



# 180U-2

## Antenna Network

unit instructions

Cedar Rapids Division | Collins Radio Company, Cedar Rapids, Iowa

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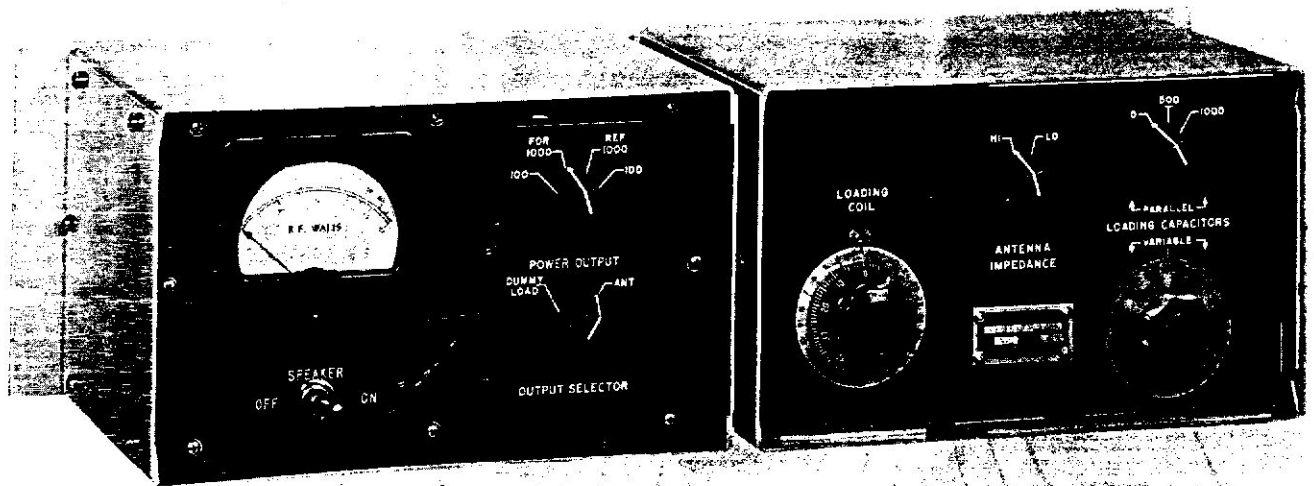


Figure 1. Antenna Network 180U-2

C443-03-P

### 1.1 GENERAL DESCRIPTION.

Antenna Network 180U-2 matches a 50-ohm output from an r-f amplifier to a 50-ohm transmission line having a standing-wave ratio up to 2 to 1. The operating frequency of the unit is between 2 mc and 30 mc.

Antenna Network 180U-2 contains an antenna transfer relay, a directional coupler with an r-f wattmeter, and a reversible L-network for impedance matching. A 4-ohm loudspeaker is also provided as well as a terminating load which is switched to the audio input when the loudspeaker is not in use. These components

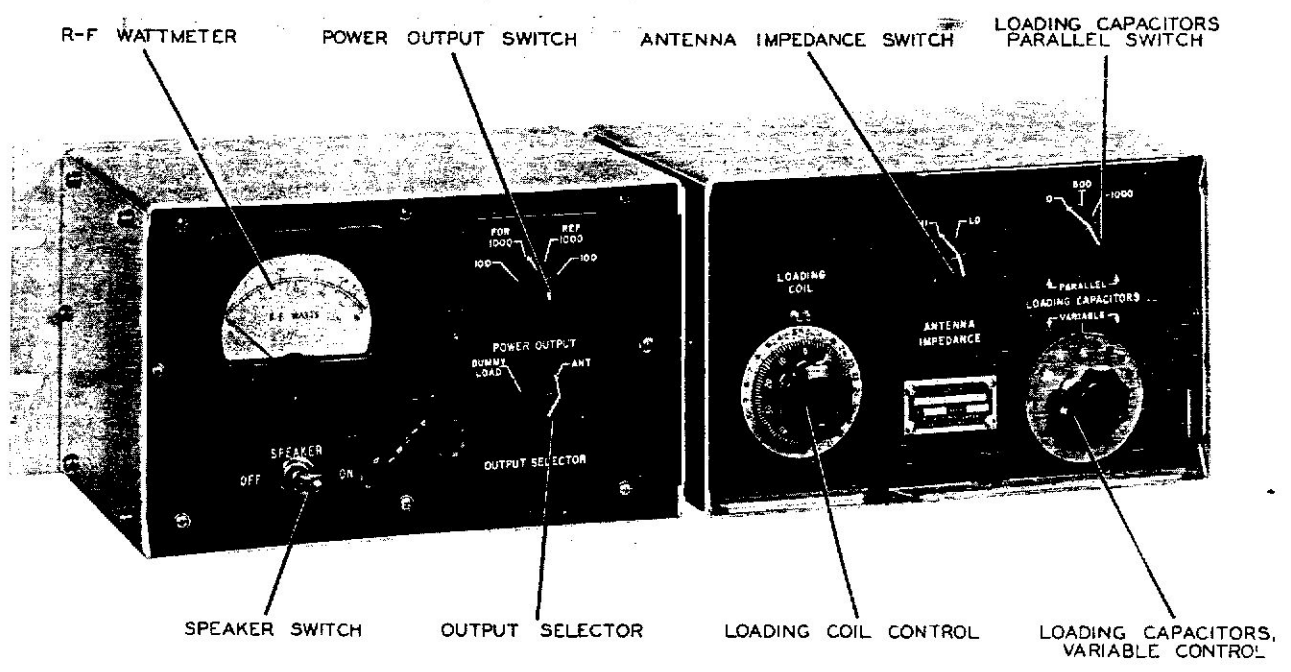


Figure 2. Antenna Network 180U-2, Operating Controls

C443-04-P

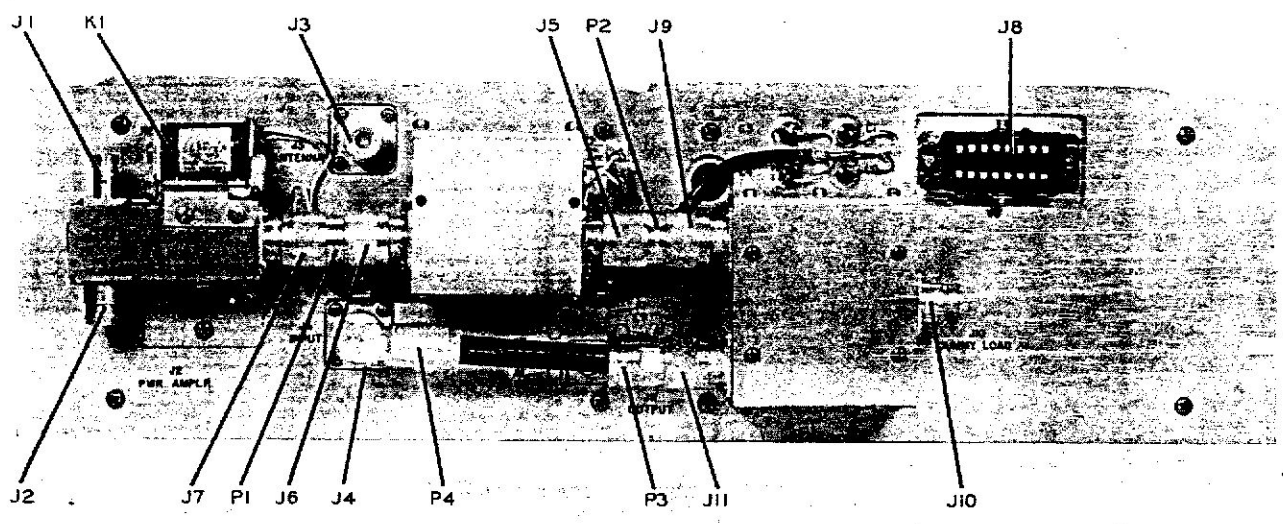


Figure 3. Antenna Network 180U-2, Input and Output Connectors

C443-05-P

are mounted on an aluminum panel which fits in a standard 19-inch rack.

Wattmeter ranges . . . 0 to 100 watts, forward  
0 to 1000 watts, forward  
0 to 1000 watts, reflected  
0 to 100 watts, reflected

**1.2 TECHNICAL CHARACTERISTICS.**

Input impedance, r-f . . . 50 ohms nominal, resistive, unbalanced

Input impedance, . . . 4 ohms, loudspeaker  
audio . . . 5 ohms, terminating load

Input level, r-f . . . . 1000 watts, maximum

Input level, audio . . . . 2 watts, maximum

Output impedance, r-f . . . 50 ohms nominal, unbalanced

Size . . . . . Height, 5-3/16 inches;  
width, 19 inches;  
depth, 9 inches

Output vswr . . . . . 2 to 1 maximum

Frequency range. . . . . 2 mc to 30 mc.

Weight . . . . . 12-1/4 pounds

**2.1 OPERATION.**

**2.1.1 OPERATING CONTROLS AND INSTRUMENTS.**

Figures 2 and 3 show the operating controls, jacks, and indicating instruments in Antenna Network 180U-2.

R-F Wattmeter . . . . . Indicates forward or reflected power depending upon the POWER OUTPUT switch setting.

POWER OUTPUT switch . . . . . With the POWER OUTPUT switch in either of the two FOR positions, the r-f wattmeter is connected to read total power being delivered to the load in the 0- to 100-watt range or the 0- to 1000-watt range. With the POWER OUTPUT switch in either of the two REF positions, the r-f wattmeter is connected to read total reflected power in the 0- to 1000-watt range or the 0- to 100-watt range.

OUTPUT SELECTOR switch . . . . . Connects the signal to either the antenna or the dummy load.

LOADING COIL control . . . . . Controls the amount of series inductance in the antenna circuit.

LOADING CAPACITORS, VARIABLE . . . . . Controls the amount of shunt capacitance in the antenna circuit control

LOADING CAPACITORS, PARALLEL . . . . . Adds 0 uuf, 500 uuf, or 1000 uuf shunt capacitance to the antenna switch

ANTENNA IMPEDANCE switch. . . . . In LO position, connects components of antenna line tuner so that antenna line under 50 ohms can be matched; in HI position, so that antenna line over 50 ohms can be matched.

SPEAKER switch. . . . . In ON position, turns loudspeaker on. In OFF position, turns loudspeaker off and connects audio line to terminating load.

**2.1.2 OPERATING PROCEDURE.**

To operate Antenna Network 180U-2 proceed as follows:

- a. Turn the OUTPUT SELECTOR switch to ANT.



Remove power from Antenna Network 180U-2 before turning the ANTENNA IMPEDANCE switch. Keep the power amplifier in TUNE condition during the following procedure.

b. Set the ANTENNA IMPEDANCE switch to the HI position.

c. Set the POWER OUTPUT switch to the REF 1000 position.

d. Turn the LOADING CAPACITORS, PARALLEL switch to the 0 position.

e. Adjust the LOADING CAPACITORS, VARIABLE control for minimum reflected power.

f. Adjust the LOADING COIL control for minimum reflected power.

g. Repeat steps e and f above several times for a zero reading of reflected power. Set the POWER OUTPUT switch to the REF 100 position when the reflected power is quite low, improving the meter sensitivity.

h. If satisfactory results cannot be obtained, turn the LOADING CAPACITORS, PARALLEL switch to the 500 position, and repeat steps e through g above. Then, if necessary, turn the LOADING CAPACITORS, PARALLEL switch to the 1000 position, and again carry out steps e through g.

i. If the above procedure does not bring the reflected power down to zero in any case, observe the CAUTION above, turn the ANTENNA IMPEDANCE switch to LO, and repeat steps c through h above.

j. Set the POWER OUTPUT switch to the FOR 1000 position. Increase the drive from the power amplifier until 500 watts is indicated on the wattmeter. Turn the POWER OUTPUT switch to the REF 100 position, and note the wattmeter reading. Retrim the LOADING CAPACITORS, VARIABLE control and the LOADING COIL control. The reflected power should not exceed 10 watts.

### 3.1 CIRCUIT DESCRIPTION.

#### 3.1.1 ANTENNA CIRCUIT.

Figure 4 is a block diagram of Antenna Network 180U-2. Figure 5 is a schematic diagram of the 180U-2. The 50-ohm output of an r-f power amplifier

and the 50-ohm input to a receiver connect at J2 and J1, respectively, to the antenna transfer relay K1. On transmit, relay K1 connects the power amplifier to the directional coupler through J7 and J6. The r-f wattmeter, M1, indicates the forward or reflected power being measured by the directional coupler, depending upon the setting of the POWER OUTPUT switch, S1. The output of the directional coupler is connected to the OUTPUT SELECTOR switch, S3B, through J5 and J9. The OUTPUT SELECTOR switch, S3B, connects the output of the directional coupler to the antenna line tuner through J11 or to a dummy load through J10. Switch S3A is linked to S3B to remove power from the antenna network momentarily while S3B moves between ANT and DUMMY LOAD positions. The antenna line tuner is an L-network which matches the antenna line impedance to the 50-ohm output impedance of the power amplifier or the 50-ohm input impedance of the receiver. The ANTENNA IMPEDANCE switch, A2S1, reverses the L-network to match the impedance of either an antenna line above 50 ohms or an antenna line below 50 ohms. The amount of inductance in the L-network is controlled by loading coil A2L1. The amount of capacitance in the L-network is controlled by variable capacitor A2C1 and switch A2S2 which connects the 500-uuf banks of capacitors.

#### 3.1.2 LOUDSPEAKER CIRCUIT.

The loudspeaker is connected to the audio line with switch S2 in the ON position. A 5-ohm terminating load is connected to the audio line with switch S2 in the OFF position.

### 4.1 MAINTENANCE AND ADJUSTMENTS.

#### 4.1.1 MAINTENANCE.

If trouble is encountered during operation, make resistance and continuity measurements to locate the defective part. When replacing parts in the directional

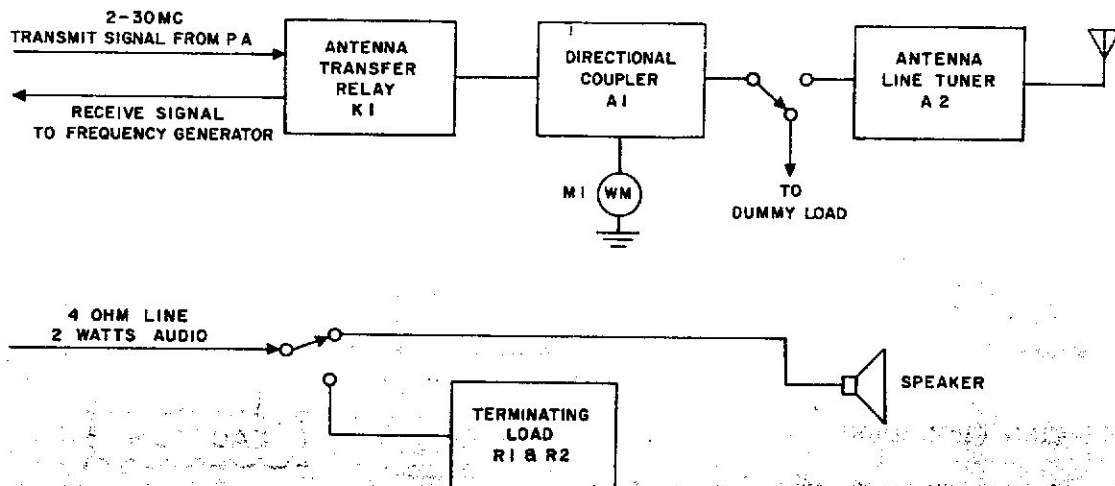
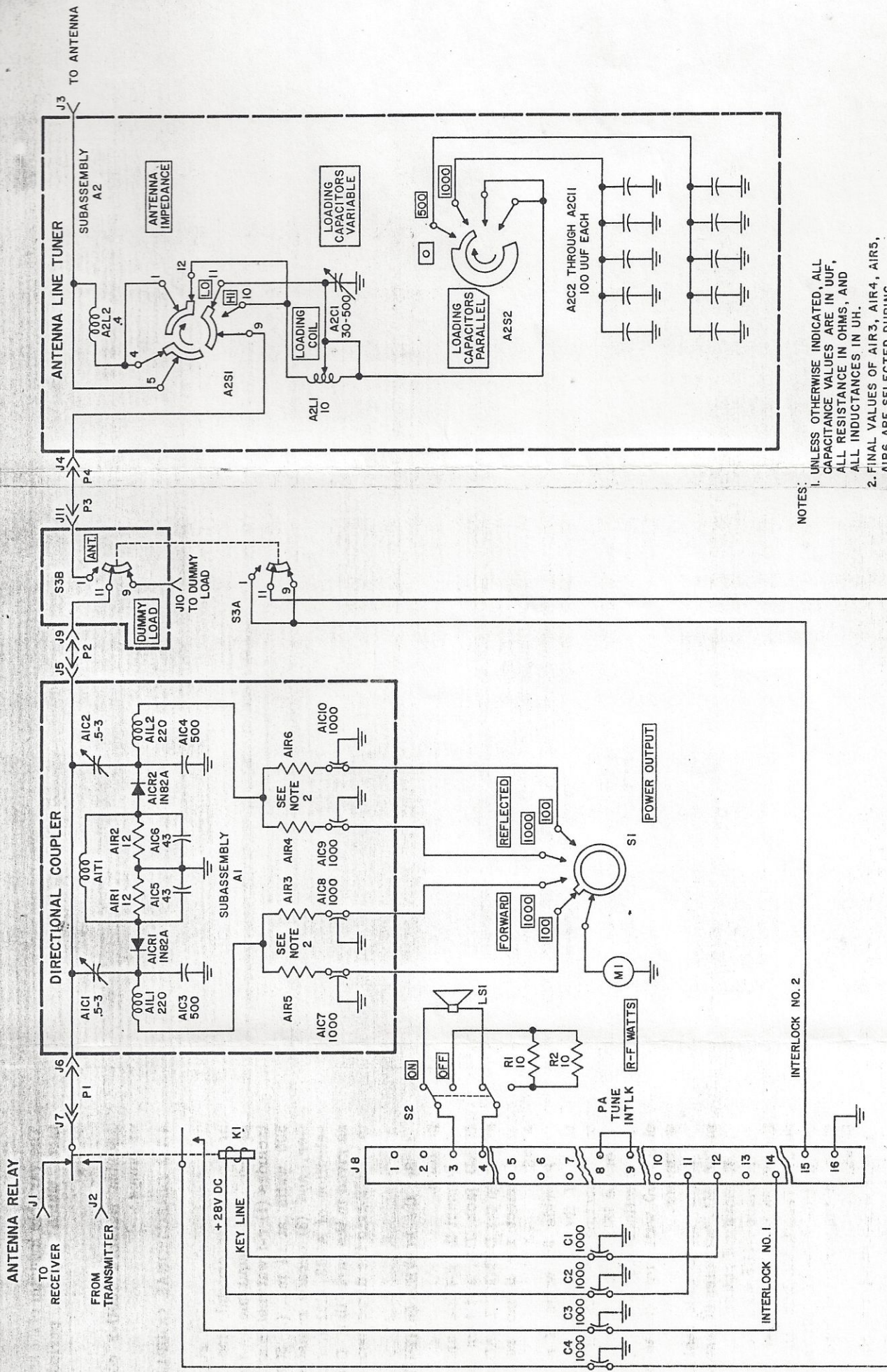


Figure 4. Antenna Network 180U-2, Block Diagram



NOTES:

- UNLESS OTHERWISE INDICATED, ALL CAPACITANCE VALUES ARE IN UUF, ALL RESISTANCE IN OHMS, AND ALL INDUCTANCES IN UH.
- FINAL VALUES OF AIR3, AIR4, AIR5, AIR6 ARE SELECTED DURING PRODUCTION TEST.

Figure 5. Antenna Network 180U-2, Schematic Diagram

coupler, be sure that the replacement part is identical to the original part. Resistors A1R3, A1R4, A1R5, and A1R6 are selected for meter calibration. If replaced, the replacement resistor must have the same resistance value as the original resistor. (See parts list for available values.) If A1T1, A1C1, A1C2, A1C3, A1C4 are replaced, the directional coupler must be rebalanced. If either A1CR1 or A1CR2 is replaced, the directional coupler must be recalibrated.

The variable inductor of the antenna line tuner has contacts which require periodic cleaning to prevent arcing.

Antenna Network 180U-2 contains no tubes, fuses, or lamps.

#### 4.1.2 DIRECTIONAL COUPLER CALIBRATION.

The directional coupler should not require recalibration unless crystal diode A1CR1 or A1CR2 is replaced. Test equipment required for calibration includes (1) r-f wattmeter and r-f load for measuring 500 watts at 14 mc, (2) 500-watt r-f power amplifier, and (3) decade resistance box, 0-10K, or full selection of A1R3, A1R4, A1R5, and A1R6 resistors as given in the parts list. Use the following procedure to recalibrate the directional coupler:

- a. Set the POWER OUTPUT switch to the FOR 100 position.
- b. Connect the r-f load and r-f wattmeter to DUMMY LOAD jack J10, and turn the OUTPUT SELECTOR switch to the DUMMY LOAD position.
- c. Connect the decade resistance box in place of A1R5.
- d. Provide 80 watts of r-f power at 14 mc to the input of the directional coupler. This can be done by connecting the output of the r-f power amplifier to J2 of the 180U-2 and energizing K1, or to the input of the directional coupler at J6. Adjust the r-f input to obtain 80 watts into the load as indicated by the r-f wattmeter.
- e. Adjust the decade resistance box until the panel meter, M1, indicates 80 watts.
- f. Remove r-f power.
- g. Replace A1R5 with the resistor given in the parts list which has the closest value to the setting of the decade resistance box. (If no decade resistance box is available, select A1R5 by substitution from resistors given in the parts list until the panel meter indicates 80 watts.)
- h. Set the POWER OUTPUT switch to the FOR 1000 position, replace A1R3 with the decade resistance box, and provide 500 watts of r-f power at 14 mc to the input of the directional coupler. Then adjust the decade resistance box until the panel meter, M1, indicates 500 watts. Remove r-f power, and replace A1R3 with the resistor given in the parts list which

has the closest value to the setting of the decade resistance box.

- i. To calibrate the reflected-power meter-circuit, reverse the r-f power input and the r-f wattmeter and load. That is, connect the r-f power amplifier to DUMMY LOAD jack J10 or to J5 of the 180U-2. Connect the r-f load and r-f wattmeter at J6 or at J2 and energize K1. With the POWER OUTPUT switch in the REF 100 position, A1R6 replaced with the decade resistance box, and 80 watts of r-f power at 14 mc applied, determine the proper value of A1R6. With the POWER OUTPUT switch in the REF 1000 position, A1R4 replaced with the decade resistance box, and 500 watts of r-f power at 14 mc applied, determine the proper value for A1R4.

#### 4.1.3 DIRECTIONAL COUPLER BALANCE ADJUSTMENT.

The directional coupler is properly balanced at the factory and should not require rebalancing unless A1T1, A1C1, A1C2, A1C3, or A1C4 is replaced. Test equipment required for balancing includes (1) r-f wattmeter and r-f load for measuring 500 watts at 29.5 mc and (2) 500-watt r-f power amplifier. Use the following procedure to balance the directional coupler:

- a. Short out resistor A1R6.
- b. Set the POWER OUTPUT switch to the REF 100 position.
- c. Connect the r-f load and r-f wattmeter to DUMMY LOAD jack J10, and turn the OUTPUT SELECTOR switch to the DUMMY LOAD position.
- d. Provide a small amount of r-f power at 29.5 mc to the input of the directional coupler. This can be done by connecting the output of the r-f power amplifier to J2 of the 180U-2 and energizing K1, or to the input of the directional coupler at J6.
- e. Adjust trimming capacitor A1C2 for minimum meter indication on the panel meter, M1. As null is approached on the panel meter, increase the r-f power until at least 500 watts, but not more than 1000 watts, is applied to the r-f load as indicated by the r-f wattmeter.
- f. Remove r-f power, and remove the short from A1R6.
- g. Short out resistor A1R5, and set the POWER OUTPUT switch to the FOR 100 position.
- h. Connect the r-f power amplifier to DUMMY LOAD jack J10 or to J5 of the 180U-2. Connect the r-f load and r-f wattmeter at J6 or at J2 and energize K1. Supply a small amount of r-f power at 29.5 mc.
- i. Adjust trimming capacitor A1C1 for minimum meter indication on the panel meter, M1. As null is approached on the panel meter, increase the r-f power until at least 500 watts, but not more than 1000 watts, is applied to the r-f load as indicated by the r-f wattmeter.
- j. Remove r-f power and the short from A1R6.

PARTS LIST

ITEM	DESCRIPTION	COLLINS PART NUMBER
ANTENNA NETWORK 180U-2		522-1398-00
<u>Chassis</u>		
C1 thru C4	CAPACITOR, FIXED, CERAMIC: 1000 uuf, plus 80%, -20%, 500 v dc	913-1292-00
J1	RECEPTACLE: part of K1	
J2	RECEPTACLE: part of K1	
J3	NOT USED	
J6 thru J8	RECEPTACLE: part of K1	
J8	CONNECTOR, RECEPTACLE, ELECTRICAL: 16 female contacts, 5 amps at 600 v dc; straight	372-1262-00
J9	CONNECTOR, RECEPTACLE, ELECTRICAL: 1 rd female contact, straight, panel mtg	357-9003-00
J10	CONNECTOR, RECEPTACLE, ELECTRICAL: same as J9	357-9003-00
J11	CONNECTOR, RECEPTACLE, ELECTRICAL: same as J9	357-9003-00
K1	RELAY, ARMATURE: 1A, 3 amps at 115 v ac or 27.5 v dc; coil 32 v max dc 220 ohm; incl J1, J2, J7	410-0160-00
LS1	LOUDSPEAKER, PERMANENT MAGNET: 3-4 ohms, impedance, 2.5 watts output, 5 in. speaker	271-0208-00
O1	KNOB: setscrew type, black phenolic; brass insert, 0.251 in. dia shaft, 1-1/8 in. by 11/16 in overall	281-0071-00
P1	ADAPTER, CONNECTOR: 2 rd male contacts, 2 identical connector mating ends, straight shape	357-9194-00
P2	ADAPTER, CONNECTOR: same as P1	357-9194-00
P3	CONNECTOR, PLUG, ELECTRICAL: 1 rd male contact, 50 ohms; straight (p/o W1)	357-9261-00
P4	CONNECTOR, PLUG, ELECTRICAL: 1 rd male contact; 50 ohms; straight (p/o W1)	357-9363-00
W1	CABLE ASSEMBLY, RADIO FREQUENCY: coaxial; 50 ohms, 0.5 ft; incl P3, P4	544-7199-00
<u>Directional Coupler</u>		542-4116-004
A1C1	CAPACITOR, VARIABLE, GLASS: concentric type; 0.5 uuf min, 3.0 uuf max	922-0149-00
A1C2	CAPACITOR, VARIABLE, GLASS: same as C1	
A1C3	CAPACITOR, FIXED, MICA: 500 uuf, ±20%, 500 v dc	912-0667-00
A1C4	CAPACITOR, FIXED, MICA: same as C3	912-0667-00
A1C5	CAPACITOR, FIXED, CERAMIC: 43 uuf, ±1%, 500 v dc	916-4675-00
A1C6	CAPACITOR, FIXED, CERAMIC: same as C5	916-4675-00
A1C7	CAPACITOR, FIXED, CERAMIC: 1000 uuf, plus 80% -20%; 500 v dc	913-1292-00
A1C8 thru A1C10	CAPACITOR, FIXED, CERAMIC: same as C7	913-1292-00
A1CR1	SEMICONDUCTOR DEVICE, DIODE: silicon type 1N82A	353-2542-00
A1CR2	SEMICONDUCTOR DEVICE, DIODE: same as CR1	353-2542-00
A1E1	CONDUCTOR-OUTER: brass, consists of tube, shield and plate	542-4112-002
A1J1 thru A1J4	NOT USED	
A1J5	CONNECTOR, RECEPTACLE, ELECTRICAL: 1 rd female contact; 1 mating end; 50 ohms; straight	357-9003-00
A1J6	CONNECTOR, RECEPTACLE, ELECTRICAL: same as J5	357-9003-00
A1L1	COIL, RADIO FREQUENCY: 3 universal wound pi sections, 36 AWG copper wire, 220 uh inductance, 0.1 amp	240-0037-00
A1L2	COIL, RADIO FREQUENCY: same as L1	240-0037-00
A1M1	WATTMETER: 0-100 and 0-1000 w scale, ±2% deflection; 100 ohms, markings and pointer black on white background	458-0388-00
A1R1	RESISTOR, FIXED, FILM: 12.1 ohms ±1%, 1/2 w	705-2358-00
A1R2	RESISTOR, FIXED, FILM: same as R1	705-2358-00

ITEM	DESCRIPTION	COLLINS PART NUMBER
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 4870 ohms, ±1%, 1/4 w	705-7129-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 5110 ohms, ±1%, 1/4 w	705-7130-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 5360 ohms, ±1%, 1/4 w	705-7131-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 5620 ohms, ±1%, 1/4 w	705-7132-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 5900 ohms, ±1%, 1/4 w	705-7133-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 6190 ohms, ±1%, 1/4 w	705-7134-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 6490 ohms, ±1%, 1/4 w	705-7135-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 6810 ohms, ±1%, 1/4 w	705-7136-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 4750 ohms, ±1%, 1/4 w	705-7255-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 4990 ohms, ±1%, 1/4 w	705-7256-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 5230 ohms, ±1%, 1/4 w	705-7257-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 5490 ohms, ±1%, 1/4 w	705-7258-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 5760 ohms, ±1%, 1/4 w	705-7259-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 6040 ohms, ±1%, 1/4 w	705-7260-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 6340 ohms, ±1%, 1/4 w	705-7261-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 6650 ohms, ±1%, 1/4 w	705-7262-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 6980 ohms, ±1%, 1/4 w	705-7263-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 7320 ohms, ±1%, 1/4 w	705-7316-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 7680 ohms, ±1%, 1/4 w	705-7317-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 8060 ohms, ±1%, 1/4 w	705-7318-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 8450 ohms, ±1%, 1/4 w	705-7319-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 8870 ohms, ±1%, 1/4 w	705-7320-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 9310 ohms, ±1%, 1/4 w	705-7321-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 9760 ohms, ±1%, 1/4 w	705-7322-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 7150 ohms, ±1%, 1/4 w	705-7137-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 7500 ohms, ±1%, 1/4 w	705-7138-00
*A1R3 and *A1R4	RESISTOR, FIXED, FILM: 7870 ohms, ±1%, 1/4 w	705-7139-00
*Chosen per operational requirement		

ITEM	DESCRIPTION	COLLINS PART NUMBER
*AIR3 and *AIR4	RESISTOR, FIXED, FILM: 8250 ohms, ±1%, 1/4 w	705-7140-00
*AIR3 and *AIR4	RESISTOR, FIXED, FILM: 8660 ohms, ±1%, 1/4 w	705-7141-00
*AIR3 and *AIR4	RESISTOR, FIXED, FILM: 9090 ohms, ±1%, 1/4 w	705-7142-00
*AIR3 and *AIR4	RESISTOR, FIXED, FILM: 9530 ohms, ±1%, 1/4 w	705-7143-00
*AIR3 and *AIR4	RESISTOR, FIXED, FILM: 10,000 ohms, ±1%, 1/4 w	705-7144-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 51.1 ohms, ±1%, 1/4 w	705-7034-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 100 ohms, ±1%, 1/4 w	705-7048-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 147 ohms, ±1%, 1/4 w	705-7056-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 196 ohms, ±1%, 1/4 w	705-7062-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 249 ohms, ±1%, 1/4 w	705-7067-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 301 ohms, ±1%, 1/4 w	705-7071-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 348 ohms, ±1%, 1/4 w	705-7074-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 402 ohms, ±1%, 1/4 w	705-7077-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 464 ohms, ±1%, 1/4 w	705-7080-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 511 ohms, ±1%, 1/4 w	705-7082-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 562 ohms, ±1%, 1/4 w	705-7084-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 619 ohms, ±1%, 1/4 w	705-7086-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 681 ohms, ±1%, 1/4 w	705-7088-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 750 ohms, ±1%, 1/4 w	705-7090-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 825 ohms, ±1%, 1/4 w	705-7092-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 909 ohms, ±1%, 1/4 w	705-7094-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 953 ohms, ±1%, 1/4 w	705-7095-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 1000 ohms, ±1%, 1/4 w	705-7096-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 1050 ohms, ±1%, 1/4 w	705-7097-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 1100 ohms, ±1%, 1/4 w	705-7098-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 1150 ohms, ±1%, 1/4 w	705-7099-00

\*Chosen per operational requirement

ITEM	DESCRIPTION	COLLINS PART NUMBER
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 1210 ohms, ±1%, 1/4 w	705-7100-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 1270 ohms, ±1%, 1/4 w	705-7101-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 1330 ohms, ±1%, 1/4 w	705-7102-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 1400 ohms, ±1%, 1/4 w	705-7103-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 1470 ohms, ±1%, 1/4 w	705-7104-00
*AIR5 and *AIR6	RESISTOR, FIXED, FILM: 1540 ohms, ±1%, 1/4 w	705-7105-00
A1S1	SWITCH, ROTARY: 1 section; 4 positions, 2 moving and 10 fixed contacts, 2 poles, 3 throws; ac, dc, 230 v, 0.25 amp	259-0790-00
A1T1	COIL, RADIO FREQUENCY: 60 turns no. 30 AWG toroidal wound	542-0918-00
	<u>Antenna Line Tuner</u>	
		544-7230-002
A2C1	CAPACITOR, VARIABLE, AIR: single section, 570 uuf max 25.2 uuf min 55 aluminum plates	920-0144-00
A2C2 thru A2C11	CAPACITOR, FIXED, CERAMIC: 100 uuf, ±10%, 7500 v dc	913-0821-00
A2DS1	POINTER, DIAL: plastic; straight line type motion; 1/8 in. by 3/8 in. by 3/8 in.	542-6948-002
A2DS2	DIAL, SCALE: 0 to 24 ccw linear inscription range in 360°, incl gear	542-7425-003
A2J1	NOT USED	
A2J2	NOT USED	
A2J3	CONNECTOR, RECEPTACLE, ELECTRICAL: 1 rd female contact, straight, panel mtg	357-9003-00
A2J4	CONNECTOR, RECEPTACLE, ELECTRICAL: same as J3	357-9003-00
A2L1	TRANSFORMER, RADIO FREQUENCY: 17 turns no. 14 AWG tinned copper wire; 10 uh max; 3.5 to 30.0 mc frequency range	980-0110-00
A2L2	COIL, RADIO FREQUENCY: single layer wound, LH; 5 turns; 14 AWG wire	544-7203-002
A2MP1	COUPLING, SHAFT, FLEXIBLE: nylon center block with brass end fittings; 1/2 in. dia by 11/16 in. lg	015-0896-00
A2MP2	SHAFT-SWITCH EXTENSION: 1/4 in. brass rod, 1-1/4 in. lg	545-3602-002
A2MP3	GEAR, SPUR: aluminum; 48 teeth, 20° pressure angle, 0.750 in. pitch dia	542-7422-002
A2MP4	BEARING, SLEEVE: porous bronze, 15/32 in. od, 11/64 in. lg	309-0086-00
A2MP5	BUSHING, MACHINE THREAD: nickel plated brass 3/8-32NEF-2 thd male end, 11/32 in. lg, female end unthreaded, 0.255 in. id; 7/16 in. lg overall; 1/2 in. hex wrenching facility	015-0132-00
A2MP6	SHAFT-SWITCH EXTENSION: brass, 1/4 in. dia rod, 2-5/16 in. lg	544-7205-002
A2MP7	COUPLING, SHAFT, FLEXIBLE: bakelite insulator, 37/64 in. lg by 1-1/16 in. od	015-3000-00
A201	DIAL, CONTROL: knob type dial; 0 to 90 ccw linear inscription, 100 scale div in 360°	542-7447-003
A202	DIAL, CONTROL: knob type dial; 0 to 100 ccw linear inscription, 100 scale div in 180°	543-3250-00
A203	KNOB: setscrew type, black phenolic; brass insert, 0.251 in. dia shaft, 1-1/8 in. by 11/16 in. overall counterbore insert 3/8 in. dia to 5/32 in. deep	544-7206-002
A204	KNOB: setscrew type, black phenolic; brass insert, 0.251 in. dia shaft, 1-1/8 in. by 11/16 in. overall	281-0071-00
A2S1	SWITCH, ROTARY: 1 section; 3 poles, 2 positions, 6 moving contacts, 28 fixed contacts	259-1034-00
A2S2	SWITCH, ROTARY: 1 section; 3 positions, 2 moving contacts, 16 fixed contacts	259-1033-00