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TELEVISION MONITOR, 17″,
Philips type EL 8010

GENERAL AND TECHNICAL INFORMATION

BY COMMAND OF THE DEFENCE COUNCIL

J. T. Dunnett

Ministry of Defence

FOR USE IN THE
ROYAL NAVY
ROYAL AIR FORCE

Prepared by the Procurement Executive, Ministry of Defence

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PYE

17-INCH 6-CHANNEL VIDEO MONITOR

TYPE 171

This service manual is for the maintenance of Pye equipment. The performance figures quoted are typical and are subject to normal manufacturing and service tolerances.

The right is reserved to alter the equipment described in this manual in the light of future technical development.

SERVICE MANUAL

ISSUE 3

PYE T.V.T. LIMITED · P.O. BOX 41 · CAMBRIDGE · ENGLAND

TELEPHONE CAMBRIDGE 45115 TELEX 81103

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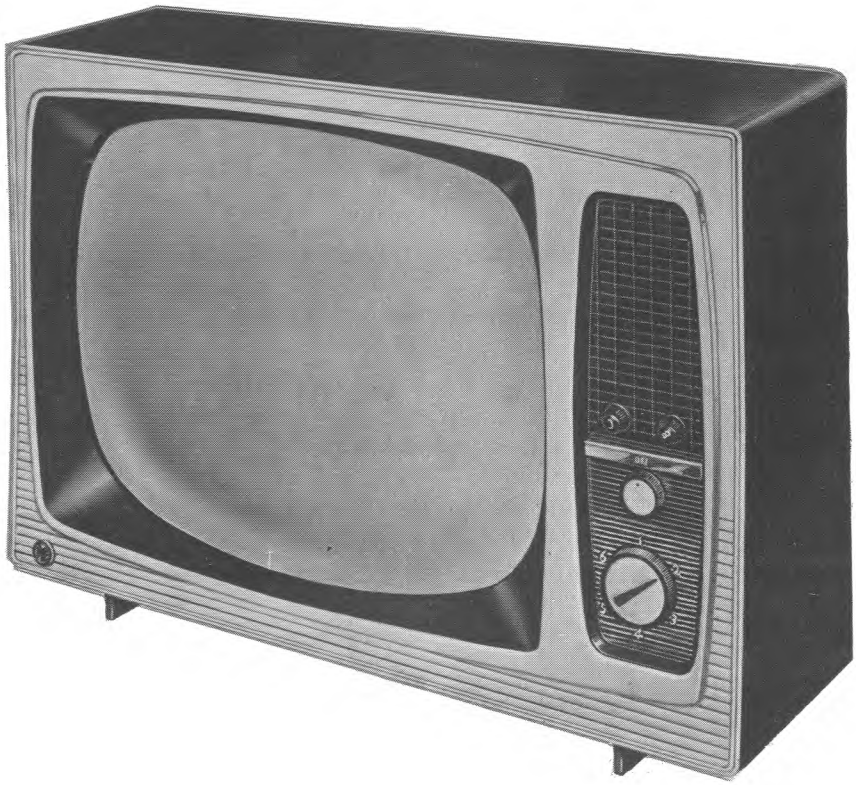
ILLUSTRATIONS



PYE 171 MONITOR

CHAPTER I

GENERAL DESCRIPTION AND SUMMARY OF DATA

The Pye 171 is a self-contained video monitor suitable for general use in closed-circuit television systems, and has been designed particularly for use in conjunction with Pye transistor cameras

The monitor operates on the 625 lines C.C.I.R. scanning standard from a composite video signal input of standard polarity, i.e. peak white positive-going.

Display is effected by a 17", 110°, rectangular type picture tube with aluminised screen providing a maximum picture size of 15 inches x 11½ inches (38 cm x 29 cm).

A channel selector switch makes possible the selection of any one of up to six channels which may be connected into the monitor at one time, thereby eliminating the necessity for plugging and unplugging leads. The input circuits are adjustable to provide either high impedance bridging or low impedance termination of the incoming lines as required.

The monitor operates on A.C. supplies only over the ranges 100-140 volts and 200-250 volts.

SPECIFICATION

Scanning System	625 lines, 50 fields per second, interlaced (C.C.I.R. Standard).
Input Signal	1 volt minimum p-p composite video waveform (peak white positive).
Input Impedance	75Ω or High (Bridged).
Video Bandwidth	7½ Mc/s.
Picture Dimensions	15 inches x 11½ inches (38 cm x 29 cm).
Display Tube	17-inch, 110°, rectangular; AW43-88 or C17/7A.
Power Supply	100-140 volts a.c. r.m.s. and 200-250 volts a.c. r.m.s. at 50 c/s, adjustable by selector plugs.
Power Consumption	140 watts approx.
Complement of Valves, etc.	10 thermionic valves, picture tube, 4 silicon and 1 selenium rectifiers.
Overall Dimensions	Height - 15¼ inches (38.7 cm) Width - 21½ inches (54.6 cm) Depth - 13½ inches (34.3 cm)
Weight	43 lb. (19.5 kg).

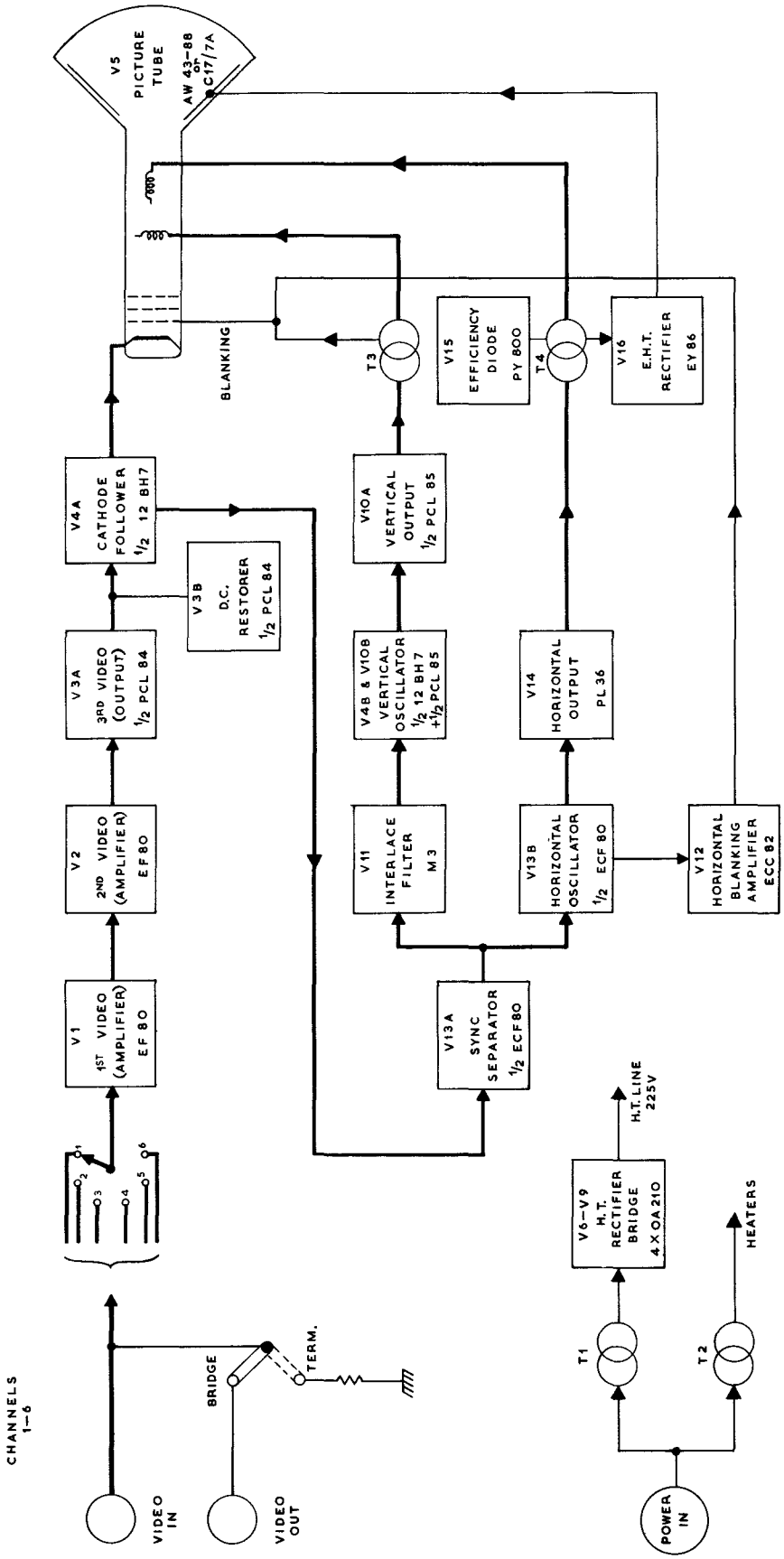


Fig. 1 Block Schematic Diagram

CHAPTER II

TECHNICAL DESCRIPTION

VIDEO AMPLIFIER

This section comprises three pentode voltage-amplifying stages (V1, V2, V3A), d.c. restorer (V3B), and a cathode follower buffer stage (V4A

The input signal is required to be of composite video/sync form and of standard polarity, i.e. peak white positive-going, sync negative-going. There are six independent and identical input circuits feeding the selector switch SW1, each circuit having input and output sockets and the facility for providing either low impedance (75Ω) termination or high impedance bridging of the incoming line (enabling further monitors to be used) by adjustment of the appropriate link (PL1-6).

The signal selected by SW1 is applied via the "Contrast" control (R7) which adjusts the level of the signal input to V1 grid and thereby determines the overall gain.

The amplifier stages are resistance/capacitance coupled and feedback is applied from the output valve cathode to the cathode of the first stage. The low value of load resistors, peaking inductance L1 in the anode of V3A, L2 in the amplifier output lead, together with the negative feedback combine to provide the required wide-band and level response.

The signal at the anode of V3A is fed via C14 to the grid of V4A, one half of a 12BH7 double triode working as a cathode follower. The d.c. component, lost through the a.c. coupling of the amplifying stages, is restored by the action of V3B, the triode section of the PCL84. Connected as a diode across V4A grid circuit, its function ensures that the black level of the signal remains constant irrespective of picture content, by setting up or clamping the sync pulse tips to a fixed potential with respect to chassis.

The negative-going signal from the cathode follower is applied to the cathode of the picture tube to modulate the scanning beam.

SYNCHRONISING CIRCUITS

The negative composite signal (negative video and positive sync) from the cathode follower is fed, via R28 and C44, to the grid of the sync separator stage (V13A) the purpose of which is to remove the picture component from the composite video signal and provide a "clean" noise-free synchronising waveform.

The valve is self-biased, the application of a signal causing grid current to flow and develop a charge on C44 sufficient to bias the valve beyond negative cut-off. Choice of time constant of C44/R76 selects the correct operating point to ensure that the pentode only conducts on the positive-going sync pulse component of the waveform.

The waveform developed across the anode load R78 is composed of combined vertical and horizontal sync pulses which require further separation.

Sharp-edged negative pulses required for the locking of the horizontal oscillator are obtained by differentiating the complete sync in the coupling network of C45, R80, etc.

Vertical frequency synchronising pulses for the vertical scan oscillator are obtained also from the complete sync by the combined action of frequency-selective r/c networks and the interlace diode (V11). Integration of the vertical sync pulses is effected by R63 and C36, producing the difference in amplitude essential for the separating action of the rectifier. With cathode biased positively by fixed potential divider (R61, R62), V11 acts as a clipper in conducting only on that portion of the vertical sync pulses which exceeds the horizontal sync pulse amplitude. Further integration is carried out by C34, R60 in the anode circuit. These pulses, free of any horizontal sync component (an essential to good interlacing), are fed to the grid of V4B to trigger the vertical oscillator.

VERTICAL SCAN TIME BASE

A conventional multi-vibrator circuit utilising one half of a 12BH7 double triode (V4B) and the triode section of a PCL85 (V10B) forms the vertical sawtooth generator. Oscillator frequency is determined by the time constant of C32 and R57, the latter being taken to the variable positive potential of R48, the "Vertical Hold" potentiometer, for control of speed. Synchronising pulses are fed to the grid of V4B to trigger the oscillator. C30 couples the oscillator sawtooth, via a linearity network which includes the two adjustable resistors R53, R55, into the control grid of the pentode output stage (V10A). T3 in the anode circuit couples the waveform to the vertical scan deflector coils (L4A, -B).

Scan amplitude (Height) is controlled by R77 which varies the h.t. supplied to the charge resistor R56 in the anode of V10B. Thermistor R38 provides compensation for variation of deflector coil d.c. resistance with temperature. R45 connected in the h.t. supply line is in series with the scan coils and the voltage developed across it provides a small amount of d.c. shift in order to centralize the active picture on the screen without distortion of horizontal lines.

HORIZONTAL SCAN TIME BASE

The horizontal scan time base uses a cross-coupled multi-vibrator oscillator consisting of the triode portion of the ECF80 (V13B) and the PL36 output valve (V14). Free-running frequency is dependent on the triode grid circuit time constant, R82 being the horizontal hold control.

The oscillator has two modes of operation. During the warming-up period before the efficiency diode (V15) has begun to operate, oscillatory action is set up between triode V13B and the control and screen grids of the output valve V14 via C50. When the PY800 efficiency diode becomes conductive and the output stage commences to function, the mode changes and the oscillatory feedback circuit from the output stage is principally from the horizontal scan output transformer(T4) via C58.

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Synchronisation of the oscillator is by negative horizontal pulses fed to the triode anode from the pentode sync separator section of V13 after differentiation from the complete sync waveform in the coupling network.

Horizontal scan deflector coils (L3A,-B) are fed from the output valve by transformer T4. The efficiency diode (V15) recovers energy from the horizontal scan flyback by conducting and charging the boost capacitance C57. This stored energy, in supplying an initial portion of scan (during which period the output valve is quiescent), increases the efficiency of the stage. The series addition to the h.t. supply of this reclaimed potential not only provides a higher d.c. voltage for the anode of the output valve, but also affords a supply (after filtering by R88, C61) for the vertical oscillator via the vertical amplitude control R77, and for the c.r.t. first anode and focusing electrode via R32 and focus potentiometer R35 respectively.

The large positive pulse present at the anode of the output valve (V14) during the flyback period is increased by the e.h.t. winding of the output transformer (T4) to provide a d.c. potential of 15-17 kV after rectification by an EY86 diode (V16). Smoothing of this e.h.t. voltage for the c.r.t. final anode is provided by the capacitance between the internal and external aquadag coatings of the c.r.t.

The desirable state of desaturation in the core of T4 is achieved by causing d.c. to be in anti-phase in two sections of the winding; this requires the feeding of h.t. into a tap on the winding via an injection choke (L8). Width of horizontal scan is varied by the horizontal amplitude control (L7), a variable inductance in series with the deflector coils, absorbing a percentage of the total scanning voltage available from the output transformer. Coupling L7 and L8 by a common core (which reduces the inductance of one coil whilst increasing the other) maintains a constant load condition on the transformer, making possible a consistent e.h.t. voltage independent of the width of the scan.

Horizontal linearity is controlled by the degree of polarisation of the saturated inductance L6 (also in series with the horizontal scan deflector coils) by the permanent magnet M7, the position of which is variable with respect to the coil.

BLANKING AMPLIFIER

Horizontal pulses appearing at the anode of the horizontal oscillator are shaped by C46 and R73 and fed to the grid of one half of an ECC82 double triode forming the horizontal blanking amplifier (V12). These pulses are negative-going and for their duration cause V12B to cut off; this results in a positive pulse at the anode which is differentiated by C38, R64, R65 the degree of differentiation (the pulse width) being determined by the resistance of the horizontal blanking width control.

Normally quiescent, V12A conducts on the pulse and is assisted in this action by the common coupling of R69, the cathode potential being lowered by the non-conduction of V12B during the pulse period. The low a.c. impedance of the anode circuit produces a sharp-edged negative-going pulse.

The vertical scan output waveform is differentiated by the network of C39, R66 and integrated by R67 and C41. Mixing with the horizontal blanking pulses occurs in the anode circuit, and the combined horizontal and vertical blanking waveform is fed via C40 and R34 to the grid of the c.r.t.

POWER SUPPLY

Power requirements are met by two transformers. One (T1) supplies an h.t. of 225 volts from a bridge configuration of silicon diodes (V6-V9) and a conventional smoothing circuit, whilst the other (T2) uses two secondary windings to supply 6.3 volts for a parallel and 77 volts for a series heater chain.

C22 is included to prevent time base components from feeding back into the power supply system, and C23 removes transients which might cause damage to the rectifiers.

The anti-surge fuse (F1) gives protection against sustained overload, and its rating is dependent upon voltage range (1 amp. for 200/250V a.c., 2.5 amps for 100/140V a.c.)

PICTURE TUBE

The picture tube (V5) is a rectangular-screened cathode ray tube having 110^{o} deflection angle and electrostatic focusing.

Initial intensity of the electron beam is controlled by the grid-cathode potential supplied from and varied by the Brightness control (R31). Modulation of beam intensity is effected by applying the negative-going output signal from the video amplifier to the c.r.t. cathode, its amplitude being adjustable by the Contrast control (R7) which varies the amplifier input.

Velocity and focus are determined by the d.c. potentials applied to the accelerating anodes of the gun assembly — A1 being connected to the boost supply voltage, A3 to the Focus potentiometer (R35) which varies the potential between chassis and boost voltage, and A2 and the final anode A4 (which extends to include the internal aquadag coating of the bulb) to which is connected the e.h.t. supply from V16.

Picture centring on the screen is by two flat ring permanent magnets (M1, M2) at the rear of the deflector coil assembly.

C17 and R32 in the supply to the first anode destroy the beam intensity upon switching off (by defocusing of the electrostatic lens), and the bright spot which otherwise would occur with collapse of the scanning fields is thus prevented from damaging the screen by 'burning-in'.

CHAPTER III

INSTALLATION & OPERATION

GENERAL INFORMATION

Power Supplies

The monitor operates on A.C. supplies at 100-140 Volts and 200-250 Volts a.c. r.m.s. 50 c/s.

Different fuse ratings are required for the two ranges. The 1 amp. fuse normally fitted is suitable for the 200-250 Volts a.c. range, whilst a 2.5 amp. fuse is required for the 100-140 V a.c. range. It is essential that a fuse of the correct rating be fitted should the need for replacement arise.

WARNING: Serious damage will result if connection is made to a D.C. supply.

INSTALLATION

Remove the rear cover by unscrewing the four fixing screws and take out the protective paper, Check that the valves are firmly seated in their holders.

Power Input Adjustment

Adjust the two voltage selector plugs (Fig. 3) so that the sum of the two figures equals, or corresponds as nearly as possible to, the voltage of the local supply. (For example, with a supply of 110 V a.c. the plug settings should be '100' and '15'; for 230 V or 240 V the settings would read '200' and '35'.

If operating on the 100-140 V a.c. range replace the fuse (Fig. 3) for one of the correct rating (see 'General Information').

Replace rear cover.

Ensure adequate ventilation for the monitor by leaving a space of at least four inches between the ventilation slots in the rear cover and any obstruction. It is important also that the air space beneath the monitor is unobstructed.

Power Supply Connections

Power should be applied by means of the detachable three-contact socket supplied with the monitor.

Use a length of colour-coded three-core cable suitable for the installation and connect the 'Live' core (e.g. RED) to the terminal marked 'L'; the Neutral core (e.g. BLACK) to the terminal marked 'N'; and the 'Earth' core (e.g. GREEN) to the terminal marked 'E'. Connect a suitable plug (preferably 3-pin or-contact) to the free end of the lead, ensuring that the Live, Neutral and Earth connections are in correspondence with those made at the monitor socket. The 'Earth' lead should not be left detached since its connection constitutes an important safety measure.

Video Signal Connections

There are six separate channels, each being selected by a corresponding position of the channel selector switch. Video 'In' and 'Out' sockets and an associated "Term./Bridge" plug-link on each channel provide for low impedance termination or high impedance bridging of the video signal line.

If a single monitor only is required on a particular channel connect the video lead (from the camera) to the appropriate 'In' socket and plug the associated link into the 'Term' position.

When more than one monitor is required in a chain, any intermediate monitor should have the video line connected into it via the 'In' socket, out via the 'Out' socket, and the link plugged into the 'Bridge' position. The final monitor in the line should be adjusted to the 'Term' position.

SETTING-UP PROCEDURE

1. Turn 'Contrast' and 'Brightness' controls fully anti-clockwise to minimum.

2. Switch on by turning the "On-Off" switch clockwise. Wait approximately 2 mins. to allow the valves and picture tube to heat up before attempting adjustments.

3. Select the appropriate channel on the 6-position selector switch.

4. Advance the 'Brightness' control to the point at which a raster (lines) become visible on the picture tube, then turn back to the point at which the raster just ceases to be visible.

5. Adjust the 'Contrast' control to provide a picture of satisfactory contrast, or, if setting up in preparation to operate a camera, adjust to approximately $\frac{3}{4}$ of maximum.

6. Adjust 'Horizontal' and 'Vertical' Hold controls (Fig. 3) if necessary, to 'lock' the picture - or the raster if no picture is available but the camera is switched on.

7. Finally adjust 'Contrast' and 'Brightness' slightly to provide optimum results.

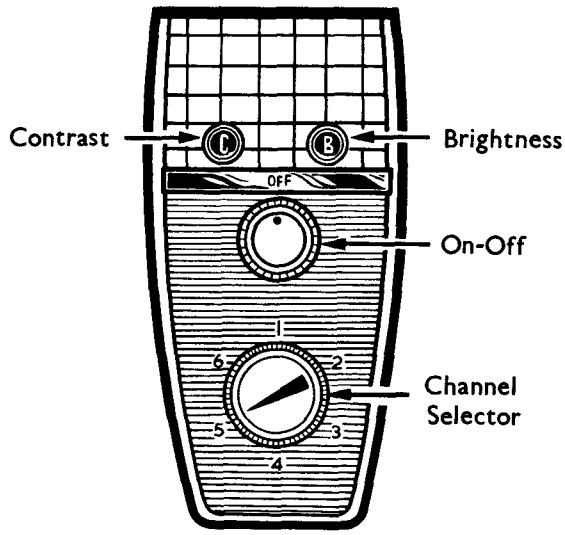

Fig. 2 Front Control Panel

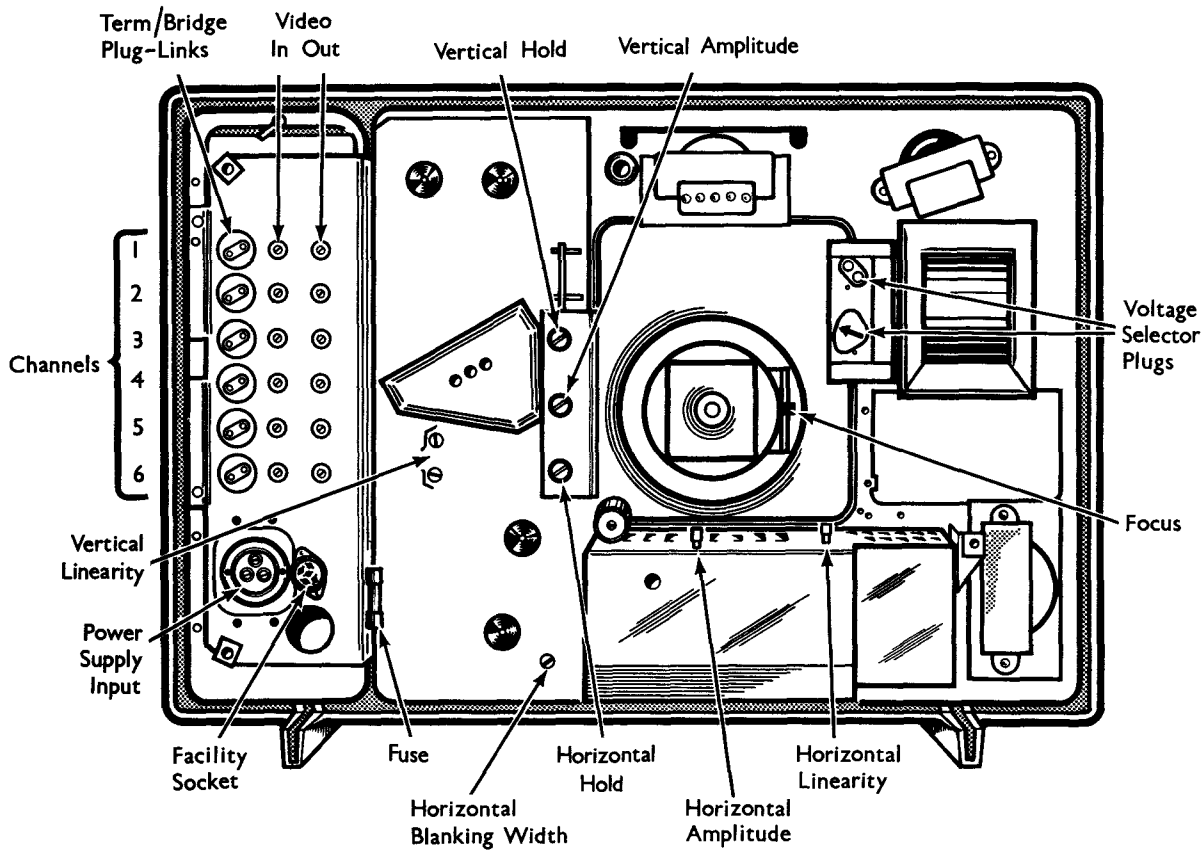

Fig. 3 Rear View Showing Controls

NORMAL OPERATION

Switch 'On' and allow the monitor to warm up.

Select the channel or channels required in turn, adjusting 'Contrast' if necessary to accommodate slight changes of signal strength.

Switch 'Off' by turning the 'On-Off' switch anti-clockwise.

NOTES ON ADJUSTMENT OF CONTROLS

Upon initial installation all auxiliary controls will be checked and/or adjusted for their correct settings, and further adjustment will not normally be required.

Pictures illustrating some effects resulting from incorrect adjustment of readily-accessible auxiliary controls, together with an 'all-correct' picture, are however given in Figs. 4-6 to assist operators in achieving consistently good results.

'On'-'Off' Switch

Controls the power supply to the monitor. Turn in a clockwise direction to switch on. 'Off' position is given by the knob indicator spot in the top central position.

Channel Selector Switch

Selects the required channel from up to six separate inputs. Set switch to the channel number in correspondence with the required video line as connected to SK1-6 at the rear of the monitor.

Brightness & Contrast

The precise setting of these controls may be a matter for individual preference. In general the aim of their combined adjustment is to produce a picture of correct or acceptable contrast. A sound method of obtaining this is to first set the Brightness control in the absence of a signal (i. e. Contrast at minimum or switch on blank channel position) to the point at which raster lines are just invisible, followed by an adjustment of the Contrast control for optimum results.

Incorrect settings of these controls will most likely result in inaccurate reproduction of shades between black and white. A comparative gradation scale is shown by the 5-square column at the centre of the test card (Fig. 6).

Vertical Hold

Adjust to the point where slight movement of the control in either direction is possible without movement of the picture in the vertical direction.

Horizontal Hold

Turn to left or right until a complete picture appears, and adjust to the point giving least sideways movement of the picture. Check accuracy by momentarily switching to another channel position and back again, when the complete picture should return.

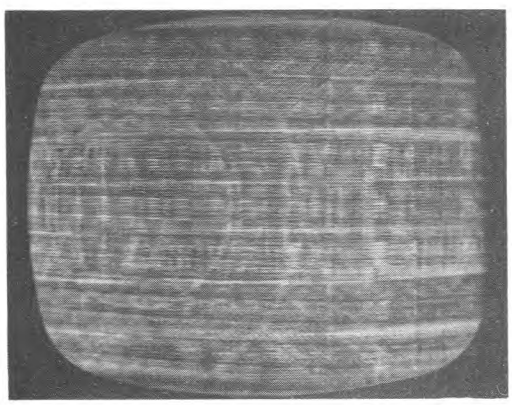

Fig. 4 Incorrect Adjustment of Horizontal Hold.

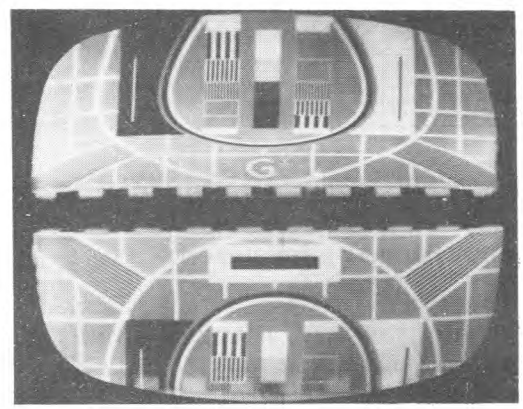

Fig. 5 Incorrect Adjustment of Vertical Hold.

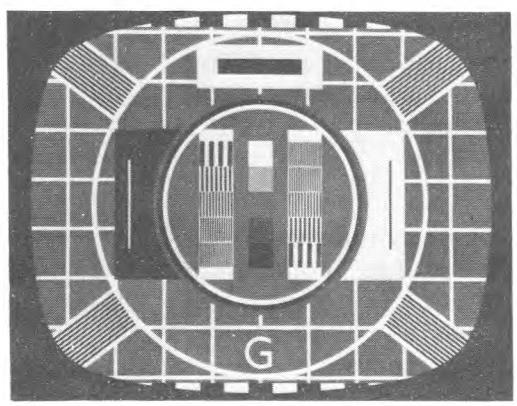

Fig. 6 All Controls correctly Adjusted.

CHAPTER IV

MAINTENANCE

PRECAUTIONS

GENERAL

When servicing the equipment, the usual precautions should be taken to avoid accidental contact with parts on which high voltages are present.

In handling the c.r.t. (e.g. during replacement) care should be exercised to avoid the possibility of implosion, and eyes should be protected by the wearing of industrial safety spectacles, goggles or visor.

PRINTED CIRCUITRY

The techniques employed in the servicing of printed circuit boards are basically similar to those in use with wired chassis. The following points should, however, be noted:-

1. The copper circuitry is covered with a protective coating and to avoid damage to this, needle point test probes should be used when making measurements from this side of the board.

2. When soldering, care should be taken to avoid the application of excessive heat which will soften the thermoplastic adhesive under the copper foil. Best results are obtained by the use of a hot iron (rating below 50 watts) applied for the shortest possible time.

3. Use as little force as possible in removing faulty components Wires bent over against the copper foil should be gently levered up – the solder being molten during this operation to prevent lifting of the copper foil from the board.

4. The leads of replacement components should be carefully cleaned before being inserted through the holes in the panel. They should then be cut to length and bent over against the copper foil. Soldering should be as rapid as possible using 60/40 resin-cored solder.

5. Avoid excessive deposits of solder; these may cause short-circuits and intermittent faults difficult to locate.

6. Should it be necessary to clean the circuitry before soldering, a small glass fibre or wire brush should be used. After soldering, the exposed copper foil may be re-coated with a suitable preservative, e.g. polystyrene dope.

7. Microscopic cracks may be satisfactorily repaired with solder, but in general tinned copper wire should be used to bridge damaged circuitry.

AUXILIARY CONTROLS

VERTICAL HOLD POTENTIOMETER: (R48)

Adjust the Vertical Hold control to the mid-point of synchronised picture range. Greater accuracy will be obtained with Contrast set to a low level.

HORIZONTAL HOLD CONTROL: (R82)

Turn slowly to right or left until a complete picture appears. Correct setting is that giving least sideways movement of the picture. Check correctness of the setting by switching momentarily to an alternative channel and back again, or by switching the monitor off and on again.

HORIZONTAL BLANKING WIDTH: (R65)

1. Use preferably a test-pattern picture.

2. Move picture (by operating the picture centring magnets) to bring the left-hand edge of the raster (i.e. commencement of scan) into view.

3. Adjust R65 to "blank-off" the bright vertical line or "ring" visible at the start of the scan and which occupies the first $\frac{1}{8}$" (3 mm) of it. The control should be adjusted to the point at which the minimum of active picture is eliminated, consistent with reduction of the bright line to an acceptable degree. The amount of blanking required is dependent upon the horizontal scan output transformer and may therefore vary between monitors.

4. Re-adjust picture centring magnets.

PICTURE ORIENTATION

1. Set-up a test-pattern or ordinary picture on the c.r.t.

2. Loosen the Deflector Coil Clamp.

4. Re-tighten the picture orientation clamp.

5. Check picture centring.

PICTURE CENTRING MAGNETS: (M1, M2)

1. Check orientation.

2. Use preferably a test-pattern picture.

3. Adjust magnets M1, M2 independently and set to position the picture centrally on the screen.

RASTER CORRECTION MAGNETS: (M3, M4)

N.B. In the event of replacement, magnets must be fitted in the polarity sequence shown in the circuit diagram (Fig. 11).

1. Use a test-pattern picture.

2. Bend and/or twist the magnet suspension arms of M3, M4 to find the position giving best geometry along the relevant sides of the picture.

FOCUS POTENTIOMETER: (R35)

1. Use preferably a test-pattern picture at normal brightness level.

2. Adjust R35 slider for optimum focus of the centre of the picture.

VERTICAL AMPLITUDE: (R77)

1. Use a linear test-pattern picture.

2. Check that picture is correctly centred.

3. Adjust the pre-set Vertical Amplitude potentiometer (R77), in conjunction with the Vertical Linearity controls if necessary, to give the desired picture height. (See "Vertical Linearity Pots. 1 & 2").

VERTICAL LINEARITY POTENTIOMETERS 1 & 2: (R55, R53)

Using a linear test-pattern picture, adjust the pre-set Vertical Linearity Pots. 1 & 2 (R55, R53) in conjunction with the Vertical Amplitude Potentiometer until a satisfactory vertical scan is obtained. (R55 will be found to affect the bottom, R53 the top of the picture, mainly).

N.B. Since the Vertical Amplitude and Linearity controls are somewhat interdependent, the following recommended procedure may be found advantageous in some instances:-

1. Set the two Vertical Linearity controls to their mechanical mid-positions.

2. Adjust the Vertical Amplitude control (R77) to the approx. correct position.

3. Slightly re-adjust the Vertical Linearity controls for a linear picture.

4. Re-adjust Vertical Amplitude control so that the screen is overscanned by approximately 2% (half height of blocks at top and bottom of test card 'G'.)

HORIZONTAL LINEARITY : (L6)

1. Use a linear test-pattern picture.

2. Loosen the locking screw and adjust the slider (controlling position of M7) until a linear horizontal scan is obtained.

3. Re-tighten the locking screw.

HORIZONTAL AMPLITUDE : (L7)

1. Check Vertical Amplitude, Centring and Orientation (see relevant sections).

2. Use normal test-pattern picture.

3. Loosen the locking screw and adjust the slider of L7 until the correct test-pattern geometry is given.

N.B. If the Vertical Amplitude has been adjusted to provide 2% overscan, a total overscan of 8% in the horizontal direction is necessary to fit the standard 4:3 picture (e.g. from the Pye TVC/1 camera) on the 5:4 monitor screen without distortion of picture geometry.

MECHANICAL ASSEMBLIES

REMOVING CHASSIS

1. Disconnect the power input socket, remove the four cardback fixing screws and washers and detach the cardback.

2. Remove the 'On-Off' and Channel Selector knobs.

3. Remove c. r. t. base connector, and unplug e. h. t. cavity terminal connector and deflector coil plug PL7.

4. Remove the chassis-fixing screws: these are ten self-tapping screws fitting into clips placed symmetrically around the cabinet perimeter.

   Note: The screw in the top left position also secures a tag, the lead from which links the tension handle bracket to the main chassis.

5. Remove two screws securing the front control mounting bracket to the cabinet front section.

6. Withdraw the chassis.

REMOVING C. R. T.

1. Carry out procedures "Removing Chassis".

2. Place cabinet face downwards on a soft non-scratch surface.

3. Remove the locking screw from the tension handle (Fig. 7)

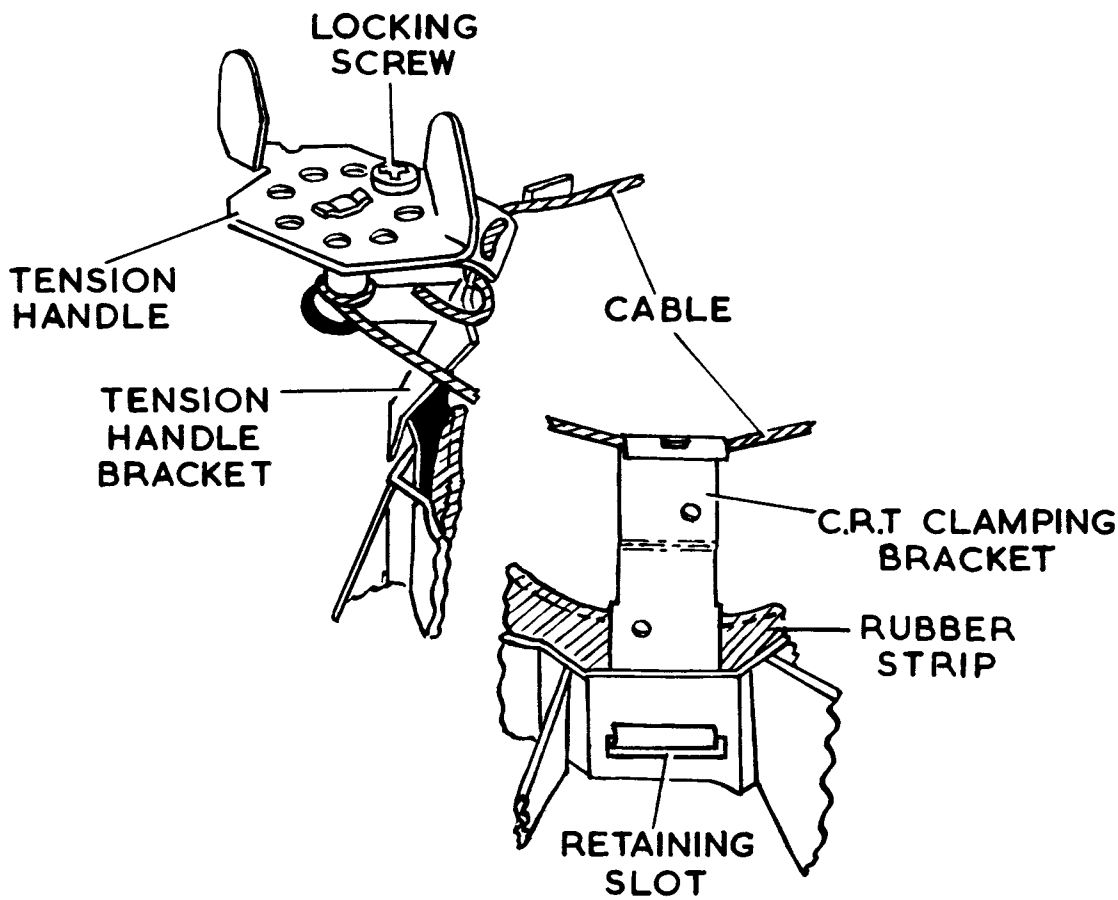

Fig. 7 C. R. T. Clamping Assembly

4. Loosen the cable by turning the tension handle approximately $\frac{1}{2}$ turn, until the tension handle bracket and c. r. t. clamping brackets can be disengaged from the retaining slots in the cabinet. Remove cable and bracket assembly complete.

5. Ease the rubber strip away from the left-hand side of the c. r. t. and withdraw c. r. t. Do NOT use neck of c. r. t. as a lever.

6. If replacing c. r. t. remove deflector coils by loosening the picture orientation clamp thumbscrew and withdraw deflector coil and magnet. assemblies complete.

REFITTING C. R. T.

1. Ensure that the rear of the implosion screen and face of the c. r. t. are clean and free from dust (See "Cleaning Implosion Screens".)

2. Place c. r. t. in the rubber surround, right-hand side foremost, ensuring that the e. h. t. cavity terminal is on the right-hand side (Fig. 10). Easing rubber away at the left hand side to allow excursion of air, press c. r. t. firmly into the rubber surround.

3. Refit the tension handle bracket and c. r. t. clamping brackets into their appropriate retaining slots in the cabinet - the tension handle bracket in the "top left" position when viewed from the rear.

4. Tighten the cable by turning the tension handle in a clockwise direction, and re-fit the locking screw. (With holes aligned this screw can be pressed into position). Ensure that the earthing spring is making good contact with the aquadag coating of c. r. t. Refit deflector coils, if applicable.

5. Refit the chassis (by reversing procedures in "Removing Chassis" above), and remember to reconnect the wire link between tension hand bracket and chassis; this earths the c. r. t. outer aquadag.

CLEANING IMPLOSION SCREENS

Perspex implosion screens are easily scratched by abrasive materials and care should be taken to prevent marking. Slight scratches may be removed with the aid of one of the proprietary scratch removing agents or polishes.

Clean with

either a suitable perspex polish, the anti-static properties of which will prevent dust from adhering to the surfaces when polished,

or warm, soapy water applied with sponge or chamois leather; rinse and wipe dry with a lightly-dampened leather using even strokes.

VIDEO AMPLIFIER RESPONSE

SENSITIVITY

Equipment/Signal Requirements

(a) A 625-line video signal with amplitude approximately 1 Volt p-p, positive-going video information and negative-going sync pulses.
(The standard 1.4 v p-p composite video output from the Pye TVC/1 camera is suitable.)

(b) An accurately-calibrated oscilloscope.

Procedure

1. Apply the video signal to any video input socket (SK1B - SK6B), setting the selector switch to the corresponding channel number.

2. Connect the oscilloscope between the cathode of the c.r.t. (V5 pin 7) and chassis.

3. Turn Brightness control fully anti-clockwise to minimum.

4. Adjust the Contrast Control (R7) to provide 85 volts p-p on the oscilloscope (as shown in waveform E).

5. Transfer the oscilloscope to between Panel Tags 2, 3 to read the input signal to the amplifier (waveform A). This will usually be found to be below 500mV p-p, and must not be greater than 1 V p-p.

A typical figure of 380mV p-p is shown on the circuit diagram (Fig. 11). Comparison of waveforms A and B shows that the signal gain between the input and the anode of the 2nd Stage Amplifier (V2 pin 7) is roughly X10 (20dB).

BANDWIDTH

Equipment Required

(a) A video signal generator (oscillator) with a maximum output of 1V approx. and having a variable – though not necessarily calibrated – attenuator, covering the following frequencies:- 10 kc/s, 100 kc/s, 1 Mc/s, 5 Mc/s.

(b) Valve voltmeter with low capacity probe (Max. 5pF) and level response to frequencies between 10 kc/s and at least 5 Mc/s.

4. Loosen the cable by turning the tension handle approximately $\frac{1}{2}$ turn, until the tension handle bracket and c. r. t. clamping brackets can be disengaged from the retaining slots in the cabinet. Remove cable and bracket assembly complete.

5. Ease the rubber strip away from the left-hand side of the c. r. t. and withdraw c. r. t. Do NOT use neck of c. r. t. as a lever.

6. If replacing c. r. t. remove deflector coils by loosening the picture orientation clamp thumbscrew and withdraw deflector coil and magnet. assemblies complete.

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1. Ensure that the rear of the implosion screen and face of the c. r. t. are clean and free from dust (See "Cleaning Implosion Screens".)

2. Place c. r. t. in the rubber surround, right-hand side foremost, ensuring that the e. h. t. cavity terminal is on the right-hand side (Fig. 10). Easing rubber away at the left hand side to allow excursion of air, press c. r. t. firmly into the rubber surround.

3. Refit the tension handle bracket and c. r. t. clamping brackets into their appropriate retaining slots in the cabinet - the tension handle bracket in the "top left" position when viewed from the rear.

4. Tighten the cable by turning the tension handle in a clockwise direction, and re-fit the locking screw. (With holes aligned this screw can be pressed into position). Ensure that the earthing spring is making good contact with the aquadag coating of c. r. t. Refit deflector coils, if applicable.

5. Refit the chassis (by reversing procedures in "Removing Chassis" above), and remember to reconnect the wire link between tension hand bracket and chassis; this earths the c. r. t. outer aquadag.

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(b) An accurately-calibrated oscilloscope.

Procedure

1. Apply the video signal to any video input socket (SK1B - SK6B), setting the selector switch to the corresponding channel number.

2. Connect the oscilloscope between the cathode of the c.r.t. (V5 pin 7) and chassis.

3. Turn Brightness control fully anti-clockwise to minimum.

4. Adjust the Contrast Control (R7) to provide 85 volts p-p on the oscilloscope (as shown in waveform E).

5. Transfer the oscilloscope to between Panel Tags 2, 3 to read the input signal to the amplifier (waveform A). This will usually be found to be below 500mV p-p, and must not be greater than 1 V p-p.

A typical figure of 380mV p-p is shown on the circuit diagram (Fig. 11). Comparison of waveforms A and B shows that the signal gain between the input and the anode of the 2nd Stage Amplifier (V2 pin 7) is roughly X10 (20dB).

BANDWIDTH

Equipment Required

(a) A video signal generator (oscillator) with a maximum output of 1V approx. and having a variable – though not necessarily calibrated – attenuator, covering the following frequencies:- 10 kc/s, 100 kc/s, 1 Mc/s, 5 Mc/s.

(b) Valve voltmeter with low capacity probe (Max. 5pF) and level response to frequencies between 10 kc/s and at least 5 Mc/s.

Procedure

1. Connect the video generator to any input socket, select the corresponding channel on the switch, and set the Term./Bridge plug-link in the 'Term.' position.

2. Turn Contrast fully clockwise to maximum.

3. Disconnect the c.r.t. cathode lead at tag 7 on the c.r.t. base connector, and connect the valve voltmeter between the disconnected end of the lead and chassis.

4. Set the generator frequency at 10 kc/s and, using the attenuator, adjust the output of the generator to provide 10 volts on the valve voltmeter.

5. Altering only the frequency setting of the generator, check that the meter readings are within the limits shown for the spot frequencies given in the table below :-

FREQUENCY	VALVE V/M READING
10 kc/s	10V
100 kc/s	9V - 11V
1 Mc/s	9.5V - 11.5V
5 Mc/s	10V - 13V

6. Disconnect signal generator and valve voltmeter, and reconnect the c.r.t cathode lead.

REPLACEMENT OF HORIZONTAL SCAN OUTPUT TRANSFORMER

When replacing the horizontal scan output transformer T4, the horizontal blanking width control (R65) should be checked for correct setting as in S. "Auxiliary Controls."

AMENDMENTS

AMENDMENT NO. 1 (Monitor Type 171)

1) L3A-B, L4A-B Horizontal and Vertical Deflector Coils.

Amend Part No. 782743 to read Part No. AF00050.
On Parts List, p 23, delete items 550808, 550810, 550814, 716502 and 715457 which are now integral in AF00050.

2) V15, Efficiency Diode Circuit.

Add C62 across C57. Add R89 and L9 in series across C62.

C62	0.1μF	±20%	350V	PR19513
R90	22 ohm	± 5%	6W wirewound	PE22003
L9	Inductance			790579

3) V12 Blanking Circuit - C37

Replace	39 pF	±10%		PN12164
by	100pF	± 5%	Mica	PP08504

Service Manual Issue is raised to Issue 3.

Amend Circuit Diagram, Parts List and Fig. 9 as appropriate.

PARTS LISTS

AND

DIAGRAMS

ORDERING OF SPARE PARTS

To avoid delays and possible errors in the supply of spare parts the reference numbers shown in these parts lists should be quoted in all orders.

The right is reserved to fit alternative types of semiconductors with equal or improved performance to those quoted in the Parts Lists.

PARTS LIST

CAPACITORS

Code					Part No.
C1	0.22μF	Polyester, Tubular	125V	±10%	PQ33000
C2	10nF	Ceramic, Tubular	350V	±25%	PN50002
C3	10nF	Ceramic, Tubular	350V	±25%	PN50002
C4	16μF	Electrolytic	275V		PS25042
C5	100μF	Electrolytic	25V		PS38047
C6	0.1μF	Paper, Tubular	350V	±20%	PR19513
C7	100μF	Electrolytic	25V		PS38047
C8	10nF	Ceramic, Tubular	350V	±25%	PN50002
C9	0.1μF	Paper, Tubular	350V	±20%	PR19513
C10	0.1μF	Paper, Tubular	350V	±20%	PR19513
C11	0.1μF	Paper, Tubular	350V	±20%	PR19513
C12	16μF	Electrolytic	275V		PS25042
C13	10nF	Ceramic, Tubular	350V	±25%	PN50002
C14	0.1μF	Paper, Tubular	350V	±20%	PR19513
C15	100μF	Electrolytic	25V		PS38047
C16	4μF	Electrolytic	275V		PS18041
C17	0.5μF	Paper, Tubular	500V	±20%	PR24003
C18	0.47μF	Polyester, Tubular	125V	±10%	PQ34050
C19 to C21		Not used			
C22	20nF	Ceramic, Plate	350V a.c.	+80% -20%	PN53300
C23	1.8nF	Ceramic, Tubular	300V a.c.	+50% -20%	PN32000
C24	200μF)				
C25	200μF)	Electrolytic	300V		PS83550
C26	60μF)				
C27	200μF	Electrolytic	25V		PS40020
C28	20nF	Paper, Tubular	350V	±10%	PR15509
C29	0.1μF	Paper, Tubular	350V	±20%	PR19513
C30	0.1μF	Paper, Tubular	350V	±20%	PR19513
C31	1nF	Paper, Tubular	350V	±25%	PR01006
C32	10nF	Paper, Tubular	350V	±25%	PR14010
C33	470pF	Ceramic, Tubular	350V	±10%	PN22101
C34	10nF	Ceramic, Tubular	350V	±25%	PN50002
C35	20nF	Paper, Tubular	350V	±20%	PR15511
C36	220pF	Ceramic, Tubular	350V	±10%	PN20030
C37	39pF	Ceramic, Tubular	350V	± 5%	PN12164
C38	68pF	Ceramic, Tubular	350V	±10%	PN15107
C39	0.22μF	Polyester, Tubular	125V	±10%	PQ33000
C40	0.1μF	Paper, Tubular	350V	±20%	PR19513
C41	0.1μF	Paper, Tubular	350V	±20%	PR19513
C42	150pF	Ceramic, Tubular	350V	±10%	PN18040
C43	0.1μF	Paper, Tubular	350V	±20%	PR19513
C44	0.1μF	Paper, Tubular	350V	±20%	PR19513
C45	8.2pF	Ceramic, Tubular	350V	±10%	PN07039
C46	27pF	Ceramic, Tubular	350V	±10%	PN11109
C47	10nF	Ceramic, Tubular	350V	±25%	PN50002
C48	100pF	Mica	350V	± 5%	PP08504
C49	100pF	Mica	350V	± 5%	PP08504
C50	47pF	Ceramic, Tubular	350V	±10%	PN13132
C51	0.1μF	Paper, Tubular	500V	±20%	PR19503
C52	5nF	Ceramic, Disc	350V	+80% -20%	PN42300
C53	10nF	Paper, Tubular	350V	±25%	PR14010
C54	1nF	Ceramic, Tubular	350V	±20%	PN26000
C55	0.1μF	Paper, Tubular	350V	±20%	PR19512
C56	5nF	Paper, Tubular	1000V	±20%	PR10011
C57	0.25μF	Paper, Tubular	500V	±10%	PR21505
C58	12pF	Ceramic, Disc	5kV	±10%	PN09351
C59	12pF	Ceramic, Disc	5kV	±10%	PN09351
C60	30nF	Paper, Tubular	1000V	±20%	PR17000
C61	0.1μF	Paper, Tubular	1000V	±20%	PR19505

Note: 1nF = 1000pF = 0.001μF

RESISTORS

Code					Part No.
R1 to R6	75Ω		¼W	±10%	NG75001
R7	3kΩ	'Contrast' Potentiometer; Linear, Carbon: (Less knob) and Spring			PL02501
R8	100Ω		½W	±10%	NG10110
R9	1.2MΩ		½W	±10%	NG12510
R10	6.8kΩ		6W	± 5%	PE68219
R11	1kΩ		½W	±10%	NG10210
R12	120Ω		½W	±10%	NG12110
R13	10Ω		½W	±10%	NG10010
R14	2.2MΩ		½W	±10%	NG22510
R15	100Ω		½W	±10%	NG10110
R16	8.2kΩ		1W	±10%	NG82214
R17	150Ω		½W	±10%	NG15110
R18	820kΩ		½W	±10%	NG82410
R19	100Ω		½W	±10%	NG10110
R20	5.6kΩ		1W	±10%	NG56214
R21	47Ω		½W	±10%	NG47010
R22	3.3kΩ		4W	± 5%	PE33207
R23	27kΩ		¼W	±10%	NG27306
R24	100kΩ		½W	±10%	NG10410
R25	470kΩ		½W	±10%	NG47410
R26	82kΩ		½W	±10%	NG82310
R27	100Ω		½W	±10%	NG10110
R28	4.7kΩ		½W	±10%	NG47210
R29	100Ω		½W	±10%	NG10110
R30	5.6kΩ		4W	± 5%	PE56218
R31	250kΩ	'Brightness' Potentiometer, Linear, Carbon: (Less knob) and Spring			PL02500
R32	2.2MΩ		½W	±10%	NG22500
R33	330kΩ		½W	±10%	NG33401
R34	22kΩ		¼W	±10%	NG22301
R35	15MΩ	'Focus' Potentiometer; Linear, Carbon: (Complete)			PL02266
R36	100kΩ		¼W	±10%	NG10401
R37	18kΩ	(Part of L2 Assembly)	¼W	±10%	NG18301
R38	8Ω	Thermistor VA1054			715995
R39 to R42		Not used			
R43	47Ω		¼W	±10%	NG47001
R44	47Ω		¼W	±10%	NG47001
R45	1Ω		½W	±10%	NG01000
R46	270Ω		1W	±10%	NG27102
R47	75kΩ		½W	±10%	NG75300
R48	50kΩ	'Vertical Hold' Potentiometer; Linear, Carbon: (Complete)			PL02003
R49	390Ω		1W	±10%	NG39114
R50	33kΩ		1W	±10%	NG33314
R51	6.8kΩ		½W	±10%	NG68210
R52	270kΩ		½W	±10%	NG27410
R53	270kΩ	'Vertical Linearity 2" Potentiometer; Linear, Carbon	½W		PL02258
R54	56kΩ		½W	±10%	NG56310
R55	2MΩ	'Vertical Linearity 1' Potentiometer; Inv. Log, Carbon	½W		PL02267
R56	1.5MΩ		½W	±10%	NG15510
R57	1.5MΩ		½W	±10%	NG15510
R58	47kΩ		1W	±10%	NG47314
R59	180kΩ		½W	±10%	NG18410
R60	47kΩ		½W	±10%	NG47310
R61	560kΩ		½W	±10%	NG56410
R62	150kΩ		½W	±10%	NG15410
R63	100kΩ		½W	±10%	NG10410
R64	68kΩ		½W	±10%	NG68310
R65	2MΩ	'Horizontal Blanking Width' Potentiometer; Linear, Carbon	½W		PL02257
R66	6.8kΩ		½W	±10%	NG68210
R67	120Ω		½W	±10%	NG12110
R68	5.6kΩ		½W	±10%	NG56210
R69	4.7kΩ		½W	±10%	NG47210
R70	10kΩ		1W	±10%	NG10314
R71	330kΩ		½W	±10%	NG33410
R72	560kΩ		½W	±10%	NG56410
R73	33kΩ		½W	±10%	NG33310
R74	100kΩ		½W	±10%	NG10410
R75	120kΩ		½W	±10%	NG12410
R76	390kΩ		½W	±10%	NG39410
R77	2MΩ	'Vertical Amplitude' Potentiometer; Linear, Carbon			PL02001
R78	47kΩ		½W	±10%	NG47310
R79	100kΩ		½W	±10%	NG10410
R80	6.8kΩ		½W	±10%	NG68210
R81	47kΩ		½W	±10%	NG47310
R82	100kΩ	'Horizontal Hold' Potentiometer; Linear, Carbon: (Complete)			PL02002
R83	470kΩ		¼W	±10%	NG47310
R84	1kΩ		¼W	±10%	NG10201
R85	2.2kΩ		6W	± 5%	PE22226
R86	3.9kΩ		1W	±10%	NG39202
R87	100Ω		6W	± 5%	PE10123
R88	390kΩ	(High Voltage Component)	1W	±20%	674742

PARTS LIST (Cont.)

Code		VALVES	Part No.
V1	EF80	1st Video Amplifier (Mullard)	FV00602
V2	EF80	2nd Video Amplifier (Mullard)	FV00602
V3A, -B	PCL84	3rd Video Amplifier & D.C. Restorer (Mullard)	FV01822
V4A, -B	12BH7	Cathode Follower & ½ Vertical Scan Oscillator (Brimar)	FV03013
V5	AW43-88	C.R.T. (17") (Mullard)	860562
	C17/7A	C.R.T. (17") (Cathodeon)	FV04718
V6	OA210	H.T. Rectifier (Mullard)	FV09016
V7	OA210	H.T. Rectifier (Mullard)	FV09016
V8	OA210	H.T. Rectifier (Mullard)	FV09016
V9	OA210	H.T. Rectifier (Mullard)	FV09016
V10A, -B	PCL85	Vertical Output & ½ Vertical Scan Oscillator (Mullard)	FV01823
V11	M3	Interlace Diode (S.T. & C.)	FV09053
V12A, -B	ECC82	Blanking Amplifier (Mullard)	FV00618
V13A, -B	ECF80	Sync Separator & Horizontal Scan Oscillator (Mullard)	FV00633
V14	PL36	Horizontal Scan Output (Mullard)	FV01800
V15	PY800	Efficiency Diode (Mullard)	FV01809
V16	EY86	E.H.T. Rectifier (Mullard)	FV00620

	SWITCHES	
SW1	Channel Selector; 6-position, Rotary	FS01510
SW2	'On-Off', Double-Pole, Rotary	831450

	INDUCTORS	
L1	Video Anode Compensation Coil: (Incl. R22, R23)	AL06027
L2	Video Output Compensation Coil: (Incl R37)	AL06028
L3A, -B	Horizontal Scan Deflector Coils) Incl. M3-M6,	782743
L4A, -B	Vertical Scan Deflector Coils) R38, SK7	
L5	H.T. Smoothing Choke	AL51006
L6	Horizontal Linearity Coil: (Incl. Core, less M7 brackets)	AL06022
L7 & L8	Horizontal Amplitude Coil & Injection Choke: (Less core, brackets)	747969
T1	Power Input Transformers: (Less voltage selector panel)	AL21503
T2	Heater Transformer	AL21504
T3	Vertical Scan Output Transformer	AL22000
T4	Horizontal Scan Output Transformer (Incl.) baseplate, V16 top cap clip connector; less V16 valve holder and shroud, C60, R88, V14/V15 top cap clip connectors	771947

MISCELLANEOUS	Part No.
Cabinet Assembly	
Cabinet Moulding; Plastic: (Less all fittings)	482871
Cardback Assembly	
Cardback	BJ10036
Screw; No. 8 x ⅝", Slotted Binding Hd.	QY41210/A
Washer; 2 BA, Chromed	QA13072/C
Nut; Nylon	550516
Clip; Spire	QA00068
Escutcheon-Panel Assembly; Control	
Panel; Perspex, Channel Indicator	BJ10040
Sheet; Metallised, Backing	715167
Escutcheon-Bar; Embossed	715172
Screw; No. 4 x 5/16", Phillips Countersunk Hd.; Self-Tapping	QU30405/A
Clip; Batten, Chassis-Fixing	QA00060
Medallion Assembly	
Motif; "PYE"	048303
Bezel; "PYE" Motif	715200
Screen Assembly; Implosion	
Screen; Implosion	716748
Strip; Dust-Excluding	716747
Cleat; Strip Clamping	432760/C
Screw; No. 8 x ⅜", Phillips Round Hd, Self-Tapping	QY20106/A

MISCELLANEOUS (Cont.)	
Chassis Assembly	
Bracket; Potentiometer Mounting: (R48, R77, R82)	433391/C
Bracket; Corner	432757/C
Cleats	
9/16" dia.; Insulated	QA00515
¾" dia.: (C61)	QA00056
1" dia.: (C17)	QA00065
1½" dia.: (C24-C26)	QA00573
Clip; Cardback Fixing	QA00068
Grommets; Rubber	
5/32" hole	FG02003
11/32" hole	FG02004
Tagstrips	
3-way	700405/A
5-way	FT01012
10-way	FT01013
Clamp Assembly; C.R.T.	
Bracket; C.R.T. Clamping	432759/C
Cable; Flexible Steel, 50" (127 cm.) 500 lb. Breaking Strain (Incl. eyelet)	746816
Tension Handle Assembly: (Incl. tension handle, tension handle bracket, cable, circlip; less rubber pad, locking screw)	746819
Tension Handle: (Incl. spool; less circlip, tension handle bracket)	746815
Bracket, Tension Handle	432763
Circlip	708892
Pad; Rubber, Adhesive	720330
Screw; No. 8 x ⅜", Phillips Round Hd., Self-Tapping	QY20106/A
Spring; C.R.T. Aquadag Earthing	708463
Connector Assembly; C.R.T. Base	
Socket; B8H, C.R.T. Base Connector: (Less panel)	FH02601
Panel; Component Mounting: (Less components)	748391
Coil Assembly; Deflector	
Clamp Assembly; Picture Orientation	
Clamp Nylon: (Less screw)	550808
Screw; Nylon, Clamping	550810
Magnet Assembly, Picture Centring	
Housing; Polythene, Magnet	550814
Magnet; Picture Centring	716502
Spacer; Magnet	715457
Magnets; Picture Correction	
M3, M4	716539
M5, M6.	714083
Connector Assembly	
Bracket; Brass, Terminal Plate Mounting	413240
Plug; Panel, 4-Way	722112
Socket; Panel, 4-Way	721695
Horizontal Scan Output & E.H.T. Compartment Assembly	
Transformer Assembly; Horizontal Scan Output: [(T4) (Incl. C60, R88, V14-V16 top cap connectors, V16 valveholder and shroud, c.r.t. e.h.t. cavity terminal connector)]	AG10093
Connector Assembly; C.R.T. E.H.T. Cavity Terminal: (Incl. shroud, 21" lead)	747235
Connector; Top Cap Clip: [(V14-V16) (Less Shroud)]	QA00585
Shroud; Top Cap Clip Connector	
V14, V15: (Less clip)	QA00586
V16: (Less clip)	721804
Valveholder Assembly; E.H.T.	
Valveholder; B9A Laminated: [(V16) (Incl. shroud; less shroud cover)]	716306
Cover; Polythene Shroud	716307
Bracket Assembly; Valveholder (V14, V15) Mounting	
Bracket; Valveholder Mounting: (Less valveholders, spacer card)	433393/C
Valveholder; B9A Ceramic: (V15)	722200
Valveholder; International Octal: (V14)	705971
Card; Presspahn, Lead Spacer	716408
Coil Assembly; Horizontal Amplitude: (Incl. L7/L8, bracket, slider and core, screw)	749483
Bracket; Coil	435301
Slider; Core	433396
Core; Ferroxcube	702390
Grommet	706188
Screw; 6BA, Knurled Hd.	388471
Coil Assembly; Horizontal Linearity: (Incl. L6, M7, brackets, screws)	AG10097
Bracket; Coil	433395/C
Slider; Magnet	435316/C
Grommet	FG02007

* For complete assembly see "Miscellaneous" section

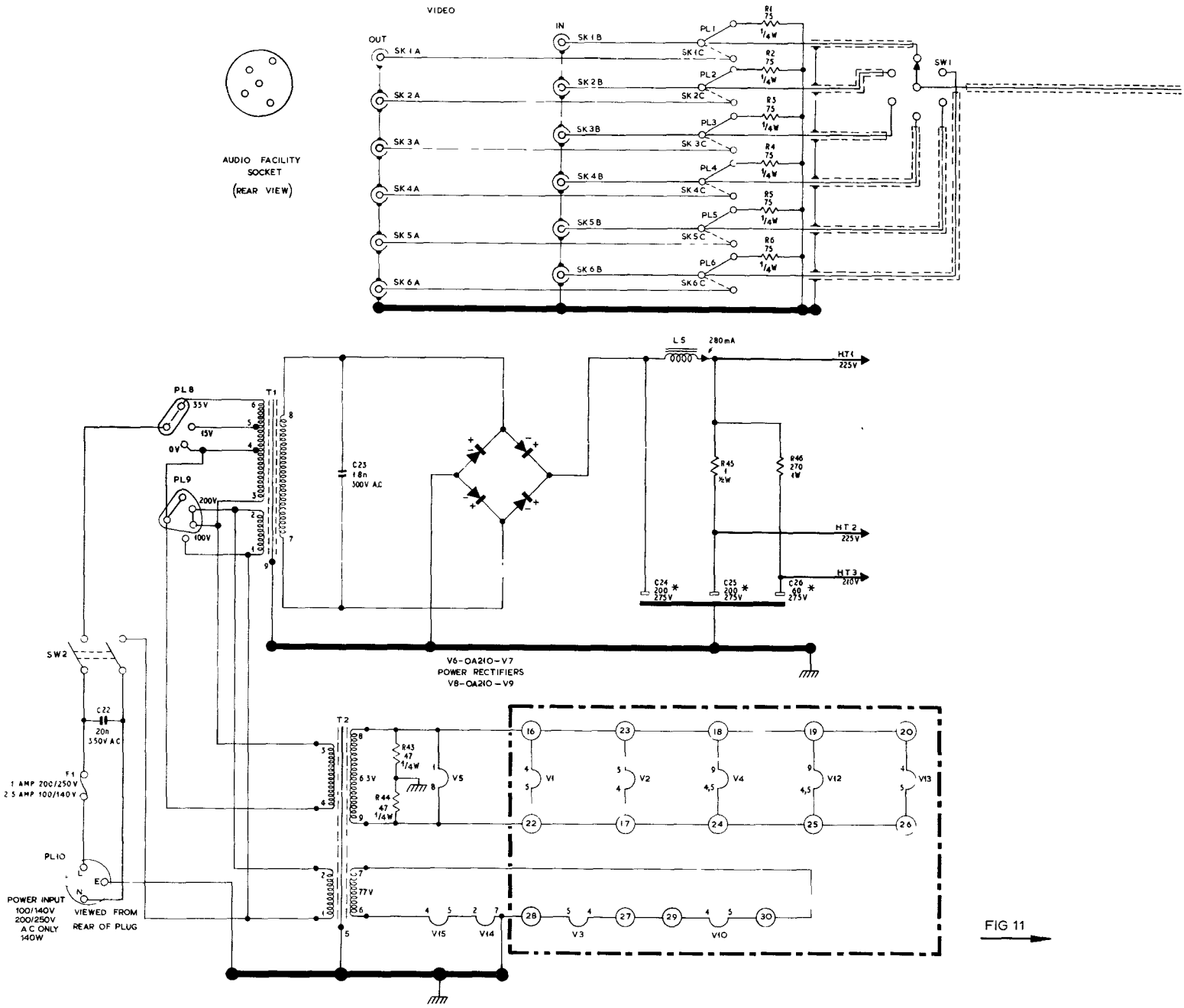


Fig. 8 SIGNAL INPUT & POWER CIRCUITS (Model 171)

PARTS LIST (Cont.)

MISCELLANEOUS (Cont.)

Magnet: (M7)	716377
Screw; 6BA, Knurled Hd.	388471
Screw; 6BA x $\frac{1}{2}$", Slotted Cheese Hd.; Nylon	383206
Screen, E.H.T. Compartment: (Less components)	435447/C
Screen; Valve (V14, V15) Compartment: (Incl. cardback fixing bracket)	BC10042
Cover; Valve (V14, V15) Compartment	433394
Cover; E.H.T. Compartment Screening	433392
Knob Assemblies	
Knob; Channel Selector	747252
Knob; 'On-Off'	747257
Knob; Brightness Control	551030
Knob; Contrast Control	551031
Spring; Channel Selector and 'On-Off' Knobs	QA00359
Spring; Brightness and Contrast Knob	706493
Panel Assembly; Printed: (Incl. components; less thermionic valves)	AG10086
Valveholder Assemblies	
Valveholder; B9A Ceramic	
V1, V2	FH02515
V3, V4, V10, V12, V13	FH02520
Can; Valve Screening	482566
Retainer; Valve	BE10255
Spring; Tension	FS18006
Panel Assembly; Front Control	
Panel; Mounting	BC10033
Cover; Presspahn, Switch	716414

MISCELLANEOUS (Cont.)

Panel Assembly; Video & Power Input	
'Facility' Assembly	
Plug; 4-Pin: (Less cover)	FP00502
Cover; Plug	FP00503
Socket: 5-pin	FS16704
Fuse Assembly	
Holder; Fuse	715588
Cover; Fuse	716721
Fuse; Antisurge: (F1)	
1 Amp: (200-250 V Range)	FF00765
2.5 Amp: (100-140 V Range)	FF00832
Power Input Assembly	
Plug; Recessed, 3-Pin: (PL10)	FP01401
Socket; 3-Pin	FS17202
Video Assemblies	
Plug-Link; 2-Pin: (PL1-6)	FP00031
Plug; Co-axial	FP01103
Socket; 'In' and 'Out': (SK1A, B, - SK6A, B)	FS17002
Strip; Multi-Socket: (SK1C-SK6C)	EA55700
Power Input Transformer Assembly: (Incl. voltage selector panel, mounting brackets; less voltage selector plugs)	AG10092
Bracket; Transformer Mounting	BC10037
Panel Assembly; Voltage Selector: (Less plugs)	AG10095
Bracket; Panel	BC10038
Plate; Adjustment	EA15502
Plug-Links	
2-Pin: (PL8)	FP00031
4-Pin: (PL9)	FP00030

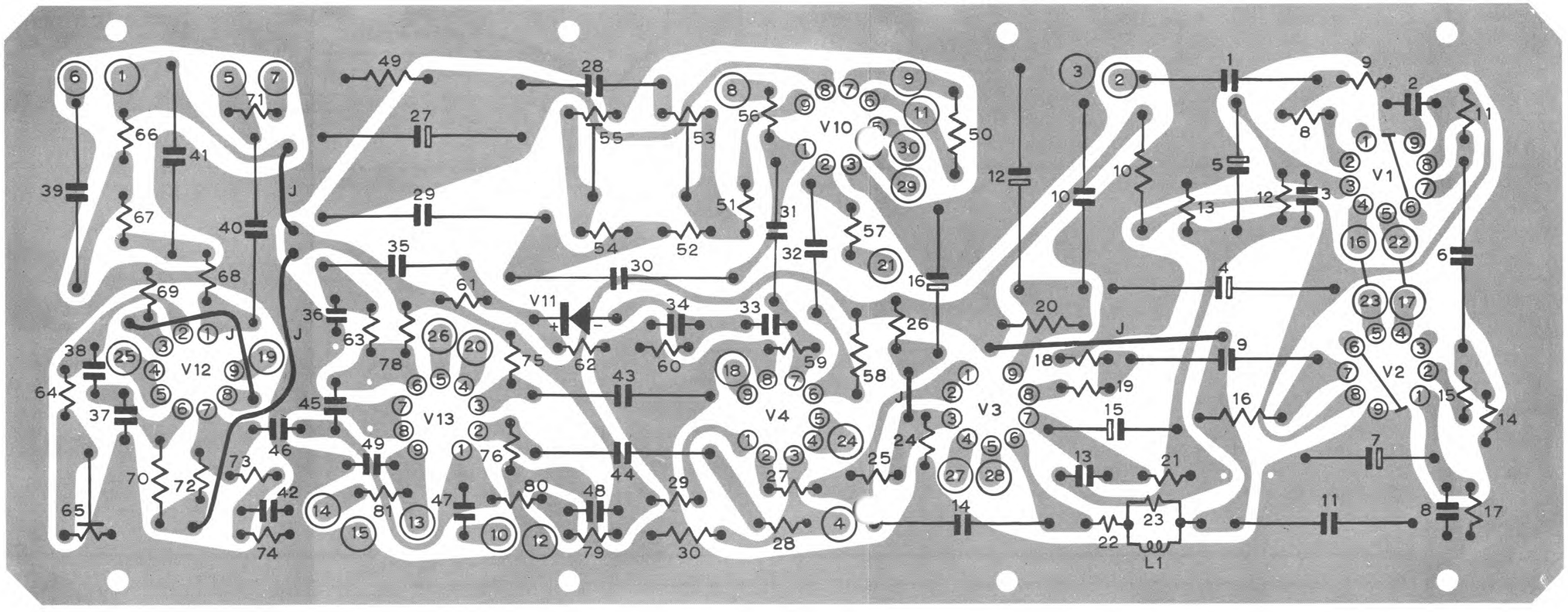


Fig. 12 PRINTED-CIRCUIT LAYOUT (rear view)
(Model 171)

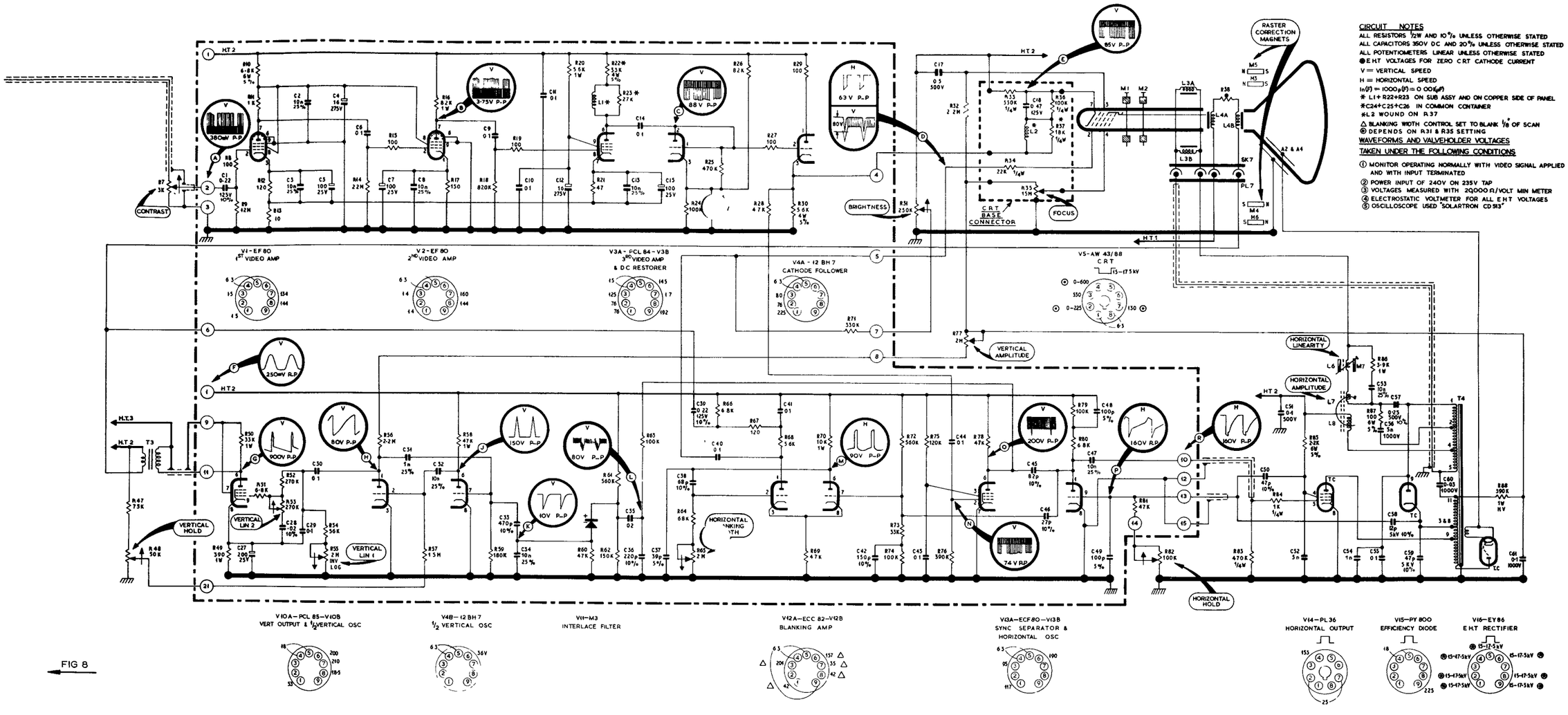
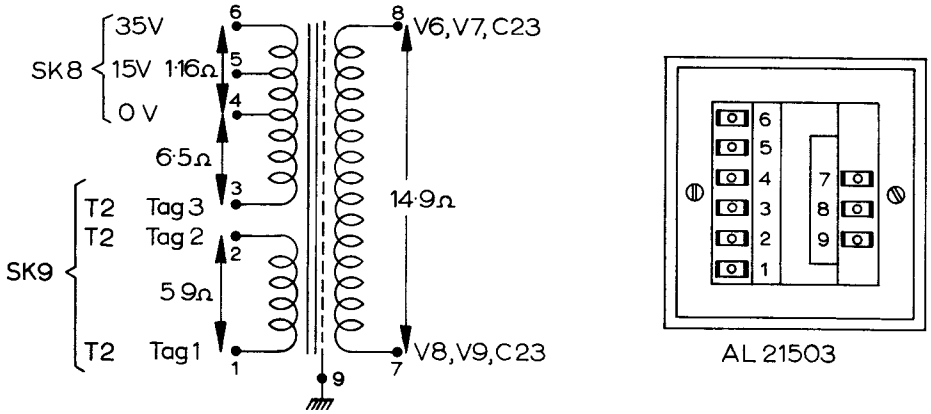
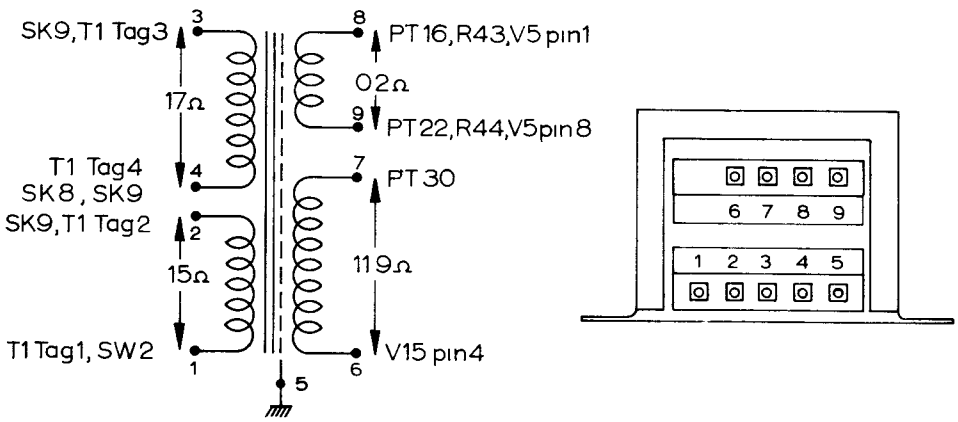


FIG 8

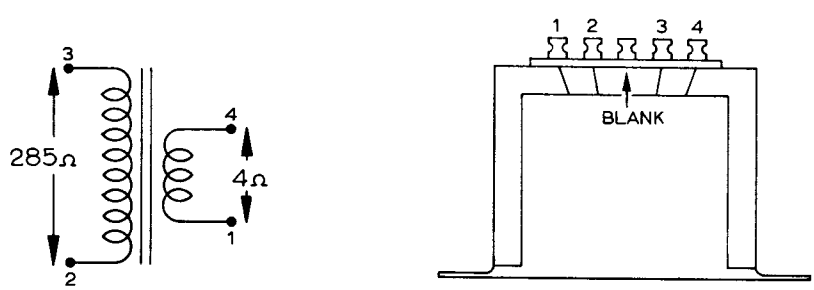
Fig. 11 VIDEO AMPLIFIER & TIME BASE CIRCUITS (Model 171)



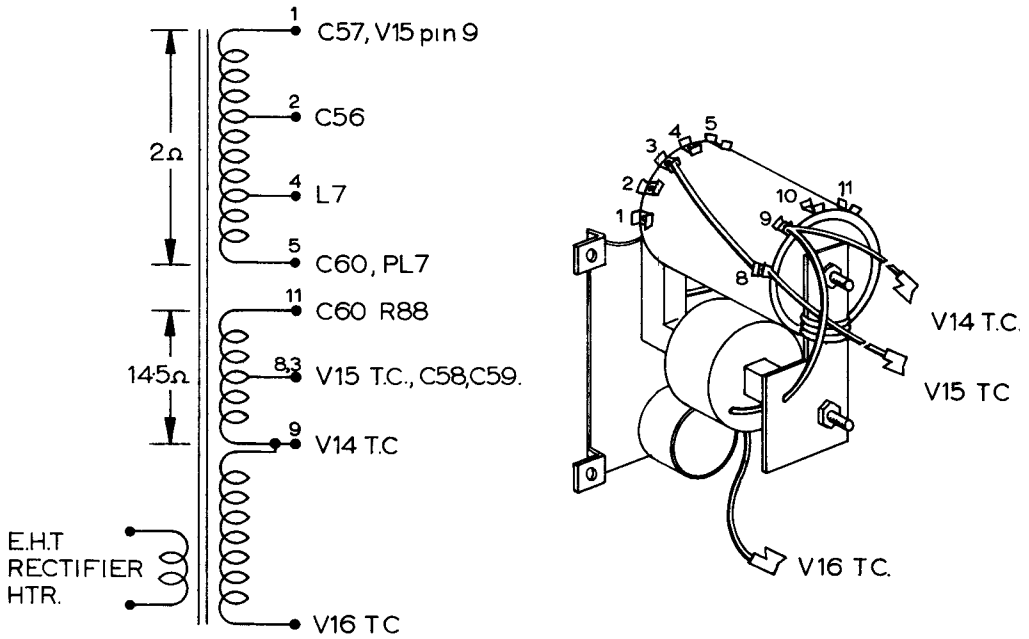
T1
POWER INPUT TRANSFORMER
AL21503



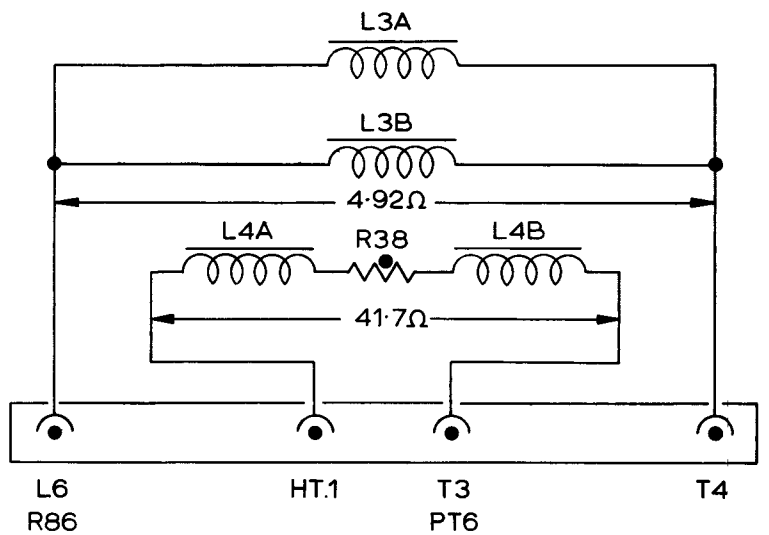
T2
HEATER TRANSFORMER
AL21504



T3
VERTICAL SCAN OUTPUT TRANSFORMER
AL22000



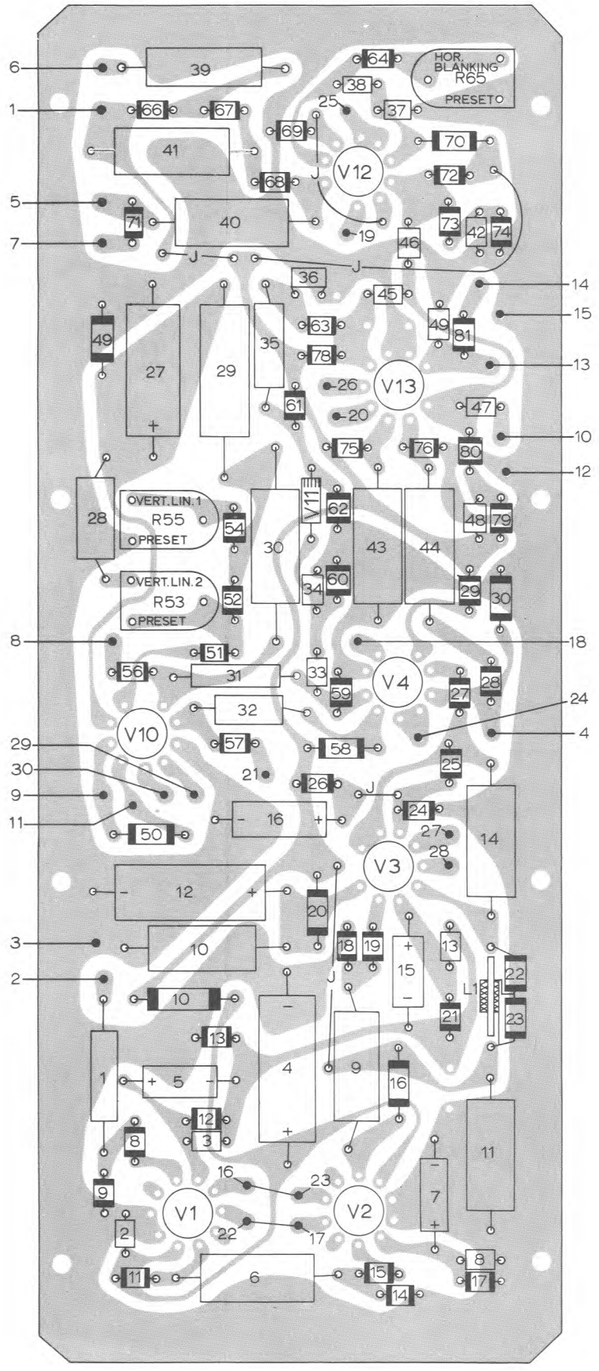
T4
HORIZONTAL SCAN OUTPUT TRANSFORMER
771947 (ASSEMBLY No.AG10093)



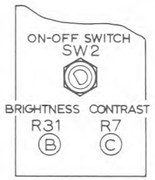
L3, L4
DEFLECTOR COILS
782743

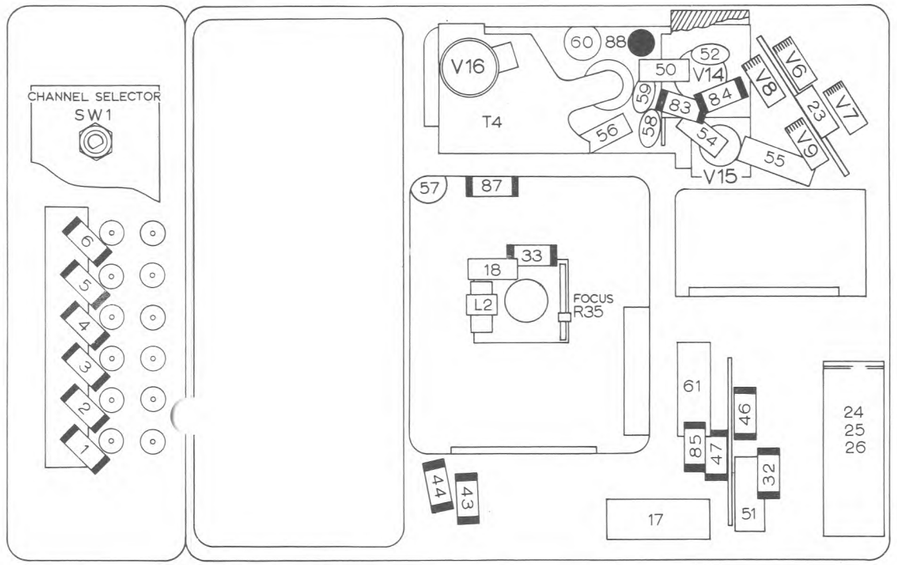
L5	HT. SMOOTHING CHOKE	23·1Ω
L6	HOR SCAN LIN COIL	0·43Ω
L7	HOR SCAN AMP COIL	0·3Ω
L8	INJECTION CHOKE	57·5Ω

Fig. 9 D.C. RESISTANCE AND CONNECTION OF WINDINGS



PANEL FRONT VIEW



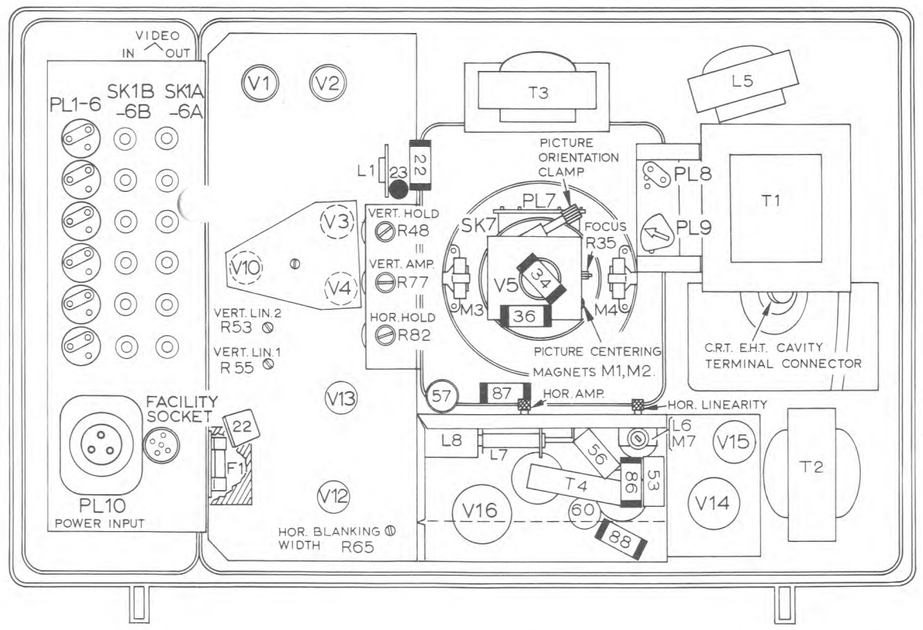


FRONT VIEW

J JUMPER • WIRING POINT ON PRINTED CIRCUIT

METAL RECTIFIER SYMBOL ◄ POSITIVE END

RESISTOR SYMBOL CAPACITORS PREFIX 'C' OR PLAIN OUTLINE WITH NO PREFIX



REAR VIEW

Fig. 10 COMPONENT LAYOUT DIAGRAMS (Model 171)