EMTRON EAT-300A ANTENNA TUNER

OPERATING MANUAL

The EAT-300A Antenna Tuner is a compact 300 watt capability antenna tuner of modern design, intended for marine, mobile land-communication, professional, amateur, SWL and CB application. It offers the ultimate flexibility. Almost any type of antenna system can be used, whether a coax, balanced line (twin lead) or random wire.

A unique built-in **"CROSS NEEDLE" SWR POWER METER** can be used independently or in conjunction with the Tuner. A built-in **50 OHM DUMMY LOAD** assists to give accurate power measurements and transmitter adjustments, while the six position antenna switch allows similtaneous connection of different antenna systems. The frequency range of EAT-300A is 1.8-30MHz continuous and can be used with any exciter or transceiver producing up to 300 watts of RF output power. Superior quality components and a rugged 2mm aluminium case assures long life and trouble-free service.

INSTALLATION

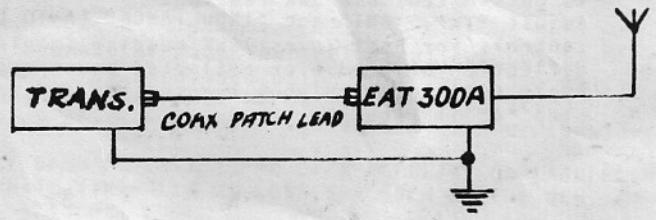
The most essential part of any antenna system utilizing a tuner is a good earth ground. A cold water pipe near the operating position or car chassis ground, for mobile operation, are suitable. Make certain to take your ground lead directly to EAT-300A first and then to your transmitter. Avoid making the ground wire a multiple of quarter waves at the operating frequency. The length of ground wire should be less than 1/8 of wave length. If you are using a low pass filter for harmonic attenuation, place it close to the input terminal **"TRANS"** of the EAT-300A.

Using a 50 OHM coaxial line (RG-8 or RG-58 or equivalent), connect your transmitter to the transmitter input **"TRANS"** of the EAT-300A. Use patching leads as short as possible.

Coax fed antennae are connected to the SO-239 connectors marked: COAX A and COAX B.

For Balanced (TWIN LEAD) System, connect one side of your feedline to either one of the balanced feed terminals, the other side of your feedline to the other balanced-fed terminal.

Single wire antenna to be connected to "SINGLE WIRE" terminal.



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MOBILE INSTALLATION

In mobile application, run a short ground wire from the tuner ground (EARTH) to the car body. Any mobile antenna is suitable, using a 50 OHM coax between your antenna installation and EAT-300A COAX output.

When using a 108" whip antenna in mobile application, the EAT-300A is fully compatible from 40 to 10 meters.

OPERATION

A INDEPENDENT POWER MEASUREMENTS UP TO 30 MHz

1. Connect your transmitter to **INPUT TERMINAL** of EAT-300A via a **50 OHM COAXIAL PATCH LEAD.**
2. Turn the **"ANTENNA" SWITCH** to **"DUMMY LOAD"** position.
3. **TURN YOUR TRANSMITTER ON AND READ THE APPLIED RF POWER OFF THE FORWARD SCALE ON "CROSS NEEDLE" METER.**

PLEASE NOTE: DO NOT APPLY FULL POWER OUT OF YOUR TRANSMITTER FOR LONGER THAN 1 (ONE) MINUTE.

B INDEPENDENT SWR MEASUREMENTS

1. Connect your transmitter ot **INPUT TERMINAL** of EAT-300A via **50 OHM COAXIAL PATCH LEAD.**
2. Connect your antenna to **"COAX A"** terminal on the rear panel of EAT-300A.
3. Turn the antenna switch to **"COAX A BYPASS"** position.
4. Apply very low (minimum) amount of RF power from your transmitter - sufficient to read the forward and reflected power and consequently the SWR off the **"CROSS NEEDLE METER".**
5. If your SWR value is very low - less than 1.2:1 proceed with transmission. If SWR is higher than 1.2:1 engage the antenna tuner by turning the antenna switch to **"COAX A".**

C ANTENNA TUNER ADJUSTMENT

1. Set **"TX"** and **"ANT"** controls to **"5".**
2. Listen for maximum noise level on your receiver while turning inductance control from **"A"** to **"L"** and leave the inductance control knob in the position of maximum noise level.
3. Apply just enough RF power from your transceiver to obtain sensible SWR reading.
4. Adjust **"TX"**, **"ANT"** and **"INDUCTANCE" (A TO L)** controls for best-(lowest)SWR reading (minimum deflection of needle on reflected power scale).
5. Apply full power to your transmitter and repeat step **"4"** if required.

BASIC CONTROL SETTINGS

(INTO 50 OHM RESISTIVE LOAD)

AMATEUR BAND (MHz)	TX	IND	ANT
1.830	5	A	6
3.6	4	B	4
7.1	4	G	4
10.1	2	H	2
14.2	2	I	2
21.2	2	J	2
28.4	3	K	3

ANTENNA

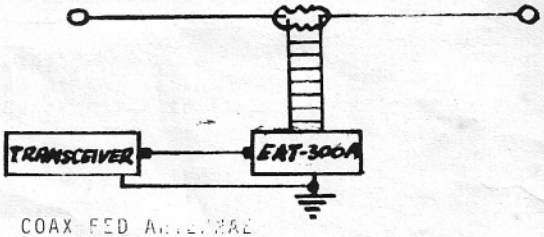
SINGLE WIRE (Long Wire) FOR EAT300

For best results a ½ wave at the lowest operating frequency is recommended. If a ½ wave length is not practical, use 1/8 wave as minimum. An ideal length for the wire (antenna coupler to far insulator) is 87 feet, (26.5m). This particular dimension provides a reasonable termination for the coupler on all bands, 160 through 10 meters.

BALANCED FEEDLINE (Open-wire/Ladderline)

Ladder line is an excellent choice for feeding a dipole to be used on several HF bands. If proper operation is to be achieved, avoid resonances in the feedline. The feedline length plus one side of the dipole should not be a multiple of 16' (4.9m) for operation on 80, 40, 20 and 10 meters, and must avoid multiples of 22 feet (6.71m) for 15 meters opertion.

Ideal length for "L" are 40 feet (12.2m), 58 feet (17.7m), 75 feet (22.87m) and 95 feet (29m) if operation on all HF bands is required.



COAX FED ANTENNAE

EAT-300A is capable of matching COAX feedlines between 50 and 75 OHMS. Be sure when using COAX line in a multi-band antenna, the COAX must be of low loss quality or the efficiency of your antenna system will suffer considerably.

THE BEST ALL BAND ANTENNA IS AN OPEN FEEDLINE OR LADDERLINE FED DIPOLE WITH VIRTUALLY NO LOSSES - SUCH AS THE NEW "EMTRON ALL BANDER".

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