

## **VECTRONICS**

### **VC-300DLP Antenna Tuner**

#### **FEATURES**

The Vectronics VC-300DLP Antenna Tuner optimizes the performance of your antenna and transmitter, receiver, or transceiver by providing adjustable impedance matching. The VC-300DLP also measures the Power and Standing Wave Ratio (SWR), allowing you to adjust for the lowest possible ratio for the selected transmit frequency. The VC-300DLP utilizes a precision frequency compensated lighted dual movement SWR / power meter which can show either peak or average readings. Also included is a built-in Dummy Load for tuning purposes which is easily switched in and out of the circuit.

#### **SPECIFICATIONS**

##### **FRONT PANEL INDICATORS**

Meter ..... Dual movement lighted cross needle Power and SWR meter.

##### **FRONT PANEL CONTROLS**

TRANSMITTER..... Continuous rotation capacitor.

ANTENNA..... Continuous rotation capacitor.

INDUCTANCE..... 48 Turn Switched Rotary Inductor.

OUTPUT SELECT ..... Eight position: DIRECT Coax 1, Coax 2, Bypass, and Dummy Load; TUNED Coax 1, Coax 2, Wire, and Dummy Load.

RANGE ..... 2 position switch: 30W / 300W

METER ..... 2 position switch: PEAK/AVG

LAMP ..... 2 position switch: ON / OFF

##### **REAR PANEL CONNECTORS**

COAX 1..... SO-239 Connector

COAX 2..... SO-239 Connector

BYPASS..... SO-239 Connector

TRANSMITTER IN..... SO-239 Connector

BALANCED LINE ..... Dual Banana Jack

WIRE..... Banana Jack

## OTHER

Frequency Coverage..... 1.8 - 30 MHz

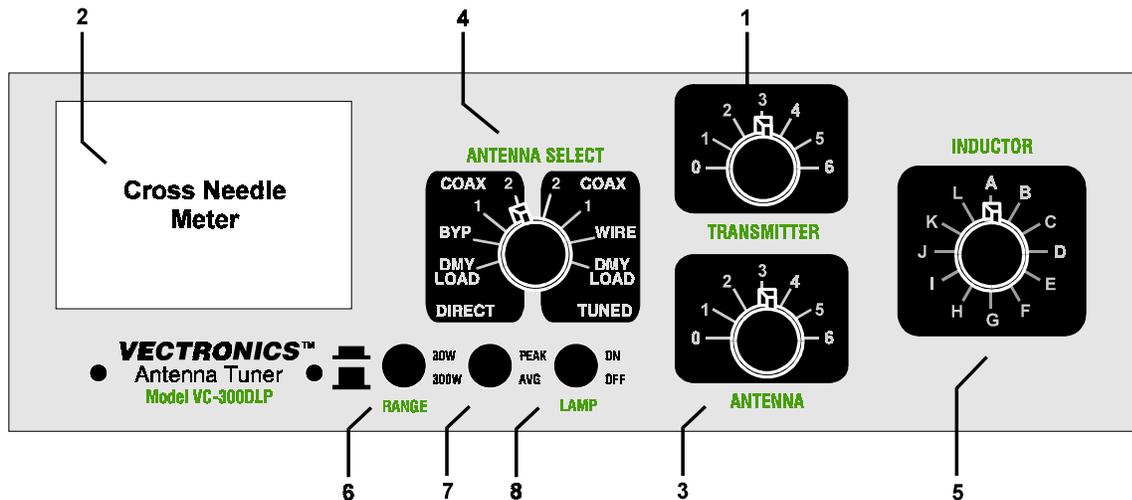
Power..... 150 watts Continuous; 300 watts pep, SSB

Dimensions..... 3.5" (89mm) H x 10.2" (266mm) W x 9.4" (240mm) D.

Weight..... 3.6 lbs. (1.6 kg.)

## CONTROLS / CONNECTORS

### FRONT PANEL FUNCTIONS



#### 1. TRANSMITTER

Continuously adjustable input capacitor.

#### 2. POWER / SWR METER

Dual needle meter displays FORWARD and REFLECTED Power in Watts.  
The SWR is measured where the two needles intersect on the red scale.

#### 3. ANTENNA

Continuously adjustable output capacitor.

#### 4. OUTPUT SELECT

Eight-position rotary switch selects an output coaxial connector.

#### DIRECT MODE

DMY LOAD selects the internal Dummy Load, bypassing the impedance matching circuit but providing normal meter readings.

BYP selects the Bypass Connector on the rear panel, bypassing the impedance matching circuit but providing normal meter readings.

COAX 1 selects the COAX 1 Connector, bypassing the impedance matching circuit but providing normal meter readings.

COAX 2 selects the COAX 2 Connector, bypassing the impedance matching circuit but providing normal meter readings.

### TUNED MODE

COAX 1 selects the COAX 1 connector through the impedance matching circuit.

COAX 2 selects the COAX 2 connector through the impedance matching circuit.

WIRE selects the WIRE connector through the impedance matching circuit.

DMY LOAD selects the internal Dummy Load through the impedance matching circuit.

## 5. INDUCTOR

48-position rotary switch to vary inductance.

## 6. RANGE

Two-position push button switch selects the range of FORWARD and REFLECTED Power displayed on the power meter.

When the RANGE switch is OUT, the FORWARD meter scale reads 300 watts full scale and the REFLECTED meter scale reads 60 watts full scale. When the switch is IN, the FORWARD meter scale reads 30 watts full scale and the REFLECTED meter scale reads 6 watts full scale.

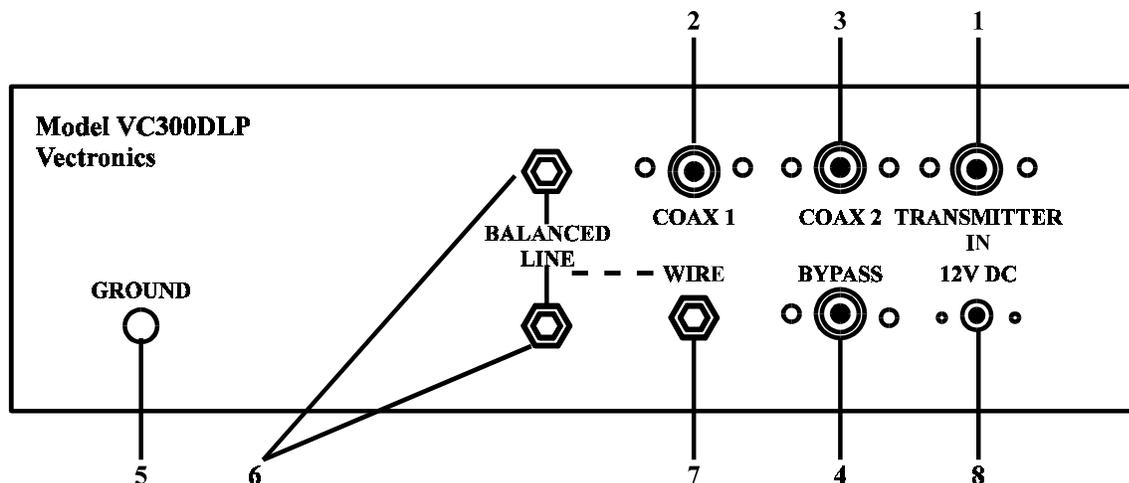
## 7. METER

Two-position push-button switch selects PEAK or AVERAGE readings on the meter.

## 8. LAMP

Two-position push-button switch turns the meter lamp ON / OFF.

## REAR PANEL CONNECTORS



### 1. TRANSMITTER IN

Coaxial connector for input from SWL receiver or transmitter.

### 2. COAX 1

Coaxial connector for output to Antenna One.

**3. COAX 2**

Coaxial connector for output to Antenna Two.

**4. BYPASS**

Coaxial connector for third coax output. Bypasses tuner, but meter circuits remain active.

**5. GROUND**

Post / Wing-nut type ground connector.

**6. BALANCE OUTPUT**

Two banana jack connectors for output to RF balanced twin lead antennas.  
(Note that jumper must be used as shown by the dotted line.)

**7. END FED WIRE**

Banana jack for output to a single-wire antenna. (Do not use jumper.)

**8. 12V DC**

Barrel connector for meter lamp power.

**INSTALLATION**

Carefully unpack your VC-300DLP from the packing carton and inspect it for signs of damage. If any damage is apparent, notify the transportation carrier or dealer immediately. We recommend keeping the packing carton for moving, storage, or reshipping the tuner.

Select a location for the VC-300DLP that allows the connectors to be free of any possible contact during operation.

**WARNING: SOME BALANCED OR END-FED ANTENNAS WILL PRODUCE HIGH RF VOLTAGES AT THE BANANA CONNECTORS. RF BURNS MAY RESULT IF TOUCHED DURING TRANSMISSION.**

**INSTALLATION PROCEDURES**

1. Connect a coax cable from your transmitter or receiver to the transmitter to the TRANSMITTER connector on the rear panel. Keep the cable as short as possible. **Do not use more than 200 watts through the tuner.**
2. Connect coax cable(s) from your antenna to COAX 1 or COAX 2 connectors on the rear panel. These connectors are either direct from the transmitter or through the tuned circuit depending on the setting of the OUTPUT SELECTOR switch.
3. If you are using a balanced feed antenna, connect a balanced line to the BALANCED OUTPUT connectors and jumper banana jack (6) with wire jack (7) as shown by the dotted line.
4. If you are using a single wire antenna, connect it to jack (7) without installing jumper.

5. Connect any antenna that does not require the use of a tuner to the BYPASS (4) connector using a coax cable. this allows you to select this antenna from the OUTPUT SELECTOR switch.
6. To avoid possible damage to the VC-300DLP, set the TRANSMITTER, ANTENNA, and RANGE switches as outlined in the next section before applying transmitter power.
7. Begin tuning with your transmitter set at a low output power setting (**10 to 20 W**).

**WARNING: DO NOT OPERATE THE VC300DLP WITH TE COVER OFF! DO NOT CHANGE THE INDUCTOR SWITCH WITH MORE THTN 20 WATTS OF APPLIED POWER**

## TUNING

1. Select the band and frequency of desired operation.
2. Set TRANSMITTER, ANTENNA, and INDUCTOR controls to the suggested settings before applying transmitter power. Actual settings may vary from antenna to antenna.

Band / Frequency	TRANSMITTER		ACTUAL		INDUCTANCE	
	Sug.	Actual	Sug.	Actual	Sug.	Actual
160 M / 1.8 MHz	5.1		3.0		J+	
75 M / 3.75 MHz	5.1		3.0		D-	
40 M / 7.15 MHz	6.0		4.1		B	
30 M / 10.125MHz	6.0		4.2		B-	
20 M / 14.175 MHz	5.5		4.2		A+	
17 M / 18.118 MHz	5.0		3.8		A+	
15 M / 21.225 MHz	5.2		6.0		A+	
12 M / 24.940 MHz	4.8		4.8		A+	
10 M / 28.850 MHz	4.0		6.0		A+	

3. Set your transmitter to a low power output. If your transmitter has a TUNE position, select that position.

**WARNING: DO NOT EXCEED 150 WATTS ON ANY BAND WHERE THE SWR ON THEANTENNA IS GREATER THATN 4 TO 1.**

4. Set RANGE switch to 30 Watts (button IN).

5. Set OUTPUT SELECTOR switch to the proper selection on the TUNED side of the switch. Selecting any of the DIRECT positions by passes the tuning circuitry altogether.
6. Rotate the TRANSMITTER, ANTENNA, and INDUCTOR controls for maximum noise or signal as heard on your receiver.
7. Key your transmitter and adjust the power level for a reading of 40-50 watts on the FORWARD scale. Adjust the TRANSMITTER, ANTENNA, and INDUCTOR controls for a minimum REFLECTED reading while maintaining a FORWARD reading of 40-50 watts using your transmitter power control.
8. Read the SWR on the red scale at the point where the two needles intersect. Repeat step 7 until the lowest SWR reading is obtained. The SWR should be 2:1 or lower.

**Note:** This procedure takes patience the first time. The transmitter and antenna controls vary the capacitors and provide fine adjustments. The inductor control provides course adjustment. If the SWR can not be reduced to the lowest reading, try increasing or decreasing the reading of the transmitter control. Then, try to null the antenna control for the lowest reading. You may want to try reversing this procedure by increasing or decreasing the antenna control and nulling the transmitter control. Always perform these adjustments at low power.

9. When you have tuned your antenna to the best SWR, record the settings of the TRANSMITTER, ANTENNA, and INDUCTANCE controls on the chart on the preceding page for future reference. When you retune, use these settings as your starting point.

## NOTES

1. An SWR of 1:1 is best, but an SWR as high as 2:1 may be acceptable. Check your transmitter manual for details.
2. If you can not get an acceptable SWR, lengthen or shorten your antenna and/or feedlines and retune.
3. If you get low SWR readings at more than one setting, use the setting that:
  - Gives the highest FORWARD power reading.
  - Gives the lowest REFLECTED power reading.
  - Uses the largest capacitance (highest number) on the TRANSMITTER and ANTENNA controls.
4. Any time a new or different antenna is connected, it is necessary to repeat the tuning procedure for each antenna.

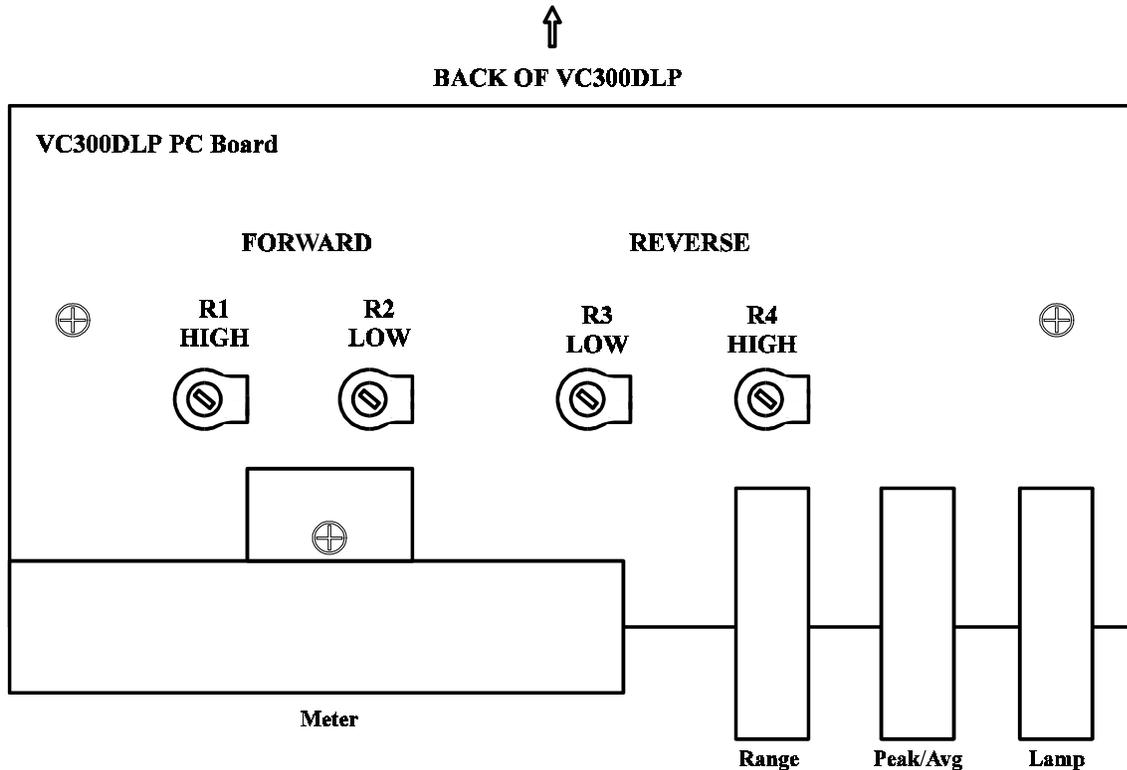
## **TECHNICAL ASSISTANCE**

If you have any problem with this unit first check the appropriate section of this manual. If the manual does not reference your problem or your problem is not solved by reading the manual you may call VECTRONICS at 601-323-5800. You will be best helped if you have your unit, manual and all information on your station handy so you can answer any questions the technicians may ask.

You can also send questions by mail to VECTRONICS, 300 Industrial Park Road, Starkville, MS 39759 or by Fax to 601-323-6551. Send a complete description of your problem, an explanation of exactly how you are using your unit, and a complete description of your station.

## **YOUR NOTES**

## METER CALIBRATION



### METER CALIBRATION PROCEDURE

- Connect transceiver to TRANSMITTER IN connector.
- Connect external 50  $\Omega$  load to COAX 2 connector.
- Set the OUTPUT SELECT switch to the COAX 2 DIRECT position.
- Set the RANGE button to 300 W and the PEAK/AVG button to AVG.
- Apply 100 W of RF at 14.0 MHz.
- Adjust R1 (see Figure 1) so that 100 W of FORWARD power is read on the meter.
- Reduce the RF power to 10 W and set the RANGE to 10 W.
- Adjust R2 so that 10 W of FORWARD power is read on the meter.
- Reverse the transceiver and load connectors on the rear panel.
- Set the RANGE to 300 W.
- Apply 10 W of RF power and adjust R4 to read 10 W of REFLECTED power.
- Set the RANGE to 30 W.
- Apply 2 W of RF power and adjust R3 to read 2 W of REFLECTED power.

