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ALIGNMENT AND TROUBLESHOOTING

The alignment procedures presented in this section are routine touch-up procedures for all tuned circuits and other adjustments. It is recommended that the procedures be performed in the order presented. However, if complete realignment is not required (as may be the case when just one tube is replaced), perform just those procedures required. Refer to Figures 5, 6 and 7 for component placement.

RECEIVER ALIGNMENT

Receiver alignment involves only the adjustment of the Second IF coil. The R. F. coils which affect receiver performance are also used in transmit mode. Their adjustment is covered under "TRANSMITTER ALIGNMENT".

1. After allowing approximately five minutes for warm-up, tune the receiver to the middle of any band and at a "clear" frequency.

2. Adjust the P. A. TUNE, P. A. LOAD, and DRIVER front panel controls for maximum background noise.

3. Adjust IF coil L801 for maximum background noise.

S-METER ADJUSTMENT

With antenna disconnected and RF Gain fully clockwise, set R706, located on rear panel, for zero meter reading. Make sure no local signals are being received.

TRANSMITTER ALIGNMENT

1. Power Amplifier Bias.

   (a) Switch meter to P. A. CATH.

   (b) After allowing approximately five minutes for warm-up, key the transmitter with the microphone switch. Without speaking into the microphone, adjust the CAR. BAL. control for a minimum power amplifier current.

   (c) Again key the transmitter with the microphone switch, and without speaking into the microphone, adjust the P. A. BIAS control on the rear panel for the delta symbol on the meter, corresponding to 40 ma idling current.

2. Transmitter Circuits. The alignment of transmitter circuits involves the adjustment of tuned circuits in the VFO Amplifier, V1, the Transmit Mixer, V2, and Driver stage, V3. It is recommended that a dummy load be connected to the antenna jack during this series of adjustments.

   (a) Start first by adjusting 7 mc band. Set tuning dial and driver control as indicated by table I, page 18.

   (b) Set P. A. LOAD control to 9 o'clock.

   (c) Press Mic. Button. Check idling current. It should be on the delta symbol when CAR. BAL. control is nulled. Adjust P. A. BIAS control, if required.

   (d) With Mic. Button pressed, adjust CAR. BAL. control for slight increase in meter reading, 50 to 60 ma. Adjust P. A. TUNE to resonance, (dip).

   (e) Adjust coils as indicated by alignment chart for maximum meter reading. When reading goes higher than 80 ma., or so, adjust CAR. BAL. for 60 ma. again.

   (f) Adjust coils carefully for maximum peak. Exercise caution with CAR. BAL. control. Do not exceed 100 ma. reading for more than a few seconds. Be sure P. A. TUNE control is resonated, (adjusted for "dip" in meter reading).

   (g) Switch to 3. 5 mc band, and repeat steps (a) through (f), following the tuning chart carefully. Follow this procedure through for each other band.

3. Power Amplifier Neutralization. Perform the power amplifier neutralization adjustment on 20 meters and in the following manner.

   (a) After allowing approximately five minutes for warm-up, tune the transmitter to approximately 14. 250 mc.

   (b) Position the P. A. LOAD control to the 9 o'clock position, (full counter clockwise).

   (c) Set meter switch to P. A. CATH.

   (d) Key the transmitter with the micro-

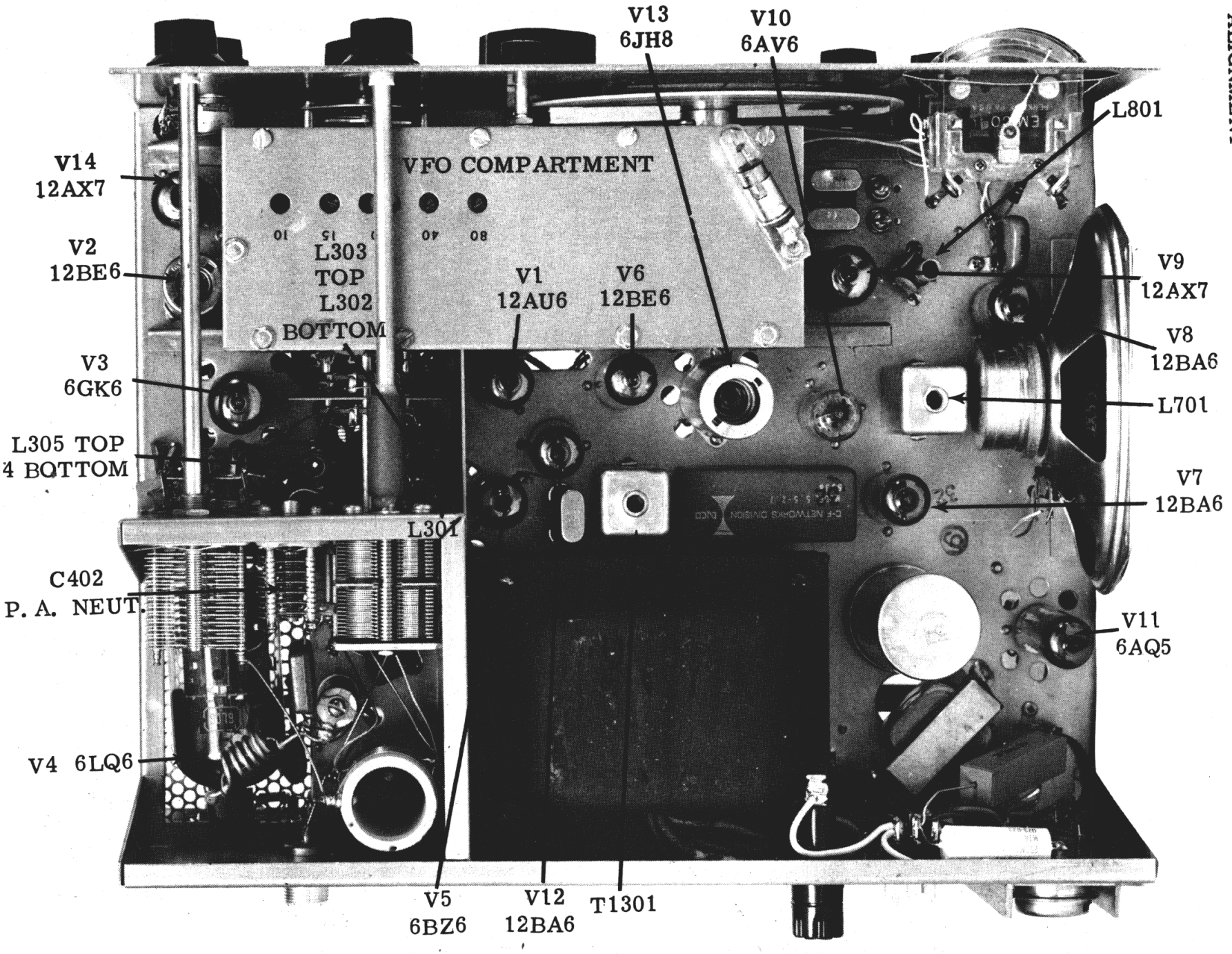

FIGURE 6. SWAN CYGNET MODEL 270 TOP VIEW

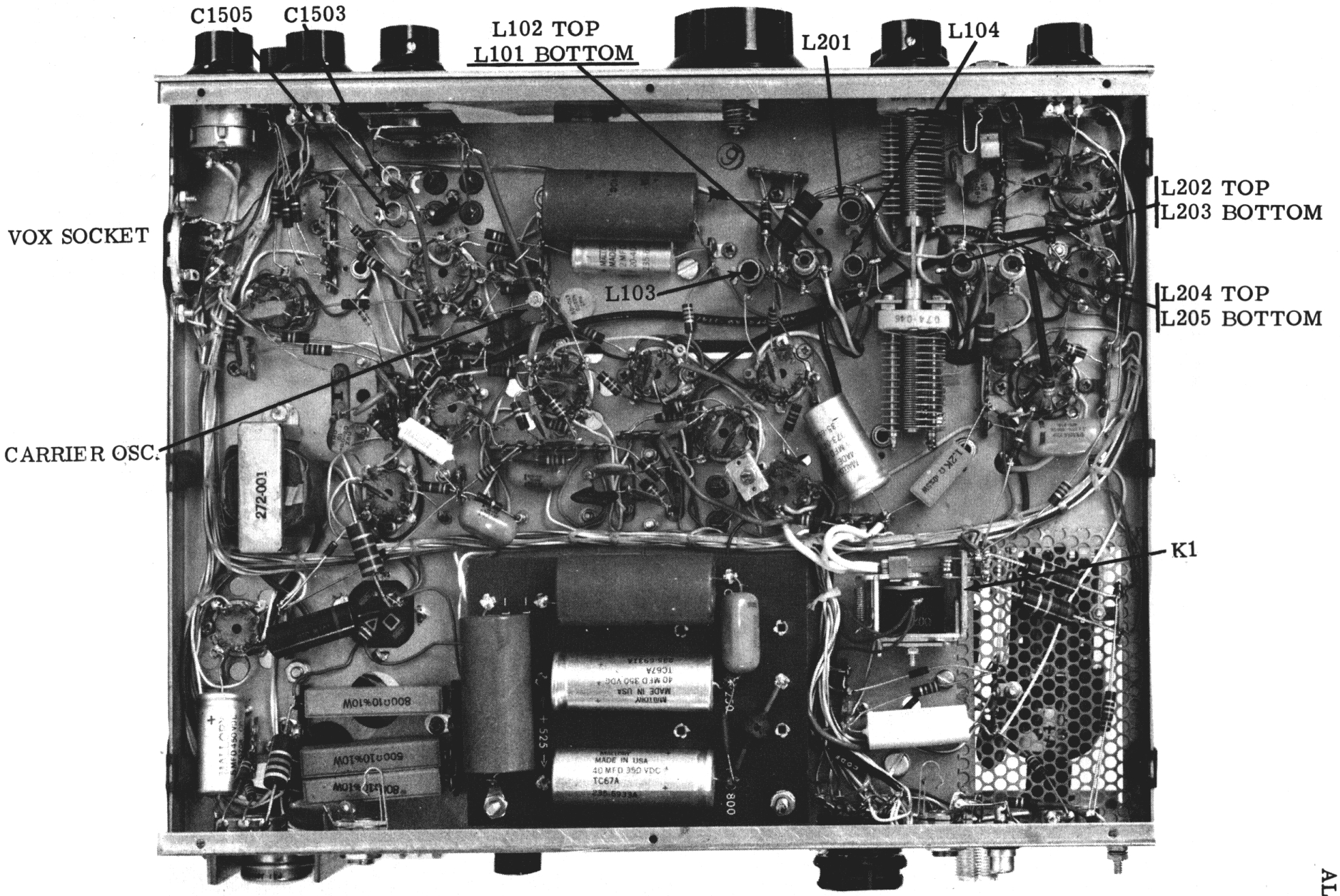

FIGURE 7. SWAN CYGNET MODEL 270 BOTTOM VIEW

phone switch, and without speaking into the microphone, adjust the CAR. BAL. control for a power amplifier current of approximately 100 ma. Adjust the DRIVER control for peak. Quickly adjust CAR. BAL. to 100 ma. again if it increased to a higher reading.

(e) With the Mic. Button still pressed, rotate the P. A. TUNE control through its range from 9 o'clock to 3 o'clock. You will note a pronounced "dip" in meter reading at resonance. Observe any tendency for the meter to "peak" above the 100 ma. plateau on either side of resonance. If there is such a peak, adjust C402, the P. A. Neutralizing trimmer to suppress the peak. When properly neutralized, the meter reading will hold steadily at 100 ma except for the sharp dip at resonance but there will be no peak above the 100 ma level.

(f) Key the transmitter with the microphone switch and re-adjust the CAR. BAL. control for minimum power amplifier current. Power amplifier idling current should be on the delta symbol. If not, repeat the power amplifier bias adjustment described on Page 13.

4. Carrier Frequency Adjustment. A dummy load wattmeter and audio generator are required for this adjustment.

(a) After allowing a five-minute warm-up period, tune the transmitter to approximately 14. 250 mc.

(b) Key the transmitter with the microphone switch and adjust the CAR. BAL. control for minimum power amplifier current.

(c) Insert 1500 cycles of audio from an audio generator into the Mic. Jack located on the front panel. Adjust the gain of the audio generator and the Mic. Gain control (R1404) until the wattmeter reads approximately 10 or 15 watts.

(d) Adjust the first IF coil (L701) for maximum output. Adjust both slugs of the balanced modulator transformer (T1301) for maximum output.

(e) Increase gain of audio generator until wattmeter reads 40 watts. Sweep generator down to 300 cycles and adjust the normal sideband carrier oscillator trimmer (C1503) for a reading of 10 watts.

(f) Switch to the Opposite Sideband. Adjust the Opposite Sideband Carrier Oscillator trimmer (C1505) for a reading of 10 watts.

(g) Re-check with audio generator set at 1500 cycles and 40 watts. Sweep down to 300 and re-adjust Carrier Oscillator capacitor, if required, for 10 watts.

5. Carrier Balance Adjustment. Several times during the preceding adjustments, the CAR. BAL. control has been adjusted for varying reasons. Be sure that this control is always re-set for exact null before operating.

NOTE:

If at any time the Balanced Modulator Tube (6JH8) is replaced it may be necessary to adjust R1311, the Mini Potentiometer located on the 6JH8 tube socket, for exact Carrier Balance Null. This control is factory set and should not need adjustment except in case of tube replacement. A recommended way of adjusting the control is to locate your transmitting signal on an external receiver. Then adjust R1311 for minimum carrier while listening to the external receiver.

VFO CALIBRATION

1. After allowing approximately five minutes for warm-up, tune the receiver near 3800 KC. Using a frequency standard or a 100 KC crystal calibrator as an accurate signal source, tune the signal for zero beat and note the corresponding dial reading. If the 3800 KC signal does not zero beat at 3800 on the dial, adjust the 80 Meter trimmer until it does.

2. In a similar manner, check each of the other bands in the normally used portion of the band. For example: 7200 kc., 14, 200 or 14, 300, 21, 300 or 21, 400, 28, 700 or whichever portion of 10 meters is normally used. Accuracy in other parts of the bands will be quite good, but remember that the Cygnet is not to be considered a frequency standard. Be cautious when operating near band edges. FCC regulations require that every amateur radio station have a means available for measuring his transmitting frequency.

If a frequency meter or frequency counter is available, the information contained in Table II can be used to perform direct VFO and Carrier Oscillator frequency measurements.

TROUBLESHOOTING

The information contained in Figures 5, 6, and 7, together with the voltage and resistance chart and troubleshooting guide should be sufficient for most troubleshooting by the average licensed amateur radio operator.

VOLTAGE AND RESISTANCE CHART

TUBE TYPE R = Rec. T = Trans.		Socket Pin Numbers								
		1	2	3	4	5	6	7	8	9
V1 12 AU6 VFO Amp.	R Volts	-. 6	0	0	12. 6AC	45	45	0		
	T Volts	-. 6	0	0	12. 6AC	50	50	0		
	Ohms	1. 2K	0	0	0. 2	0	*	0		
V2 12BE6 Trans. Mixer	R Volts	-1. 2	0	0	12. 6AC	250	-2	0		
	T Volts	-1. 0	0	0	12. 6AC	250	135	0		
	Ohms	100K	0	0	0. 2	*	11K	35K		
V3 6GK6 Driver	R Volts	0	-6. 7	0	0	6. 3AC	NC	255	0	0
	T Volts	0	-6. 7	0	0	6. 3AC	NC	265	225	0
	Ohms	10	100K	0	0	0. 3	NC	*	0. 2	0
V4 6LQ6 Pwr. Amp.	R Volts	NC	-75	0	12. 6AC	6. 3AC	-75	0	0	NC
	T Volts	NC	-75	0	12. 6AC	6. 3AC	-75	225	0	NC
	Ohms	NC	6K	1. 0	0. 1	0. 3	6K	0. 1	0	NC
V5 6BZ6 Rec. R. F.	R Volts	0	0	6. 3AC	0	255	115	0		
	T Volts	0	0	6. 3AC	0	255	0	0		
	Ohms	1. 1M	0	0. 1	0	14K	40K	0		
V6 12BE6 Rec. Mixer	R Volts	0	0	0	12. 6AC	250	100	-. 5		
	T Volts	0	0	0	12. 6AC	265	0	-. 5		
	Ohms	100K	0	0	0. 1	11K	40K	45K		
V7 12BA6 1st I. F.	R Volts	-1. 8	0	0	12. 6AC	210	48	0		
	T Volts	-1. 8	0	0	12. 6AC	220	50	0		
	Ohms	500	0	0	0. 1	15K	50K	0		
V8 12BA6 2nd I. F.	R Volts	-1. 7	0	0	12. 6AC	205	105	0		
	T Volts	-1. 7	0	0	12. 6AC	225	0	0		
	Ohms	110K	0	0	0. 1	15K	40K	0		
V9 12AX7 Det. A. F.	R Volts	55	-1	0	0	0	145	-. 25	0	6. 3AC
	T Volts	-3	-1. 6	0	0	0	0	-. 25	0	6. 3AC
	Ohms	400K	11K	300	0	0	125K	1M	0	0. 2
V10 6AU6 AGC Amp.	R Volts	0	2. 0	6. 3AC	0	0	0	225		
	T Volts	0	1. 6	6. 3AC	0	0	0	175		
	Ohms	500K	5K	0. 2	0	0	700K	100K		
V11 6AQ5 A. F. Output	R Volts	-9	0	0	6. 3AC	237	215	NC		
	T Volts	-9	0	0	6. 3AC	262	0	NC		
	Ohms	500K	0	0	0. 2	10K	12K	NC		
V12 12BA6 100 KC Cal.	R Volts	0	0	12. 6AC	225	225	75			
	T Volts	0	0	12. 6AC	175	175	55			
	Ohms	1M	0	0. 1	100K	200K	0			
V13 6JH8 Bal. Mod.	R Volts	0	0	0	6. 3AC	0	-1. 4	0	0	0
	T Volts	45	45	75	6. 3AC	0	-1. 4	0	100	100
	Ohms	2K	75K	500K	0. 2	0	35K	0	75K	75K
V14 12AX7 Mic. Amp.	R Volts	50	0	0	0	0	0	0	0	6. 3AC
	T Volts	45	0	0	0	0	75	0	0	6. 3AC
	Ohms	1M	0	0	0	0	600K	0	10K	0. 2

TABLE I
TRANSMITTER ALIGNMENT CHART

Band	Driver Setting	Tuning Dial Dial	Adjust Coils
40	12 o'clock	7180KC	L103, L202, L302
80	12 o'clock	3790KC	L201, L301
20	12 o'clock	14205KC	L203, L303
15	12 o'clock	21270KC	L101, L204, L304
10	12:30 o'clock	28920KC	L102*, L104*, L205, L305

Note: Adjust 40 Meter band first

*To adjust L102, connect one end of a 2.7K resistor to the hot side of L104. Connect a .10 μf disc capacitor from ground to the other end of the resistor. Adjust L102. To adjust L104, use the same procedure as above, but connect the capacitor and resistor to L102.

TROUBLESHOOTING CHART

DEFECT	POSSIBLE CAUSE
PA IDLING CURRENT UNSTABLE	1. Defective Power Amplifier Tube (V4). 2. Defective BIAS control and/or associated components. 3. Defective bias power supply.
INABILITY TO LOAD PER OPERATION INSTRUCTIONS	1. Antenna not resonant at operating frequency. 2. Defective transmission line. 3. Defective antenna loading coil(s). 4. Tubes V1 through V4 defective.
INSUFFICIENT SIDEBAND SUPPRESSION	1. Carrier Oscillator (Q3) operating on incorrect frequency. 2. Crystal filter defective or mistuned.
INSUFFICIENT CARRIER SUPPRESSION	1. Tube V13 defective 2. Transformer T1301 defective or mistuned. 3. Carrier Oscillator (Q3) operating on incorrect frequency.
MICROPHONICS IN TRANSMITTER	1. Tubes V13 and/or V14 defective. 2. IF coil L701 Defective or incorrectly adjusted. 3. Microphone defective
LOW RECEIVER SENSITIVITY	1. Tubes V5 through V10 defective. 2. Incorrect adjustment of the transmitter Pi-Network. 3. IF coil L801 incorrectly adjusted or defective. 4. K1 relay contacts defective.

TABLE II
VFO AND CARRIER OSCILLATOR FREQUENCIES

Tuning Dial	V1 Injection Frequency	Q1 Osc. Frequency	Q3 Osc. Carrier Frequency
3500 KC	9000 KC	9000 KC	5500 KC
4000 KC	9500 KC	9500 KC	5500 KC
7000 KC	12, 500 KC	(1/2) 6250 KC	5500 KC
7300 KC	12, 800 KC	(1/2) 6400 KC	5500 KC
14, 000 KC	8500 KC	8500 KC	5500 KC
14, 350 KC	8850 KC	8850 KC	5500 KC
21, 000 KC	15, 500 KC	(1/2) 7750 KC	5500 KC
21, 450 KC	15, 950 KC	(1/2) 7975 KC	5500 KC
28, 000 KC	22, 500 KC	(1/2) 11, 250 KC	5500 KC
29, 700 KC	24, 200 KC	(1/2) 12, 100 KC	5500 KC

PARTS LIST

RESISTORS. All resistors are 1/2 watt 10% tolerance, unless otherwise noted.

R101	1.5K
R102	47K
R103	2.7K
R104	2.7K
R105	10K - 2W
R201	27K
R202	100K
R203	10K - 2W
R204	470K
R205	2.7K
R206	100K
R301	100K
R302	100K
R303	100 ohm
R401	100 ohm
R402	25K bias pot
R403	4.7K
R404	1K
R405	3 ohm 5W
R406	100 ohm 5W
R501	100K
R502	220K
R503	470 ohm
R504	10K
R505	25K R. F. Gain
R506	10K
R507	470K
R601	47K
R701	470 ohm
R702	10 meg
R703	33K - 2W
R704	1K
R705	33K
R706	25K S-Meter Zero
R707	15K
R708	47K 1W
R801	100K
R802	1K
R901	10K
R902	270 ohm
R903	270K
R904	47K
R905	10 meg
R906	1 meg
R907	47K
R908	100K
R909	47K
R1001	470K
R1002	270K
R1003	1 meg
R1004	4.7K
R1005	15K
R1101	1 meg A. F. Gain Pot
R1201	1 meg
R1202	27K
R1203	100K
R1301	1K
R1302	47K
R1303	47K
R1304	270K
R1305	27K
R1306	100K
R1307	5K Car. Bal. Pot
R1308	47K - 1W
R1309	2.2 meg
R1310	1K
R1401	150K
R1402	47K
R1403	1K
R1404	1 meg Mic. Gain Pot
R1405	2.2 meg
R1406	270K
R1407	470K
R1408	47K
R1501	18K
R1502	2.2K
R1503	1.5K
R1504	100 ohm
R1601	2.7K
R1602	1.5K
R1603	1K
R1604	470 ohm
R1605	2.7K
R1606	1K
R1607	470 ohm
R1701	150 ohm - 2W
R1702	2 ohm - 15W
R1703	350 ohm - 5W
R1704	4.7 ohm
R1705	150K - 2W
R1706	150K - 2W
R1707	1.2K - 5W
R1708	800 ohm 10W
R1709	2.7K
R1710	800 ohm 10W
R1711	500 ohm 10W
R1712	10K 2W
R1713	100K
R1714	270K

TRANSISTORS

Q1	2N706 Oscillator
Q2	2N5130 Buffer
Q3	2N706 Carrier Oscillator
Q4	2N1522 P. S. Switching
Q5	2N1522 P. S. Switching

DIODES

D501	1N34A
D701	1 Amp 600 V
D702	1 Amp 600 V
D1001	1N34A
D1201	1N34A
D1701	1N4002
D1702	1N4002
D1703	1 Amp 600 V
D1704-1707	RCA 39804
D1708-1711	RCA 39804
D1712	RCA 39804
D1713	1N4742 Zener

PARTS LIST

CAPACITORS Unless otherwise specified, a capacitor is listed in pico farads with a whole number and in micro farads with a decimal number.

C101	.01 +80 -20%, 500 V Disc
C102	44 pf Disc
C103	60 pf Disc
C104	68 pf 5% Disc
C105	25 pf 5% Disc
C106	.002, 20% 1KV Disc
C107	.01 +80 -20% 500 V Disc
C201	.01 +80 -20% 500 V Disc
C202	68 pf 5% Disc
C203	39 pf 10% Disc
C204	.01 +80 -20% 500 V Disc
C205	470 pf 5% SM
C206	2 pf 10% 500 V Ceramic
C207	.002 20% 1KV Disc
C208	.05 10% 200 V Mylar
C301	.002 20% 1 KV Disc
C302	68 pf 5% Disc
C303	39 pf 1% Disc
C304	510 pf 5% SM
C305	15 pf 3KV Disc
C306	.002 20% 1KV Disc
C308	270 pf 10% Disc
C309	15 pf 10% Disc
C401	3.3 pf 10% 3 KV
C402	20 pf Neut. Trimmer
C403	.01 +80 -20% 500 Disc
C404	.002 20% 1KV Disc
C405	.01 +80 -20% 500 V Disc
C406	.002 20% 1KV Disc
C407	270 5% 2500 V Mica
C408	105 pf P. A. Tune
C409	100 10% 6KV Disc.
C410	330 10% 500 V Mica
C411	820 pf P. A. Load
C501	.01 +80 -20% 500 V Disc
C502	.01 +80 -20% 500 V Disc
C503	30 pf 10% 1 KV Disc
C602	.01 +80 - 20% 500 V Disc
C603	220 10% Disc
C604	430 pf 5% SM
C701	1 mfd 50 V
C702	50 pf 5% Disc
C703	.01 +80 -20% 500 V Disc
C705	.01 +80 -20% 500 V Disc
C801	.01 +80 -20% 500 V Disc
C802	.01 +80 -20% 500 V Disc
C803	50 pf 5% Disc
C804	50 pf 5% Disc
C805	.01 +80 -20% 500 V Disc
C901	220 pf 20% Disc
C902	.002 20% 1KV Disc
C903	150 pf 10% Disc
C904	2 mfd 450 V Electrolytic
C905	.001 20% Disc
C906	500 pf 20% Disc
C907	.001 20% Disc
C1001	.05 10% 200 V Mylar
C1002	.05 10% 200 V Mylar
C1003	.001 20% Disc
C1004	.01 +80 -20% 500 V Disc
C1101	.001 20% Disc
C1102	5 mfd 450 V
C1201	60 pf Trimmer
C1202	150 pf 10% Disc
C1203	50 pf 5% Disc
C1301	.01 +80 -20% 500 V Disc
C1302	.01 +80 -20% 500 V Disc
C1303	.01 +80 -20% 500 V Disc
C1304	220 pf 10% Disc
C1305	.002 20% 1KV Disc
C1306	.01 +80 -20% 500 V Disc
C1307	.01 +80 -20% 500V Disc
C1401	.01 +80 -20% 500 V Disc
C1402	.1 10% 400 V Mylar
C1404	.01 +80 -20% 500 V Disc
C1405	100 pf 10% Disc
C1406	.1 mfd, 400V
C1407	.01 +80 -20% 500 V Disc
C1501	15 pf 5% Disc
C1503	8 pf Piston Trimmer
C1504	20 pf 5% Disc
C1505	8 pf Piston Trimmer
C1506	270 pf N2200 10% Disc
C1507	270 pf N2200 10% Disc
C1508	.01 +80 -20% 500 V Disc
C2A	50 pf Driver Tuning
C2B	50 pf Driver Tuning
C1601	10 pf Selected
C1602	5 pf Trimmer
C1603	70 pf Selected
C1604	10 pf Trimmer
C1605	44 pf Selected
C1606	15 pf Trimmer
C1607	127 pf Selected
C1608	15 pf Trimmer
C1609	35 pf Selected
C1610	15 pf Trimmer
C1611	2 pf Dial Set Trimmer
C1612	20 pf Main Tuning
C1613	22 pf N 220
C1614	.01 +80 -20% 500 V Disc
C1615	270 pf SM
C1616	430 pf SM
C1617	27 pf SM
C1618	.01 +80 -20% 500 V Disc
C1619	.01 +80 -20% 500 V Disc
C1620	.002 20% 1KV Disc
C1701	100 mfd 35V
C1702	250 mfd 25V
C1703	.0047 1KV
C1704	.0047 1KV
C1705	100 mfd 35V
C1707	40 mfd 350 V Electrolytic
C1708	40 mfd 350 V Electrolytic
C1709	80 mfd 150 V Electrolytic
C1710A	40 mfd 450 V Electrolytic
C1710B	40 mfd 450 V Electrolytic
C1711	80 mfd 150 V Electrolytic
C1712	80 mfd 150 V Electrolytic
C1713	5 mfd 450 V Electrolytic
C1714	.01 +80 -20% 500 V Disc

COILS

L101	15 MTR VFO Amp.
L102	10 MTR VFO Amp.
L103	VFO Amp.
L104	10 MTR VFO Amp.
L201	80 MTR Mixer
L202	40 MTR Mixer
L203	20 MTR Mixer
L204	15 MTR Mixer
L205	10 MTR Mixer
L301	80 MTR Driver
L302	40 MTR Driver
L303	20 MTR Driver
L304	15 MTR Driver
L305	10 MTR Driver
L306	82 μ
L401	82 μ
L402	55 μ
L403	Pi-Network
L404	30 μ
L701	5500 Kc I. F.
L801	5500 Kc I. F.
L1501	200 μ
L1601	VFO Coil
L1602	200 μ
L1603	200μ
L1604	200 μ
L1701	17 μ
L1702	200 μ

TRANSFORMERS

T1101	A. F. Output Trans.
T1301	5500 Kc Bal. Mod. Trans.
T1701	DC Feed Back Trans.
T1702	Power Trans.
Z401	Parasitic Suppressor

RELAYS

K1	3 PDT Relay, 12 VDC Coil

CRYSTALS

Y1201	100 Kc Crystal Calibrator
Y1501	5500 Kc Carrier Oscillator
Y1502	5503. 3 Kc Carrier Oscil.

TUBES

V1	12 AU6 VFO Amplifier
V2	12 BE 6 Trans. Mixer
V3	6GK6 Driver
V4	6LQ6 Power Amp.
V5	6BZ6 Rec. RF Amp.
V6	12BE6 Rec. Mixer
V7	12BA6 First I. F. Amp.
V8	12BA6 Second I. F. Amp.
V9	12AX7 Prod. Det. /Rec. A. F.
V10	6AV6 AGC Amp.
V11	6AQ6 A. F. Output
V12	12BA6 100 Kc Cal.
V13	6JH8 Bal. Mod.
V14	12AX7 Mic. Amp.

SWITCHES

S1-A, B, C, D, E	Band Switch
S2	Power On & Off (part of RF Gain)
S3	Cal. Rec. Tune/CW
S4	P. A. Cathode/S-Meter
S5	Sideband Selector

ACCESSORIES

The following accessories are designed for use with the Model 270 Transceiver.

MODEL 1200-W LINEAR AMPLIFIER
MODEL 508 FREQUENCY CONTROL UNIT
MODEL 510 CRYSTAL CONTROLLED EXTERNAL OSCILLATOR
SWAN HYBRID PHONE PATCH
MODEL VX-2 PLUG-IN VOX UNIT

MODEL 1200-W LINEAR AMPLIFIER

Specifically designed as a matching linear for the Model 270 transceiver.

POWER RATING:

1200 Watts PEP Input in SSB Mode.
800 Watts DC Input on CW.

5 Frequency ranges:

(1) 3,000 - 4,500 kc
(2) 6,000 - 9,000 kc
(3) 11,000 - 16,000 kc
(4) 16,000 - 23,000 kc
(5) 23,000 - 35,000 kc

Uses four 6LQ6 tubes, Grounded Grid, Super Cathode-Drive Circuit.

Drive Requirement:

100 - 125 watts

METER:

Reads relative output and cathode current.

Includes Transmit-Receive Relay Control for simple operation with a Transceiver.

Wide range Pi Output Circuit matches 52 or 75 ohm coax cable or variety of other load impedances.

DIMENSIONS:

13" wide x 5 3/4" high x 10 3/4" deep.

WEIGHT:

23 pounds.

POWER SUPPLY

Computer grade electrolytic capacitors, 55 mfd. filtering at 1200 VDC rating.

Silicon Rectifiers.

AC Input: 117 volts, 50-60 cycles, 400 watts average input with voice modulation.

230 volt, 50-60 cycle model available on special order.

SWAN MODEL 508
FREQUENCY CONTROL UNIT

The Model 508 Frequency Control Unit is designed to serve as an external VFO to be used with the Swan 500C and Swan 270 Transceivers. It may also be used with the Model 350C when the accessory socket is installed on back of the transceiver after the jumper plug has been removed.

OPERATION

The position of the VFO selector switch on the front panel of the Model 508 will determine split-frequency operation, or transceiver operation on the 500C or 270 VFO or the Model 508 VFO. Rotating the Selector Switch to "XCV 500C" will permit transceive operation with the frequency controlled by the internal VFO of the Model 500C, or 270.

The "TRANS 500C/REC 508" position will select frequency operation. When in this position the frequency of the transmitted signal will be controlled by the internal VFO of the 500C or 270. The frequency of the signal being received will be determined by the Model 508 VFO. When rotating the Selector Switch to "XCV 508" the unit will be in transceive operation with the frequency determined by the setting of the VFO dial of the Model 508 VFO.

DIAL CALIBRATION

The dial of the Model 508 is basically calibrated in 5KC increments on each range. The 80-meter band is calibrated for direct Read-out on the dial. Calibration for all other ranges is read on the green portion of the dial. This dial is calibrated 0-500 and the reading of this scale would be additive to the megacycle range as selected by the VFO Bandswitch. For example: If the bandswitch is set for 7.0 megacycles, and the VFO dial is set for 250 on the green scale, the frequency is 7250 KC. When the bandswitch is rotated to 21 megacycles, VFO dial set on 350, the operating frequency would be 21350 KC, etc. The smaller white dial is a reference scale and is calibrated in approximately 1 KC increments.

VFO ALIGNMENT

A trimmer condenser is mounted on each of the VFO coils. Dial tracking has been set by pruning the coil, and will not ordinarily require further adjustment. When dial calibration changes beyond the adjusting range of the front panel "dial set" control, calibration may be restored by carefully adjusting the trimmer for that range. The VFO coils and trimmers are accessible by removing the bottom cover of the unit.

DIAL SET

A dial-set has been provided so that dial adjustment can be made at any 100 kc point of the dial. With calibrator on, set the dial to any 100 kc point closest to the frequency you wish to work. Now adjust dial set control to zero-beat the VFO with the 100 kc Calibrator. This provides greater accuracy of dial readout.

POSITION X

The "X" position is provided for possible in stallation of an additional tuning range.

WWV RECEPTION

To receive WWV simply tune up the transceiver in the 20 meter band. Switch the Model 508 VFO to the 3.5 MC range and tune to 4.0 MC. You will then receive the 15.0 MC WWV station. This is accomplished because the 508 oscillating frequency, 9.5 MC, is mixed with the transceiver I. F. frequency, 5.5 MC, resulting in 15.0 MC.

510 CRYSTAL CONTROLLED EXTERNAL OSCILLATOR

For MARS operation, Net and other fixed-channel operations.

The Model 510X crystal oscillator has been designed for crystal control operation on NET and MARS frequencies and may be plugged directly into the accessory socket on back of the Swan 270 by removing the jumper plug. Plugging the Model 510X directly into the 270 automatically removes the inboard VFO from the circuit.

The Model 510X oscillator unit provides for added versatility with Swan transceivers by crystal controlling the operating frequency. Not only does this permit fixed frequency "net" operation in the 80, 40 and 20 meter amateur bands, but the 510X also permits operation outside the amateur bands for MARS, commercial, and other services.

Operation on some MARS frequencies with the Model 270 will require adjustment of the driver and final stages. The higher bands have sufficient band spread to cover most of the MARS frequencies. Frequencies selected below the 80 meter band such as 3. 0 MC to 3. 5 MC or above the 80 meter band such as 4. 0 MC to 4. 5 MC will require realignment of the transceiver.

See chart below for necessary adjustments and frequency range of each band. These ranges can be adjusted either up or down quite easily in the field or at the factory, if necessary.

NOTE

Depending on what Mars frequency you have selected, between 3. 0 MC to 3. 5 MC or 4. 0 MC to 4. 5 MC, realignment of the transceiver may take away a portion of the 80-meter band.

BAND	DRIVER FREQ. RANGE	ALIGNMENT	P. A. PLATE Freq. Range and adjustment
80 Mtr. Production	3. 5 MC - 4. 2 MC without modification		3. 5MC - 4. 4 MC
80 Mtr. low freq. alternate adjustment	3. 0 MC - 3. 5 MC	*Adjust L201, L301 to lowest selected MARS freq. with DRIVER at 9 o'clock	Add 100pf 6KV in parallel with C409 to cover 3. 0MC-3. 5MC.
80 Mtr. high freq. alternate adjustment	4. 0 MC - 4. 5 MC	*Adjust L201, L301 to highest selected MARS frequency with DRIVER at 3 o'clock	Delete C409 to cover 4. 0MC - 4. 5MC
40 Mtr. Production	6. 7 MC - 8. 0 MC without modification		6. 7MC - 11. 0MC
20 Mtr. Production	14. 0 MC - 14. 9 MC without modification		11. 3MC-19. 0MC
15 Mtr. Production	21. 0 MC - 22. 5 MC without modification		17. 5MC-35MC
10 Mtr. Production	28. 0 MC - 30. 0 MC without modification		17. 5 - 35MC

*Peak for maximum cathode current

WARRANTY POLICY

SWAN ELECTRONICS CORPORATION WARRANTS THIS EQUIPMENT AGAINST DEFECTS IN MATERIAL OR WORKMANSHIP, EXCEPT FOR TUBES, TRANSISTORS, AND DIODES, UNDER NORMAL SERVICE FOR A PERIOD OF ONE YEAR FROM DATE OF ORIGINAL PURCHASE. THE WARRANTY IS VALID ONLY IF THE ENCLOSED CARD IS PROPERLY FILLED IN AND MAILED TO THE FACTORY WITHIN TEN DAYS OF DATE OF PURCHASE. DO NOT SHIP TO THE FACTORY WITHOUT PRIOR AUTHORIZATION. THIS WARRANTY IS LIMITED TO REPAIRING OR REPLACING ONLY THE DEFECTIVE PARTS, AND IS NOT VALID IF THE EQUIPMENT HAS BEEN TAMPERED WITH, MISUSED OR DAMAGED.