

# WESTINGHOUSE PORTABLE TELEVISION RECEIVER MODEL W1147P



## TELEVISION

Issued By **EMAIL LIMITED**  
Consumer Products Division (Sydney)

### GENERAL DESCRIPTION

Model W1147P is a 14-valve, A.C.-operated 11" portable television receiver. Serviceability and compactness are facilitated by a hinged printed board, while other features include a neutrode tuner, twin telescopic aerial and shatter-proof moulded cabinet.

### ELECTRICAL AND MECHANICAL SPECIFICATIONS

#### INTERMEDIATE FREQUENCIES

Video I.F. Carrier Frequency ..... 36.875 Mc/s  
Sound I.F. Carrier Frequency ..... 31.375 Mc/s

**POWER CONSUMPTION:** 120 watts maximum.

**UNDISTORTED AUDIO POWER OUTPUT:** 400mW.

**FOCUS** ..... Electrostatic (Low Voltage)

**DEFLECTION** ..... 110° Magnetic

**TUNER TYPE** ..... TB1 Part No. 45051

#### VALVE AND DIODE COMPLEMENT:

1	V1 Radiotron 6GK5	R.F. Amplifier
2	V2 Radiotron 6HG8	R.F. Oscillator and Converter
3	V101 Radiotron 6CS6	Quadrature Detector
4	V102 Radiotron 6EW6	Audio Output
5	V201 Radiotron 6EH7	1st Video I.F.
6	V202 Radiotron 6EJ7	2nd Video I.F.
7	V203 Radiotron 6KV8	Video Amp. and Sync. Sep.
8	V204 Radiotron 11LP4	Kinescope
9	V301 Radiotron 6CB6	A.G.C. Amplifier
10	V302 Radiotron 6BM8	Vert. Osc. and Output
11	V401 Radiotron 12AU7A	Hor. Oscillator
12	V402 Radiotron 6CM5	Horizontal Output
13	V403 Radiotron 6AX4GT	Damper*
14	V404 Radiotron 1X2B	H.V. Rectifier

\* Should not be replaced by a 6AU4GT or other substitute.

MR201	IN87A	Video Detector
MR301	M3	A.G.C. Clamp
MR401	IN618	Phase Discriminator
MR402	IN618	Phase Discriminator
MR403	IN3194	Rectifier
MR404	IN3194	Rectifier

## HIGH VOLTAGE WARNING

Operation of this receiver outside the cabinet involves a shock hazard from the receiver power supplies. Work on the receiver should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high voltage equipment. Make sure that the aquadag earth spring is making good contact before turning the receiver on.

### PRINTED BOARD AND GENERAL SERVICING

Place the receiver face downwards on a soft cloth and remove the four slotted retaining nuts exposed.

Lift the cabinet back slightly upwards and unplug the mains isolating panel which is connected to the aerial leads from the tuner. The back may now be lifted clear of the chassis assembly.

Stand the receiver upright and the receiver is exposed for voltage checks and general servicing.

To gain access to the component side of the board, disconnect the tuner I.F. output and A.G.C. leads from the retaining clip mounted on the speaker and remove three screws securing the board to the mounting frame.

The board is now free to be hinged back through 90° without affecting the receiver operation.

If it is necessary to remove the board completely, disconnect the earth strap from the right-hand side and unplug all the interconnecting leads from the board. Unsolder the I.F. output and A.G.C. leads from the tuner.

Swing the board through a full 180° arc and lift it slightly to free the pivot hinges from the mounting frame.

Re-assembly is the reverse of the above procedure.

### CHASSIS REMOVAL

The chassis need only be removed if the kinescope, implosion screen, speaker, front controls or some major items on the chassis require replacement. The procedure is as follows:—

Remove the front control knobs.

Remove the two screws securing the chassis to the cabinet front and stand the receiver upright.

Disconnect the kinescope socket, ultor lead, aquadag earth spring and unsolder the yoke leads on the vertical chassis.

Remove the nut securing the earphone socket to the cabinet front.

Slide the chassis back as far as possible and remove the four screws mounting the speaker.

With the speaker removed, the front control plate is detached from the cabinet front by removing two screws.

The complete chassis may now be removed from the cabinet front.

Re-assembly is the reverse of the above procedure taking note of the following points:—

With the board secured to its mounting frame, the tuner I.F. output and A.G.C. leads must be secured in the retaining clip on the top right-hand side of the speaker.

The aquadag earth spring must be in position.

The leads from the front controls and speaker should be dressed under the neck of the kinescope, as far as possible from the yoke.

### KINESCOPE REMOVAL

First remove the complete chassis from the cabinet front as described in Chassis Removal.

Place the cabinet front assembly face down on a soft cloth and remove the four screws securing the kinescope mounting brackets.

The kinescope may now be lifted clear of the cabinet front.

When replacing the kinescope or fitting a new one the following points should be observed:—

Make sure that the face of the kinescope and the inside surface of the implosion screen are perfectly clean; a damp, soft, lint-free cloth will be satisfactory for this purpose.

The high voltage contact should be on the vertical chassis side of the cabinet.

Make sure that the rubber mounting spacers are in place on the brackets.

A piece of thermo-setting insulating tape should be affixed to the rear surface of the kinescope to prevent the damper valve making glass to glass contact with the kinescope.

### REPLACEMENT OF FUSES

Fuses are provided for mains and high tension protection.

Both are accessible on removing the cabinet back and hinging the printed board through 90°. It is most important that the 1 amp. mains fuse be only of the anti-surge type.

### HORIZONTAL HOLD ADJUSTMENT

Short circuit the sine wave coil, L401, and earth pin 2 of V203 (6KV8) sync. separator.

Adjust the horizontal hold control, RV401, until the picture is synchronised with the signal, i.e., picture sides are straight.

Remove the short circuit from the sine wave coil.

Adjust the core of the sine wave coil until the picture is synchronised with the signal.

**Note:** Two positions of the core may satisfy the above requirement. The correct setting is with the core furthest from the coil.

Remove the short circuit from pin 2 of V203.

**Note:** The above adjustments must be made with the printed board closed, since interaction of the deflection yoke with the sine wave coil necessitates re-adjustment of this coil.

### A.G.C. ADJUSTMENT

The following adjustments can only be performed after all other receiver adjustments have been satisfactorily carried out.

Set the Contrast, A.G.C. and I.F. A.G.C. controls in their mid-positions.

With the receiver tuned to a medium strength signal (about 1mV), or suitable attenuated signal, make the following adjustments.

Adjust the A.G.C. control to give a reading of 130V d.c. at the wiper arm of the control. This reading should be taken on a Voltomyst or a 20,000 ohms/volt meter.

With normal brightness and contrast settings, adjust the I.F. A.G.C. control for snow threshold.

**Note:** Clockwise rotation of the I.F. A.G.C. control increases snow, whilst a clockwise rotation of the A.G.C. control increases the video output.

### CARE OF CABINET

A soft, lint-free cloth slightly dampened will remove most dirt marks from the plastic case.

A good quality perspex polish should be used to repair the surface of the safety screen when it becomes scuffed or marked.

## ALIGNMENT PROCEDURE

### TESTING INSTRUMENTS

To properly service the television receiver, it is recommended that the following testing equipment be available:—

1. A.W.A. Television Sweep Generator, type A56036.
2. A.W.A. Cathode Ray Oscilloscope (c.r.o.), type A56031.
3. [REDACTED]
4. 5.5 Mc/s F.M. Generator such as Advance SG63E.
5. A.W.A. Voltohmyst, type A56010.
6. A.W.A. Voltohmyst Probe, type 2R56020.
7. A.W.A. Universal Measuring Bridge, type A56048.
8. A.W.A. Television Calibrator, type A56057.

### SOUND AND VIDEO I.F. ALIGNMENT

**Note:** When two positions of the core appear to give the correct adjustment, the following apply:—

- \* Coil tuned with core close to the printed board.
- † Coil tuned with core close to can top remote from the printed board.

#### Sound I.F. Alignment.

Connect an f.m. signal generator to the Video Detector test point and set the frequency accurately to 5.5 Mc/s (signal level approximately 200mV).

Connect the Voltohmyst crystal probe to the video output test point and set the range switch to + 5 volts d.c.

Adjust L207\* (5.5 Mc/s trap) for minimum reading on the Voltohmyst.

Connect the c.r.o. to the sound test point.

Switch the f.m. modulation of the signal generator to ± 50 Kc/s deviation and the modulating frequency 400 to 1,000 c/s. Insert 2.7K ohms between generator & test point.

With a signal strength of approximately 50-100mV, adjust the core of L101\* for maximum amplitude and symmetrical sinusoidal wave.

Reduce the signal and adjust TR203, bottom core, for maximum output and top core† for symmetrical break-out as shown in Fig. 1. Break-out is shown on viewed audio as equal symmetrical distortion (noise) on both positive and negative tips of the wave form.



FIG 1

### VIDEO I.F. ALIGNMENT

Turn RV301 to the extreme anti-clockwise position when viewed from the back of the printed board.

Connect a source of -6V bias to the video I.F. A.G.C. test point.

Connect the c.r.o. through a 100K ohms resistor to the Video Detector test point and the sweep generator (29-40 Mc/s sweep, correctly terminated) to the secondary of TR201.

"Loose couple" the marker generator to the active lead of the sweep generator whose output is set to give 1.5V p-p on the c.r.o.

Adjust TR202 and the top core of TR201† (30.875 Mc/s trap) to the required response as shown in Fig. 2.

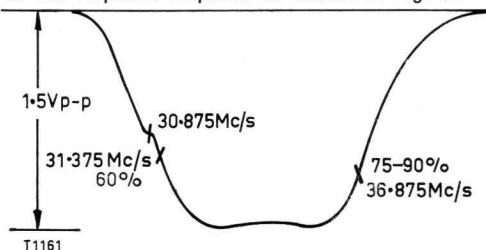


FIG. 2

With the tuner on a blank or unused channel, connect the sweep generator to the mixer grid of the tuner through the network shown in Fig. 3.

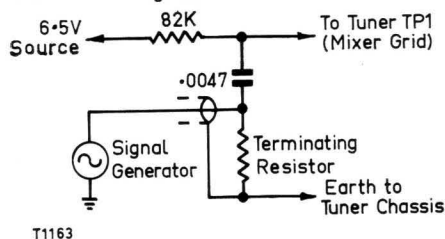


FIG. 3—

Adjust L2, L201\* and TR201\* to give a symmetrical curve as shown in Fig. 4.

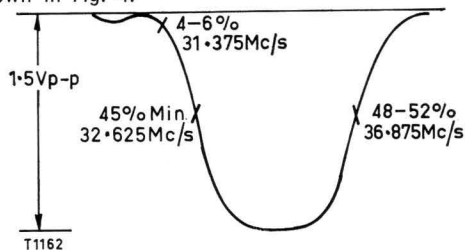


FIG. 4—

**Note:**

L2 mainly affects the carrier position.  
L201\* and TR201\* mainly affect tilt and shape.  
L201\* maximum amplitude at approximately 32.625 Mc/s marker.

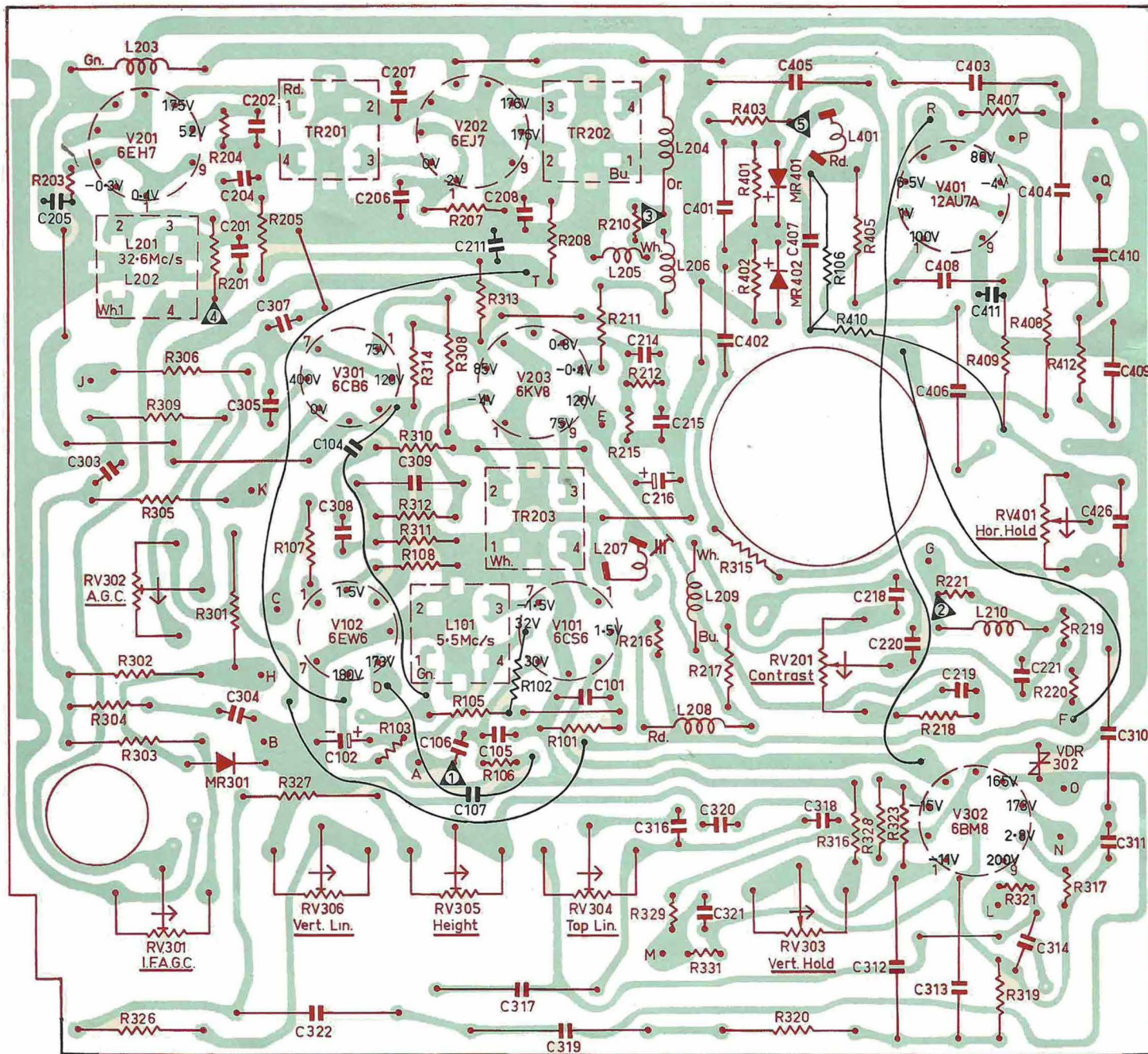
## CIRCUIT CODE

Code No.	DESCRIPTION	Part No.	Code No.	DESCRIPTION	Part No.	
<b>RESISTORS</b>			<b>RESISTORS (Continued)</b>			
All Resistors composition type unless otherwise stated.						
R1	5.6K ohms ±20%	1/2 watt	611288	R403 470K ohms ±10%	1/2 watt	617356
R2	1K ohms ±20%	1/2 watt	608030	R404 33K ohms ±10%	1/2 watt	614460
R3	33K ohms ±20%	1/2 watt	614463	R405 33K ohms ±10%	1 watt	614464
R4	2.2K ohms ±10%	1 watt	609446	R406 100K ohms ±10%	1/2 watt	616017
R5	2.2K ohms ±20%	1/2 watt	609445	R407 2.2K ohms ±10%	1/2 watt	609442
R6	4.7K ohms ±10%	1 watt	610966	R408 68K ohms ±10%	1 watt	615500
R7	10K ohms ±20%	1/2 watt	612032	R409 39K ohms ±10%	1 watt	614691
R8	Not used			R410 560K ohms ±10%	1 watt	617527
R9	2.2K ohms ±20%	1/2 watt	609445	R411 Not used		
R10	1 Megohm ±20%	1/2 watt	618020	R412 10K ohms ±10%	1/2 watt	612025
R101	470 ohms ±10%	1/2 watt	606588	R413 47K ohms ±10%	1 watt	614969
R102	39K ohms ±10%	1/2 watt	614684	R414 680K ohms ±10%	1/2 watt	617666
R103	56K ohms ±10%	1 watt	615165	R415 2.7K ohms ±10%	5 watts W.W.	609879
R104	68K ohms ±10%	1/2 watt (in L101)	615494	R416 1 Megohm ±10%	1 watt	618021
R105	150K ohms ±10%	1/2 watt	616426	R417 820K ohms ±10%	1 watt BTAV	617848
R106	470K ohms ±10%	1/2 watt	617356	R418 4.7K ohms ±10%	1 watt	610966
R107	10K ohms ±10%	1/2 watt	612025	R419 2.7 ohms ±10%	1/2 watt W.W.	600445
R108	120 ohms ±10%	1/2 watt	601077	R420 820K ohms ±10%	1 watt	617846
R201	6.8K ohms ±10%	1/2 watt	611526	R421 Not used		
R202	Not used			R422 1.5K ohms ±10%	5 watts W.W.	608718
R203	22 ohms ±5%	1/2 watt	602326	R423 680 ohms ±10%	5 watts W.W.	607290
R204	22K ohms ±10%	1 watt	613658	RV101 500K ohms Curve "C" Carbon, Volume W/S		620496
R205	220 ohms ±20%	1/2 watt	605256	RV201 15K ohms Curve "A" Carbon, Contrast		620222
R206	3.3K ohms ±10%	1/2 watt (in TR201)	610304	RV301 500K ohms Curve "A" Carbon, I.F., A.G.C.		620451
R207	150 ohms ±10%	1/2 watt	604677	RV302 50K ohms Curve "A" Carbon, A.G.C.		620282
R208	220 ohms ±20%	1/2 watt	605256	RV303 500K ohms Curve "A" Carbon, Vert. Hold		620450
R209	15K ohms ±10%	1/2 watt	612922	RV304 250K ohms Curve "A" Carbon, Top Lin.		620493
R210	2.7K ohms ±10%	1/2 watt	609862	RV305 250K ohms Curve "A" Carbon, Height		620493
R211	470 ohms ±10%	1/2 watt	606588	RV306 50K ohms Curve "A" Carbon, Vert. Lin.		620282
R212	33 ohms ±10%	1/2 watt	602752	RV307 500K ohms Curve "A" Carbon, Brightness		620495
R213	33 ohms ±10%	1/2 watt	602752	RV401 50K ohms Curve "A" Carbon, Hor. Hold		620283
R214	4.7K ohms ±10%	2 watts	610962	RV402 1 Megohm Curve "A" Carbon, Width		620769
R215	39K ohms ±10%	1 watt	614691	<b>CAPACITORS</b>		
R216	4.7K ohms ±10%	5 watts W.W.	610958	C1 3.3pf ±10% NPO disc		220164
R217	3.9K ohms ±20%	1/2 watt	610561	C2 2.2pf ±5% NPO disc		221494
R218	3.3K ohms ±10%	1/2 watt	610304	C3 18pf ±5% NPO feed thru		220776
R219	220K ohms ±10%	1/2 watt	616721	C4 3.3pf ±10% NPO disc		220164
R220	680K ohms ±10%	1/2 watt	617666	C5 15pf ±5% NPO disc		220710
R221	6.8K ohms ±10%	1/2 watt	611526	C6 0.001µf ±100% —0% Hi-K feed thru		225011
R301	4.7 Megohms ±10%	1 watt	618941	C7 1.5pf trimmer		231144
R302	680K ohms ±10%	1 watt	617669	C8 0.5-3pf trimmer		231122
R303	270K ohms ±10%	1 watt	616959	C9 100pf ±7 1/2% N3300 feed thru		222246
R304	33K ohms ±10%	1/2 watt	614460	C10 27pf ±5% NPO disc		221071
R305	150K ohms ±10%	1 watt	616430	C11 0.001µf ±100% —0% Hi-K feed thru		225011
R306	180K ohms ±10%	1 watt	616568	C12 0.5-3pf trimmer		231122
R307	Not used			C13 0.001µf ±100% —0% Hi-K feed thru		225011
R308	47K ohms ±10%	1 watt	614969	C14 0.68pf special		49915
R309	47K ohms ±10%	1 watt	614969	C15 470pf ±20% K2000 tubular		221972
R310	33K ohms ±10%	1/2 watt	614460	C16 56pf ±10% N750 tubular		221774
R311	1.5 Megohms ±10%	1/2 watt	618260	C17 5.6pf ±5% —0% N150 disc		220274
R312	680K ohms ±10%	1/2 watt	617666	C18 5.6pf ±2 1/2% N150 disc		220276
R313	100K ohms ±10%	1/2 watt	616017	C19 5.6pf ±0% —5% N150 disc		220275
R314	100K ohms ±10%	1/2 watt	616017	C20 0.001µf ±100% —0% Hi-K feed thru		225011
R315	33K ohms ±10%	1/2 watt	614460	C21 0.033µf ±10% 125VW polyester		226739
R316	220K ohms ±10%	1/2 watt	616721	C22 220pf ±20% Hi-K disc		223205
R317	18K ohms ±10%	1/2 watt	613306	CN Neutralising capacitance		
R318	Not used			C101 270pf ±20% K2000 tubular		223550
R319	82K ohms ±10%	1/2 watt	615795	C102 2µf 300VW Electrolytic		227923
R320	10K ohms ±10%	1 watt BTAV	612054	C103 6.8pf ±10% N750 disc (in L101)		220382
R321	1 Megohm ±10%	1 watt	618021	C104 0.22µf ±10% 125VW polyester		227341
R322	Not used			C105 270pf ±20% K2000 tubular		223550
R323	2.2 Megohms ±10%	1/2 watt	618484	C106 0.0068µf ±10% 400VW polyester		226218
R324	100K ohms ±10%	1 watt	616020	C107 0.0039µf ±10% 400VW polyester		225863
R325	1.2 Megohms ±10%	1/2 watt	618141	C201 0.0047µf ±100% —0% K5000 disc		225980
R326	27K ohms ±10%	1 watt BTAV	614153	C202 0.0047µf ±100% —0% K5000 disc		225980
R327	330K ohms ±10%	1 watt BTAV	617115	C203 27pf ±5% NPO disc (in TR201)		221071
R328	47K ohms ±10%	1/2 watt	614961	C204 0.001µf ±10% 400VW polyester		225060
R329	1.2 Megohms ±10%	1/2 watt	618141	C205 0.0047µf ±100% —0% K5000 disc		225980
R330	1 Megohm ±10%	1 watt	618021	C206 0.0047µf ±100% —0% K5000 disc		225980
R331	2.2 Megohms ±10%	1/2 watt	618484	C207 0.0047µf ±100% —0% K5000 disc		225980
R332	220 ohms ±10%	1 watt	605257	C208 0.001µf ±10% 400VW polyester		225060
R333	150 ohms ±10%	1/2 watt	604677	C209 4.7pf ±5% NPO tubular (in TR202)		220219
R334	150 ohms ±10%	1/2 watt	604677	C210 10pf ±5% NPO disc (in TR202)		220456
R335	150K ohms ±10%	1/2 watt	616426	C211 0.0047µf ±100% —0% K5000 disc		225980
R336	1.2 Megohms ±10%	1/2 watt	618141	C212 4.7pf ±10% N750 disc (in TR203)		220215
R401	470K ohms ±10%	1/2 watt	617356	C213 33pf ±5% NPO tubular (in TR203)		221161
R402	470K ohms ±10%	1/2 watt	617356			

## CIRCUIT CODE

Code No.	DESCRIPTION	Part No.	Code No.	DESCRIPTION	Part No.
<b>CAPACITORS (Continued)</b>					
C214	0.027 $\mu$ f $\pm$ 10% 400VW polyester	226690		Channel 8	45064
C215	0.0082 $\mu$ f $\pm$ 10% 400VW polyester	226293		Channel 9	45065
C216	2 $\mu$ f 300VW Electrolytic	227923		Channel 10	45066
C217	6.8pf $\pm$ 10% N750 disc	220382		Channel 11	45067
C218	47pf $\pm$ 10% N750 disc	221438	L101	Quadrature Detector Coil	52714
C219	47pf $\pm$ 10% N750 disc	221438	L201	Video I.F. Input Coil	} 52718
C220	12pf $\pm$ 10% N750 disc	220550	L202	Video I.F. R.F. Choke	
C221	0.22 $\mu$ f $\pm$ 10% 125VW polyester	227342	L203	Filament Choke	52739
C301	Not Used		L204	Detector Filter Coil	52720
C302	0.1 $\mu$ f $\pm$ 10% 125VW polyester	227086	L205	Detector Filter Coil	41423
C303	0.0039 $\mu$ f $\pm$ 10% 400VW polyester	225863	L206	Detector Filter Coil	49671
C304	0.022 $\mu$ f $\pm$ 10% 400VW polyester	226636	L207	5.5 Mc/s Trap	52721
C305	0.1 $\mu$ f $\pm$ 10% 400VW polyester	227090	L208	Video Amp. Peaking Coil	40117
C306	560pf $\pm$ 10% N1500 2500VW tubular (in TR401)	224484	L209	Video Amp. Peaking Coil	45021
C307	0.1 $\mu$ f $\pm$ 10% 400VW polyester	227090	L210	Video Amp. Peaking Coil	45020
C308	0.0047 $\mu$ f $\pm$ 10% 400VW polyester	225953	L301	Vertical Deflection Coil	} Yoke 44900
C309	220pf $\pm$ 10% 600VW polystyrene	223206	L302	Vertical Deflection Coil	
C310	0.033 $\mu$ f $\pm$ 10% 400VW polyester	226739	L401	Sine Wave Coil	52191
C311	0.027 $\mu$ f $\pm$ 10% 125 VV polyester	226690	L402	H.F. Choke	214516
C312	0.027 $\mu$ f $\pm$ 10% 125VW polyester	226690	L403	Horizontal Linearity Coil	43264
C313	0.033 $\mu$ f $\pm$ 10% 400VW polyester	226739	L404	Horizontal Deflection Coil	} Yoke 44900
C314	0.022 $\mu$ f $\pm$ 10% 400VW polyester	226636	L405	Horizontal Deflection Coil	
C315	2 $\mu$ f 450VW Electrolytic	227922	L406	H.T. Filter Choke	52602
C316	0.0068 $\mu$ f $\pm$ 10% 400VW polyester	226234	<b>TRANSFORMERS</b>		
C317	0.01 $\mu$ f $\pm$ 10% 125VW polyester	226378	TR1	Balun Assembly	44009
C318	0.1 $\mu$ f $\pm$ 10% 400VW polyester	227090	TR101	Speaker Transformer	52606A
C319	0.0068 $\mu$ f $\pm$ 10% 1800VW paper	226241	TR201	1st Video I.F.	52722
C320	0.1 $\mu$ f $\pm$ 10% 400VW polyester	227090	TR202	2nd Video I.F.	52724
C321	0.1 $\mu$ f $\pm$ 10% 125VW polyester	227086	TR203	Sound Take-off	52716
C322	0.047 $\mu$ f $\pm$ 10% 400VW polyester	226802	TR301	Vertical Output	52691A
C323	0.22 $\mu$ f $\pm$ 10% 125VW polyester	227341	TR401	Horizontal Output	52520
C324	0.0022 $\mu$ f $\pm$ 10% 400VW polyester	225636	TR402	Power	52600
C325	150 $\mu$ f 200VW Electrolytic	229737	<b>VALVES and DIODES</b>		
C401	150pf $\pm$ 10% 600VW polystyrene	222698	V1	Radiotron 6GK5	
C402	150pf $\pm$ 10% 600VW polystyrene	222698	V2	Radiotron 6HG8	
C403	0.0047 $\mu$ f $\pm$ 10% 400VW polyester	225953	V101	Radiotron 6CS6	
C404	0.001 $\mu$ f $\pm$ 10% 400VW polyester	225060	V102	Radiotron 6EW6	
C405	0.0047 $\mu$ f $\pm$ 10% 400VW polyester	225953	V201	Radiotron 6EH7	
C406	0.047 $\mu$ f $\pm$ 10% 125VW polyester	226804	V202	Radiotron 6EJ7	
C407	0.0027 $\mu$ f $\pm$ 10% 400VW polyester	225746	V203	Radiotron 6KV8	
C408	680pf $\pm$ 10% 600VW polystyrene	224777	V204	Radiotron 11LP4	
C409	680pf $\pm$ 10% 600VW polystyrene	224777	V301	Radiotron 6CB6	
C410	0.001 $\mu$ f $\pm$ 10% 400VW polystyrene	225062	V302	Radiotron 6BM8	
C411	22pf $\pm$ 10% NPO tubular	220889	V401	Radiotron 12AU7	
C412	0.1 $\mu$ f $\pm$ 10% 400VW polyester	227085	V402	Radiotron 6CM5	
C413	0.01 $\mu$ f $\pm$ 10% 125VW polyester	226378	V403	Radiotron 6AX4-GT	
C414	0.047 $\mu$ f $\pm$ 10% 600VW paper	226835	V404	Radiotron 1X2-B	
C415	0.047 $\mu$ f $\pm$ 10% 1000VW paper	226831	MR201	IN87A	
C416	270pf $\pm$ 10% N750 2500VW disc	223554	MR301	M3	
C417	0.033 $\mu$ f $\pm$ 10% 400VW polyester	226739	MR401	IN618	
C418	270pf $\pm$ 10% N750 2500VW tubular (in TR401)	223560	MR402	IN618	
C419	270pf $\pm$ 10% N750 2500VW disc	223554	MR403	IN3194	
C420	100 $\mu$ f 200VW Electrolytic	229728	MR404	IN3194	
C421	0.1 $\mu$ f $\pm$ 10% 400VW polyester	227085	<b>MISCELLANEOUS</b>		
C422	100 $\mu$ f 200VW Electrolytic	229728	FS401	1 Amp. Fuse	370030
C423	100 $\mu$ f 125VW Electrolytic	229729	FS402	1 Amp. Fuse (Anti-Surge)	369954
C424	100 $\mu$ f 125VW Electrolytic	229729	LS101	6" x 2" Speaker	50272
C425	47pf $\pm$ 10% N750 disc	221438	JK101	Sound Outlet Jack	
C426	0.1 $\mu$ f $\pm$ 10% 125VW polyester	227086	SW401	Power Switch (on RV101)	
<b>INDUCTORS</b>			TH301	1 ohm at 25° C. NTC Thermistor	893707
L1	36.875 Mc/s Trap	41859			
L2	Converter I.F. Coil	41859			
L3	Not used				
L4	Oscillator Filament Choke	41866			
L5	Screen Inductor Coil	45017			
La-Lh	Tuning Coil Assembly				
	Channel 0	45055			
	Channel 1	45056			
	Channel 2	45057			
	Channel 3	45058			
	Channel 4	45059			
	Channel 5	45060			
	Channel 5A	45061			
	Channel 6	45062			
	Channel 7	45063			

## PRINTED BOARD LAYOUT

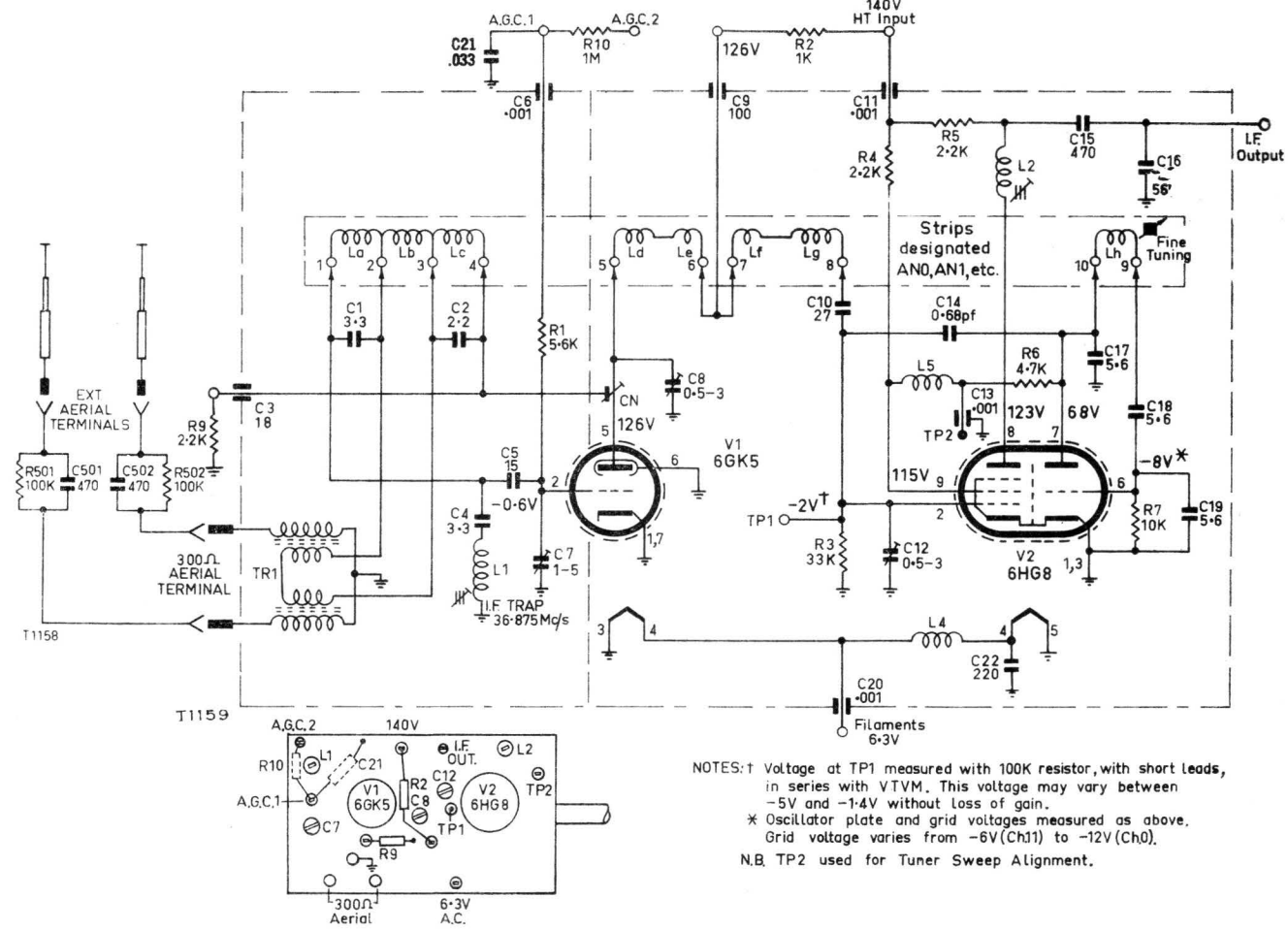


T1168 RB

▶ Represent Test Points as follows 1.Sound Test 2.Video Output 3.Video Detector 4.I.F. A.G.C. Test 5.Phase Discriminator Output.

Notes: The diagram represents the view from the wiring side of the printed board.  
 Red indicates components and leads mounted on the remote side of the board.  
 Black indicates those components and leads mounted on the wiring side of the board.  
 All voltages shown are measured with no signal input and controls set normally using a 20,000 ohm/volt meter.

### TB1 (45051) NEUTRODE TURRET TUNER



NOTES: 1 Voltage at TP1 measured with 100K resistor, with short leads, in series with VTVM. This voltage may vary between -5V and -1.4V without loss of gain.  
 \* Oscillator plate and grid voltages measured as above. Grid voltage varies from -6V (Ch1) to -12V (Ch0).  
 N.B. TP2 used for Tuner Sweep Alignment.

### CIRCUIT VARIATIONS

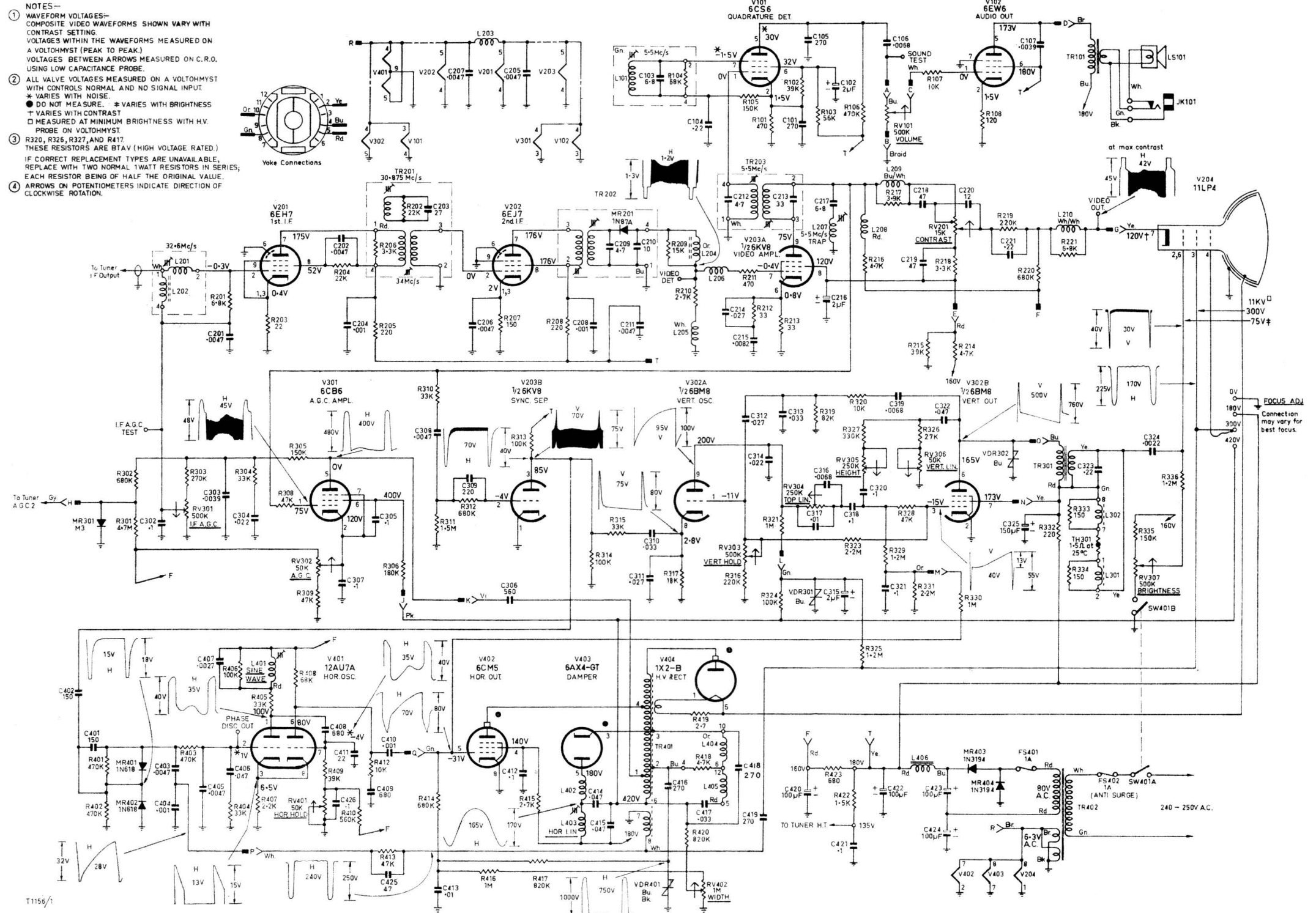
To improve horizontal stability at the top of the picture:

C403 has been changed to 0.0022pf ±10% 400VW polyester capacitor 225636 and R410 is now a 470K ohms ±10% 1 watt resistor 617359.

In early chassis R107 was 47K ohms. This is now a 10K ohms to reduce pick-up of vertical pulses in the audio.

Early chassis also used 52604A Vertical Output transformer (TR301).

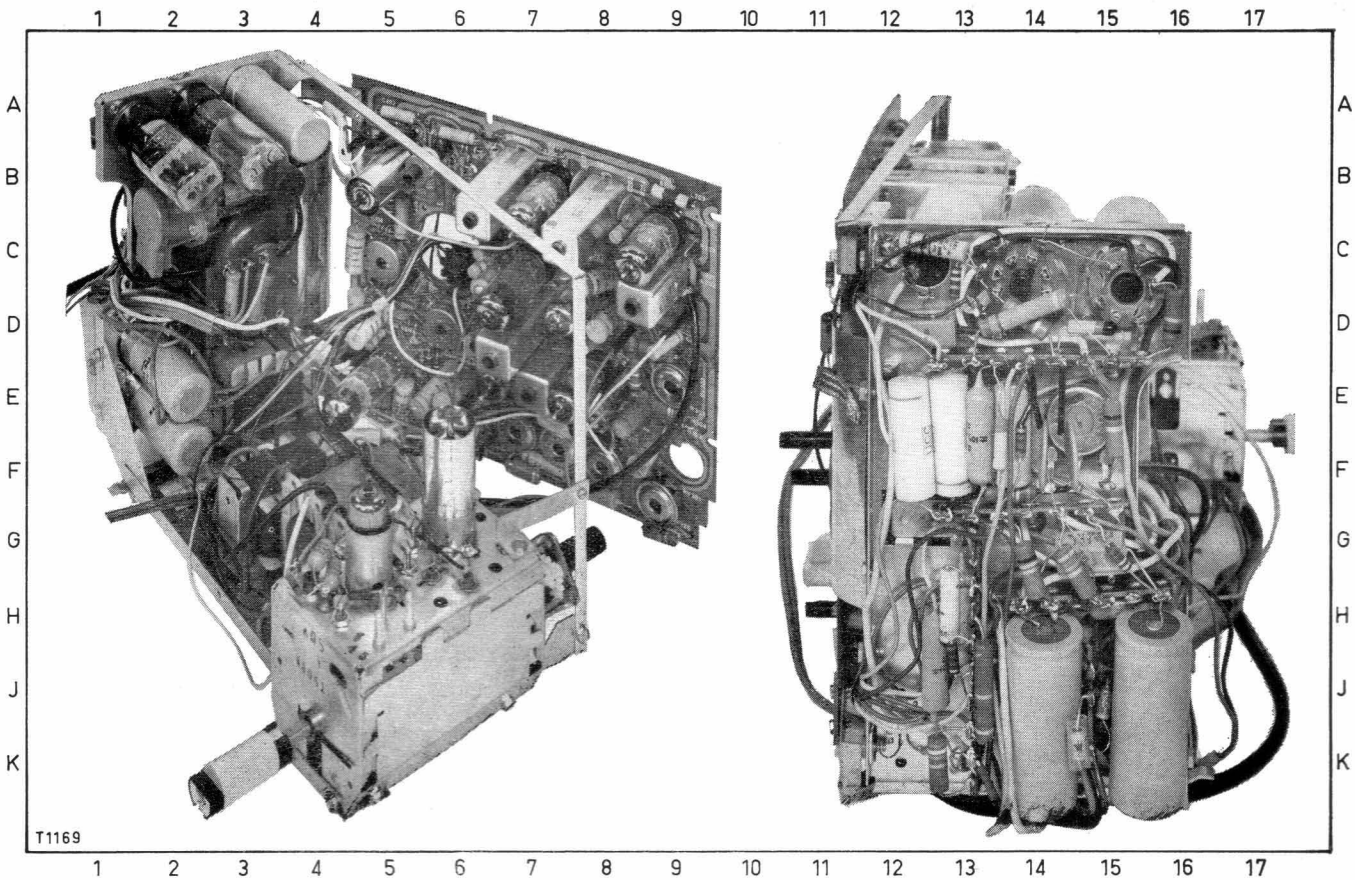
### TELEVISION RECEIVER CHASSIS — 4600 SERIES



NOTES—  
 ① WAVEFORM VOLTAGES—  
 COMPOSITE VIDEO WAVEFORMS SHOWN VARY WITH CONTRAST SETTING.  
 VOLTAGES WITHIN THE WAVEFORMS MEASURED ON A VOLTOHMIST (PEAK TO PEAK).  
 VOLTAGES BETWEEN ARROWS MEASURED ON C.R.O. USING LOW CAPACITANCE PROBE.  
 ② ALL VALVE VOLTAGES MEASURED ON A VOLTOHMIST WITH CONTROLS NORMAL AND NO SIGNAL INPUT.  
 \* VARIES WITH NOISE. # VARIES WITH BRIGHTNESS. † VARIES WITH CONTRAST. □ MEASURED AT MINIMUM BRIGHTNESS WITH H.V. PROBE ON VOLTOHMIST.  
 ③ R326, R326, R327, AND R417 THESE RESISTORS ARE BTAV (HIGH VOLTAGE RATED). IF CORRECT REPLACEMENT TYPES ARE UNAVAILABLE, REPLACE WITH TWO NORMAL 1WATT RESISTORS IN SERIES; EACH RESISTOR BEING OF HALF THE ORIGINAL VALUE.  
 ④ ARROWS ON POTENTIOMETERS INDICATE DIRECTION OF CLOCKWISE ROTATION.

T1156/1

# LOCATION CHART



T1169

COMPONENT	LOCATION	COMPONENT	LOCATION	COMPONENT	LOCATION	COMPONENT	LOCATION	COMPONENT	LOCATION		
<b>RESISTORS</b>				R318	Not used	RV303	E6	C311	D5		
R101	E6	R319	E5	RV304	F7	C312	E5	L205	C6		
R102	E7 (at rear)	R320	E5	RV305	F7	C313	E5	L206	C6		
R103	E7	R321	E5	RV306	F8	C314	E5	L207	D6		
R104	E7 (in L101)	R322	Not used	RV307	Front Control	C315	E14	L208	D6		
R105	E7	R323	E5	RV401	C5	C316	E6	L209	D6		
R106	E7	R324	G14	RV402	E15	C317	F7	L210	D5		
R107	D8	R325	F14	<b>CAPACITORS</b>						L301	Yoke
R108	D8	R326	G9	C101	E7	C318	E6	L302	Yoke		
R201	C8	R327	F8	C102	E8	C319	F7	L401	B6		
R202	Not used	R328	E6	C103	E7	C320	E6	L402	D14		
R203	C9	R329	F6	C104	D8 (at rear)	C321	E6	L403	D2		
R204	C8	R330	D16	C105	E7	C322	F8	L404	Yoke		
R205	C8	R331	E6	C106	E7	C323	J13	L405	Yoke		
R206	B8	R332	J13	C107	E7 (at rear)	C324	H13	L406	E3		
R207	C7	R333	In Yoke	C201	C8	C325	A3	<b>TRANSFORMERS</b>			
R208	C7	R334	In Yoke	C202	B8	C401	B6	TR101	On Speaker		
R209	B6	R335	G15	C203	B8	C402	B6	TR201	B8		
R210	B6	R336	J13	C204	C8	C403	A5	TR202	B7		
R211	C7	R401	B6	C205	C9 (at rear)	C404	A5	TR203	D7		
R212	C7	R402	B6	C206	B8	C405	A6	TR301	F4		
R213	C7	R403	B6	C207	B8	C406	C5	TR401	C3		
R214	J13	R404	C5	C208	C7	C407	B6	TR402	G4		
R215	K13	R405	B6	C209	B7	C408	B5	<b>VALVES &amp; DIODES</b>			
R216	D6	R406	B6 (at rear)	C210	B7	C409	B5	V101	E6		
R217	D6	R407	A5	C211	C7 (at rear)	C410	B5	V102	E7		
R218	D5	R408	B5	C212	D7	C411	B5 (at rear)	V201	C9		
R219	C5	R409	B5	C213	D7	C412	F13	V202	B7		
R220	D5	R410	C5 (at rear)	C214	C6	C413	C13	V203	C7		
R221	D5	R411	Not used	C215	C6	C414	F13	V204	Kinescope		
R301	E8	R412	B5	C216	D6	C415	F12	V301	D7		
R302	E9	R413	F15	C217	D6	C416	F15	V302	E5		
R303	F9	R414	C13	C218	D5	C417	H15	V401	B5		
R304	E9	R415	D12	C219	D5	C418	D3	V402	B3		
R305	D9	R416	E15	C220	D5	C419	F14	V403	B2		
R306	D9	R417	D14	C221	D5	C420	H16	V404	B3		
R307	Not used	R418	In Yoke	C301	Not used	C421	H13	MR201	B7		
R308	C7	R419	C2	C302	F9	C422	H13	MR301	F8		
R309	D9	R420	F14	C303	D9	C423	E2	MR401	B6		
R310	D7	R421	Not used	C304	E8	C424	F2	MR402	B6		
R311	D8	R422	J13	C305	D8	C425	F15	MR403	J5		
R312	D8	R423	G15	C306	D3	C426	C5	MR404	K5		
R313	C7	RV101	Front Control	C307	D8	<b>INDUCTORS</b>					
R314	C8	RV201	D6	C308	D8	L101	E7	<b>MISCELLANEOUS</b>			
R315	D6	RV301	G7	C309	D8	L201	C9	FS401	F4		
R316	E6	RV302	E9	C310	D5	L202	C9	FS402	F4		
R317	E5					L203	B9				
						L204	B6				



## D.C. RESISTANCE OF WINDINGS

WINDING	D.C. RESISTANCE IN OHMS	WINDING	D.C. RESISTANCE IN OHMS	WINDING	D.C. RESISTANCE IN OHMS
Tuner Windings .....	*	L402 H.F. Choke .....	*	TR203 Sound Take-off	
L101 Quadrature Detector Coil .....	7	L403 Horizontal Linearity Coil .....	7	Primary .....	1.5
L201 Video I.F. Input Coil .....	*	L404 Horizontal Deflection Coil .....	17	Secondary .....	3.0
L202 Video I.F. R.F. Choke .....	1.5	L405 Horizontal Deflection Coil .....	17	TR301 Vertical Output	
L203 Filament Choke .....	*	L406 H.T. Filter Choke .....	25	Primary .....	190
L204 Detector Filter Coil .....	1.5	TR101 Speaker Transformer		Secondary .....	2.2
L205 Detector Filter Coil .....	5	Primary .....	1300	TR401 Horizontal Output	
L206 Detector Filter Coil .....	*	Secondary .....	2.8	Primary 4-6 .....	40
L207 5.5 Mc/s Trap .....	7	TR201 1st Video I.F.		Secondary 3-6 .....	28
L208 Video Ampl. Peaking Coil .....	6.5	Primary .....	*	Tertiary 4-Top Cap .....	360
L209 Video Ampl. Peaking Coil .....	2.7	Secondary .....	*	Tertiary 7-8 .....	2.9
L210 Video Ampl. Peaking Coil .....	3.8	TR202 2nd Video I.F.		TR402 Power Transformer	
L301 Vertical Deflection Coil .....	2.5	Primary .....	*	Primary .....	20
L302 Vertical Deflection Coil .....	2.5	Secondary .....	*	Secondary .....	5.5
L401 Sine Wave Coil .....	55			Heater Winding .....	*

\* Less than 1 ohm.

The above readings were taken on a standard chassis, but substitution of materials during manufacture may cause variations, and it should not be assumed that a component is faulty if a slightly different reading is obtained.

## MECHANICAL REPLACEMENT PARTS

Aerial, Telescopic (2) .....	103553	Extension, Fine Tuning .....	45216
Cabinet, Body Assembly .....	45213	Hearing Aid .....	307002
This includes		Hinge Plate, Bottom .....	45235
Cabinet, Body .....	60261	Hinge Plate, Top .....	45234
Handle .....	45204	Insulator Aerial .....	45479
Hook, Power Cable .....	45220	Jack, Sound Outlet .....	417019
Cabinet Front Assembly .....	45281	Knob Assembly (2) .....	45209
This includes		Knob Assembly, Channel Selector .....	45212
Cabinet Front .....	45283	Panel Assembly, Mains Isolating .....	43275
Fret Assembly .....	45285	Screen, Implosion .....	45202
Trim, Channel Selector .....	45222	Spring Terminal Assembly .....	64237
Coupling, Channel Selector .....	45224		