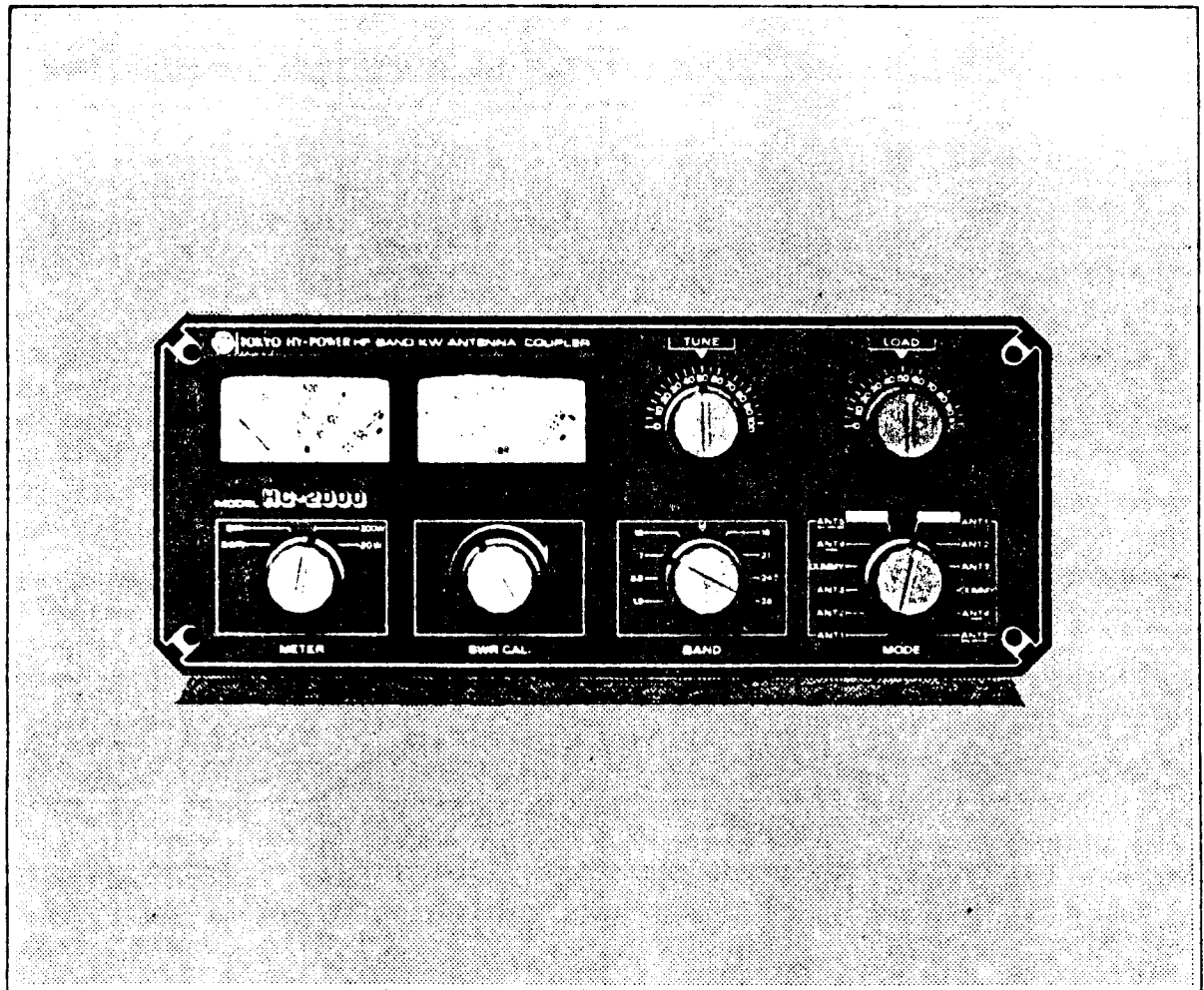


HC-2000



 **TOKYO HY-POWER LABS., INC.**

FEATURES

- HEAVY DUTY COMPONENTS** - The variable capacitors, rotary switch, and steatite coil-form were selected to meet the demands of legal high power operation. Copper tubing is used at the higher frequencies for best results.
- VERNIER TUNE AND LOAD** - Vernier drive mechanisms are used on both the tune and the load capacitors in the HC-2000 for smooth accurate settings with a minimum of backlash and vibration error.
- TWO LARGE METERS** - Large meters provide easy determination of a proper match or the measurement of power applied to the 50 Ohm point in the network. Three power ranges and a VSWR position are provided.
- SIX ANTENNAS** - Six different positions are available through the coupler or direct including one wire antenna and one balance feed line type. One position is marked dummy for use of a dummy load but may be used for an antenna also.
- BANDPASS FILTER** - The same characteristics that make for a good antenna matching network also have use in the suppression of unwanted harmonics and other possible spurious generated by the transmitter. This aids in the prevention of TVI and BCI.

SPECIFICATIONS

Bands:	1.9, 3.5, 7, 10, 14, 18, 21, 24.5, 28 MHz Amateur Bands.
Input Impedance:	50 Ohms.
Output Impedance:	10 to 500 Ohms coax, long-wire, or balanced (with optional balun supplied by user).
Maximum Power:	2000 Watts PEP after matching is completed. (Except 1.9 MHz band max. input is 500 Watts.)
Insertion loss:	Less than 0.3 dB for coupler.
Inline VSWR:	Less than 1:1.1 VSWR from input to Dummy.
Forward Power:	2000, 200, 20 Watts or VSWR switchable.
Connectors:	UHF, SO-239, "M" type coaxial connectors and three Johnson Terminals.
Size:	328 (w) x 131 (h) x 396 (d) mm
Weight:	8.5 kg

How to PRETUNE the HC-2000

1. Set the mode switch on the HC-2000 to the Direct-Dummy position.
2. Set the power meter range appropriate to the transmitter maximum output.
3. Key up the transmitter in TUNE mode, adjust the power meter readings to maximum by tuning the transmitter TUNE and LOAD.

(Do not keep key down any longer than 30 seconds to protect your finals, check the output on the power meter.)

USING the HC-2000 in the BY-PASS MODE to CHECK THE TX OUTPUT

1. Set the power meter range appropriate to the transmitter output.
2. Select the desired antenna from the DIRECT side ANT 1 thru 5.
3. Retune the transmitter to maximum output, read the power meter upper scale if the power is more than 200 watts, read the middle scale when the power is 20-200 watts, and read the lower scale when the power is less than 20 watts. The higher the VSWR is the lesser the accuracy on the power readings.

USING THE HC-2000 ON BY PASS MODE TO CHECK THE VSWR

1. Set the "Meter" select switch to SWR, turn "SWR-CAL" to full counter clock-wise.
2. Set the transmitter to TUNE or CW mode, transmit a carrier (5w-20w) into the HC-2000. Please use a clear frequency.
3. Turn the "SWR-CAL" clockwise to set the power meter reading to full scale. Read the "VSWR" on the SWR meter.
4. Use the upper VSWR scale for more than 200 Watts power, the middle scale for 20-200 Watts and the lower scale for less than 20w to read VSWR.

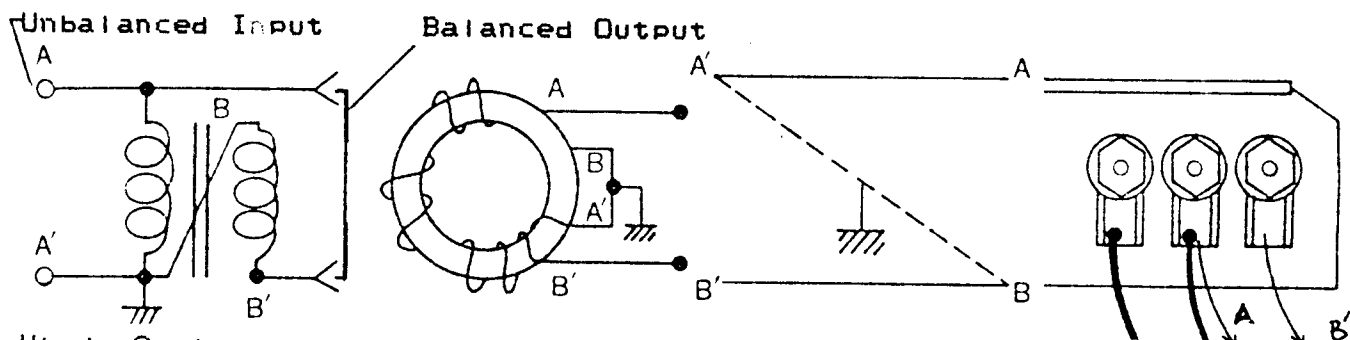
BAND MHz START POINT	1.9	3.5	7	10	14	18	21	24.5	28
TUNE	37	46	72	83	92	87	84	76	60
LOAD	67	72	84	92	96	94	93	93	94

USING THE ANTENNA COUPLER AND CHECKING THE POWER OUTPUT

1. Set the HC-2000 Mode switch to select the desired antenna on the Coupler side, ANT 1 thru 5
2. Set the "Meter" selector to "SWR".
3. Select the operating "Band". Listen to a signal around the operating frequency, adjust the TUNE and the LOAD to the best S-meter reading (or maybe maximize noise reading). To finish the procedure transmit per number 4.
4. Transmit some carrier (5-10w). Reading the VSWR meter, tune the TUNE and the LOAD each to make the reading minimum. (see the directions for checking "VSWR".)
5. Increase the carrier and turn the "SWR-CAL" clockwise to make the power meter reading full scale, again adjust the VSWR reading to minimum by turning TUNE and LOAD.
6. The Coupler is now tuned up, select the power range 2kw/200w/20w appropriate for the transmitter.
7. Change the transmitter mode to the desired operating mode (LSB-USB-CW, etc) and operate

USING THE HC-2000 FOR BALANCED OUTPUT

It is necessary to install a balun coil for use with a balanced feed such as a 300-Ohm ribbon cable or 450-Ohm ladder line. The Balun provides unbalanced to balanced matching. The following example is for a balun which has 1:4 impedance ratio, because most balanced type feeders are high impedance.



Wind 2 wires in parallel over the core. The core used is a T-200-2 type toroidal core by AMIDON. 1mm diameter magnet wire (or enameled wire) is wound 15 times (about 3m long x 2wired) in bifilar fashion over the core. The core is rated up to 1kw input. Maximum power input is figured by the following calculation. --- Balun coil diameter (T-200) x 5 = 1kw. Putting insulating tape or glass tape produces an even better result. This balun is not provided.

CAUTION

1. In case a good ground system is not available, use a counter-poise (1/4 wave long for the band to be matched.)
2. In the case the VSWR is not low enough on the band chosen use the next lower band position and retune.
3. Transmitting into an untuned antenna coupler can result in bad transmitter finals or damage to the antenna coupler or both. Tune the antenna coupler using as low a power setting as possible, then increase the power and retune slightly. Damage to the variable capacitors is likely.
4. Switching the band switch or the antenna switch during transmitting, will damage the HC-2000 and maybe the transmitter.
5. The use of small antenna wire for a high power station causes bad VSWR and produces bad results. For best efficiency, use big coax and big antenna wire for high power transmission.
7. SWR meter works only when SWR mode is selected.

ANTENNA SELECT

1. Several mono-banders or a multi-band antenna such as a multi-band vertical antenna, a multi-band dipole, or a log-periodic antenna is expected for all bands operation with this antenna coupler.
2. The HC-2000 makes it possible to operate all bands with a single mono-bander. (But a good result cannot be expected or a perfect VSWR as when using a full-size antenna.)
3. When using the antenna which is designed for another frequency, the transmitting can possible cause TVI,BCI..etc.This is not the problem of the coupler. The feed point may be the RF voltage maximum, try cutting or adding length to the feeder. This will help keep the radiated RF down and help keep the shack from being "HOT" with RF.
4. A long wire antenna is frequently used for marine, field and apartment operation. In the case the wire is much longer than 20m (like more than 40-60m long), possibly a good match will not result. The same situation can happen on Low Frequencies like 80m, 160m, where the impedance may be higher than 500 Ohm. Try cutting or adding the wire length. To reduce the impedance to less than 500 Ohms.

AFTER SERVICE

HF all bands antenna coupler HC-2000 is produced under the high technology and strict quality control. If you have a question on this product, please contact your dealer

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