



MFJ VERSA TUNER V



MODEL MFJ-989C INSTRUCTION MANUAL

CAUTION: Read All Instructions Before Operating Equipment

MFJ ENTERPRISES, INC.

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The MFJ-989C Versa Tuner V is designed for use in high power amateur transmitting installations up to 3KW PEP. The tuner is designed to match most antenna systems from 1.8 to 30 Mhz.

This tuner has a built in 50 ohm, 300W dummy load for easily tune up of your exciter. The MFJ-989C also has a cross needle SWR/Wattmeter to allow you easy tune up and power measurement.

PEAK READING SWR/WATTMETER

The cross-needle meter lets you simultaneously read peak or average Forward power, Reflected power and SWR in two ranges. To read FORWARD POWER, set the power range switch to HI (2000 watts) or LO (200 watts). Next read the power level on the FORWARD SCALE. REFLECTED POWER is shown at the same time on the REFLECTED POWER SCALE. SWR is read by observing where the two needles cross. No SWR sensitivity adjustment is needed to read SWR. You get a peak holding reading when you set the METER button to PEAK. Read the power level off of both scales.

The HI range is 2KW Forward and 500W reflected. The LO range is 200W forward and 50W reflected.

The meter lamp can be powered by a 12V DC source, such as the optional MFJ-1312 power supply. Use a 2.5mm plug with the tip of the plug connected to the positive. METER LAMP ON/OFF switch will activate the meter lamp.

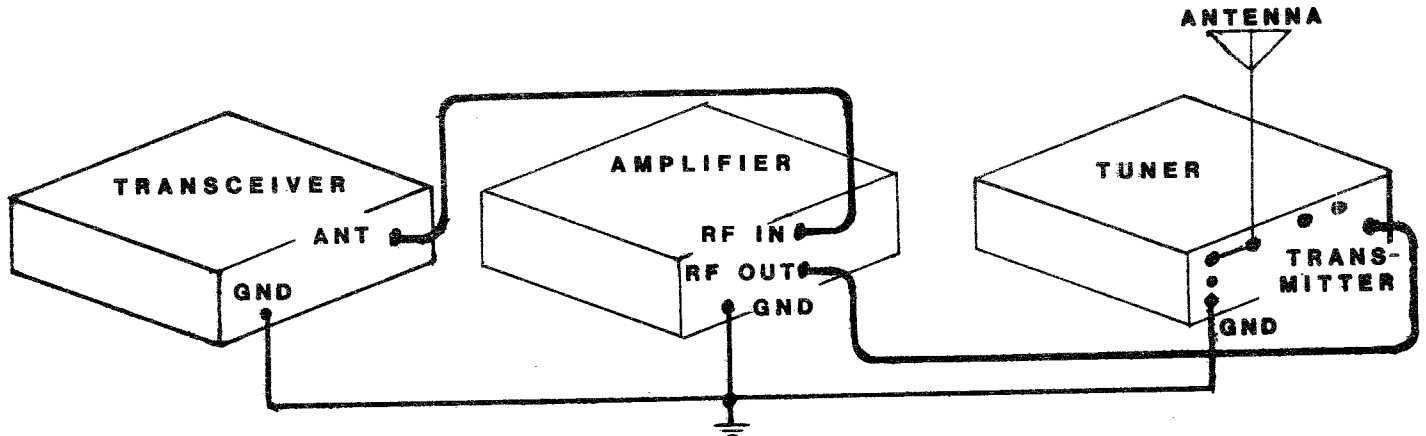
ANTENNA SELECTOR

The ANTENNA SELECTOR allows you to select 2 coax fed antennas either direct or through the tuner, a 50 ohm dummy load, and a wire or balanced line antenna.

INSTALLATION

1. Locate the tuner in a convenient location at the operating position. NOTE: LOCATE THE TUNER SO THE REAR IS NOT ACCESSIBLE DURING OPERATION. If random wire or balanced line operation is used the ceramic feed through insulators will have high RF voltages which can cause serious RF burns if touched when transmitting.
2. Install the tuner between the transmitter and the antenna as shown in the diagram below. Use coax cable such as RG-8/U to connect the transmitter to the connector marked TRANSMITTER on the rear of the tuner.
3. Connect the antenna(s) to the tuner as follows:
 - A. coax cable feed lines to the coax connectors 1 and 2 coax lines may be fed direct or through the tuner as selected by the ANTENNA SELECTOR switch.

- B. Wire antenna is connected to the WIRE terminal.
- C. Balanced line antenna is connected to the BALANCED LINE terminals. A jumper needs to be connected between the Wire terminal and the unmarked terminal below it as indicated by the solid line.
4. A ground post is provided for ground connection.



CONNECTION DIAGRAM

OPERATION

The roller inductor has a maximum inductance at 99 and a minimum at 00 on the reference counter. The capacitors have a maximum at 10 and a minimum at 0.

1. Tune the exciter up into the dummy load. (most solid state transmitters are pretuned to 50 ohms and do not require tuning up into the dummy load.)
2. Select the desired antenna with the ANTENNA SELECTOR.
3. Select the desired antenna with the ANTENNA and TRANSMITTER controls to about 4.
4. Starting from minimum on the INDUCTOR, tune for maximum noise and signals. If the maximum noise and signal setting is not found set the inductor to the setting in TABLE 1 and proceed to the next step.
5. With the linear amplifier OFF or in stand-by set the meter power switch to Lo range, transmit a low power signal (10 to 50 watts).
6. Adjust the ANTENNA and TRANSMITTER controls for minimum. If SWR is not 1:1 adjust the inductor up or down and repeat Step 6. If the capacitors are at maximum capacitance, increase the inductance. If the capacitors are at minimum capacitance, decrease the inductance.
7. After minimum SWR is achieved the amplifier may be turned on and tuned up according to the manufacturer's instruction.
8. For quick retuning of the tuner, record the INDUCTOR and CAPACITOR settings.

OPERATING NOTES

1. The tuner is designed to have as large a tuning range as possible. But there are limits to the tuning range of the capacitors and inductor. This means that some antennas may require more or less inductance or capacitance than the controls have. In these cases the SWR may not be reduced to 1:1. If the SWR is higher than the limits on your rig, try changing the length of the antenna to bring the impedance to within the tuning range of the tuner.
2. In tuning the tuner use the minimum inductance required to obtain a minimum SWR. This will help reduce the losses in the inductor and reduce the chances of tuning the tuner to a point where the tuner absorbs the power instead of transferring it to the antenna.
3. If the INDUCTOR counter slips out of calibration turn the INDUCTOR fully clockwise. Then, with a small screw driver or pencil push the reset lever through the hole beside the counter and set the counter to "000".

Table 1
Initial Tune-up Inductor Settings

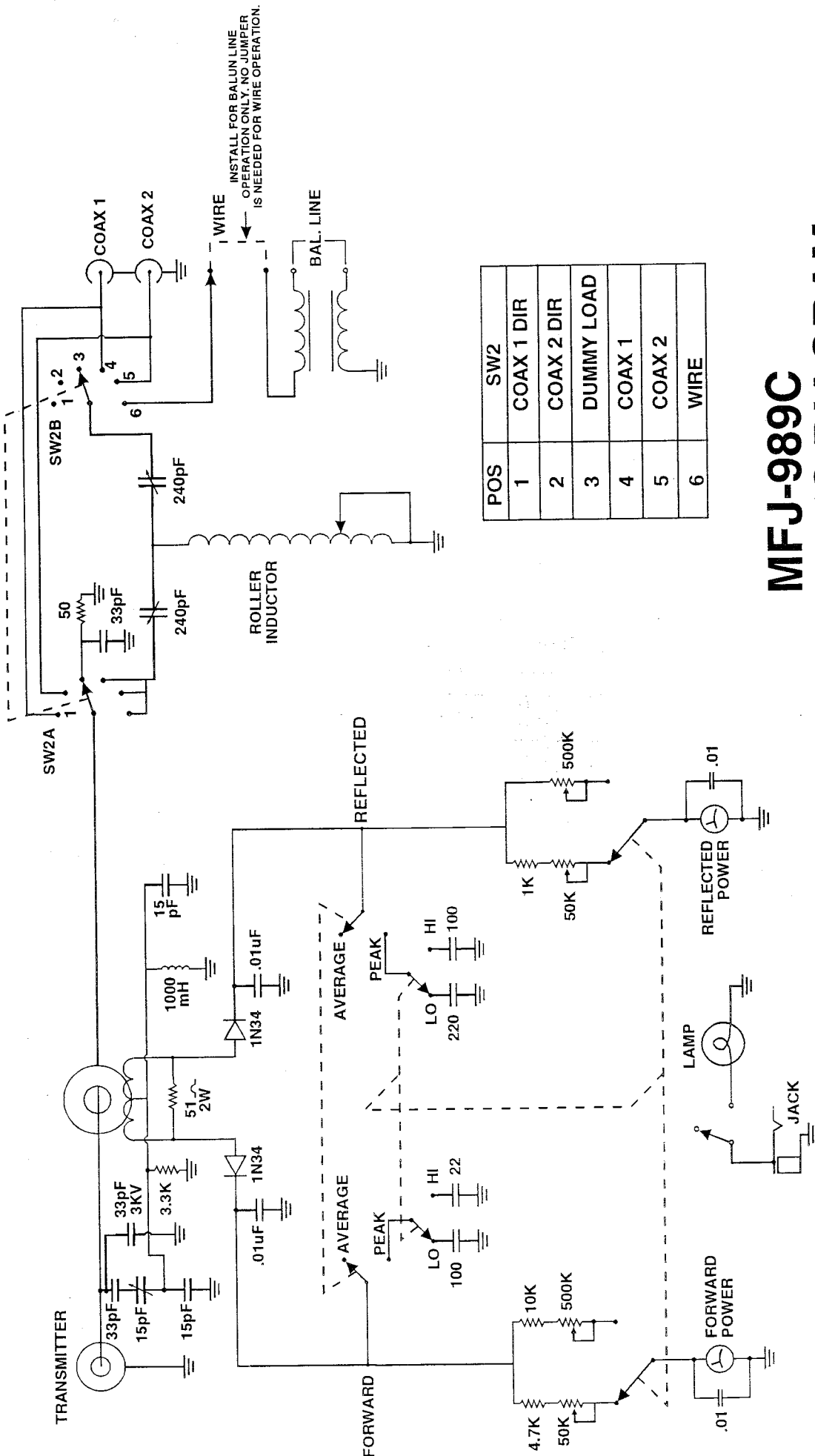
BAND	INDUCTOR
160 M	99
80 M	48
40 M	18
20 M	8
15 M	4
10 M	2

TABLE 1: Initial Tune-up Inductor Settings

NOTE: These settings are approximate. The exact setting will depend on the particular antenna system.

WARNING

1. Never operate the tuner with the top removed. The voltages inside are very dangerous during operation.
2. Never rotate the ANTENNA SELECTOR switch while transmitting, damage to the switch may result.
3. Locate the tuner so that it will not be accessible from the rear.
4. Disconnect the antennas from the tuner during lightning and storms.
5. Always tune with low power (i.e. less than 100 watts). Apply maximum power only after tuning up.
6. Do not key transmitter into high SWR for a long period of time.



POS	SW2
1	COAX 1 DIR
2	COAX 2 DIR
3	DUMMY LOAD
4	COAX 1
5	COAX 2
6	WIRE

MFJ-989C SCHEMATIC DIAGRAM

FULL 12 MONTH 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 of machine reproduction or 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. reserves the option to repair or replace, at no 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 \$7.00 to cover postage and handling.
3. MFJ Enterprises, Inc. will supply replacement parts, free of charge, for any MFJ product under warranty. A request for a replacement part must include a dated proof of purchase and a \$5.00 personal check, cashiers check, or money order 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 (601) 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, unrepai red.
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.