MANUFACTURERS AWA SUPERVISED SERVICE

# A.W.A. RADIOLA
# Television Receiver Chassis
# 36 Series

ISSUED BY AMALGAMATED WIRELESS (AUSTRALASIA) LTD.

## CHASSIS DESIGNATION

| Chassis No. | Model | Kinescope | Tuner |
|---|---|---|---|
| 36-01 | No. 6, No. 7 | 23MP4 | 44000 (TA1) |
| 36-02 | D62 | 23CP4 | 43981 (MF1) |
| 36-03 | D60Y | 23CP4 | 44000 (TA1) |
| 36-04 | D53X | 23CP4 | 44000 (TA1) |
| 36-05 | 6Z | 23MP4 | 44000 (TA1) |
| 36-06 | 3W | 23CP4 | 44000 (TA1) |
| 36-07 | 244P | 19AKP4 | 43442 (MF1) |
| 36-08 | 4X | 23CP4 | 44000 (TA1) |

## GENERAL DESCRIPTION

These chassis are fitted in 19 valve, A.C. operated Television Receivers.

Features of design include: Three stage i.f. amplifier; gated a.g.c.; phase discriminator a.f.c. horizontal system; horizontal and vertical sweep stabilization; 114° deflection; electrostatic dynamic focus; aluminised kinescope; intercarrier f.m. sound system; ratio detector.

## 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:** 170 watts maximum.

**UNDISTORTED AUDIO POWER OUTPUT:** 2.5 watts max.

**VIDEO RESPONSE** ..... To 4.25 Mc/s

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

**DEFLECTION** ..... 114° Magnetic

**TUNER** ..... See table above

**VALVE COMPLEMENT:**

1 (V1) Radiotron 6ES8 ..... R.F. Amplifier
2 (V2) Radiotron 6EA8 (MF1) ..... R.F. Osc. & Conv.
(V2) Radiotron 6HG8 (TA1) ..... R.F. Osc. & Conv.
(Valves 1 and 2 in Tuner)
3 (V101) Radiotron 6AU6 ..... Sound I.F.
4 (V102) Radiotron 6AL5 ..... Ratio Detector
5 (V103) Radiotron 6AV6 Audio Amp. & A.G.C. Clamp
6 (V104) Radiotron 6AQ5 ..... Audio Output
7 (V201) Radiotron 6BZ6 ..... 1st Video I.F.
8 (V202) Radiotron 6CB6 ..... 2nd Video I.F.
9 (V203) Radiotron 6CB6 ..... 3rd Video I.F.
10 (V204) Radiotron 6EB8 .. Video Amp. & Sync. Amp.
11 (V205) Radiotron 6CG7 Video Control and Vert. Osc.
12 (V206) Radiotron 23CP4, 23MP4 or 19AKP4 Kinescope
13 (V301) Radiotron 6HS8 Noise Gated A.G.C. & Sync. Sep.
14 (V302) Radiotron 6EM5 ..... Vertical Output
15 (V401) Radiotron 6AL5 ..... Phase Discriminator
16 (V402) Radiotron 6CG7 Buffer and Horizontal Oscillator
17 (V403) Radiotron 6CM5 ..... Horizontal Output
18 (V404) Radiotron 6AU4-GTA ..... Damper
19 (V405) Radiotron 1B3-GT ..... High Voltage Rectifier
MR201 OA80, OA90, etc. ..... Video Detector
MR401 1N1763 or 1N3194 ..... Rectifier
MR402 1N1763 or 1N3194 ..... 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. Do not operate the receiver with the high voltage compartment shield removed. Make sure that the earth strap between the chassis and the kinescope assembly is securely fastened before turning the receiver on.**

## KINESCOPE HANDLING PRECAUTIONS

**Do not install, remove or handle the kinescope in any manner unless shatter-proof goggles are worn. People not so equipped should be kept away while handling kinescopes. Keep the kinescope away from the body while handling.**
**When the receiver has been switched off after operating for a time, the kinescope will retain a certain charge. Therefore it is advisable to discharge it before handling.**

## OPERATING TESTS

### *DEFLECTION YOKE ADJUSTMENT (Fig. 1)*

If the lines of the raster are not horizontal or squared with the kinescope, rotate the deflection yoke until this condition is obtained. Tighten the yoke clamp.

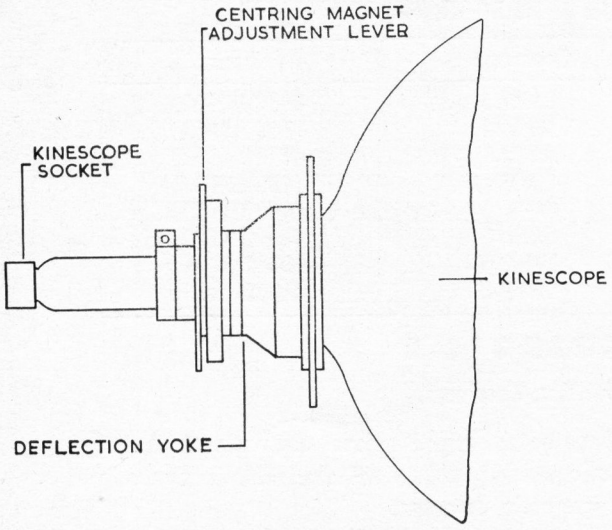



FIG. 1

**NOTE:** Rotational directions specified are viewed from the spindle end or, when no spindle is visible, from the rear cabinet end.

### *FOCUS ADJUSTMENT*

This is a factory adjustment and should not need resetting unless the Kinescope is replaced.
The wander lead is attached in turn to the three taps provided, and then left on the tap giving best overall focus at normal contrast and brightness.

### *CHECK OF HORIZONTAL OSCILLATOR ADJUSTMENT*

Turn the horizontal hold control to the extreme clockwise position. The picture should be out of synchronisation with a minimum of 10 bars slanting downwards towards the left. Turn the control slowly anti-clockwise. The number of diagonal black bars will gradually reduce and when only 1½ to 3 bars remain, the picture will synchronise with further slight anti-clockwise rotation of the control. The picture should remain synchronised for at least 4 full turns of additional anti-clockwise rotation of the control. Continue to turn the control anti-clockwise until synchronisation is lost. Turning the control beyond this point should produce a minimum of 6 bars before end of rotation or a minimum of 6 bars before interrupted oscillation (motor-boating) occurs.

The hold control should then be turned in a clockwise direction until synchronisation is just obtained. A further rotation of 1 to 1½ turns is the correct setting.

When the receiver passes the above checks and the picture is normal and stable the horizontal oscillator is correctly aligned and the "Horizontal Oscillator Adjustment" may be by-passed.

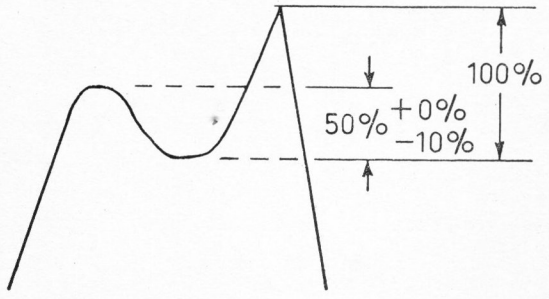
### *HORIZONTAL OSCILLATOR ADJUSTMENT*

The adjustment of the horizontal oscillator is not considered to be part of the alignment procedure. The adjustment is made at the factory and should not require readjustment in the field. However, the adjustment should be carried out whenever components in the horizontal oscillator circuit are changed. The width should be correctly set before adjustments are carried out.

The horizontal oscillator may be adjusted by the following method:—

**NOTE:** Under normal circumstances, unless C408 or L401 are replaced, no sine wave coil adjustment will be required, and the correct horizontal oscillator conditions will be obtained by following step 5 below.

1. Short circuit the sine wave coil, L401, and short circuit the phase discriminator test point to ground.
2. Adjust the horizontal hold control, TR401, until the picture is synchronised with the signal, i.e., picture sides are straight.
3. Remove short circuits from sine wave coil and phase discriminator test point.
4. With a c.r.o. at the horizontal oscillator transformer tap (red colour dot), adjust sine wave, L401, for a waveform as shown.




5. Set the horizontal hold control, TR401, for 0 volts d.c. at the phase discriminator test point.

# OPERATING TESTS

### *CENTRING ADJUSTMENT*

Centring of the electron beam is important for good linearity, horizontally and vertically. When the linearity has been adjusted as per following instructions, if the horizontal linearity is poor this indicates that the centring magnets require adjustment for horizontal centring. Similarly, if the vertical linearity is poor after adjusting the height and vertical linearity controls, this indicates the need for vertical centring.

**Note:** The centre of test patterns as transmitted on various channels may vary and should not be relied upon for centring purposes.

The centring magnets are in the form of two discs mounted on the rear of the deflection yoke cap. When the magnets are rotated around the tube neck so that the levers are opposite, minimum centring effect with either lever is produced. To obtain correct centring of the picture the magnets are alternatively rotated with respect to each other.

### *CAUTION*

**Under no circumstances should the receiver be switched on with the deflection yoke removed from the picture tube. This may produce an undeflected spot which may damage the screen.**

### *WIDTH AND HORIZONTAL LINEARITY ADJUSTMENTS*

The width and horizontal linearity controls, RV401 and L403, are adjusted to produce best linearity with a picture of the correct width, i.e., with the picture extending approximately $\frac{1}{2}$" on either side of the kinescope mask with normal picture brightness.

### *HEIGHT AND VERTICAL LINEARITY ADJUSTMENTS*

Adjust the height control, RV307, for a picture of approximately $\frac{3}{4}$ of the normal size.

Adjust the vertical linearity control, RV305, to give a small amount of cramp at the top of the picture.

Adjust the height and top linearity controls, RV307 and RV306, to obtain a picture of normal height (approximately $\frac{1}{2}$" of picture extending beyond the top and bottom of the kinescope mask).

Finally adjust the height, top linearity and vertical linearity controls for best linearity and correct height.

### *A.G.C. ADJUSTMENT*

This adjustment to be made only after all other adjustments have been checked.

Set the min. contrast and I.F. A.G.C. controls, RV302 and RV301, at their mid-positions.

Tune the receiver to a channel of medium strength (1mV) or suitable attenuated strong signal.

Set the contrast control, RV201, to minimum (fully anti-clockwise).

Adjust the min. contrast control to give 15 volts p-p at the kinescope cathode.

Adjust contrast control to increase this to 20 volts p-p.

Adjust the I.F. A.G.C. for snow threshold. A clockwise rotation increases snow.

### *REPLACEMENT OF FUSES*

Two 1.5 amp. fuses are provided for mains and high tension protection. The location and function of these fuses are indicated on the layout diagram.

# ALIGNMENT PROCEDURE

### *TESTING INSTRUMENTS*

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

(1) Television Sweep Generator.

(2) A.W.A. Cathode Ray Oscilloscope (C.R.O.), type 1A56069.

(3) A.W.A. Television Calibrator, type A56057.

(4) A.W.A. Voltohmyst, type 1A56074.

(5) A.W.A. Universal Measuring Bridge, type A56048.

### *TESTING PADS AND CIRCUITS*

(Referred to in Alignment Procedure.)

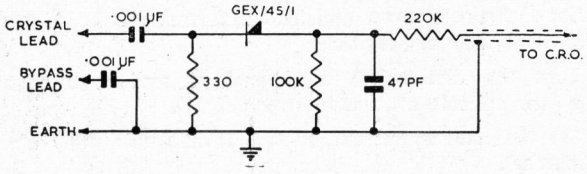



FIG. 2—CRYSTAL DETECTOR PROBE

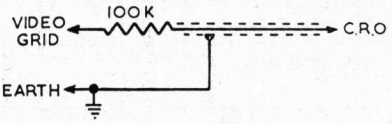



FIG. 3

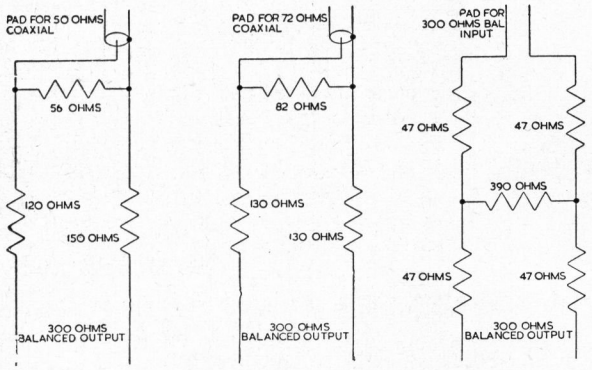



FIG. 4—SWEEP ATTENUATOR PADS

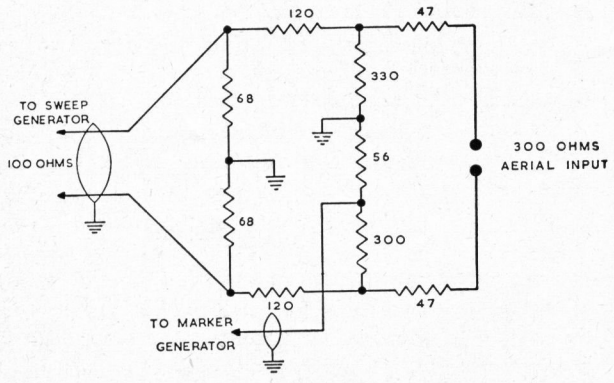



FIG. 5—INPUT PAD

### *RESPONSE CURVES*

The response curves referred to throughout the alignment procedure were taken from a production set, but some variations can be expected.

### *CRITICAL LEAD DRESS*

All leads in the i.f. section, particularly those on by-pass capacitors, must be kept as short as possible.

Wire wound resistors should be dressed away from neighbouring components.

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

* Coil tuned with core close to chassis.

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

Make sure that bias voltages are correct, as incorrect voltages will lead to wrong adjustment.

When applying markers use smallest marker visible, otherwise response could be incorrectly displayed, i.e., removal of the marker generator should not change viewed shape of response.

Make sure that responses are viewed at correct output level as incorrect level will result in wrong adjustment. At lower levels detector non-linearity affects the shape, and at higher levels overload will alter the shape of the response.

### *SOUND I.F. ALIGNMENT*

Connect the output of the television calibrator to the video detector test point and set the frequency to 5.5 Mc/s.

Connect the Voltohmyst d.c. probe to the sound peak test point and set the range switch to + 5 volts d.c.

Short circuit pin 1 of V203 (3rd video i.f. grid) to ground.

Adjust the following cores for peak output varying the input to maintain a reading of about 2 volts.

TR101 secondary (ratio detector bottom core)*.

TR101 primary (top core)†.

L101 (sound take off coil)*.

L206 (sound trap)*.

Repeat this sequence once.

Transfer the Voltohmyst probe to the sound zero test point.

Re-adjust TR101 secondary (bottom core) for zero reading on the Voltohmyst.

Set the calibrator modulation switch to 600 c/s.

Connect the c.r.o. to the video out test point through a crystal probe (Voltohmyst probe 2R56075 is suitable).

Re-adjust L206 (sound trap)* for minimum 600 c/s on the c.r.o.

Remove television calibrator, Voltohmyst and short circuit on V203 grid.

### *VIDEO I.F. ALIGNMENT*

Turn RV301 to its extreme clockwise position when viewed from the wiring side and connect the junction of R301 and R303 to earth.

Connect a source of —3 volts bias to the video i.f. at the i.f. a.g.c. test point and a source of —2.5 volts bias to the tuner a.g.c. terminal.

Connect the sweep generator to the aerial input terminals on the tuner and set both sweep generator and tuner to Channel 6.

Connect the c.r.o. vertical input to TP1 on the tuner through a shielded lead.

Check that the r.f. response viewed on the c.r.o. conforms with that shown in figure 6.

Note: In figure 5 is shown a suggested input pad and a way the marker generator can be connected for checking the tuner response.

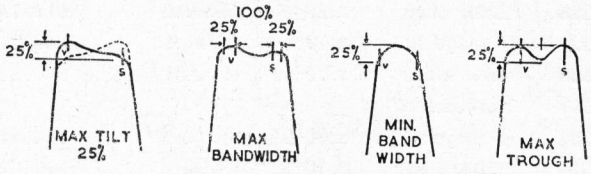



FIG. 6

Disconnect the c.r.o. from TP1 on the tuner and connect the crystal detector probe (figure 2) to pin 5 of V201 (1st video i.f. plate) and also by-pass pin 5 of V202 using by-pass lead provided.

Set tuner oscillator frequency to 212.125 Mc/s ± 0.5 Mc/s using the fine tuning control. Set the sweep generator output to give maximum deflection on the c.r.o. of 0.3 volts p-p. It is suggested that the marker generator be connected to the centre spigot on the socket of V201 and the earth lead connected to the chassis.

Set the marker generator to 38.375 Mc/s and adjust L201† so that the marker appears in the dip of the response produced by the trap, i.e., tune the trap to 38.375 Mc/s.

Adjust TR2,† L202* and trimmer C204 to produce the response on the c.r.o. shown in figure 7.

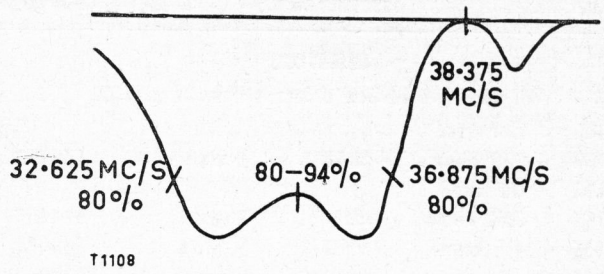



FIG. 7

TR2† mainly affects 36.875 Mc/s marker position.

L202* mainly affects tilt.

C204 mainly affects the band width.

### *OVERALL ALIGNMENT*

Remove the crystal probe and connect the c.r.o. to the video detector test point using the network shown in figure 3. It is suggested that the marker generator remain connected to the centre spigot of V201 socket.

View overall response with approximately 3 volts p-p output and adjust the accompanying sound trap TR202 (top core)† for minimum response at 30.875 Mc/s increasing the c.r.o. gain if necessary for easier adjustment of the trap.

Reset the c.r.o. gain to give 3 volts p-p and adjust for a response as shown in figure 8.

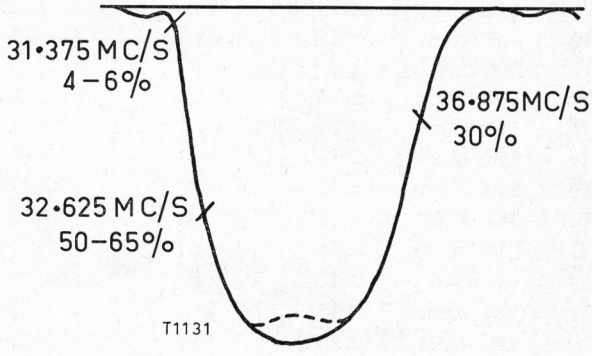



FIG. 8

Marker 36.875 Mc/s at 30% TR202*.

Marker 31.375 Mc/s at 4%-6% TR201*.

No tilt TR203*.

Check that 32.625 Mc/s marker is at 50%-65%, otherwise re-adjust TR201* and correct tilt with TR203* if necessary.

# CIRCUIT CODE

| Code No. | DESCRIPTION | | | Part No. |
|---|---|---|---|---|
| | **RESISTORS** | | | |
| | All Resistors carbon unless otherwise stated. | | | |
| R101 | Not Used | | | |
| R102 | 220 ohms | ±10% | ½ watt | 605253 |
| R103 | Not Used | | | |
| R104 | 33K ohms | ±10% | 2 watts | 614465 |
| R105 | 47 ohms | ±10% | ½ watt | 603091 |
| R106 | 47K ohms | ±10% | ½ watt | 614961 |
| R107 | 4.7K ohms | ±5% | ½ watt | 610964 |
| R108 | 4.7K ohms | ±5% | ½ watt | 610964 |
| R109 | 10 Megohms | ±10% | ½ watt | 619406 |
| R110 | 330K ohms | ±10% | ½ watt | 617108 |
| R111 | Not Used | | | |
| R112 | 470K ohms | ±10% | ½ watt | 617356 |
| R113 | Not Used | | | |
| R114 | Not Used | | | |
| R115 | 270 ohms | ±10% | 1 watt | 605645 |
| R116 | 680 ohms | ±10% | 5 watts W.W. | 607290 |
| R201 | 1K ohms | ±20% | ½ watt | 608030 |
| R202 | 2.2K ohms | ±5% | ½ watt | 609444 |
| R203 | 47 ohms | ±10% | ½ watt | 603091 |
| R204 | 8.2K ohms | ±5% | ½ watt | 611847 |
| R205 | 470 ohms | ±10% | ½ watt | 606588 |
| R206 | 120K ohms | ±10% | ½ watt | 616261 |
| R207 | 15K ohms | ±10% | ½ watt | 612922 |
| R208 | 39 ohms | ±10% | ½ watt | 602914 |
| R209 | 150K ohms | ±10% | ½ watt | 616426 |
| R210 | 8.2K ohms | ±5% | ½ watt | 611847 |
| R211 | Not Used | | | |
| R212 | 1.5K ohms | ±10% | ½ watt | 608705 |
| R213 | 150 ohms | ±10% | ½ watt | 604677 |
| R214 | 39K ohms | ±10% | 1 watt | 614691 |
| R215 | 3.3K ohms | ±10% | 1 watt | 610309 |
| R216 | 33K ohms | ±10% | ½ watt | 614460 |
| R217 | 3.9K ohms | ±5% | ½ watt | 610560 |
| R218 | 68 ohms | ±10% | ½ watt | 603560 |
| R219 | 22K ohms | ±10% | ½ watt | 613653 |
| R220 | 47K ohms | ±10% | 1 watt | 614969 |
| R221 | Not Used | | | |
| R222 | Not Used | | | |
| R223 | 5.6K ohms | ±5% | 7 watts W.W. | 611300 |
| R224 | Not Used | | | |
| R225 | 390K ohms | ±10% | ½ watt | 617204 |
| R226 | 180K ohms | ±5% | 1 watt | 616561 |
| R227 | 150K ohms | ±5% | 1 watt | 616434 |
| R228 | 100K ohms | ±5% | 1 watt | 616024 |
| R229 | 3.3 Megohms | ±10% | ½ watt | 618712 |
| R230 | Not Used | | | |
| R231 | 120K ohms | ±10% | ½ watt | 616261 |
| R301 | 470K ohms | ±10% | ½ watt | 617356 |
| R302 | 4.7 Megohms | ±10% | 1 watt | 618941 |
| R303 | 680K ohms | ±10% | ½ watt | 617666 |
| R304 | 33K ohms | ±10% | ½ watt | 614460 |
| R305 | 150K ohms | ±10% | 1 watt | 616430 |
| R306 | Not Used | | | |
| R307 | 10K ohms | ±10% | 1 watt | 612033 |
| R308 | 2 x 47K ohms | ±10% | 1 watt | 614969 |
| R309 | 8.2K ohms | ±10% | 1 watt | 611849 |
| R310 | 470K ohms | ±10% | 1 watt | 617359 |

| Code No. | DESCRIPTION | | | Part No. |
|---|---|---|---|---|
| | **RESISTORS** (Continued) | | | |
| R311 | Not Used | | | |
| R312 | 1 Megohm | ±10% | ½ watt | 618016 |
| R313 | 680K ohms | ±10% | 1 watt | 617669 |
| R314 | 1.8 Megohms | ±10% | ½ watt | 618362 |
| R315 | 1 Megohm | ±10% | 1 watt | 618021 |
| R316 | 100K ohms | ±10% | ½ watt | 616017 |
| R317 | 1 Megohm | ±10% | 1 watt | 618021 |
| R318 | 120K ohms | ±10% | ½ watt | 616261 |
| R319 | Not Used | | | |
| R320 | 10K ohms | ±10% | 2 watts | 612022 |
| R321 | Not Used | | | |
| R322 | 10K ohms | ±10% | 2 watts | 612022 |
| R323 | 27K ohms | ±10% | 1 watt | 614142 |
| R324 | 6.8K ohms | ±10% | ½ watt | 611526 |
| R325 | 1.2 Megohms | ±10% | 1 watt | 618146 |
| R326 | 100K ohms | ±10% | 1 watt | 616020 |
| R327 | 10 Megohms | ±10% | 1 watt | 619410 |
| R328 | 220K ohms | ±20% | ½ watt | 616725 |
| R329 | 1 Megohm | ±10% | 1 watt | 618021 |
| R330 | 4.7K ohms | ±10% | 1 watt | 610966 |
| R331 | Not Used | | | |
| R332 | 1 Megohm | ±10% | ½ watt | 618016 |
| R333 | 330K ohms | ±10% | ½ watt | 617108 |
| R334 | 47K ohms | ±10% | 1 watt (BTAV) | 614974 |
| R335 | 820K ohms | ±10% | 1 watt (BTAV) | 617848 |
| R336 | 820K ohms | ±10% | 1 watt (BTAV) | 617848 |
| R337 | 1.5 Megohms | ±10% | 1 watt | 618263 |
| R338 | 1.2 Megohms | ±10% | ½ watt | 618141 |
| R339 | 47K ohms | ±10% | ½ watt | 614961 |
| R340 | 1 Megohm | ±10% | 1 watt | 618021 |
| R341 | Not Used | | | |
| R342 | 680 ohms | ±10% | 5 watt W.W. | 607290 |
| R343 | 10K ohms | ±10% | 2 watts | 612022 |
| R344 | 12K ohms | ±10% | ½ watt | 612507 |
| R345 | 330K ohms | ±10% | 1 watt | 617111 |
| R346 | 100K ohms | ±10% | ½ watt | 616017 |
| R347 | 1.2 Megohms | ±10% | 1 watt | 618146 |
| R348 | 1 Megohm | ±10% | 1 watt (BTAV) | 618026 |
| R349 | 100K ohms | ±10% | 1 watt | 616020 |
| R401 | 1 Megohm | ±10% | ½ watt | 618016 |
| R402 | 33K ohms | ±10% | 2 watts | 614465 |
| R403 | 1 Megohm | ±10% | ½ watt | 618016 |
| R404 | 82K ohms | ±10% | ½ watt | 615795 |
| R405 | 68K ohms | ±10% | ½ watt | 615494 |
| R406 | 2.2K ohms | ±10% | ½ watt | 609442 |
| R407 | 220K ohms | ±10% | 1 watt | 616734 |
| R408 | 39K ohms | ±10% | ½ watt | 614684 |
| R409 | 100K ohms | ±10% | 1 watt | 616020 |
| R410 | 47 ohms | ±10% | ½ watt | 603091 |
| R411 | Not Used | | | |
| R412 | 680K ohms | ±10% | 1 watt | 617669 |
| R413 | 27K ohms | ±10% | 1 watt | 614142 |
| R414 | 820K ohms | ±10% | 1 watt (BTAV) | 617848 |
| R415 | 3.9K ohms | ±10% | 5 watts W.W. | 610567 |
| R416 | 1 Megohm | ±10% | 1 watt (BTAV) | 618026 |
| R417 | 22K ohms | ±10% | 1 watt | 613658 |
| R418 | 1.5 ohms | ±10% | ½ watt W.W. | 600416 |

# CIRCUIT CODE

| Code No. | DESCRIPTION | Part No. |
|---|---|---|
| | **RESISTORS** (Continued) | |
| R419 | 470K ohms ±10% 1 watt | 617359 |
| R420 | 330K ohms ±10% 1 watt | 617111 |
| R421 | Not Used | |
| R422 | 2.2 Megohms ±20% ½ watt | 618487 |
| R423 | 1K ohms ±20% ½ watt | 608030 |
| R424 | Not Used | |
| R425 | 150 ohms ±10% ½ watt } In yoke | |
| R426 | 150 ohms ±10% ½ watt } In yoke | |
| R427 | 150 ohms ±10% 1 watt | 604681 |
| RV101 | 500K ohms Curve "C" Carbon, Volume | |
| | 36-01, 05, | 620587 |
| | 36-02, 03, -04 | 620546 |
| | 36-06, -08 | 620556 |
| | 36-07 | 620592 |
| RV102 | 500K ohms Curve "F" Carbon, Tone | |
| | 36-02 (W/S) | 620547 |
| | 36-03, -04 | 620538 |
| | 36-06, -08 (W/S) | 620651 |
| | 36-07 (W/S) | 620660 |
| RV201 | 500K ohms Linear Carbon, Contrast | |
| | 36-01, -05 | 620561 |
| | 36-02, -03, 04 | 620545 |
| | 36-06, -08 | 620540 |
| | 36-07 | 620543 |
| RV301 | 200K ohms Linear Carbon I.F.A.G.C. | 620487 |
| RV302 | 20K ohms Linear Carbon Min. Contrast | 620262 |
| RV303 | Not Used | |
| RV304 | 1.5 Megohms Linear Carbon Vert. Hold | 620786 |
| RV305 | 100K ohms Linear Carbon Vert. Linearity | 620322 |
| RV306 | 1 Megohm Linear Carbon Top Linearity | 620769 |
| RV307 | 1 Megohm Linear Carbon Height | 620769 |
| RV308 | 500K ohms Linear Carbon, Brightness | |
| | 36-01, -05 | 620561 |
| | 36-02, -03, -04 | 620545 |
| | 36-06, -08 | 620540 |
| | 36-07 | 620543 |
| RV401 | 1 Megohm Linear Carbon Width | 620769 |
| | **CAPACITORS** | |
| C101 | 6.8pf ±5% NPO tubular (in L101) | 220378 |
| C102 | 39pf ±5% N220 disc (in L101) | 221292 |
| C103 | Not Used | |
| C104 | 0.0033μf ±10% 400VW polyester | 225793 |
| C105 | 100pf ±5% 600VW styroseal (in TR101) | 222222 |
| C106 | 470pf ±5% 600VW styroseal | 224212 |
| C107 | 470pf ±5% 600VW styroseal | 224212 |
| C108 | 0.001μf ±10% 400VW polyester | 225060 |
| C109 | 10μf 25VW Electrolytic | 228771 |
| C110 | 0.0047μf ±10% 400VW polyester | 225953 |
| C111 | Not Used | |
| C112 | 0.039μf ±10% 125VW polyester | 228775 |
| C113 | 0.01μf ±10% 125VW polyester | 226378 |
| C114 | 0.0068μf ±10% 400VW polyester | 226234 |
| C115 | Not Used | |
| C116A | 10μf 450VW } Electrolytic | 229612 |
| C116B | 50μf 350VW } Electrolytic | 229612 |
| C117 | 0.0022μf ±10% 400VW polyester | 225636 |
| C201 | 5.6pf ±5% NPO disc | 220269 |
| C202 | 12pf ±5% NPO tubular | 220556 |
| C203 | 0.0047μf +100% —0% K5000 disc | 225980 |
| C204 | 4—10pf trimmer | 231123 |
| C205 | 0.0047μf +100% —0% K5000 disc | 225980 |
| C206 | 270pf ±5% 600VW styroseal | 223561 |
| C207 | 0.0047μf +100% —0% K5000 disc | 225980 |

| Code No. | DESCRIPTION | Part No. |
|---|---|---|
| | **CAPACITORS** (Continued) | |
| C208 | 0.0047μf +100% —0% K5000 disc | 225980 |
| C209 | 390pf ±5% 600VW styroseal | 223885 |
| C210 | 0.0047μf +100% —0% K5000 disc | 225980 |
| C211 | Not Used | |
| C212 | 0.0047μf +100% —0% K5000 disc | 225980 |
| C213 | 18pf ±5% NPO tubular (in TR202) | 220775 |
| C214 | 0.0047μf +100% —0% K5000 disc | 225980 |
| C215 | 0.001μf +80% —20% K2000 feed thru | 225011 |
| C216 | 0.0047μf +100% —0% K5000 disc | 225980 |
| C217 | 470pf ±5% 600VW styroseal | 224212 |
| C218 | 2.2pf ±.5pf NPO disc (in TR203) | 221494 |
| C219 | 4.7pf ±10% N750 bead (in TR203) | 220215 |
| C220 | 2.2pf ±.5pf NPO disc | 221494 |
| C221 | Not Used | |
| C222 | 0.1μf ±10% 400VW polyester | 227085 |
| C223 | 0.0039μf ±5% 400VW polyester | 225858 |
| C224 | 39pf ±10% N220 disc | 221292 |
| C225 | Not Used | |
| C226 | 0.1μf ±10% 400VW polyester | 227085 |
| C227 | 0.22μf ±10% 125VW polyester | 227341 |
| C301 | 0.1μf ±10% 125VW polyester | 227086 |
| C302 | 0.1μf ±10% 125VW polyester | 227086 |
| C303 | 0.022μf ±10% 400VW polyester | 226636 |
| C304 | 0.0039μf ±10% 400VW polyester | 225863 |
| C305 | 0.01μf ±10% 400VW polyester | 226365 |
| C306 | 0.5μf ±10% 125VW polyester | 227495 |
| C307 | 330pf ±10% 600VW styroseal | 223716 |
| C308 | 0.033μf ±10% 400VW polyester | 226739 |
| C309 | 0.001μf ±10% 400VW polyester | 225060 |
| C310 | Not Used | |
| C311 | Not Used | |
| C312 | 0.01μf ±10% 400VW polyester | 226365 |
| C313 | 0.027μf ±10% 400VW polyester | 226689 |
| C314 | 0.0068μf ±5% 400VW polyester | 226236 |
| C315 | Not Used | |
| C316 | 0.1μf ±10% 400VW polyester | 227085 |
| C317 | 4μf 500VW Electrolytic | 228188 |
| C318 | 0.012μf ±10% 400VW polyester | 226526 |
| C319 | 0.1μf ±10% 400VW polyester | 227085 |
| C320 | 0.0068μf ±10% 400VW polyester | 226234 |
| C321 | 330pf ±20% K2000 disc | 223724 |
| C322 | 0.1μf ±10% 400VW polyester | 227085 |
| C323 | 0.1μf ±10% 125VW polyester | 227086 |
| C324 | 0.0068μf ±10% 400VW polyester | 226234 |
| C325 | 0.047μf ±10% 400VW polyester | 226802 |
| C326A | 10μf 450VW } Electrolytic | 229612 |
| C326B | 50μf 350VW } Electrolytic | 229612 |
| C327 | 0.01μf ±10% 400VW polyester | 226365 |
| C328 | 0.022μf ±10% 400VW polyester | 226636 |
| C329 | 0.1μf ±10% 400VW polyester | 227085 |
| C330 | Not Used | |
| C331 | 0.1μf ±20% 600VW paper | 227011 |
| C401 | 150pf ±10% 600VW styroseal | 222698 |
| C402 | 150pf ±10% 600VW styroseal | 222698 |

# CIRCUIT CODE

| Code No. | DESCRIPTION | Part No. |
|---|---|---|
| | **CAPACITORS** (Continued) | |
| C403 | 0.0015μf ±10% 400VW polyester | 225390 |
| C404 | 390pf ±5% 600VW styroseal | 223885 |
| C405 | 0.047μf ±10% 125VW polyester | 226804 |
| C406 | 470pf ±10% 600VW polystyrene | 224207 |
| C407 | 270pf ±5% 1000VW mica | 223553 |
| C408 | 0.01μf ±5% 600VW styroseal | 226335 |
| C409 | Not Used | |
| C410 | 0.0012μf ±5% 1000VW mica | 225307 |
| R411 | Not Used | |
| C412 | 2.2pf ±.5pf NPO disc | 221494 |
| C413 | 0.0012μf ±10% 600VW styroseal | 225303 |
| C414 | 0.01μf +100% —0% K5000 disc | 226307 |
| C415 | 2μf 300VW Electrolytic | 227923 |
| C416 | 0.047μf ±10% 1000VW paper | 226831 |
| C417 | 0.047μf ±10% 1000VW paper | 226831 |
| C418 | 68pf ±10% 400VW N750 disc | 221965 |
| C419 | 560pf ±10% 2500VW N1500 tubular | 224484 |
| C420 | 270pf ±10% 2500VW N750 disc | 223554 |
| C421 | 0.12μf ±10% 400VW paper | 227250 |
| C422 | Not Used | |
| C423 | 0.001μf +100% —0% K5000 tubular | 225010 |
| C424 | Not Used | |
| C425 | 270pf ±10% 2500VW N750 disc | 223554 |
| C426 | 100μf 200VW Electrolytic | 229711 |
| C427 | 100μf 200VW Electrolytic | 229711 |
| C428 | 100μf 350VW Electrolytic | 229727 |
| | **INDUCTORS** | |
| L101 | Sound I.F. | 43336 |
| L201 | 38.375 Mc/s Trap | 43580 |
| L202 | I.F. Input | |
| L203 | Detector Filter | 40323 |
| L204 | Detector Filter | 49671 |
| L205 | Detector Peaking Coil (250μH) | 40117 |
| L206 | 5.5 Mc/s Trap | 43593 |
| L207 | Video Amp. Series Peaking Coil | 51693 |
| L401 | Sine Wave | 52150 |
| L402 | H.F. Choke (1.5μH) | 214516 |
| L403 | Horizontal Linearity | 43264 |
| L404-L407 | Yoke (when chassis behind kine.) | 43660 |
| | Yoke (when chassis under kine.) | 43661 |
| L408 | H.T. Filter Choke | 40113C |
| | **TRANSFORMERS** | |
| TR101 | Ratio Detector | 40077 |
| TR102 | Speaker Transformer | 51862A |
| TR201 | 1st Video I.F. | 40902 |
| TR202 | 2nd Video I.F. | 41407 |
| TR203 | 3rd Video I.F. | 41933 |
| TR301 | Vertical Blocking Oscillator | 43643A |
| TR302 | Vertical Output | 43340A |
| TR401 | Horizontal Blocking Oscillator | 51694 |
| TR402 | Horizontal Output | 43646 |
| TR403 | Not Used | |
| TR404 | Power Transformer 36-01, 02, 03, 04, 06, 08 | 43261C |
| | 36-07 | 43261D |
| | 36-05 | 51839 |

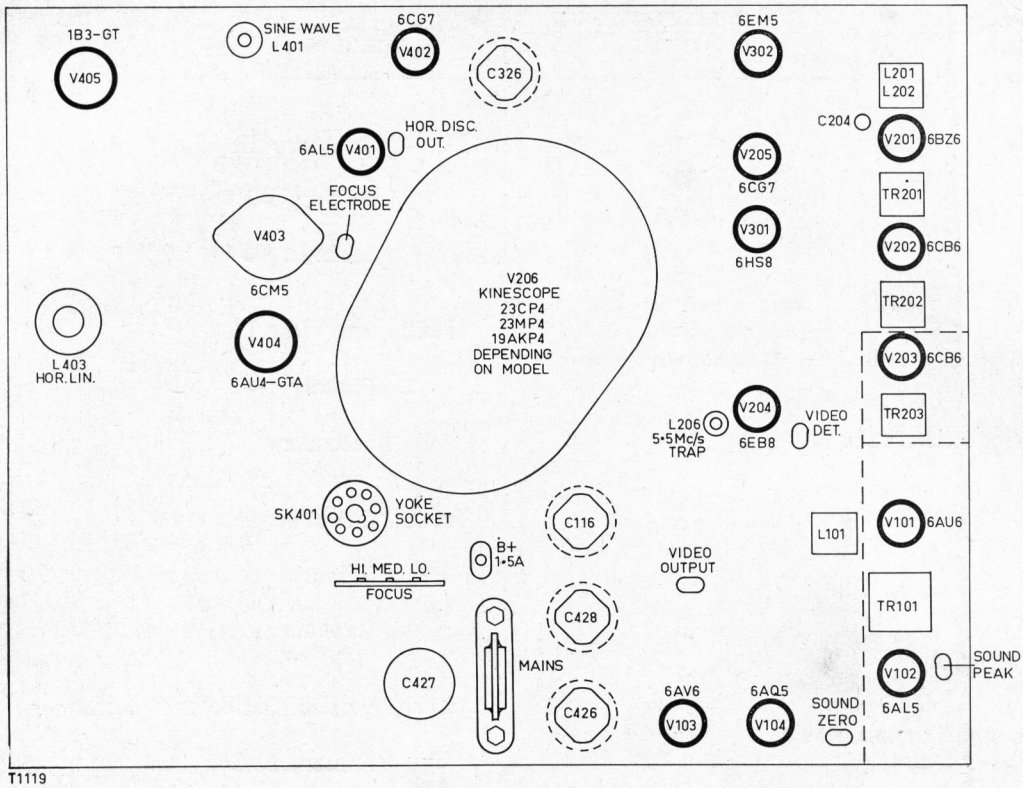
| Code No. | DESCRIPTION | Part No. |
|---|---|---|
| | **VALVES AND DIODES** | |
| V101 | Radiotron 6AU6 | |
| V102 | Radiotron 6AL5 | |
| V103 | Radiotron 6AV6 | |
| V104 | Radiotron 6AQ5 | |
| V201 | Radiotron 6BZ6 | |
| V202 | Radiotron 6CB6 | |
| V203 | Radiotron 6CB6 | |
| V204 | Radiotron 6EB8 | |
| V205 | Radiotron 6CG7 | |
| V206 | Radiotron 23CP4, 23MP4 or 19AKP4 (see models) | |
| V301 | Radiotron 6HS8 | |
| V302 | Radiotron 6EM5 | |
| V401 | Radiotron 6AL5 | |
| V402 | Radiotron 6CG7 | |
| V403 | Radiotron 6CM5 | |
| V404 | Radiotron 6AU4-GTA | |
| V405 | Radiotron IB3-GT | |
| MR201 | OA80, OA90 or equivalent | |
| MR401 | AWV IN1763 or IN3194 | |
| MR402 | AWV IN1763 or IN3194 | |
| | **MISCELLANEOUS** | |
| SG401 | Spark Gap (BTS Blank) | 600000 |
| VDR301 | Voltage Dependent Resistor Philips E298ED/A260 | 619561 |
| VDR302 | Voltage Dependent Resistor Philips E298ED/A260 | 619561 |
| VDR401 | Voltage Dependent Resistor Philips E298ZZ/06 | 619562 |
| SW401 | On-Off Switch | |
| | 36-01, -05 | 858788 |
| | 36-03, -04 | 857421 |
| | 36-02, -06, -07, -08 | On RV102 |
| | **MECHANICAL** | |
| | Anode Cap and Lead, Hor. Output | 40044 |
| | Cap Ass'y, Yoke | 41185 |
| | Clamp Body, Power Cable | 208056 |
| | Clamp Lock, Power Cable | 208057 |
| | Clamp, Yoke Cap | 41186 |
| | E.H.T. Box Lid | 41310 |
| | E.H.T. Box Side | 41309 |
| | Fuse Holder, H.T. | 49075 |
| | Fuse Holder, Mains | 40845 |
| | Insulator, Power Switch | 38469 |
| | Insulator, Pre-set Panel | 42741 |
| | Leads Ass'y, Mains | 49793 |
| | Leads Ass'y, Ultor | 49545 |
| | Lid, I.F. Shield | 42426 |
| | Panel Ass'y, Focus | 64201 |
| | Screen, Valve | 653013 |
| | Shield Ass'y, Corona | 41062 |
| | Shield Ass'y, Video Det. | 42378 |
| | Shield, Tunnel | 42429 |
| | Socket, Kinescope | 794566 |
| | Socket, 7 Pin with Saddle | 794615 |
| | Socket, 7 Pin with Skirt | 794569 |
| | Socket, 7 Pin Moulded Push-in | 794579 |
| | Socket, 8 Pin Wafer | 793033 |
| | Socket, 8 Pin Mica Filled | 794582 |
| | Socket, 9 Pin Moulded | 794599 |
| | Socket, 9 Pin Mica Filled | 794640 |
| | Test Point Assembly | 41085 |

# D.C. RESISTANCE OF WINDINGS

| WINDING | | D.C. RESISTANCE IN OHMS |
|---|---|---|
| Tuner Windings | | * |
| L101 | Sound I.F. | 1.3 |
| L201 | 38.375 Mc/s Trap | * |
| L202 | Video I.F. | * |
| L203 | Detector Filter Choke | 4 |
| L204 | Detector Filter Choke | * |
| L205 | Detector Peaking Coil | 6 |
| L206 | 5.5 Mc/s Trap | 1.5 |
| L207 | Video Amp. Series Peaking | 5 |
| L401 | Sine Wave Coil | 55 |
| L402 | H.F. Choke | * |
| L403 | Horizontal Linearity Coil | 7 |
| L404 | Deflection Yoke | 2.5 |
| L405 | Deflection Yoke | 2.5 |
| L406 | Deflection Yoke | 17 |
| L407 | Deflection Yoke | 17 |
| L408 | H.T. Filter Choke | 40 |
| TR101 | Ratio Detector | |
| | Primary | 9.5 |
| | Secondary | 1 |
| TR102 | Speaker Transformer | |
| | Primary | 500 |
| | Secondary | 2 |
| TR201 | 1st Video I.F. | |
| | Primary 1-2 | * |
| | Secondary 3-4 | * |
| TR202 | 2nd Video I.F. | |
| | Primary 1-4 | * |
| | Secondary | * |
| TR203 | 3rd Video I.F. | |
| | Primary | * |
| | Secondary | * |
| TR301 | Vertical Oscillator Transformer | |
| | Primary Bu-Gn | 525 |
| | Secondary Ye-Bk | 140 |
| TR302 | Vertical Output Transformer | |
| | Primary Bu-Rd | 350 |
| | Secondary Rd-Ye | 1 |
| TR401 | Horizontal Oscillator Transformer | |
| | Primary Rd-Anode | 24 |
| | Secondary Rd-C407 | 88 |
| TR402 | Horizontal Output Transformer | |
| | Primary 3-5 | 23 |
| | Secondary 4-7 | 7 |
| | Tertiary 5-Top Cap | 415 |
| | Tertiary 1-2 | 1.5 |
| TR404 | Power Transformer | |
| | Primary Gn-Wh | 10 |
| | Secondary Rd-Rd | 4 |
| | Motor Winding | 2 |

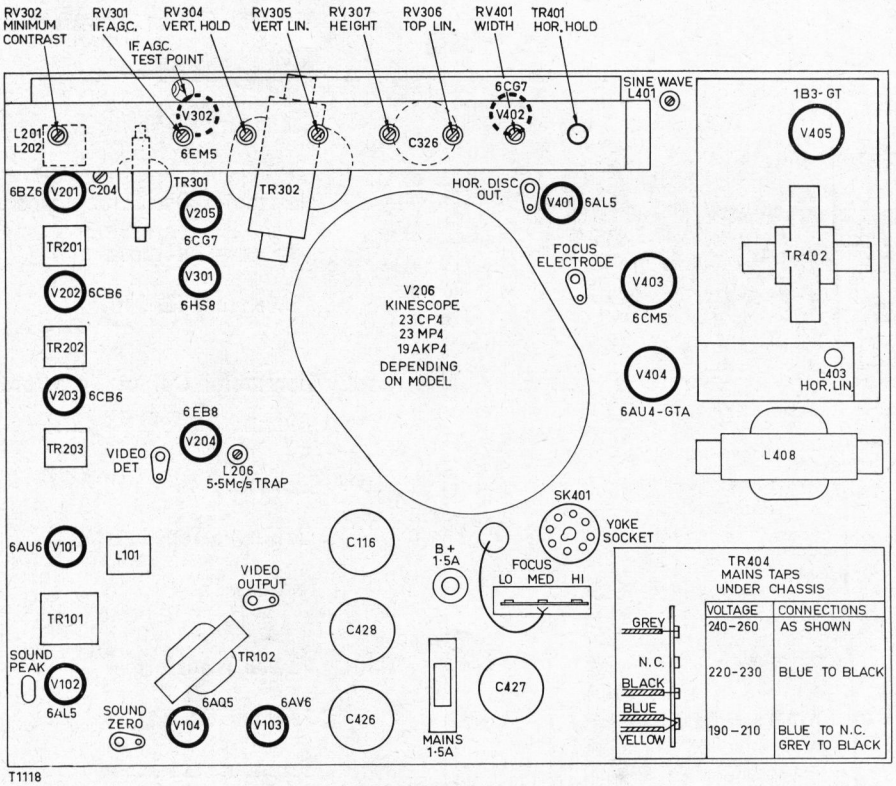
* Less than 1 ohm.

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.




T1119

**Under Chassis Location Chart**




T1118

**Top Chassis Location Chart**

## CIRCUIT CHANGES

To improve synchronisation at minimum contrast setting:—

The value of C312 which was a 0.033$\mu$f ± 10% 600 VW paper capacitor 226731, is now 0.01$\mu$f.

R316 was omitted on some chassis.

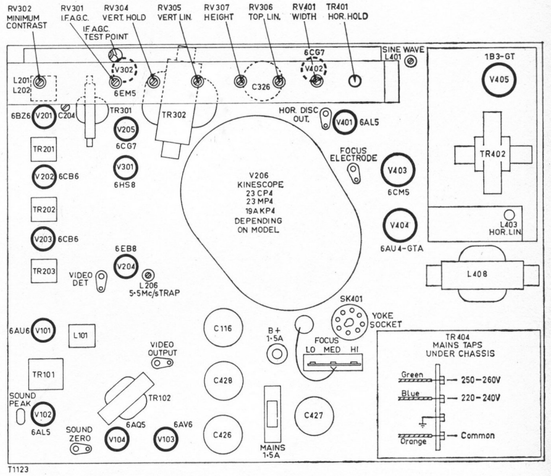
To increase the vertical hold control range with all contrast control settings:—

The value of R313 which was a 220K ohms ± 10% ½ watt resistor, 616721, is now 680K ohms.

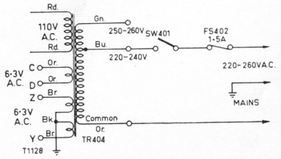
The value of R324 which was a 2.7K ohms ± 10% ½ watt resistor, 609862, is now 6.8K ohms.

To improve audio output on strong signals:—

The value of R104 which was a 39K ohms ± 10% 2 watts resistor, 614465, is now 33K ohms.




**Top chassis Location Chart (36-05 chassis)**




**Power Input Circuit with 51839 Transformer (36-05 chassis)**

# CIRCUIT TELEVISION RECEIVER CHASSIS – 36 SERIES

NOTES:—

1. WAVEFORM VOLTAGES— COMPOSITE VIDEO WAVEFORMS SHOWN VARY WITH CONTRAST SETTING. VOLTAGES WITHIN THE WAVEFORMS MEASURED ON A VOLTOHMYST (PEAK TO PEAK) VOLTAGES BETWEEN ARROWS MEASURED ON C.R.O. USING LOW CAPACITANCE PROBE.
2. ALL VALVE VOLTAGES MEASURED ON A VOLTOHMYST WITH CONTROLS NORMAL AND NO SIGNAL INPUT.
   * VARIES WITH NOISE.
   ● DO NOT MEASURE.
   o VARIES WITH BRIGHTNESS.
   † VARIES WITH HORIZONTAL HOLD SETTING.
   □ MEASURED AT MINIMUM BRIGHTNESS WITH H.V. PROBE ON VOLTOHMYST.
   ‡ VARIES WITH FOCUS SETTING.
3. R334, R335, R336, R348, R414, R416. 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.
5. VOLTAGE DEPENDENT RESISTORS.

| CODE | TYPE | COLOUR |
|---|---|---|
| VDR301 | E298ED/A260 | BLUE |
| VDR302 | E298ED/A260 | BLUE |
| VDR401 | E298ZZ/ 06 | BLUE/BLACK |

6. TONE CONTROL NOT FITTED ON ALL RECEIVERS.


A. W. BOUNDS (SALES) PTY. LTD., PRINTERS, GLEBE, SYDNEY