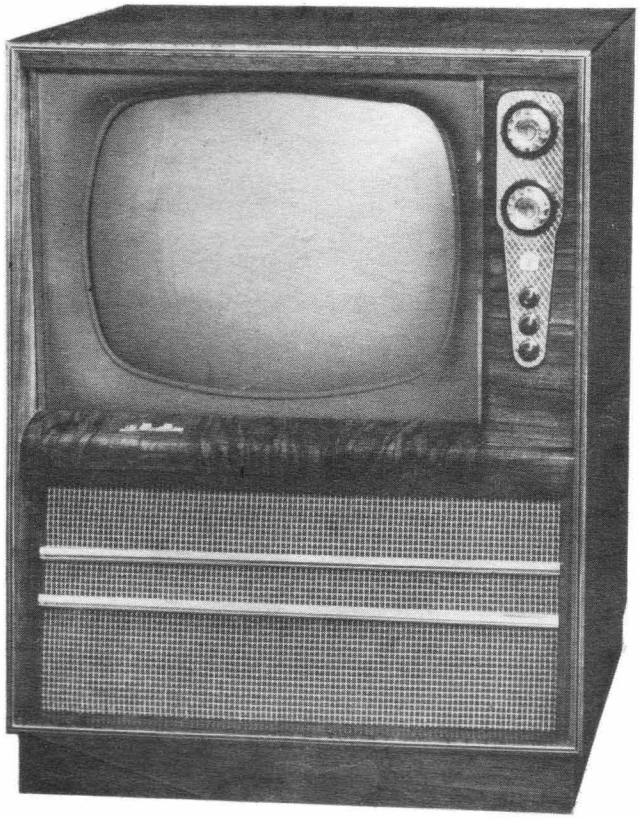
TELEVISION RECEIVER

SERVICE MANUAL



COVERING MODELS – T172
T212

ISSUED BY THE SERVICE DEPARTMENT

STANDARD TELEPHONES & CABLES PTY. LTD.

ISSUED FREE TO S.T.C. ACCREDITED RETAILERS. ADDITIONAL COPIES 3/6

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SECTION

ILLUSTRATION

INTRODUCTION

GENERAL INFORMATION

This manual has been published to assist you in obtaining the best possible installation, operation and service from the S.T.C. Model T172 and T121 Television Receivers.

It will be appreciated that the manual, although fairly comprehensive is nevertheless unable to cover every possible installation and service problem which will occur from time to time. We have therefore established a Technical Advice Service whereby a mechanic who is experiencing difficulty in the field may, by contacting the Service Department, obtain additional information or advice on any particular problem.

CHASSIS PRODUCTION CODING

To facilitate and co-ordinate the handling of production changes both in the factory and in the field, a production coding system has been established for these chassis.

The initial production will be indicated by means of a "Chassis Code Plate" marked T172 or T212, located on the rear apron of the chassis immediately above the serial number.

The numbers T172 and T212 indicates the model number, whilst any modifications which occur will be indicated as follows :- T172/1, T172/2, T212/1, T212/2 etc.

Where modifications occur a "Technical Flash" will be issued by the Service Department giving details of the modification and if necessary the reason for so doing.

SPARE PARTS

A replacement parts list is included in the manual to assist you in the correct identification and chassis location of defective parts.

When making an order or request for parts, please quote the following :-

1. The quantity required ;
2. The circuit reference and/or the part number ;
3. The part description ;
4. The colour (where applicable) ;
5. The chassis Model Number .

Example : Please supply :

1 - SP40534R 50K ohm Taper A Potentiometer suitable for T212/? Television Receiver.

When returning defective parts, valves or cathode ray tubes for examination under the terms of the Television Receiver Warranty, please ensure that the parts are adequately packed against damage in transit.

Please quote the following :-

1. The Chassis Model Number ;
2. The Chassis Serial Number ;
3. The Receiver Owner's Name and Address ;
4. The date of sale ;
5. If the receiver was originally purchased from a company other than the service company, give details.
6. Reason for return of the defective part and where possible the electrical or mechanical defect.

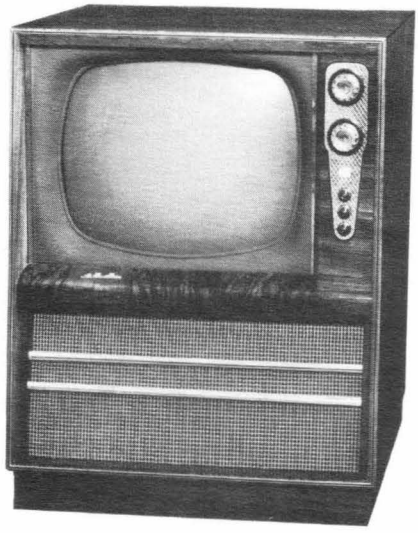


Fig. 1.

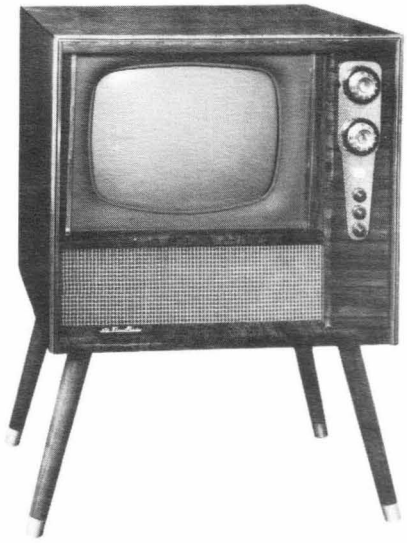


Fig. 2.

Fig. 3.

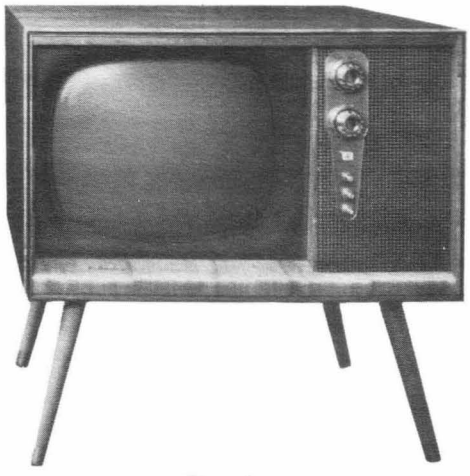


Fig. 4.

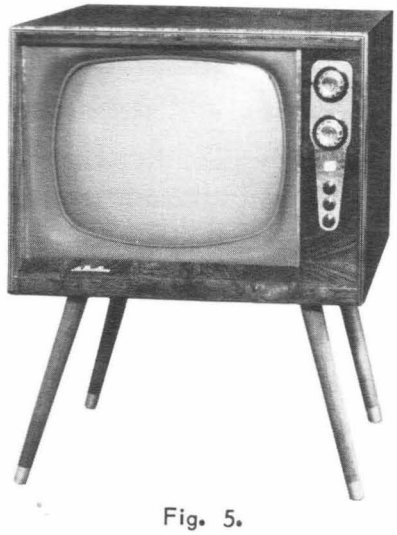


Fig. 5.

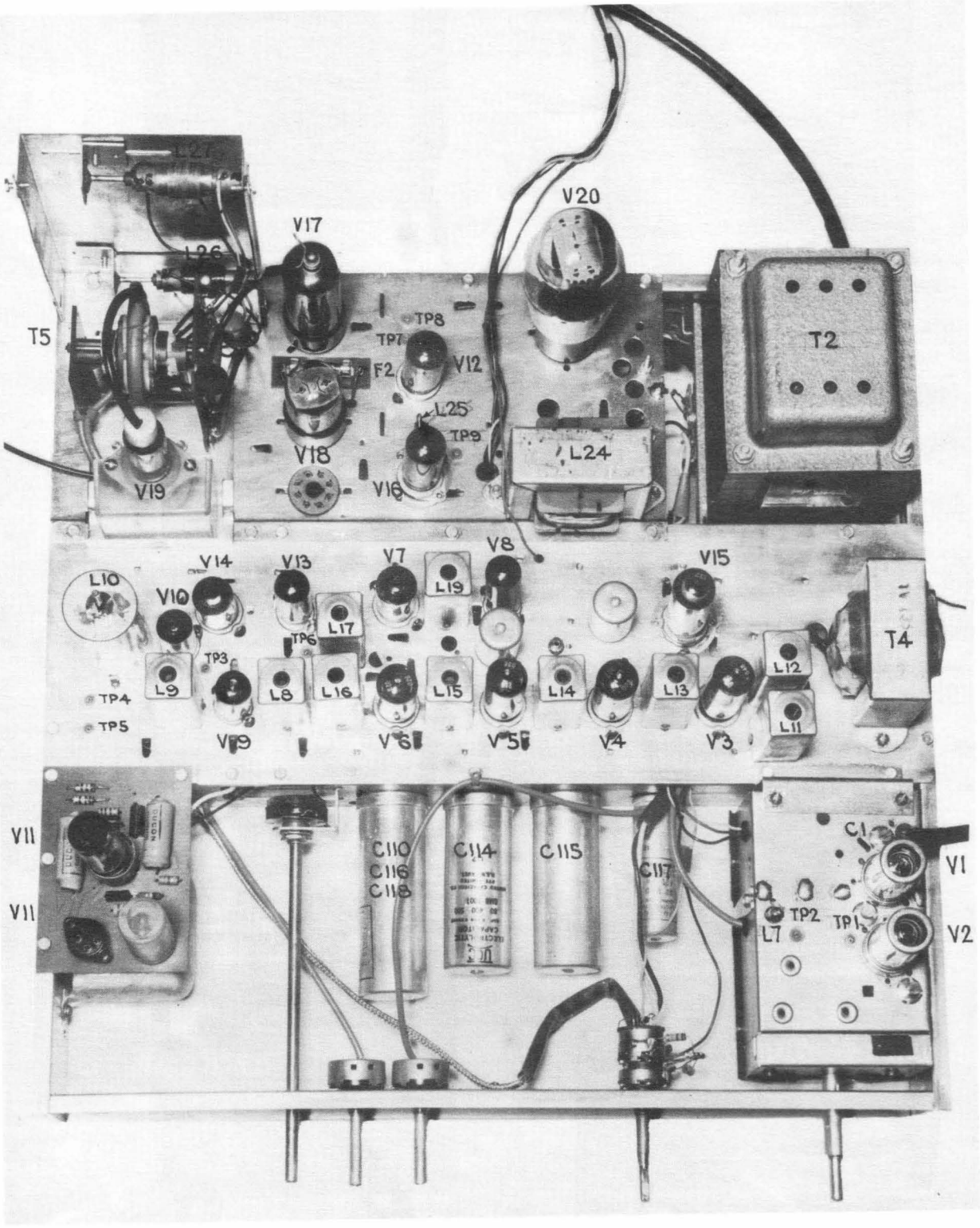

L27
L26
V17
V20
T5
TP8
TP7
F2
V12
L25
TP9
V18
V16
L24
T2
V19
V14
V13
V7
V8
V15
L10
V10
L19
L17
TP6
TP3
T4
TP4
L9
L8
L16
L15
L14
L13
L12
TP5
L11
V9
V6
V5
V4
V3
V11
V11
C110
C116
C118
C114
C115
C117
C1
V1
TP2
TP1
L7
V2

Fig. 6.

SPECIFICATION

This Television Receiver is designed to operate on the Australian 625 line 50 field system.

The main features of the circuit are the use of automatic frequency control, keyed amplified automatic gain control, noise gating and a multi channel turret tuner. The receiver has high sensitivity electro statically focussed cathode ray tube is fitted.

There are 20 Valves in the receiver plus 5 germanium diodes and the cathode ray tube.

Circuit Reference	Type	Function
V1	6CW7/ECC84	R. F. Amplifier
V2	6U8/ECF82	Frequency Converter and Local Oscillator
V3	6BX6/EF80	First I.F. Amplifier
V4	6BX6/EF80	Second I. F. Amplifier
V5	6BX6/EF80	Third I. F. Amplifier
V6	6BX6/EF80	Fourth I. F. Amplifier
V7	6U8/ECF82	Video Amplifier and D. C. Restoration
V8	6AQ5	Video Outlet Amplifier
V9	6AU6	First sound I. F. Amplifier
V10	6AU6	Second sound I.F. Amplifier
V11	6BM8/ECL82	Audio Amplifier and Output
V12	6U8/ECF82	Keyed A.G.C. Amplifier and A.G.C. Clamp
V13	6CS6	Noise Gating and Synchronising Seperator
V14	12AU7	Synchronising Phase Inverter and Vertical Synchronising Amplifier
V15	6BM8/ECL82	Vertical Blocking Oscillator and Vertical Output
V16	12AU7	Horizontal Multivibrator
V17	6CM5	Horizontal Output
V18	6AX4GT	Damper Diode
V19	R19	E.H.T. Rectifier
V20	5AS4	Mains Rectifier
V21	17AVP4A (17" Models)	Cathode Ray Tube
V21	21ALP4A (21" Models)	Cathode Ray Tube
V21	AW53 – 80 (21" Models)	Cathode Ray Tube
V21	AW53 – 80/1 (21" Models)	Cathode Ray Tube
M1	GD3	Video Detector
M2	20A79	Ratio Detector
M3	(OA81	Horizontal A.F.C. Detector
	(OA81	

Aerial :

The aerial input impedance is 300 ohms balanced.

Tuning Range :

Channels 1 – 10 (Australian frequency allocations)

Intermediate Frequencies :

Picture	I. F. Carrier.	36. 0 Mc/s.
Sound	I.F. Carrier.	30. 5 Mc/s.
Intercarrier	Sound I.F.	5.5 Mc/s.

Bandwidth :

At the 3 db points approx.	4. 0 Mc/s.
At the 6 db points approx.	4. 6 Mc/s.

Time Base Non-Linerity :

Better than 10%

Power Supply :

220, 230, and 240 Volts A.C. 50 cycles

Power Consumption :

240 Volts Amperes (Maximum)

Speaker :

21" Console Models (2) – 8 Circular Permagnetic
17" Models 7" x 5" Elliptical Permagnetic
21" Table and Lowboy 9" x 6" Elliptical

Controls :

The following controls are placed at the front of the cabinet : –

On/Off and Volume
Brightness
Channel Selector
Fine Tuning
Vertical Synchronising
Horizontal Synchronising
Contrast

The following preset controls are located at the rear of the receiver : –

Vertical Height
Vertical Linearity
Sync. Stability
Horizontal Drive
Horizontal Frequency Control
Automatic Gain Control Delay
Automatic Gain Control Level
Picture Width
Horizontal Linearity
Picture Centring

CIRCUIT DESCRIPTION

THE TUNER

The tuner unit comprises of a high frequency amplifier and a frequency converter. A seperate set of coils is used for each channel, the coils being mounted in a twelve position turret. Electrical connections between the coils and associated circuits are made by silver contacts and wipers.

The R. F. Amplifier (V.1.) is an ECC84 double triode valve connected as a cascode amplifier. A tuned secondary transformer (L. 1.) is used to match the 300 ohm balanced aerial feeder to the input grid of the cascode circuit. A bridge network is used to achieve minimum feedback; reduce oscillator radiation and ensure that the input circuit is balanced.

A bandpass coupled circuit (L2) is used between the output of the cascode amplifier and the control grid of the pentode section of (V2) the ECF82 frequency converter valve.

The triode section of the frequency converter valve is connected as a Colpitts Oscillator. The inductor (L6) of the oscillator circuit is wound on the same former as the bandpass coupling circuit and consequently the oscillator volts are mixed with the incoming high frequency signals. A high degree of oscillator stability is obtained by compensation using negative temperature coefficient capacitors.

The oscillator coil inductance (L6) is adjusted by means of a brass core. The other coils (L1 and L2) are adjusted by movement of the end turns.

The first tuned circuit of the intermediate amplifier (L7) is connected to the plate of the pentode section of the ECF82. Test points Nos. 1 and 2 are provided for use in aligning the tuner coils.

The following ten channels are provided : –

Channel	Video Carrier	Sound Carrier
1	50. 25 Mc/s	55. 75 Mc/s
2	64. 25 Mc/s	69. 75 Mc/s
3	86. 25 Mc/s	93. 75 Mc/s
4	133. 25 Mc/s	138. 75 Mc/s
5	140. 25 Mc/s	145. 75 Mc/s
6	175. 25 Mc/s	180. 75 Mc/s
7	182. 25 Mc/s	187. 75 Mc/s
8	189. 25 Mc/s	194. 75 Mc/s
9	196. 25 Mc/s	201. 75 Mc/s
10	210. 25 Mc/s	215. 75 Mc/s

THE COMPOSITE I.F. AMPLIFIER

The receiver utilises the intercarrier sound system and hence uses a common intermediate frequency amplifier for both vision and sound.

The amplifier uses four 6BX6 Valves (V3, V4, V5 and V6) and four tuned circuits (L13, L14, L15 and L16) arranged as a staggered quadruple. The coupling circuits L7 and L12 between the plate of the converter valve (V2) and the control grid of the first I. F. Amplifier (V3) form a bandpass circuit. The tuned circuits used in the amplifier are bifilar wound transformers.

A GD3 Germanium Diode is used as the video detector and is connected inside the screening can of of the final tuned circuit (L16) . This greatly reduces the feedback from the output to the input of the vision amplifers.

THE VIDEO AMPLIFIER

Two stages of video amplification are used. The first amplifying stage employs the pentode section of V7 type 6U8 Valve and this is connected to the video detector. The output from the video detector is adjusted by means of the A.G.C. level control (P8) to deliver 1. 5 volts peak to peak signal at test point T. P. 6. The output from video amplifier (V7) is capacitance coupled via C81 to the control grid of (V8) the video amplifier valve type 6AQ5 D.C. restoration is employed and this is accomplished by the triode section of (V7) connected as a diode.

Compensation coils L20, L21, L22 and L23 are used to compensate for the effect of valve and wiring capacitances in order to maintain the necessary high frequency response.

An additional 5. 5 Mc/s trap (L19) is included in the circuit for the rejection of the sound carrier.

The overall gain of the video amplifier is varied by the contrast control (P10) which is connected in the cathode circuit of V8 and utilizes the principle of negative current feedback.

THE SOUND I.F. AMPLIFIER

The sound intermediate frequency amplifier is tuned to 5. 5 Mc/s. the frequency difference between the sound and vision carriers. The input to the amplifier is connected to the video detector.

There are two stages of amplification using 6AU6 valves (V9 and V10) . This is followed by diodes 2 – OA79 (M2) connected in a ratio detector circuit.

THE AUDIO AMPLIFIER

The output from the ratio detector after passing through the volume control (P1A) is amplified by the two stages in the 6BM8 Valve (V11) . This valve can deliver up to three watts of power to the loud-speaker.

THE SYNCHRONISING and NOISE GATING CIRCUIT

This circuit employs two valves a type 6CS6 (V13) and a type 12AU7 (V14).

The 6CS6 valve (V13) receives the composite video signal with positive going synchronising pulses from the plate of the first video amplifier (V7) and these are applied to the control grid (pin No. 7) . The operating voltages of this valve are adjusted to produce the most favourable amplification of the synchronising pulses relative to the video information.

To minimise the effect of positive going noise pulses that could be passed through the synchronising seperator a noise gating circuit is used. A small amount of the video signal is coupled from the video detector output (test point TP6) via R85 to the grid No. 1 of the 6CS6 valve (V13) . This signal is 180° out of phase with the signal which is applied to the control grid (pin No. 7) . A positive bias is also applied to grid No. 1 which cancels the negative potential obtained from the video detector. The amount of the bias may be adjusted by means of the sync. stability control (P7) to a condition where any noise pulses which occur will exceed the positive bias and cut off the 6CS6 valve (V13) . This results in the synchronising pulses at the plate of the valve having small portions missing and makes a readily observable improvement on the receiver in the presence of interference.

The synchronising information is coupled from the plate of the 6CS6 valve (V13) to one half of the double triode 12AU7 valve (V14) . The vertical synchronising pulses are amplified and passed on to vertical integrating circuit (C98, C100, R95 and R98) and thus further amplified by the vertical synchronising amplifier valve ½ 12AU7 (V14) .

The horizontal pulses are removed from both the cathode and plate circuits of V14 in a phase splitting action. By removing the horizontal pulses across balanced load resistor (R94 and R97) pulses of equal amplitude and opposite phase are supplied to the horizontal phase detector.

THE AUTOMATIC FREQUENCY and HORIZONTAL SCANNING CIRCUITS

Automatic frequency control of the horizontal oscillator is accomplished by the horizontal phase detector circuit which employs two germanium diodes type OA81 (M3) . The horizontal synchonising pulses from (V14) are applied to an anode and cathode of the two diodes (M3) . A saw-tooth wave-form derived from the horizontal output transformer is applied to the anode and cathode of the diodes (M3) . By comaring the phase of the synchonising pulses and the saw-tooth wave-form the diodes produce a potential which is used to control the frequency of the horizontal multi-vibrator. This potential is zero when the natural frequency of the oscillator is the same as that of the synchronising pulses. If the oscillator frequency increases a positive correcting voltage is produced and vice versa, at the junction of R118 and R119.

The horizontal oscillator employs a 12AU7 valve (V16) connected as a multi-vibrator. A parallel resonant circuit L25 is incorporated which improves the stability of the oscillator and gives it a more desirable frequency versus control potential characteristic. The multi-vibrator is of cathode coupled type and the controlling potential is applied to the otherwise unused control grid. The output at the plate of the horizontal output valve type 6CM5 (V17) is coupled to the deflection coils (L31) by means of an autotransformer T5. The core material of the transformer is a ferrite known as Feramic and the windings are of the wave wound type. The E.H.T. winding is wound over the coupling windings and the design of the unit is such that it has an adequately fast retrace time to meet the requirements of the 625 line system.

The 6AX4GT (V18) rectifier is used to reclaim power from the deflection coils and thus improve the efficiency of operation.

The transformer produces a 16 K. v supply for the picture tube final anode. The E.H.T. rectifier (V19) is a type R19 valve.

THE VERTICAL SCANNING CIRCUIT

A type 6BM8 valve (V18) is employed for vertical scanning. The triode section is used in a conventional blocking oscillator circuit whilst the pentode section is used in the vertical output stage, the output is transformer coupled to the deflection coils by means of the vertical output transformer (T4).

THE AUTOMATIC GAIN CONTROL CIRCUIT

A triode pentode valve type 6U8 (V12) is used to provide the bias for the tuner and the first two intermediate frequency amplifier valves (V3 and V4).

The cathode of ½ 6U8 Valve (V12) is connected to a variable positive potential controlled by the automatic gain control level potentiometer (P8). The grid is directly connected to the output of the first video amplifier (V7). The plate of the valve is fed by pulses taken from the horizontal output transformer (T5). By this method the current is determined during the synchronising pulse period only. The magnitude of the current is determined by the peak carrier level.

The circuit is so designed that the clamp diode (one triode section of the 6U8 valve (V12) connected as a diode) will hold the R.F. bias to zero until the signal becomes strong enough to provide a snow free picture with maximum R. F. amplifier gain. The A.G.C. delay potentiometer (P9) may be used to vary the point at which the clamp diode loses its control and in this way enables the most favourable signal to noise ratio to be obtained at all levels of signal input.

The use of gated and amplified gain control ensures that the carrier level at the vision detector is constant for all signal input levels and is independent of picture content. The effects of interference are also kept to a minimum.

POWER SUPPLY

The mains transformer (T2) is designed for use with the appropriate supply voltage. One 5AS4 valve (V20) is used as main rectifier.

Filament windings on the transformer provide two seperate 6. 3 volt supplies.

UNPACKING and SET-UP INSTRUCTIONS

These receivers are shipped complete in one corrugated card-board carton with the picture tube fitted. To properly unpack receiver refer to the unpacking instructions attached to the exterior of the shipping carton.

After the receiver has been unpacked, the following inspection checks and adjustments should be made before placing the receiver into operation.

1. The general appearance and condition of the cabinet.
2. All valves in place and in their respective sockets, and the picture tube socket on tight.
3. Mechanical operation of controls.
4. Check that the speaker and yoke plugs are inserted in their respective sockets and that the high voltage anode lead is securely inserted in the socket on the exterior of the picture tube.

POWER SOURCE

These receivers are designed for operation from an alternating current power source of from 220 to 240 Volts at a frequency of 50 cycles per second.

Before connecting the receiver to the power source a check should be made that the mains selector plug is in the correct position.

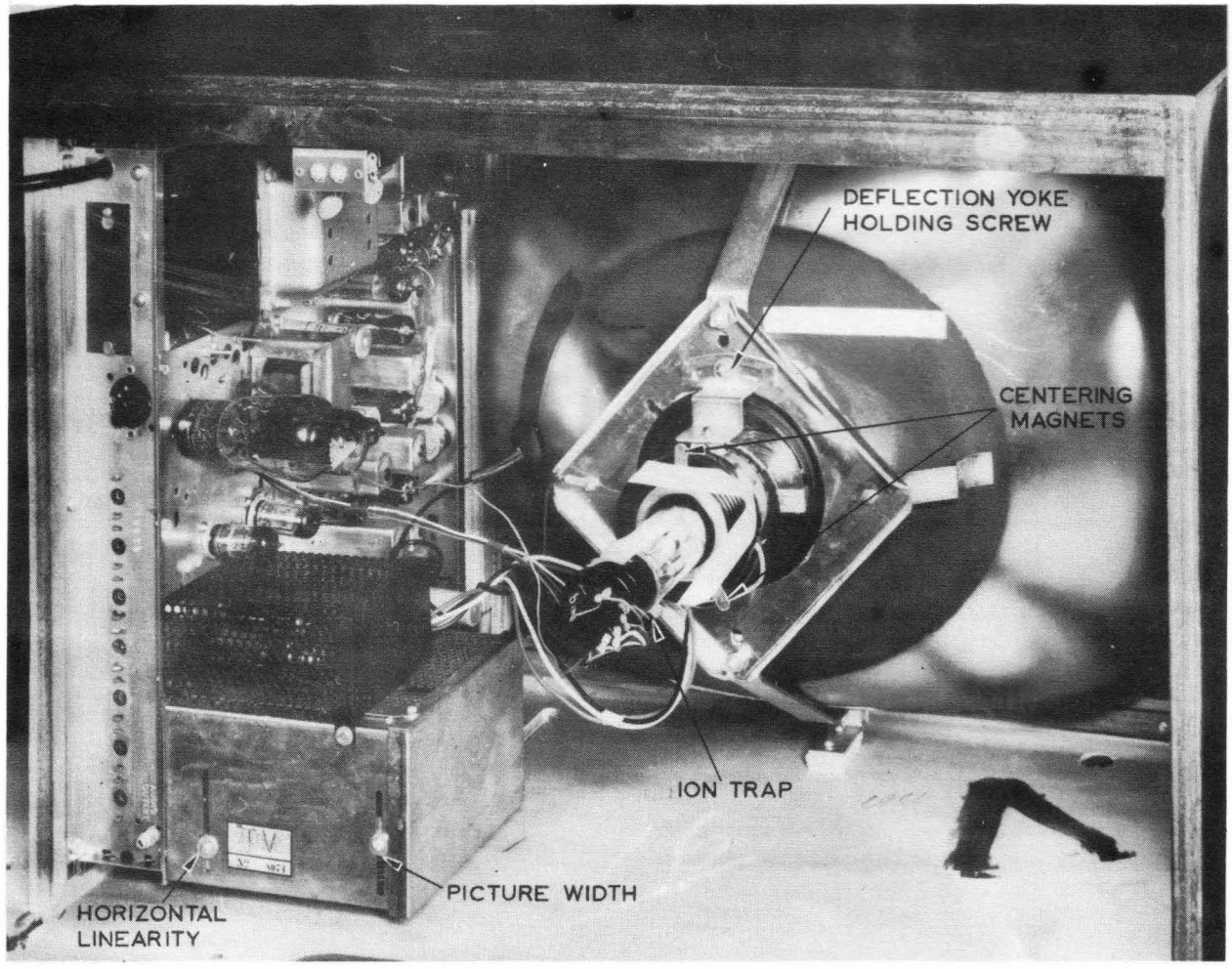


Fig. 7.

OPERATING PROCEDURE

The following procedure should be adopted when tuning the receiver for the first time or if the various controls have been disturbed since the receiver was last operated.

(a) Refer to Fig. 3. which shows the location of the controls.

(b) Turn the receiver on by rotating the ON – OFF SOUND VOLUME CONTROL in a clockwise direction. Permit the receiver to establish an initial condition of stable operation by allowing two minutes to elapse then

(c) Set the CHANNEL SELECTOR to the channel number of the desired transmitting station.

(d) Adjust the FINE TUNING CONTROL for the best (sharpest) detail in the picture (not necessarily the brightest picture), and good sound reproduction.
Do not endevour to set the sound volume by rotating the FINE TUNING CONTROL for this purpose.

(e) Rotate the PICTURE BRIGHTNESS CONTROL from its extreme counter-clockwise position where the picture tube screen is sufficiently lighted. The CONTRAST CONTROL (P10) has been preset in the factory and should not be reajusted unless the receiver is operating in areas of low signal strength in which case it may be necessary to increase the contrast by rotating the CONTRAST CONTROL clockwise.

(f) If the picture is broken up by a series of diagonal bars, adjust the HORIZONTAL HOLD CONTROL (P3) .

(g) If the picture moves up or down, adjust the VERTICAL HOLD CONTROL (P4) .

(h) After sufficient time has(approximately ten minutes)has been allowed for the components to reach their normal operating temperatures, it may be necessary to reajust the FINE TUNING CONTROL as outlined in Step D.

SIMPLIFIED OPERATING PROCEDURE :

Use this procedure if controls have not been disturbed since the receiver was last operated.

(a) Turn the receiver on by rotating ON – OFF VOLUME CONTROL clockwise. Allow two minutes warm up period.

(b) Rotate the CHANNEL SELECTOR to the channel number of the desired transmitting station.

(c) Adjust the FINE TUNING CONTROL for the best picture and good sound re-production. Adjust the SOUND VOLUME CONTROL for desired sound level. DO NOT ROTATE TUNING TO ADJUST VOLUME.

(d) If the picture is broken up by diagonal bars, adjust the HORIZONTAL HOLD CONTROL (P3) .

(e) If the picture moves up or down, adjust the VERTICAL HOLD CONTROL (P4) .

(f) After approximately ten minutes, readjust the FINE TUNING CONTROL as outlined in Step C.

PRESET ADJUSTMENTS (REAR)

The VERTICAL HEIGHT (P5) and VERTICAL LINEARITY CONTROLS (P6) have been preset at the factory for best operation and should not be reset unless absolutely necessary. If these controls are disturbed it will be necessary to reset them to obtain correct picture height and vertical linearity. As these control settings are not entirely independent of each other, then the adjustment is somewhat critical.

SYNC. STABILITY CONTROL (P7)

This control is adjusted at the factory and in good signal reception areas will require no further adjustment. In low and adverse signal areas an improvement may be effected by careful adjustment of this control.

NOTE : Care should be taken when adjusting this control otherwise sync. instability can result.

HORIZONTAL DRIVE CONTROL (C127)

With the raster synchronised by a test pattern signal, the drive trimmer capacitor should be adjusted to obtain maximum drive without vertical white bars appearing in the raster just to the left of the centre.

The trimmer should be set to its full clockwise position, after which it should be adjusted by turning the screw in a counter clockwise direction until a drive bar appears and then backed off until the bar disappears. The adjustment is best carried out when the receiver has been first switched on. (For amplitude of driving voltage and wave form refer to circuit diagram.)

HORIZONTAL FREQUENCY CONTROL (P2) .

Adjusting Procedure :

1. Tune the receiver to a television transmission.
2. Short circuit the horizontal ringing coil L 25.
3. Set the horizontal hold control (P3) to its central position (Note : this control is located at the front of the chassis) .
4. Set the horizontal frequency control (P2) so that the voltage at test point TP9 is zero when measured with a vacuum tube voltmeter.
5. Remove the short circuit from L 25.
6. Adjust the ringing coil inductance (L25) by means of the adjustable core until the voltage at the test point TP9 is again zero.

A.G.C. DELAY CONTROL (P9)

This control is adjusted at the factory for maximum receiver performance over a wide range of signal input levels and in good signal strength areas will require no further adjustment. In areas where the signal strength is of low order, an improvement in picture quality may be obtained by increasing the A.G.C. Delay ; i. e. reducing the R.F. A.G.C. line bias at test point TP7.

A.G.C. LEVEL CONTROL (P8)

This control is adjusted at the factory to deliver 1. 5 volts peak to peak signal at the video detector output (test point TP6) and should require no further adjustment.

HORIZONTAL WIDTH CONTROL (L27) .

After the horizontal drive has been correctly set the picture width can be adjusted by means of the slider adjustment on the rear skirt of the chassis. The picture width should be set so that with correct mains voltage the raster overscans the tube face proper by at least one-half of an inch at each side. (This also applies to picture height) .

HORIZONTAL LINEARITY CONTROL (L 26)

This preset adjustment provides a small degree of control over the horizontal linearity of the raster. When setting this lsider adjustment a position should be selected near nimimum inductance setting prior to excessive distortion being obtained at the centre of the raster. Care must be excersised when setting this adjustment.

PICTURE CENTERING

The picture (raster) after correctly synchronizing is centred by means of the centering device on the yoke, the two sliding magnets being moved relative to each other to obtain the desired result.

If the single magnet type of centreing unit is used on the tube neck then centering is obtained by rotating the small magnet fitted in the top of the centreing unit pole pieces until the disired result is obtained.

INSTALLATION INSTRUCTIONS

A built in aerial is not provided in the receiver and consequently either an indoor aerial or an outdoor aerial must be used depending on the site of the installation.

The input impedance of the receiver is 300 ohms and balanced and a suitable two terminal connector panel is arranged on the receiver to permit connection of the 300 ohms flat twin lead from the aerial.

An effective aerial and transmission line system is a very important factor in obtaining good television reception in many areas where signal strength is not great and where interference conditions exist. If the installation is not properly made, satisfactory reception cannot be expected. The aerial used should be of a type and configuration chosen to suit the site conditions. A lightning arrester should be fitted in the leadin cable.

RECEIVER LOCATION :

Selection of a suitable receiver location in the home or other place of installation should be decided upon only after the following factors have been taken into consideration.

1. The convenience of connecting the A/C power lead and the outdoor aerial lead in if required.
2. The location of the receiver should be such that no strong direct light from lamps or windows will fall on the picture or shine in the eyes of the viewers.
3. Sufficient space must be available in front of the receiver for the anticipated number of viewers. Normal viewing distance for a twenty-one inch picture tube is ten to twelve feet from the front of the receiver and eight to ten feet for a seventeen inch picture tube.
4. It is desirable that the receiver be placed away from sources of heat, such as hot air vents or radiators and that adequate clearance should be allowed at the back of the receiver to permit circulation of air through the rear of the cabinet.

CHECK OF OPERATION :

At the time of installation a final operating check of the receiver should be made. The necessary final adjustments to the preset controls should be made at this time to provide proper operation of the receiver. The customer should be instructed in the proper operation of the receiver, and cautioned that the non-operating controls should be adjusted only by an experienced television service man.

1. Check control knobs for clearance between inner and outer concentric knobs so that the rotation of each knob is independent of its associated inner or outer knob.
2. Insert the power lead plug into the 50 cycle per second A.C. outlet point.
3. Switch the receiver on at the power outlet and receiver ON – OFF CONTROL. Rotate the CHANNEL SELECTOR CONTROL to a channel on which a television program is being transmitted (preferably a test pattern program) .
4. Adjust the FINE TUNING CONTROL for best picture with the volume control set at minimum volume. Then set the volume control for the desired sound level.
5. If difficulty is experienced in obtaining a satisfactory picture, check the A.G.C. level control (P8) and/or the A.G.C. delay control (P9) . These controls have been preset at the factory to reproduce 1. 5 volts peak to peak signal at the video detector output (test point TP6) and normally will not require any further adjustment.
6. Adjust the brightness, horixontal hold and vertical hold controls to obtain a picture. If necessary readjust the fine tuning control for the best picture detail.
7. Immediately a picture is obtained (within 30 seconds) adjust the Ion Trap magnet on the neck of the picture tube for maximum brightness. The magnet should be rotated and moved slowly backward and forward to obtain the maximum brightness. (Straight gun picture tubes will not need this adjustment) .
8. Check the operation of the horizontal hold control by turning it to the full clockwise position. The picture should be just on the edge of sync. or just slightly out of sync. Rotate the horizontal hold control one quarter of a turn counterclockwise. The picture should fall in sync. condition.

9. Turn the horizontal hold control to the full counterclockwise position. The picture should fall out of sync. or approach this condition. Proper adjustment of the horizontal hold control is then at midpoint of its rotation. If the operation of the horizontal hold control does not follow this pattern, a slight readjustment of the horizontal frequency control will be necessary. (See adjustment procedure) .

10. The vertical height, vetrical linearity, horizontal wodth and horizontal linearity controls may require adjusting to obtain the best picture geometry. The vertical height and vertical linearity adjustment are correlated, therefore these controls should be adjusted at the same time to provide proper height and good vertical linearity. The horizontal drive control should not require adjustment from its factory setting.

11. In order to eliminate corner cutting, it is important that the deflection yoke be positioned as far up as possible on the neck and seated against it (if the picture is tilted) , loosen the holding the screw on the centre of the yoke support bracket. If the picture is not centred on the screen it can be corrected by means of the centreing magnets attached to the rear of the deflection yoke. The picture tube is electrostatically focussed and does not require any focus adjustments.

12. Readjust the Ion Trap Magnet for maximum brightness after any adjustments of the deflection yoke.

13. Readjust the width controls as required.

14. Recheck the horizontal hold control and determine that with the horizontal hold control adjusted to the centre of the hold range, the picture is centred horizontally.

15. Do not reset the contrast control from its factory set position unless absolutely necessary.

16. Turn the channel selector control to each channel on which reception is obtained. The picture should fall into sync. on all channels on which signals of normal strength are received.

17. Adjust the fine tuning control to obtain the best picture and check the quality of reception, picture and sound on all available television stations in the area.

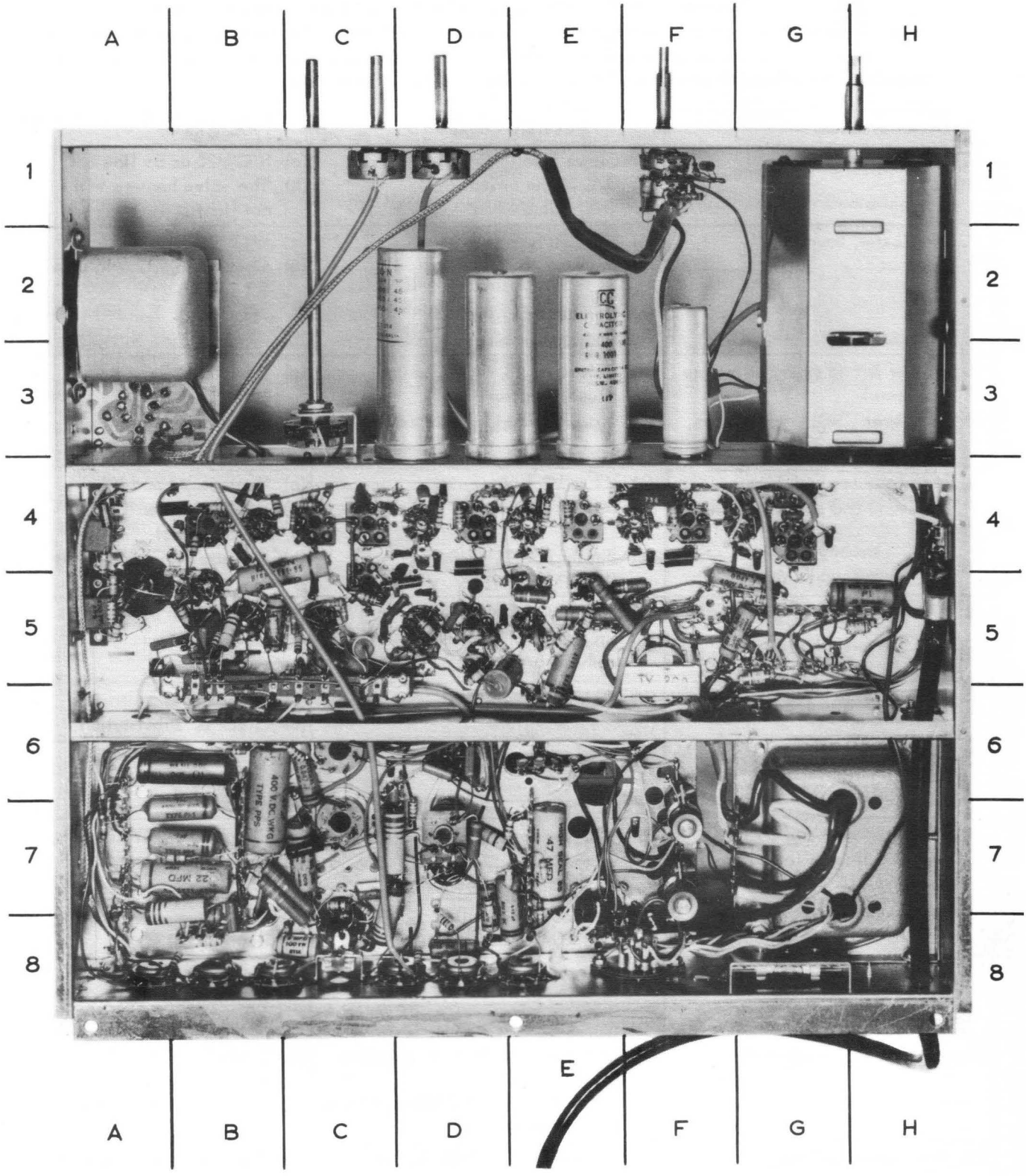


Fig. 8.

FAULT FINDING IN THE RECEIVER

In the event of a fault developing in the receiver, the effects upon the picture can be of considerable assistance to the service mechanic in localizing the cause of the fault. The information given below is intended to facilitate the quick diagnosis of faults from the indications shown in the picture, and also gives details of the effects of component failure in various parts of the receiver.

Symptom	Possible Cause	Remarks
1. No Raster, No Sound	(a) Blown fuse (F1) (b) O/C Mains Switch (P1) O/C Mains Lead	(a) S/C V20 or B+ line S/C (b) The valve heaters will not light
2. No Raster, Sound O. K.	(a) No E.H.T. (b) Faulty C.R.T. (c) Defective Brightness Control Circuit	(a) EHT Rect. (V19) failed (b) Check V18,V17,V16 also F2 and T5
3. Raster but no sound or picture (no snow)	(a) Defective V3,V4,V5,V6 or Video Detector (b) V7 or V12 failure	(a) Apply C.R.O. at test point TP6 (b) Check AGC bias at Test Point TP8
4. As above but with hissing on sound and snow on picture	(a) V1 or V2 faulty (b) Defective Tuner (c) Faulty A.G.C. Clamp (V12)	(a) Replace V1 and V2 (b) Replace Tuner (Check all channels) (c) Measure AGC clamp voltage at test point TP7.
5. Uncontrollable Brightness	(a) Spot Killer Switch O/C (b) CRT possible heater / cathode S/C	(a) Check CRT base volts (b) Replace C.R.T.
6. Picture O. K. No Sound	(a) V9,V10,V11 failure (b) Speaker failure	(a) Check Valves (b) Check by substitution
7. Bright Horizontal Line	(a) Vertical time base failure failure	(a) Check V15, T3 and T4 Use CRO for wave form check
8. Line fold over and bright vertical line on left of picture	(a) V18 low emmission (b) C128 O/C	(a) Check by substitution (b) Check by substitution
9. Defocussed vertical line	(a) Horizontal deflection Coils O/C (b) C 134 O/C	(a) Check by substitution (b) Replace C 134
10. Sound on Vision	(a) R. F. Oscillator off tune	(a) See under alignment Instructions "R.F. Osc. Adjustment".
11. Picture moving up or down	(a) Vertical Hold (P4) in operative (b) R102, R103, C102, C103 or T3 also check V14 and V15	(a) Control O/C or disconnected (b) Check for alteration in value
12. No Horizontal hold	(a) Horizontal hold (P3) in operative (b) R123, R2, R124, P3, C124 faulty also V16	(a) Check at test point TP9 for control volt (b) Check for alteration in value
13. No Horizontal or Vertical Hold. Picture and Sound Otherwise O. K.	(a) Sync. Circuit faulty V13, V14 (b) Sync. Stability Control (P7) incorrectly adjusted	(a) Check Components and and Valves (b) Turn the control to its anticlockwise position i.e. Maximum positive bias position

Symptom	Possible Cause	Remarks
14. Corner cutting on picture	(a) C.R.T. displaced	(a) Inspect C.R.T. Mounting
	(b) Deflection Yoke L 31 insufficiently forward	(b) See under check of operation item No. 11
	(c) Picture centering incorrectly adjusted	(c) See under Operating Procedure "Picture Centering"
15. Hum on Sound	(a) L 10 out of alignment or M2 defective	(a) Check Ratio Detector alignment
	(b) Smoothing faults C114, C115, or L24	(b) Usually will cause picture to weave horizontally
	(c) Overloading in high signal areas	(c) Adjust A.G.C. level control P8 or fit an attenuator
16. Overshoot and/or lack of definition	(a) R.F. Oscillator mis-tuned	(a) Check all channels
	(b) Faulty alignment	(b) Check alignment
	(c) Faulty Video Section	(c) Check Video Amp. Circuit
	(d) A.G.C. Control incorrectly adjusted	(d) Adjust A.G.C. level control (P8)

MECHANICAL DETAILS

1. REMOVAL OF THE CHASSIS :

The following procedure should be adopted when removing the chassis from the cabinet.

1. Remove the cabinet back, this is held in position by self tapping screws.
2. Disconnect the aerial terminal panel, loudspeaker plug, cabinet screen earthing bond, yoke plug, picture tube socket and E.H.T. anode connector.
3. Remove the seven main control knobs at the front of the cabinet.
4. Remove the chassis retaining bolts on the rear skirt of the chassis.
5. The chassis may not be withdrawn from the cabinet.

2. CLEANING THE SAFETY GLASS :

To remove the safety glass the following procedure should be adopted.

1. Remove the screws from the underside of the underside of the top moulding trim.
2. Remove the moulding and hold the safety glass to prevent it from falling out.
3. Remove the safety glass and side trim pieces by permitting them to fall forward and lift them over the bottom retaining step. The mask will also be detached in this operation.
4. The glass can be cleaned with any suitable cleaning material.
5. It is suggested before replacing the safety glass that the mask and picture tube face be cleaned.
6. To reassemble, reverse the procedure.

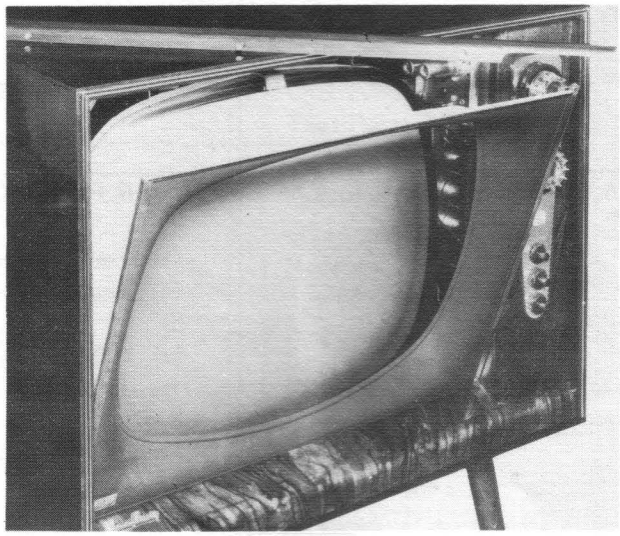


Fig. 9.

3. REMOVING THE PICTURE TUBE :

To remove the picture tube the following procedure should be used.

1. Remove the cabinet back.
2. Remove the C.R.T. Socket, E.H.T. anode connector Ion Trap (if used) and yoke plug.
3. Discharge the picture tube anode.
4. Remove the safety glass and mask as outlined in paragraph 2.
5. Support the picture tube and remove the mounting bolts which secure the tube and yoke assembly into the cabinet.
6. The picture tube complete with yoke mounting assembly may now be withdrawn from the front of the cabinet.
7. Remove holding strap from the picture tube and the tube may now be removed from the yoke assembly.
8. The packing tape round the bell of the picture tube can be removed for use with the replacement tube or alternatively 1" insulation tape is equally suitable for this purpose.
9. When installing a new tube the above procedure should be reversed.

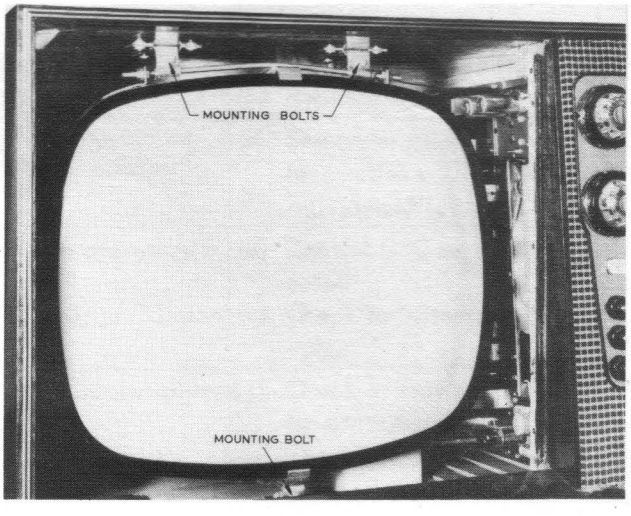


Fig. 10.

Care must be taken to locate the tube within the holding strap and cabinet mounts to ensure that the tube face and mask fit correctly.

CAUTION : The picture tube is highly evacuated and extreme care should be exercised at all times when handling picture tubes. Protective goggles should be used.

4. REMOVING THE DEFLECTION YOKE :

When removing the deflection yoke the following procedure is recommended :

1. Remove the C.R.T. socket and yoke plug.
2. Remove the Ion Trap and/or centering magnet (when fitted) from the neck of the picture tube.
3. Remove the deflection yoke holding screw.
4. The deflection Yoke may now be slid off the neck of the picture tube.
5. To refit, reverse the procedure.

5. REPLACING THE TURRET TUNER :

When replacing the turret tuner, the following procedure should be adopted.

1. Remove the chassis from the cabinet.
2. Place the chassis on its right hand side (i. e. the side where the E.H.T. Box is located) onto the service bench with the front of the chassis towards the front of the bench.
3. Remove the tuner supply leads from the chassis connection points with a soldering iron.
4. Disconnect the converter coupling cable from L12 (note the connections) .
5. Remove the turret spindle support plate and the support bracket.
6. The tuner may now be withdrawn from the top side of the chassis.
7. To refit, reverse the procedure.
8. Check the receiver alignment (see alignment instructions) .

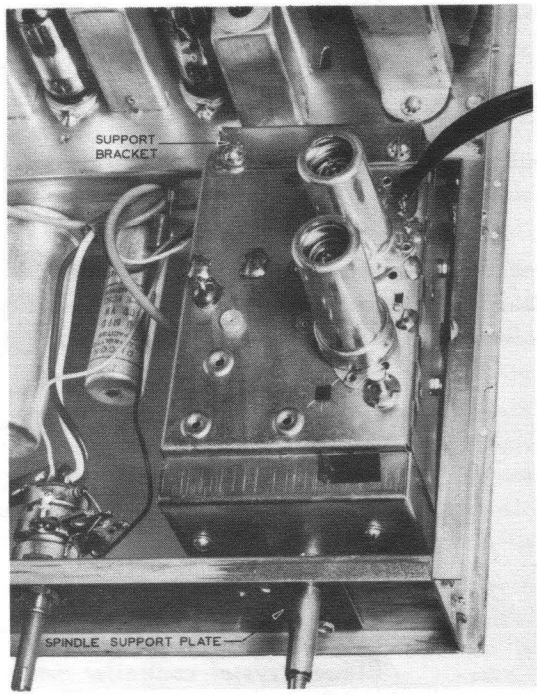


Fig. 11.

ALIGNMENT INSTRUCTIONS

EQUIPMENT REQUIRED :

The following is a list of the Test Equipment that is required for proper alignment of this receiver.

The equipment should meet the specifications stated. The actual alignment of the video (composite) and sound intermediate frequency sections requires the use of a RF Signal Generator and Vacuum Tube Voltmeter. The RF Sweep Generator and Cathode Ray Oscilloscope are required to check the overall RF, IF and sound IF response curves.

1. RF SWEEP GENERATOR

(a) Centre frequency ranges :-

5 - 6 Mc/s.
29 - 39 Mc/s.
49 - 92 Mc/s.
132 - 146 Mc/s.
174 - 216 Mc/s.

(b) Sweep Width

Variable to 15 Mc/s on all ranges except the 5 to 6 Mc/s range for which the sweep width required is 500 Kc/s.

(c) Output

Variable with at least 0. 1 volt (for maximum setting of attenuator) . Constant output on all ranges with flat output at all attenuator positions.

2. RF SIGNAL (MARKER) GENERATOR

(a) Frequency range for sound IF adjustment

5. 5 Mc.s crystal controlled oscillator with provision for at least two additional markers ± 100 Kc/s. about the 5. 5 Mc/s value.

(b) Frequency range for composite IF adjustment

28. 0 to 39. 0 Mc/s - with means for checking the frequency at fixed points against a crystal calibrator.

(c) Frequency range for RF Adjustment

Either crystal controller markers or markers capable of being set to an accuracy of (at least) 0. 1% are required for the provision of the video and sound carrier markers for each channel listed below.

Channel No.	Video Carrier	Sound Carrier
1	50. 25 Mc/s.	55. 75 Mc/s.
2	64. 25 Mc/s.	69. 75 Mc/s.
3	86. 25 Mc/s.	91. 75 Mc/s.
4	133. 25 Mc/s.	138. 75 Mc/s.
5	140. 25 Mc/s.	145. 75 Mc/s.
6	175. 25 Mc/s.	180. 75 Mc/s.
7	182. 25 Mc/s.	187. 75 Mc/s.
8	189. 25 Mc/s.	194. 75 Mc/s.
9	196. 25 Mc/s.	201. 75 Mc/s.
10	210. 25 Mc/s.	215. 75 Mc/s.

3. CATHODE RAY OSCILLOSCOPE

(a) Wideband vertical deflection

(b) Vertical Input Provided with a calibrated attenuator.

(c) Low capacity probe.

(d) High sensitivity (30 mV per inch deflection)

4. VACUUM TUBE VOLTMETER

(a) High input impedance

(b) Low voltage range (1.5 volts D. C.)

(c) A high voltage probe is required for measuring the EHT voltage for the picture tube. Those instruments are not usually very accurate and should be used as a guide only for this purose.

GENERAL :

During alignment of a television receiver, the test signal obtained from the signal generator and/or sweep generator should not be stronger than that required to produce the desired oscilloscope pattern/or voltmeter reading. When using the voltmeter for indication, the signal should be no stronger than that required to produce a reading of 1. 0 to 1. 5 volts at the video detector test point No. TP6. When using the oscilloscope for display purposes, it should be operated at high gain.

All chassis and connecting leads must, in operation, be "cold", touching the leads with the hand should produce no change in the reproduced scope pattern or meter reading. If the hand does produce a change, evidently there is present an unstable condition which must be corrected by better grounding together of the chassis and all instruments in use.

Under normal conditions, complete alignment of a television receiver will not be necessary. The circuits employed are sufficiently stable that they will not require alignment unless the adjustments have been tampered with, or if components in these circuits become defective and are replaced. In the case where the receiver does not require a complete realignment, information is furnished in the following paragraphs which will enable the serviceman to perform the necessary adjustments in the proper manner.

To perform a complete realignment, the chassis may be removed from the cabinet. The most convenient position of the receiver chassis on the service bench, for alignment purposes, is with the chassis turned on its left – hand side (this is the side where the EHT box is located) . In this position, all adjustments are readily accessible.

When performing a complete realignment, it is suggested that the following sequence of adjustment be observed.

1. Sound Ratio Detector
2. Sound IF Amplifiers
3. 5. 5 Mc/s Video Trap
4. Converter coupling circuits
5. Composite IF Trap Adjustments
6. Composite IF Transformers
7. RF Oscillator Adjustments
8. RF and Converter Adjustments

SOUND RATIO DETECTOR

1. Connect the high side of the signal generator to pin 1 of the 6AU6 (10) limiter grid via a .01 mF capacitor and the low side of the generator to ground. Set the generator frequency to 5.5 Mc/s. This 5.5 Mc/s signal should be accurately calibrated since the alignment of the sound channel at any improper frequency will cause distortion or even complete loss of the sound.
2. Connect the vacuum tube voltmeter to the test Point TP4 in series with a 1 megohm resistor and set it to the 15 volt range.
3. Adjust the primary of L10 (bottom) for maximum reading on the meter.
4. Connect the vacuum tube voltmeter to test point TP5.
5. Adjust the secondary tuning L10 (top) for zero reading.

This adjustment will provide a positive or a negative reading on the meter. The proper setting is the point of zero output on the meter as the reading swings from positive to negative value.

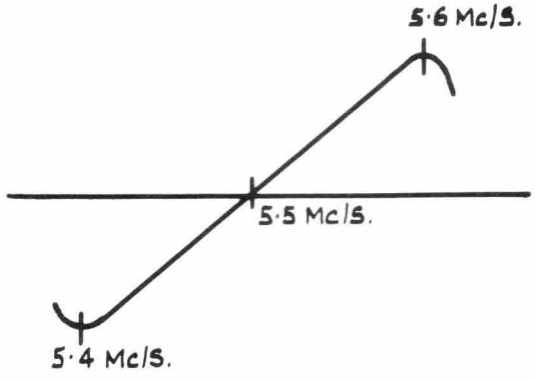


Fig. 12.

As a final check of the ratio detector alignment, connect the sweep generator to the 6AU6 V10 limiter grid (pin 1). Adjust the sweep generator output for approx. 500 Mc/s sweep with a centre of 5.5 Mc/s. Connect the Oscilloscope to test point TP5 and chassis to observe the response curve. The ideal curve is shown Fig. 12. If it is not symmetrical, adjust the secondary (top) of L10 to obtain symmetry.

Markers at 5.4 and 5.6 Mc/s should be used to determine the peak to peak bandwidth of the ratio detector.

SOUND IF TRANSFORMERS :

1. Connect the high side of the signal generator to the grid (pin 2) of the 4th IF Amplifier valve V6. Set the generator to 5.5 Mc/s.
2. Connect the vacuum tube voltmeter to the test point TP3.
3. Adjust L8 and L9 to give maximum indication on the vacuum tube voltmeter.
4. Connect the sweep generator to the grid (pin 2) of the 4th IF Amplifier tube V6 and the oscilloscope to observe the response at test point TP3. With the generator set to give a sweep width of approx. 1 megacycle per second, the ideal response curve is shown in Fig. 13. and shows symmetry about the 5.5 Mc/s marker.
5. Small departures from the initial settings may be made to obtain symmetry provided the gain is not permitted to deteriorate to any extent.

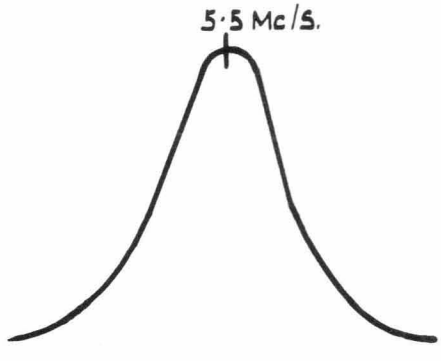


Fig. 13.

5. 5 Mc/s VIDEO TRAP ADJUSTMENT :

1. Connect a signal generator capable of providing a 5. 5 Mc/s accurately calibrated signal across the video detector load at test point TP6.
2. Connect the radio frequency A.C. probe of the vacuum tube voltmeter between the control grid (pin 11). and the chassis of V21.
3. Increase the output of the signal generator to obtain a convenient reading on the vacuum tube voltmeter.
4. Adjust the trap tuning core of L19 with an insulated screwdriver to obtain a minimum reading on the testmeter.

COMPOSITE IF TRAP ADJUSTMENT :

1. Remove the keyed AGC amplifier valve V12 from its socket.
2. Connect an external bias supply of approx. – 3.5 volts between the junction of resistors R78 and R83 (TP8) and ground. This bias potential can be obtained from a 9V bias battery and potentiometer network.
3. Connect the vacuum tube voltmeter across the video detector load resistor R56 (test point TP6) via a 10K ½ watt carbob resistor.
4. Connect the signal generator to the grid of the 6U8 (ECF82) (V2) converter (pin 2) through a . 01 mF capacitor. Insert the . 01 mfd condenser through the small round hole on the side of the tuner.

CAUTION : Do not move or reposition any components associated with the converter circuitry.

5. Set the channel selector to a position between channels, or to a spare channel position.
6. Adjust the signal generator to provide each of the following frequencies and adjust the corresponding trap coil to provide a minimum reading on the meter.
   (a) 37. 5 Mc/s L11 Adjacent channel sound trap
   (b) 37. 5 Mc/s L15 adjacent channel sound trap
   (c) 29. 0 Mc/s L12 (top) adjacent channel video trap
   (d) 29. 0 Mc/s L13 (top) adjacent channel video trap
   (e) 30. 7 Mc/s L14 (top) sound carrier trap

In the foregoing adjustments, it may be possible to run the tuning cores through the coils and obtain two nulls. The correct null (minimum) will be the one which occurs when the cores are nearest the outer edge of the coils. If the cores are not correctly positioned, improper coupling will result, thus causing incorrect overall response.

CONVERTER COUPLING CIRCUIT :

1. Connect a sweep generator to the converter grid through a . 01 mf capacitor and adjust its centre frequency to approx. 33. 5 Mc/s with 10 Mc/s sweep width.
2. Connect the signal marker to the converter grid through a small capacitor. (Watch for loading of sweep input) .
3. Connect an external bias supply of approx. –1. 5 volts between the junction of resistor R78 and R83 (TP8) and ground. This bias can be obtained from a 9V bias battery and potentiometer network. The Keyed AGC Amplifier valve V12 must be removed from its socket for this alignment.
4. Disconnect the lead from L13 to the plate (pin 7) of V3.

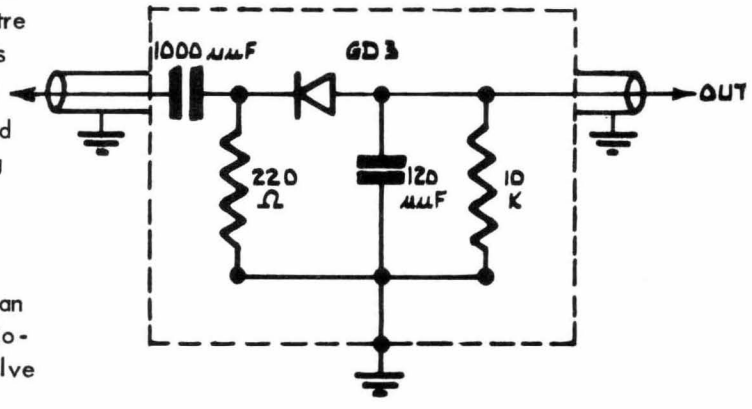


Fig. 14.

5. Connect a 220 ohm ½ watt carbon resistor between pins 7 and 8 of V3.

6. Connect the oscilloscope, through the probe circuit shown in Fig. 14. between pin 7 and ground of V3.

7. Adjust the signal (marker) generator to produce markers at 31.7 Mc/s and 35.5 Mc/s.

8. Adjust the converter transformer L7 to peak at 35. 5 Mc/s and the conductance L 12 to peak at 31. 7 Mc/s to produce a curve similar to that shown in Fig. 15.

9. Remove test equipment and reconnect pin 7 (V3) to L 13.

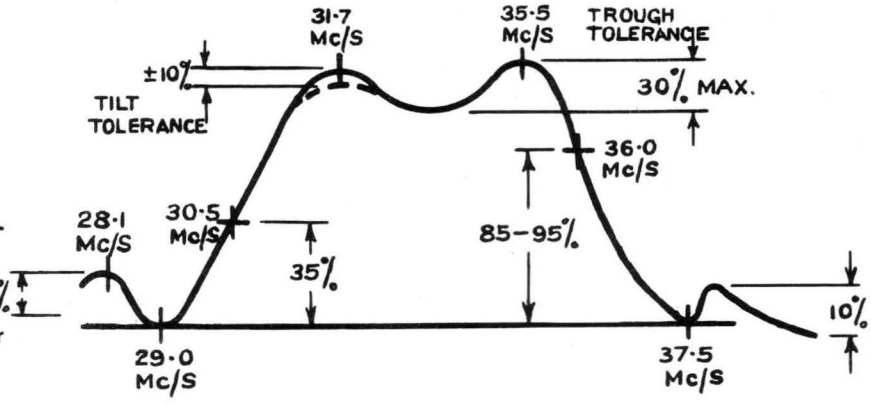


Fig. 15.

VIDEO (COMPOSITE) IF TRANSFORMER ADJUSTMENTS :

1. Remove the keyed AGC amplifier tube V12 from its socket

2. Connect an external bias supply of approx. –3. 5 volts between the junction of resistors R78 and R83 (TP8) and ground. This bias potential can be obtained from a 9V bias battery and potentiometer network.

3. Connect the vacuum tube voltmeter across the video detector load resistor R56 test point TP6 via a 10K ½ watt carbon resistor at the detector end of the shielded lead.

4. Connect the signal generator to a short tube shield placed over the converter tube and ground. Set the band selector to a free position.

5. Adjust the signal generator to provide each of the following frequencies in turn and adjust the corresponding coil tuning core to obtain minimum reading on the meter.

(a) 33. 6 Mc/s. L13 bottom
(b) 31. 5 Mc/s. L14 ''
(c) 35. 6 Mc/s. L15 ''
(d) 32. 4 Mc/s. L16 ''

When tuning these circuits the tuning core should be moved from the full out position to the first position of tuning. Do not tune coils on the inner peak. If the tuning cores are moved through any great change in position then the trap adjustments should be checked or at least note made of the fact that the trap settings are to be checked on sweep operation.

6. Connect a sweep generator to the grid of the converter valve via a . 01 mF capacitor and an oscilloscope across the video detector load resistor (via a 10K resistor) . The band selector must be set to a free position.

6 a. Alternative method of sweep injection.

Connect the sweep generator to a short tube shield placed over the converter tube and ground. Set the selector to a free position. (The sweep generator output will have to be increased slightly when using this method of injection) .

7. Adjust the sweep generator to display the overall IF response curve and set the signal generator to note the response at the desired frequencies as seen in Fig. 16.

8. Correct the response if necessary by retouching the composite IF tuning cores to obtain a response within the limits shown in Fig. 16.

9. Check that the trap coils are correctly set by noting that the trap frequency markers fall into the trough produced by trap attenuation and correct if necessary by retuning the trap inductance concerned.

CAUTION : Care must be taken to avoid overloading the receiver circuits under test due to excessive sweep or marker signals. When peaking the circuits the d. c. level at the detector load must not exceed 1. 5 volts an the amplitude of the response curve must not exceed 3 volts peak.

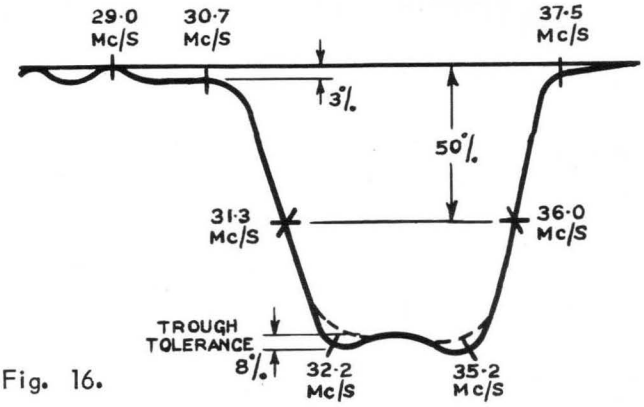


Fig. 16.

RF AND CONVERTER ADJUSTMENT :

1. Connect the sweep generator through a 300 ohm matching network or transformer to the aerial input terminals of the receiver.
2. Connect the oscilloscope to the plate test point of the turret unit via a low impedance crystal detector probe Fig. 14.
3. Connect a bias battery and potentiometer network to the junction of R74 and R76 test point TP7 and set the bias at this point to –0. 5 volts.
4. Set the channel selector to channel 9.
5. Adjust the sweep generator to sweep channel 9 and adjust the signal generator to provide marker/ signals at the picture and sound carrier frequencies for channel 9.
6. Adjust the two RF trimmers C1 and C7 and the converter trimmer C12 (all located on the top of the RF tuner) for the curve as shown in Fig. 17. with maximum gain.
7. Adjust the sweep and signal generators progressively for each of the remaining channels 10, 8, 7 etc. Observe the response and check the position of the markers. The curves for all channels should be within the limits shown by the curves in Fig. 17. If a particular channel does not fall within these limits, it is possible that a comprise can be made by adjusting the RF and converter trimmers as in steps 4,5 and 6 to improve the channel that is out of limits. The response should then be checked on all other channels to determine the extent to which the other channels were affected by the compromise. (If this method proves unsatisfactory, the tuner should be returned to the factory for attention.)

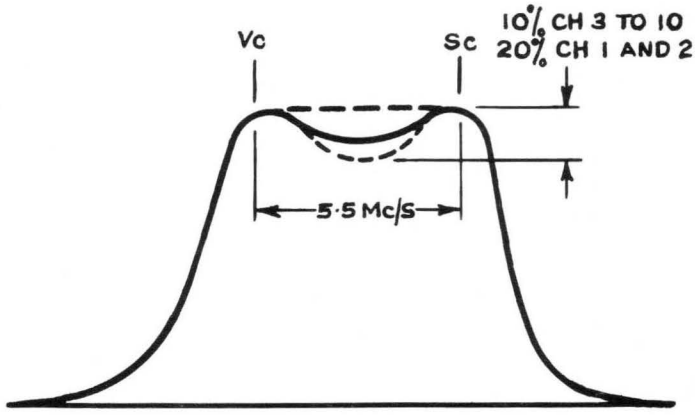


Fig. 17.

RF OSCILLATOR ADJUSTMENT :

1. Connect the sweep generator to the input aerial input terminals of the receiver.
2. Connect the marker generator to the receiver input terminals.
3. Connect the oscilloscope across the video detector load resistor R56 test point TP6.
4. With the sweep generator set to sweep channel 9 and the signal generator set to the sound and video carrier frequencies for channel 9, observe the response curve when tthe tuner unit is set to this channel (Note : the bias conditions for this test are the same as for the composite IF transformer adjustments.)
5. With the fine tuning control fixed at its mid-position, check that the sound carrier frequency marker for all the remaining channels falls on the sound carrier plateau and make the necessary adjustments to ensure this is so. The adjustments are made by tuning the brass screwed core to a position in the coil which produces the desired results. A thin non-metallic screwdriver is required for this adjustment. The video carrier will fall at the –6db point.

NOTE : The brass screw is accessible through the hole provided to the right of the turret spindle.

VALVES

Circuit Reference	Grid Reference	Part No.	Part Description	Remarks
V1	H2	6CW7/ECC84	R. F. Amplifier	
V2	H2	6U8/ECF82	Frequency Converter & Local Osc.	
V3	G4	6BX6/EF80	1st IF Amplifier	
V4	F4	6BX6/EF80	2nd IF Amplifier	
V5	E4	6BX6/EF80	3rd IF Amplifier	
V6	D4	6BX6/EF80	4th IF Amplifier	
V7	D5	6U8/ECF82	Video Amplifier & D. C. Restoration	
V8	E5	6AQ5	Video Outlet Amplifier	
V9	B4	6AU6	1st Sound IF Amplifier	
V10	B5	6AU6	2nd Sound IF Amplifier	
V11	A3	6BM8/ECL82	Audio Amplifier and Output	
V12	D8	6U8/ECF82	Keyed AGC Amplifier and AGC Clamp	
V13	C5	6CS6	Noise Gating & Synchronising Seperator	
V14	B5	12AU7	Synchronising Phase Inverter and Vertical Synchronising Amplifier	
V15	F5	6BM8/ECL82	Vertical Blocking Oscillator & Vertical Output	
V16	D6	12AU7	Horizontal Multivibrator	
V17	C8	6CM5	Horizontal Output	
V18	C7	6AX4GT	Damper Diode	
V19	Fig. 6.	R19	EHT Rectifier	
V20	E8	5AS4	Mains Rectifier	
V21	–	17AVP4A	(17" Models) Cathode Ray Tube	
V21	–	21ALP4A	(21" Models) Cathode Ray Tube	
V21	–	AW53-80	(21" Models) Cathode Ray Tube	
V21	–	AW53-80	(21" Models) Cathode Ray Tube	
M1	C4	GD3	Video Detector	
(M2	(A5	OA79	Ratio Detector)	
(	(A5	OA79	Ratio Detector)	Supplied only as matched pairs.
M3	(OA81	OA81	Horizontal AFC Detector	
	(B6	OA81	Horizontal AFC Detector	

COILS AND TRANSFORMERS

Circuit Reference	Grid Reference	Part No.	Part Description	Remarks
L8	B4	SP54384A	Sound IF Coupling Coil Assy.	
L9	B4	SP54381A	Limiter Coupling Coil Assy.	
L10	A5	74-SU-71B	Ratio Detector Transformer	
L11	G4	SP54388A	37.5 Mc Trap Coil	
L12	G4	SP54373A	Input IF Transformer	
L13	F4	SP54398A	IF Transformer	
L14	E4	SP54398B	IF Transformer	
L15	D4	SP54398C	IF Transformer	
L16	C4	SP54376A	Video Detector Transformer	
L17	C5	SP54396A	Video Detector Series Peaking Coil	
L 18	C5	SP54272A	Peaking Inductance	
L19	D5	SP54389A	5.5 Mc Trap Coil	
L20	D5	SP54003G	Series Compensation Coil	
L21	D6	SP54391A	Shunt Peaking Coil	
L22	E5	SP54391B	Shunt Peaking Coil	
L23	E5	SP54003H	Series Compensation Coil	
L24	Fig. 6.	192-SU-3K	H. T. Filter Choke	
L25	D7	SP54117B	Ringing Coil Assy.	
L26	Fig. 6.	SP54116C	Linearity Coil Assy.	
L27	Fig. 6.	SP54005C	Width Coil Assy.	
L28	F5	SP54001B	Heater Choke	
L29	D5	SP54001B	Heater Choke	
L30	B7	SP54487	Spook Suppressor	
L31	Fig. 7.	RS509-29	Deflection Yoke	
T1	A2	RS507-37	Speaker Transformer	
T1	A2	RS507-44	Speaker Transformer	21" Console only
T1	H8	SP54486A	Power Transformer	
T3	F6	RS507-40	Blocking Oscillator Transformer	
T4	Fig. 6.	SP54349B	Vert. Output Transformer	
T5	Fig. 6.	RS507-41	Horizontal Output Transformer	

MISCELANEOUS (CABINET)

Circuit Reference	Grid Reference	Part No.	Part Description	Remarks
		SP54432CP	Cabinet 17" Table	)
		SP54433CQ	Cabinet 17" Consolette	) All Cabinets c/w
		SP54278-CZ	Cabinet 21" Table	) Backs when ordering
		SP54279-DA	Cabinet 21" Console	) specify finish
		SP54280-DB	Cabinet 21" Lowboy	)
		SP54109-C	Medallion (STC)	
		SP54283-A	Monogram (STC)	
		SP54136-D	Mask 17"	
		SP54137-C	Mask 21"	
		SP54484-A	Mask Trim 21"	
		SP54484B	Mask Trim 17"	
		SP54096-A	Safety Glass Plain	)
		SP54096-AT	Safety Glass Tinted	) 17" as required
		SP54096-AP	Safety Glass Polaroid	)
		SP54096-C	Safety Glass Plain	)
		SP54096-CT	Safety Glass Tinted	) 21"
		SP54096-CP	Safety Glass Polaroid	)
		SP54458-B	Dress Plate	Walnut & Mahogany
		SP54458-C	Dress Plate	Maple
		SP54491-A	Knob Channel Selector	Walnut & Mah. Cabinet
		SP54491-B	Knob Channel Selector	Maple Cabinets
		SP54492-A	Knob Volume On/Off	Walnut & Mah. Cabinet
		SP54492-B	Knob Volume On/Off	Maple Cabinets
		SP54479-AA	Knob Fine Tuning	Walnut & Mah. Cabinet
		SP54470-AB	Knob Fine Tuning	Maple Cabinet
		SP54479-BA	Knob Brilliance	Walnut & Mah. Cabinet
		SP54479-BB	Knob Brilliance	Maple
		CSA0725-17-0	Knob Retaining Clips	
		SP54483-AA	Knob Pre Set Contrast	Walnut & Mah. Cabinet
		SP54483-AB	Knob Pre Set Contrast	Maple
		SP54483-BA	Knob Pre Set Horizontal Hold	Walnut & Mah. Cabinet
		SP54483-BB	Knob Pre Set Horizontal Hold	Maple
		SP54483-CA	Knob Pre Set Vertical Hold	Walnut & Mah. Cabinet
		SP54483-CB	Knob Pre Set Vertical Hold	Maple
		RS-517-90	Speaker (5" x 7" Rola)	
		RS-517-91	Speaker (5" x 7" MSP)	
		RS-517-89	(2) Speakers (8M Rola)	21" Console only
		RS-517-94	Speaker (9" x 6" MSP)	
			Ion Trap	
		SP54012-A	Manilla Bag	
		SP54480-A	Instruction Book (STC)	

MISCELLANEOUS (CHASSIS)

Circuit Reference	Grid Reference	Part No.	Part Description	Remarks
		1722	Terminal Panel Aerial	
		74–SU–1B	Turret Tuner	
		SP54359–A	Turret Support Bracket	
		SP54383–A	Turret Spindle Support Plate	
		SM210	Terminal Panel	
		SM25	Terminal Panel	
		SM23	Terminal Panel	
		SM22	Terminal Panel	
		SM28	Terminal Panel	
		SP54460–A	Terminal Panel Assy.	
		SP54196–A	Test Pin Bush	
		463	Miniature Valve Socket Contact	
		P65 'CLIX'	Mains Tapping Plug	
		VSP42 "	Mains Tapping Socket	
		P202 "	Coaxial Plug	
		S202 "	Coaxial Socket	
		SP54399–A	Service Lead Assy.	
		SP54357–A	Fuse Cover Plate	
		SP54438–A	Fuse Panel Assy.	
		S8940	Fuse 150 MA Carrying	
		S8940	Fuse 2 Amp. Slow Blow	
		SP54144–A	E.H.T. Anode Clip	
		SP54018–A	E.H.T. Shroud	
		SP54370–A	E.H.T. Socket Support	
		ST109C	9 Pin High Tension Valve Socket c/w Cover	
		ST29	9 Pin Moulded Valve Socket	Must not have aluminium Plate
		ST27	7 Pin Moulded Valve Socket	– ditto –
		SS24	4 Pin Kelton Socket	
		ST112	C.R.T. Tube Socket c/w Cover and Clip	
		733–2–24	Octal Mica Filled Valve Socket	
		733–2–11	Octal Plain Phenolic Valve Socket	
		733–2–41	9 Pin Valve Socket	
		A3	Grommet	
			OBA x ½ Dust Core Carbonyl	
			OBA x ½ Dust Core 'NEOS10 900'	Used in L14
		SP30076 –U	Dust Core	Used in L26 & L27
		SP30076 –S	Dust Core	Used in L25

POTENTIOMETERS

Circuit Reference	Grid Reference	Part No.	Part Description	Remarks
P1A	F1	SP40534S	1 Meg Potentiometer Concentric	(Volume Control
P1B	F1		200K Potentiometer	(Brightness Control
P2	C8	"EC"	250K Taper A Potentiometer	Horizontal Freq. Control
P3	A1	SP40534R	50K Taper A Potentiometer	Horizontal Hold Control
P4	B1	SP40534Q	1 Meg Taper A Potentiometer	Vertical Hold Control
P5	A8	"EC"	1 Meg Taper A Potentiometer	Vertical Height Control
P6	B8	"EC"	250K Taper A Potentiometer	Vertical Linearity Control
P7	B8	"EC"	5 Meg Taper A Potentiometer	Syn. Stability Control
P8	D8	"EC"	20K Taper A Potentiometer	AGC Level Control
P9	D8	"EC"	250 Taper A Potentiometer	AGC Delay Control
P10	B3	SP30184AP	3K,2W,WW Potentiometer	Contrast Control

RESISTORS

Circuit Reference	Grid Reference	Part No.	Description	Remarks
R15	B4	*	18K ± 10% ½W Type BTS	
R16	B4		47K ± 10% ½W Type BTS, T or 9	
R17	B4		100 ohm ± 10% ½W Type BTS, T or 9	
R18	B4		12K ± 10% ½W Type BTS, T or 9	
R19	B4	*	68K ± 10% ½W Type BTS	Refer L9 SP54381A
R20	A4		1K ± 10% ½W Type BTS, T or 9	
R21	A4	*	18K ± 10% ½W Type BTS	Refer L9 SP54381A
R22	B5		82K ± 10% ½W Type BTS	
R23	A5		22K ± 10% ½W Type BTS or T	
R24	A5		12K ± 10% ½W Type BTS or T	
R25	A5		47 ohm ± 10% ½W Type BTS, T or 9	
R26	A4		24K ± 10% ½W Type BTS, or T	
R27	A5		6. 8 ± 10% ½W Type BTS or T	
R28	A5		6. 8K ± 10% ½W Type BTS or T	
R29	A5		3. 3K ± 10% ½W Type BTS or T	
R30	F1		120K ± 10% ½W Type BTS or T	
R31	Fig. 6.		1 Meg. ± 10% ½W Type BTS or T	
R32	Fig. 6.		3. 3K ± 10% ½W Type BTS or T	
R33	Fig. 6.		100K ± 10% ½W Type BTS or T	
R34	Fig. 6.		1 Meg. ± 10% ½W Type BTS or T	
R35	Fig. 6.	*	750 ohm ± 5% ½W Type T	
R36	Fig. 6.	*	750 ohm ± 5% ½W Type T	
R37	Fig. 6.	*	6.8K ± 5% 1W Type R	
R38	G4	*	5.6K ± 5% 1W Type T	
R39	F4		10K ± 20% ½W Type BTS or T	
R40	G4	*	56 ohm ± 5% ½W Type T	
R41	G4		150 ohm ± 5% ½W Type BTS or T	
R42	F4		1K ± 20% ½W Type BTS or T	
R43	F4		10K ± 20% ½W Type BTS or T	
R44	F4	*	3. 3K ± 5% ½W Type T	
R45	F4	*	56 ohm ± 5% ½W Type T	
R46	F4	*	150 ohm ± 5% ½W Type T	
R47	E4		1K ± 20% ½W Type BTS or T	
R48	E4	*	5. 6K ± 5% ½W Type T	
R49	E4		220 ohm ± 5% ½W Type BTS or T	
R50	D4		1K ± 20% ½W Type BTS or T	
R51	D4	*	7. 5K ± 5% ½W Type T	
R52	D4		270 ohm ± 5% ½W Type BTS or T	
R53	C4		1K ± 20% ½W Type BTS or T	
R54	C4		1K ± 20% ½W Type BTS or T	
R55	C4	*	470 ohm ± 10% ½W Type BTS	
R56	C5		2. 7K ± 5% ½W Type BTS or T	
R57	C5	*	39 ohm ± 5% ½W Type T	
R58	D5	*	3. 9K ± 5% ½W Type T	
R59	D5	*	3. 9K ± 5% ½W Type T	
R60	D5		6. 8K ± 10% ½W Type BTS	
R61			Not used in circuit	
R62	D6	*	3. 9K ± 5% ½W Type T	
R63	D5		470K ± 10% ½W Type BTS or T	
R64	E5		560 ohm ± 5% 1W Type BTA, Y or 8	
R65	E5	*	1. 5K ± 5% 1W Type BTB	
R66	E5	*	1. 5K ± 5% 1W Type BTB	
R67	E5		24K ± 5% ½W Type BTS	Refer L23 SP54003H
R68	E5		10K ± 20% ½W Type BTS or T	

Circuit Reference	Grid Reference	Part No.	Description	Remarks
R69	E6		100K ± 20% ½W Type BTS, T or 9	
R70	C5	*	1. 5 Meg. ± 10% ½W Type BTS	
R71	F1		220K ± 10% ½W Type BTS, T or 9	
R72	B6		150K ± 10% ½W Type BTS, T or 9	
R73	B6		22K ± 10% ½W Type BTS, T or 9	
R74	D8		4. 7M ± 10% ½W Type BTS, T or 9	
R75	D8		100K ± 10% ½W Type BTS, T or 9	
R76	E7		680K ± 10% ½W Type BTS, T or 9	
R77	D7		820K ± 10% ½W Type BTS or T	
R78	D8		390K ± 10% ½W Type BTS or T	
R79	D7		47K ± 10% 1W Type BTA, R or 8	
R80			47K ± 10% 1W Type BTA, R or 8	Inside EHT Cage
R81	D5		39K ± 10% ½W Type BTS or T	
R82	D8		120K ± 10% ½W Type BTS, T or 9	
R83	E8		100K ± 10% ½W Type BTS, T or 9	
R84	E8		15K ± 10% ½W Type BTS, T or 9	
R85	C5	*	47K ± 10% ½W Type BTS	
R86	B5		560K ± 10% ½W Type BTS, T or 9	
R87	C5		120K ± 10% ½W Type BTS or T	
R88	D5		10K ± 10% ½W Type BTS or T	
R89	B5		1. 5M ± 10% ½W Type BTS or S	
R90	C5	*	22K ± 10% 2W Type 10	
R91	C5		220K ± 10% ½W Type BTS or T	
R92	C5		68K ± 10% ½W Type BTS, S or 8	
R93	B5		330K ± 10% ½W Type BTS, T or 9	
R94	B5		2. 2K ± 5% ½W Type BTS or S	
R95	B5		150K ± 10% ½W Type BTS or T	
R96	B5		10K ± 10% ½W Type BTS or T	
R97	B6		2. 2K ± 5% ½W Type BTS or S	
R98	B5		150K ± 10% ½W Type BTS or T	
R99	B5		1M ± 10% ½W Type BTS or S	
R100	B5		10K ± 10% ½W Type BTS or S	
R101	B5		100K ± 10% 1W Type BTA, R or 8	
R102	B5		2. 7K ± 10% ½W Type BTS or T	
R103	G6		1M ± 5% ½W Type BTS or 9	
R104	A8		1 Meg. ± 10% ½W Type BTS, T or 9	
R105	A7		2. 2M ± 10% ½W Type BTS, T or 9	
R106	G5		470K ± 10% ½W Type BTS, T or 9	
R107	H5		120K ± 10% ½W Type BTS, T or 9	
R108	G5		4. 7M ± 10% ½W Type BTS, T or 9	
R109	F5		560 ohm ± 5% 1W Type BTA, Y or 8	
R110	G5		6. 8K ± 10% ½W Type BTS, T or 9	
R111			Not used in circuit	
R112	G5		470 ohm ± 10% ½W Type BTS, T or 9	
R113	C6		2. 2K ± 10% ½W Type BTS, T or 9	
R114	F7		1. 5K ± 5% 20W Type IRC DGA Vert. Mtg.	
R115	F4		600 ohm ± 5% 5W IRC "AA" CTG "B" Term. 1	
R116	F8		3. 5K ± 5% 20W Type IRC DGA-Vert. Mtg.	
R117	B8		6. 8K ± 10W 1W Type BTA, R or 8	
R118	B6		100K ± 5% ½W Type BTS or T	
R119	B6		100K ± 5% ½W Type BTS or T	
R120	B6		4. 7M ± 10% ½W Type BTS or T	

RESISTORS (Cont'd)

Circuit Reference	Grid Reference	Part No.	Description	Remarks
R121	B6		470K ± 10% ½W Type BTS or T	
R122	D7		1. 2K ± 10% ½W Type BTS or S	
R123	D7		8. 2K ± 10% 1W Type BTA, Y or 8	
R124	D8		56K ± 10% ½W Type BTS, T or 9	
R125	C7		120K ± 10% ½W Type BTS or T	
R126	C7		12K ± 5% ½W Type BTS or T	
R127	C8		470K ± 10% ½W Type BTS or T	
R128	C8		68 ohm ± 10% ½W Type BTS or T	
R129	C8	*	110 ohm ± 5% 2W Type 10	
R130	C7	*	120 ohm ± 5% 2W Type 10	
R131	B8		13K ± 5% 2W Type BTB	
R132	B8		13K ± 5% 2W Type BTB	
R133		*	2. 2 ohm ± 10% ½W Type BW	Inside EHT Valve Socket
R134	A8	*	110 ohm ± 5% 2W Type 10	
R135	A7		10K ± 10% ½W Type BTS, T or 9	
R136	A7		39K ± 10% ½W Type BTS or T	
R137	A7		47K ± 10% ½W Type BTS, T or 9	
R138	F4		10K ± 5% Type T	Refer L13 SP54398A
R139	B8		83K ohm ± 10% Type T	
R140	A8		150K ohm ± 10% Type T	

NOTE : * Substitute Type Resistors Not Recommended

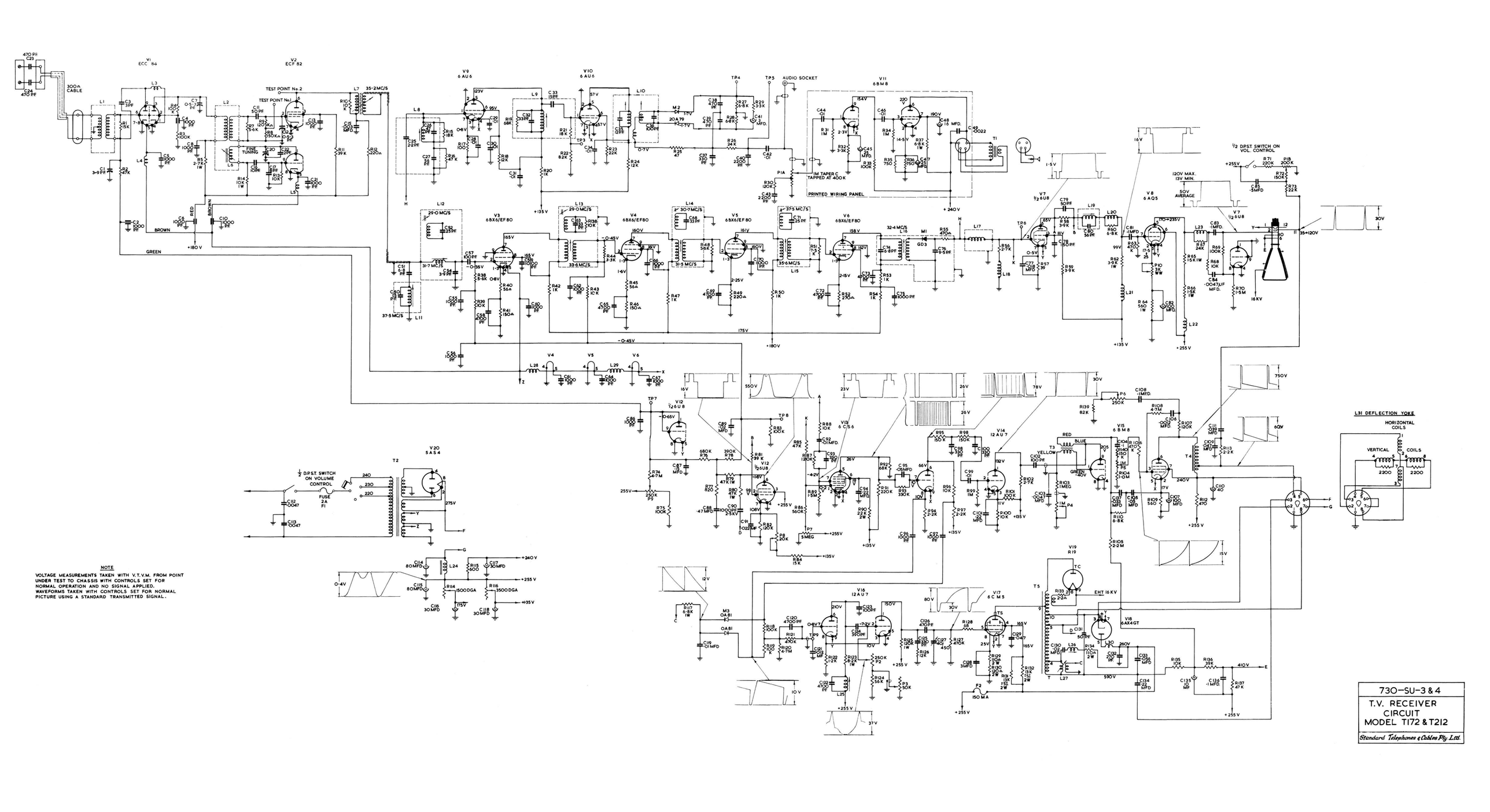
CAPACITORS

Circuit Reference	Grid Reference	Part No.	Part Description	Remarks
C23			470pf ± 20% Type 300 Vacerie	
C24			470pf ± 20% Type 300 Vacerie	
C25	B4		2. 2pf ± 10% Ducon NPO BEA Bead	Refer L8 SP54384A
C26	B4		47pf ± 2½% Ducon NPO B47 Tubular	
C27	B4		56pf ± 5% Ducon N750 A Tubular	
C28	B4		. 01mfd ± 20% AEE W99 200 VW	
C29	B4		. 01mfd ± 20% AEE W99 200 VW	
C30	B4		. 01mfd ± 20% AEE W99 400 VW	
C31	A4		. 01mfd ± 20% AEE W99 400 VW	
C32	B4		33pf ± 2½% Ducon NPO B Tubular	Refer L9 SP54381A
C33	B4		15pf ± 2½% Ducon N750 A Tubular	Refer L9 SP54381A
C34	A5		. 01mfd ± 20% AEE W99 400 VW	
C35	A5		12pf ± 1pf I. F. Type	Refer L10 74-SU-71B
C36	A5		100pf ± 2½% I. F. Type	
C37	A4		330pf ± 10% "P. T" Simplex	
C38	A5		470pf ± 5% "P. T" Simplex	
C39	A5		470pf ± 5% "P. T" Simplex	
C40	A4		. 002mfd ± 10% DF216 200 VW	
C41	A4		3mfd 100VW ET1X Electrolytic	
C42	A4		. 01mfd ± 20% AEE W99 200 VW	
C43	F1		. 002mfd ± 20% AEE W99 400 VW	
C44	Fig. 6.		. 01mfd ± 20% AEE W99 400 VW	
C45	Fig. 6.		25mfd 40VW Ducon ET1B	
C46	Fig. 6.		. 01mfd ± 20% AEE W99 400VW	
C47	Fig. 6.		25mfd 40VW Ducon ET1B	
C48	Fig. 6.		16mfd Ducon or UCC EC5D 525V	
C49	Fig. 6.		. 0022mfd ± 20% AEE W99 400VW	
C50	G4		15pf ± 2 pf Ducon NPO Style A	Refer L11 SP54388A
C51	G4		6. 8pf ± . 5pf Ducon NPO Style A	
C52	G4		25pf ± 2pf Ducon NPO Style B	Refer L12 SP54373A
C53				
C54	G4		3. 9pf ± 5pf Ducon NPO Style A	Refer L12 SP54373A
C55	G4		1000pf Ducon DS H1 K5000 Style A	
C56	G4		1000pf Ducon DS H1 K5000 Style A	
C57	G4		100pf ± 5% Ducon N 750 B	
C58	G4		4700pf Ducon DS H1 K5000 Style C	
C59	F4		1000pf Ducon DS H1 K5000 Style A	
C60	G4		1000pf Ducon DS H1 K5000 Style A	
C61	F4		1000pf Ducon DS H1 K5000 Style A	
C62	F4		1000pf Ducon DS H1 K5000 Style A	
C63	F4		33pf ± . 5pf Ducon NPO Disc Style C	Refer L13 SP54398A
C64	E4		1000pf Ducon DS H1 K5000 Style A	
C65	F4		4700pf Ducon DS H1 K5000 Style C	
C66	F4		1000pf Ducon DS H1 K5000 Style A	
C67	D4		1000pf Ducon DS H1 K5000 Style A	
C68	E4		33pf ± . 5pf Ducon NPO Disc Style C	
C69	E4		4700pf Ducon DS H1 K5000 Style C	
C70	E4		1000pf Ducon DS H1 K5000 Style A	
C71	D4		25pf ± 2pf Ducon NPO Disc Style B	
C72	D4		4700pf Ducon DS H1 K5000 Style C	

Circuit Reference	Grid Reference	Part No.	Description	Remarks
C73	C4		4700pf Ducon H1 K5000 Style C	
C74	C4		6. 8pf ± . 5pf Ducon NPO Disc Style A	Refer L16 SP54376A
C75	C4		1000pf Ducon DS H1 K5000 Style A	
C76	C4		9. 5pf ± . 5pf Ducon NPO Style A	Refer L16 SP54376A
C77	D5		. 018mfd ± 10% UCC PPS 200VW	
C78	C5		150pf ± 5% Ducon N 750C Tubular	
C79	D5		50pf ± 5% Ducon NPO B Tubular	
C80	D5		56pf ± 2½% Ducon NPO B Tubular	Refer L19 SP54389A
C81	E5		. 1mfd ± 20% Ducon TPB464 400 VW	
C82	E5		1000mfd EC5C 50V UCC or Ducon	
C83	E5		. 1mfd ± 20% Ducon TPB464 400 VW	
C84	E6		. 0047mfd ± 10% Ducon DFB420 400VW	
C85	D7		. 47mfd ± 10% Ducon or UCC PPS/TPB	
C86	F4		1000pf Ducon DS H1 K5000 Style A	
C87	D8		. 15mfd ± 20% Ducon or UCC PPS/TPB 200VW	
C88	E7		. 47mfd ± 20% Ducon or UCC PPS/TPB 200VW	
C89	D8		. 022mfd ± 20% Ducon or UCC PPS/TPB 200VW	
C90			1000pf ± 20% Ducon Tubular 2.5 KVW	Inside EHT box
C91	D8		. 022mfd ± 20% Ducon or UCC PPS/TPB 200VW	
C92	B4		. 01mfd ± 20% McLelland AEE W99 VW	
C93	C5		330pf ± 10% Simplex "PT"	
C94	C6		. 22mfd ± 20% Ducon or UCC PPS/TPB 400VW	
C95	B5		. 047mfd ± 20% Ducon or UCC PPS/TPB 200VW	
C96	B5		1000pf ± 5% Simplex "PT"	
C97	B6		1000pf ± 5% Simplex "PT"	
C98	B6		1000pf ±5% Simplex "PT"	
C99	B5		. 01mfd ± 20% AEE W99 400VW	
C100	A5		330pf ± 10% Simplex "PT"	
C101	B5		. 22mfd ± 20% Ducon or UCC PPS/TPB 200VW	
C102	A5		100pf ± 5% Simplex "PT"	
C103	G5		. 0047mfd ± 10% Ducon DFB420 400VW	
C104	A7		. 1mfd ± 20% Ducon TPB464 400VW	
C105	F5		. 047mfd ± 10% UCC PPS 400VW	
C106	H5		. 0012mfd ± 10% Ducon DFB613 600VW	
C107	F5		100mfd Ducon or UCC ES5C 50VW	
C108	H5		. 1mfd ± 20% Ducon or UCC PPS/TPB 400VW	
C109	B6		. 047mfd ± 20% Ducon or UCC PPS/TPB 400VW	
C110	D3		40mfd x 30mfd x 30mfd Ducon ECT 214 400VW	
C111	B6		. 039mfd ± 20% Ducon or UCC PPS/TPB 400VW	
C112	H5		. 0047mfd ± 10% Ducon or UCC PPS/TPB 600VW	
C113	H5		. 0047mfd ± 10% Ducon or UCC PPS/ TPB 600VW	

CAPACITORS (Cont'd)

Circuit Reference	Grid Reference	Part No.	Description	Remarks
C114	D3		80mfd Ducon or UCC ECS434 400VW	
C115	E3		80mfd Ducon or UCC ECS434 400VW	
C116	F3		30mfd Ducon or UCC EC56 400VW	
C117	D3		40mfd x 30mfd x 30mfd Ducon ECT214 400VW	
C118	D3			
C119	A8		.01mfd ± 20% Ducon or UCC PPS/TPB 400VW	
C120	B6		.0047mfd ± 10% Ducon DFB220 200VW	
C121	D7		.012mfd ± 10% Ducon DFB225 200VW	
C122	D7		4700pf ± 5% "SM" Sil Mica.	
C123	D7		100pf ± 5% Simplex "PT"	
C124	D7		390pf ± 5% Simplex "PT"	
C125	C7		330pf ± 5% Simplex "PT"	
C126	C8		470pf ± 10% Simplex "PT"	
C127	C8		45-450pf Trimmer CWO-100 c/w MTG Bracket	
C128	B8		3mfd Ducon ET1X 100VW	
C129	B8		.047mfd Ducon or UCC PPS/TPB 600VW	
C130	Fig.		.022mfd Ducon or UCC PPS/TPB 600VW	
C131	Fig.		50pf ± 10% Ducon 5KVW	
C132	B8		270pf ± 20% Simplex "PT"	
C133	A7		.056mfd Ducon or UCC PPS/TPB 600VW	
C134	A7		.22mfd ± 20% Ducon or UCC PPS/TPB 400VW	
C135	A6		10mfd Ducon or UCC ESQ 300V	
C136	A7		.1mfd ± 20% Ducon or UCC PPS/TPB 400VW	
C137	F7		.033mfd ± 10% Ducon or UCC PPS/TPB 400VW	



NOTE

VOLTAGE MEASUREMENTS TAKEN WITH V.T.V.M. FROM POINT UNDER TEST TO CHASSIS WITH CONTROLS SET FOR NORMAL OPERATION AND NO SIGNAL APPLIED. WAVEFORMS TAKEN WITH CONTROLS SET FOR NORMAL PICTURE USING A STANDARD TRANSMITTED SIGNAL.

730-SU-3 & 4

T.V. RECEIVER CIRCUIT MODEL T172 & T212

Standard Telephones & Cables Pty. Ltd.