

# **Operating Manual**

## **DTR-3KA Antenna Tuner**

**DenTron**



# Description

The Model DTR-3KA Antenna Tuner is a precision built, compact, high performance instrument of advanced design, providing maximum possible flexibility for the operator.

The DTR-3KA is equipped with an in-line dual wattmeter showing simultaneously forward and reverse power on two separate precision meters, with front panel switchable ranges.

The DTR -3KA has been designed to match any transmitter (3000 watts P.E.P. maximum) to a multitude of antenna systems, including three coaxial lines, a long wire system, and a balanced feed line. There is also a built-in KW PEP Dummy Load which can be used to tune up without on-air interference. The DTR-3KA will tune any of these systems from 1.8-30 Mhz and it will handle a full 3KW P.E.P. Built modularly, the DTR-3KA makes the ideal addition to any HF communication system operating between 1.8-30 Mhz.

## DTR-3KA Specifications

Frequency Coverage: 1.8-30 Mhz Continuous

Input Impedance: 50 Ohms (Resistive)

Output Impedance:

Coax 1 50 ohms nominal )

Coax 2 50 ohms nominal )—May range from a few ohms to a high impedance.

Coax 3 50 ohms nominal )

Long Wire either High or Low Impedance

Balance Line 75 to 600 ohms

Power Capability: 3000 watts P.E.P.

Wattmeter Accuracy:  $\pm 5\%$  full scale

Dimensions: 5¼" high, 17" wide, 13" deep (19" wide with rack brackets)

Weight: 15 lbs.

Front panel controls are provided for the adjustment of transmitter matching, antenna matching, inductance selector, antenna selector, wattmeter selector and fan control. Dummy Load Power Handling: 2KW PEP for 45 seconds (with appropriate A.C. connection) Dummy Load Duty Cycle: 50%, 45 seconds on 45 seconds off.

## WARNING

Do not put more than 100 watts into the DTR-3KA prior to tuning. Always tune with small powers. Only after tuning increase driver gain to maximum output. Do not use inductance selector or antenna selector with power applied to the DTR-3KA.

## **Location**

The DTR-3KA will work properly in almost any location. Select a location on the operating table that will allow easy access to the control knobs, and does not block the intake or exhaust for the dummy load cooling.

# **Installation**

## **Connections**

Connect the RF Output of your transmitter to the exciter connector of the DTR-3KA pick-up box, and an appropriate length of cable from the antenna connector of the pick-up box to the input of the 3KA, using 50 ohm coaxial cable such as RG-8/U. (Note: 1 Connect the coaxial line of your antenna to COAX 1 connector. Connect another coaxial line of a second antenna to COAX 2 connector. A third coax antenna can be connected to COAX 3 connector. Connect a long wire antenna to post marked LONG WIRE. Also connect a good ground to GND post.

Connect balanced feed line to posts marked BALANCE. You now have a choice of five antennas and a dummy load which you can switch from the front panel. You can also from the front panel bypass the DTR-3KA on COAX 1 only, or bypass the DTR-3KA and still select any antenna connected to the DTR-3KA.

Connect the A.C. Power cord to the 117 VAC four pin connector on the rear panel and plug into an appropriate outlet.

Connect the patch cord from the 12VDC jack on the rear panel to a 12VDC source capable of at least 1 amp. D.C.

Note: 1 The exciter may be connected directly to the DTR-3KA input bypassing the pick up box for the metering system.

# Operation

1. Switch Antenna Selector to "Dummy Load" and tune up the exciter into the 50 ohm Dummy Load; this will preset the exciter controls for a 50 ohm resistive load. Then switch to the proper antenna to be used.
2. Set "Transmitter Matching" and "Antenna Matching" controls to position 5.
3. Listen on receiver for maximum band noise while turning inductance switch for maximum noise.
4. Feed just enough power through the system to get a reading on the reflected meter.
5. Rotate inductance control for a drop on this reading.
6. Adjust "Transmitter Matching" and "Antenna Matching" controls for a minimum reading on the reflected meter.

## Dummy Load

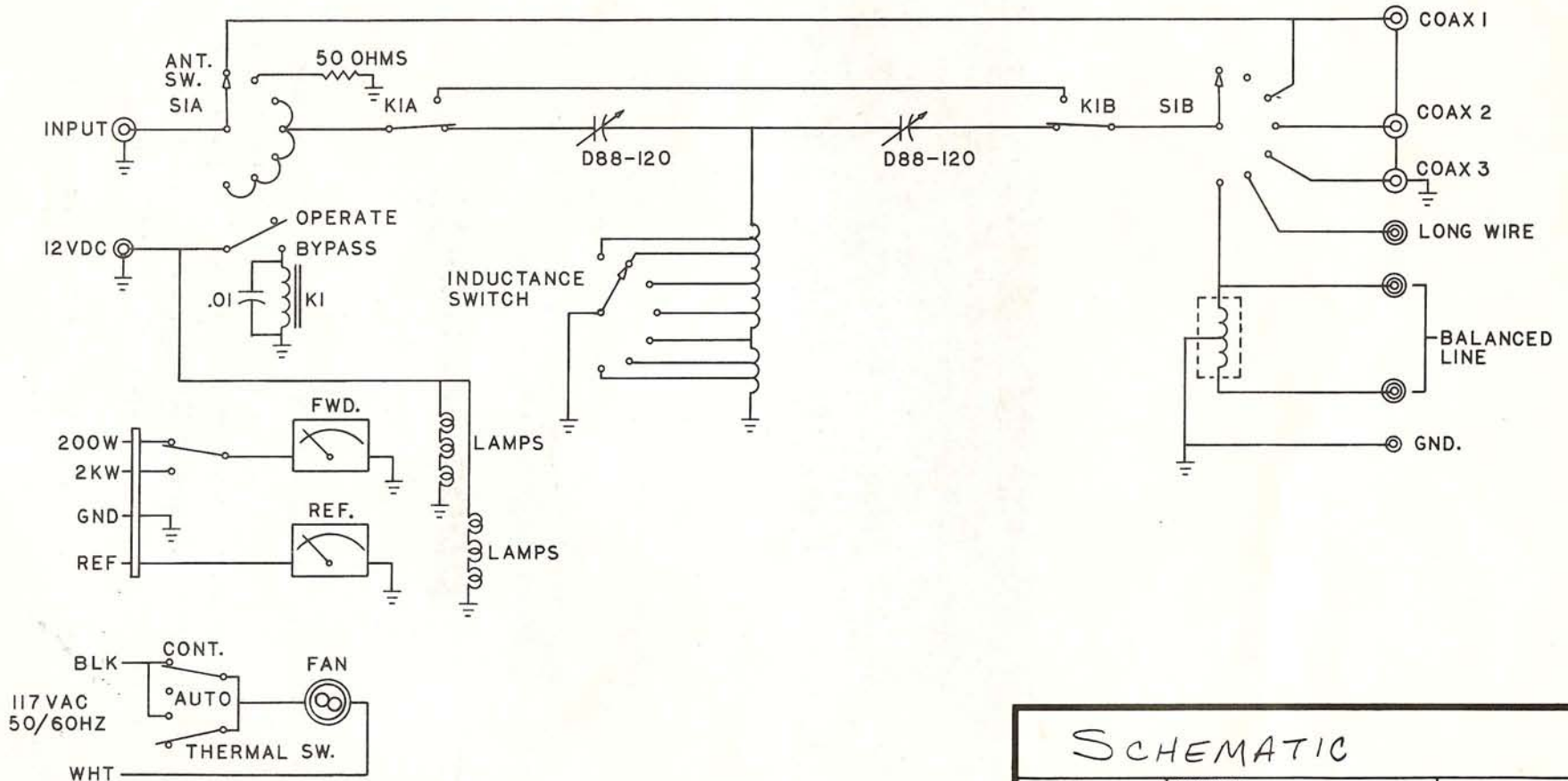
The DTR-3KA is equipped with a built-in dummy load which can be selected from the front panel. This dummy load is capable of handling 2KW PEP for a period of 45 seconds.

The Duty Cycle is 50% (45 seconds on, 45 seconds off).

The dummy load is cooled by a fan which will automatically come on and turn off in the auto position and run constantly in the continuous position.

## WARNING

Do not apply more than 2 KW PEP of RF to the DTR-3KA with antenna selector switch in dummy load position, or load may be interrupted and transmitter may be damaged. Do not apply RF to the DTR-3KA with antenna selector in dummy load position for more than 45 seconds at a time. (45 seconds on, 45 seconds off).



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|                          |              |                       |
|--------------------------|--------------|-----------------------|
| SCHEMATIC                |              |                       |
| SCALE: —                 | APPROVED BY: | DRAWN BY CD           |
| DATE: 2/25/80            |              | REVISED 2             |
| <b>Dentron</b> RADIO CO. |              |                       |
| DTR-3KA                  |              | DRAWING NUMBER 20-009 |

BRUNING 40-105-37650

HIGHER RATIOS  
POWER VALUES vs. VSWR

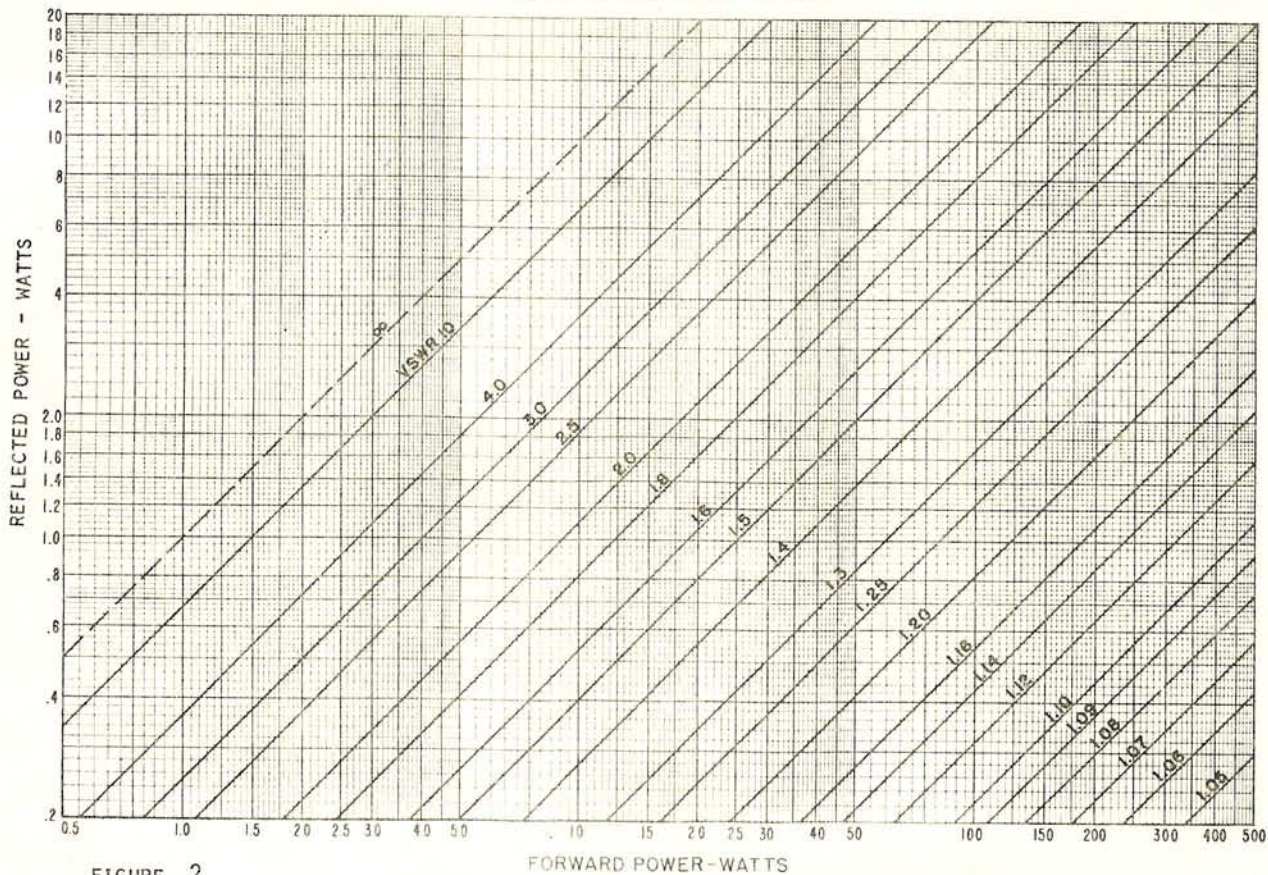


FIGURE 2

FOR HIGHER POWER VALUES MULTIPLY BOTH SCALES BY THE SAME DECIMAL FIGURE

LOWER RATIOS  
POWER VALUES vs. VSWR

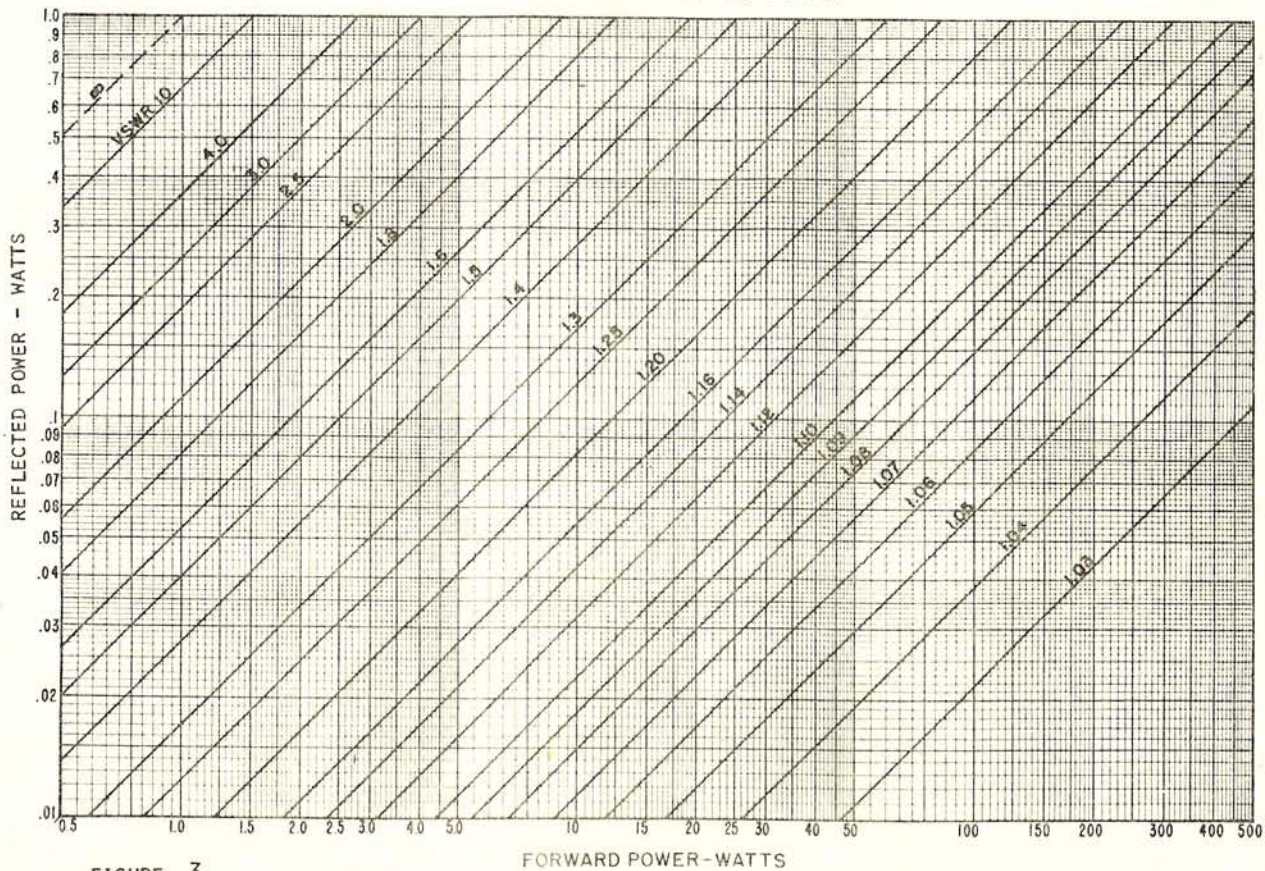
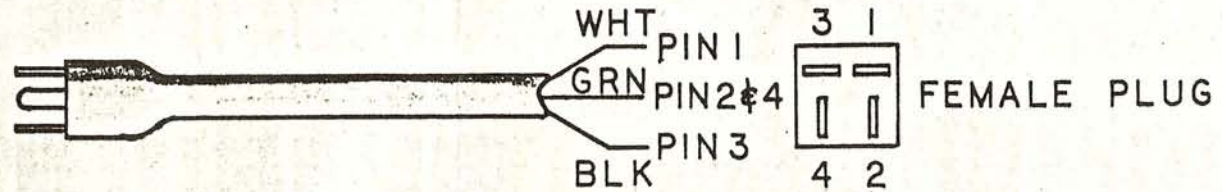


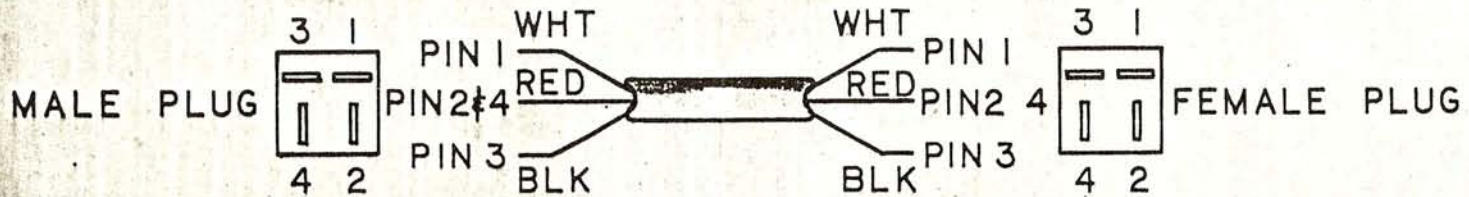
FIGURE 3

FOR HIGHER POWER VALUES MULTIPLY BOTH SCALES BY THE SAME DECIMAL FIGURE

117 VAC LINE CORD (WIRE AS SHOWN BELOW)

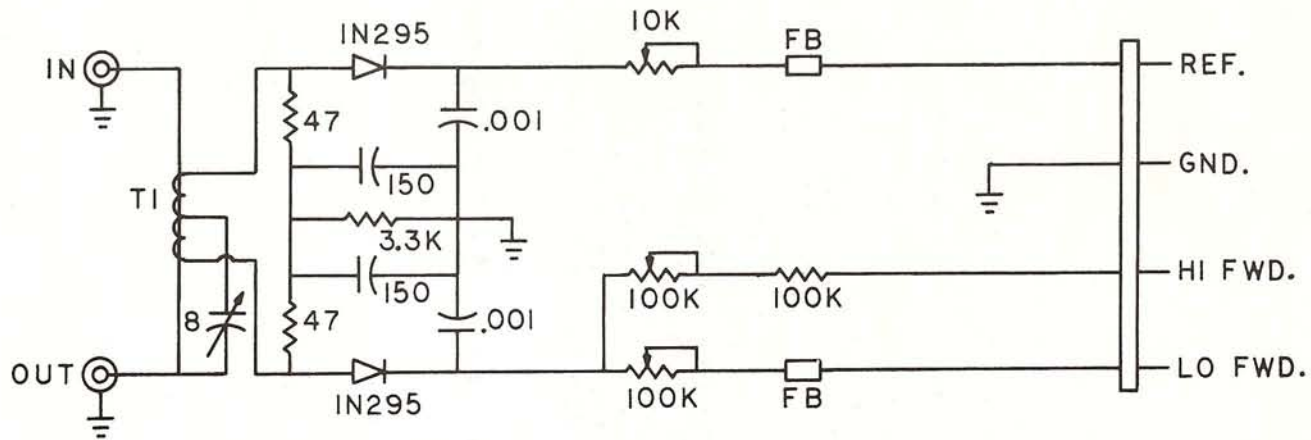


ACC'Y POWER CORD (FOR USE WITH DENTRON DTR-1200L)



|                          |              |                |
|--------------------------|--------------|----------------|
| SCALE:                   | APPROVED BY: | DRAWN BY       |
| DATE:                    |              | REVISED        |
| <b>Dentron</b> RADIO CO. |              | DRAWING NUMBER |





PICK UP BOX

SCHEMATIC

|                   |              |                |
|-------------------|--------------|----------------|
| SCALE: —          | APPROVED BY: | DRAWN BY CD    |
| DATE: 2/25/80     |              | REVISED 2      |
| Dentron RADIO CO. |              | DRAWING NUMBER |
| DTR-3KA           |              | 20-010         |

## Limited 90 Day Warranty

DenTron Radio is proud of the quality and workmanship of its communication equipment. If properly installed and operated in accordance with our instruction manual, it will give reliable performance. DenTron Radio extends to you as an owner of a new DenTron Radio Product the warranty set forth below:

For ninety (90) days from the date of original retail purchase, **DENTRON RADIO CO.** will either repair or replace, at its option, free of charge, any part or parts found to be defective in material or workmanship. Transportation charges for any parts submitted for replacement under this warranty must be paid by the purchaser.

This warranty will not apply to any part which has become inoperative due to misuse, excessive use, accident, neglect, improper maintenance, alterations, or unless the unit has been operated and maintained in accordance with the instructions furnished.

This warranty will not apply where the unit has been used commercially or when the unit has been used in conjunction with accessories not manufactured by **DENTRON RADIO CO.**

All implied warranties are limited in duration to ninety (90) days from the date of original retail purchase.

The provisions of this warranty specifically exclude any warranty or remedies for incidental or consequential damages.

**SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.**

In order to obtain warranty service, send written notification to the following address: **DENTRON RADIO CO.**, Attn: Service Dept., 1605 Commerce Drive, Stow, Ohio 44224.

Any written notification should include the model number of the unit, date and place of purchase, and a description of the defective part or condition. Do not return the unit or any parts unless requested to do so by **DENTRON RADIO CO.**

Although the return of the **DENTRON** Warranty Registration Card is not a condition precedent to warranty coverage and performance, the purchaser is encouraged to promptly return the Warranty Registration Card upon purchase in order to more easily facilitate the handling of any future service under these warranty provisions.

**THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.**

**DenTron**<sup>®</sup>  
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