

Thank you very much for your purchase of the CAT-300 Antenna Tuner.

Please inspect your CAT-300 as soon as possible. Although our products are manufactured to the strictest quality standards, occasionally damage may occur in shipping. Should your unit be damaged, please contact the dealer from whom you purchased the unit; they will be pleased to assist you.

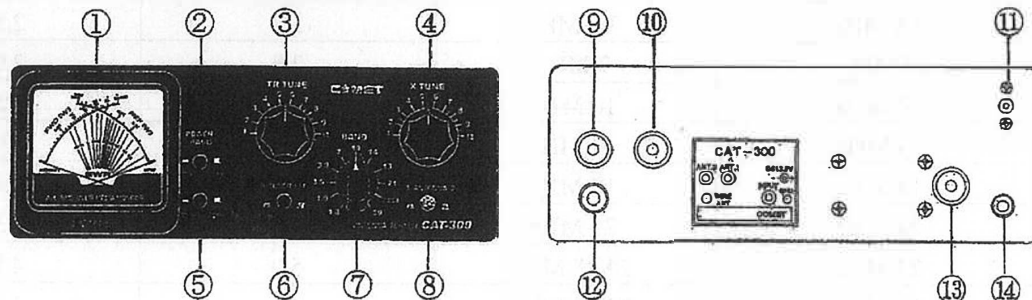
Please read this manual in its entirety before using the tuner, so as to understand its features and capabilities fully.

### Features

- The CAT-300 is a manual antenna tuner capable of accepting up to 300 Watts of transmitter power, and it can be used to tune dipole, vertical, mobile whip, long wire, and other types of antenna on the 160-6 meter amateur bands.
- The precision cross meter is capable of measuring forward power, reflected power, and Standing Wave Ratio (SWR) concurrently.
- The meter scale is illuminated, allowing easier viewing of the meter during low-light conditions (external DC power required).

### Precautions

- Although the CAT-300 is designed to handle up to 300 Watts input, please limit the transmitter power, during tuning, to 10 Watts or less, to protect the transmitter and/tuner since extremely high RF voltage may occur in the tuning circuit, and the impedance seen from the transmitter may fluctuate dramatically.
- Do not operate the BAND switch while the transmitter is transmitting. It may temporarily increase the load SWR to infinity, and may cause failure or damage to the transmitter or the CAT-300. Furthermore, do not apply transmitter power of 300 Watts or higher to the CAT-300. Failure to observe this precaution may result in malfunction or damage.
- Although the CAT-300 is capable of tuning some loads in the range of 10-600 Ohms, we recommend that you make adjustments in your antenna system, instead of tuning by force when the SWR for the connected antenna system is outside the range of about 2.5:1.
- Never apply 15V DC or higher, nor AC voltage of any kind, as the external power supply voltage for the meter scale board lamp. Failure to observe this precaution may result in malfunction and/or damage.



### Part Names and Descriptions

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| <p>(1) Cross Meter<br/>The meter indicates FWD (Forward Power), REF (Reflected Power), and SWR.</p> <p>(2) Measurement Range Selection Button<br/>This button selects the maximum value for FWD (Forward) power indication.</p> <p>(3) TR TUNE<br/>This knob controls a variable capacitor that changes the impedance on the input side (transmitter side).</p> <p>(4) X TUNE<br/>This knob controls a variable capacitor that changes the impedance on the output side (antenna side).</p> <p>(5) AVG/PEP switch<br/>This switch determines the power measurement method (Average or PEP) during power measurement.</p> <p>(6) TUNER switch<br/>This switch enables/disables (manual) antenna tuner operation. When set to OFF, the CAT-300 functions solely as an SWR meter.</p> <p>(7) BAND switch<br/>This is the switch to select the 1.8 MHz – 50 MHz bands.</p> | <p>(8) ANTENNA switch<br/>This switch selects either ANT1 or ANT2.</p> <p>(9) ANT.2 (M- type, SO-239 connector)<br/>Connects to an antenna, dummy load, etc.</p> <p>(10) ANT.1 (M- type, SO-239 connector)<br/>Connects to an antenna, dummy load, etc.</p> <p>(11) Power input terminal<br/>Terminal for external 12V power input for the meter lighting.</p> <p>(12) ANT.2 (Terminal)<br/>Connects to a single-wire antenna (long wire, etc.). It cannot be used simultaneously with the ANT2 Connector. To use this terminal, do not connect any antenna, etc. to the ANT2 connector.</p> <p>(13) INPUT (M-type, SO-239 connector)<br/>This is the connector to connect the radio output.</p> <p>(14) GND<br/>Use this terminal to connect the CAT-300 to an earth ground. TVI and BCI may be reduced by connecting this terminal to the GND terminal for the radio and grounding this terminal.</p> |
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**Specifications**

Frequency range: 1.8 – 50MHz  
 Input impedance: 50 Ω  
 Maximum transmit power: 300W or lower (SSB)  
 Lighting power supply: DC11V – 15V, Approx.  
 250 mA

Bands: 11 bands  
 Output impedance : 10 – 600 Ω  
 Minimum SWR measurement power : 6 Watts  
 Weight : Approx. 2.7 kg (approx. 6 lbs)

Dimensions: 250(W) x 98(H) x 242(D) mm

**Connection Procedures**

Use good quality 50-Ohm coaxial cable (3D-2V, 5D-2V, RG-8X, RG-213, or "400" type) for connections between the radio and the CAT-300, as well as between the CAT-300 and your antenna(s).  
 If the antenna is a long wire type, connect it via the [ANT2] (terminal). Connect the ground wire to the [GND] terminal.

**Operation Procedures**

To use the CAT-300 exclusively for reception such as SWL, press the TUNER switch to enable tuning operation. Then adjust the [BAND] switch, the TR TUNE, and the X TUNE controls so that the received signal level is maximized. Use the tuning table below for *starting point* settings.

To use the CAT-300 for transmission, use the following [procedures]:

1. Set the [ANTENNA] switch to the [ANT1] or [ANT2] position, corresponding to the coax line to be tuned. Be certain that the coaxial cable is connected to the correct M-connector on the CAT-300.
2. Reduce the transmitter power to between 5 and 10 Watts.
3. Set the [BAND] switch to the appropriate band, and set the "TR TUNE" and "X TUNE" to the starting point settings shown in the chart below.

**Tuning Table**

Frequency (MHz)	BAND	TR TUNE	X TUNE
1.8 MHz	1.8 MHz	5.4	3.6
1.9 MHz	1.9 MHz	4.9	3.2
3.5 MHz	3.5 MHz	4.4	3.0
3.8 MHz	3.8 MHz	3.7	2.5
7 MHz	7 MHz	2.8	2.0
10 MHz	10 MHz	2.0	1.3
14 MHz	14 MHz	1.5	1.0
18 MHz	18 MHz	9.5	9.6
21 MHz	21 MHz	7.0	6.3
24 MHz	24/28 MHz	5.0	4.1
28 MHz	24/28 MHz	4.8	3.3
50 MHz	50 MHz	1.5	1.2

Note: This is the data for a 50Ω input impedance and load. These values are strictly a starting point.

4. Apply transmitter power until the needle of the reflection power meter of the tuner's SWR meter deflects with CW, AM, or modulation.
5. Turn the "TR TUNE" dial while transmitting to find the point where meter deflection is minimized.
6. Then turn the "X TUNE" dial to find the setting where SWR meter deflection is smaller than it was in the previous step.
7. Repeat procedures 4 – 5 above to find the point where the SWR meter deflection is minimized. This reading should ultimately be below 1.5:1.
8. If a low SWR cannot be obtained, stop transmission immediately and set the [BAND] switch one step lower, then resume the tuning operation again from step 4 above.
9. Operation up to the maximum transmission output of 300 Watts is possible once a low SWR is obtained.

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 without notice for improvement of the product.