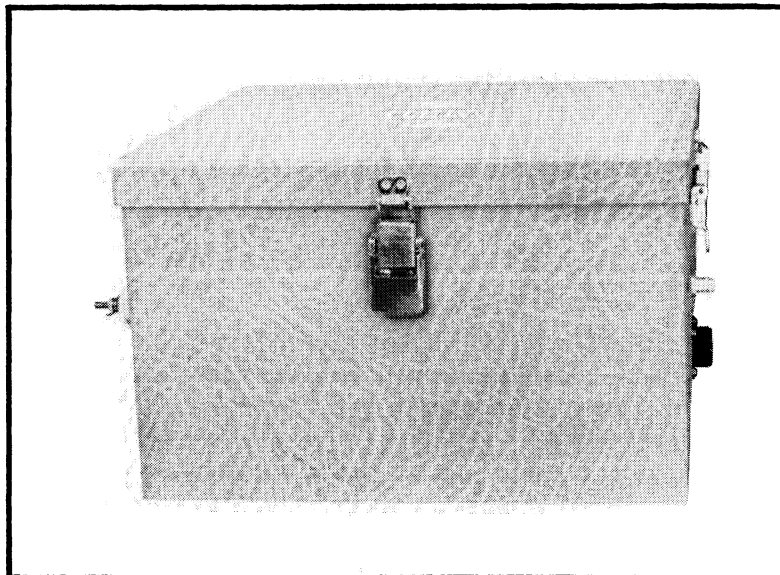




**ANTENNA COUPLER
180 V-2
INSTRUCTION BOOK**



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OF CANADA LTD. TORONTO, ONTARIO

GUARANTEE

The equipment described herein is sold under the following guarantee:

Collins agrees to repair or replace, without charge, any equipment, parts, or accessories which are defective as to design, workmanship or material, and which are returned to Collins at its factory, transportation prepaid, provided

- (a) Notice of the claimed defect is given Collins within one(1) year from date of delivery and goods are returned in accordance with Collins' instructions.
- (b) Equipment, accessories, tubes, and batteries not manufactured by Collins or from Collins' designs are subject to only such adjustments as Collins may obtain from the supplier thereof.
- (c) No equipment or accessory shall be deemed to be defective if, due to exposure or excessive moisture in the atmosphere or otherwise after delivery, it shall fail to operate in a normal or proper manner .

Collins further guarantees that any radio transmitter described herein will deliver full radio frequency power output at the antenna lead when connected to a suitable load, but such guarantee shall not be construed as a guarantee of any definite coverage or range of said apparatus.

The guarantee of these paragraphs is void if equipment is altered or repaired by others than Collins or its authorized service center.

No other warranties, expressed or implied, shall be applicable to any equipment sold hereunder, and the foregoing shall constitute the Buyer's sole right and remedy under the agreements in this paragraph contained. In no event shall Collins have any liability for consequential damages, or for loss, damage or expense directly or indirectly arising from the use of the products, or any inability to use them either separately or in combination with other equipment or materials, or from any other cause.

HOW TO RETURN MATERIAL OR EQUIPMENT.

If, for any reason, you should wish to return material or equipment, whether under the guarantee or otherwise, you should notify us, giving full particulars including the details listed below, insofar as applicable. If the item is thought to be defective, such notice must give full information as to nature of defect and identification (including part number if possible) of part considered defective. (With respect to tubes we suggest that your adjustments can be speeded up if you give notice of defect directly to the tube manufacturer.) Upon receipt of such notice, Collins will promptly advise you respecting the return. Failure to secure our advice prior to the forwarding of the goods or failure to provide full particulars may cause unnecessary delay in handling of your returned merchandise.

ADDRESS:

Collins Radio Company of Canada Limited
11 Bermondsey Road,
Toronto 16,
Ontario.

INFORMATION NEEDED:

- (A) Type number, name, and serial number of equipment
- (B) Date of delivery of equipment
- (C) Date placed in service
- (D) Number of hours of service
- (E) Nature of trouble
- (F) Cause of trouble if known
- (G) Part number (9 or 10 digit number) and name of part thought to be causing trouble
- (H) Item or symbol number of same obtained from parts list or schematic
- (I) Collins number (and name) of unit sub-assemblies involved in trouble
- (J) Remarks

HOW TO ORDER REPLACEMENT PARTS.

When ordering replacement parts, you should direct your order as indicated below and furnish the following information insofar as applicable. To enable us to give you better replacement service, please be sure to give us complete information.

ADDRESS:

Collins Radio Company of Canada Limited
11 Bermondsey Road,
Toronto 16,
Ontario

INFORMATION NEEDED:

- (A) Quantity required
- (B) Collins' part number (9 or 10 digit number) and description
- (C) Item or symbol number obtained from parts list of schematic
- (D) Collins' type number, name, and serial number of principal equipment
- (E) Unit sub-assembly number (where applicable)

ANTENNA COUPLER
180 V-2
INSTRUCTION BOOK

523-0120-00
15 NOVEMBER 1961

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PRINTED IN CANADA



1.1 GENERAL DESCRIPTION.

Antenna Coupler 180V-2 is a reversible L-type of antenna matching device for use in coupling AM/SSB Transceiver 32MS-1A to an antenna. The 180V-2 is a preset, automatically switched, four-channel antenna tuner. Refer to figure 1.

1.2 SPECIFICATIONS.

- Frequency range1.6 to 15.0 megacycles.
- Frequency channelsFour.
- Tuning methodPreset.
- Channel selection time . . .Five seconds maximum.
- Power handling capabilities100 watts continuously.
- Power requirements5 watts maximum during switching only.
- Power source12 v d-c from 32MS-1A.

- Weight 13 pounds.
- Height 7-7/8 inches.
- Width 12 inches.
- Length 12 inches.
- Input impedance 52 ohms nominal with swr of less than 2 to 1.
- Output impedance Sufficient to match any antenna longer than 50 feet at 1.6 to 2.5 megacycles or longer than 30 feet at 2.5 to 15.0 megacycles.
- Ambient temperature range -30 to +65 degrees C (-22 to +149 degrees F).
- Ambient humidity range . . . 0 to 100 percent.
- Altitude 0 to 10,000 feet.
- Vibration 2 g at 10 to 55 cycles per second.

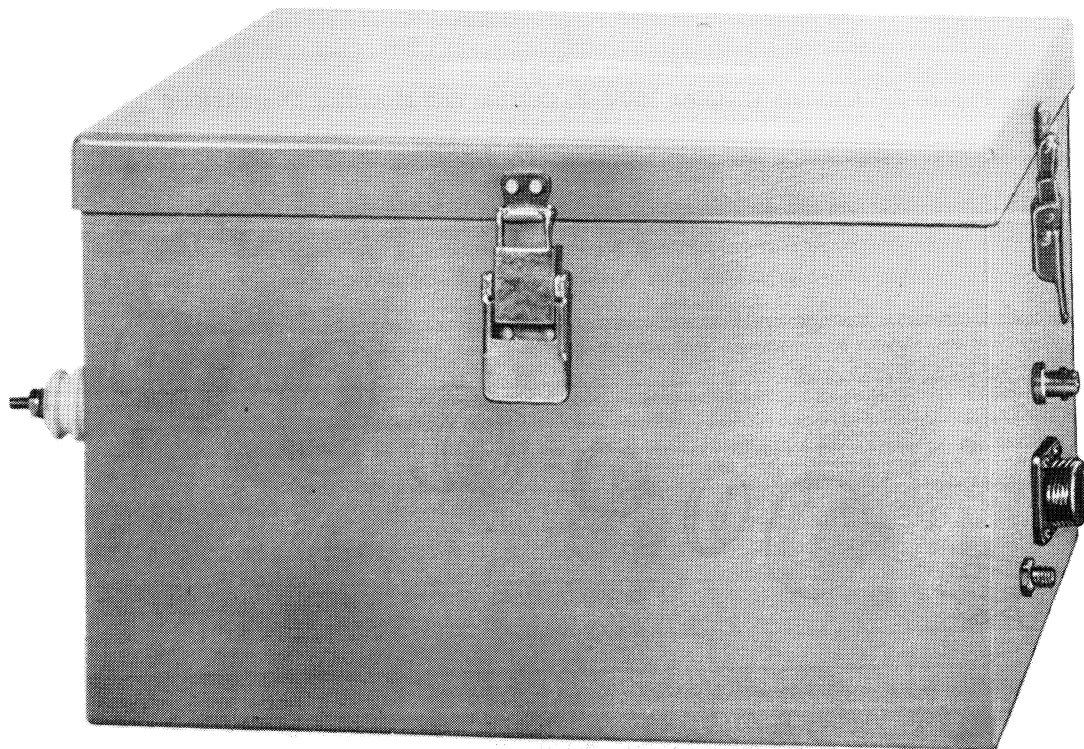


Figure 1. Antenna Coupler 180V-2, Over-all View

C382-06-P

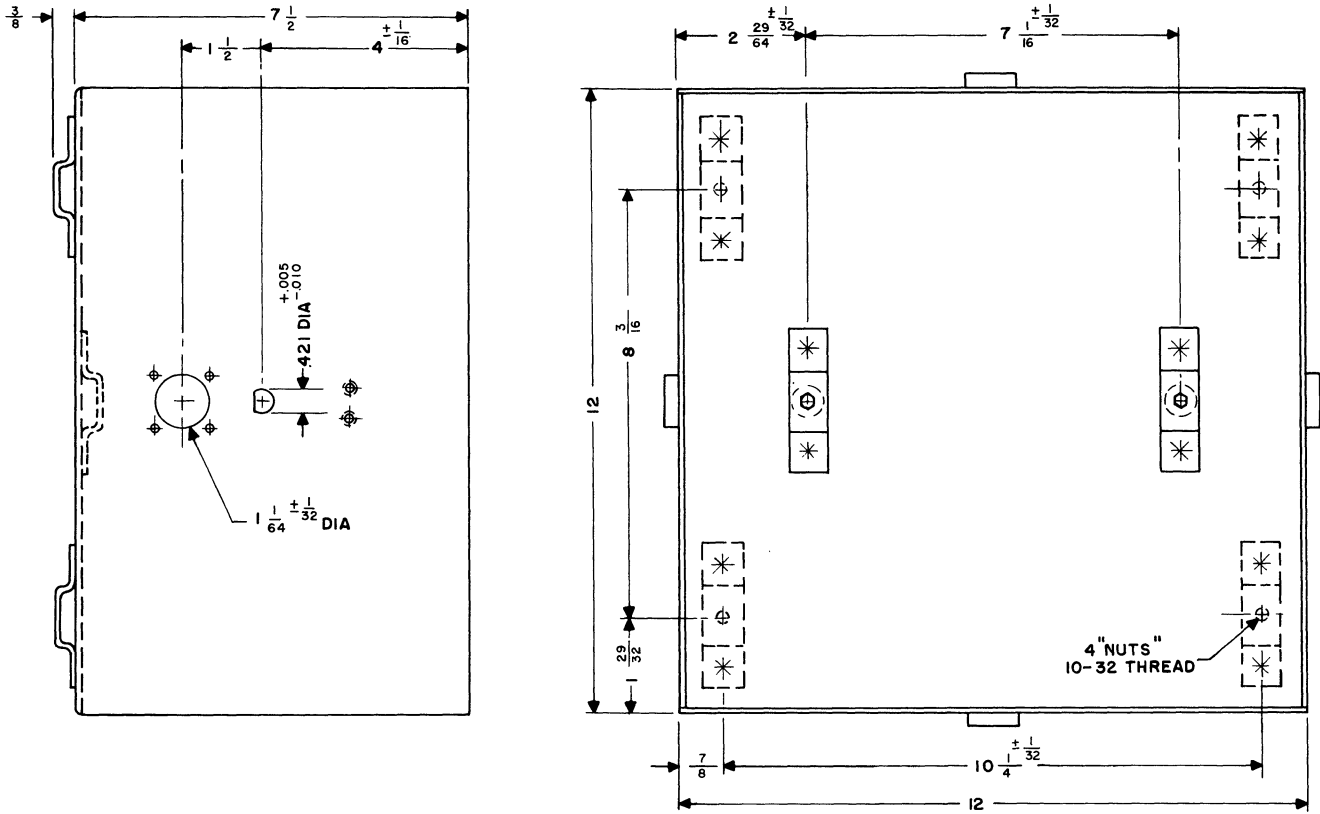


Figure 2. Antenna Coupler 180V-2, Outline and Mounting Dimensions

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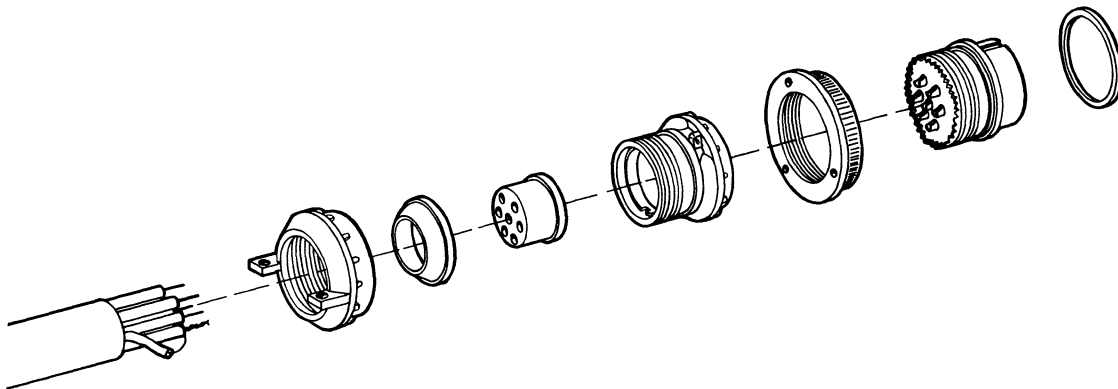


Figure 3. Cable Fabrication Diagram

C382-01-3

2.1 INSTALLATION.

Antenna Coupler 180V-2 is enclosed in a weatherproof case and is intended to be located at the base of the antenna. The unit may be mounted in any position; however, when the unit is set with the Collins emblem upright it is most waterproof. The 180V-2 may be strapped to a pole or tree, or bolted to a plate. Refer to figure 2 for outline and mounting dimensions. In any case, a good r-f ground must be made to one of the mounting brackets or to the ground lug. Make the r-f ground lead as short as possible.

2.2 INTERCONNECTING CABLING.

2.2.1 Obtain enough cable (Belden 8488 or equivalent) to reach from the 32MS-1A to J2 on the 180V-2, and make the connections as shown in figure 8. Refer to figure 3 for cable fabrication diagram.

2.2.2 Obtain one BNC connector, one phono connector, and enough cable RG-58/U, for connection between the 32MS-1A and J1 on the 180V-2.

2.2.3 Connect the antenna to J3 on the 180V-2.

2.3 TUNEUP PROCEDURE.

2.3.1 Connect a 25-ohm resistive load across the output of the 32MS-1A. Do not connect the antenna feed line at this time. The 25-ohm resistive load swamps out variations in antenna reactance to allow the power amplifier of the 32MS-1A to run at resonance at all times.

2.3.2 Tune and load the 32MS-1A for an indication of 60 on the meter of the 32MS-1A with the meter switch in the PA CATH position. Refer to the AN/URC-38 or 32MS-1A instruction book for tuning and loading procedures. Adjust the TRANSMIT AUDIO gain control in the 32MS-1A to obtain an indication of 30 on the meter with the meter selector switch in the PA CATH position.

2.3.3 Connect the antenna feed line, from the 180V-2, to the output of the 25-ohm resistive load.



Check to see that PA CATH indication does not exceed 60; if it does, use the TRANSMIT AUDIO gain control to decrease PA CATH indication to 60.

2.3.4 Refer to figure 6 for type of L-connection required for the frequency and type of antenna used. Then, on the 180V-2, solder the required jumper wire between the terminal of S5 and either tap A or tap B as suggested in figure 5. Use the no. 16 solid wire that is provided. If the frequency and antenna length indicate a point in figure 6 that is close to

the line separating the types of L-connections, it is possible that the antenna will not produce an swr of 2.5 to 1 when connected in the suggested manner; try retuning with the reversed type of connection. Refer to figures 4 and 7 for location of fixed and variable taps.

2.3.5 The following general rules apply to initial positioning of the variable inductor tap and capacitor settings. For low-frequency operation, start with maximum inductance. Maximum inductance is obtained with the variable inductor lead clipped to the tap position, either tap A or tap B, used to select the type of L-connection. The capacitor bank should be started at maximum capacity. For midfrequency or high-frequency operation, start with the variable inductor lead clipped to the center of the inductor and the capacitor bank at about midcapacity. Throughout tuning operations, as inductance is decreased a turn or two at a time, the capacity also should be decreased by approximately the same percentage. Therefore, as the inductor variable lead is moved every ten turns or so, the capacitor switch can be decreased by one position.

It should be noted that the extreme counterclockwise position of the capacitor switch is an unmarked position which removes all capacitors to give minimum capacity setting. If more capacity is desired for a low-frequency antenna, a fixed capacitor could be placed in this position.

2.3.6 After initial variable inductor clips have been set and capacitor settings have been made, use the key switch on the 180V-2 to key the 32MS-1A. The ground return for the key switch is through the antenna feed line; the key switch will not function unless the coax is connected.



To prolong PA tube life in the 32MS-1A, it is suggested that the unit be keyed for no more than 10 seconds out of every 30 seconds during the entire tuneup procedure.

2.3.7 The repetitive tuning cycle is as follows:

- a. Key transmitter.
- b. Note forward and reflected power readings.
- c. Unkey transmitter and make adjustments.
- d. Repeat the three-step cycle until there is a significant difference between forward and reflected power indications.

The initial wattmeter reading will probably be low, near 20 watts, indicating the same for forward and reflected power. Due to diode unbalance, it is even possible that reflected power could indicate higher than the forward power indication. This can occur only with extremely high swr on the feed line and

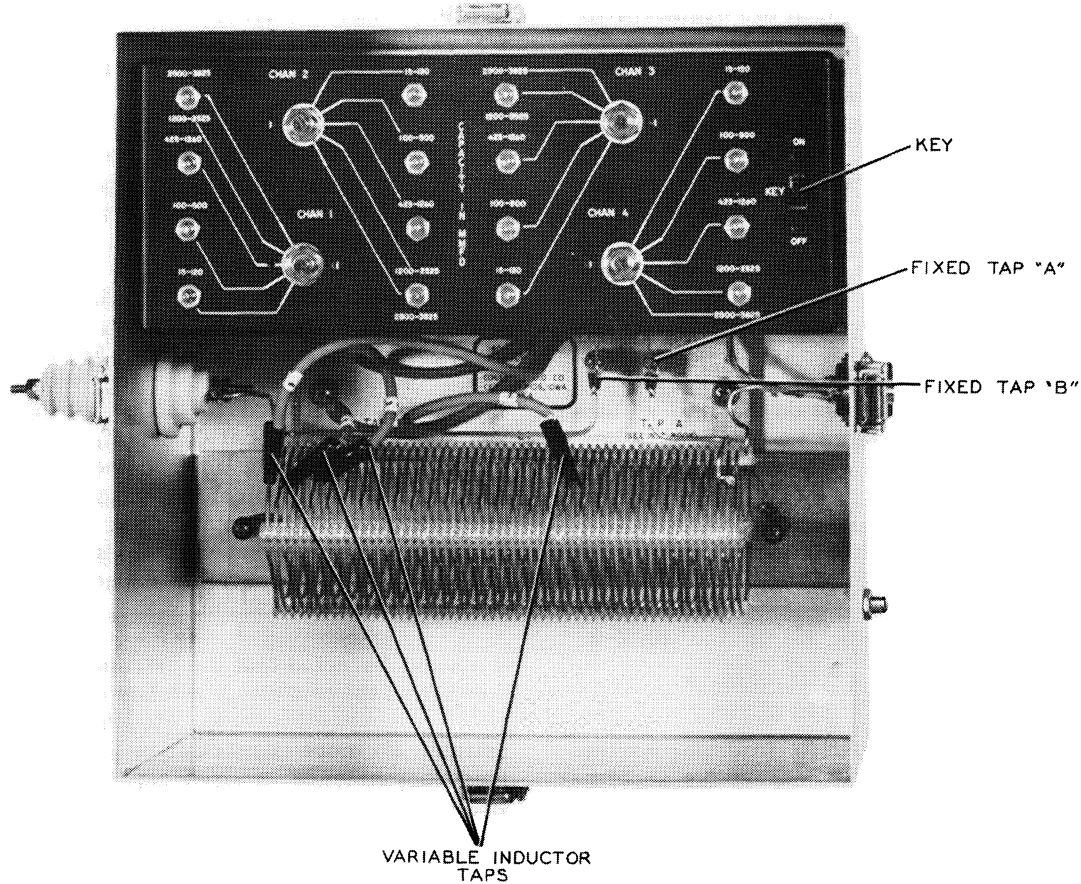


Figure 4. Antenna Coupler 180V-2, Tap Location

C382-09-P

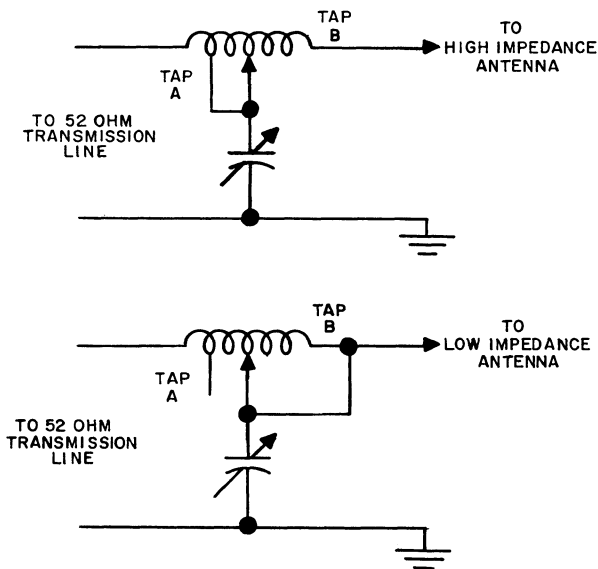


Figure 5. Reversible L-Connections, Simplified Schematic Diagram

C382-03-2

does not mean that the power as indicated for a lower swr is in error. As the swr becomes lower, the difference between forward and reflected power readings may be used as an indication of the power output and is easily used in determining tap positioning.

2.3.8 After the rough adjustments are completed, use the following tuning cycle:

- a. Key transmitter.
- b. Note reflected power reading and adjust capacitors for minimum reflected power.
- c. Note forward power reading.
- d. Unkey transmitter. Subtract reflected power reading from forward power reading, and note this number as an index of performance. Reposition the variable inductor tap one turn, and repeat the preceding steps.

This procedure is to be continued until the reflected power is too small to null. If adjusting the capacitor for minimum reflected power decreases the forward-reflected power difference, use the forward minus reflected power indication as the guiding parameter.

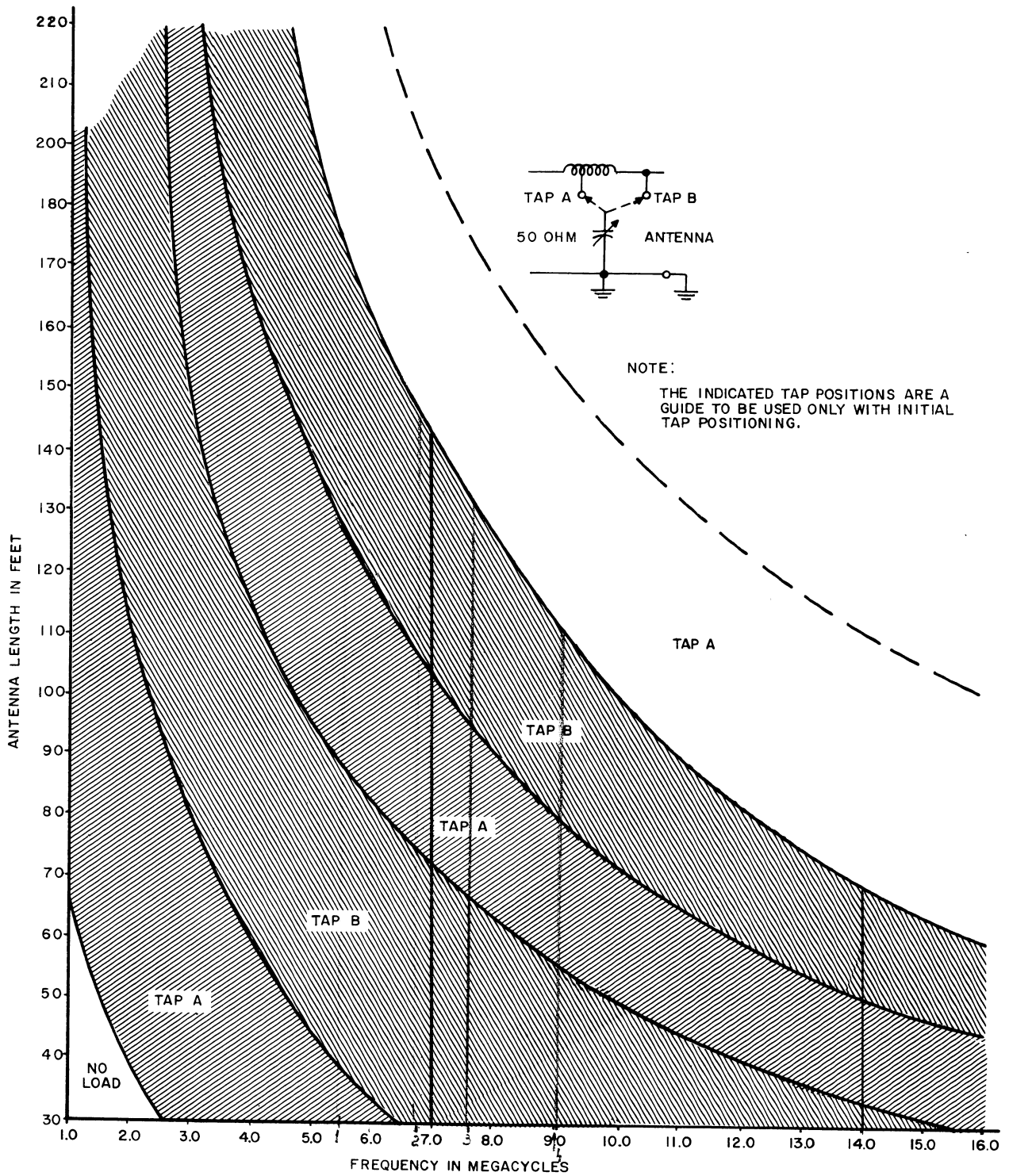


Figure 6. Antenna Coupler 180V-2, Tuning Chart

C382-04-3

2.3.9 Return to the 32MS-1A and adjust the TRANSMIT AUDIO gain control until the meter indicates 60 when set to PA CATH position. Repeat procedures outlined in paragraph 2.3.8.

2.3.10 When adjustment of the variable inductor tap, in either direction, increases the forward-reflected power difference, the 25-ohm resistive load may be removed from the 32MS-1A output. The 32MS-1A tuning and loading adjustments then are adjusted for an indication of 60, with the meter in the PA CATH position, with alc action. When forward power is near 100 watts and reflected power is near 10 watts, the swr is below 2 to 1, which is satisfactory. Check that the power amplifier is in resonance.

NOTE

Tap positions of all channels introduce some stray capacitance into the tuning circuits and will influence final tap positioning; therefore, before removing the 25-ohm resistive load, make rough tap settings for all channels.

2.3.11 Repeat tuning procedures, paragraphs 2.3.1 through 2.3.10, for each channel to be used.

2.3.12 Remove the clip on the variable inductor tap, and solder tap wire to the inductor in the position determined by the preceding adjustments.

3.1 OPERATION.

Operation of Antenna Coupler 180V-2 is controlled automatically by AM/SSB Transceiver 32MS-1A when the operator selects a channel on the control unit. It should be noted, however, that making channel changes with the 32MS-1A in transmit condition may cause excessive arcing on switch contacts in both the 32MS-1A and the 180V-2.

4.1 PRINCIPLES OF OPERATION.

Antenna Coupler 180V-2 is an automatically switched, four-channel antenna coupling device for use with AM/SSB Transceiver 32MS-1A. Output impedance of the 180V-2 is great enough to match any antenna longer than 50 feet at frequencies between 1.6 to 2.5 megacycles or any antenna longer than 30 feet at frequencies between 2.5 to 15.0 megacycles. Higher frequency operation is possible.

A schematic diagram of the 180V-2 is illustrated on figure 8. The circuit of the 180V-2 is that of a modified reversible L matching network to allow the use of either a high- or low-impedance antenna. A separate bank of capacitors is used with each of the four channels; however, only one inductor is required. Two inductor taps must be fixed for each channel used. As illustrated in figure 5, one inductor tap is fixed to either of two special tapping positions, taps A and B. Tap positions A and B determine whether a capacitor output type of L-connection is used. The small residual inductance is used with tap A so that a 50-ohm

antenna may be matched. The second inductor tap is made variable, for tuning purposes, and attached anywhere along the coil as determined by the antenna and the frequency of operation. The portion of coil between the two inductor taps is shorted out. Switch S5 determines which capacitor bank and which inductor taps are in the circuit at any given time.

The type of L-connection to be used with any particular antenna is determined by the operating frequency and will change with operating frequency. Figure 6 is a chart provided to help determine which type of L-connection to use with any antenna at any frequency. It should be remembered that the chart figures are only approximate and that final selection of L-connection is determined through actual tuning procedures.

Any one of the four channels may be selected automatically by using the remote switching information available at the rear terminal panel of the 32MS-1A. Switching functions are performed by a 12-volt d-c motor. Motor voltage is taken from the 32MS-1A and delivered to motor B1. The motor needs only a ground to operate. Ground is supplied to the dynamic braking relay K1, through switch S6, whenever a new channel is selected at the control unit of the 32MS-1A. Upon receiving a ground, motor B1 drives switches S5 and S6 until switch S6 opens the power circuit. When switch S6 opens the power circuit, motor B1 stops with S5 contacts coupling the correct matching network to the antenna.

The 180V-2 is capable of handling the full power output capabilities (100 watts PEP) of AM/SSB Transceiver 32MS-1A. Power rating is based on keeping the antenna r-f voltage below 2500 volts (above 2500 volts, r-f switch S5 may arc), keeping capacitor r-f current below 3 amperes, and keeping the r-f voltage across the capacitors below 500 volts. Any one of the recommended antennas will handle the 32MS-1A output power without exceeding these three ratings.

5.1 MAINTENANCE.

Maintenance of Antenna Coupler 180V-2 is divided into two parts: first, preventive maintenance, which is based on periodic inspections to determine equipment operation; and second, trouble analysis, which provides information on repair and alignment procedures to be performed in case of equipment malfunction.

5.2 PREVENTIVE MAINTENANCE.

5.2.1 Make a periodic visual inspection of the 180V-2. Check for burned switch contacts, frayed wiring leads, and evidences of water and rust within the 180V-2 case. If switch contacts are burned, it is possible that the operator has held the 32MS-1A in transmit condition during channel switching or that the switch contacts on S5 have become misaligned. Refer to paragraph 5.3.3.b for alignment of S5. If water or rust is apparent within the case, check the waterproof seals and make repairs.

5.2.2 Oil motor B1 every six months with SAE 20 or 30 oil. Do not overoil.

5.2.3 Check to see that the 180V-2 has a good r-f ground. A good r-f ground, close to the unit, is necessary for high-efficiency operation.

5.3 TROUBLE ANALYSIS.

5.3.1 TUNE INDICATION. An indication that the 180V-2 is operating may be noted by listening for an increase in output or background noise on the 32MS-1A 1/2 to 2 seconds after channel selection has been made. This is caused by the 180V-2 having reached resonance and matching the 32MS-1A to the antenna. Equal time may be required for the channel motor of the 32MS-1A to complete its channeling operation. Performance of the 180V-2 may be checked by observing the forward/reflected power indications on the meter of the 32MS-1A.

5.3.2 ARCING DURING SWITCHING. Arcing during switching is caused by the 32MS-1A being in transmit operation during operation of the 180V-2.

5.3.3 ARCING. Arcing within the 180V-2 may be caused by the following:

a. Arcing due to physical placement of leads within the 180V-2. Redress leads within the unit.

b. Arcing at the contacts of S5 may be caused by the contacts not being aligned properly. The contacts of S5 are aligned by loosening the two screws securing S6 and rotating S6 until the contacts of S5 mate properly when turned by motor B1. Refer to figure 7 for location of S6.

5.3.4 TRIMMER CAPACITOR BURNED OUT. A burned-out trimmer capacitor may be located by the use of an ohmmeter or visually by signs of arcing. Replace capacitors with parts recommended in the parts list.

5.3.5 MOTOR B1 FAILURE. Check contacts of S6, check motor, check relay K1, and make continuity checks on control cable. The control information comes from S2 in the 32MS-1A. S2 must be positioned before the motor of the 180V-2 can position S5 to the proper channel.

PARTS LIST

ITEM	DESCRIPTION	COLLINS PART NUMBER
ANTENNA COUPLER 180V-2		522-2423-000
B1	MOTOR: 12 v dc, 10 RPM, 2 in. lb continuous duty; 5 in. lb intermittent, with gear train	230-0403-00
C1	CAPACITOR, VARIABLE, MICA: compression type, 15 uuf min, 120 uuf max, 1000 v dc test voltage	918-0031-00
C2	CAPACITOR, VARIABLE, MICA: compression type; 100 uuf min, 500 uuf max, 1000 v dc test voltage	918-0032-00
C3	CAPACITOR, VARIABLE, MICA: compression type, 425 uuf min, 1260 uuf max, 1000 v dc test voltage	918-0033-00
C4	CAPACITOR, VARIABLE, MICA: compression type, 1200 uuf min, 2525 max, 1000 v dc test voltage	918-0034-00
C5	CAPACITOR, FIXED, MICA: 620 uuf, $\pm 5\%$, 500 v dc	935-2129-00
C6	CAPACITOR, VARIABLE, MICA: same as C1	918-0031-00
C7	CAPACITOR, VARIABLE, MICA: same as C2	918-0032-00
C8	CAPACITOR, VARIABLE, MICA: same as C3	918-0033-00
C9	CAPACITOR, VARIABLE, MICA: same as C4	918-0034-00
C10	CAPACITOR, FIXED, MICA: same as C5	935-2129-00
C11	CAPACITOR, VARIABLE, MICA: same as C1	918-0031-00
C12	CAPACITOR, VARIABLE, MICA: same as C2	918-0032-00
C13	CAPACITOR, VARIABLE, MICA: same as C3	918-0033-00
C14	CAPACITOR, VARIABLE, MICA: same as C4	918-0034-00
C15	CAPACITOR, FIXED, MICA: same as C5	935-2129-00
C16	CAPACITOR, VARIABLE, MICA: same as C1	918-0031-00
C17	CAPACITOR, VARIABLE, MICA: same as C2	918-0032-00
C18	CAPACITOR, VARIABLE, MICA: same as C3	918-0033-00
C19	CAPACITOR, VARIABLE, MICA: same as C4	918-0034-00
C20	CAPACITOR, FIXED, MICA: same as C5	935-2129-00
C21	CAPACITOR, FIXED, MICA: same as C5	935-2129-00
thru C24		
E1	CLIP, ELECTRICAL: alligator style, steel, 1-3/32 in. lg, 1/16 in. dia hole w/2 clamping ears	362-0016-00
E2 thru E4	CLIP, ELECTRICAL: same as E1	362-0016-00
E5	INSULATOR, STANDOFF: cylindrical pillar, 3/8 in. dia by 3/4 in. lg; ceramic, glazed finish	190-1143-00
E6	INSULATOR, STANDOFF: same as E5	190-1143-00

ITEM	DESCRIPTION	COLLINS PART NUMBER
H1	SCREW, MACHINE: Phillips recessed flat head, 4-40 NC-2A, 5/16 in. lg, brass, nickel plated, black enamel head	543-7337-00
H2	POST, SPACING: aluminum; 5/16 in. hex, 6-32 thd tap 3/8 in. deep both ends, 2.750 in. lg overall	540-9478-003
H3	STANDOFF: 1/4 in. od, 0.625 in. lg	541-6033-002
J1	CONNECTOR, RECEPTACLE, ELECTRICAL: 1 female contact, 50 ohms, straight	357-9307-00
J2	CONNECTOR, RECEPTACLE, ELECTRICAL: one mating end, 7 rd female contacts, straight shape	357-3289-00
J3	INSULATOR, FEEDTHRU: double ended conical corrugated, 1-5/8 in. dia, 4-1/4 in. lg overall; porcelain	190-0175-00
K1	RELAY, ARMATURE: 3 amp at 30 v dc or 115 v ac resistive; max coil voltage 1 1/2 v dc; resistance 60 ohms $\pm 20\%$	970-2128-00
L1	TRANSFORMER, RADIO FREQUENCY: 1 winding, 56 turns no. 12 AWG wire, tapped, 56 uh inductance	544-7186-002
L2	COIL, RADIO FREQUENCY: 3 universal pi wound sections, 36 AWG copper wire, 220 uh inductance, 0.1 amp	240-0037-00
P1	NOT USED	
P2	CONNECTOR, PLUG, ELECTRICAL: one mating end, 7 rd male contacts, straight shape	357-4906-00
S1	SWITCH, ROTARY: 6 positions, 1 circuit, 1 pole, 7 fixed contacts, 1 moving contact	259-1029-00
S2 thru S4	SWITCH, ROTARY: same as S1	259-1029-00
S5	SWITCH, ROTARY: 12 positions, 1 circuit, 1 pole 12 fixed contacts, 1 moving contact	269-2038-00
S6	SWITCH SECTION, ROTARY: 1 moving contact, 5 fixed contacts, 1 pole, 1/16 in. by 1-9/16 in. by 1-7/8 in.	269-2039-00
S7	SWITCH, SLIDE: spdt, 1 amp at 125 v ac, dc; 1-3/8 in. lg by 17/32 in. w, 3 terminals, two 0.146 in. dia mtg holes	260-2596-00
T1	TRANSFORMER, POWER, STEP-DOWN: primary 115 v, 50/60 cps, single phase, secondary 28 v, 1.43 amp	662-0359-00
	LOAD, RESISTIVE: c/o one resistor, one male one female connector, chassis load & hardward	544-7180-00
	GASKET: black neoprene, 1/16 in. thk, 40-45 durometer	544-7184-002

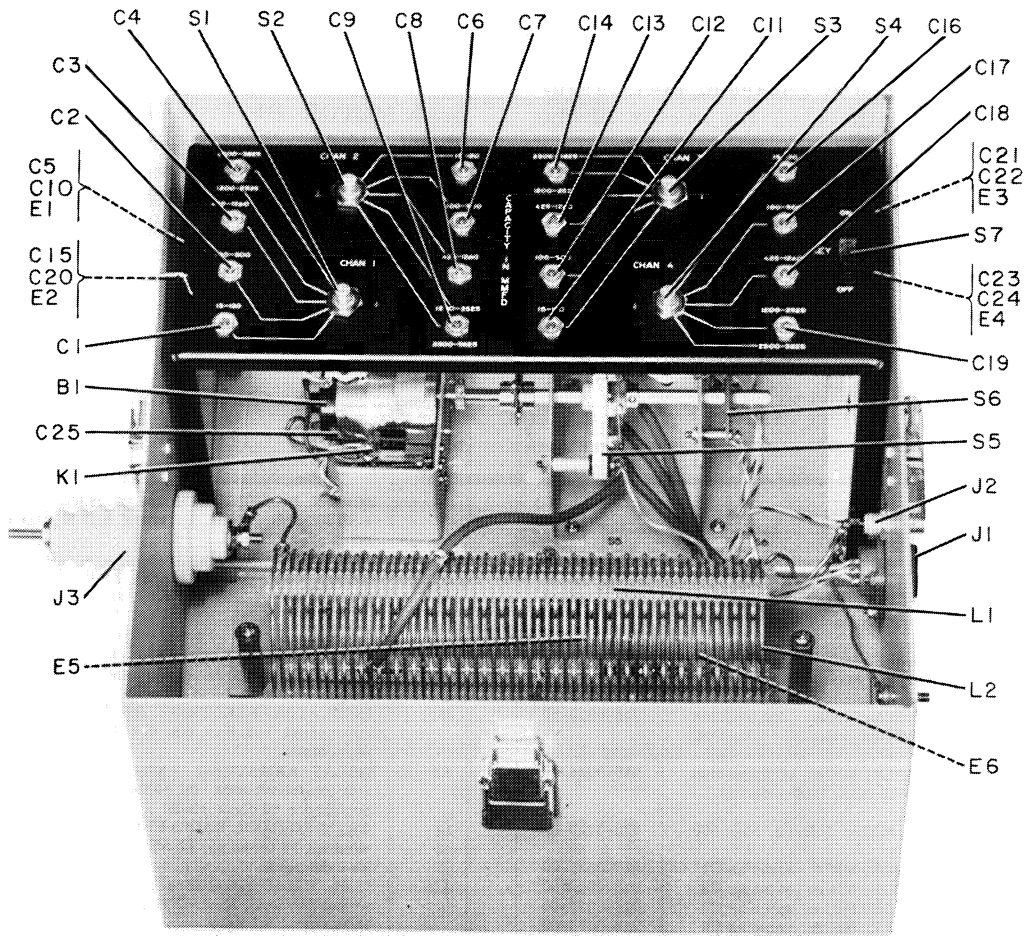
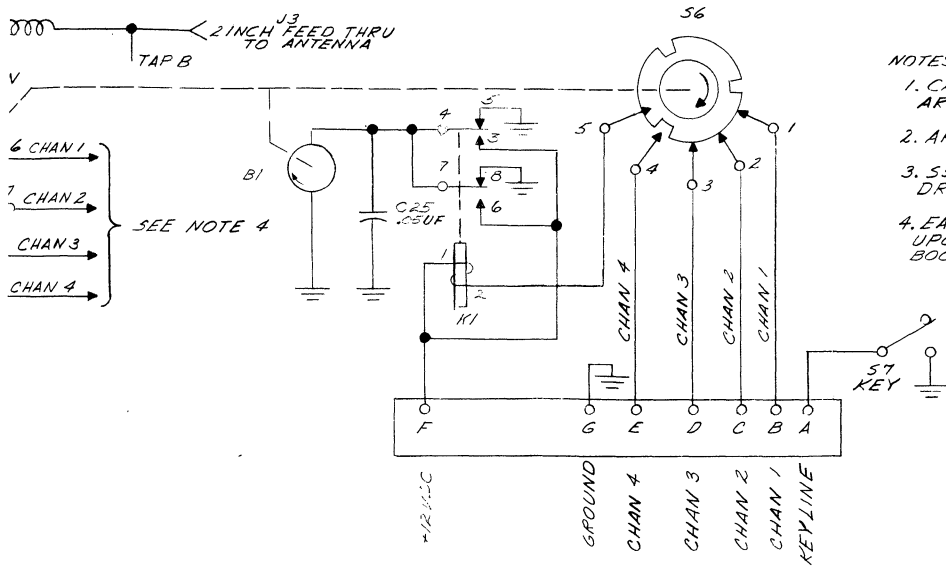


Figure 7. Antenna Coupler 180V-2, Top Cover Removed

C382-10-P



- NOTES:
1. CAPACITANCE VALUES SHOWN ON CHANNEL 1 ARE TYPICAL ON CHANNELS 2, 3, AND 4
 2. ARROWS DENOTE CLOCKWISE ROTATION.
 3. S5 AND S6 ARE VIEWED FROM OPPOSITE THE DRIVEN END.
 4. EACH MUST GO TO EITHER TAP A OR B DEPENDING UPON FREQUENCY AND ANTENNA. (SEE INSTRUCTION BOOK FOR INSTALLATION DESCRIPTION.)

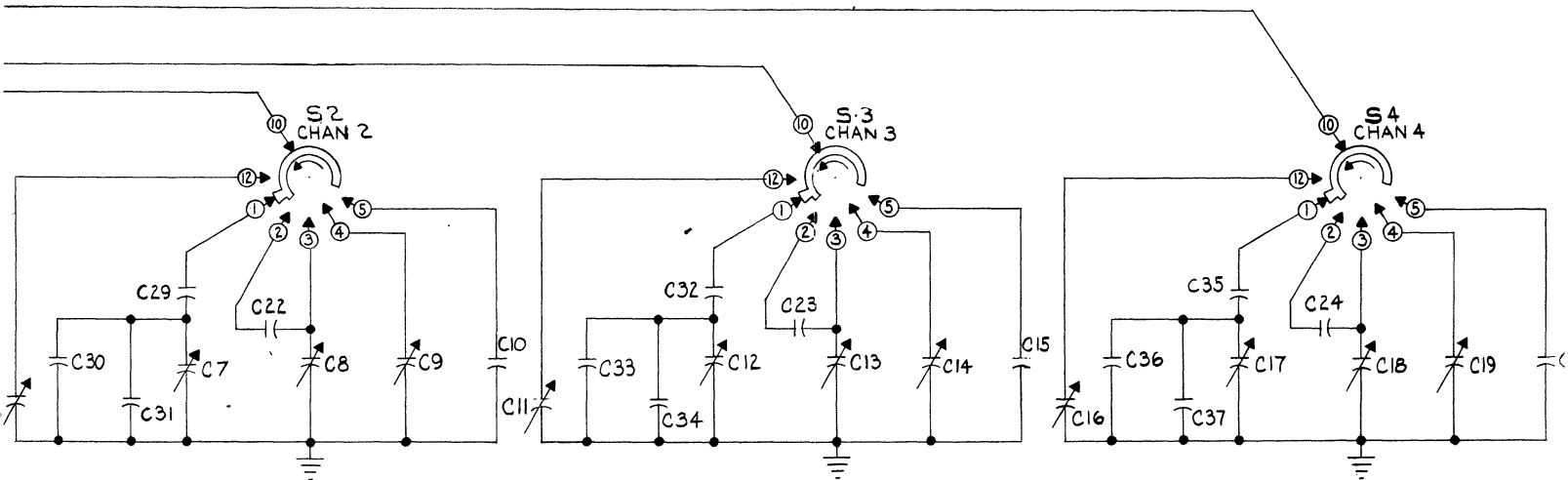
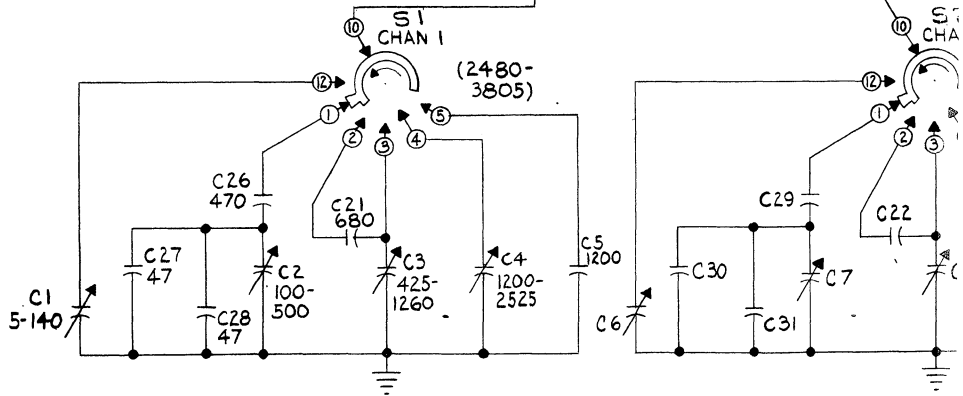
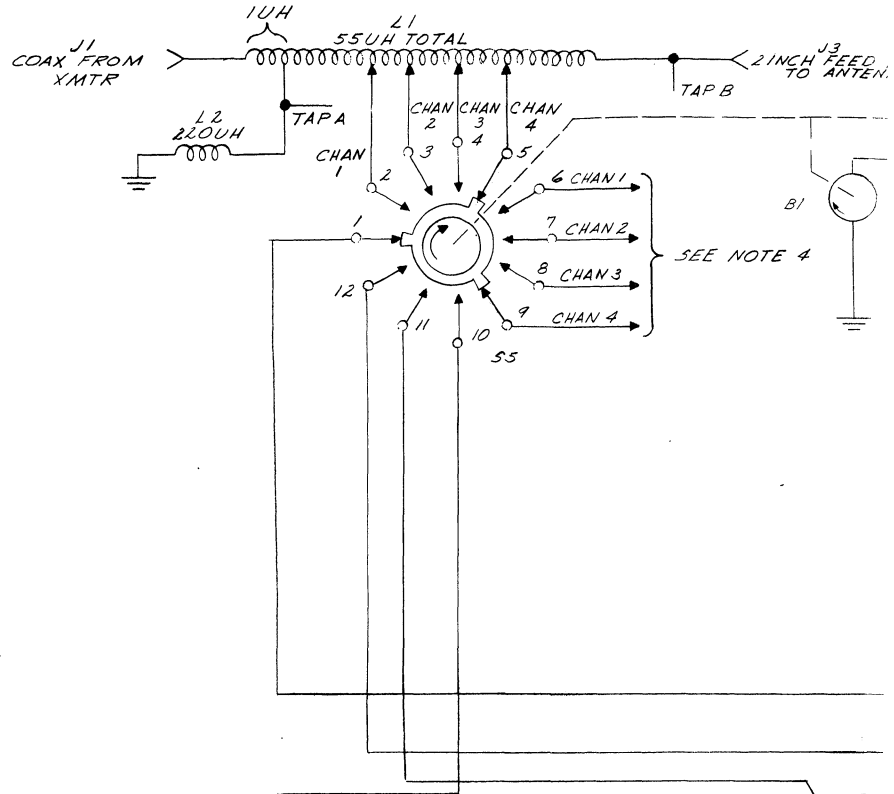


Figure 8. Antenna Coupler 180V-2. Schematic Diagram



ADDENDUM
TO
ANTENNA COUPLER 180V-2
INSTRUCTION BOOK

Make the following changes to the instruction book:

1. Page 3, Para. 2.3,5

Delete paragraph "It should be noted that - - - - - could be placed in this position".

2. Page 7, Parts List

Delete Items C1 through C24, and P1

Insert Items C1 through C37, and P1 as follows:

ITEM	DESCRIPTION	COLLINS PART NUMBER
C1	CAPACITOR, VARIABLE, AIR: single section, 7 uuf min., 140 uuf max., 1000 v dc test voltage	922-0648-00
C2	CAPACITOR, VARIABLE, MICA: compression type 100 uuf min., 500 uuf max., 1000 v dc test voltage	918-0032-00
C3	CAPACITOR, VARIABLE, MICA: compression type, 425 uuf min., 1260 uuf max., 1000 v dc test voltage	918-0033-00
C4	CAPACITOR, VARIABLE, MICA: compression type, 1200 uuf min., 2525 uuf max., 1000 v dc test voltage	918-0034-00
C5	CAPACITOR, FIXED, MICA: 1200 uuf \pm 5%, 500 v dc	912-3321-00
C6	CAPACITOR, VARIABLE, AIR: same as C1	922-0648-00
C7	CAPACITOR, VARIABLE, MICA: same as C2	918-0032-00
C8	CAPACITOR, VARIABLE, MICA: same as C3	918-0033-00
C9	CAPACITOR, VARIABLE, MICA: same as C4	918-0034-00
C10	CAPACITOR, FIXED, MICA: same as C5	912-3321-00
C11	CAPACITOR, VARIABLE, AIR: same as C1	922-0648-00
C12	CAPACITOR, VARIABLE, MICA: same as C2	918-0032-00
C13	CAPACITOR, VARIABLE, MICA: same as C3	918-0033-00
C14	CAPACITOR, VARIABLE, MICA: same as C4	918-0034-00
C15	CAPACITOR, FIXED, MICA: same as C5	912-3321-00
C16	CAPACITOR, VARIABLE, AIR: same as C1	922-0648-00
C17	CAPACITOR, VARIABLE, MICA: same as C2	918-0032-00
C18	CAPACITOR, VARIABLE, MICA: same as C3	918-0033-00
C19	CAPACITOR, VARIABLE, MICA: same as C4	918-0034-00
C20	CAPACITOR, FIXED, MICA: same as C5	912-3321-00
C21	CAPACITOR, FIXED, MICA: 680 uuf \pm 5% 500 v dc	912-3303-00
thru C24		
C25	NOT USED	
C26	CAPACITOR, FIXED, MICA: 470 uuf \pm 2% 500 v dc	912-2973-00

ADDENDUM

ITEM	DESCRIPTION	COLLINS PART NUMBER
C27 thru C28	CAPACITOR, FIXED, MICA: 47 uuf ± 5%, 500 v dc	912-2792-00
C29	CAPACITOR, FIXED, MICA: same as C26	912-2973-00
C30 thru C31	CAPACITOR, FIXED, MICA: same as C27	912-2792-00
C32	CAPACITOR, FIXED, MICA: same as C26	912-2973-00
C33 thru C34	CAPACITOR, FIXED, MICA: same as C27	912-2792-00
C35	CAPACITOR, FIXED, MICA: same as C26	912-2973-00
C36 thru C37	CAPACITOR, FIXED, MICA: same as C27	912-2792-00
P1	CONNECTOR, CABLE, ELECTRICAL: 15 contact pin insert, with top opening metal cap with cable clamp, and locking extrusion for shallow base mounting, using 63A locks	365-0031-00

3. Page 7, Parts List

Delete Item T1 TRANSFORMER, POWER, STEP-DOWN.

LOAD, RESISTIVE: Part number 544-7180-00 to read 547-3939-00.

COLLINS RADIO COMPANY

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