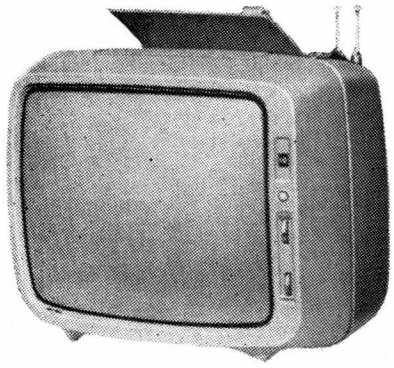
MANUFACTURERS AWA SUPERVISED SERVICE

A.W.A. RADIOLA Portable Television Receiver Model P4 "Telstar"



ISSUED BY AMALGAMATED WIRELESS (AUSTRALASIA) LIMITED

GENERAL DESCRIPTION

This model is a 17" a.c. operated portable television receiver. Features include combined valve, transistor and integrated circuit components; new miniature transistorised turret tuner; hinge down printed board unit; twin telescopic aerials; thumb-wheel controls and a combined power-switch and sound deflecting panel.

ELECTRICAL AND MECHANICAL SPECIFICATIONS

INTERMEDIATE FREQUENCIES:

Video I.F. Carrier Frequency ..... 36.875 MHz

Sound I.F. Carrier Frequency ..... 31.375 MHz

POWER CONSUMPTION: 120 watts maximum.

UNDISTORTED AUDIO POWER OUTPUT: 1 watt.

FOCUS ..... Electrostatic (Low Voltage)

DEFLECTION ..... 114° Magnetic

CHASSIS TYPE 52-01

TUNER TYPE ... A.W.A. TC20-1, Part No. 46300/001

VALVE AND TRANSISTOR COMPLEMENT:

VT1	40469	R.F. Amplifier
VT2	AS305	Mixer
VT3	AS304	Oscillator
1C101	CA3013	Sound I.F. Ampl.; Ratio Det.; Audio Ampl.
VT101	AS312	Audio Amplifier
V101	6AQ5	Audio Output
VT201	AS306	1st Video I.F.
VT202	AS307	2nd Video I.F.
VT203	AS308	3rd Video I.F.
V201	6KV8	Video Ampl. and Sync. Sep.
V202	17ERP4	Picture Tube
VT301	AS147	I.F. A.G.C. Ampl.
VT302	AS43	A.G.C. Gate
V301	6GV8	Vert. Osc. and Output
V401	12AU7-A	Horizontal Oscillator
V402	6CM5	Horizontal Output
V403	6AX4-GT	Damper
V404	1X2-B	H.V. Rectifier
MR201	1N87A	Video Detector
MR304	OA95	Blocking Diode
MR401	AS49	Phase Discriminator
MR402	AS49	Phase Discriminator
MR403	1N3194	Rectifier (21 Volt Supply)
MR404	1N3193	Spot Suppression
MR405	1N3194	H.T. Rectifier
MR406	1N3194	H.T. Rectifier

Total: Valves 8; Transistors 9; Diodes 8; Integrated Circuit 1.

SERVICING NOTES

BOARD SERVICING

Remove the four screws securing the cabinet back. Swing the cabinet back to the tuner side and hinge down the support brackets on each side of the chassis base. To gain access to the component side of the board, loosen the two bracket support screws and hinge the board downwards. In this condition the receiver remains fully operative and complete accessibility is retained for voltage checking and component replacement.
To remove the printed board completely:
Disconnect the two earth straps, one on the bottom right hand side and one on the bottom support rail.
Unplug all interconnecting leads to the board.
Spring the chassis base apart to free the board hinge and the board may be removed.
To remove the cabinet back completely:
Loosen the screw securing the switch assembly to the hinge bracket. Remove the switch and attach the switch mounting plate to the screw on the outer edge of the tuner diecast bracket. Disconnect the aerial cable from the tuner and slide the cable through its retaining loop.

COMPLETE CHASSIS REMOVAL

Remove the cabinet back as above.
Lay the receiver face downwards on a smooth, covered surface. Disconnect the picture tube socket and the ultor and yoke leads. Remove the picture tube earth strap from the base of the printed board.
Remove the earth spring from harness to the chassis strap.
Remove the four screws securing the chassis assembly to the cabinet front, one on each side of the carrying handle and one at each bottom corner.
Remove the top screw and loosen the bottom screw retaining the front control panel.
Remove the chassis and attach the control panel to the bottom front edge of the chassis strap where a screw is provided.
Reassembly is the reverse of the above procedure.

TUNER REMOVAL

Remove cabinet back.
Disconnect all leads to the tuner and remove the board support bracket.
Remove the complete tuner assembly held by a screw on the speaker baffle and a screw to the chassis strap.
Remove the spring washer retaining the indicator drum spindle.
Remove the spindle, spring, washer and drum.
Remove the channel selector knob.
Remove the C clip retaining the fine tuning knob and remove this knob.
Remove the three screws mounting the tuner and remove the tuner.
Reassembly is the reverse of the above procedure but take note of the following points:
The channel, the tuner is switched to, may readily be identified from the arrow mark on the rear of the tuner and the numbers marked on the indent plate.
Since the channel selector knob will fit on the tuner in two ways, make sure that the number on the top front of the knob corresponds to the channel number on the tuner indent plate.
To correctly index the indicating drum with the channel selector, spring the gears out of mesh and rotate the drum until the correct number appears in the front window. If the number is not accurately centred in the window, a vernier adjustment is provided by the three screws securing the drive gear to the channel selector knob.

PICTURE TUBE REMOVAL

Remove the chassis assembly as above.
Remove the bottom earthing spring from the wire harness.
Loosen the clamping screw on the harness sufficiently to free the wire from the corner straps.
Remove the picture tube.
Reassembly is the reverse of the above procedure taking note of the following:
The high voltage contact should be on the right.
Make sure that the earthing spring is replaced and that the earth strap is under the head of the harness clamp screw.

REPLACEMENT OF FUSES

Two 1 amp. fuses are provided for mains and h.t. protection. These fuses are located under a protective cover behind the printed board.
The mains fuse must be the anti-surge type.
Make sure that the fuse cover is replaced correctly.

FOCUS ADJUSTMENT

This adjustment has been made at the factory and it should only be necessary to readjust if the picture tube is replaced. In this case adjust the focus by connecting the orange fly-lead to various voltage points, indicated in Fig. 1, until maximum definition of the line structure of the raster is obtained.

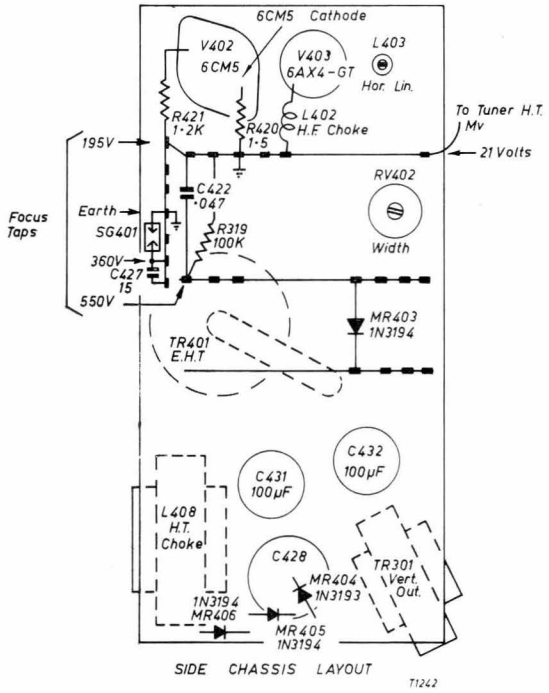


FIG. 1

HORIZONTAL OSCILLATOR ADJUSTMENT

The adjustment of the horizontal oscillator is not considered to be part of the alignment procedure. The adjustment is carried out in the factory and should only be readjusted when components in the horizontal oscillator circuit are changed.
Procedure:—

1. Short circuit the sine wave coil, L401, and earth pin 2 of the sync. separator, V201 (6KV8).
2. Adjust the horizontal hold control, RV401, until the picture is synchronised with the signal, i.e., picture sides are straight.
3. Remove the short circuit from the sine wave coil.
4. Adjust the core of the sine wave coil until the picture is once again synchronised.
5. Remove the earth from the sync. separator.

WIDTH AND HORIZONTAL LINEARITY ADJUSTMENTS

Set the width control (RV402 on chassis) to give approximately $\frac{5}{8}$" overscan on each side of the picture.
Adjust the horizontal linearity coil (L403 on chassis) to give a minimum voltage reading at the 6CM5 cathode test point (across R420).
N.B. (a) From this position the linearity control may be set no more than one turn anti-clockwise or two turns clockwise to improve linearity.
(b) With the width control set correctly ($\frac{5}{8}$" overscan) 21.5 $\pm$ 1 volt should be available for the tuner and i.f. supply.

A.G.C. SYSTEM

A gated a.g.c. system is used. A negative going gating voltage derived from the horizontal output transformer, TR401, is applied to the a.g.c. gate collector, VT302. When a suitable video signal is applied to the base, current flows during the sync. pulses resulting in a positive a.g.c. line. After filtering, the a.g.c. passes on to the tuner r.f. amplifier, VT1, which is forward gain controlled.

To ensure that the i.f. amplifier is controlled accurately with respect to the r.f. amplifier, its a.g.c. is derived from the r.f. amplifier emitter. This d.c. potential is amplified by VT301 and applied to the first two video i.f. stages, VT201 and VT202. The delay or limit of gain reduction in the i.f. amplifiers is achieved by limiting the saturation current in the a.g.c. amplifier, VT301. This saturation current is controlled by the a.g.c. delay, RV301, which must be set correctly.

The video i.f. amplifiers are reverse gain controlled, i.e., the a.g.c. voltage is reduced to reduce the stage gain.

A.G.C. FIELD ADJUSTMENT

The a.g.c. controls have been accurately set during manufacture and these settings should not be disturbed unless there are positive indications for the need for re-adjustment.

The a.g.c. adjustment is fully covered in the following section after the video i.f. alignment. When the necessary equipment is unavailable, the following alternative method may be used.

Set contrast, a.g.c. and a.g.c. delay controls in their mid positions.

With the receiver tuned to a medium strength signal (1 mV) or suitably attenuated strong signal, make the following adjustments:—

Set the a.g.c. control, RV302, for 3.5V p-p at the video detector test point.

With normal brightness and contrast settings, adjust a.g.c. delay control for snow threshold.

Tune receiver to a strong signal (100 mV) and check that the picture is free from tearing, pulling and peak-white compression. If a slight resetting of the a.g.c. delay is necessary for picture quality, recheck medium strength signal for freedom from snow.

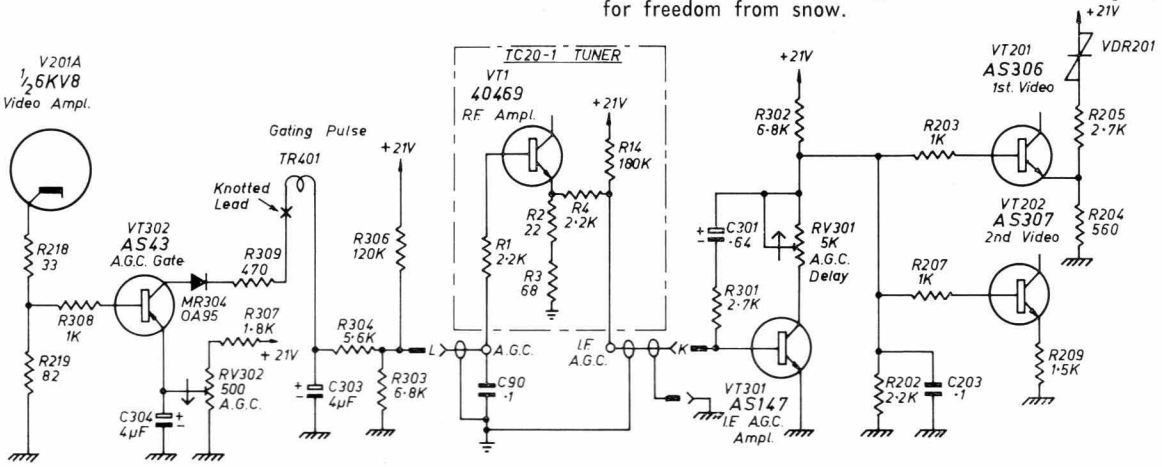


FIG. 2 *A.G.C. CIRCUIT 52 Series Chassis* T1235

INTEGRATED CIRCUIT

The integrated circuit IC101 (CA3013) is equivalent to a network of transistors, diodes and resistors of the sound i.f. amplifier, ratio detector and sound amplifier stages. It is a highly reliable unit and should, in the event of a fault developing, be the least suspect component.

If a fault exists the following technique is suggested:—

1. Check the d.c. voltages on all electrodes starting from the audio output valve, 6AQ5, and working back to the integrated circuit.

N.B. (a) IC101 derives its d.c. supply from the 6AQ5 cathode with VT101, the audio amplifier, also acting as voltage regulator. Removal of the valve thus renders IC101 inoperative.

(b) An incorrect d.c. voltage may result from failure of a component and not necessarily one of the active devices.

2. If the d.c. voltages are correct, apply an audio signal to points A or C on the printed board. Set the volume control to maximum level and check for audio in the speaker.
3. If the audio amplifier, VT101, and output, V101, are operating correctly, apply a 5.5 MHz signal or tune the receiver to a channel and check for audio output from IC101 at point "A" on the printed board. A 5.5 MHz signal with ± 15 kHz deviation should produce 0.2V p-p of audio output.

To check the sound take-off and ratio detector transformers, check the alignment procedure as outlined in the following section.

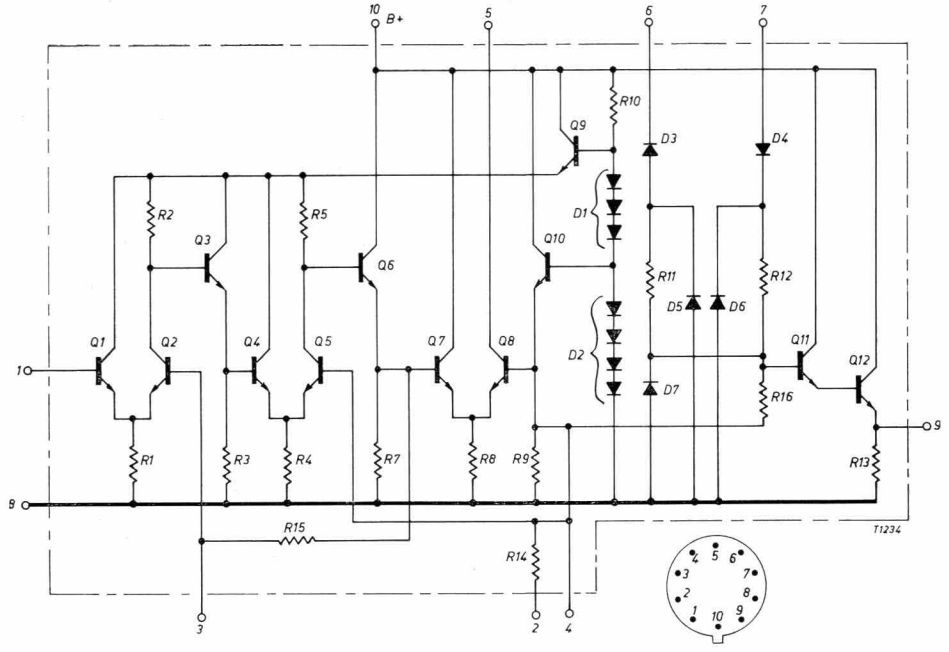


FIG. 3 *CA3013 EQUIVALENT CIRCUIT*

ALIGNMENT PROCEDURE

TESTING INSTRUMENTS

To properly service the television receiver it is recommended that the following test equipment be available:

1. Television Sweep Generator.
2. Cathode Ray Oscilloscope.
3. VTVM: A.W.A. Voltohmyst, type 2A56074.
4. RF Probe: A.W.A. Voltohmyst Probe, type 2R56075.
5. Television Calibrator.
6. Crystal Detector Probe (Fig. 5).

SOUND AND VIDEO I.F. ALIGNMENT

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

* Coil tuned with core close to the chassis or board.

† Coil tuned with core close to can top, i.e., remote from chassis.

SOUND I.F. ALIGNMENT

Connect the output of the television calibrator to the video detector test point and set the frequnecy to 5.5 MHz.

Connect the Voltohmyst r.f. probe via a 1 pF capacitor to sound test point (terminal 1 of TR101). Set the range switch to + 1.5 volts d.c.

Turn a.g.c. controls (RV301 and RV302) full clockwise when viewed from printed track side.

Turn TR102 top core to the top of the can.

Adjust TR102 primary (ratio detector bottom core)* for maximum meter reading.

Adjust TR101 (sound take-off)* for maximum, reducing 5.5 MHz input to obtain a sharp peak.

Adjust TR102 secondary (top core)† for minimum.

Repeat last three steps.

Transfer the Voltohmyst probe to the video output test point and set the contrast control to maximum.

Increase the 5.5 MHz input to approximately 200 mV and adjust L208 (sound trap)* for minimum.

Remove the input and the probe.

VIDEO I.F. ALIGNMENT

Leave the a.g.c. delay control, RV301, fully clockwise.

Set a.g.c. control, RV302, fully anti-clockwise.

Set tuner to channel 6 and connect the sweep generator (30-39 MHz sweep, correctly terminated) to the mixer base of the tuner through the network shown in Fig. 4.

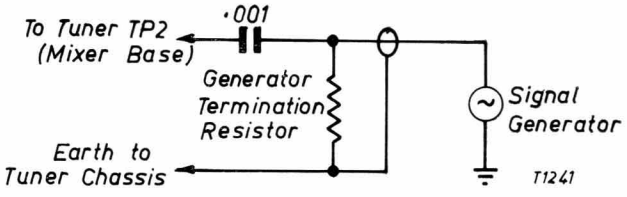
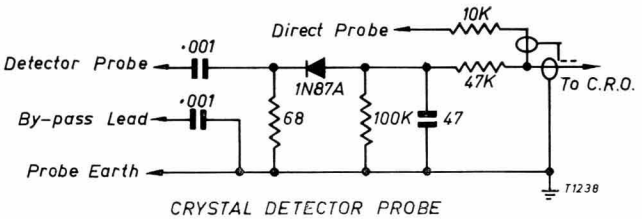


FIG. 4

Connect the crystal detector probe (Fig. 5) to the i.f. 1 test point (1st video i.f. collector) and by-pass i.f. 2 test point (2nd video i.f. collector) using the by-pass lead provided. Connect the probe earth to VT301 collector (junction of VT301 and RV301).



CRYSTAL DETECTOR PROBE

FIG. 5

Set the sweep generator output to give 0.15 volts p-p on the c.r.o.

Adjust TR2, L201 and L202 to produce response shown in Fig. 6.

L201 mainly affects 31.375 MHz.
TR2 (tuner)* mainly affects 36.875 MHz.
L202* mainly affects tilt.

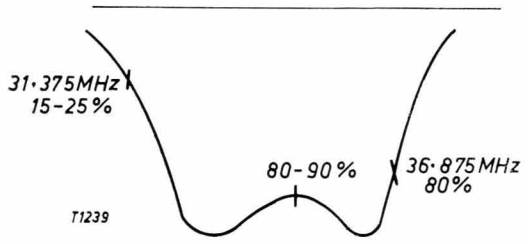


FIG. 6

Remove the crystal probe and by-pass lead.

Connect the direct probe to the video detector test point.

Adjust the input level to give 3 volts p-p on the c.r.o.

Increase input level 10dB (3 times) and turn the a.g.c. delay control, RV301, anti-clockwise to reduce c.r.o. display to 3 volts p-p.

Adjust TR201, L203 and TR202 to give response shown in Fig. 7.

TR202* affects 36.875 MHz.
TR201 (top core)† is 30.875 MHz trap.
TR201 (bottom core)* affects 33 MHz.
L203* affects tilt.

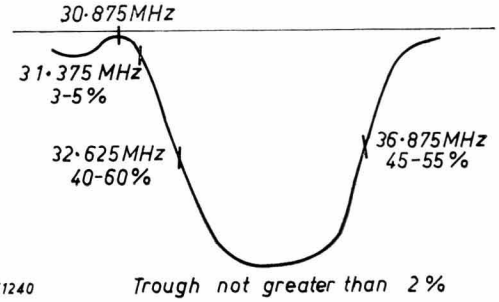


FIG. 7

A.G.C. ADJUSTMENT

Adjustment of the a.g.c. should only be carried out after all other adjustments have been satisfactorily performed.

Set the contrast, a.g.c. and a.g.c. delay controls to their mid-positions.

Apply a 1 mV fully modulated signal to the receiver and set the fine tuning control correctly.

Set the a.g.c. control, RV302, to give a 3.5 volts p-p on the c.r.o. connected via direct probe (Fig. 5) to video detector test point.

Adjust the a.g.c. delay control, RV301, for snow threshold at 1 mV and freedom from peak-white compression at 100 mV level.

Note: Clockwise rotation of the a.g.c. control increases the video output.

At medium signal levels, a clockwise rotation of the a.g.c. delay increases snow, while at high levels it increases sync. compression and decreases peak-white compression.

CIRCUIT CODE

Code No.	DESCRIPTION			Part No.
	RESISTORS			
	All Resistors composition type unless otherwise stated.			
R1	2.2K ohms	±5%	1/10 watt	
R2	22 ohms	±10%	1/10 watt	
R3	68 ohms	±10%	1/10 watt	
R4	2.2K ohms	±5%	1/10 watt	
R5	1.2K ohms	±10%	1/4 watt†	
R6	12K ohms	±10%	1/10 watt‡	
R7	5.6K ohms	±10%	1/10 watt‡	
R8	1.5K ohms	±10%	1/10 watt	
R9	18K ohms	±10%	1/10 watt	
R10	1.2K ohms	±10%	1/10 watt‡	
R11	820 ohms	±10%	1/10 watt	
R12	2.7K ohms	±10%	1/10 watt	
R13	6.8K ohms	±10%	1/10 watt	
R14	180K ohms	±5%	1/10 watt	
R15	6.8K ohms	±10%	1/10 watt	
R16	12K ohms	±10%	1/10 watt‡	
R101	12K ohms	±5%	1/2 watt	
R102	4.7K ohms	±10%	1/2 watt	
R103	470K ohms	±10%	1/2 watt	
R104	12K ohms	±5%	1/2 watt	
R105	Not used			
R106	100K ohms	±5%	1/2 watt	
R107	12K ohms	±10%	1/2 watt	
R108	390 ohms	±5%	1 watt	
R109	270 ohms	±5%	1/2 watt	
R110	220K ohms	±10%	1/2 watt	
R201	27 ohms	±5%	1/2 watt*	
R202	2.2 ohms	±5%	1/2 watt	
R203	1K ohms	±10%	1/2 watt	
R204	560 ohms	±5%	1/2 watt	
R205	2.7K ohms	±5%	1/2 watt	
R206	27 ohms	±5%	1/2 watt*	
R207	1K ohms	±10%	1/2 watt	
R208	Not used			
R209	1.5K ohms	±5%	1/2 watt	
R210	Not used			
R211	18 ohms	±5%	1/2 watt*	
R212	15K ohms	±5%	1/2 watt	
R213	5.6K ohms	±5%	1/2 watt	
R214	1K ohms	±5%	1/2 watt	
R215	15K ohms	±10%	1/2 watt	
R216	2.7K ohms	±10%	1/2 watt	
R217	470 ohms	±10%	1/2 watt	
R218	33 ohms	±10%	1/2 watt	
R219	82 ohms	±10%	1/2 watt	
R220	Not used			
R221	4.7K ohms	±10%	5 watts W.W.	
R222	1.8K ohms	±10%	1/2 watt	
R223	3.3K ohms	±10%	1/2 watt	
R224	39K ohms	±10%	1 watt	
R225	Not used			
R226	6.8K ohms	±10%	4 watts PF4	
R227	220K ohms	±10%	1/2 watt	
R301	2.7K ohms	±10%	1/2 watt	
R302	6.8K ohms	±5%	1/2 watt	
R303	6.8K ohms	±5%	1/2 watt	
R304	5.6K ohms	±10%	1/2 watt	
R305	Not used			
R306	120K ohms	±5%	1/2 watt	
R307	1.8K ohms	±10%	1/2 watt	
R308	1K ohms	±10%	1/2 watt	
R309	470 ohms	±10%	1/2 watt	
R310	Not used			
R311	1.5 Megohms	±10%	1/2 watt	
R312	33K ohms	±10%	1/2 watt	
R313	680K ohms	±10%	1/2 watt	
R314	22K ohms	±10%	1 watt	
R315	Not used			

Code No.	DESCRIPTION			Part No.
	RESISTORS (Continued)			
R316	27K ohms	±10%	1 watt	
R317	82K ohms	±10%	1/2 watt	
R318	150K ohms	±10%	1 watt	
R319	100K ohms	±10%	1 watt	
R320	Not used			
R321	220K ohms	±10%	1 watt†	
R322	68K ohms	±10%	1/2 watt	
R323	68K ohms	±10%	1 watt	
R324	10 Megohms	±10%	1 watt	
R325	Not used			
R326	1.2 Megohms	±10%	1/2 watt	
R327	680K ohms	±10%	1/2 watt	
R328	68K ohms	±10%	1 watt	
R329	180K ohms	±10%	1 watt	
R330	Not used			
R331	4.7K ohms	±10%	1/2 watt	
R332	2.2 Megohms	±10%	1 watt	
R333	330K ohms	±10%	1 watt*	
R334	100K ohms	±10%	1 watt	
R335	47K ohms	±10%	1/2 watt	
R336	270K ohms	±10%	1/2 watt	
R337	100K ohms	±10%	1/2 watt	
R338	1.2 Megohms	±10%	1/2 watt	
R401	1 Megohm	±10%	1 watt	
R402	470K ohms	±10%	1/2 watt	
R403	470K ohms	±10%	1/2 watt	
R404	470K ohms	±10%	1/2 watt	
R405	Not used			
R406	56K ohms	±10%	1/2 watt	
R407	2.2K ohms	±5%	1 watt	
R408	Not used			
R409	47K ohms	±10%	1 watt	
R410	Not used			
R411	68K ohms	±10%	1 watt	
R412	18K ohms	±10%	1 watt	
R413	47K ohms	±10%	1/2 watt	
R414	33K ohms	±10%	1/2 watt	
R415	Not used			
R416	47K ohms	±10%	1/2 watt	
R417	680K ohms	±10%	1/2 watt	
R418	820K ohms	±10%	1 watt†	
R419	1K ohms	±10%	1/2 watt	
R420	1.5 ohms	±10%	1/2 watt W.W.	
R421	1.2K ohms	±10%	5 watts W.W.	
R422	1 Megohm	±10%	1 watt	
R423	1 Megohm	±10%	1 watt	
R424	1 Megohm	±10%	1 watt	
R425	Not used			
R426	4.7K ohms	±10%	1 watt	
R427	4.7 ohms	±10%	1/2 watt W.W.	
R428	Not used			
R429	150 ohms	±10%	1/2 watt In Yoke	
R430	2.7K ohms	±10%	1/2 watt	
R431	150 ohms	±10%	1/2 watt In Yoke	
R432	270 ohms	±5%	2 watts	
R433	220 ohms	±10%	5 watts W.W.	
R434	1.8K ohms	±10%	1/2 watt	
RV101	15K ohms Curve F Carbon, Volume			620228
RV201	15K ohms Curve A Carbon, Contrast			620227
RV301	5K ohms Curve A Carbon, A.G.C. Delay			620045
RV302	500 ohms Curve A Carbon, A.G.C.			619963
RV303	250K ohms Curve A Carbon, Vert. Hold			620474
RV304	500K ohms Curve A Carbon, Height			620451
RV305	200K ohms Curve A Carbon, Top Lin.			620449
RV306	50K ohms Curve A Carbon, Vert. Lin.			620282
RV307	500K ohms Curve A Carbon, Brightness			620479
RV401	50K ohms Curve A Carbon, Hor. Hold			620343
RV402	1 Megohm Curve A Carbon, Width			620769

* Morganite or Ducon only. † I.R.C. only. ‡ Morganite only.

CIRCUIT CODE

Code No.	DESCRIPTION	Part No.
	CAPACITORS	
C1	1-3.5pF trimmer	230119
C2	6.8pF ±10% NPO disc	220384
C3	12pF ±10% NPO feed thru	220574
C4	115pF ±5% N3300 feed thru	222564
C5	0.001μF +80% —20% Hi-K feed thru	225067
C6	27pF ±10% N470 feed thru	221077
C7	8.2pF ±10% NPO disc	220420
C8	1-3.5pF trimmer	230119
C9	0.001μF +80% —20% Hi-K feed thru	225067
C10	6.8pF ±10% NPO feed thru	220385
C11	0.001μF +80% —20% Hi-K feed thru	225067
C12	39pF ±10% N750 feed thru	221299
C13	5.6pF ±10% NPO disc	220277
C14	1-3.5pF trimmer	230119
C15	1-3.5pF trimmer	230119
C16	10pF ±10% NPO disc	220470
C17	6.8pF ±10% NPO feed thru	220385
C18	5.6pF +0% —10% N470 disc	220278
C19	5.6pF +10% —0% N470 disc	220280
C20	2.2pF ±10% NPO disc	220130
C21	5.6pF ±5% N470 disc	220279
C22	0.0022μF +80% —20% Hi-K feed thru	225637
C23	0.001μF +80% —20% Hi-K feed thru	225067
C24	10pF ±10% NPO disc	220470
C25	39pF ±10% N470 feed thru	221299
C26	0.001μF +80% —20% Hi-K feed thru	225067
C27	56pF ±10% N1500 feed thru	221778
C28	0.88pF ± .13pF NPO disc	220090
C29	0.88pF ± .13pF NPO disc	220090
C90	0.1μF ±20% 50VW Hi-K disc	
C101	2.2pF ±5% NPO disc	
C102	82pF ±10% N750 disc (in TR101)	
C103	0.1μF ±20% 50VW disc	
C104	0.1μF ±20% 50VW disc	
C105	Not used	
C106	0.1μF ±20% 50VW disc	
C107	0.1μF ±20% 50VW disc	
C108	470pF ±5% 100VW polystyrene (in TR102)	
C109	100pF ±5% 100VW polystyrene (in TR102)	
C110	0.1μF +80% —20% 50VW disc	
C111	0.01μF ±20% 200VW metalised paper	
C112	4μF 10VW Electrolytic	228189
C113	80μF 25VW Electrolytic	229669
C114	0.018μF ±10% 400VW polyester	**
C201	12pF ±5% NPO tubular	
C202	0.001μF ±20% K2000 disc	
C203	0.1μF +80% —20% 50VW disc	
C204	470pF ±20% K1000 disc	
C205	18pF ±5% NPO tubular	
C206	0.0047μF +100% —0% K5000 disc	
C207	0.001μF ±20% K2000 disc	
C208	39pF ±10% N220 disc (in TR201)	
C209	0.0047μF +100% —0% K5000 disc	
C210	Not used	
C211	0.0047μF +100% —0% K5000 disc	
C212	18pF ±5% NPO tubular	
C213	0.001μF ±20% K2000 disc	
C214	0.0047μF +100% —0% K5000 disc	
C215	Not used	
C216	0.0047μF +100% —0% K6000 disc	
C217	0.001μF ±20% K2000 disc	
C218	10pF ±10% NPO disc	
C219	10pF ±10% NPO disc	
C220	47pF ±10% N750 disc	
C221	0.0047μF ±10% 400VW polyester	
C222	2μF 200VW Electrolytic	227933
C223	39pF ±10% N220 disc (in L208)	
C224	15pF ±10% N750 disc	
C225	220pF ±20% K3000 disc	
C226	0.22μF ±10% 160VW polyester	

Code No.	DESCRIPTION	Part No.
	CAPACITORS (Continued)	
C301	0.64μF 64VW Electrolytic	227620
C302	80μF 25VW Electrolytic	229669
C303	4μF 25VW Electrolytic	228195
C304	4μF 10VW Electrolytic	228189
C305	Not used	
C306	0.0047μF ±10% 400VW polyester	
C307	220pF ±10% 630VW polystyrene	
C308	0.0018μF ±10% 400VW polyester	
C309	0.0027μF ±10% 400VW polyester	
C310	Not used	
C311	0.022μF ±10% 400VW polyester	
C312	0.039μF ±10% 400VW polyester	
C313	0.0047μF ±10% 400VW polyester	
C314	0.0039μF ±10% 400VW polyester	
C315	Not used	
C316	0.22μF ±10% 400VW polyester	
C317	0.1μF ±10% 160VW polyester	
C318	0.1μF ±10% 400VW polyester	
C319	0.01μF ±10% 400VW polyester	
C320	2μF 500VW Electrolytic	227934
C321	0.1μF ±10% 160VW polyester	
C322	0.033μF ±10% 400VW polyester	
C323	0.039μF ±10% 400VW polyester	
C324	0.047μF ±10% 630VW polyester	
C325	Not used	
C326	0.1μF ±10% 160VW polyester	
C327	0.022μF ±10% 400VW polyester	
C328	0.1μF ±10% 400VW polyester	
C401	150pF ±10% 630VW polystyrene	
C402	150pF ±10% 630VW polystyrene	
C403	0.1μF ±10% 160VW polyester	
C404	0.001μF ±10% 400VW polyester	
C405	Not used	
C406	0.0022μF ±10% 400VW polyester	
C407	0.0047μF ±10% 400VW polyester	
C408	0.22μF ±10% 160VW polyester	
C409	0.0027μF ±10% 400VW polyester	
C410	Not used	
C411	Not used	
C412	820pF ±5% 630VW polystyrene	
C413	22pF ±10% N750 tubular	
C414	820pF ±5% 630VW polystyrene	
C415	Not used	
C416	0.001μF ±10% 400VW polyester	
C417	27pF ±10% N1500 tubular	
C418	0.01μF ±10% 160VW polyester	
C419	0.1μF ±10% 400VW polyester	
C420	Not used	
C421	0.047μF ±10% 600VW paper	
C422	0.047μF ±10% 600VW paper	
C423	270pF ±10% 2500VW N750 disc	
C424	0.033μF ±10% 400VW polyester	
C425	10μF 300VW Electrolytic	228775
C426	220pF ±10% 4000VW N3300 disc	
C427	15pF ±20% 3000VW N750 disc	
C428A	60μF 275VW	229766
C428B	200μF 275VW } Electrolytic	
C429	0.47μF ±10% 160VW polyester	
C430	220pF ±20% K3000 disc	
C431	100μF 125VW Electrolytic	229729
C432	100μF 125VW Electrolytic	229729
C433	0.001μF ±20% 500VW K2000 disc	

** Philips only.

CIRCUIT CODE

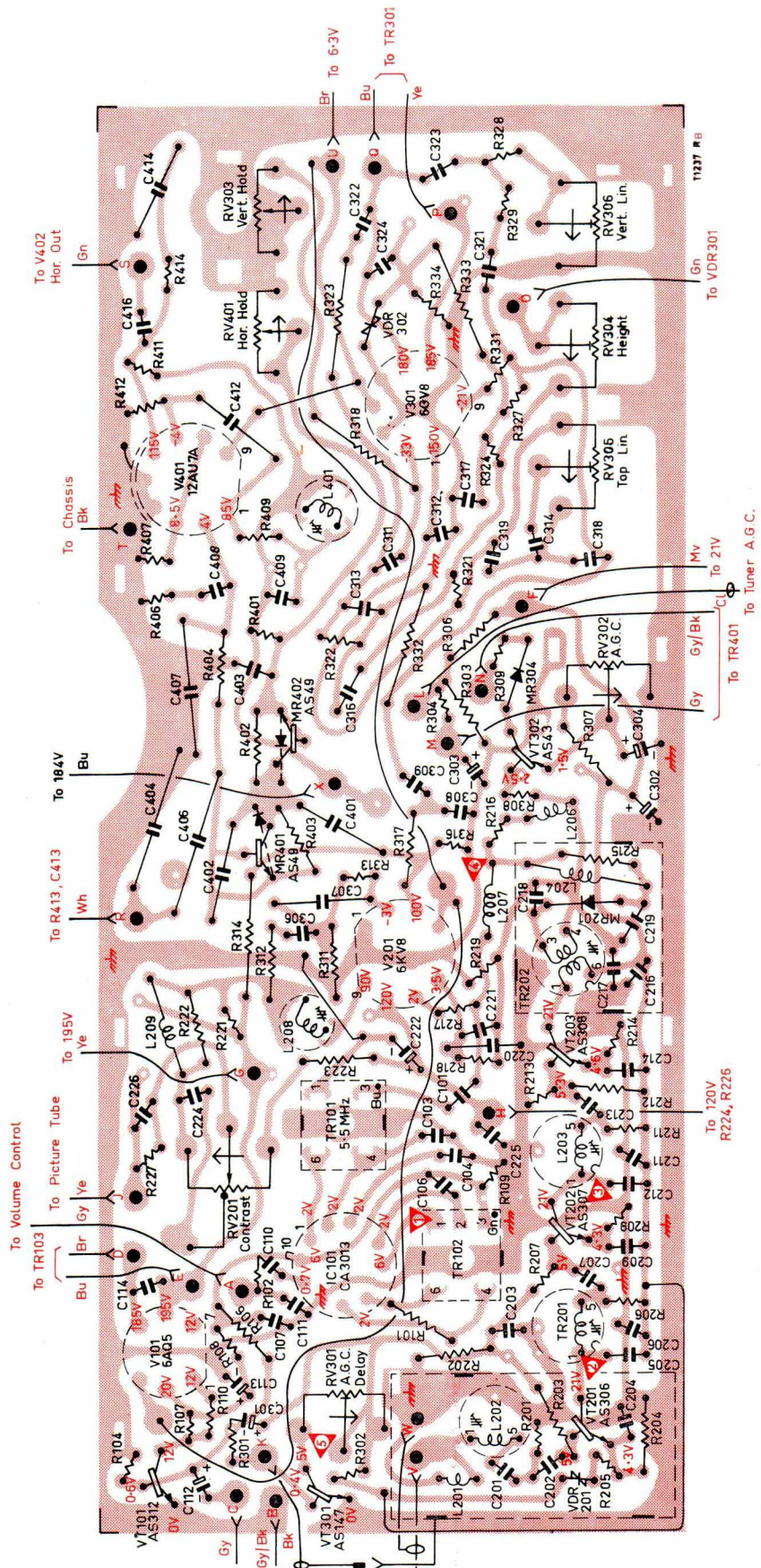
Code No.	DESCRIPTION	Part No.
	TRANSFORMERS	
TR1	Balun Assembly	129984
TR2	Converter I.F.	46303
	Tuning Coil Assembly	
	Channel 0	46310/001
	Channel 1	46310/002
	Channel 2	46310/003
	Channel 3	46310/004
	Channel 4	46310/005
	Channel 5	46310/006
	Channel 5A	46310/007
	Channel 6	46310/008
	Channel 7	46310/009
	Channel 8	46310/010
	Channel 9	46310/011
	Channel 10	46310/012
	Channel 11	46310/013
TR101	Sound Take-off	54603
TR102	Ratio Detector	54600
TR103	Audio Output	54468
TR201	Video I.F.	54611
TR202	Video I.F.	54613
TR301	Vertical Output	52691/001
TR401	Horizontal Output	52563
TR402	Power	54467/001
	INDUCTORS	
L201	Video I.F. Bandwidth	54607
L202	Video I.F. Input	54608
L203	Video I.F.	54610
L204	Detector Filter	54615
L205	Not used	
L206	Detector Filter	41423
L207	Detector Filter	49671
L208	5.5 MHz Trap (incl. C223)	54605
L209	Video Ampl. Peaking	40117
L401	Sine Wave	52191
L402	H.F. Choke	214516
L403	Horizontal Linearity	43264
L404	Horizontal Deflection	
L405	Horizontal Deflection	
L406	Vertical Deflection (Yoke)	44908
L407	Vertical Deflection	
L408	H.T. Filter Choke	52698/001
	VALVES and SEMI CONDUCTORS	
V101	6AQ5	
V201	6KV8	
V202	17ERP4	
V301	6GV8	
V401	12AU7A	
V402	6CM5	
V403	6AX4-GT	
V404	1X2-B	
VT1	40469	
VT2	AS305	
VT3	AS304	
VT101	AS312	
VT201	AS306	
VT202	AS307	
VT203	AS308	
VT301	AS147	
VT302	AS43	

Code No.	DESCRIPTION	Part No
	VALVES and SEMI CONDUCTORS CONT.	
IC101	CA3013	
MR201	IN87A	
MR301	Not used	
MR302	Not used	
MR303	Not used	
MR304	OA95	
MR401	AS41 or AS49	
MR402	AS41 or AS49	
MR403	IN3194	
MR404	IN3193	
MR405	IN3194	
MR406	IN3194	
	MISCELLANEOUS	
FS401	H.T. Fuse 1 Amp.	370030
FS402	Mains Fuse 1 Amp. (Anti-Surge)	369954
LS101	Speaker 6" x 4"	53400
SG401	Spark Gap	600000
SW301	Power Switch	857108
TH401	1.1 ohm at 25° C. Thermistor	(on Yoke)
VDR201	Voltage Dependent Resistor E299DD/A216	619576
VDR301	Voltage Dependent Resistor E298ED/A262	619507
VDR302	Voltage Dependent Resistor E298ED/A260	619561
VDR401	Voltage Dependent Resistor E298ZZ/06	619562

MECHANICAL

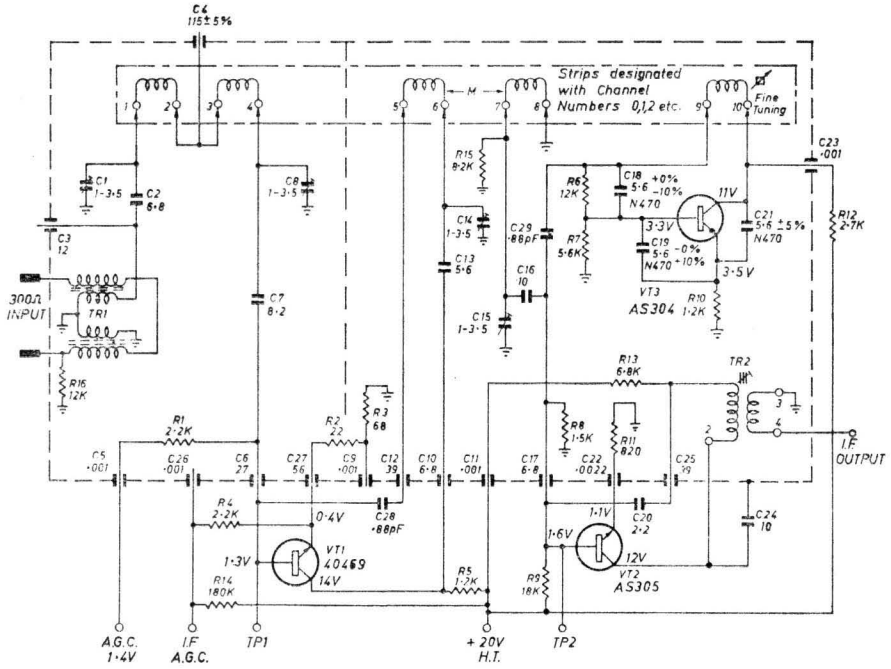
Bracket, Mounting, Power Switch	46530
Bracket, Support, Handle (2)	46522
Cabinet Assembly, Front	46551
Comprising	
Bracket, Mounting, Picture Tube (4)	46531
Front, Moulded	46552
Retainer, Cradle	46532
Spring, Earthing	46213
Cabinet Assembly, Rear	46565
Comprising	
Aerial, Rod, Telescopic (2)	103770
Lid Assembly	46566
Comprising	
Lid, Moulded	46500
Nameplate, Power	46525
Plate, Striker, Power Switch	46514
Roller, Assembly, Detent	46548
Spring, Detent	46512
Terminal, Spring, Aerial (64237)	798213
Handle Assembly, Carrying	46564
Holder, Fuse	400094
Insulator, Power Switch	46480
Knob Assembly, Controls (2)	46563/001
Tuner Mounting Assembly	46559
Comprising	
Bracket, Mounting, Tuner	46507
Drum, Channel Indicator	46538
Knob, Fine Tuning	46503
Knob Assembly, Channels Selector	46560
Comprising	
Gear, Drive, Channel Indicator	46505
Knob, Channel Selector	46502
Nameplate, Channel Numbers	46526
Spindle, Ch. Ind. Drum	46527
Spring, Loading, Ch. Ind. Drum	798210

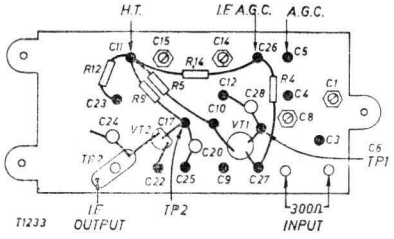
PRINTED BOARD LAYOUT

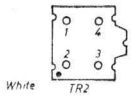


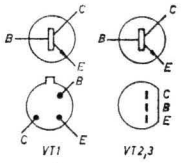
NOTES: The diagram represents the view from the copper-track side of the printed board.
Stipple indicates the copper track.
Black indicates components and leads mounted on the remote side of the board.
Red indicates those components and leads mounted on the copper-track side.
All voltages shown are measured on a Voltohmyst with the receiver controls all set normally and under no signal conditions.

TC 20-1 (46300-001) MINIATURE TRANSISTOR TUNER









A. W. Bounds Pty. Ltd., Arundel Street, Glebe.

TELEVISION RECEIVER CHASSIS — 52-00 SERIES