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AT5K-HP 3500 Watt Antenna Tuner

Specifications Summary

- 3500 W PEP SSB
- 160 m to 6m
- Custom capacitors with 6:1 vernier drives
- 7" H x 16.25" W x 19.75" D

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AT5K-HP 3500 Watt Antenna Tuner Technical Manual



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AT5K-HP SPECIFICATIONS

- **INPUT & ANTENNA TUNING:** 2 x Variable capacitors 600 pF, 6 kV
Peak, 6:1 Vernier Drives for both capacitors
- **INDUCTANCE:** 28 μ H roller inductor, 10 amps, 5 kV,
10 ga. wire wound on steatite ceramic core,
silver plated shaft and wheel
- **ANTENNA SELECTOR SWITCH:** 6 position:
Coax 1 - tuned and tuner bypass
Coax 2 - tuned and tuner bypass
Bypass coax connector;
Coax to EXT BALUN for BAL FEED
Switch wafers are 7 kV/10A rated
- **REAR PANEL CONNECTORS:**
SO-239: RF Input, Coax 1 & 2, Bypass,
Coax to EXT BALUN
- **FREQUENCY COVERAGE:** 1.8 - 54 MHz
- **POWER MAXIMUM:** 5000 W PEP SSB, 3500 W single tone
- **IMPEDANCE RANGE:** 8 to 2000 Ω , 160m to 10m
(assuming resistive load)
Reduce power for lower Z-range
- **DIMENSIONS:** 7" H x 16.25" W x 19.75" D (incl. terminals)
- **WEIGHT:** 20 LBS, 9 Kg
- **CHASSIS & COVER:** 11 ga., .090 gold Iridite Treated Aluminium

NOTES:

AT5K-HP GENERAL DESCRIPTION



The Palstar AT5K-HP Antenna Tuner is an American-made impedance matching network that can provide unbalanced and balanced output with a power rating of 3500 watts (single tone carrier) and 5000 watts PEP at certain Z ranges.

Tuning is achieved with the front panel mounted controls. The Vernier capacitor dials allow for tuning with precision and accuracy, while the inductor crank handle facilitates coarse adjustments.

INSTALLATION

UNPACKING

Carefully remove the AT5K-HP from the shipping carton and inspect it for signs of damage. If any damage is apparent, notify the transportation carrier or dealer immediately.

KEEP THE PACKING CARTON for moving, storing, or reshipping the tuner to us for repair if required.

LOCATION

Select a location for the AT5K-HP that allows the connectors to be free from any possible contact with people, pets, or objects during operation and with unrestricted air flow for cooling.

INSTALLATION PROCEDURE

Connect a coax cable from your transmitter to the RF INPUT connector on the rear panel. Keep the cable as short as possible. If you use a linear amplifier, connect your transmitter to the linear amplifier input and the linear amplifier output to the AT5K-HP.

DO NOT USE MORE THAN 3500 WATTS (single tone carrier) or 5000 WATTS PEP THROUGH THE TUNER.

OPERATING YOUR AT5K-HP

6. Set the **OUTPUT SELECTOR** switch to the position matching your antenna connection. To tune your antenna, the switch selection must be set to: COAX 1 TUNED, COAX 2 TUNED. Selecting COAX 1 DIRECT, COAX 2 DIRECT, or BYPASS bypasses the tuning circuitry and tuning is not possible.

7. **Key your transmitter** and adjust the power level for a reading of 100-150 watts on the FORWARD scale. Adjust the INPUT, OUPUT, and INDUCTOR controls for a minimum REFLECTED reading while maintaining a FORWARD reading of 100-150 watts using your transmitter power control. Use the supplied chart of approximate tuning control locations for the different bands located at the back of the manual.

This procedure takes patience the first time. The input and antenna controls vary the capacitors and provide fine adjustments, while the roller inductor crank provides coarse adjustment.

OPERATING YOUR AT5K-HP

BEFORE OPERATING

1. To avoid possible damage to the AT5K-HP set INPUT, OUTPUT, INDUCTOR, and POWER RANGE switches as outlined in the chart below before applying transmitter power.
2. Begin tuning with your transmitter/amp feeding the tuner set at a low output power setting (50-100 Watts max).

WARNING: DO NOT OPERATE THE AT5K WITH THE COVER OFF.

TUNING

1. Select the band and frequency of desired operation.
2. Set TUNE and INDUCTOR controls to the suggested setting before applying transmitter power (see chart). Actual settings will vary from antenna to antenna.
3. Set your transmitter/amplifier to 100-150 watts LOW output. If your transmitter has a TUNE position, select that position.
4. Preset the INPUT, OUTPUT, and INDUCTOR values shown in the chart.

BAND	C INPUT		C OUTPUT		INDUCTOR	
	SUGGESTED	ACTUAL	SUGGESTED	ACTUAL	SUGGESTED	ACTUAL
160 M	58		60		78	
80 M	49		50		162	
40 M	50		54		200	
20 M	47		55		212	
15 M	55		48		196	
10 M	40		40		200	

NOTE: MINIMUM INDUCTANCE is **229** (max turns clockwise).
 MAXIMUM INDUCTANCE is **0 (ZERO)** on the turns counter.

REAR PANEL

RF INPUT coaxial connector for input from transmitter or amplifier

COAX 1 coaxial connector for output to Antenna 1

COAX 2 coaxial connector for output to Antenna 2



GROUND post/wing nut ground connector

BYPASS coaxial connector for output to dummy load or resonant antenna. Bypasses tuner.

BALUN OUTPUT coax connector to connect external balun for LADDER LINE FED antenna

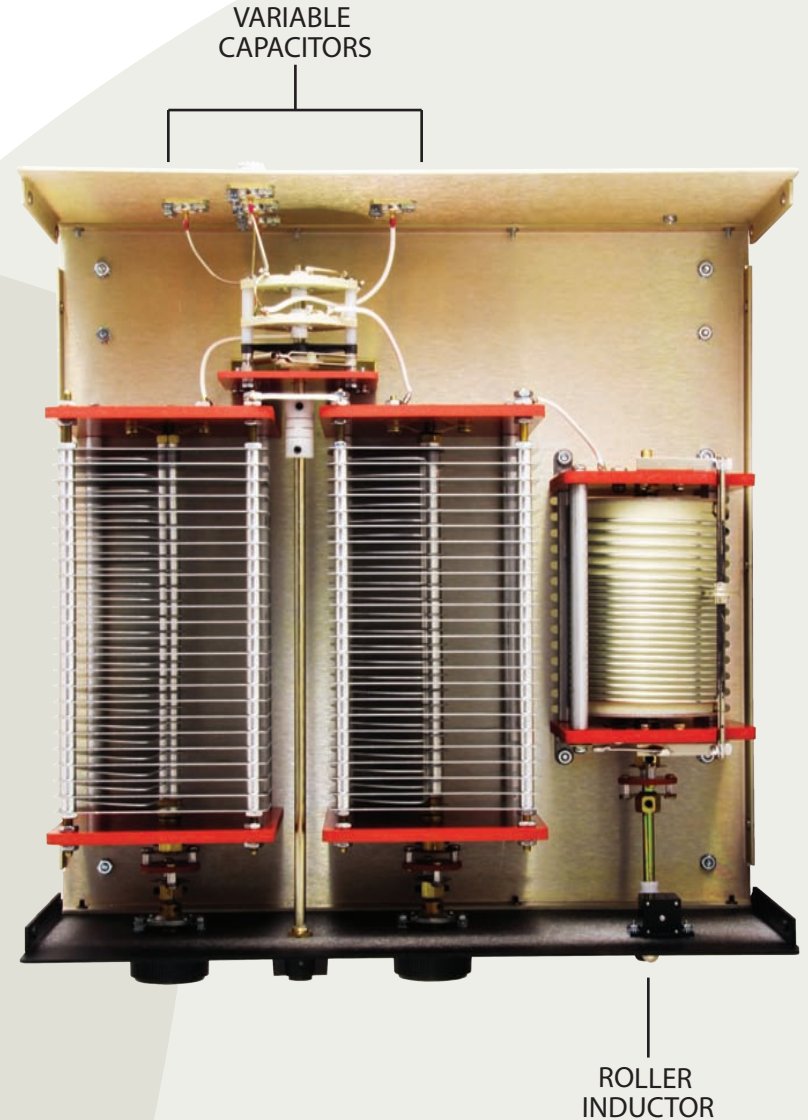


FRONT PANEL DESCRIPTION



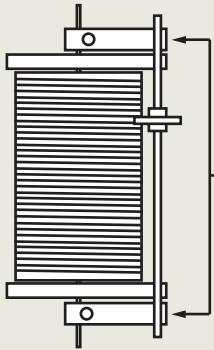
1. **INPUT** Continuously adjustable input capacitor. Min. capacitance = 0. Max. = 100.
2. **DIRECT-TUNED MODE SWITCH** Six-position rotary switch selects an output coaxial connector.
 - a. **DIRECT BYPASS** selects BYPASS COAX CONNECTOR bypassing the impedance matching circuit, but providing SWR, FORWARD, and REFLECTED power meter readings.
 - b. **DIRECT COAX 1** selects COAX 1 CONNECTOR bypassing the tuner matching circuit, but providing SWR, FORWARD, and REFLECTED meter readings.
 - c. **DIRECT COAX 2** selects COAX 2 CONNECTOR bypassing the tuner matching circuit, but providing SWR, FORWARD, and REFLECTED meter readings.
 - d. **TUNED COAX 1** selects COAX 1 CONNECTOR through the impedance matching T circuit.
 - e. **TUNED COAX 2** selects COAX 2 CONNECTOR through the impedance matching T circuit.

INSIDE VIEW



RESTORING THE INDUCTOR WHEEL

When approaching the end stops of the roller inductor (readings of Zero or 229) **SLOW DOWN**. Slamming the roller wheel into the mechanical end stops on either end of the roller inductor *will decrease the pressure of the wheel against the wire wound on the ceramic form.*



To RESTORE wheel pressure on the inductor push down on the flat springs soldered to the wheel shaft located on each end of the shaft.

- e. **TUNED COAX 2** selects COAX 2 CONNECTOR through the impedance matching T circuit.
 - f. **COAX to EXTERNAL BALUN** selects COAX to BALUN CONNECTOR through the impedance matching T circuit for LADDER LINE FEED.
3. **OUTPUT** Continuously adjustable output capacitor. Min.=0; Max.=100.
 4. **INDUCTOR** 28 μH continuously variable ceramic roller inductor driven by a crank handle. Coupled to the crank handle is a gear-driven precision mechanical counter; Max. = 0; Min. = 229.

AT5K-HP SCHEMATIC

