



RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.

126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

Bulletin: GQS-1.

File: Receivers AC.

Date: 21-10-52.

1.

MODEL—GQS

GRAMO-RADIO COMBINATION

An Automatic 3 Speed Record Changer (78, 45, 33 $\frac{1}{3}$ r.p.m.) and a 5 Valve Superheterodyne Four Band Receiver incorporating Bandspreading of the 19 Metre, 25 Metre and 31 Metre Shortwave Bands.

FOR OPERATION FROM:—

200-250 Volts 50 Cycle AC. Supply Mains.

Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

POWER CONSUMPTION:—

Radio Operation:-55 Watts.-approx.

Gramo Operation:-75 Watts.-approx.

TUNING RANGES:—

Broadcast Band, 535-1610 Kc/s.

19 Metre Band, 14.9-15.5 Mc/s. (Bandspread)

25 Metre Band, 11.6-12.1 Mc/s. (Bandspread)

31 Metre Band, 9.4-9.8 Mc/s. (Bandspread)

RECEIVER COVERAGE:—

560.7-186.3 Metres.

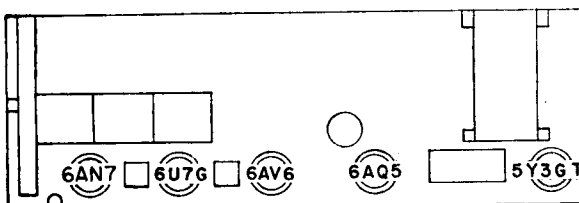
20.13-19.29 Metres (approx.)

25.86-24.79 Metres (approx.)

31.91-30.61 Metres (approx.)

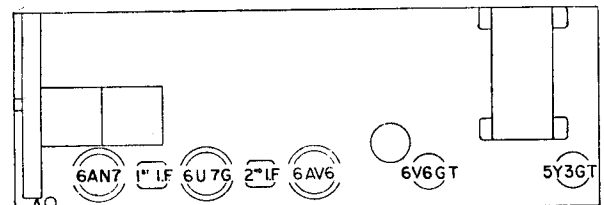
THIS BULLETIN CONTAINS:—

1. Alignment Instructions.
2. Circuit Diagram.
3. Component Parts List.
4. Connections for IF. and RF. Transformers.
5. Dial Drive Cording Diagram.
6. Valve Placement Diagram.
7. Instructions for Changing Mains Input Voltage Tap.
8. Instructions for Removing Chassis from Cabinet.



AER VALVE PLACEMENT DIAGRAM

938/279



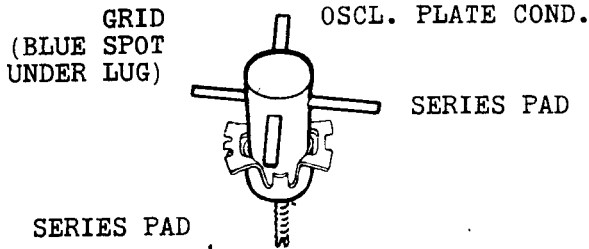
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VALVE PLACEMENT DIAGRAM

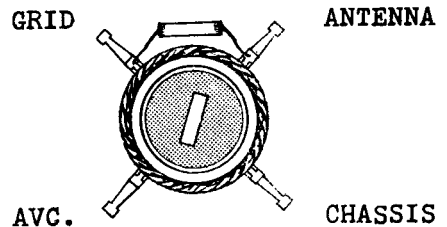
Dial Reading Clamp
 Dial Pointer Assembly
 Dial Drum
 Speaker Lead Clip Term. Strip Assembly
 Dial Lamp Socket Assembly (3)
 3-pin Socket Assembly
 Pulley - $\frac{3}{4}$ " dia. wood
 Pulley - $\frac{5}{8}$ " dia. wood (2)
 A.C. Lead Junction Block - Moulded type
 Tuning Spindle Assy.
 Input Trans. insulating strip
 Input Trans. bakelite mount strip

15/760-1
 A102/760-1
 A104/698
 A105/698
 A105/661
 A102/768
 17/87
 13/613
 297/250
 A116/698
 348/64
 347/64

OSCL. COIL B/C.



ANTENNA TRANS. B/C. (IRON CORED)



19, 25 and 31 METRE ANT. TRANS.

19, 25 and 31 METRE OSCL. COIL

Lead from top lug (iron core end):— GRID.

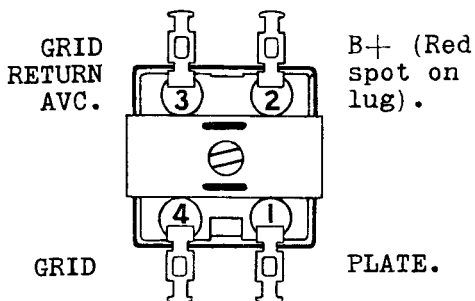
Lead from top lug (iron core end):— GRID.

Lead from bottom lug (mounting end):— CHASSIS - EARTH.

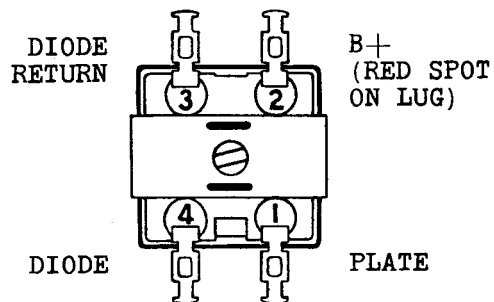
Lead from bottom lug (mounting end):— OSCL. PLATE COND.

31 Metre spreadband coil, RED spot on iron core end of former.
 25 Metre Spreadband coil, WHITE spot on iron core end of former.
 19 Metre spreadband coil, BLUE spot on iron core end of former.

1st IF. TRANS.



2nd IF. TRANS.



ALIGNMENT INSTRUCTIONS

ALIGNMENT CONDITIONS

Load Impedance: 5,000 ohms.
 Output Level: 50 Milliwatts.
 Vol. Control: Max. Vol. fully clockwise.
 Tone Control: Treble position.
 Intermed. Freq.: 455 Kc/s.
 Supply Mains: 230 volts 50 cycle AC. input to trans. 221-250V. primary tap.

EQUIPMENT

Signal Generator.
 Output Meter.
 Mica Capacitor: 0.01 MF. (For I.F.T.. alignment).
 Dummy Antenna: 200MMF. Mica capacitor.
 Dummy Antenna: 400 ohm. non-inductive resistor.
 Alignment Tools: Type M195 and PM581.

The receiver chassis has to be removed from the cabinet to align the trimmers of the RF. and IF. circuits. Remove the four push-on type control knobs from front of cabinet and wave change switch knob near record changer by pulling the knobs straight off their spindles.

Remove the screws holding the cabinet back to the cabinet. Disconnect the receiver chassis AC leads from the AC junction block and the cabinet indicator lamp lead plug from its socket. Pull the pick-up leads out of the sockets on rear of receiver chassis. On the rear edge of the chassis, at each end, a screw through a metal strip fastens the chassis to the cabinet; remove these two screws then slide the chassis out of the cabinet.

Operation No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To control grid of 6U7G valve.	455 Kc/s.	0.01MF. Mica capacitor in series with generator.	Turn wave change switch to B/cast band. Leave grid cap on valve. Peak 2nd IF. trans. pri. and sec. for max. output.
2.	To control grid of 6AN7 valve (Pin No. 2)	455 Kc/s.	0.01MF. Mica capacitor in series with generator.	Gang plates fully out of mesh. Leave grid lead attached to valve socket. Peak 1st IF. trans. pri. and sec. for max. output.
3.				Repeat operations No. 1 and 2.
4.	Set centre of dial pointer on centre of end of travel near 540 Kc/s.	Condenser gang plates fully meshed.		
5.	To antenna terminal.	600 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn gang and dial pointer until centre of pointer aligns with centre of 600 Kc/s. dial mark. Leave the gang and dial pointer set in this position and peak the B/cast oscl. coil. ind. trim. (iron core) for max. output.
6.	To antenna terminal.	1400 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn gang and dial pointer until centre of pointer aligns with 1400 Kc/s spot on dial reading. Adjust B/cast oscl. coil trim. condenser for logging and peak B/cast ant. trans. trim. condenser for max. output.

58.	IF. Transformer.	PT869
59.	IF. Transformer.	PT869
60.	Antenna Trans. B/cast. (iron cored).	PT905
61.	Oscl. Coil B/cast	PT860
62.	19 Metre Bandsread Coil (blue spot on coil).	PT914
63.	25 Metre Bandsread Coil (White spot on coil).	PT913
64.	31 Metre Bandsread Coil (Red spot on coil).	PT912
65.	Speaker Input Trans. 5,000-2 ohms Imped. KBG81	PT799
66.	Choke, 14H, 60 Ma.	PT806
67.	Power Transformer, 200-250 Volt 50 cycle mains.	PT807
	Power Transformer, 200-260 Volt 40 cycle mains.	PT809
68.	Wave change switch.	S169
69.	Dial Lamp, 6-8V. 0.25A. Min. Screw Base, T 3 $\frac{1}{4}$ Bulb.	PM678
70.	12" Permug. Speaker, type 12M magnet.	K172
71.	8MMFD (Part of antenna coil circuit No. 55).	PC832
72.	Change-over switch gramo-radio.	S128
73.	Record Changer: Garrard 3-speed type RC72A (includes plug-in type turnover head) 200-250V. 50 cycle operation.	M283
	Replacement plug-in type turnover head includes needles.	229/524
	40 cycle drive bush.	228/524
73.	Record Changer: Collaro 3-speed type 3RC521 (includes twin plug-in type pick-up heads).	M287
	Replacement plug-in pick-up head (green spot) for 78 R.P.M. recordings.	196/524
	Replacement plug-in pick-up head (red spot) for 33-1/3 and 45 R.P.M. recordings.	197/524
	40 cycle drive bush.	213/524
	Cabinet Assy. for Garrard RC72A record changer:	
	Honey Blonde	233/221-1
	Mahogany	223/221-2
	Cabinet Assy. for Collaro 3RC521 record changer:	
	Honey Blonde	233/221-5
	Mahogany	233/221-4
	Walnut	233/221-3
	Control Knobs (4) for Mahogany cabinet only:	
	Tone	17/779-4
	Gramo-radio	17/779-5
	Volume	17/779-6
	Tuning	17/779-7
	Control Knobs (4):	
	Tone	17/779
	Gramo-radio	17/779-1
	Volume	17/779-2
	Tuning	17/779-3
	Cabinet Speaker Grille	22/779
	Control Knob Spring Clips	22/755
	Control Knob - Wave Change	A104/779
	Screw - speaker mount	46/560-10
	Screw - chassis to cabinet mount	16/560-4
	Cabinet Light Bezel	292/250
	Light Bezel Lamp Socket	A128/30C
	Valve Shield (6AV6)	38/635
	Valve Shield (6U7G)	PM217
	8-pin Socket	PM532
	7-pin Socket	A104/58
	9-pin Socket	279/250
	I.F. Transformer Mount Clip	7/760
	Coil Mount Clip	6/622
	Indicator Button - red	27/688-1
	" " - clear	27/688-3
	" " - blue	27/688-4
	" " - green	27/688-2
	Dial Reading	6/779

Circuit No.	Description.	Tol. ±	Rating	Part No.
1.	.25 MFD Paper Condenser.	20%	400V.DCW.	PC128
2.	.1 MFD Paper Condenser.	20%	400V.DCW.	PC103
3.	.1 MFD Paper Condenser.	20%	200V.DCW.	PC218
4.	.05 MFD Paper Condenser.	20%	200V.DCW.	PC102
5.	.05 MFD Paper Condenser.	20%	200V.DCW.	PC102
6.	.05 MFD Paper Condenser.	20%	200V.DCW.	PC102
7.	.02 MFD Paper Condenser.	20%	400V.DCW.	PC111
8.	.02 MFD Paper Condenser.	20%	400V.DCW.	PC111
9.	.02 MFD Paper Condenser.	20%	400V.DCW.	PC111
10.	.03 MFD Paper Condenser.	20%	200V.DCW.	PC303
11.	.002 MFD Paper Condenser.	20%	600V.DCW.	PC112
12.	.001 MFD Mica Condenser.	10%	1000VT.	PC108
13.	.001 MFD Mica Condenser.	10%	1000VT.	PC108
14.	.00046 MFD Mica Condenser.	2½%	1000VT.	PC728
15.	.00025 MFD Mica Condenser.	10%	1000VT.	PC126
16.	.0001 MFD Mica Condenser.	10%	1000VT.	PC110
17.	.0001 MFD Mica Condenser.	10%	1000VT.	PC110
18.	.0001 MFD Mica Condenser.	10%	1000VT.	PC571
19.	85 MMFD Silvered Mica Condenser.	2½%	1000VT.	PC809
20.	75 MMFD Silvered Mica Condenser.	2½%	1000VT.	PC871
21.	70 MMFD Silvered Mica Condenser.	2½%	1000VT.	PC799
22.	50 MMFD Silvered Mica Condenser.	2½%	1000VT.	PC801
23.	30 MMFD Silvered Mica Condenser.	1MMFD	1000VT.	PC810
24.	15 MMFD Silvered Mica Condenser.	1MMFD	1000VT.	PC811
25.	6MMFD Ceramicon Condenser.	+1MMFD-0	1000VT.	PC831
26.	4MMFD Ceramicon Condenser.	+1MMFD-0	500V.DCW.	PC830
27.	4 MMFD Ceramicon Condenser.	+1MMFD-0	500V.DCW.	PC830
28.	2 Gang Varb. Condenser.			PC636
29.	0-30 MMFD Trimmer Cond. Wire Wound.			PC663
30.	1.5-18 MFD Trimmer Condenser.			PC250
31.	16 MFD E'lytic. Cond. Tol.± 20% 525PV. }			
32.	16 MFD E'lytic. Cond. Tol.± 20% 525PV. }			
33.	25 MFD E'lytic. Cond. Tol.± 20% 40PV. }			
34.	10 Megohm Carbon Resistor.	10%	1 W.	PR236
35.	3 Megohm Carbon Resistor.	10%	½ W.	PR282
36.	1.75 Megohm Carbon Resistor.	10%	½ W.	PR248
37.	.5 Megohm Carbon Resistor.	10%	½ W.	PR245
38.	.5 Megohm Carbon Resistor.	10%	½ W.	PR245
39.	.25 Megohm Carbon Resistor.	10%	1 W.	PR496
40.	100,000 ohm Carbon Resistor.	10%	1 W.	PR165
41.	.25 Megohm Carbon Resistor.	10%	½ W.	PR249
43.	50,000 ohm Carbon Resistor.	10%	1 W.	PR415
43.	50,000 ohm Carbon esistor.	10%	½ W.	PR160
44.	50,000 ohm Carbon Resistor.	10%	½ W.	PR160
45.	50,000 ohm Carbon Resistor.	10%	½ W.	PR160
46.	30,000 ohm Carbon Resistor.	10%	½ W.	PR151
47.	20,000 ohm Carbon Resistor.	10%	1 W.	PR171
48.	5,000 ohm Carbon Resistor.	10%	½ W.	PR250
49.	2,000 ohm Carbon Resistor.	10%	½ W.	PR253
50.	2,000 ohm Carbon Resistor.	10%	½ W.	PR253
51.	200 ohm Carbon Resistor.	10%	½ W.	PR176
52.	300 ohm Carbon Resistor.	10%	½ W.	PR258
53.	300 ohm Wire Wound Resistor.	10%	1 W.	PR122
54.	50 ohm Wire Wound Resistor.	10%	½ W.	PR280
55.	25 ohm Wire Wound Resistor.	10%	½ W.	PR281
56.	100,000 ohm Potentiometer.	20%		PR699
57.	500,000 ohm Pot. tapped at 40,000 ohms and with DP.ST. switch attached.	20%		PR662

Combination type.

7. To antenna terminal. 600 Kc/s 200MMF. Mica capacitor in series with generator. Turn gang and dial pointer until centre of pointer aligns with centre of 600 Kc/s. dial spot. Leave the gang and dial pointer set in this position and re-peak the B/cast oscl. coil. ind. trim. (iron core) for max. output, then peak the B/cast antenna trans. ind. trim. (iron core) for max. output. Do not rock the cond. gang to and fro through the signal or move the dial pointer off 600 Kc/s. dial mark, until after the ind. trim. (iron core) of both of these transformers has been peaked for max. output.
8. To antenna terminal. 1400 Kc/s. 200MMF. Mica capacitor in series with generator. Turn gang and dial pointer to 1400 Kc/s. Adjust B/cast oscl. coil. trim. cond. for logging and peak B/cast ant. trans. trim. cond. for max. output.
9. Turn wave change switch to 31 metre band (this band must be aligned before the 25 and 19 metre bands).
10. To antenna terminal. 9.6 Mc/s. 400 ohm non-inductive resistor. Turn dial pointer and gang to 9.6 Mc/s. Adjust 31 metre band oscl. coil. ind. trim. (iron core) for logging and peak 31 metre ant. trans. trim. (iron core) for max. output. Rock cond. gang to and fro through the signal while adjusting.
11. To antenna terminal. 11.8 Mc/s. 400 ohm non-inductive resistor. Turn wave change switch to 25 metre band. Turn dial pointer and gang to 11.8 Mc/s. Adjust 25 metre band oscl. coil. ind. trim. (iron core) for logging and peak 25 metre ant. trans. trim. (iron core) for max. output. Rock cond. gang to and fro through the signal while adjusting.
12. To antenna terminal. 15.2 Mc/s. 400 ohm non-inductive resistor. Turn wave change switch to 19 metre band. Turn dial pointer and gang to 15.2 Mc/s. Adjust 19 metre band oscl. coil. ind. trim. (iron core) for logging and peak 19 metre ant. trans. trim. (iron core) for max. output. Rock cond. gang to and fro through the signal while adjusting.

4.

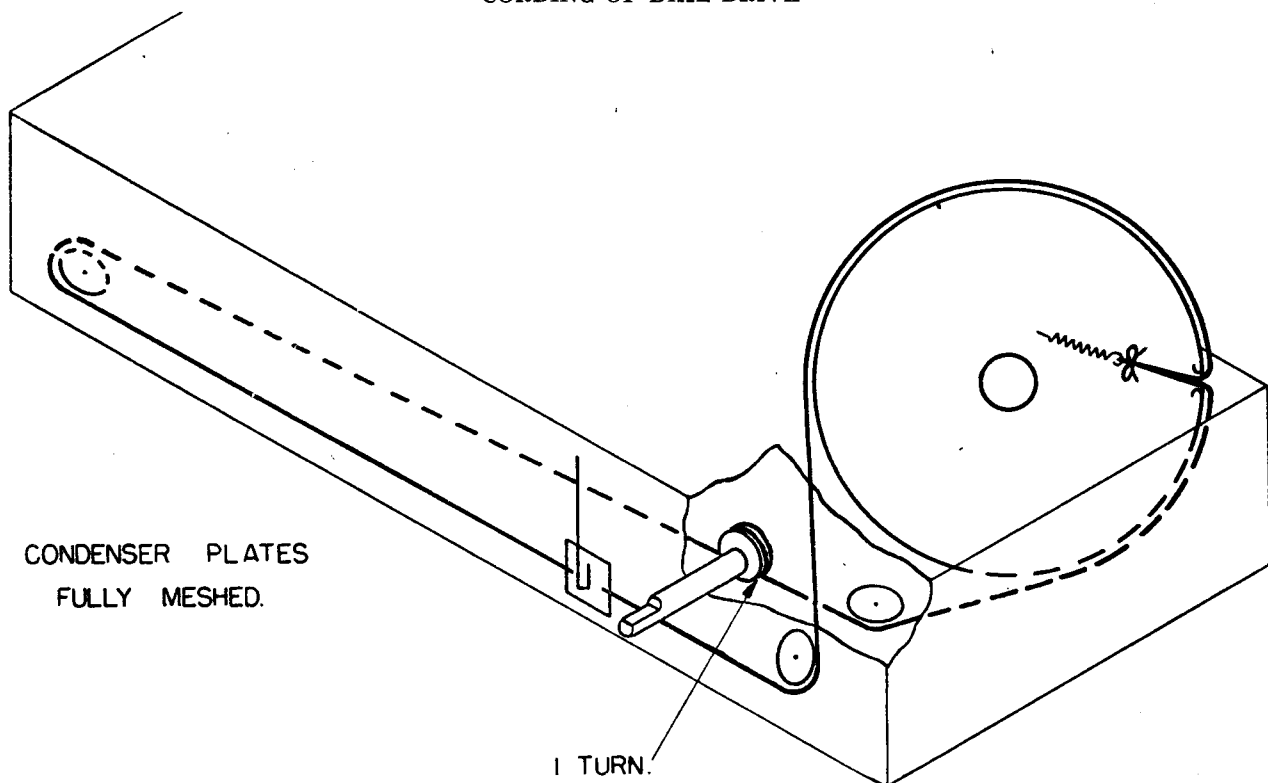
13. Check the logging of the shortwave bands on some well-known shortwave stations. If a crystal calibrator is available, check the logging at each 100 Kc/s. mark on the dial.

31 Metre spreadband coil, RED spot on iron core end of former.

25 Metre spreadband coil, WHITE spot on iron core end of former.

19 Metre spreadband coil, BLUE spot on iron core end of former.

CORDING OF DIAL DRIVE



Length of cord required is 5 ft. 6 ins. which includes about 6 ins. to spare for tying to the tension spring.

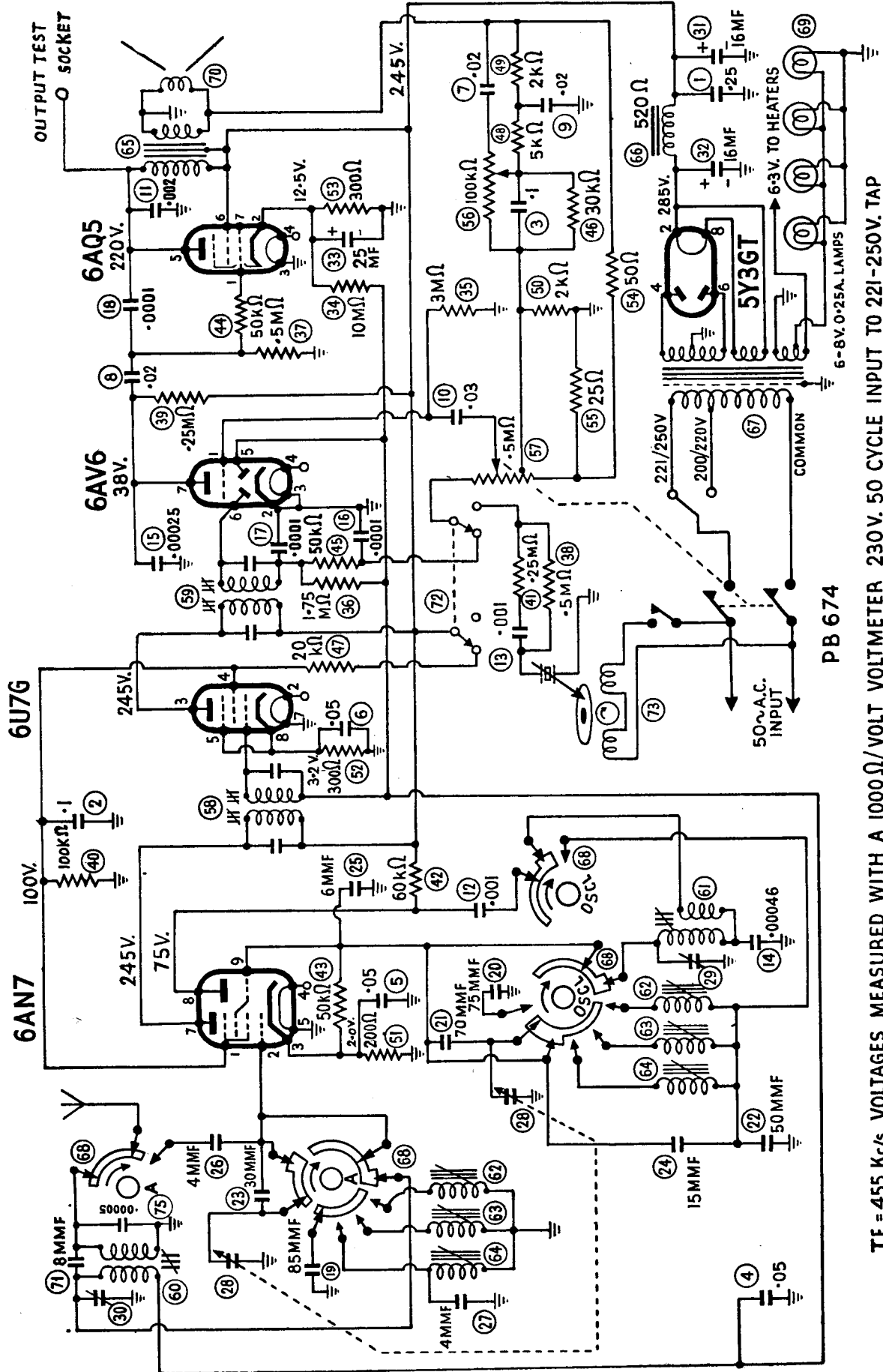
Cord Part No. 34/754.

Tension Spring Part No. 21/698.

INSTRUCTIONS FOR CHANGING MAINS VOLTAGE INPUT TAPS

MAINS VOLTAGE.—The mains adjustment tap should be adjusted as follows: For any AC. voltage between 200 V. and 220 V., on the 200-220 V. tap, and for any AC. voltage between 221 V. and 250 V., on the 221-250 V. tap.

MAINS VOLTAGE ADJUSTMENT.—For 200-220 Volt Operation: The receiver chassis has to be removed from the cabinet for this adjustment. **DISCONNECT THE RECEIVER MAINS LEAD PLUG FROM THE POWER POINT SOCKET.** Remove the four push-on type control knobs from front of cabinet and wave change switch knob near record changer by pulling the knobs straight off the spindles. Remove the screws holding the cabinet back to the cabinet. Disconnect the receiver chassis AC. leads from the AC. junction block and the cabinet indicator lamp lead plug from its socket. Pull the pick-up leads out of the sockets on rear of receiver chassis. On the rear edge of the chassis, at each end, a screw through a metal strip fastens the chassis to the cabinet; remove these two screws then slide the chassis out of the cabinet. Unsolder the mains lead wire from the switch on the volume control which is attached to the 221-250 volt tap and re-solder it to the 200-220 volt tap. Refit the chassis to the cabinet in the exact reverse procedure to removing it.



IF = 455 Kc/s VOLTAGES MEASURED WITH A 1000Ω/VOLT VOLTMETER 230V. 50 CYCLE INPUT TO 221-250V. TAP