

312B-5 STATION CONTROL

1.1 DESCRIPTION.

The 312B-5 Station Control (figure 1), contains a pm speaker, a directional wattmeter and coupler, a variable frequency oscillator, and a phone patch. The vfo is a 70K-2 Oscillator which operates with the KWM-2 or KWM-2A Transceiver to provide separate receive and transmit frequencies when desired. A switch on the front panel provides selection of either oscillator as single frequency control for the station in transceiver service, or selection of one oscillator to control the receiver frequency and the other to control the transmitter frequency. This allows tuning the receiver into the foreign d-x bands to listen for d-x stations while keeping the transmitter within the legal amateur band. This arrangement also allows quick-switch selection of one of two preset frequencies within the same band. The directional wattmeter measures up to two kilowatts of forward or reflected power on 52-ohm transmission lines (RG-8/U or equivalent). The wattmeter is accurate to $\pm 5\%$ (nominal) over the

2- to 30-mc range. This power indication is useful in tuning the antenna to produce minimum vswr. Power loss and mismatch introduced by the instrument are negligible. The phone patch provides the necessary apparatus for vox phone patch operation.

2.1 INSTALLATION.

Make power, phone patch, speaker, and r-f connections to the equipment and telephone lines as shown on the station interconnections diagrams, figures 2 or 3. If the directional coupler is removed from the 312B-5 and mounted elsewhere, refer to figure 4 for connections.



Make sure the vfo power plug is plugged into proper socket on KWM-2 chassis. DO NOT plug into noise blanker power socket.



Figure 1. Station Control

C569-01-P



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1959

Cedar Rapids, Iowa, U.S.A.

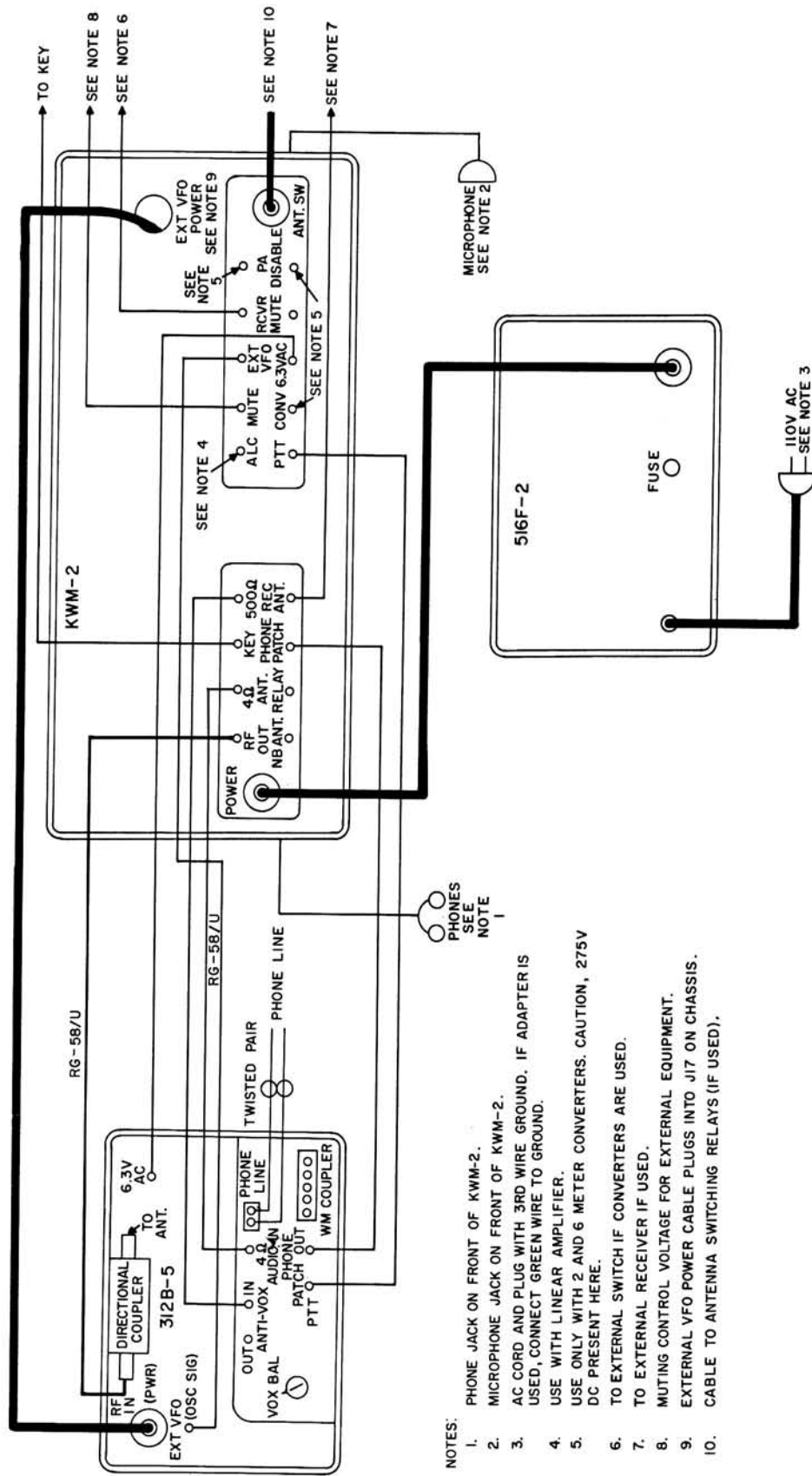
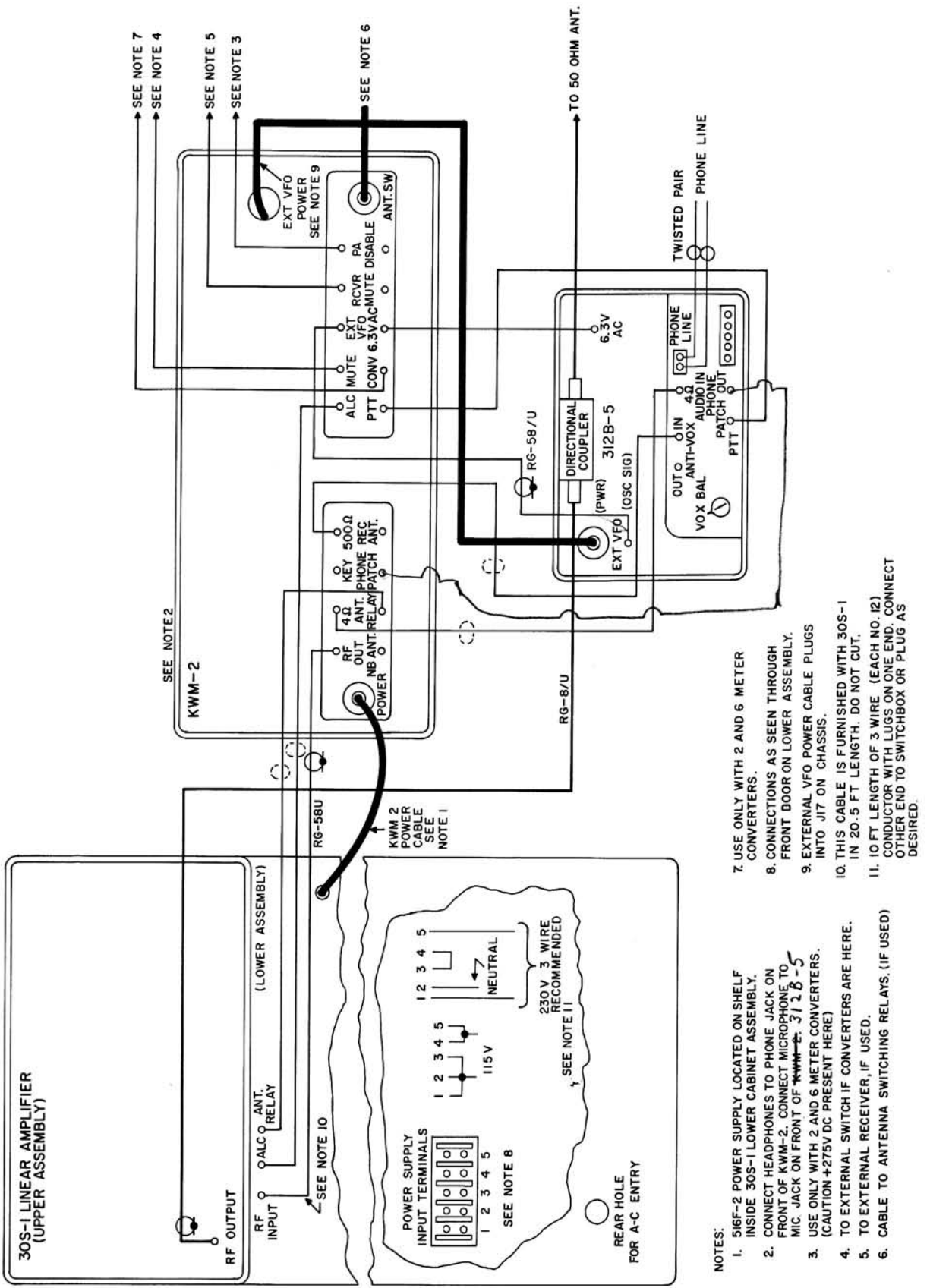


Figure 2. Low-Power Station Interconnections

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- NOTES:
1. 516F-2 POWER SUPPLY LOCATED ON SHELF INSIDE 30S-1 LOWER CABINET ASSEMBLY.
 2. CONNECT HEADPHONES TO PHONE JACK ON FRONT OF KWM-2. CONNECT MICROPHONE TO MIC JACK ON FRONT OF ~~KWM-2~~ 312B-5.
 3. USE ONLY WITH 2 AND 6 METER CONVERTERS. (CAUTION +275V DC PRESENT HERE)
 4. TO EXTERNAL SWITCH IF CONVERTERS ARE HERE.
 5. TO EXTERNAL RECEIVER, IF USED.
 6. CABLE TO ANTENNA SWITCHING RELAYS. (IF USED)
 7. USE ONLY WITH 2 AND 6 METER CONVERTERS.
 8. CONNECTIONS AS SEEN THROUGH FRONT DOOR ON LOWER ASSEMBLY.
 9. EXTERNAL VFO POWER CABLE PLUGS INTO J17 ON CHASSIS.
 10. THIS CABLE IS FURNISHED WITH 30S-1 IN 20.5 FT LENGTH. DO NOT CUT.
 11. 10 FT LENGTH OF 3 WIRE (EACH NO. 12) CONDUCTOR WITH LUGS ON ONE END. CONNECT OTHER END TO SWITCHBOX OR PLUG AS DESIRED.

Figure 3. High-Power Station Interconnections

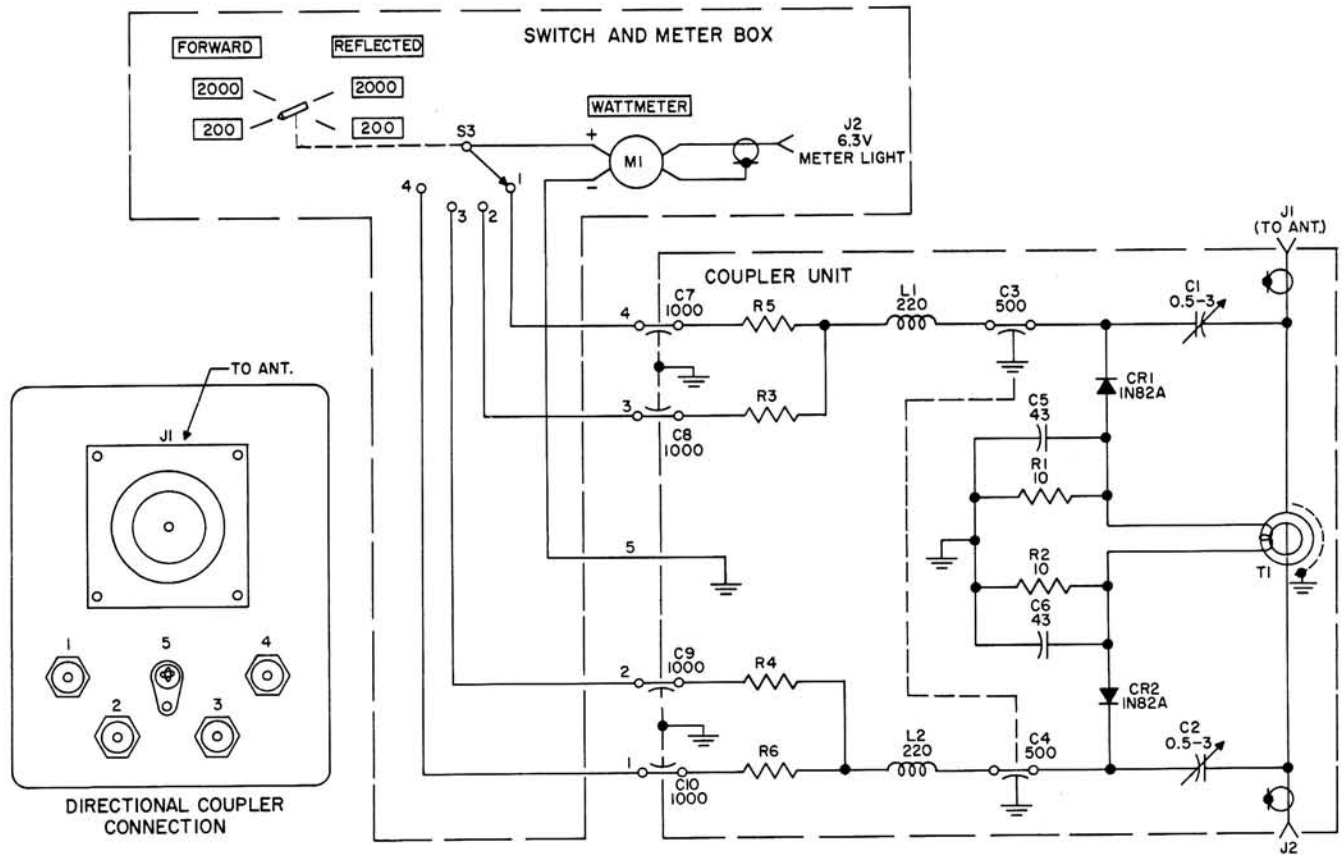


Figure 4. Wattmeter Interconnections

C487-08-4

3.1 OPERATION.

3.1.1 PHONE PATCH OPERATION WITH THE KWM-2 TRANSCEIVER.

- a. Set EMISSION switch to LSB, ANTIVOX GAIN control to full counterclockwise, MIC GAIN control full counterclockwise, VOX GAIN control fully counterclockwise, RF GAIN and AF GAIN as required for normal operation.
- b. Set OFF-ON-NB-CAL switch to CAL and tune in the calibrate signal to 700 or 800-cps beat frequency.
- c. Set VOX BAL control, at rear of 312B-5 on phone patch, to full counterclockwise.
- d. Lift telephone and dial any single digit to remove dial tone.
- e. Set PHONE PATCH switch to ON.
- f. Advance VOX GAIN control on KWM-2 until vox relay just begins "pumping."
- g. SLOWLY readjust VOX BAL control until vox relay stops "pumping."
- h. Repeat steps f and g until it is no longer possible to advance the VOX GAIN control without vox relay "pumping." Leave VOX BAL control at this setting.

RECOMMENDED METHOD

If an a-c vacuum-tube voltmeter is available, connect it from the PHONE PATCH OUT jack (J4 on 312B-5) to ground. SLOWLY adjust VOX BAL control for vtvm null (minimum indication).

- i. Hang up telephone, turn off phone patch, reset all KWM-2 controls for normal VOX SSB operation.
- j. The phone patch is now ready for use. Normal procedure is to set PHONE PATCH switch (on 312B-5) to ST'N MUTE and call your party on the telephone. Switch the phone patch on, and adjust RF GAIN (on KWM-2) to provide maximum voice-to-noise ratio and AF GAIN (on KWM-2) for normal telephone line level.
- k. Depending upon telephone line characteristics and voice volume of incoming telephone signal, it may be necessary to make slight adjustments of MIC GAIN and VOX GAIN. In case of extremely weak signals from the telephone line, operate 312B-5 FUNCTION switch to REC ONLY and XMIT ONLY.

3.1.2 OPERATION OF DIRECTIONAL WATTMETER.

The actual transmitter output power that can be handled safely is relative to the swr on the transmission line. If the swr is extremely high, as when the line is open or shorted, it is possible to obtain a forward power indication of greater than two kilowatts with practically no power output from the transmitter. To avoid damaging the instrument, the following operating procedure should be followed carefully:

- a. Set the WATTMETER switch to FORWARD 2000 scale.
- b. Turn on the transmitter and excite the transmission line (and the antenna or other load). Use CW emission. The indication meter should show a forward power indication.

c. If the forward power indication is below 200 watts, either switch to the FORWARD 200 scale or increase the power output of the transmitter until an indication of midscale or greater is obtained. If the forward power indication is greater than 2000 watts (off scale), reduce the power output of the transmitter until an on-scale indication is obtained. Record the indication.

d. Switch to the REFLECTED 2000 scale. Unless the antenna or load is perfectly matched (52 ohms, resistive), the meter will indicate reflected power. The reflected power indication will always be less than the forward power indication. If the indication is less than 200 watts, switch to the REFLECTED 200 scale. Record the indication. Use the recorded indications and figure 5 to determine vswr. To use the vswr chart of figure 5, multiply the WATTS REFLECTED POWER along the left side and the WATTS FORWARD POWER along the bottom by a factor of 10. The swr values on the lines remain the same. This allows the chart to be used for forward and reflected power readings up to 10,000 watts.



In any doubtful case, as in use with high-power amplifiers, always use the highest wattmeter scale first and, if necessary, switch to lower scale. This will prevent damage to the directional coupler.

If the reflected power indication is greater than the forward power indication, the coupler unit has been improperly installed. Either the coupler has been installed backwards (input and output type N connector attached to the wrong side of the line) or pairs of d-c meter leads to the indicator are reversed.

e. If the forward and reflected power indications are equal or nearly equal, the swr on the line is extremely high. This indicates a shorted, open, or poorly terminated line. The instrument will respond to spurious r-f output from the transmitter as well as to r-f at the fundamental frequency. It is possible to have a high swr indication with the transmission line terminated properly, but with a high level of spurious emission from the transmitter.

3.1.3 OPERATION OF VFO.

The switch positions of the VFO switch designate the two oscillators as number 1 and 2. Number 1 is the vfo in the KWM-2 (or KWM-2A). Number 2 is the vfo in the 312B-5. The vfo switching arrangement allows tuning the receiver circuits into the foreign d-x band while keeping the transmitter frequency in the American portion of the band, instant selection of either of two preset frequencies within the American band (one for net frequency and one for net QSY frequency), scanning for a clear channel in case of severe interference, and checking the local transmitter frequency for interference while working d-x.

a. With VFO selector switch in the REC 1 - XMIT 2 position, the receiver frequency is controlled by the dial setting of the KWM-2 and the transmitter frequency is controlled by the dial setting of the 312B-5. This

allows the transmit circuits to be set within the American portion of the band and the receive circuits to be tuned into the d-x band. For example, with the 312B-5 dial set to 14.296 mc and the EMISSION switch on the KWM-2 set to TUNE, the transmit circuits may be peaked and the PA loaded. The EMISSION switch is then set back to the desired sideband or CW and the KWM-2 dial tuned to any frequency between 14.3 and 14.350 mc. Refer to table 1.

TABLE 1
KWM-2 AND 312B-5 APPROXIMATE VFO
FREQUENCY SEPARATION LIMITS

	BANDS (MC)				
	3.4-4	7-7.4	14-14.4	21-21.6	28-30
Approximate limit of separation in kc between 312B-5 and KWM-2 dials	15 kc	30 kc	50 kc	75 kc	100 kc

b. With the VFO selector switch in the REC 1 - XMIT 1 position, both the receiver and transmitter frequencies are the same and are controlled by the vfo in the KWM-2.

c. With the VFO selector switch in the REC 2 - XMIT 2 position, both the receiver and the transmitter frequencies are the same and are controlled by the vfo in the 312B-5. With the 312B-5 VFO switch set in REC 1 - XMIT 1 position, the KWM-2 may be tuned and loaded to one selected frequency within the legal amateur band using the KWM-2 tuning dial. The VFO switch may then be changed to REC 2 - XMIT 2 position and the 312B-5 dial adjusted to another selected frequency within the same band. Transceiver operation may then be changed instantly from one frequency to the other by operating the VFO switch on the 312B-5 back and forth between the two positions marked REC 1 - XMIT 1 and REC 2 - XMIT 2. This permits presetting to a net frequency and a net QSY frequency, and the instant selection of either during net operation. Frequency separation limits listed in table 1 should not be exceeded by any great extent. If they are exceeded, the result is decreased receiver sensitivity or transmitter PA grid drive (or both) due to the selectivity of the transceiver r-f tuned circuits. The best compromise for this tuned circuit attenuation effect is to tune and load the KWM-2 at a frequency midway between the two desired frequencies and then set the 312B-5 and KWM-2 dials to the required frequencies.

3.1.4 OPERATION OF STATION CONTROL SWITCHES.

Table 2 gives functions of FUNCTION switch at different positions of PHONE PATCH switch.

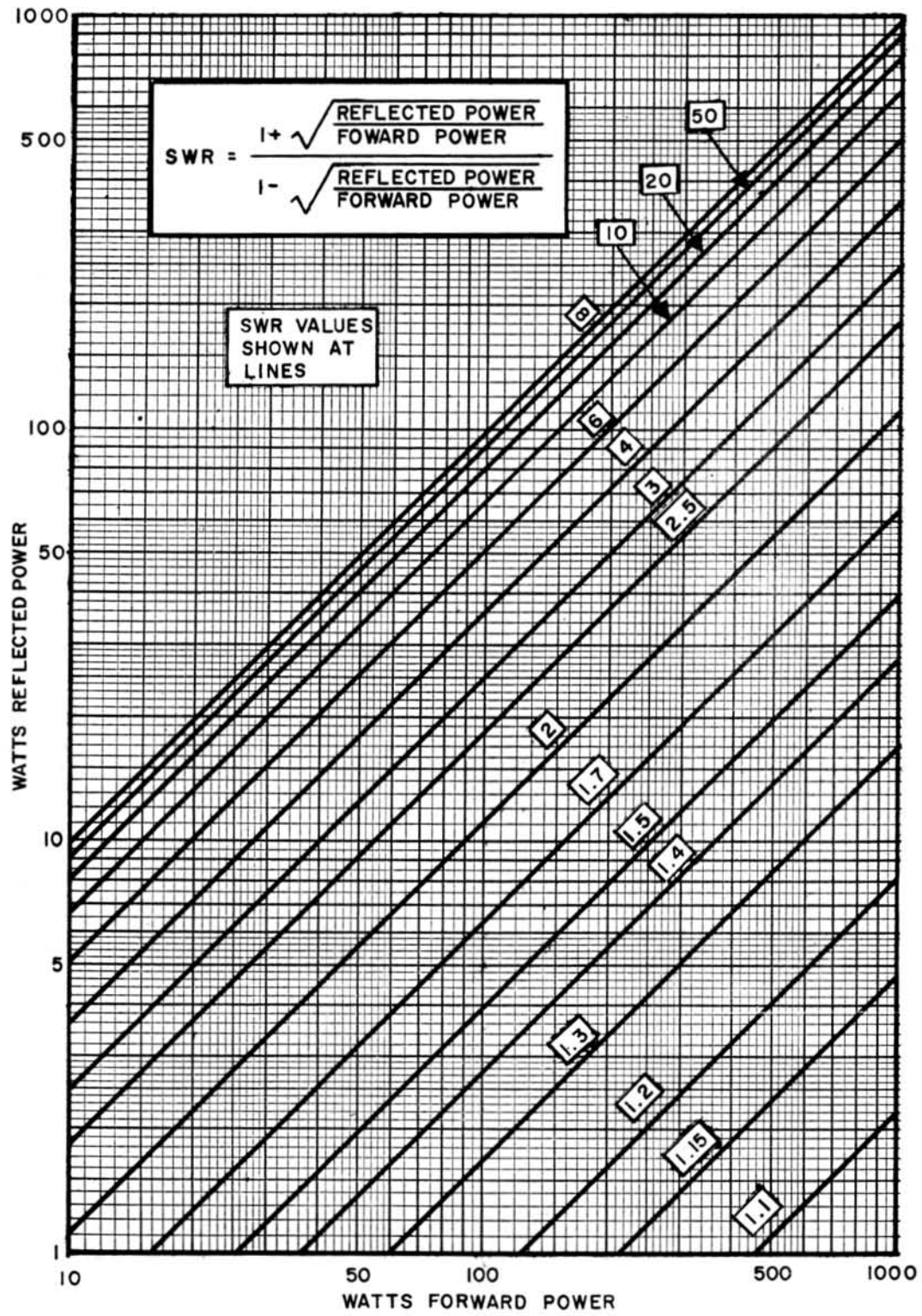


Figure 5. VSWR Chart

C189-01-1X

TABLE 2. FUNCTIONS OF PHONE PATCH AND FUNCTION SWITCHES

FUNCTION SWITCH POSITIONS	PHONE PATCH SWITCH POSITIONS		
	ON	OFF	STATION MUTE
NORMAL	Speaker dead, MIC dead, PTT operative, vox operative, patch connected.	Speaker live, MIC live, PTT operative, vox operative, patch disconnected.	Speaker dead, MIC dead, transmitter input grounded*, PTT inoperative.
RECEIVE ONLY	Speaker dead, transmitter input grounded*, PTT inoperative, MIC dead, patch hears receiver.	Speaker live, PTT inoperative, transmitter input grounded*, patch disconnected.	Same as above.
TRANSMIT ONLY	Speaker dead, PTT operative, MIC dead, anti-vox voltage grounded.	Speaker dead, PTT operative, MIC live, anti-vox voltage grounded.	Same as above.

*PHONE PATCH OUT jack (J4) shorted.

4.1 MAINTENANCE.

4.1.1 TUBE REPLACEMENT.

Tube V301 can be replaced without upsetting the calibration accuracy of the oscillator.

4.1.2 VFO SIDEBAND FREQUENCY SHIFT ADJUSTMENT.



Do not make this adjustment unless switching from one sideband to the other makes readjustment of the tuning dial necessary to keep the output signal from shifting.

- a. Set controls of 312B-5 as follows: VFO selector to REC 2 - XMIT 2, FUNCTION selector to NORM.
- b. Set controls of KWM-2 as follows: BAND switch to 3.6, EXCITER TUNING to approximately 1.9 on logging scale, EMISSION switch to LSB, and OFF-ON-NB-CAL switch to CAL position. Tune dial near 100 until calibrate signal is zero beat. Do not touch dial for following procedure.
- c. Switch to USB, and adjust trimmer C308 (top of vfo can in 312B-5) for zero beat.

NOTE

Make no adjustments to the 70K-2 Oscillator except the above frequency shift adjustment.

5.1 SPECIFICATIONS.

5.1.1 DIRECTIONAL WATTMETER AND COUPLER.

- Frequency range . . . 2 to 30 mc
- Impedance 52 ohms unbalanced
- Wattmeter scales . . . 200 watts, forward
2000 watts, forward
200 watts, reflected
2000 watts, reflected
- Maximum power handling capability . . 2000 watts forward power
- Power loss through coupler Less than 0.1%
- Swr introduced by coupler Less than 1.05:1

5.1.2 VARIABLE FREQUENCY OSCILLATOR.

- Frequency range . . . 2.5 to 2.7 mc
- Calibration accuracy . . 1 kc
- Drift Not more than 100 cps after 30-minute warmup
- Dial backlash Less than 50 cps
- Power Supplied by KWM-2 Transceiver

5.1.3 PHONE PATCH.

- Input impedance . . . 600 ohms

Output impedance . . . 600 ohms

5.1.4 PM SPEAKER.

Impedance 4 ohms

Size 5- by 7-inch oval

6.1 PARTS LIST.

The following parts list contains all parts which may need replacement. Figures 6 and 7 show parts locations in the directional coupler, and figure 8 is a schematic diagram of the 312B-5 Station Control.

ITEM	DESCRIPTION	COLLINS PART NUMBER
312B-5 STATION CONTROL		522 1668 00
J1	JACK, TELEPHONE: spring leaf; 2 conductor plug	358 1050 00
J2	JACK, TIP: accommodates 1/8 in. plug; ceramic insulation; brass contacts	360 0088 00
LS1	LOUDSPEAKER, PERMANENT MAGNET: 4-9 w nom., 3-4 ohms, 5 x 7 in. oval	271 0215 00
M1	AMMETER: D-Arsonval movement dc; internally illuminated	458 0467 00
O1	HANDLE, SWITCH: phenolic; 3/8 dia by 15/16 in. lg.	281 0199 00
S1	SWITCH, LEVER: 3 pole, 3 position; 3 moving and 12 fixed contacts	259 1132 00
S2	SWITCH, LEVER: 5 pole, 3 position; 5 moving and 20 fixed contacts	259 1131 00
S3	SWITCH, ROTARY: 1 circuit, 4 position, 1 section; 1 moving and 5 fixed contacts	259 0966 00
T1 & T2	TRANSFORMER, AUDIO FREQUENCY: 200 to 20,000 kc freq. range; Chicago Std. Transformer no. 27315	667 0326 00
W1	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL: 9 conductors, stranded #22 AWG, polyvinyl insulation; one end terminated into P401, opposite end terminated into P17	545 6105 00
W2	CABLE ASSEMBLY, RADIO FREQUENCY: coaxial, 50 ohms nom impedance, copper, stranded, 19 strands, 0.0066 in. dia., single braid covering; 4 ft. lg. excluding terminals	544 6068 00
DS401	LAMP, INCANDESCENT: 6.3 v, 0.945 w, 0.15 amps; 1-1/8 in. lg. max overall	262 3240 00
J401	CONNECTOR, RECEPTACLE, ELECTRICAL: 11 pin male; phenolic insulation; 5 amp; straight shape	372 1757 00
J402	CONNECTOR, PLUG, ELECTRICAL: 1 rd male contact, 50 ohms; straight shape	357 9288 00
P401	COVER, ELECTRICAL CONNECTOR: metallic material; 23/32 in. dia. by 1-1/8 in. lg	372 1159 00
R401	RESISTOR, COMPOSITION: 15,000 ohms ±10%; 1 w	745 3401 00
R402	RESISTOR, COMPOSITION: 33,000 ohms ±10%; 2 w	745 5715 00
S401	SWITCH, ROTARY: 3 circuit, 3 position, 1 section; 3 moving and 12 fixed contacts	259 1108 00
XDS401	LAMP HOLDER: miniature bayonet; clip mounting	262 1210 00
P17	CONNECTOR, PLUG, ELECTRICAL: 9 male contacts; for u/w miniature tube socket	372 1822 00
<u>Directional Coupler</u>		543 8118 004
C1, C2	CAPACITOR, VARIABLE, GLASS: 0.5 uuf min., 3.0 uuf max.; concentric type; Corning Glass 6F2026	922 0149 00
C3, C4	CAPACITOR, FIXED, MICA: 500 uuf ±20%; 500 vdcw; Sangamo Electric type M-23	912 0667 00
C5, C6	CAPACITOR, FIXED, CERAMIC: 43 uuf ±1%; 500 vdcw JAN CC30LH430F	916 4675 00
C7, C8, C9, C10	CAPACITOR, FIXED, CERAMIC: 1000 uuf +80% -20%; 500 vdcw; Erie Resistor type 327	913 1292 00
CR1, CR2	SEMICONDUCTOR DEVICE, DIODE: silicon; type 1N2A; CBS-Hytron	353 2542 00
J1, J2	CONNECTOR, RECEPTACLE, ELECTRICAL: 1 rd female contact; straight; panel mtg.; Automatic Metal	357 9003 00
L1, L2	COIL, RADIO FREQUENCY: 220 uh inductance; 1 amp; Jeffers Electronics	240 0037 00
R1, R2	RESISTOR, FIXED, FILM: 10 ohms ±1%; 1/2 w	705 2356 00
*R3, *R4	RESISTOR, FIXED, FILM: 5,360 ohms ±1%; 1/4 w; IRC type MDB	705 7131 00

*Selected in manufacture to calibrate meter.

ITEM	DESCRIPTION	COLLINS PART NUMBER
*R3, *R4	RESISTOR, FIXED, FILM: 5,620 ohms ±1%; 1/4 w; IRC type MDB	705 7132 00
*R3, *R4	RESISTOR, FIXED, FILM: 5,900 ohms ±1%; 1/4 w; IRC type MDB	705 7133 00
*R3, *R4	RESISTOR, FIXED, FILM: 6,190 ohms ±1%; 1/4 w; IRC type MDB	705 7134 00
*R3, *R4	RESISTOR, FIXED, FILM: 6,490 ohms ±1%; 1/4 w; IRC type MDB	705 7135 00
*R3, *R4	RESISTOR, FIXED, FILM: 6,810 ohms ±1%; 1/4 w; IRC type MDB	705 7136 00
*R3, *R4	RESISTOR, FIXED, FILM: 7,150 ohms ±1%; 1/4 w; IRC type MDB	705 7137 00
*R3, *R4	RESISTOR, FIXED, FILM: 7,500 ohms ±1%; 1/4 w; IRC type MDB	705 7138 00
*R3, *R4	RESISTOR, FIXED, FILM: 7,870 ohms ±1%; 1/4 w; IRC type MDB	705 7139 00
*R3, *R4	RESISTOR, FIXED, FILM: 8,250 ohms ±1%; 1/4 w; IRC type MDB	705 7140 00
*R3, *R4	RESISTOR, FIXED, FILM: 8,600 ohms ±1%; 1/4 w; IRC type MDB	705 7141 00
*R3, *R4	RESISTOR, FIXED, FILM: 9,090 ohms ±1%; 1/4 w; IRC type MDB	705 7142 00
*R3, *R4	RESISTOR, FIXED, FILM: 9,530 ohms ±1%; 1/4 w; IRC type MDB	705 7143 00
*R3, *R4	RESISTOR, FIXED, FILM: 10,000 ohms ±1%; 1/4 w; IRC type MDB	705 7144 00
*R3, *R4	RESISTOR, FIXED, FILM: 10,500 ohms ±1%; 1/4 w	705 7145 00
*R3, *R4	RESISTOR, FIXED, FILM: 11,000 ohms ±1%; 1/4 w	705 7146 00
*R3, *R4	RESISTOR, FIXED, FILM: 11,500 ohms ±1%; 1/4 w	705 7147 00
*R3, *R4	RESISTOR, FIXED, FILM: 12,100 ohms ±1%; 1/4 w	705 7148 00
*R5, *R6	RESISTOR, FIXED, FILM: 953 ohms ±1%; 1/4 w; IRC type MDB	705 7095 00
*R5, *R6	RESISTOR, FIXED, FILM: 1000 ohms ±1%; 1/4 w; IRC type MDB	705 7096 00
*R5, *R6	RESISTOR, FIXED, FILM: 1,050 ohms ±1%; 1/4 w; IRC type MDB	705 7097 00
*R5, *R6	RESISTOR, FIXED, FILM: 1,100 ohms ±1%; 1/4 w; IRC type MDB	705 7098 00
*R5, *R6	RESISTOR, FIXED, FILM: 1,150 ohms ±1%; 1/4 w; IRC type MDB	705 7099 00
*R5, *R6	RESISTOR, FIXED, FILM: 1210 ohms ±1%; 1/4 w; IRC type MDB	705 7100 00
*R5, *R6	RESISTOR, FIXED, FILM: 1,270 ohms ±1%; 1/4 w; IRC type MDB	705 7101 00
*R5, *R6	RESISTOR, FIXED, FILM: 1,330 ohms ±1%; 1/4 w; IRC type MDB	705 7102 00
*R5, *R6	RESISTOR, FIXED, FILM: 1,400 ohms ±1%; 1/4 w; IRC type MDB	705 7103 00
*R5, *R6	RESISTOR, FIXED, FILM: 1,470 ohms ±1%; 1/4 w; IRC type MDB	705 7104 00
*R5, *R6	RESISTOR, FIXED, FILM: 1,540 ohms ±1%; 1/4 w; IRC type MDB	705 7105 00
*R5, *R6	RESISTOR, FIXED, FILM: 1,620 ohms ±1%; 1/4 w; IRC type MDB	705 7106 00
*R5, *R6	RESISTOR, FIXED, FILM: 1,690 ohms ±1%; 1/4 w; IRC type MDB	705 7107 00
*R5, *R6	RESISTOR, FIXED, FILM: 1,780 ohms ±1%; 1/4 w; IRC type MDB	705 7108 00
*R5, *R6	RESISTOR, FIXED, FILM: 1,870 ohms ±1%; 1/4 w	705 7109 00
*R5, *R6	RESISTOR, FIXED, FILM: 1,960 ohms ±1%; 1/4 w	705 7110 00
*R5, *R6	RESISTOR, FIXED, FILM: 2,050 ohms ±1%; 1/4 w	705 7111 00
*R5, *R6	RESISTOR, FIXED, FILM: 2,150 ohms ±1%; 1/4 w	705 7112 00
*R5, *R6	RESISTOR, FIXED, FILM: 2,260 ohms ±1%; 1/4 w	705 7113 00
*R5, *R6	RESISTOR, FIXED, FILM: 2,370 ohms ±1%; 1/4 w	705 7114 00
*R5, *R6	RESISTOR, FIXED, FILM: 2,490 ohms ±1%; 1/4 w	705 7115 00
T1	COIL, RADIO FREQUENCY: 60 turns of #30 AWG; toroidal wound; Collins Radio Company	542 0916 002

ITEM	DESCRIPTION	COLLINS PART NUMBER
	<u>Phone Patch</u>	544 3229 00
C1	CAPACITOR, FIXED, PAPER: 1 uf, +20% -10%, 200 v dc	931 0170 00
C2, C3, C4, C5	CAPACITOR, FIXED, CERAMIC: 470 uuf, +100% -20%, 500 v dc	913 3007 00
C6	CAPACITOR, FIXED, PAPER: 0.5 uf, +20%, -10%, 200 v dc	931 0169 00
C7	CAPACITOR, FIXED, PAPER: 0.25 uf, +20% -10%, 200 v dc	931 0168 00
J3, J4, J5, J6, J7	JACK, TIP: accommodates 1/8 in. plug; ceramic insulation; brass contacts	360 0088 00
L1, L2	COIL, RADIO FREQUENCY: 2 mh; 50,000 ohms; 100 ma current	240 0134 00
O1	KNOB: set screw type, black phenolic, brass insert for 1/4 in. shaft, 13/32 in. by 1 in. dia, 8-32 NC-2 set screw supplied	281 0069 00
R1, R2, R4, R5, R6, R7, R9	RESISTOR, FIXED, COMPOSITION: 100 ohms, ±10%, 1/2 w	745 1310 00
R3, R8	RESISTOR, FIXED, COMPOSITION: 820 ohms, ±10%, 1/2 w	745 1349 00
R10	RESISTOR, VARIABLE, COMPOSITION: 1000 ohms, ±30%, 1/4 w	376 7203 00
R11, R12	RESISTOR, FIXED, FILM: 619 ohms, ±1%, 1/2 w	705 7586 00
R13, R15	RESISTOR, FIXED, COMPOSITION: 390 ohms, ±10%, 1/2 w	745 1335 00
R14	RESISTOR, FIXED, COMPOSITION: 270 ohms, ±10%, 1/2 w	745 1328 00
R16	RESISTOR, FIXED, COMPOSITION: 180 ohms, ±10%, 1/2 w	745 1321 00
T1, T2	TRANSFORMER, AUDIO FREQUENCY: 200 to 20,000 kc freq. range	667 0326 00
TB1	TERMINAL BOARD: bakelite, 1/16 in. by 5/8 in., 1-5/16 in. lg.; 2 screw type terminals	306 0032 00
TB2	TERMINAL BOARD: bakelite; 1/16 in. thk, 5/8 in. w, 3 in. lg; 5 screw-type terminals	306 0035 00

ITEM	DESCRIPTION	COLLINS PART NUMBER
	<u>70K-2 Oscillator</u>	522 1093 00
	70K-2 Oscillator consists of the following. This equipment should be returned to Collins Radio Company for repair.	
*C301	CAPACITOR, CERAMIC: 20 uuf ±5%, 500 vdcw	913 0053 00
*C301	CAPACITOR, CERAMIC: 20 uuf ±5%, 500 vdcw	913 0054 00
*C301	CAPACITOR, CERAMIC: 20 uuf ±5%, 500 vdcw	913 0055 00
*C301	CAPACITOR, CERAMIC: 20 uuf ±5%, 500 vdcw	913 0056 00
*C301	CAPACITOR, CERAMIC: 20 uuf ±5%, 500 vdcw	913 0057 00
*C301	CAPACITOR, CERAMIC: 20 uuf ±5%, 500 vdcw	913 0058 00
*C301	CAPACITOR, CERAMIC: 20 uuf ±5%, 500 vdcw	913 0232 00
*C301	CAPACITOR, CERAMIC: 20 uuf ±5%, 500 vdcw	913 0233 00
*C301	CAPACITOR, CERAMIC: 20 uuf ±5%, 500 vdcw	913 0234 00
C302	CAPACITOR, MICA: 1000 uuf ±2%, 500 vdcw	912 1737 00
C303	CAPACITOR, MICA: 3000 uuf ±1%, 500 vdcw	912 1748 00
C304	CAPACITOR, MICA: 200 uuf ±2%, 500 vdcw	912 0514 00
*C305	CAPACITOR, CERAMIC: 100 uuf ±2%, 500 vdcw	913 0074 00
*C305	CAPACITOR, CERAMIC: 100 uuf ±2%, 500 vdcw	913 0246 00
C306, C307, C309, C310, C308	CAPACITOR, VARIABLE, CERAMIC: 5 uuf min. to 37.5 uuf max, 350 vdcw	917 1073 00
CR301	SEMICONDUCTOR DEVICE, DIODE: germanium; Sylvania part no. 1N34A	353 0103 00
L301	COIL, RADIO FREQUENCY: 22 turns #28 AWG double formvar, 2.4 uh inductance	240 0652 00
L302	TRIMMER ASSEMBLY: 9 turns #28 AWG wire, 1 toroid coil and hardware	543 7323 00
L303	INDUCTOR, TUNING: 10 turns #30 AWG wire	543 7333 003
L304	COIL, RADIO FREQUENCY: single layer wound, magnet wire, 3.30 uh	240 0695 00
R301, R303	RESISTOR, COMPOSITION: 0.10 megohms ±10%, 1/2 w	745 1436 00
R302	RESISTOR, COMPOSITION: 82,000 ohms ±5%, 1/2w	745 1432 00
T301	TRANSFORMER, RADIO FREQUENCY: pri 380 uh nom 790 kc; sec 2.7 uh nom., 2.6 mc	240 0665 00
V301	ELECTRON TUBE: pentode; General Electric type 6AU6	255 0202 00
	*Chosen per operational requirement.	
	**Selected in final test.	

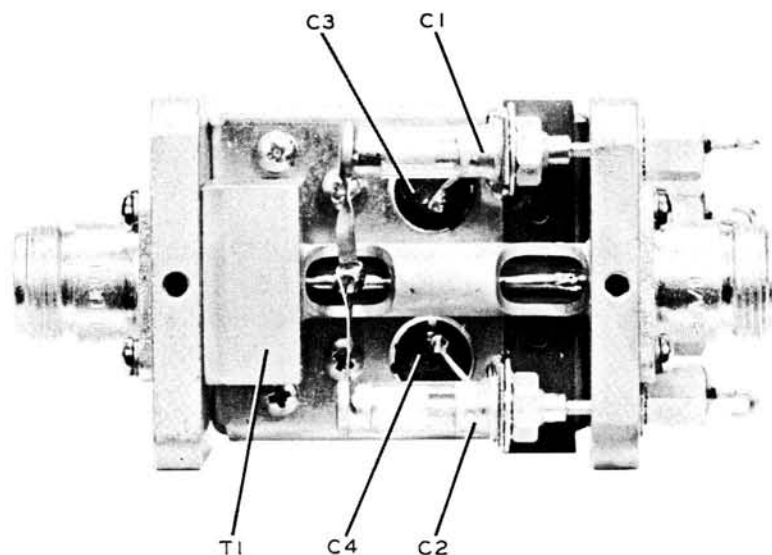


Figure 6. Directional Coupler, Top View, Location of Parts

C487-15-P

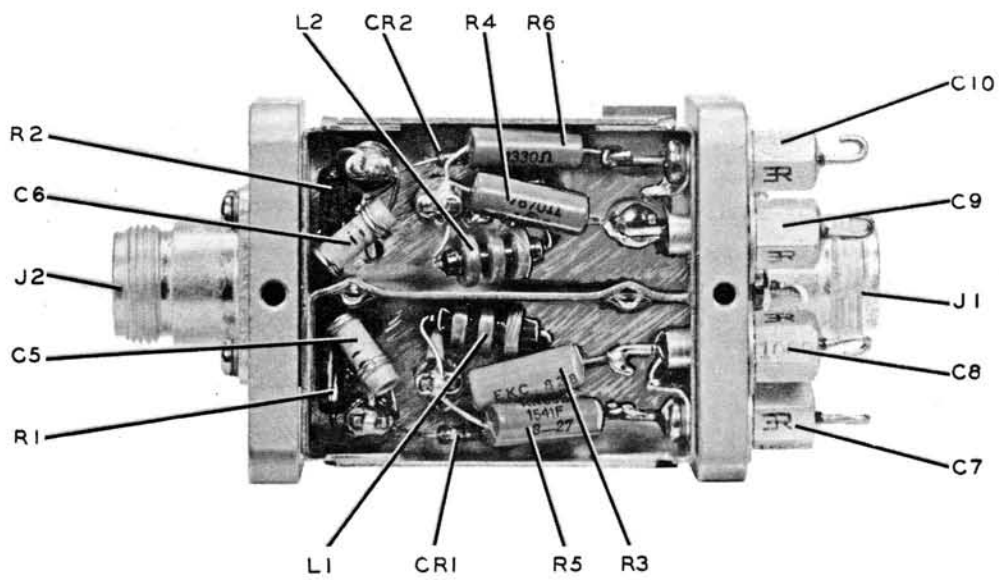


Figure 7. Directional Coupler, Bottom View,
Location of Parts

C487-16-P

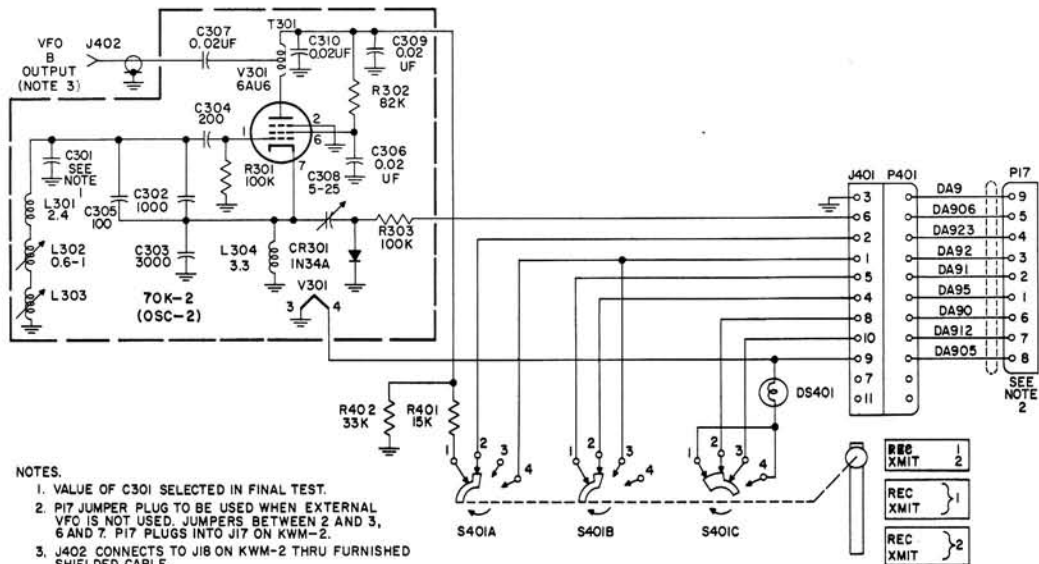
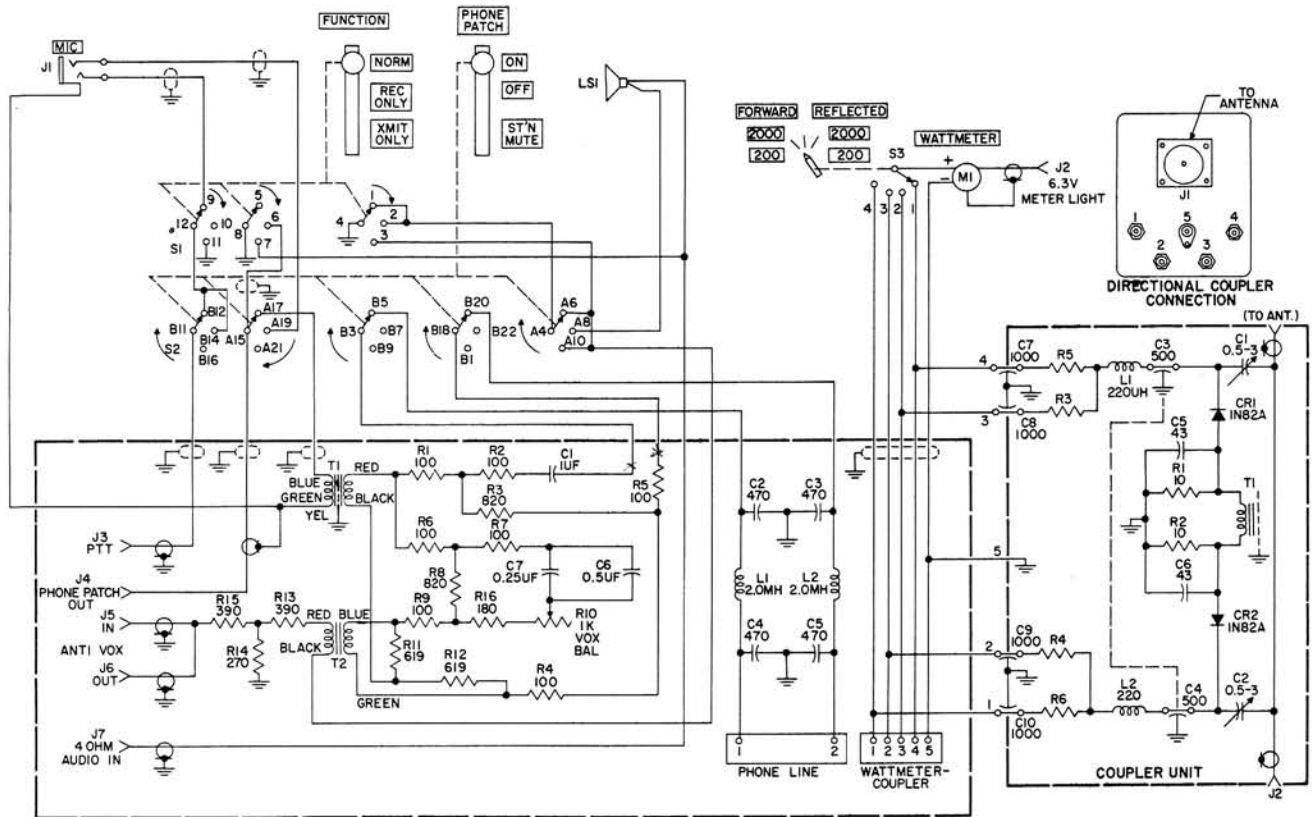


Figure 8. 312B-5 Station Control, Schematic Diagram

C569-02-5

ADDENDUM TO 312B-5 INSTRUCTIONS,
2ND EDITION

1. Page 3, figure 3. Change note 2, second sentence to read, "Connect microphone to MIC jack on front of 312B-5." Draw a line from PHONE PATCH jack on the KWM-2 to the PHONE PATCH OUT jack on the 312B-5.
2. Insert the following after paragraph 3.1.1 on page 4:

NOTE

As shipped, the phone patch will balance on normal telephone lines. Additional extension phones or unusual line conditions may require a change in capacity to compensate for these conditions. It may be necessary to cut C7 loose, or to add the extra capacitor (furnished) in parallel with C6 and C7, to make it possible to null with VOX BAL control.

25 February 1960

