



RADIO CORPORATION PTY. LTD. Bulletin: BPJ-1

DIVISION OF ELECTRONIC INDUSTRIES LTD.
126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

File: Receivers AC.

Date: 17.6.58

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TECHNICAL BULLETIN

MANTEL MODEL "BPJ"

5 VALVE SUPERHETERODYNE BROADCAST RECEIVER.

FOR OPERATION FROM:

200-240 Volt 40 or 50 Cycle AC. Mains (Power Transformer T171)
Power trans Primary Tap-red-common
" " " " -green-200 Volt mains.
" " " " -black-230 & 240 Volt mains.

When the receiver is to be operated from a 250 volt 40 or 50 cycle AC. supply mains the transformer primary connections are as for the 240 volt supply mains but a 180 Ohm 10 watt resistor Part No. R166 is to be mounted beneath the chassis and wired in the power trans. common lead (red).

POWER CONSUMPTION: 40 Watts-approx.

TUNING RANGE: 535-1610 Kc/s. - 560.7-186.3 Metres.

THIS BULLETIN CONTAINS:

1. Alignment Instructions.
2. Circuit Diagram.
3. Component Parts List.
4. Connections for Transformers.
5. Dial Drive Cording Diagram.
6. Chassis Serial Number.
7. Instructions for Removing Chassis from Cabinet.
8. Instructions for Changing Mains Voltage Tap.
9. Valve Placement Diagram.
10. Instructions for Replacing Dial Reading.

ALIGNMENT PROCEDURE.EQUIPMENT.ALIGNMENT CONDITIONS.

Signal Generator:		Load Impedance:	7000 ohms
Output Meter:		Output Level:	50 Milliwatts
Mica Capacitor:	0.01MF Mica Capacitor for I.F. trans alignment	Vol. Control:	Max. vol. fully clockwise.
Dummy Antenna:	200 MMF Mica Capacitor	Intermediate Frequency:	455 Kc/s.
Straight Alignment	Tool: type PM581 for b/cast. trim. adjustment	Input Voltage:	230 Volts 50 cycle
Flexible Alignment	Tool; type 48/712 for b/cast. osc. coil core and I.F.T. core adjustment.		AC input to trans. 230-240V. Primary tap.
		Tone Control:	Treble position, fully clockwise.

IF. ALIGNMENT.

<u>Operation No.</u>	<u>Generator Connection</u>	<u>Generator Frequency</u>	<u>Dummy Antenna</u>	<u>Instructions.</u>
1.				Remove receiver chassis from cabinet as detailed in the following pages of this bulletin.
2.	To signal grid of 6BH5 valve (pin No. 2.)	455 Kc/s.	0.01MF Mica capacitor in series with generator	Leave grid wire attached to valve socket. Peak 2nd I.F. trans. pri. and sec. for max. output.
3.	To signal grid of 6BE6 valve (pin No. 7)	455 Kc/s.	0.01MF Mica capacitor in series with generator	Turn tuning control until condenser gang plates are fully out of mesh. Leave grid wire attached to valve socket. Peak 1st I.F. trans. pri. and sec. for max. output.
4.				Repeat operations 2 and 3.

BROADCAST ALIGNMENT.

- Fully mesh the condenser gang plates. Set the centre of the dial pointer to align with the centre of the end of travel mark on the dial reading near 535 Kc/s.
- To AVC connection of rod aerial 600 Kc/s. 200 MMF Mica capacitor in series with generator Turn cond. gang and dial pointer to 600 Kc/s. dial mark. Leave the cond. gang and dial pointer set in this position, peak osc. coil ind. trim (iron core) and the sec. trimmer coil on fer-rite rod aerial for max. output.

Do not rock the cond. gang to and fro through the signal or move the dial pointer off the 600 Kc/s dial mark until after the inductance trimmer and the rod trimmer coil have been peaked for max. output.

3. To AVC connection of rod aerial 1400 Kc/s 200 MMF Mica capacitor in series Turn cond. gang and dial pointer until centre of dial pointer is on 1400 Kc/s. dial mark. Adjust osc. coil trim. cond. and rod aerial trim. condenser for max. output.
4. Repeat operations 5 and 6.
5. Refit receiver chassis to cabinet. Tuning range after alignment 535 - 1610 Kc/s.

Circuit

Circuit No.	Description	Tol \pm	Rating	Part No.
1.	3-55 MMF Ceramic base trimmer condenser			PC899
2.	2 Gang variable condenser			PC636
3.	460 MMF mica condenser	2 $\frac{1}{2}$ %	500V DCW	PC728
4.	5-50 MMF wire wound trimmer condenser			G157
5.	.047 MF paper condenser	20%	200V DCW	E4733
6.	.1 MF paper condenser	20%	400V DCW	F1043
7.	.047 MF paper condenser	20%	200V DCW	E4733
8.	.1 MF paper condenser	20%	400V DCW	F1043
9.	.047 MF paper condenser	20%	200V DCW	E4733
10.	200 MMF silvered mica condenser	10%	500V DCW	PC995
11.	100 MMF silvered mica condenser	10%	500V DCW	PC994
12.	.033 MF paper condenser	20%	200V DCW	E3333
13.				
14.				
15.	200 MMF silvered mica condenser	10%	500V DCW	PC995
16.	.1 MF Paper condenser	20%	200V DCW	E1043
17.	.022 MF paper condenser	20%	400V DCW	F2233
18.	.022 MF paper condenser	20%	400V DCW	F2233
19.	100 MMF mica condenser	10%	500V DCW	PC571
20.	25 MF electrolytic condenser	20%	40VP 25VW	PC318
21.	.022 MF paper condenser	20%	400V DCW	F2233
22.	24 MF electrolytic condenser	20%	525VP 450VW	PC881
23.	24 MF electrolytic condenser	20%	350VP 300VW	PC276
24.	.0022 MF paper condenser	20%	600V DCW	G2223
25.				
26.				
27.	22 Ohm wire wound resistor	10%	$\frac{1}{2}$ W	PR773
28.	22,000 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R2232
29.	11,000 Ohm carbon resistor (consists of two 22,000 Ohm 10% 1W carbon resistors Part No. Z2232 wire in parallel)			
30.	1.8 Megohm carbon resistor	10%	$\frac{1}{2}$ W	R1852

31	330 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R3312
32	470,000 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R4742
33	47,000 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R4732
34	1.2 Megohm carbon element potentiometer	20%		R163
35	22 Ohm wire wound resistor	10%	$\frac{1}{2}$ W	PR773
36	3.3 Megohm carbon resistor	10%	$\frac{1}{2}$ W	R3352
37	2,200 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R2222
38				
39	33,000 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R3332
30	100,000 Ohm carbon element potentiometer			R162
41	220,000 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R2242
42	.47 Megohm carbon resistor	10%	$\frac{1}{2}$ W	R4742
43	160,000 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R1042
44	4,700 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R4722
45	47 Ohm wire wound resistor	10%	$\frac{1}{2}$ W	PR853
46	2,200 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R2222
47	180 Ohm carbon resistor	10%	1W	Z1812
48	4,700 Ohm carbon resistor	10%	1W	Z4722
49	5,600 Ohm carbon resistor	10%	1W	Z5622
50				
51	Aerial loading Coil			PT942
52	Ferrite rod aerial			L338
53	Oscillator coil			PT952
54	I.F. transformer 455 Kc/s.			L284
55	D.P. S.T. mains switch (rotary type)			S232
56	I.F. transformer 455 Kc/s.			L284
57	Power transformer 200-240V 40 or 50 cycle mains			T171
58	Dial lamp -(2)- 6-8V 0.2 amp min. screw base, T3 $\frac{1}{4}$ bulb			M449
59	Speaker input transformer 7000 - 3.5 ohm imped code No. EBG96 or E2			PT964
60	Speaker 5" x 7" permag, type 5X7H			K202

Wire clips (2) I.F.T. mt.	510/250-2	Speed nut(2) on chassis	
Dial Reading	9/850	rear brackets	476/250
Locking Cam - dial reading	511/81	Bracket(2) tuning gang mt.	51/409
Screw - $\frac{5}{8}$ " x No.6 self-tapping		Grommet(2) " " "	64/30A
locking cam.	34/560-20	Bush (4) " " "	93/53-1
Dial Pointer	8/850	Dial lamp socket assy (2)	A105/661
Pulley (2) dial cord	13/613	Shield (2) dial lamp	24/698
Stud (3) pulley	18/87	Dial background and speaker	
Stud - dial cord	18/87-8	mount plate assy.	A105/850
Tuning Spindle Assy.	A102/850	Mount pillar(2) moulded,	
Bush - tuning spindle	3/287-1	rod aerial	278/81
Horseshoe Washer - tuning		Clip (2) rod aerial	453/250
spindle	19/57-1	A.C. mains lead-with	
Pressed Steel Nut (4) control		moulded 3 pin plug	PA609
bush	542/250	Terminal strip assy (2)	
Control Knob assy (4)	A136/81	3 lug	A555/30C
Felt washer (4) knob	456/30C-1	Terminal strip assy - 5	
		lug	A573/30C

Screw (4) $\frac{1}{2}$ " x $\frac{5}{32}$ " Whit fastens chassis to cabinet	16/560-10	Terminal strip Assy - 3 lug	A579/30C
Screw (4) self-tapping $\frac{1}{4}$ " x No.6 fastens dial back- ground to chassis	34/560-12	Terminal strip Assy(2)6 lug	A629/30C
Rubber Foot (2) front mt. screws of cabinet.	618/250	Valve socket - 7 pin	A104/58
Dial cord 60"	34/754	Valve socket(4)9 pin	279/250
Spring-dial cord	21/698	Screw (2) self-tapping $\frac{1}{2}$ " x No.6 fastens rear of cabinet to chassis	35/560-11
		Washer (8) flat steel 11/64" x 9/16"	67/30C
		Dial drum assy.	A102/617

CABINET STYLING.CABINET FRONT(includes grille
and name plate)

COLOUR

BLOSSOM PINK	A107/850-1
CORAL	A107/850-2
CHERRY RED	A107/850-3
GREY	A107/850-6
LIME	A107/850-8
TAN	A107/850-9
LAWN GREEN	A107/850-10
CREAM	A107/850-12
GREEN	A107/850-13
CHARCOAL	A107/850-14

CABINET REAR(includes danger transfer
and valve placement diagram)

A108/850-1
A108/850-2
A108/850-3
A108/850-6
A108/850-8
A108/850-9
A108/850-10
A108/850-12
A108/850-13
A108/850-14

FRONT AND REAR SECTIONS OF CABINET SUPPLIEDAS A PAIR IN A CARTON

(Includes grille, name plate, valve placement diagram and danger transfer)

COLOUR

BLOSSOM PINK	A106/850-1
CORAL	A106/850-2
CHERRY RED	A106/850-3
GREY	A106/850-6
LIME	A106/850-8

COLOUR

TAN	A106/850-9
LAWN GREEN	A106/850-10
CREAM	A106/850-12
GREEN	A106/850-13
CHARCOAL	A106/850-14

TO REMOVE AND REFIT CHASSIS TO CABINET.

1. Remove push-on type knobs from control spindles.
2. Remove two screws fastening rear section of cabinet to chassis.
3. From base of cabinet remove four screws and washers fastening chassis in position.
4. Slide chassis out of cabinet.
5. Refitting of the chassis to the cabinet is the reverse procedure to removing it.

CLEANING AGENT FOR PLASTIC CABINET.

Do not polish the cabinet with an abrasive material or motor car polish, as permanent damage may result to the finish of the toughened polystyrene material of which the cabinet is made.

To restore the cabinet lustre, wipe the cabinet with a soft cloth dampened with water and lightly polish with PEPCO furniture polish.

DIAL GLASS REPLACEMENT.

1. Remove chassis from cabinet (refer chassis removal instructions)
2. Loosen the screw fastening locking cam situated above top centre of dial glass.
3. Rotate locking cam then lift dial glass out of holding lugs at base of dial background.
4. Place a new dial reading on to holding lugs.
5. Hold dial reading so that it corresponds with the groove in locking cam then rotate cam to lock dial firmly in position.
6. Securely tighten screw fastening locking cam in position.

CHASSIS SERIAL NUMBER

The chassis serial number is stamped into the rear of the metal chassis. When viewing the receiver from the rear the serial number is visible through a slot at the right of the cabinet.

INSTRUCTIONS FOR CHANGING MAINS VOLTAGE INPUT TAP FOR
OPERATION FROM 200V SUPPLY MAINS.

1. Switch the receiver OFF and DISCONNECT THE RECEIVER MAINS LEAD PLUG FROM THE POWER POINT SOCKET.
2. Remove push-on type knobs from control spindles.
3. Remove two screws fastening rear section of cabinet to chassis.
4. Remove four screws and washers fastening chassis to the cabinet. Slide chassis out of cabinet.
5. Unsolder the 230/240V. mains tap lead (black) from the terminal lug on the rear of the on/off switch.
6. The 200V. tap lead (green) protrudes from the trans. winding and is terminated inside insulated sleeving.
7. Remove the sleeving then solder the green lead to the terminal lug on the switch from which the 230/240V. black lead was removed.
8. Cover the bare end of 230/240V tap (black) lead with insulated sleeving.
9. Refit chassis to cabinet

FERRITE ROD AERIAL CONNECTIONS

PRIMARY - (fixed winding, 5 turns)

Lead from end turn nearest end of rod - connect to AERIAL LOADING COIL.

Lead from end turn nearest to secondary - connect to CHASSIS

SECONDARY - (fixed winding)

Lead from end turn nearest to fixed primary - connect to GRID

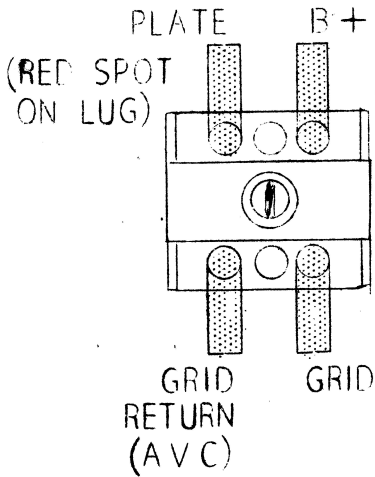
Lead from end turn nearest to sec. trim coil - JOINED TO THE LEAD FROM THE SECONDARY TRIMMER COIL (TURN NEAREST THE FIXED SECONDARY)

SECONDARY TRIMMER COIL - (movable winding)

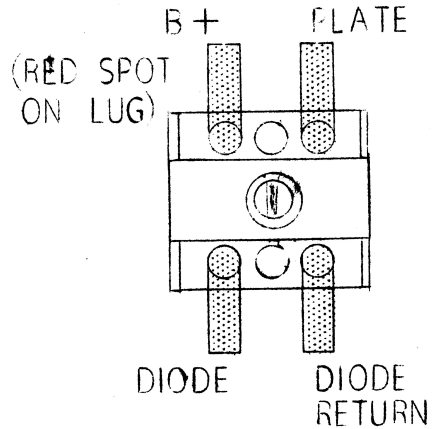
Lead from end turn nearest to fixed secondary - JOINED TO THE LEAD FROM THE FIXED SECONDARY (TURN NEAREST THE MOVABLE TRIM. COIL).

Lead from end turn nearest end of rod - A.V.C.

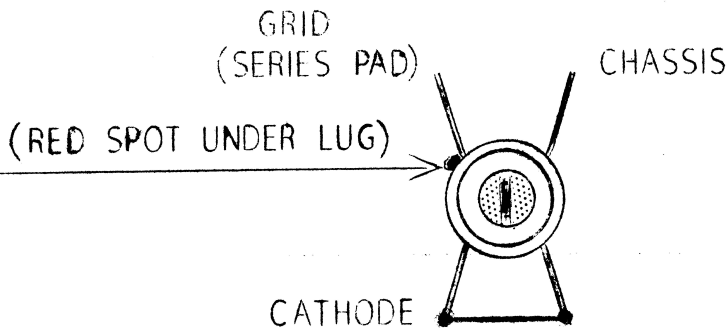
1ST I.F. TRANS.



2ND I.F. TRANS.



OSCILLATOR COIL



LUG VIEW OF COIL

POWER TRANSFORMER (Part No. T171)

PRIMARY:

- Red lead common
- Green lead 200 volt mains tap
- Black lead 230 & 240 volt mains tap.

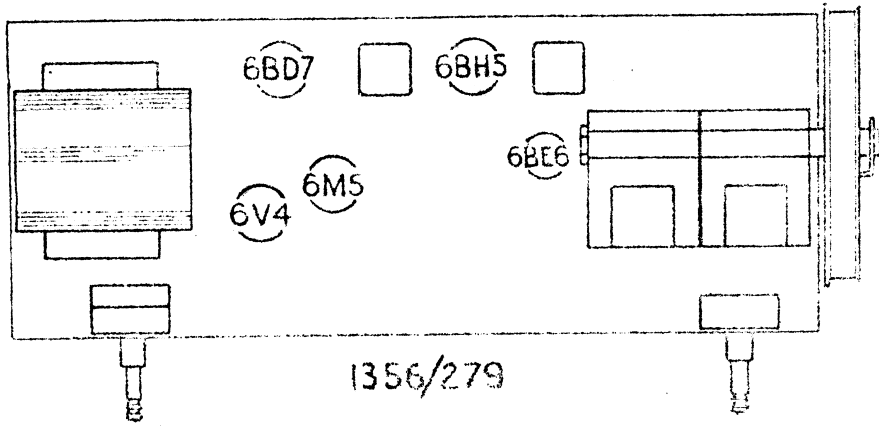
HT. SECONDARY:

- Blue start
- Yellow centre tap
- Blue finish

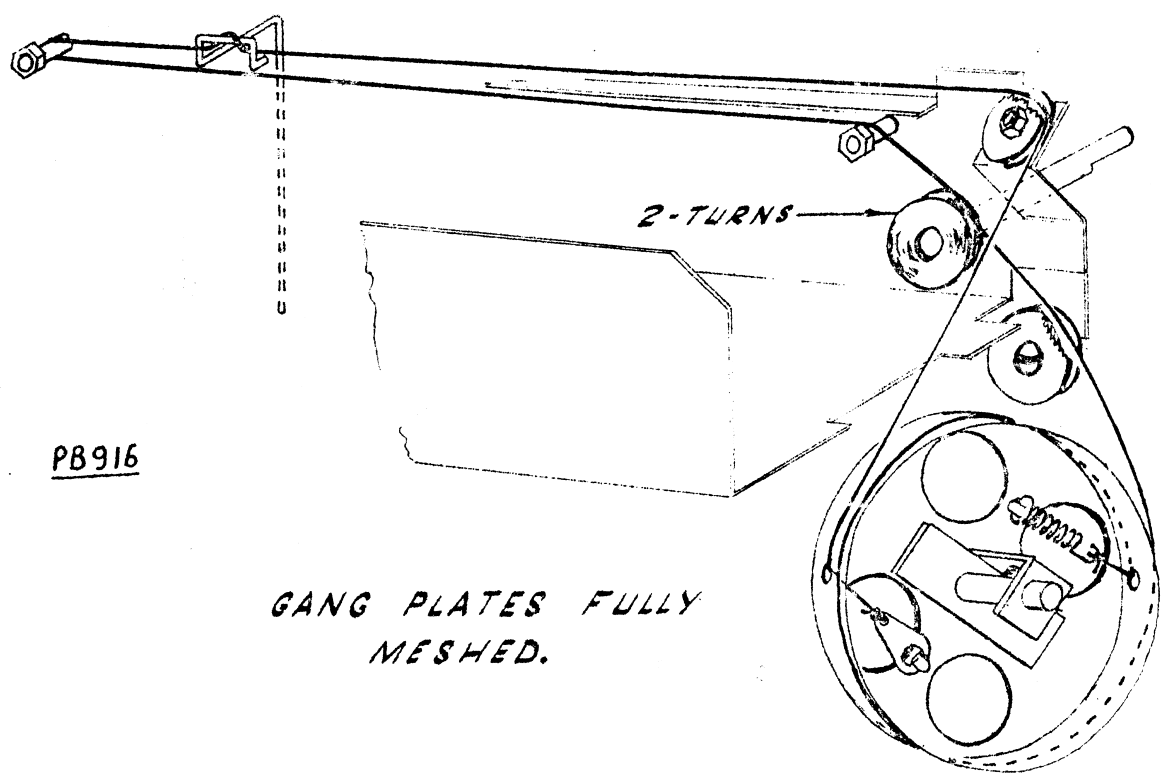
Electro-static shield joined internally to centre tap of H.T. secondary.

LT. SECONDARY

Start and finish in winding wire.

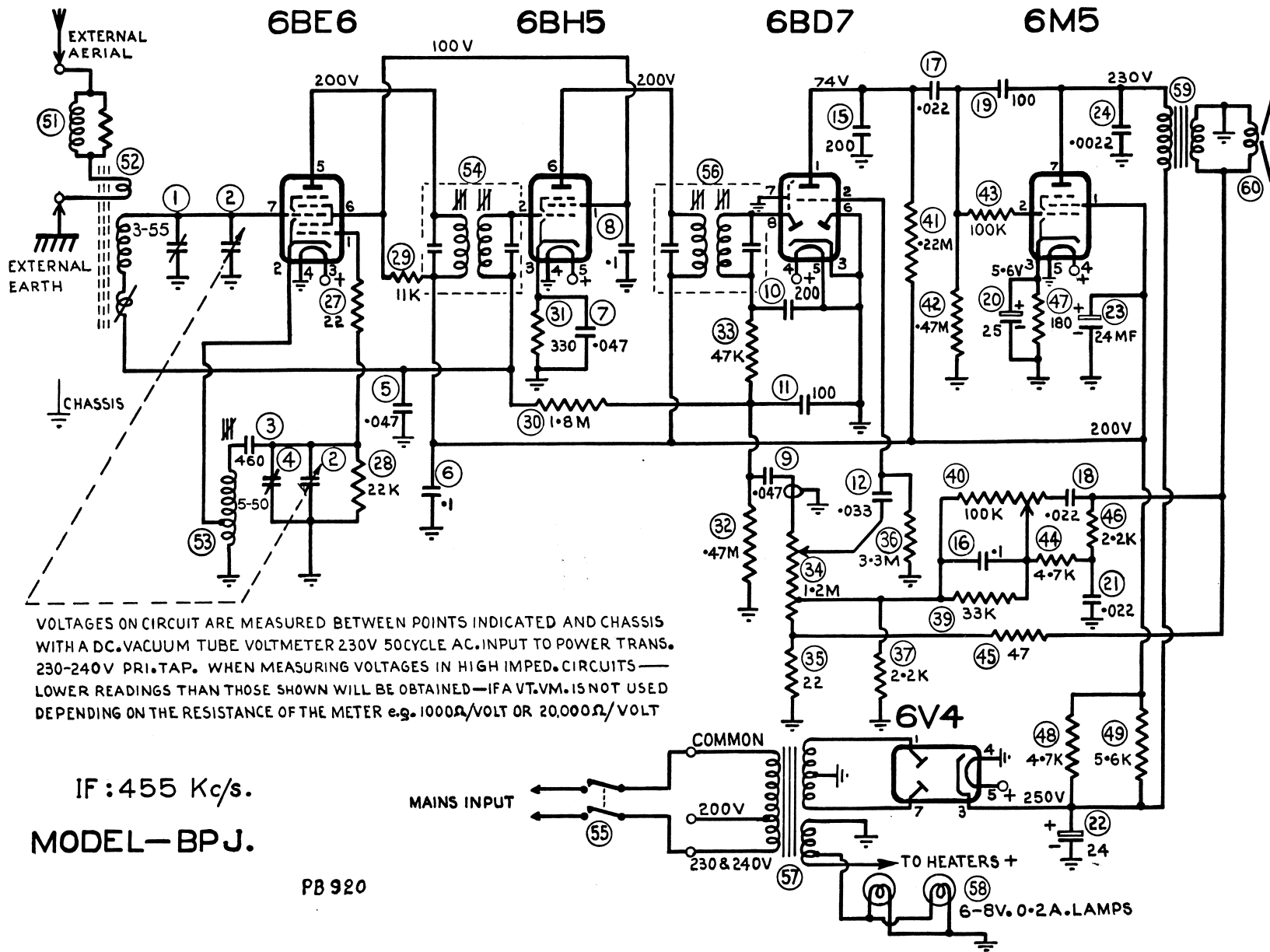


1356/279



PB916

*GANG PLATES FULLY
MESHED.*



VOLTAGES ON CIRCUIT ARE MEASURED BETWEEN POINTS INDICATED AND CHASSIS WITH A DC. VACUUM TUBE VOLT METER 230V 50CYCLE AC. INPUT TO POWER TRANS. 230-240V PRI. TAP. WHEN MEASURING VOLTAGES IN HIGH IMPED. CIRCUITS — LOWER READINGS THAN THOSE SHOWN WILL BE OBTAINED — IF A VT.V.M. IS NOT USED DEPENDING ON THE RESISTANCE OF THE METER e.g. 1000Ω/VOLT OR 20,000Ω/VOLT

IF: 455 Kc/s.
 MODEL — BPJ.