SERVICE MANUAL

TELEVISION CHASSIS TYPES **PW, V2**

"HIS MASTER'S VOICE"

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E.M.I. (AUSTRALIA) LIMITED
(INCORPORATED IN N.S.W.)

6 PARRAMATTA ROAD
HOMEBUSH, N.S.W.

SPECIFICATIONS

POWER SUPPLY:
240, 250 volts, A.C., 50 c/s.

CONSUMPTION:
190 watts.

AERIAL INPUT:
300 ohms balanced.

INTERMEDIATE FREQUENCIES
Vision Carrier: 36.875 Mc/s.
Sound Carrier: 31.375 Mc/s.

FUSES:
Mains: 1.5 amp.
H.T.: 1.5 amp.

VALVES & SEMI-CONDUCTORS

V1	6ES8	..	RF Amplifier
V2	6HG8	..	Frequency Changer
V3	6EH7	..	1st IF Amplifier
V4	6U9	..	2nd IF Amplifier and Blanking Clamp
V5	6X9	..	3rd IF Amplifier and Noise Detector
V6	6Y9	..	Video Amplifier and AGC

VALVES & SEMI-CONDUCTORS (Continued)

V7	6V9	..	Sync. Separator and Amplifier
V8	SE1001	..	Inter-Carrier Amplifier
V9	SE1001	..	Limiter
V10	6GW8	..	Sound Amplifier and Output
V11	6GV8	..	Vertical Oscillator and Output
V12	6JW8	..	Reactance Valve and Horizontal Oscillator
V13	6CM5	..	Horizontal Output
V14	1S2	..	EHT Rectifier
V15	6AL3	..	Damper Diode
MR1	0A90	..	Impulse Clipper
MR2	0A90	..	Video Detector
MR3	0A210	..	HT Rectifier
MR4	0A210	..	HT Rectifier
MR5	M3	..	AGC Clamp
MR6	AA119	..	Inter-Carrier Detector
MR7	AA119	..	Ratio Detector
MR8	AA119	..	Ratio Detector
MR9			
MR10	BA100	..	Vertical Sync. Diode
MR11	BA100 or AB1101		Phase Discriminator
MR12	BA100 or AB1101		Phase Discriminator

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.

PART No. 683-5651

August, 1965.

DISMANTLING

TO HINGE DOWN CHASSIS

1. Remove back.
2. Swing chassis down.

TO REMOVE TUNER

1. Pull off channel selector, picture, sound and set black knobs. (Also ON/OFF switch knob on V2).
2. Slacken wing nut under tuner chassis assembly.
3. Unscrew captive screw at top of tuner bracket and withdraw tuner assembly.
4. Tuner may be hooked to left side of main chassis by dropping tongue on tuner bracket into 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 240-volt tap on the transformer. A 250-volt tap is also provided for use where 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 the rubber bung from "250V" fuse holder and insert the fuse and plug in this position. Insert the rubber bung into "240V" socket.

HORIZONTAL HOLD. This is set at the factory and normally should not need further adjustment. However, after change of components it may be necessary to readjust. The procedure is as follows:

(1) Short between cathodes (+) of phase discriminator diodes MR11 and MR12.

(2) Adjust the horizontal hold potentiometer for +2 volts, using a VTVM across C109.

(3) Adjust the core of the horizontal oscillator coil for "floating" sync.

(4) Remove the short from diodes and remove incoming sync. by bridging R121.

(5) Adjust discriminator balance control RV11 for "floating" sync.

(6) Remove bridge from R121.

CONTRAST RANGE. This control may be adjusted by inserting a thin screwdriver into the shaft of the "Picture" control, after removing the knob.

Set the "Picture" control to the extreme anti-clockwise position. The "Set Black" 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 re-appears and just locks in. Reset the "Set Black" control.

SET BLACK. To adjust the "Set Black" control, select the strongest signal. Turn "Picture" control fully anti-clockwise. Then adjust the brightness until **only** the darkest parts of the picture are black. The "Picture" control may then be advanced to raise the highlights of the picture to the required level.

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 tube beam current to zero, by means of the "Set Black" control. The voltage, measured **across** C133 (.047uF) should be adjusted to 510 volts for PW (23") and 500 volts for V2 (25"). This assures optimum picture width and EHT voltage. Reset the "Set Black" 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 is located adjacent to the 6GV8 vertical oscillator and output valve. RV9 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. Readjustment of the boost control and interlocking adjustments may be necessary if the other position of the slug is used.

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 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.

PICTURE TILT. If the picture is not square with the edges of the mask, loosen the clamping ring on the deflection coils and rotate the assembly until the picture is squared up. Tighten the clamping ring and, if necessary, re-centre the picture.

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.

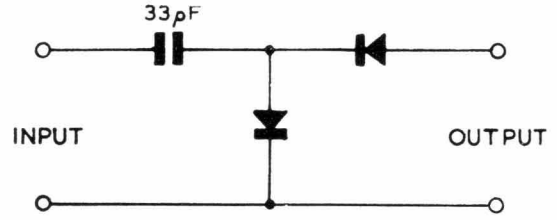


Fig. 1. Peak-to-Peak Detector.

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 MR2, 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 MR6. Connect the multimeter, set to a low voltage range, across the emitter of the limiter, V9. 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 R85 and R86, 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 28 to 40 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 the 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.

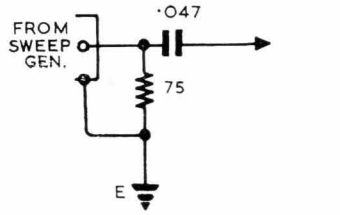


Fig. 2.

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

NOTE (3): Cores in L21, L24, L25, L28, L29, L31, L33 are set in the position furthest from the chassis.

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

OPERATION 1.

(a) Connect a bias supply of 9 volts across C26.

(b) Connect the display unit between the junction of L35 and L36 and earth.

(c) Remove cores from L24, L25, L28, L29, L31 and L33.

(d) Screw the core in L22 fully in.

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 38.375 Mc/s. Detune L28 slightly to allow alignment of L24.

(b) Insert a core in L24 and adjust to a minimum at 38.375 Mc/s.

(c) Stagger tune L28 and L24 so that a minimum rejection of about 60 dB at 38.375 Mc/s results. It may be necessary to adjust the coupling between L28 and L26, and L24 and L23 to obtain the 60 dB rejection. To measure this, increase the sweep generator output by 40 dB. Re-set the base line with the vertical shift control if necessary, and the 20 dB will represent the 60 dB point required below reference level.

OPERATION 7.

(a) Adjust L33 to 29.875 Mc/s and vary the spacing with L32 if necessary, to obtain a dip 40 dB below peak response.

(b) Adjust L22 to 28.375 Mc/s. Fig. 3, Stage 5.

OPERATION 8.

(a) Insert cores into L25 and L29 and tune both to 31.375 Mc/s. If necessary, vary the coupling between L25 and IFT1, and L29 and IFT2, to obtain a dip below peak response.

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

(c) Connect the display unit between pin 3 of V7 and earth. Insert a core in L31 and adjust the tuning and spacing with IFT, so that the response at 32.8 Mc/s is 10 dB above video response.

OPERATION 9.

(a) Remove 9 volt bias supply and check that the video response curve remains substantially unchanged.

(b) Seal all cores with a light application of cellulose adhesive.

Note: The curve of Fig. 3, Stage 6, is that seen when the display unit is connected between the junction of MR6 and R74, and earth. This should be in order provided the rest of the alignment has been carried out correctly.

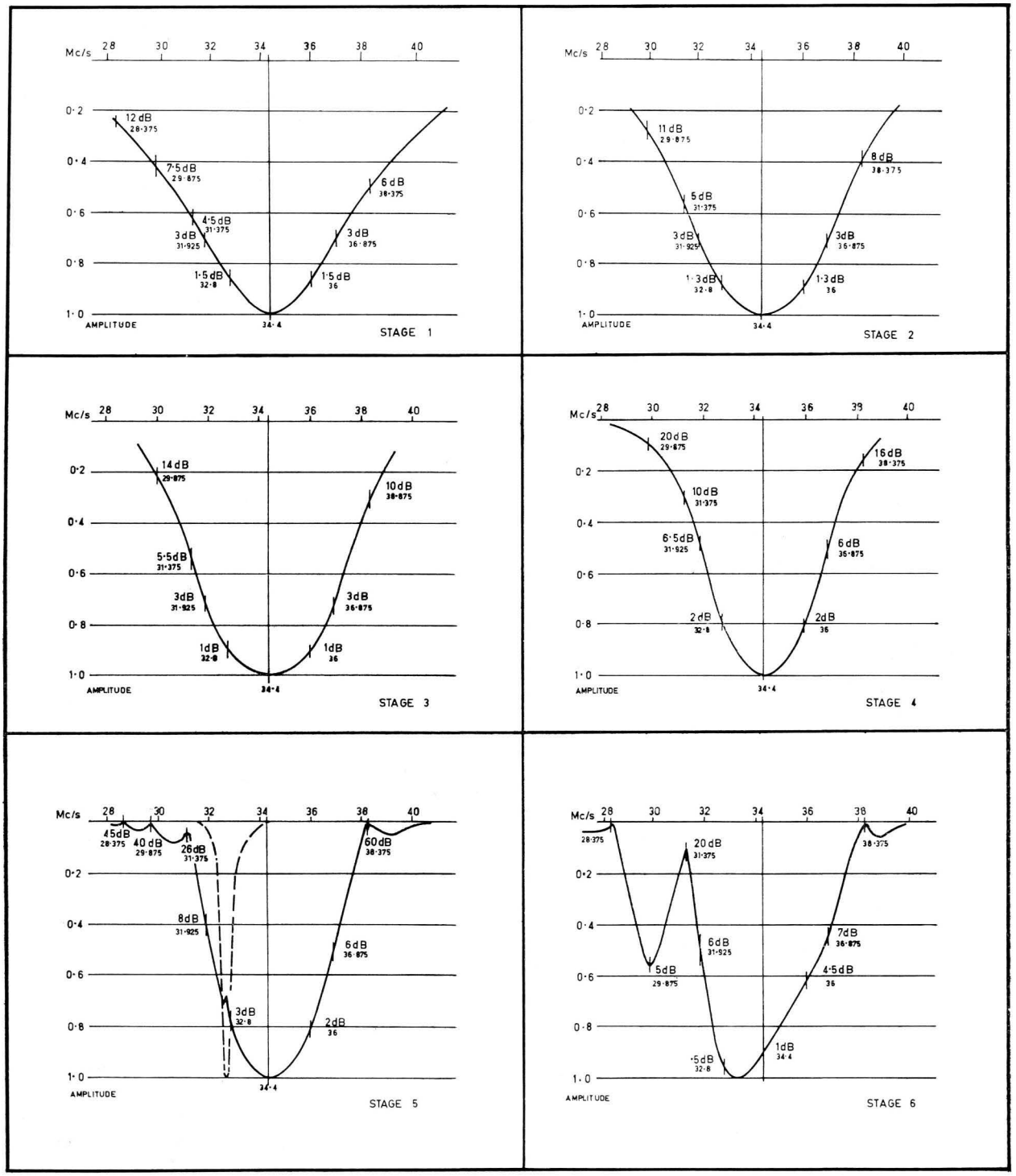
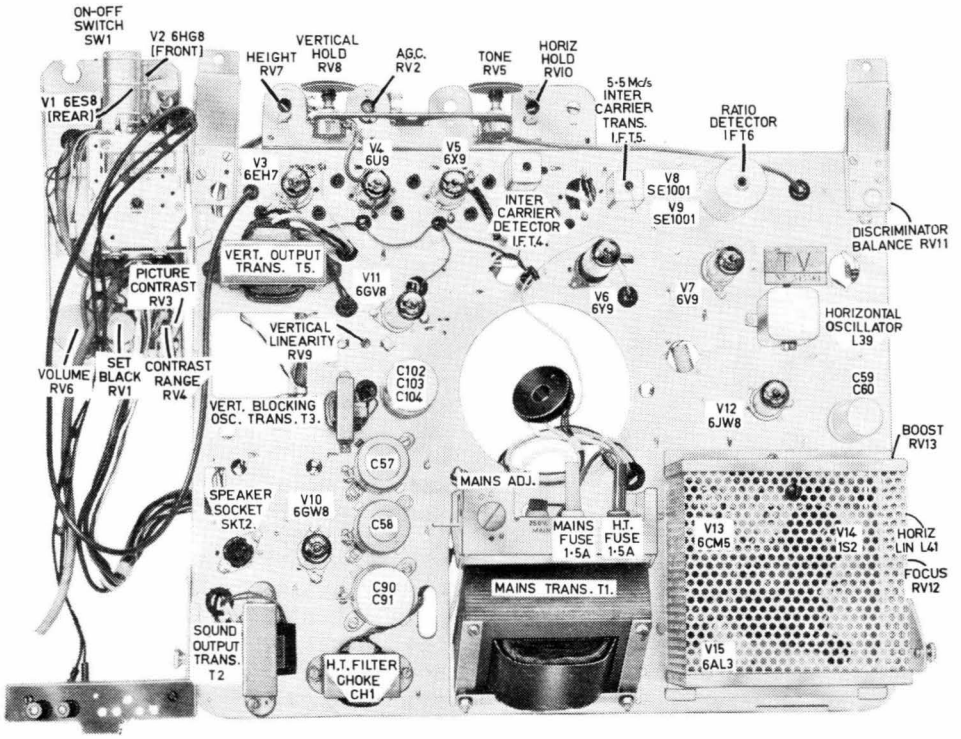
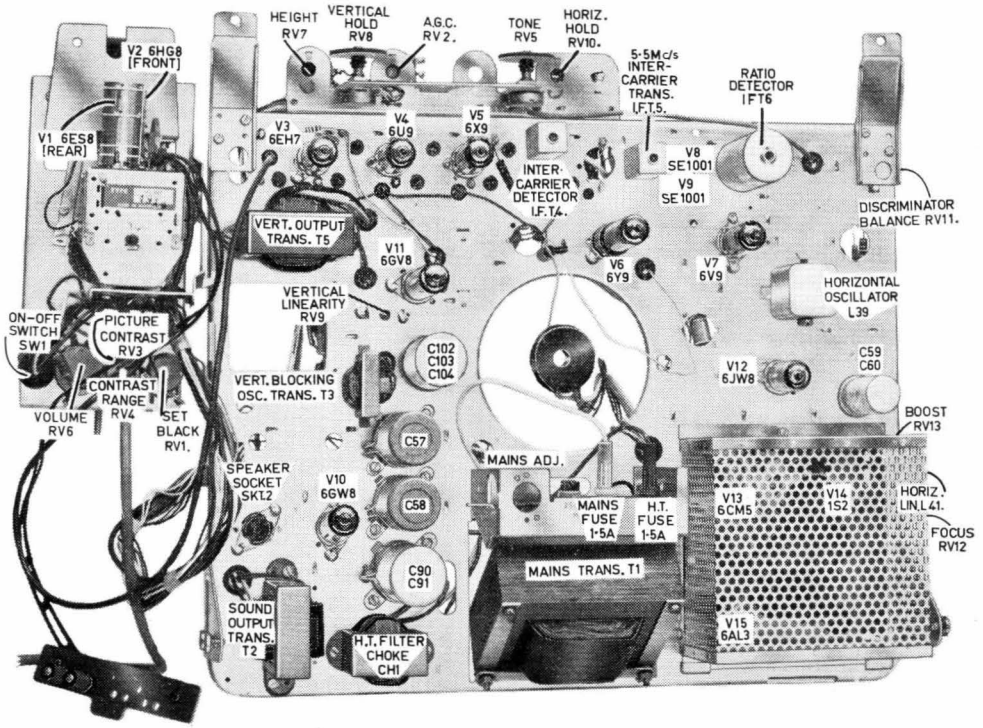


Fig. 3



BACK VIEW — PW CHASSIS



BACK VIEW — V2 CHASSIS

PARTS LIST — PW, V2

RESISTORS

REF.	PART NO.	DESCRIPTION
R20	740-0412	820 ohms 10% ½W
R21	740-0032	2.2K 10% ½W
R21a	740-1162	180 ohms 10% ½W
R22	749-0142	1K 20% 2W
R23	742-1142	2.7K 20% 1W
R24	740-0983	22 ohms 10% ½W
R25	740-0653	100 ohms 10% ½W
R26	742-0712	2.2K 20% 1W
R27	740-0592	22K 20% ½W
R28	740-0022	1K 10% ½W
R29	742-0492	68K 10% 1W
R30	740-0012	470 ohms 10% ½W
R31	740-0592	22K 20% ½W
R32	740-0612	10K 20% ½W
R33	740-0983	22 ohms 10% ½W
R34	740-0653	100 ohms 10% ½W
R35	742-0712	2.2K 20% 1W
R35a	750-0672	1.5K 10% 5W PW5
R36	740-0412	820 ohms 10% ½W
R37	740-0442	120 ohms 10% ½W
R38	740-0822	33K 20% ½W
R39	740-0792	8.2K 10% ½W
R40	742-1012	3.3K 20% 1W
R41	740-0322	1.2K 10% ½W
R42	740-0842	820K 10% ½W
R43	740-0862	18K 10% ½W
R44	740-0382	6.8K 10% ½W
R45	740-0082	10K 10% ½W
R46	740-0382	6.8K 10% ½W
R47	Part of 259-1261	2.7K 10% 1W. Former for Equalising Coil
R48	740-0922	330 ohms 10% ½W
R48a	740-0022	1K 10% ½W
R49	750-0702	2.7K 5% 7W PF7
R50	740-0773	39 ohms 10% ½W
R51	740-0362	390K 10% ½W
R52	740-0622	470K 20% ½W
R53	740-0272	150 ohms 10% ½ W
R54	740-0272	150 ohms 10% ½ W
R55	750-0752	250 ohms 10% 7W PW7
R56	742-0522	820K 10% 1W
R57	740-0722	1.5M 10% ½W
R58	742-0192	1M 10% ½W
R59	740-0802	1.8M 10% ½W
R60		
R61	740-0773	39 ohms 10% ½W
R62	740-0702	56K 10% ½W
R62a	742-1092	3.3M 20% 1W
R63	740-0582	47K 20% ½W
R64		
R65	750-0782	6.8K 10% 4W PF4
R66	742-0352	1M 20% 1W
R66a	742-0062	27K 10% 1W
R67	742-0732	1.8M 10% 1W
R67a	742-1132	6.8M 20% 1W
R68	742-0352	1M 20% 1W
R69	740-1122	3.3M 20% ½W
R70	740-1122	3.3M 20% ½W

RESISTORS (Continued)

REF.	PART NO.	DESCRIPTION
R71	742-0332	15K 20% 1W
R72	742-0372	22K 20% 1W
R73	740-0512	100K 20% ½W
R74	738-0082	12K 10% ¼W
R75	740-0082	10K 10% ½W
R76	740-0322	1.2K 10% ½W
R77	740-0663	82 ohms 10% ½W
R78	740-0792	8.2K 10% ½W
R79	740-0412	820 ohms 10% ½W
R80	740-0663	82 ohms 10% ½W
R81		
R82		
R83	740-1182	1K 5% ½W
R84	740-1292	680 ohms 5% ½W
R85	740-0092	15K 10% ½W
R86	740-0092	15K 10% ½W
R87	740-0582	47K 20% ½W
R88	740-0152	150K 10% ½W
R89	740-0152	150K 10% ½W
R90	740-0702	56K 10% ½W
R91	742-0452	220K 20% 1W
R92	740-0252	1.5K 10% ½W
R93	740-0292	270 ohms 10% ½W
R94	740-0142	100K 10% ½W
R95	740-0512	100K 20% ½W
R96	740-1422	4.7K 20% ½W
R97	740-0653	100 ohms 10% ½W
R98	740-0062	3.9K 10% ½W
R99	750-0662	3.9K 10% 4W PF4
R100	742-0342	330K 20% 1W
R101	742-0142	270K 10% 1W
R102	742-1092	3.3M 20% 1W
R103	742-1122	750K 5% 1W
R104	740-0822	33K 20% ½W
R105	742-0592	2.2M 20% 1W
R106	740-0232	39K 10% ½W
R107	742-0802	4.7K 20% 1W
R108	740-0822	33K 20% ½W
R109	740-0202	2.2M 10% ½W
R110	742-0823	270 ohms 10% 1W
R111	740-0582	47K 20% ½W
R112	740-0032	2.2K 10% ½W
R113	742-0602	470 ohms 10% 1W
R114	740-0132	82K 10% ½W
R115	740-1243	6.8 ohms 10% ½W
R116	740-1243	6.8 ohms 10% ½W
R117	742-0192	1M 10% 1W
R118	742-0402	150K 20% 1W
R119	740-0582	330K 20% ½ W
R120	742-0582	120K 10% 1W
R121	740-0822	33K 20% ½W
R122	740-0322	1.2K 10% ½W
R123	740-0732	12K 10% ½W
R124	740-0142	100K 10% ½W
R125	740-0852	560K 10% ½W
R126	740-0852	560K 10% ½W
R127	742-0432	18K 10% 1W
R128	740-0102	22K 10% ½W

REF.	PART NO.	DESCRIPTION
		RESISTORS (Continued)
R129	740-0382	6.8K 10% ½W
R130	740-0102	22K 10% ½W
R131	740-0172	470K 10% 1W
R132	740-0242	33K 10% ½W
R133	740-0062	3.9K 10% ½W
R134	740-0242	33K 10% ½W
R135	742-0372	22K 20% 1W
R136	742-0062	27K 10% 1W
R137	742-0192	1M 10% 1W
R138	742-0192	1M 10% 1W
R139	740-0572	1K 20% ½W
R140	750-0362	2.7K 10% 5W PW5
R141	742-0562	470K 20% 1W
R142	742-0562	470K 20% 1W
R143	742-0562	470K 20% 1W
R144	742-0102	82K 10% 1W
R145	742-0102	82K 10% 1W
R146	961-0921	0.5 ohm resistance wire
R147	742-0192	3.3M 20% 1W
R148	750-0602	22 ohms 10% 5W PW5
R149	740-1043	27 ohms 10% ½W
R150	740-0502	15K 20% ½W
		CAPACITORS
C20	271-0311	27pF 5% NPO Tubes
C21	279-0561	.5uF 25% 200V Hunts
C22	271-0911	.003uF GMV 500V CTR
C23	271-0911	.003uF GMV 500V CTR
C24	271-0911	.003uF GMV 500V CTR
C25	271-0911	.003uF GMV 500V CTR
C26	271-0621	.001uF Lead Thru
C27	273-0591	68 pF 2½% MS Mica
C27a	271-0911	.003uF GMV 500V CTR
C28	271-0731	.047 uF +80% —20% 25V Redcap
C29	271-0591	.0027uF 20% K2000 Disc
C30	273-0591	68pF 2½% MS Mica
C31	271-0281	.022uF GMV 100V Disc
C32	273-0591	68pF 2½% MS Mica
C33	271-0911	.003uF GMV 500V CTR
C34	271-0761	.1uF +80% —20% 25V Redcap
C35	271-0281	.022uF GMV 100V Disc
C36	271-0621	.001uF Lead Thru
C37	271-0731	.047 uF +80% —20% 25V Redcap
C38	273-0591	68pF 2½% MS Mica
C39	271-0591	.0027uF 20% K2000 Disc
C40	273-0591	68pF 2½% MS Mica
C41	271-1221	82pF Lead Thru CAC106
C42	271-1211	.001uF GMV Tube
C42a	271-0911	.003uF GMV 500V CTR
C43	273-0591	68pF 2½% MS Mica
C44	269-1041	10uF 6VW Electro
C45	271-0281	.022uF GMV 100V Disc
C46	271-0911	.003uF GMV 500V CTR

REF.	PART NO.	DESCRIPTION
		CAPACITORS (Continued)
C46a	273-0591	68pF 2½% MS Mica
C47	271-0591	.0027uF 20% K2000 Disc
C48	271-0121	5.6pF ±¼pF NPO Tube
C49	283-1161	.022uF 10% 400V Polyester
C50	271-0941	8.2pF ±½pF NPO Disc
C51	271-0621	.001uF Lead Thru CAC107
C52	271-0601	10pF 5% NPO Disc
C53	273-0591	68pF 2½% MS Mica
C54	283-1741	.1uF 10% 400V Polyester
C55	269-1271	1uF 300VW Electro
C56	283-1701	.047 10% 400V Polyester
C57	269-0521	100uF 150VW Electro — EMG2024S
C58	269-0521	100uF 150VW Electro — EMG2024S
C59	269-0901	200uF 275VW Electro EMG
C60		60uF 275VW Electro 1716M
C61	283-1181	.033uF 10% 160V Polyester
C61a	271-0911	.003uF GMV 500V CTR
C62	271-0911	.003uF GMV 500V CTR
C62a	283-1121	.01uF 10% 160V Polyester
C63	283-1621	.01uF 10% 400V Polyester
C63a	271-0841	470pF 20% Disc
C64	271-0841	470pF 20% Disc
C65	280-1791	220pF 10% 600V Styroseal
C66	271-0351	33pF 5% NPO Tube
C67	271-0681	12pF 5% NPO Disc
C68	271-1131	.047pF Lead Thru CAC100
C69	271-0731	.047uF +80% —20% 25V Redcap
C70	271-0351	33pF 5% NPO Tube
C71	271-0471	6.8pF ±¼pF NPO Disc
C72	271-1401	100pF 20% N330 Tube
C73	271-0351	33pF 5% NPO Tube
C74	271-0731	.047uF +80% —20% 25V Redcap
C75	271-0731	.047uF +80% —20% 25V Redcap
C76	271-1101	1.8pF ±¼pF NPO Disc
C77	271-0731	.047uF +80% —20% 25V Redcap
C78	280-3191	470pF 5% 125V Styroseal
C79	271-1121	47pF 2½% NPO Disc
C80	280-3121	270pF 10% 125V Styroseal
C81	280-3121	270pF 10% 125V Styroseal
C82	269-0781	4uF 25VW Electro
C83	283-1501	.001uF 10% 400V Polyester
C84	283-1581	.0047uF 10% 400V Polyester
C85	271-0961	560pF 10% K2000 Tube
C86	283-1121	.01uF 10% 160V Polyester
C87	283-1701	.047uF 10% 400V Polyester
C88	269-1171	25uF 6.4VW Electro
C89	271-1061	15pF 10% N330 Tube
C90	269-1161	8uF 250VW Electro
C91		16uF 250VW Electro
C92	269-1171	25uF 6.4VW Electro
C93	269-1261	2uF 250VW Electro
C94	271-0911	.003uF GMV 500V CTR

PARTS LIST — PW, V2

REF.	PART NO.	DESCRIPTION
		CAPACITORS (Continued)
C95	283-1721	.068uF 10% 400V Polyester
C96	271-1211	.001uF GMV Tube
C97	283-1721	.068uF 10% 400V Polyester
C98	283-1701	.047uF 10% 400V Polyester
C99	283-1261	.15uF 10% 160V Polyester
C100	271-1211	.001uF GMV Tube
C101	271-1211	.001uF GMV Tube
C102	269-0981	50uF 300VW Electro
C103		24uF 300VW Electro
C104		100uF 300VW Electro
C105	283-1661	.022uF 10% 400V Polyester
C106	283-1581	.0047uF 10% 400V Polyester
C107	271-1371	22pF 20% N330 Disc
C108	280-2041	220pF 20% 600V Styroseal
C109	269-0781	4uF 25VW Electro
C110	269-0781	4uF 25VW Electro
C111	280-3241	330pF 20% 125V Styroseal
C12	283-1601	.0068uF 10% 400V Polyester
C113	283-1601	.0068uF 10% 400V Polyester
C114	283-1241	.1uF 10% 160V Polyester
C115	271-0571	22pF 10% NPO Tube
C116	280-1101	.0068uF 10% 400V Styroseal
C117	280-1091	.0056uF 10% 400V Styroseal
C118*	280-3271	33pF 20% 600V Styroseal
C119*	280-3271	33pF 20% 600V Styroseal
C120	283-1141	.015uF 10% 160V Styroseal
C121	283-2361	1uF 20% 160V Polyester
C122	271-1241	820pF 20% K2000 Tube
C123	283-1501	.001uF 10% 400V Polyester
C124	279-0561	.5uF 25% 200V Hunts
C125	283-1581	.0047uF 10% 400V Polyester
C126	271-0911	.003 GMV 500V CTR
C127	271-0991	220pF 2KV Tube
C128	284-0661	.022uF 20% 600V Dipol
C129	284-1281	.22uF 20% 1000V Dipol
C130		68pF 3KV Tube (Ex MSP)
C131	284-2701	.047 10% 100V Dipol
C132	271-0911	.003 GMV 500V CTR
C133	284-2701	.047 10% 100V Dipol
C134	283-1701	.047uF 10% 400V Polyester
C135	271-0911	.003 GMV 500V CTR
C136	271-0911	.003uF GMV 500V CTR
C137	283-1771	.18uF 10% 400V Polyester
C138	271-1251	18pF 20% 3KV Disc
		POTENTIOMETERS
RV1	677-1311	500K Curve 'A'—Set Black. Used on PW only
RV1	677-1341	500K Curve 'A'—Set Black. Used on V2 only
RV2	677-0911	1M Curve 'A'—AGC
RV3	677-1301	50K Curve 'A' (front)—Contrast
RV4		25K Curve 'A' (rear)—Contrast Range
RV5	677-1113	1M Reverse 'C'—Tone
RV6	677-1321	1M Curve 'A' tapped 500K—Volume
RV7	677-0341	250K Curve 'A'—Height
RV8	677-1103	500K Curve 'A'—Vertical Hold

REF.	PART NO.	DESCRIPTION
		POTENTIOMETERS (continued)
RV9	677-0511	10K Curve 'A—Vertical Linearity
RV10	677-1241	100K Curve 'A'—Horizontal Hold
RV11	677-1122	15K Curve 'A'—Discriminator Balance
RV12	677-0891	2M Curve 'A' Strip—Focus
RV13	677-0911	1M Curve 'A'—Boost
		VALVES AND TRANSISTORS
V1	932-1161	6ES8—RF Amplifier
V2	932-1921	6HG8—Frequency Changer
V3	932-1211	6EH7—1st IF Amplifier
V4	932-2331	6U9—2nd IF Amplifier and Blanking Clamp
V5	932-2341	6X9—3rd IF Amplifier and Noise Detector
V6	932-2351	6Y9—Video Amplifier and AGC
V7	932-2411	6V9—Sync. Separator and Amplifier
V8	932-2281	SE1001—Sound IF Amplifier
V9	932-2281	SE1001—Limiter
V10	932-1771	6GW8—Audio Driver and Output
V11	932-2001	6GV8—Vertical Oscillator and Output
V12	932-2371	6JW8—Reactance Valve and Horizontal Oscillator
V13	932-0531	6CM5—Horizontal Output
V14	932-0771	1S2—EHT Rectifier
V15	932-1151	6AL3—Damper Diode
		DIODES
MR1	932-0971	OA90—Noise Clipper
MR2	932-0971	OA90—Video Detector
MR3	932-1071	OA210—HT Rectifier
MR4	932-1071	OA210—HT Rectifier
MR5	932-0991	M3—AGC Clamp
MR6	932-2271	AA119—Inter-Carrier Detector
MR7	932-2081	2—AA119—Ratio Detector (Matched Pair)
MR8		
MR9		
MR10	932-2451	BA100—Vertical Sync. Diode
MR11†	932-2601	AB1101—Phase Discriminator
MR12†	932-2601	AB1101—Phase Discriminator
MR13	932-2401	BA122—AGC Reference Diode
		COILS
L21	259-1321	IF Input Coil
L22		28.375 Mc/s Trap
L23	259-1391	1st IF Anode Coil
L24		38.375 Mc/s Trap
L25	Part of IFT1	31.375 Mc/s Trap
L26	259-1431	Filter Choke
L27	259-1611	2nd IF Anode Coil
L28		38.375 Mc/s Trap
L29	Part of IFT2	31.375 Mc/s Trap

* 47pF (280-3351) on more recent production.

† BA100 (932-2451) on earlier production.

REF.	PART NO.	DESCRIPTION
		COILS (Continued)
L29a	259-1431	Filter Choke
L30	259-1431	Filter Choke
L31	Part of IFT3	Noise Take-off Coil
L32	259-1411	3rd IF Anode Coil
L33		29.875 Mc/s Trap
L34	259-0955	Grid Peaking Choke
L35	259-1591	5.5 Mc/s Trap
L36	259-1431	Filter Choke
L37	259-1261	Equalising Coil
L38		
L39	908-0622	Video Peaking Transformer
L40	259-0045	Anti-Parasitic Coil
L40a	259-1543	Horizontal Oscillator Coil
L41	259-0045	Anti-Parasitic Coil
L42	259-1251	Linearity Coil
		TRANSFORMERS
T1	904-0451	Power Transformer
T2	905-0621	Sound Output Transformer
T3	908-0781	Vertical Oscillator Transformer
T4	908-0741	Vertical Feedback Transformer
T5	905-0602	Vertical Output Transformer
T6	908-0771	Horizontal Output Transformer
IFT1	906-0771	Vision IFT
IFT2	906-0771	Vision IFT
IFT3	906-0831	Vision IFT
IFT4	906-0674	Sound Detector IFT
IFT5	906-0781	Sound IFT
IFT6	906-0681	Ratio Detector Transformer

REF.	PART NO.	DESCRIPTION
		MISCELLANEOUS
CH1	232-0352	HT Choke
VDR1	750-0711	Voltage Dependent Resistor Type E299DC/P342
VDR2	750-0691	Voltage Dependent Resistor Type E298ED/A262 Violet Spot
VDR3	750-0571	Voltage Dependent Resistor Type E298ZZ/06 Black End, Blue Spot
VDR4	750-0761	Voltage Dependent Resistor Type E299DE/P354
FS1	431-0081	Fuse, 1.5 amp. Mains
FS2	431-0081	Fuse, 1.5 amp. HT Secondary
Tuner	224-1512	Philips NT3011
SW1	855-0682	DP Push-Push On/Off Switch Used on PW only
SW1	855-0711	DP Rotary On/Off Switch Used on V2 only
Lamp	932-1941	6.3V .25A Bayonet Cap Used on PW only
Lamp	932-1171	6.3V .32V Bayonet Cap Used on V2 only
Yoke	259-1851	MSP 43663A
CRT	932-2291	23ARP4 23" Shelbond Used on PW only
CRT	932-2641	25NP4 25" Shelbond Used on V2 only

H. CLARK PTY. LTD.
Printers
MARRICKVILLE, N.S.W.

CHANGES TO CIRCUIT OVERLEAF

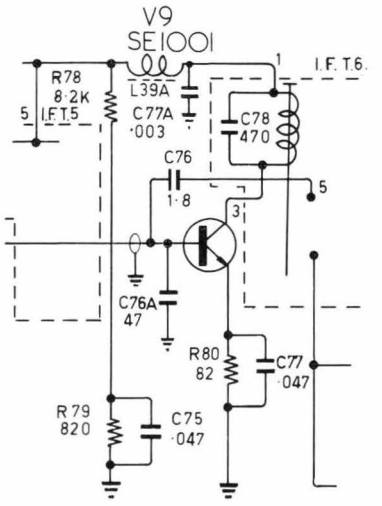
CHASSIS TYPES PW AND V2

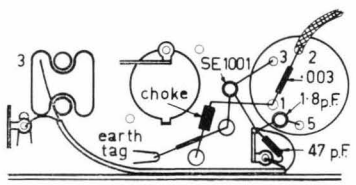
In some areas, due to 5.5 Mc/s harmonic radiation, trouble has been experienced with interfering patterns, particularly on Channel 2. To minimise this effect, some circuit alterations have been made around the limiter stage.

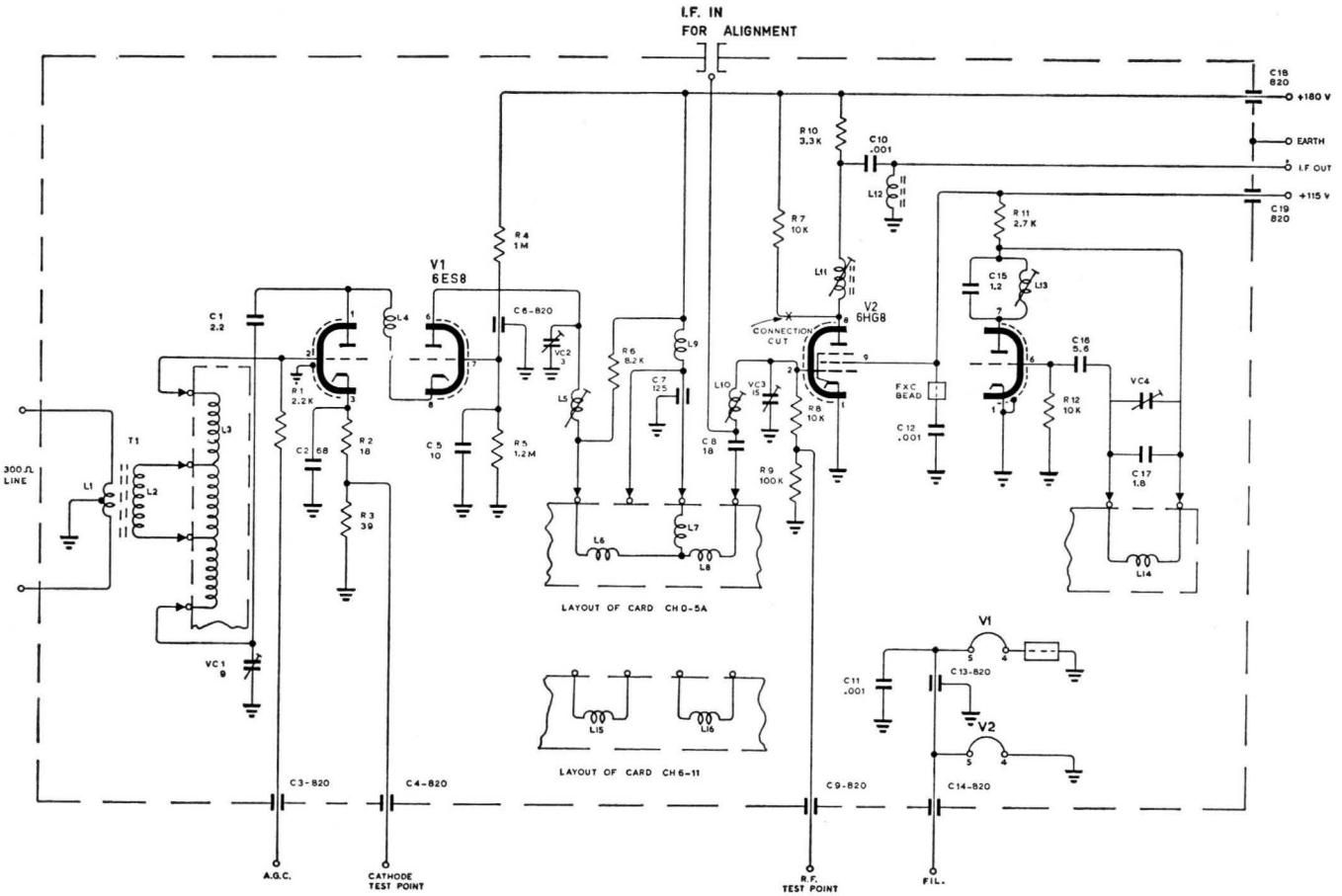
A filter in the collector circuit has been added. This consists of a filter choke (L39a) and a .003uF ceramic capacitor (C77a). The lead from pin 3 of IFT5 to the base of the limiter is run in shielded cable and the base is also by-passed to earth with a 47pF ceramic NPO capacitor (C76a). The .047uF Redcap capacitor (C77) has been replaced with a .047uF Lead Thru capacitor.

These changes will take effect after Serial No. 1125 for the PW chassis, and 3105 for the V2 chassis.

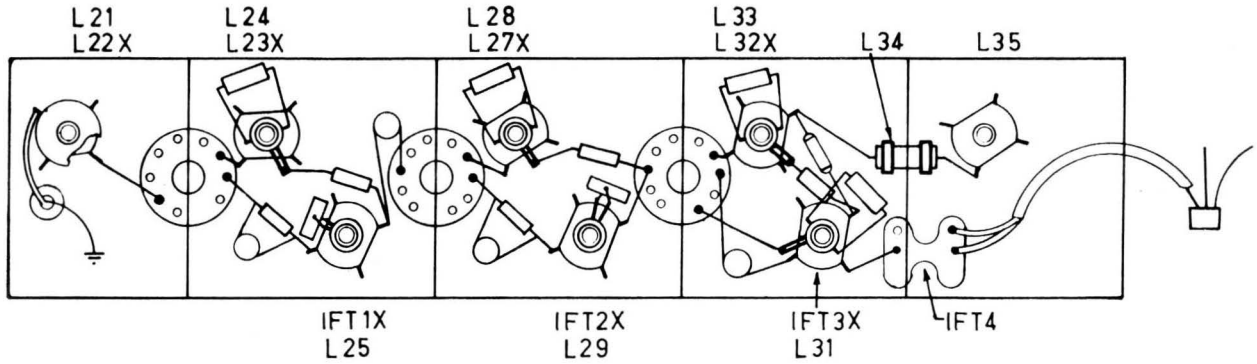
L39a	259-1431	Filter Choke	Added
C77a	271-0911	.003uF GMV 500V CTR	Added
C76a	271-1441	47pF 20% NPO Ceramic Tube	Added
C77	271-0731	.047uF +80% —20% 25V Redcap	Deleted
	271-1131	.047uF Lead Thru	Added





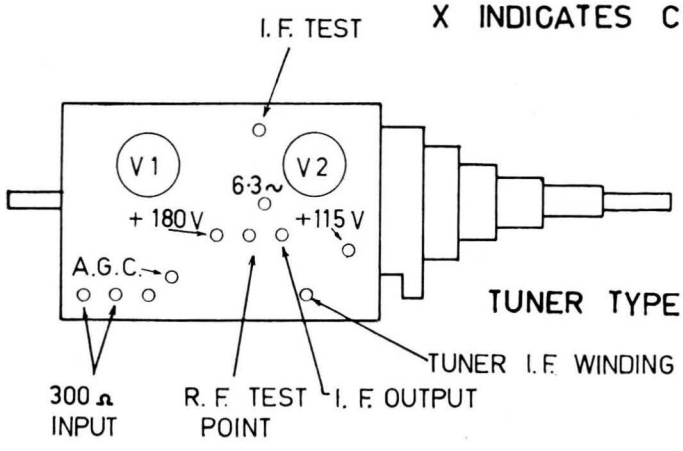


TUNER TYPE NT3011



LOCATION OF COILS FROM UNDERSIDE OF CHASSIS

X INDICATES COIL NEAREST CHASSIS



TUNER TYPE NT3011

1ST. I.F. AMPLIFIER

2ND. I.F. AMPLIFIER

3RD. I.F. AMPLIFIER & NOISE DETECTOR

VIDEO DETECTOR AMPLIFIER

PICTURE TUBE

23ARP4 - SB MODEL PW.
25NP4 - SB MODEL V2.

POWER SUPPLY

TO TUNER TYPE NT3011

V3 6EH7

V4 6U9

V5 6X9

V6A ½ 6Y9

VDR1

SET BLACK

E.H.T. 17KV.

T1

MR3 OA210

MR4 OA210

PL1 YOKE

A.G.C.

SYNC. SEPARATOR AND AMPLIFIER.

V6B ½ 6Y9

V7 6V9

LIMITER

RATIO DETECTOR

SOUND AMPLIFIER

V8 SE1001

V9 SE1001

V10 6GW8

T2

T6

VERTICAL BLOCKING OSCILLATOR

OUTPUT

REACT. VALVE

PHASE DISCRIM.

HORIZ. OSCILLATOR

HORIZONTAL OUTPUT

E.H.T. RECTIFIER

DAMPER DIODE

V11 6GV8

T3

T4

T5

V12 6JW8

V13 6CM5

V14 1S2

V15 6AL3

ARROWS ON RV. INDICATE CLOCKWISE ROTATION OF CONTROLS.

UNLESS OTHERWISE NOTED:-
CAPACITORS MORE THAN 1 = pF.,
CAPACITORS LESS THAN 1 = μF.,
RESISTORS = Ω, K = 1,000, M = 1,000,000.
SOCKETS VIEWED FROM UNDERNEATH.
PLUGS VIEWED ON PINS.

NOTE:- ALL VOLTAGES MEASURED WITH 20,000 Ω/V METER WITH RESPECT TO CHASSIS.
ALL CONTROLS SET FOR NORMAL OPERATION WITH SIGNAL APPLIED
▲ DO NOT MEASURE!
✱ SYNC. AT ½ HORIZ. FREQUENCY
✱✱ SYNC. AT ½ VERTICAL FREQUENCY.
WAVEFORM PEAK VOLTAGES WITH RESPECT TO CHASSIS.