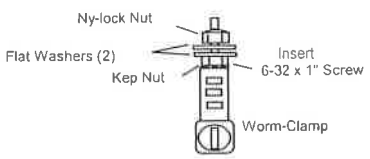
[ ] Install the 12-meter loop. Dimension "D" will be approximately 23-1/4"
[ ] Install the 15-meter loop. Dimension "D" will be approximately 28-3/4"
[ ] Install the 17-meter loop. Dimension "D" will be approximately 34-3/4"
[ ] Install the 20-meter loop. Dimension "D" will be approximately 45-3/4"

After all wires are installed, check each for even tensioning. Re-adjust as needed to ensure no wires are pulled up too tight or hanging too slack. Also, confirm that the frame is square. When satisfied, tighten down all wire-attachment screws.

7. Install the 6-meter element: Note that installation of the 6-meter element may be omitted without impacting operation on other bands. To install, use the following items:

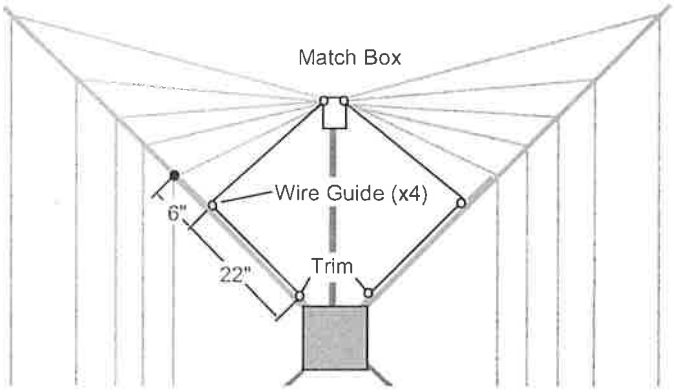
[ ]	1	6-Meter wire pack
[ ]	4	Worm-clamp
[ ]	4	6-32 x 1/2" screw
[ ]	4	6-32 lock nut
[ ]	4	6-32 Kep nuts
[ ]	8	#6 Flat Washer

Prepare all four 6-meter wire guide assemblies, as show below:

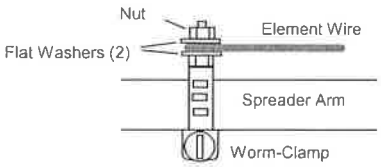


[ ] Open up the worm clamp (turn hex-nut counterclockwise to release the band).
[ ] Insert 6-32 x 1/2" screw though hole in the worm clamp. Secure with Kep nut.
[ ] Install two flat washers and a nylon locking nut, as shown.

Unlike the other five elements, the 6-meter element is "corner-fed" and does not wrap around the center hub. Install as shown:



[ ] Measure (6") toward the center hub from the 10-meter element guide (see above).
[ ] Install a worm-clamp wire guide on the spreader at this location.
[ ] Measure (22") beyond this guide and install a second guide.
[ ] Repeat on the other side of the match box.



[ ] Install the 6-meter element wires on the match box.
[ ] String and capture the element wires on the wire guides, as shown.

- Hang the excess wire straight down, avoiding close proximity to the center hub. Like the other elements, these ends will be pruned during tune-up.

8. Tune Up: The cobweb should be at least 6 feet above ground and weather conditions dry for initial tuning. If at all possible, use a handheld antenna analyzer for measuring SWR and pruning. Also, stand a few feet back from the end insulators when checking to avoid detuning the elements.

Important Note: If you use a transmitter and SWR meter for tune up, apply the minimum power needed to calibrate the bridge. *Also, never touch RF-energized element wires!* RF burns are extremely painful, slow to heal, and can be inflicted at surprisingly low power levels.

When pruning for minimum SWR, trim the wire ends on each side of the insulator as evenly in length as possible. Also, prune in small increments to avoid over-shooting your target frequency. You may find one or more minimum SWR readings are somewhat elevated with the antenna in close proximity to ground. These readings normally drop down once the antenna is raised higher. Start with 20 meters and work inward:

[ ] Find the initial SWR dip. It will normally occur below the edge of the band.
[ ] Prune wires in small steps to obtain minimum SWR on your desired frequency.

[ ] Once tuned, twist the wire ends tightly to prevent individual "hairs" from sticking out.

For MFJ-1836H: Apply solder to each wire-end to prevent it from fraying. "Solidifying" the element tips with solder is especially important at high power levels to prevent corona or sparking.

Repeat the above tuning procedure on the other bands:

[ ] Tune 17 meters
[ ] Tune 15 Meters
[ ] Tune 12 Meters
[ ] Tune 10 Meters
[ ] Tune 6 Meters (if installed)

Installation: Cobwebs perform best when mounted 20-feet or more above ground and clear of nearby wiring, large metal surfaces, or other antennas. When guying, use a non-conducting line such as Phillystran or black Daycron. The U-bolts accept any mast diameter between 1-1/4" and 1-3/4" OD. Doubling the wall thickness is recommended for longer sections of un-guyed mast.

Coax: Premium-grade RG-8X feedline works well up to 1000 watts. It's easy to handle, light in weight, and places minimal stress on the support mast. For higher power, use RG-8, RG-213, or a premium-grade equivalent. Avoid RG-58 except for short cable runs and portable setups.

Safety Ground: Install one or more ground rods and connect them to the mast with #10 solid wire and stainless hardware.

Coax Disconnect: Install outside the building and unhook coax any time your station is unattended or severe weather approaches. It's your best lightning protection!

Using a Tuner: The cobweb's folded half-wave elements have somewhat less bandwidth than straight-line elements. If needed, you may use a tuner to expand low-SWR coverage to the margins of the wider bands (it won't harm the antenna). Also, be aware that precipitation loading from heavy rain, snow, or ice accumulating on the wires will temporarily lower resonant frequency, elevating in-band SWR readings. You may use a tuner to compensate for this condition during weather-related events.

Typical Specifications:

Minimum SWR:	Normally 1.2:1 or less on all bands, measured at 20' AGL
Modeled Gain:	4.7 dBi at 20-feet AGL on 14.2 MHz with a 37° TOA.
Modeled Pattern:	±1.5 dB with maximum gain occurring on axis with the feedpoint.
MFJ-1836 Power:	300-W PEP, SSB/CW, ICAS (<50% transmit time)
MFJ-1836H Power	1500-W pep, SSB/CW, ICAS (<50% transmit time)
Balun	Ferrite-sleeve "choke" over coax
Matching Network	4:1 broadband step-down autotransformer
Dimensions:	9' x 9' per side, 12' diagonal.
Weight:	MFJ-1836 8.2 pounds, MFJ-1836H, 8.8 pounds
Mast Size	1-3/4" OD maximum

Warrantee

If manufactured by MFJ Enterprises, Inc. and purchased from an authorized dealer or directly from MFJ, we warrant to the original owner that this product shall be free from defects in material and workmanship for a period of 12 months from date-of-purchase provided the following terms and conditions are satisfied:

1. The purchaser must retain a dated proof-of-purchase (bill of sale, cancelled check, credit card or money order receipt, etc.) describing the product so as to establish the validity of the warranty claim. In addition, the original copy or machine reproduction of such proof shall be provided to MFJ at the time of warranty service. MFJ shall have the discretion to deny warranty service 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 agrees to repair or replace, at its option and 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 in the amount of $7.00 to cover postage and handling.

3. MFJ Enterprises, Inc. will supply any replacement parts free of charge for any MFJ product under warranty upon request. A dated proof-of-purchase and a $5.00 personal check, cashiers check, or money order must be provided to cover postage and handling for parts and materials.

4. This warranty *shall not be voided* 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. (once assembly begins, the owner becomes the manufacturer).

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 own cabinet or connected to switches, jacks, or cables, etc. and sent to MFJ Enterprises, Inc. will be returned at the owner's expense un-repaired.

7. Under no circumstances shall MFJ Enterprises, Inc. be liable for consequential damages to persons 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 the design or manufacture of its products without incurring any obligation to install such changes upon 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 a dated proof-of-purchase.

12. This warranty conveys specific rights, and you may also be entitled to other rights which may vary from state to state.