

SERVICE MANUAL

TELEVISION MODELS

PW2-BJ
V9-BJ



Manufactured by

E.M.I. (AUSTRALIA) LIMITED

301 Castlereagh Street
SYDNEY, N.S.W., 2000
AUSTRALIA

SPECIFICATION

POWER SUPPLY:

220-250 volts, A.C., 50 c/s.

CONSUMPTION:

180 watts.

AERIAL INPUT:

300 ohms balanced.

INTERMEDIATE FREQUENCIES:

Vision Carrier: 38.9 Mc/s.

Sound Carrier: 33.4 Mc/s.

FUSES:

Mains: 1.5 Amp.

H.T.: 1.5 Amp.

VALVES AND SEMI-CONDUCTORS

V1	6ES8—R.F. Amplifier
V2	6HG8—Frequency Changer
V3	6EH7—1st I.F. Amplifier
V4	6U9—2nd I.F. Amplifier
V5	6X9—3rd I.F. Amplifier and Noise Detector
V6	6Y9—Video Amplifier and A.G.C.
V7	6BL8—Sync. Separator and Amplifier
V8	2N3568—Noise Gate Transistor
V9	SE1001—Sound I.F. Transistor
V10	SE1001—Sound Limiter Transistor
V11	6GW8—Audio Amplifier and Output
V12	6GV8—Vertical Oscillator and Output
V13	6JW8—Horizontal Oscillator and Reactance
V14	6CM5—Horizontal Output
V15	1S2—E.H.T. Rectifier

V16	6AL3—Damper Diode
MR1	OA90—Noise Clipper
MR2	OA90—Noise Detector
MR3	OA90—Video Detector
MR4	OA210—H.T. Rectifier
MR5	OA210—H.T. Rectifier
MR6	BA100—A.G.C. Clamp
MR7	AA119—Inter-Carrier Detector
MR8	AA119—Ratio Detector
MR9	AA119—Ratio Detector
MR10	BA100—Vertical Sync.
MR11	AB1122—Phase Discriminator
MR12	AB1122—Phase Discriminator
ZD1	AN7101—Zener Reference

CAUTION

The normal B+ voltages in these receivers are dangerous. Use extreme caution when servicing. The high voltage at the picture tube anode (17,000 volts) will give an unpleasant shock, but does not supply enough current to give a fatal shock. However, secondary human reactions to otherwise harmless shocks have been known to cause injury.

Always discharge the picture tube anode to the chassis, or to its aquadag coating, before handling the tube. The picture tube is highly evacuated and, if broken, it may violently expel glass fragments. When handling the picture tube, always wear goggles.

DISMANTLING

TO HINGE DOWN CHASSIS

1. Remove back.
2. Swing chassis down.

TO REMOVE TUNER

1. Remove front control knobs.
2. Remove screw at right side of tuner.
3. Tuner may be hooked to left side of main chassis by dropping tongue on tuner bracket into special slot provided. Slide tuner forward and tighten self-tapping screw.

TO REMOVE CHASSIS AND TUNER

1. Unplug yoke, picture tube, speaker and EHT leads.
2. Tilt chassis to approximately 45° and lift clear of pivots.

TO REMOVE PICTURE TUBE

1. Remove chassis and tuner as above.
2. Remove four screws securing picture tube and lift out.

ADJUSTMENTS

Mains Voltage. Before leaving the factory, the mains input is set to the 220-240 volt tap on the transformer. A 250-volt tap is also provided for use when necessary. To make the alteration, withdraw the plug and fuse on the black lead from the holder marked "240V" on the rear of the mains transformer. Remove rubber bung from "250V" fuseholder and insert the fuse and plug in this position. Insert rubber bung into "240V" socket.

Horizontal Oscillator. This is set at the factory and normally should not need further adjustment. However, after a change of components it may be necessary to re-adjust. The procedure is as follows:

1. Connect the cathodes (+) of the discriminator diodes MR11, MR12 together.
2. Set the horizontal hold control to mid-position (cathode potential of V13 triode = $3\frac{1}{4}$ V).
3. Adjust core of T6 for correct frequency.
4. Remove connection from discriminator diodes and short grid of sync amplifier V7 triode, to earth.
5. Adjust discriminator balance control RV11 for correct oscillator frequency.

Contrast Range (PW2 chassis). This control may be adjusted by inserting a thin screwdriver into the shaft of the "Picture" control, after removing the knob.

Set the "Picture" (Contrast) control to the minimum contrast position. The "Set Black" (Brightness) control should be turned up to give sufficient brightness on the screen to be

able to observe a weak picture. Adjust the "Contrast Range" control so that the picture just disappears after going out of lock. Advance the control until the picture reappears and just locks. Re-set the "Set Black" (Brightness) control.

Contrast Range (V9 chassis). Set the "Contrast" control to the minimum contrast position. The "Picture" control should be rotated to give sufficient brightness on the screen to be able to observe a weak picture. Adjust the "Contrast Range" control so that the picture just disappears after going out of lock. Advance the control until the picture reappears and just locks.

A.G.C. The pre-set AGC control should be set, when necessary, to the weakest signal, i.e., that displaying the most "snow" or grey to white flecks in the picture. Adjust the control to the position which just reduces the snow to a minimum.

Boost Voltage. The boost voltage may be adjusted, where necessary, by means of the pre-set control adjacent to the line output transformer. Access to this control is easier from the reverse side of the chassis, when it has been swung down. Reduce the picture beam current to zero, by means of the brightness control ("Picture" V9), ("Set Black" PW2). The voltage, measured across C131 (.047 uF) should be adjusted to 510 volts, which assures optimum width and EHT voltage. Re-set the brightness control.

Note: Do not use a meter protected with silicon diodes, as this gives a rectifying effect and results in an incorrect reading.

Focus. The only time that focus adjustment may be necessary is after replacement of the picture tube. The focus potentiometer, which is a strip pre-set type, is located on the edge of the chassis and adjacent to the EHT rectifier socket, and is accessible when the chassis is swung down. Adjust for optimum overall focus across the picture tube face.

Linearity. Before adjusting either vertical or horizontal linearity the picture shift magnets should be neutralised. To do this, the two magnets should be rotated with respect to each other. The neutralised setting is such that, when the complete assembly is rotated, it has little effect on the picture position. After adjustment has been made for best linearity, the picture may need to be re-centred. The linearity should be retouched where necessary.

Vertical. The vertical linearity pre-set potentiometer (RV9), located adjacent to the tone control RV5, should be adjusted, in conjunction with the vertical height control, for best linearity, using a pattern on the screen.

Horizontal. The horizontal linearity coil is situated adjacent to the EHT rectifier, and may be adjusted from the side of the chassis.

The slug should be adjusted for best

linearity, using a pattern on the screen. Two positions of the slug provide suitable conditions, but the position in which the slug is farthest out of the coil is the correct one.

Picture Centring. The picture may be centred by rotating the two shift magnets on the tube neck, behind the deflection yoke. Rotate the centring magnet assembly to shift the picture in the required direction, and move one of the magnets with respect to the other, to change the strength of the field, and so the amount of picture shift.

SERVICE NOTE:

These receivers have a number of regulating devices, such as voltage-dependent resistors and diodes, which are designed to correct departures from mean operating conditions.

In fault-tracing, a certain amount of masking of the true cause occurs and defective parts or incorrect operation may be difficult to isolate.

Servicemen are therefore advised to consider carefully any substitution of components or diagnosis of faults, before making adjustments, and so avoid unnecessary complications in repairs.

INTER-CARRIER ALIGNMENT

The following equipment is necessary:

- (i) An RF Oscillator, capable of being set accurately to 5.5 Mc/s.
- (ii) A 20,000 ohms/volt multimeter.
- (iii) A peak-to-peak detector, as shown in Fig. 1.

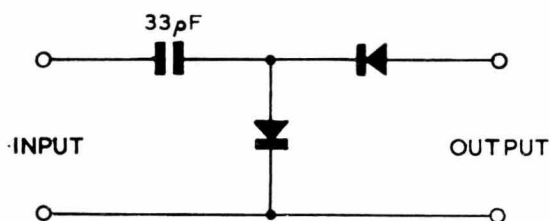


Fig. 1.—Peak-to-Peak Detector.

5.5 MC/S. TRAP, L35

L35 is a trap tuned to 5.5 Mc/s. This is set at the factory and normally should not need further adjustment.

Should it be necessary to retune L35, the following method is recommended.

1. Inject 5.5 Mc/s at approximately 100 mV between the junction of L34 and MR3, and earth.

2. Connect the input of the peak-to-peak detector of the CRT cathode pin 7. Connect the output of the peak-to-peak detector to a multimeter, set to a low DC voltage range.
3. Adjust the core of L35 to give a minimum reading on the meter.

INTER-CARRIER TRANSFORMERS IFT4 AND IFT5

Connect the 5.5 Mc/s. oscillator to the junction of L33 and MR7. Connect the multi-meter, set to a low voltage range, across the emitter of the limiter, V10. Adjust the core in IFT5 and the two cores in IFT4 for maximum response, reducing the input from the oscillator as necessary.

RATIO DETECTOR TRANSFORMER IFT6

With the 5.5 Mc/s. oscillator connected as above, connect the multimeter between the junction of R89 and R90, and earth. Adjust the secondary core (furthest from chassis) so that a positive or negative reading is obtained. Adjust the primary core so that this reading shows a maximum. Then adjust the secondary for zero reading. Instead of the 5.5 Mc/s. oscillator, an off air signal may be used for all the above adjustment.

VISION I.F. ALIGNMENT

The following equipment is necessary:

- (i) A sweep generator, covering the range 30 to 42 Mc/s.
- (ii) A marker generator, covering the same range.
- (iii) A C.R.O.

These instruments should be interconnected as described in the instructions supplied with the sweep generator. This generator should be terminated with a resistor equal to the output impedance, and connected to the receiver as shown in Fig. 2.

Because of the high gain of the receivers, care should be taken to ensure that all components replaced are on short leads and placed in exactly the same position as the original part.

Care must also be taken to avoid feedback in interconnecting leads of the alignment equipment.

NOTE (1): Throughout the alignment, the display should be adjusted so that the response is accurately set between the reference level and base line, from a signal of about 2 volts peak-to-peak. The output of the IF strip should be maintained at that level by varying the output from the sweep generator and not the gain of the display unit.

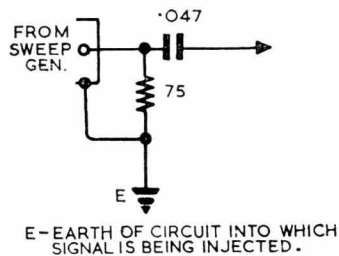


Fig. 2.

NOTE (2): Coupling between stages will not require adjusting unless IFT1, IFT2 or IFT3 has been replaced.

NOTE (3): Cores in L21, L24, L28, L31, L33 are set in the position furthest from the chassis.

Cores in L22, L23, IFT1, L27, IFT2, L32 and IFT3 are set in a position nearest the chassis.

OPERATION 1.

- (a) Connect a bias supply of 9 volts across C25.
- (b) Connect the display unit between the junction of L35 and L36 and earth.
- (c) Remove cores from L24, L28, L31 and L33.

OPERATION 2.

- (a) Using the termination network as shown in Fig. 2, connect sweep output between pin 3 of V5 and earth.
- (b) Adjust the cores in L32 and IFT3 to obtain the response of Fig. 3, Stage 1.
- (c) If IFT3 has been replaced, it will be necessary to adjust the coupling, by closing the spacing of the two windings of IFT3, until the desired bandwidth is achieved.
- (d) If a dip appears in the response, remove it by adjusting the core in L27.

OPERATION 3.

- (a) Remove the sweep from V5 and connect between pin 3 of V4 and earth.
- (b) Adjust the cores of L27 and IFT2 to obtain the response of Fig. 3, Stage 2.
- (c) If IFT2 has been replaced, it will be necessary to adjust the coupling, by closing the spacing of the two windings of IFT2, until the desired bandwidth is achieved.
- (d) If a dip appears in the response, remove it by adjusting the core in L23.

OPERATION 4.

- (a) Remove the sweep from V4 and connect between pin 2 of V3 and earth.
- (b) Adjust the cores of L23 and IFT1 to obtain the response of Fig. 3, Stage 3.
- (c) If IFT1 has been replaced, it will be necessary to adjust the coupling, by closing the spacing of the two windings of IFT1, until the desired bandwidth is achieved.
- (d) If a dip appears in the response, it may be removed by shorting out the coaxial cable from the tuner.

OPERATION 5.

- (a) Remove the sweep from V3 and connect it to the IF test point on tuner located adjacent to V2. Set tuner to Channel 11.
- (b) Adjust the cores of L11 (IF output coil, adjacent to V2) and L21, to obtain the response of Fig. 3, Stage 4.

OPERATION 6.

- (a) Insert a core in L28 and adjust to a minimum at 40.40 Mc/s. Detune L28 slightly to allow alignment of L24.
- (b) Insert a core in L24 and adjust to a minimum at 40.40 Mc/s.
- (c) Stagger tune L28 and L24 so that a minimum rejection of about 60 dB at

40.40 Mc/s. results. It may be necessary to adjust the coupling between L28 and L27 and L23 to obtain the 60 dB rejection. To measure this, increase the sweep generator output by 40 dB. Reset the base line with the vertical shift control if necessary, and the 20 dB will represent the 60 dB point required below reference level.

(d) Screw the core in L22 fully in.

OPERATION 7.

(a) Adjust L22 to 30.40 Mc/s. Fig. 3, Stage 5.

(b) Insert core into L33 and tune to 34.40 Mc/s.

(c) Check the overall response and make any adjustments to obtain an overall response as shown in Fig. 3, Stage 5.

OPERATION 8.

(a) Reduce input by 8 dB.

(b) Connect the display unit between base of V8 and earth. Insert a core in L31 and adjust the tuning and spacing with IFT3, so that at 34.825 Mc/s. it shows a small, narrow response 20 dB below video peak response.

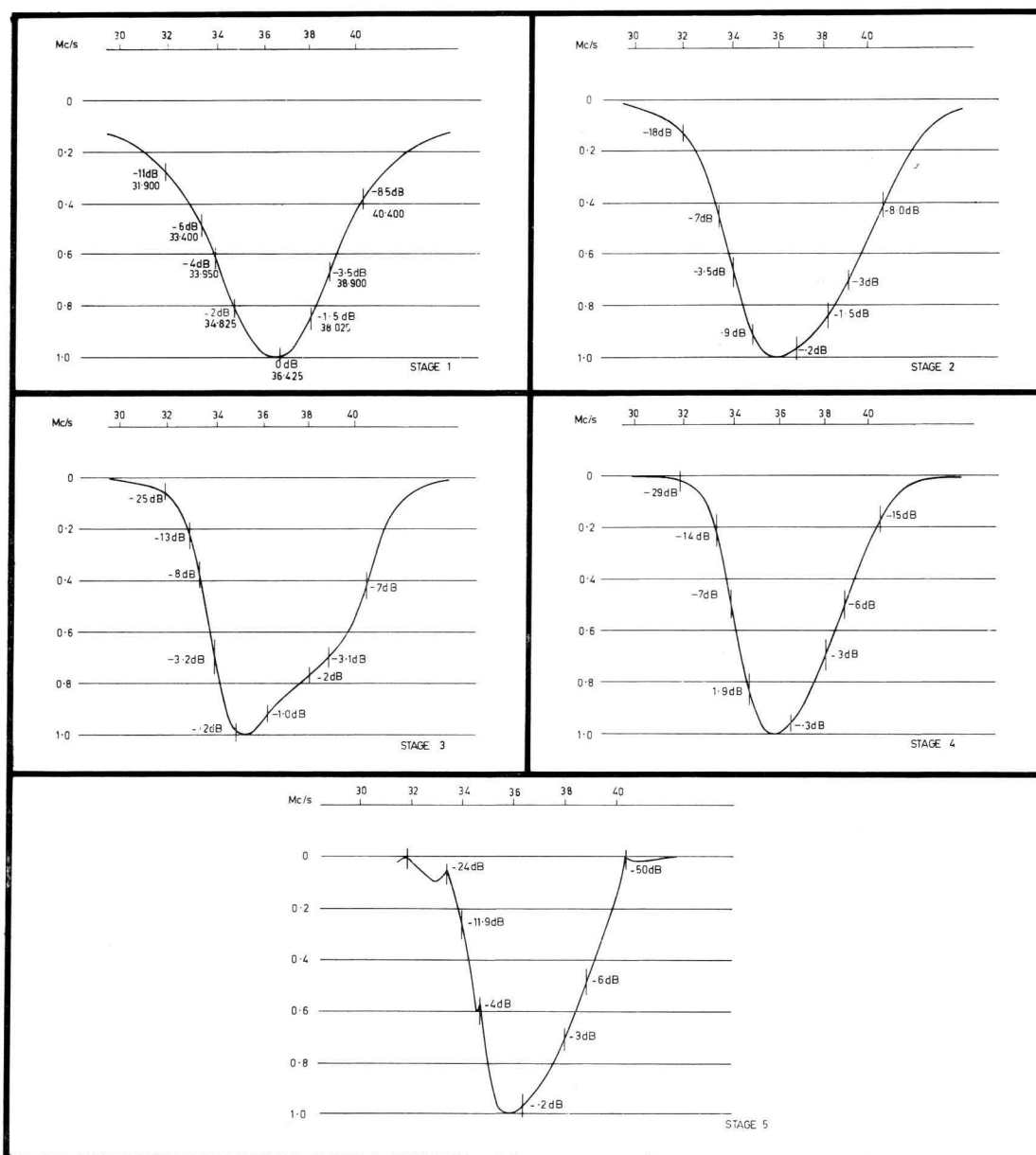


Fig. 3 — I.F. ALIGNMENT CURVES

PARTS LIST — PW2 AND V9 CHASSIS

(Parts are common to both chassis except where indicated)

* PW2.

† V9

REF.	PART NO.	DESCRIPTION	REF.	PART NO.	DESCRIPTION
RESISTORS			RESISTORS (continued)		
R20	740-0412	820 ohms \pm 10% $\frac{1}{2}$ W	R71	740-0532	1M \pm 20% $\frac{1}{2}$ W
R21	740-1162	180 ohms \pm 10% $\frac{1}{2}$ W	R72	742-0562	470K \pm 20% 1W
R22	750-0932	2.2K \pm 10% 4W	R73	740-0082	10K \pm 10% $\frac{1}{2}$ W
R22 _a	750-0662	3.9K \pm 10% 4W	R74	742-0642	180K \pm 10% 1W
R23	742-1142	2.7K \pm 20% 1W	R75	742-0162	390K \pm 10% 1W
R24	740-0982	22 ohms \pm 10% $\frac{1}{2}$ W	R76	740-0132	82K \pm 10% $\frac{1}{2}$ W
R25	740-0652	100 ohms \pm 10% $\frac{1}{2}$ W	R77	742-0372	22K \pm 20% 1W
R26	742-0712	2.2K \pm 20% 1W	R78	740-0142	100K \pm 10% $\frac{1}{2}$ W
R27	740-0592	22K \pm 20% $\frac{1}{2}$ W	R79	742-0372	22K \pm 20% 1W
R28	740-0062	3.9K \pm 10% $\frac{1}{2}$ W	R80	738-0082	12K \pm 10% $\frac{1}{2}$ W
R29	742-0492	68K \pm 10% 1W	R81	740-0612	10K \pm 20% $\frac{1}{2}$ W
R30	740-0012	470 ohms \pm 10% $\frac{1}{2}$ W	R82	740-0322	1.2K \pm 10% $\frac{1}{2}$ W
R31	740-0592	22K \pm 20% $\frac{1}{2}$ W	R83	740-0663	82 ohms \pm 10% $\frac{1}{2}$ W
R32	740-0822	33K \pm 20% $\frac{1}{2}$ W	R84	740-0792	8.2K \pm 10% $\frac{1}{2}$ W
R33	740-0982	22 ohms \pm 10% $\frac{1}{2}$ W	R85	740-0412	820 ohms \pm 10% $\frac{1}{2}$ W
R34	740-0652	100 ohms \pm 10% $\frac{1}{2}$ W	R86	740-0663	82 ohms \pm 10% $\frac{1}{2}$ W
R35	742-0172	2.2K \pm 20% 1W	R87	740-1181	1K \pm 5% $\frac{1}{2}$ W
R35 _a	750-0672	1.5K \pm 10% 5W	R88	740-1291	.680 ohms \pm 5% $\frac{1}{2}$ W
R36	740-0052	3.3K \pm 10% $\frac{1}{2}$ W	R89	740-0092	15K \pm 10% $\frac{1}{2}$ W
R37	740-0442	120 ohms \pm 10% $\frac{1}{2}$ W	R90	740-0092	15K \pm 10% $\frac{1}{2}$ W
R38	740-0822	33K \pm 20% $\frac{1}{2}$ W	R91	740-0582	47K \pm 20% $\frac{1}{2}$ W
R39	740-0792	8.2K \pm 10% $\frac{1}{2}$ W	R92	740-0152	150K \pm 10% $\frac{1}{2}$ W
R39 _a	740-0132	82K \pm 10% $\frac{1}{2}$ W	R93	740-0152	150K \pm 10% $\frac{1}{2}$ W
R40	740-0252	1.5K \pm 10% $\frac{1}{2}$ W	R94	740-0702	56K \pm 10% $\frac{1}{2}$ W
R41	740-0302	1.8K \pm 10% $\frac{1}{2}$ W	R95	742-0452	220K \pm 20% 1W
R42	740-0302	1.8K \pm 10% $\frac{1}{2}$ W	R96	740-0252	1.5K \pm 10% $\frac{1}{2}$ W
R43	740-0822	33K \pm 20% $\frac{1}{2}$ W	R97	740-0292	270 ohms \pm 10% $\frac{1}{2}$ W
R44	740-0382	6.8K \pm 10% $\frac{1}{2}$ W	R98	740-0512	100K \pm 20% $\frac{1}{2}$ W
R45	740-0082	10K \pm 10% $\frac{1}{2}$ W	R99	740-0512	100K \pm 20% $\frac{1}{2}$ W
R46	740-0382	6.8K \pm 10% $\frac{1}{2}$ W	R100	740-1422	4.7K \pm 20% $\frac{1}{2}$ W
R47	Part of 259-1262	2.7K \pm 10% 1W Former for equalising coil	R101	740-0442	120 ohms \pm 10% $\frac{1}{2}$ W
R48	740-0922	330 ohms \pm 10% $\frac{1}{2}$ W	R102	740-0062	3.9K \pm 10% $\frac{1}{2}$ W
R48 _a	740-0022	1K \pm 10% $\frac{1}{2}$ W	R103	742-0742	3.9K \pm 10% 1W
R49	750-0702	2.7K \pm 5% 7W	R104	742-0342	330K \pm 20% 1W
R50	740-0773	39 ohms \pm 10% $\frac{1}{2}$ W	R105	742-0142	270K \pm 10% 1W
R51	740-0362	390K \pm 10% $\frac{1}{2}$ W	R106	742-1092	3.3M \pm 20% 1W
R52	740-0622	470K \pm 20% $\frac{1}{2}$ W	R107	742-1122	750K \pm 5% 1W
R53	740-0272	150 ohms \pm 10% $\frac{1}{2}$ W	R108	740-0822	33K \pm 20% $\frac{1}{2}$ W
R54	740-0272	150 ohms \pm 10% $\frac{1}{2}$ W	R109	742-1182	2.7M \pm 10% 1W
R55	750-0752	250 ohms \pm 10% 7W	R110	740-0232	39K \pm 10% $\frac{1}{2}$ W
R56	742-0522	820K \pm 10% 1W	R111	740-1422	4.7K \pm 20% $\frac{1}{2}$ W
R57	740-0722	1.5M \pm 10% $\frac{1}{2}$ W	R112	740-0822	33K \pm 20% $\frac{1}{2}$ W
R58	742-0192	1M \pm 10% 1W	R113	740-0202	2.2M \pm 10% $\frac{1}{2}$ W
R59	740-0802	1.8M \pm 10% $\frac{1}{2}$ W	R114	742-0822	270 ohms \pm 10% 1W
R60	742-0492	68K \pm 10% 1W	R115	740-0582	47K \pm 20% $\frac{1}{2}$ W
R61	740-0302	1.8K \pm 10% $\frac{1}{2}$ W	R116	740-0032	2.2K \pm 10% $\frac{1}{2}$ W
R62	742-0122	150K \pm 10% 1W	R117	742-0002	1K \pm 10% 1W
R63	742-0122	150K \pm 10% 1W	R118	742-0002	1K \pm 10% 1W
R64	742-0762	12K \pm 10% 1W	R119	740-0132	82K \pm 10% $\frac{1}{2}$ W
R65	750-0892	22K \pm 10% 4W	R120	740-1242	6.8 ohms \pm 10% $\frac{1}{2}$ W
R66	740-0082	10K \pm 10% $\frac{1}{2}$ W	R121	740-1242	6.8 ohms \pm 10% $\frac{1}{2}$ W
R67	742-1202	200K \pm 5% 1W	R122	740-0352	1M \pm 20% 1W
R68	740-1622	75K \pm 5% $\frac{1}{2}$ W	R123	742-0402	150K \pm 20% 1W
R69	740-0582	47K \pm 20% $\frac{1}{2}$ W	R124	740-0322	1.2K \pm 10% $\frac{1}{2}$ W
R70	750-0782	6.8K \pm 10% 4W	R125	740-0412	820 ohms \pm 10% $\frac{1}{2}$ W
			R126	740-0822	33K \pm 20% $\frac{1}{2}$ W

PARTS LIST — PW2 AND V9 CHASSIS

(Parts are common to both chassis except where indicated)

* PW2. † V9

REF.	PART NO.	DESCRIPTION	REF.	PART NO.	DESCRIPTION
RESISTORS (continued)			CAPACITORS (continued)		
R127	742-0492	68K \pm 10% 1W	C38	273-0591	68 pF \pm 2½% Simplex Type MS
R128	740-0732	12K \pm 10% ½W	C38a	271-1801	.0033 uF \pm 80% —20% 'Lead thru'
R129	740-0172	270K \pm 10% ½W	C39	271-1781	470 pF \pm 10% Disc Type AY
R130	740-0082	10K \pm 10% ½W	C40		Not used
R131	740-0102	22K \pm 10% ½W	C41	271-1221	82 pF 'Lead thru' CAC 106
R132	740-0852	560K \pm 10% ½W	C42	271-1851	.001 uF \pm 10% Style "A" Curve "Y" Tube
R133	740-0852	560K \pm 10% ½W	C42a	271-1801	.0033 uF \pm 80% —20% 'Lead thru'
R134	740-0322	1.2K \pm 10% ½W	C43	273-0591	68 pF \pm 2½% Simplex Type MS
R135	740-0252	1.5K \pm 10% ½W	C44	269-1041	10 uF 6VW Electro
R136	740-0072	4.7K \pm 10% ½W	C45	271-0281	.022 uF GMV 100V Disc
R137	740-0382	6.8K \pm 10% ½W	C46	271-0911	.003 uF GMV 500V CTR
R138	740-0062	3.9K \pm 10% ½W	C46a	273-1091	130 pF \pm 20% Simplex Type MS
R139	740-0802	1.8M \pm 10% ½W	C47	271-1841	680 pF \pm 10% Tube Style "A" Curve "Y"
R140	742-0172	470K \pm 10% 1W	C48	271-1821	8.2 pF \pm ¼ pF NPO Disc
R141	740-0102	22K \pm 10% ½W	C49	283-1701	.047 uF \pm 10% 400V Polyester
R141a	740-0582	47K \pm 20% ½W	C50	271-0941	8.2 pF \pm ½ pF NPO Disc
R142	742-0062	27K \pm 10% 1W	C51	271-0621	.001 uF 'Lead thru' CAC 107
R143	750-0362	2.7K \pm 10% 5W	C52	271-0601	10 pF \pm 5% NPO Disc
R144	740-0572	1K \pm 20% ½W	C53	271-1341	68 pF \pm 10% N750 Tube
R145	742-0352	1M \pm 20% 1W	C54	283-1741	.1 uF \pm 10% 400V Polyester
R146	742-0352	1M \pm 20% 1W	C55	269-0941	8 uF 100VW Electro
R147	742-0562	470K \pm 20% 1W	C55a	271-0911	.003 uF GMV 500V CTR
R148	742-0562	470K \pm 20% 1W	C56	283-1701	.047 uF \pm 10% 400V Polyester
R149	742-0562	470K \pm 20% 1W	C57	269-0521	100 uF 150VW Electro EMG 202S
R150	742-0102	82K \pm 10% 1W	C58	269-0521	100 uF 150VW Electro EMG 202S
R151	742-0102	82K \pm 10% 1W	C59		{ 200 uF 275VW Electro
R152	961-0921	0.5 ohms Resistance Wire	C60	269-0901	{ 60 uF 275VW Electro
R153	742-1092	3.3M \pm 20% 1W	C61	283-1241	.1 uF \pm 10% 160V Polyester
R154	750-0602	22 ohms \pm 5% 4W	C61a*	271-0911	.003 uF GMV 500V CTR
R155	740-1043	27 ohms \pm 10% ½W	C62	271-0221	2.2 pF \pm ½pF Disc NPO
R156	740-0502	15K \pm 20% ½W	C62a	271-1421	56 pF \pm 5% N330 Tube
CAPACITORS			C63	283-1741	.1 uF \pm 10% 400V Polyester
C20	271-0311	27 pF \pm 5% NPO Tube	C64	283-1241	.1 uF \pm 10% 160V Polyester
C21	279-0561	.47 uF \pm 25% 200V Hunts	C65	280-1791	220 pF \pm 10% 630V Styroseal
C22	271-0911	.003 uF GMV 500V CTR	C66	271-0351	33 pF \pm 5% NPO Tube
C22a	271-0911	.003 uF GMV 500V CTR	C67	271-0681	12 pF \pm 5% NPO Tube
C23	271-0911	.003 uF GMV 500V CTR	C68	271-1131	.047 uF 'Lead thru' CAC 100
C24	271-0911	.003 uF GMV 500V CTR	C68a	271-0731	.047 uF \pm 80% —20% 25V Redcap
C25	271-0621	.001 uF 'Lead thru' CAC 107	C69	271-0731	.047 uF \pm 80% —20% 25V Redcap
C26	273-0591	68 pF \pm 2½% Simplex Type MS	C70	271-0351	33 pF \pm 5% NPO Tube
C27	271-1801	.0033 uF \pm 80% —20% 'Lead thru'	C71	271-0471	6.8 pF \pm ¼ pF NPO Disc
C28	271-0731	.047 uF \pm 80% —20% 25V Redcap	C72	271-1401	100 pF \pm 20% N330 Tube
C29	271-1851	.001 uF \pm 10% Style "A" Curve "Y" Tube	C73	271-0351	33 pF \pm 5% NPO Tube
C30	273-0591	68 pF \pm 2½% Simplex Type MS	C74	271-0731	.047 uF \pm 80% —20% 25V Redcap
C31	271-0281	.022 uF GMV 100V Disc			
C32	273-0591	68 pF \pm 2½% Simplex Type MS			
C33	271-1271	.001 uF \pm 20% Disc Type AY			
C34	271-0761	.1 uF \pm 80% —20% 25V Redcap			
C35	271-0281	.022 uF GMV 100V Disc			
C36	271-0621	.001 uF 'Lead thru' CAC 107			
C37	271-0731	.047 uF \pm 80% —20% 25V Redcap			

PARTS LIST — PW2 AND V9 CHASSIS

(Parts are common to both chassis except where indicated)

* PW2. † V9

REF.	PART NO.	DESCRIPTION	REF.	PART NO.	DESCRIPTION
CAPACITORS (continued)			CAPACITORS (continued)		
C75	271-0731	.047 uF ± 80% —20% 25V Redcap	C116	280-1091	.0056 uF ± 10% 400V Styroseal
C76	271-1101	1.8 pF ± ½ pF NPO Disc	C117	280-0291	.0022 uF ± 10% 200V Styroseal
C76a	271-1441	47 pF ± 20% NPO Tube	C118	283-1571	.0039 uF ± 10% 400V Polyester
C77	271-1131	.047 uF 'Lead thru' CAC 100	C119	283-1571	.0039 uF ± 10% 400V Polyester
C77a	271-0911	.003 uF GMV 500V CTR	C120	271-1241	820 pF ± 20% Tube K2000
C78	280-3191	470 pF ± 5% 125V Styroseal	C121	279-0561	.47 uF ± 25% 200V Hunts
C79	271-1121	47 pF ± 2½% NPO Disc	C122	283-1501	.001 uF ± 10% 400V Polyester
C80	280-3121	270 pF ± 10% 125V Styroseal	C123	283-1581	.0047 uF ± 10% 400V Polyester
C81	280-3121	270 pF ± 10% 125V Styroseal	C124	271-0911	.003 uF GMV 500V CTR
C82	269-0781	4 uF 25V Electro	C125	271-0991	220 pF 2KV Tubular N750
C83	283-1501	.001 uF ± 10% 400V Polyester	C126	284-0661	.022 uF ± 20% 600V Dipol
C84	283-5581	.0047 uF ± 10% 50V Polyester	C127	284-1281	.22 uF ± 20% 1000V Dipol
C85	271-0961	560 pF ± 10% Tube K2000	C128		68 pF 3KV Tube (Ex. MSP)
C86	283-5621	.01 uF ± 10% 50V Polyester	C129	284-2701	.047 uF ± 10% 100V Dipol
C87	283-1701	.047 uF ± 10% 400V Polyester	C130	271-0911	.003 uF GMV 500V CTR
C88	269-1171	25 uF 6.4VW Electro	C131	284-2701	.047 uF ± 10% 100V Dipol
C89	271-1061	15 pF ± 10% N330 Tube	C132	283-1701	.047 uF ± 10% 400V Polyester
C90	269-0211	8 uF 300VW Electro	C133	271-0911	.003 uF GMV 500V CTR
C91 }	269-1161	{ 16 uF 250VW Electro	C134	271-0911	.003 uF GMV 500V CTR
C91a }		{ 8 uF 250VW Electro	C135	283-1771	.18 uF ± 10% 400V Polyester
C92	269-1331	50 uF 10VW Electro	C136	271-1251	18 pF ± 20% 3KV
C93	269-1261	2 uF 350VW Electro	POTENTIOMETERS		
C94	271-0911	.003 uF GMV 500V CTR	RV1*	677-1311	500K Curve 'A'—Set Black
C95	283-1721	.068 uF ± 10% 400V Polyester	RV1†	677-1731	500K Curve 'A'—Picture
C96	271-1271	.001 uF ± 20% Disc Type AY	RV2	677-0912	1M Curve 'A'—A.G.C.
C97	283-1721	.068 uF ± 10% 400V Polyester	RV3 }	677-1301	{ 50K Curve 'A' (front)—Contrast
C98	283-1701	.047 uF ± 10% 400V Polyester	* }		{ 25K Curve 'A' (rear)—Contrast Range
C99	283-1261	.15 uF ± 10% 160V Polyester	RV4 }	677-1741	{ 50 K Curve 'A'—Contrast
C100	271-1271	.001 uF ± 20% Disc Type AY	RV3†		25K Curve 'A'—Contrast Range
C101	271-1271	.001 uF ± 20% Disc Type AY	RV4†	677-0172	25K Curve 'A'—Contrast Range
C102 }	269-0981	{ 50 uF 300V Electro	RV5	677-1113	1M Curve 'F'—Tone
C103 }		{ 24 uF 300V Electro	RV6*	677-1321	1M Tap 500K Curve 'A'—Volume
C104 }		{ 100 uF 25V Electro	RV6†	677-1721	1M Tap 500K Curve 'A'—Volume
C105	283-1661	.022 uF ± 10% 400V Polyester	RV7	677-0341	250K Curve 'A'—Height
C106	283-1721	.068 uF ± 10% 400V Polyester	RV8	677-1103	500K Curve 'A'—Vertical Hold
C107	271-1371	22 pF ± 20% N330 Tube	RV9	677-0511	10K Curve 'A'—Vertical Linearity
C108	280-2041	220 pF ± 20% 630V Styroseal	RV10	677-1651	100K Curve 'A'—Horizontal Hold
C109	283-1361	1 uF ± 10% 160V Polyester	RV11	677-1801	5K Curve 'A'—Discriminator Balance
C110	283-1141	.015 uF ± 10% 160V Polyester	RV12	677-0891	2M Curve 'A'—Focus
C111	283-1361	1 uF ± 10% 160V Polyester	RV13	677-0912	1M Curve 'A'—Boost
C112	280-3241	330 pF ± 20% 100V Styroseal			
C113	280-0291	.0022 uF ± 10% 200V Styroseal			
C114	271-0571	22 pF ± 10% NPO Tube			
C115	280-1101	.0068 uF ± 10% 400V Styroseal			

PARTS LIST — PW2 AND V9 CHASSIS

(Parts are common to both chassis except where indicated)

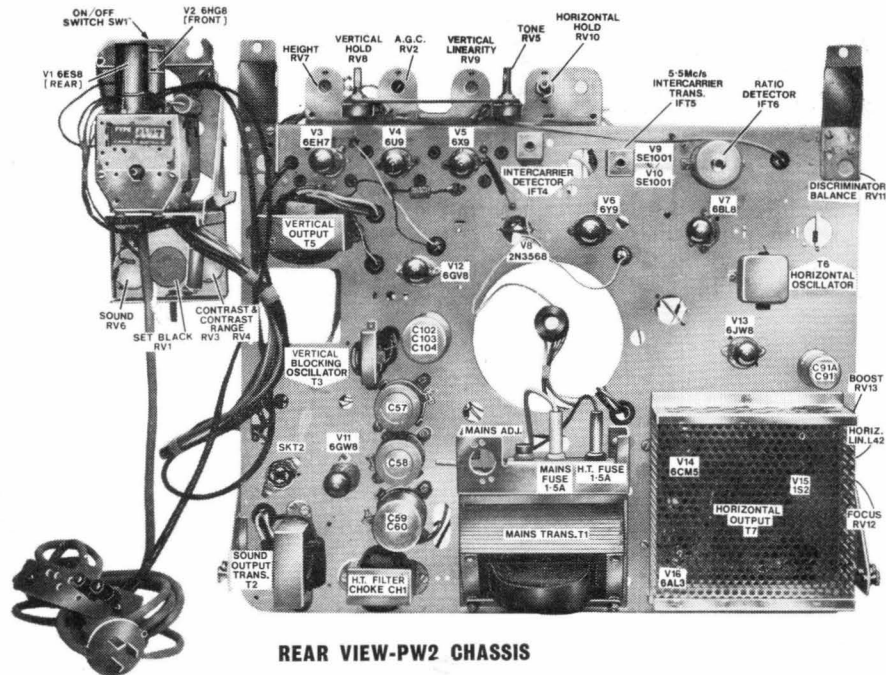
* PW2

† V9

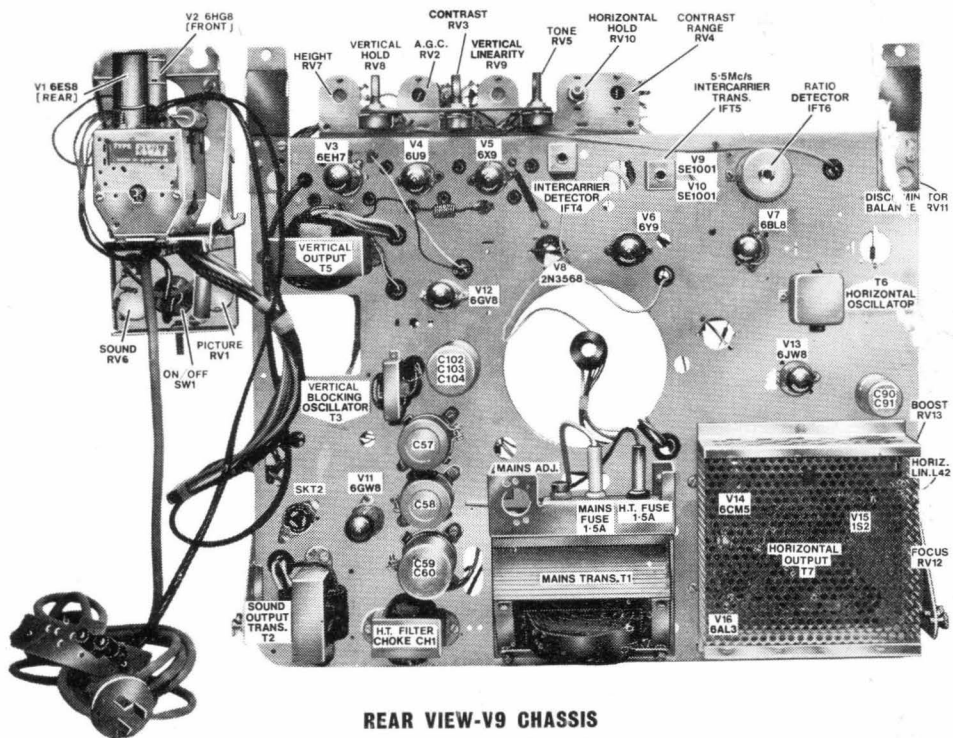
REF.	PART NO.	DESCRIPTION	REF.	PART NO.	DESCRIPTION
VALVES AND TRANSISTORS			COILS (continued)		
V1	932-1161	6ES8—R.F. Amplifier	L34	259-0956	Grid Peaking Choke
V2	932-1921	6HG8—Frequency Changer	L35	259-1591	Sound Trap, 5.5 Mc/s.
V3	932-1211	6EH7—1st I.F. Amplifier	L36	259-1432	Filter Choke
V4	932-2331	6U9—2nd I.F. Amplifier	L37}	259-1262	Equalising
V5	932-2341	6X9—3rd I.F. Amplifier and Noise Detector	L38}		
V6	932-2351	6Y9—Video Amplifier and A.G.C.	L39	908-0623	Video Peaking Coil
V7	932-0501	6BL8—Sync. Separator and Amplifier	L39a	259-1432	Filter Choke
V8	932-2971	2N3568—Noise Gate Transistor	L40	259-0045	Anti-Parasitic Coil
V9	932-2281	SE1001—Sound I.F. Transistor	L41	259-0045	Anti-Parasitic Coil
V10	932-2281	SE1001—Sound Limiter Transistor	L42	259-1252	Linearity Coil
V11	932-1771	6GW8—Audio Amplifier and Output	TRANSFORMERS		
V12	932-2001	6GV8—Vertical Oscillator and Output	T1	904-0451	Power Transformer
V13	932-2371	6JW8—Horizontal Oscillator and Reactance	T2	905-0621	Sound Oscillator Transformer
V14	932-0531	6CM5—Horizontal Output	T3	908-0781	Vertical Oscillator Transformer
V15	932-0771	1S2—E.H.T. Rectifier	T4	908-0742	Vertical Feedback Transformer
V16	932-1151	6AL3—Damper Diode	T5	905-0602	Vertical Output Transformer
DIODES			T6	259-1881	Horizontal Oscillator Transformer
MR1	932-0971	OA90—Noise Clipper	T7	908-0771	Horizontal Output Transformer
MR2	932-0971	OA90—Noise Detector	IFT1		Vision IFT
MR3	932-0971	OA90—Video Detector	IFT2		Vision IFT
MR4	932-1071	OA210—H.T. Rectifier	IFT3		Vision IFT and Trap
MR5	932-1071	OA210—H.T. Rectifier	IFT4		Sound Detector IFT
MR6	932-2451	BA100—A.G.C. Clamp	IFT5	906-0782	Sound IFT
MR7	932-2271	AA119—Intercarrier Detector	IFT6	906-0681	Ratio Detector Transformer
MR8	932-2081	AA119—Ratio Detector	MISCELLANEOUS		
MR9	932-2081	AA119—Ratio Detector	CH1	232-0351	H.T. Choke
MR10	932-2451	BA100—Vertical Sync.	VDR1	750-0711	Voltage Dependent Resistor E299 DD/P342
MR11	932-2961	AB1122—Phase Discriminator	VDR2	750-0691	Voltage Dependent Resistor E298 ED/A262—Violet Spot
MR12	932-2961	AB1122—Phase Discriminator	VDR3	750-0571	Voltage Dependent Resistor E298 ZZ/06 — Black End, Blue Spot
ZD1	932-3131	AN7101—Zener Reference	VDR4	750-0761	Voltage Dependent Resistor E299 DE/P354
COILS			FS1	431-0081	Fuse, 1.5 amp.—Mains
L21}	{ I.F. Input Coil		FS2	431-0081	Fuse, 1.5 amp.—H.T. Secondary.
L22}	{ 30.4 Mc/s. Trap		FS3		Fuse, Heater Line, B26SW6
L23}	{ 1st I.F. Anode				Tinned Copper Wire
L24}	{ 40.4 Mc/s. Trap		Tuner	224-2291	Tuner, Philips, NT3016
L25	{ 34.4 Mc/s. Trap		SW1*	855-0682	Switch—Push/Push
L26	{ Filter Choke		SW1†	855-0821	Switch—On/Off
L27}	{ 2nd I.F. Anode		Lamp	932-1941	6.3V, 0.25A, Bayonet Cap Lamp
L28}	{ 40.4 Mc/s. Trap			824-0691	Lamp Socket
L28a	{ Heater Choke (12½" wire)			517-2081	Knob, Rear, Pre-set
L29	{ Filter Choke		Yoke	259-1581	MSP Coil Deflector, 43663A
L30	{ Filter Choke		CRT*	932-2292	23 ARP4 Shellbond
L31	{ Noise take off coil		CRT†	932-2642	25TP4 Kimcode
L32}	{ 3rd I.F. Anode			526-4463	Mains Lead
L33}	{ 34.4 Mc/s. Trap				

CABINET SPARE PARTS

REF.	PART NO.	DESCRIPTION
BJ TYPE CABINET		
	192-3401	Cabinet, Maple
	192-3411	Cabinet, Rosewood
	192-3421	Cabinet, Teak
	192-3431	Cabinet, Walnut
	294-1205	Cover, Back Panel
	403-3641	Escutcheon, Mask
	403-3621	Escutcheon, Control
	403-3631	Escutcheon, Sound Outlets
	403-3651	Escutcheon, Channel Indicator
	517-2891	Knob, Front Controls
	517-2991	Knob Cover, Channel Indicator (Gold)
	517-3001	Knob, Fine Tuning (Gold)
	517-3041	Knob Cover, Channel Indicator (Beige)
	517-3031	Knob, Fine Tuning (Beige)
	517-2981	Knob, Channel Indicator
	517-2081	Knob, Rear, Pre-set
	561-2071	Medallion Inlay
	561-2001	Medallion, "Warwick"
	561-1432	Medallion, Trade Mark
	561-0682	Medallion, "Rangemaster"
	801-0181	Screw, Knob Cover Fixing
	831-2422	Speaker, 30 ohms V.C. 7" x 5"
DIMENSIONS:		
		Packed Unpacked
Height	23½"	30" (incl. 9" legs)
Width	43"	39½"
Depth	20½"	16¾"
WEIGHT:		
Gross	121 lbs.	
Nett	104 lbs.	



REAR VIEW-PW2 CHASSIS



REAR VIEW-V9 CHASSIS

Note: Read C91a for C90.

