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Colin Hinson

In the village of Blunham, Bedfordshire.

AIR PUBLICATION
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**TELEVISION COLOUR MONITOR,
19" and 25",
Philips types ET 9954
and ET 9955**

GENERAL AND TECHNICAL INFORMATION

BY COMMAND OF THE DEFENCE COUNCIL



Ministry of Defence

FOR USE IN THE
ROYAL NAVY
ROYAL AIR FORCE

Prepared by the Procurement Executive, Ministry of Defence

Issued
Oct. 71



PYE TVT LIMITED
CAMBRIDGE · ENGLAND

19" COLOUR MONITOR

TYPE ET9954

25" COLOUR MONITOR

TYPE ET9955

NOTE: Although there are minor mechanical differences between the 19" and 25" versions, the electrical data in this manual is applicable to both monitors.

Service Manual—issue 1

This service manual is for the maintenance of Pye T.V.T. 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.



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CONTENTS

	<u>Page</u>	
SECTION 1	GENERAL DESCRIPTION AND SPECIFICATION	1
1.1	General	1
1.2	Specification	1
1.3	Mechanical Data	7
SECTION 2	TECHNICAL DESCRIPTION	8
2.1	General	8
2.2	Input and Matrix Module	10
2.3	Video Amplifier Module	11
2.4	Video Output Module	11
2.5	Sync Processing Module	12
2.6	Field Scan and Pincushion Correction Module	16
2.7	Field and Static Convergence Module	18
2.8	Line Output and E.H.T. Modules	19
2.9	Line Convergence Module	23
2.10	Line Convergence Output Module	25
2.11	Main Frame Assembly	27
	2.11.1 C.R.T. Potentials	27
	2.11.2 Centre Chassis and Main Frame	28
2.12	Power Supply Unit Module	29
SECTION 3	MAINTENANCE	30
3.1	Preliminary Checks	30
	3.1.1 Pincushion	32
	3.1.2 Purity	32
3.2	Positional and Modulation Hum	32
3.3	Degaussing of Coils	33
3.4	Convergence	33
	3.4.1 General	33
	3.4.2 Field Convergence	34
	3.4.3 Line Convergence	34
3.5	Line Scan	35
3.6	Grey Scale	35
3.7	Preliminary Monitor Setting	35
3.8	Frequency Response	36
3.9	Linearity and Geometry	36
3.10	Recheck Purity	37
3.11	Recheck Convergence	37
3.12	Recheck Frequency Response	38
3.13	Decoder	38
3.14	Line and Field Hold	38
3.15	Recheck Flyback	38
3.16	Soak Test	38

	Page
SECTION 4	SETTING UP PROCEDURE
4.1	General Checks
4.1.1	Power Supply
4.1.2	Field Scan and Pincushion
4.1.3	Sync Process
4.1.4	Line Output Unit
4.1.5	E.H.T. Unit
4.1.6	Video Output Amplifiers
4.1.7	Frequency
4.2	Setting Up
4.2.1	Purity
4.2.2	Convergence
4.3	Checking Performance for P.A.L. Decoders
4.3.1	Luminance Gain
4.3.2	Chroma
4.3.3	Chroma Gain

PARTS LIST

ILLUSTRATIONS

Input and Matrix Circuit	3913-426-0175
Video Amplifier Circuit	3913-426-0176
Video Output Circuit	3913-426-0183
Sync Processing Circuit	3913-426-0463
Field Scan and Pincushion Circuit	3913-426-0178
Field Convergence Circuit	3913-426-0180
Line Output Units and EHT Unit Circuit (Line Stage A & B, EHT Stage A & B)	3913-426-0170
Line Convergence Circuit	3913-426-0179
Line Convergence Output Circuit	3913-426-0373
Centre Chassis, and Spark Suppression Circuits	3913-426-0167
Power Supply Circuits	3913-426-0169
Front Drawer Assembly	3913-426-0391
Colour Monitor Block Diagram	

SECTION 1

GENERAL DESCRIPTION AND SPECIFICATION

1.1 GENERAL

The colour television monitor type ET9954 is suitable for monochrome or colour and employs a 19" reinforced shadow mask CRT of the latest design. Performance features and overall design make this instrument suitable for all the high quality requirements of broadcasting studios and outside broadcast installations.

Versions are available for standard 19" rack mounting or as cased units for mounting on control desks. The monitor is suitable for either 625-line CCIR or 525-line EIA systems, with simple adjustment of the appropriate controls on a pull out front drawer unit. Decoders for PAL or NTSC system working may be supplied with the monitor.

Provision is made for the front panel signal selector facility to be controlled at a remote point. The push button selector is for three inputs:

1. R.G.B. ,
2. Test.
3. Coded Signal.

In addition to the above the normal controls are provided on the front panel for Contrast, Brightness, On/Off with Indicator Lamp selection (for camera or ON AIR), together with a mode switch for individual selection of Red, Blue, Green, Black/White, colour.

All the important setting-up controls are mounted on a pull-out front drawer unit for ease of adjustment.

Mains supply facilities cater for 100-117V or 220-234V with a $\pm 10\%$ tolerance of input at 48-62 Hz.

1.2 SPECIFICATION

1. Dimensions

	<u>Rack</u>	<u>19 inch</u> <u>Case</u>	<u>25 inch</u> <u>Case version only</u>
Height:	21.2 in (530 mm)	22.2 in (555 mm)	25.4 in (635 mm)
Width:	17.7 in (444 mm)	18.9 in (481 mm)	24.2 in (605 mm)
Depth:	22.2 in (540 mm)	24.0 in (600 mm)	24.8 in (620 mm)

2. Weight

120 lb. 55 kg. approx. (19" version)
209 lb. 94 kg. (25" version)

3. Mains Supply

110V-117V or 220V-234V $\pm 10\%$
48 to 62 Hz

Failure of the mains fuses is indicated by means of neon lamps on the rear panel. The supply frequency may differ from the nominal field frequency of the system in use.

4. Power

440 watts nominal.

5. Systems

625 lines 50 Hz - CCIR
525 lines 60 Hz - EIA

Operation on either standard may be obtained by adjustment of front drawer controls.

6. Line Time Base

Horizontal hold is maintained over a minimum range of 60° rotation of the hold control.

The pull-in range is at least ± 300 Hz
The hold-in range is at least ± 1 kHz

7. Field Time Base

Vertical hold is maintained over a minimum range of 60° rotation of the hold control which has sufficient range to pull in on either of the line standards.

8. Interlace

55.45

9. Aspect Ratio

Masked to 4:3

10. Inputs

Provision is made for the following inputs:

- (a) R, G and B Video with or without the addition of mixed syncs at a video level between 0.35V and 1.5V p-p positive.

- (b) Separate Sync input negative going with an amplitude between 0.5V and 6V p-p. A modification for positive going sync is available if requested, at extra cost.
- (c) Coded Input. Composite Colour Signal (625 PAL or 525 NTSC) 0.5V to 2V p-p positive going.
- (d) Test Input. Positive video with or without mixed syncs at a video level between 0.35V and 1.5V p-p.

Two BNC sockets and a switch are provided on all channels for looped or terminated operation. Terminating resistors are $75\Omega \pm 1\%$.

11. Input Characteristics

The input circuit is a high impedance bridging type having an effective shunt impedance not worse than $35k\Omega$ in shunt with 10pF, whether power is applied to the monitor or not.

The addition of 50% mains hum to the signal will not cause significant deterioration of the picture.

12. Frequency Response

Within ± 0.5 dB to 5 MHz	}	with respect to 1 MHz measured
Less than 3 dB down at 8 MHz	}	with CRT drive of 30V p-p

13. Grey Scale Tracking

The R, G, B gains and black level settings may be adjusted so that with a staircase test signal applied equally to the R, G and B inputs, difference in chromaticity between steps are less than the equivalent of 2% of peak white at the input.

14. Contrast

One master control is provided on the front panel, together with a balance control in each channel. The master control may be set to give the specified luminance from input signals within the stated range and is capable of reducing the output substantially to zero.

15. Black Level Clamps

The monitor employs feedback black level clamps. Variations in the black levels of the CRT red, green and blue drive signals due to each of the following are not worse than $\pm 0.5V$:

- (a) Picture content
- (b) Signal composite or non-composite
- (c) Power supply ripple
- (d) Mains supply variations

(e) Sync pulse parameters within their tolerances.

In addition the differences in black level of any pair of CRT signals change by not more than 0.25V.

16. EHT

The EHT is 25 kV nominal with an output impedance of less than 300k Ω .

17. Luminance

The monitor, including the loss due to the protective screen, is capable of giving a luminance on a plain white (illuminance colour 6500^ok) raster occupying half the picture area of not less than 880 nits without perceptible defocussing. A master brightness control is provided on the front panel, together with separate black level controls for each gun.

18. Linearity and Geometry

The intersection of the grid pattern lines is within 2% diameter circles of the projected test pattern in areas A and B of the drawing provided.

19. Positional Hum

Displacement of the raster due to magnetic fields generated within the equipment is less than 0.1% of picture height.

20. Amplitude Hum

Luminance modulation due to hum voltages is invisible on a uniform grey background under any viewing conditions with R, G, B inputs bridged.

21. Stability

Operation to specification may be obtained (by adjustment) within the ambient temperature range -10^oC to +45^oC, and without adjustment over any 10^oC within the range -10^oC to +45^oC.

22. Earth System

The monitor has a fully floating technical earth system, and provision is made to connect external and local earth wires.

23. Flyback Suppression

Both line and field flyback suppression are provided so that flyback lines are not visible on the CRT under any normal viewing conditions.

24. Flyback Times

Flyback times for field and line scans are not greater than 1mS and 10.5 μ S respectively.

25. Scan Amplitudes

Both timebases are capable of 5% overscan. The scan controls are capable of adjusting the raster from the overscan position to a position where the four corners of the raster are visible.

26. Sweep Failure

A means is provided to protect the CRT from screen-burning in the event of vertical and/or horizontal deflection circuit failure, or in the event of disconnection of the scan coil plug.

27. Purity

When individual adjustments have been made for optimum colour purity, a plain field of any of the three primary colours or any combination of them is free from significant colour contamination.

28. Convergence

With respect to Areas A, B and C of the drawing provided, the spatial displacement between any two colour components of a single input signal is not greater than the fraction of active line length specified below:

Area A	1/750
Area B	1/500
Area C	1/375

29. Automatic Degaussing

Degaussing coils are incorporated which operate each time the monitor is switched on.

30. Controls

The following controls are provided on the front panel with unrestricted access:

Mains Switch and Indicator Lamp

Contrast

Brightness

		<u>Front Panel Text</u>
Input Selector Switch -	1. R, G, B	RGB
	2. Test	Test
	3. Coded	Code
Mode Switch -	1. Red Gun ON	R
	2. Blue Gun ON	B
	3. Green Gun ON	G
	4. Black/White	Y
	5. Colour	C

'Camera' and 'On-Air' Indicator lamps.

Controls for the adjustment of the following are available within the front drawer unit:

1. R, G, B Brightness
2. Focus
3. Int/Ext Sync Selector
4. System Switch
5. Picture Size Switch
6. Width
7. Height
8. Horizontal DC Shift
9. Vertical DC Shift
10. Line Convergence
11. Field Convergence
12. Static Convergence
13. R, G, B Gain
14. Line Hold
15. Field Hold
16. Field Linearity
17. Purity
18. Pincushion

The following facilities are provided at the rear:

Mains input plug (Philips Type 5722 660 20880)

Mains Fuses and Indicator Neons

Mains Voltage Selectors

DC Power Supply Fuses

BNC Coaxial Sockets and Loop/Terminate switches fitted to a removable panel (50Ω BNC type UG 1094/U).

Separate Earth Terminals
Indicator Lamp (fixed socket)
Remote Control (fixed plug) for input selector

Remote selection of the three input signal groups RGB, Test, and Coded, requires that all three buttons of the input selector switch are released.

1.3 MECHANICAL DATA

In order to assist servicing and maintenance, the monitor is divided into four major units, with the optional decoder as a fifth item.

1. The Power Supply unit is fitted on sliding runners at the rear of the monitor and may be withdrawn after the removal of two captive screws. A.C. and D.C. fuses, and mains transformer tap adjustments are accessible at the back of the unit. All monitor supplies (except E.H.T.) are available in this assembly, including those for the fan and for degaussing.
2. The High Voltage and Line Output Unit consists of two separate sub-assemblies individually mounted on the monitor rear panel. This panel hinges down for inspection and servicing. Each sub-assembly is also hinged in order to provide access to the copper side of the printed circuit boards.
3. The Front Drawer unit contains most of the low level electronic circuitry together with the cue and designation indicators. The front panel of this unit carries the operational controls as listed in the specification.

For setting up and servicing the complete unit may be withdrawn on its sliding runners. All the controls needed for routine adjustments are provided on the top of this unit and are identified by titling on the perspex cover plate.

4. The Main Frame contains the Cathode Ray Tube with the blanking and field output stages. The convergence unit and the three video output assemblies are on plug-in printed circuit boards. Two coil assemblies are provided - one for normal deflection purposes, and the other for convergence, purity, and blue lateral shift. The degaussing coils are also in this unit. No magnets are used for any picture adjustment. To ease the tube changing procedure, both the principal coil assemblies are connected by plugs and sockets.
5. When the Decoder unit is provided, this is found as a plug-in printed circuit module on the right-hand side at the rear of the monitor.

SECTION 2

TECHNICAL DESCRIPTION

2.1 GENERAL

The monitor accepts either Standard RGB colour signals with the added sync pulses, (VBS input) or the sync signals can be separately supplied (VB + S input). When required the monitor may be fitted with a decoder unit to accept a composite colour signal (CVBS input).

A separate test signal input can be accepted. In this condition the RGB amplifier inputs are connected in parallel to give a monochrome picture. All the inputs are provided with two sockets to permit bridging through of the signals or can be terminated with 75 Ω resistors by the individual switches.

Versions are available for the 625-line PAL or the 525-line NTSC systems.

The input signal condition is selected by three push buttons on the front panel for R.G.B., Test, or Coded signals.

A second row of push buttons allows the mode of the display to be chosen, i.e. full colour, one only or two only of the primary colours (red, green and blue), or monochrome. For the latter condition the R.G.B. signals applied to the input sockets, or supplied from the Decoder Unit, are mixed to provide a luminance signal made up of 30% red, 59% green and 11% blue. This signal is fed to the three video amplifiers. The 'colour killer' circuit is also automatically operated when the monochrome condition is selected.

The video amplifiers (see Video Amplifier and Video Output Circuits) employ feedback clamp circuits which stabilise the black level at the Cathode of the Cathode Ray Tube. Grey Scale tracking is achieved by individual gain controls and also by control of the three screen (G2) potentials. The contrast control comprises a 23-position ganged switch with associated close-tolerance resistors. Brightness (master black level) adjustment is obtained by variation of a line frequency pulse which is added at equal levels to the red, green and blue video channel signals.

The Decoder unit circuits for both the PAL (625-line) and NTSC (525-line) versions are of a similar form. Each includes a crystal controlled subcarrier reference generator, balanced transistor demodulator, a 12 dB subcarrier notch circuit, together with the virtual-earth matrix amplifiers. The decoder makes use of the monitors synchronising separator circuit signals and feeds out at low impedance of version of the incoming video for synchronising purposes. The PAL version employs a glass delay line,

together with sum and difference amplifiers prior to demodulation. Conversion to PAL or NTSC decoding is easily achieved, and the Decoder Unit plugs in at the rear of the monitor. The Decoder Units are designed for highly stable operation over the full performance range. Internal adjustments of Control Chroma Gain and Hue are intended only for initial setting up.

The EHT supply circuits - see Line and EHT Output circuit diagram - provide a 25 kV highly stabilised output. Stabilisation is provided against both fluctuations in the load requirements and in the supply. Circuit arrangements also give protection against any damage which might otherwise result from a failure of operation of the line scanning circuits, and also from the accidental disconnection of the scanning coil.

The line and field deflection circuits are stabilised to give constant amplitude outputs. Overall design also ensures negligible geometric distortion, together with highly efficient electronic pincushion correction (see Field Scan and Pincushion Assembly circuit). A picture size switch is provided to cater for both normal monitor other display functions. Focus supply voltage for the electrostatic focus potential to the CRT is derived from the rectified flyback pulses of the line output stage. Such valves as are employed are protected during the warm-up period by a delay which holds off the screen supply for about one minute.

With the exception of the axial shift of the deflector coils, all convergence and purity adjustments are catered for by the controls within the front drawer unit. All the necessary sawtooth, parabola and other waveforms produced by the normal active circuits are then matrixed by virtual-earth amplifiers for convenience in adjustment when a grid test pattern is employed in setting up. Static convergence is obtained by d.c. being added to the dynamic correction which is applied to the field convergence coils. Picture shift is effected by means of d.c. current in the scan coils.

A pair of degaussing coils positioned around the cone of the C.R.T. are activated automatically for a short period each time the monitor is switched on. The degaussing prevents the shadow mask and any other steel assemblies in the vicinity of C.R.T. being gradually magnetised by parasitic magnetic fields and hence giving rise to distortion.

The monitor has a fully floating 'technical-earth' system and provision is made for connection of the external and local earth leads. A blower unit is incorporated together an air filter to exclude dust, and also a thermal cut-out. These latter provisions are designed to ensure adequate cooling under a variety of ambient conditions, but are in fact only essential in applications where higher than normal temperatures are encountered. The thermal cut-out operates only under exceptional conditions, e.g. where unusual fault conditions raise the internal temperature of the monitor to a dangerous level.

2.2 INPUT AND MATRIX PWB MODULE - CIRCUIT 0175

The purpose of this Printed Wiring Board Module is to select the required video from the three available inputs, i.e. RGB, TEST or CODE, and also to provide a true 'Y' signal for displaying a black/white picture. The desired output is fed out to the master contrast control.

The R, G and B inputs from the monitor input panel are fed into emitter follower stages TS259, TS260 and TS261. The test input and the RGB decoder outputs are similarly fed to TS258 (TEST) and TS251, TS252 and TS253 (Decode).

RGB, TEST or CODE are selected by switching the gating diodes and the base emitter junction of the particular source required. The inputs which are not selected have their base emitter junctions reverse biased.

The d.c. control voltages used are $\pm 24V$ or $0V$, which are selected by the 3-button switch on the front panel. These same voltages are also used to select the appropriate sync source by operating relays on the Sync Processing Module - circuit 0463.

The RGB outputs from the emitter followers are fed to the Colour/Mono gating diodes, GR252-GR254-GR256 or GR261-GR266-GR268 and also through the matrix resistors R256-R261-R266 or R296-R297-R305 to the emitter of the grounded base stage TS254.

This circuitry effects the summing of the correct proportions of R, G, B delivered by the matrix resistors at the emitter of TS254.

The voltage gain of TS254 is arranged such that the output voltage at the collector is $Y = 0.3R + 0.59G + 0.11B$. This Y signal is fed via the emitter follower TS262 to the Colour/Mono gating diodes GR257-GR258-GR259; these diodes are biased on or off by the voltage ($0V$ or $24V$) obtained via the resistors R280-R281-R282 from the Mono push button on the front panel.

The output of the Colour/Mono gate is fed to the base of the emitter followers TS255-TS256 and TS257, the outputs of which are fed to the master contrast control on the front panel. The output of the Green channel is also taken via R314 to the Sync PWB where it forms an input for the sync separator on sync processing module 0463. See Section 2.5.

2.3 VIDEO AMPLIFIER PWB MODULE - CIRCUIT 0176

The Printed Wiring Board Module contains three identical low-level video amplifier circuits - Red, Green and Blue.

It receives three inputs from the contrast control on the front panel, and after the addition of a brightness pulse and the required d.c. level, the outputs are fed via coaxial cables to the video output PWBs - see Section 2.4.

Gain controls are fitted to each channel and these are accessible in the front drawer for setting up the desired white level.

The input is terminated at high frequency in 75Ω by C385 and R423; it is then amplified by the d.c. coupled pair TS367 and TS369. The gain control is R401 and the positive going brightness pulse is added to the video signal after the sync pulse via R397.

The amplitude of the brightness pulse is the same for all three amplifiers and is controlled by the brightness control on the front panel of the monitor.

The tip of this pulse is clamped to a d.c. level fed back from the video output circuit, such that the d.c. level at the cathode of the CRT is 95V. The clamp transistor is TS371 and it is switched on by a positive going clamp pulse from the sync circuit fed in via R405 and C376.

2.4 VIDEO OUTPUT - CIRCUIT 0183

The output is fed to the video output via the common collector stages TS373 and TS374. The video output stages are shown on circuit 0183 and employ fairly conventional solid state circuitry.

2.5 SYNC PROCESSING MODULE - CIRCUIT 0463

External Sync

External sync input is fed to the base of TS451 which for standard negative sync performs as an emitter follower. A link in the emitter circuit is provided to preset for the required range of input level, either 0.5V p-p - 3V p-p. or 1.5V p-p - 6V p-p.

If it is required to work on positive-going external sync, the link across R456 should be removed and connected across R454 and the link from RLA changed from the emitter to the collector circuit of TS451.

Sync Amplifier and Separator

The appropriate sync signal as selected and programmed by the RGB, TEST and CODE buttons on the front panel is fed to the base of the sync amplifier TS452.

The collector of TS452 feeds a feedback type of low pass filter incorporating TS454 which limits the rise time of pulses to approx 0.4 μ S and serves to remove noise and subcarrier from the sync signal.

The signal from the emitter of TS454 is a.c. coupled to the base of the sync separator transistor TS456, where it is d.c. restored on the tips of pulses. TS456 conducts during the sync pulse period, giving rise to negative going sync pulses at its collector.

During the conduction period part of the base current of TS456 is provided by the collector of TS455. This has the effect of reducing the amount of sync pulse absorbed by the base current and reducing variations in clipping level with the 'weight' of the video signal.

To improve the performance of the sync separator when the monitor is used with certain types of video tape recorders, a feedback system is incorporated to the base of TS456 which has the effect of lengthening the base time constant in the absence of line pulses during the field sync period.

The composite sync output from the sync separator is taken via the emitter follower TS457. An additional emitter follower TS458 feeds composite sync to the decoder module, when fitted.

Phase Splitter and Decoder Delay

Transistors TS460 and TS461 operate as a long tailed clipper pair which provide a 'window' near the centre of the composite sync waveform applied to the base of TS460.

Positive pulses are developed at the collector of TS460 and negative pulses at the collector of TS461.

Positive pulses are developed at the collector of TS460 and negative pulses at the collector of TS461.

To allow for the delay in the decoder, when the CODE button is pressed TS459 is made to conduct and thus apply C465 across the base resistor of TS460 giving rise to a delay of approx 0.5 μ S to the pulses at the collectors of TS460 and TS461.

Brightness Pulse Generator

Positive going sync pulses are fed from the collector of TS460 via a short-time-constant coupling to the base of TS462. Since TS462 is normally conducting with the collector bottomed, the collector current is unaffected by the leading edge of a pulse.

In the presence of a differentiated back edge to the pulse, the collector current will be switched off for a period determined by the time constant of the base circuit giving rise to a positive pulse of voltage at the collector, the leading edge of which corresponds to the back edge of the initiating sync pulse.

The output from the collector of TS462 is fed to the base of TS479 which is normally non-conducting. In the presence of a pulse on its base TS479 conducts and produces a negative going pulse at its collector, the amplitude of which is determined by the voltage across C496.

The amplitude of brightness pulse can therefore be varied by adjusting the d.c. voltage across C496 by means of the brightness control or over a smaller range by the remote brightness control.

Transistor TS480 serves as an emitter follower to distribute the brightness pulses to the video amplifiers.

Clamp Pulse Generator

The operation of TS465 is similar to that of TS462 associated with the brightness pulse circuit.

In this case, however, the base resistors R505 and R507 are taken to a d.c. voltage which is developed by rectification of the sync pulses appearing at the collector of TS461. By this means the clamp transistors on the video amplifiers are maintained in conduction in the absence of input syncs so that the d.c. loop is kept constant.

The clamp pulses appearing at the collector of TS465 are fed via the emitter follower TS466 to the video amplifiers.

Field Sync Separator

The composite sync signal appearing at the emitter of TS457 is fed to the base of TS463.

In the collector circuit of TS463 is a lumped parameter open-circuit delay line which produces a reflection of the pulses developed across R501 by the collector current.

The delay is such that a reflected line pulse occurs after the finish of the initiating pulse. In the case of the wide field pulses, however, the reflected pulses build up on top of the initiating pulses, thereby producing double amplitude field pulses.

Separation of the field pulses is effected by arranging the bias of TS464 so that conduction occurs only on the double-amplitude pulses.

Line Flywheel

Negative going mixed sync is fed from the collector of TS461 through a short-time-constant coupling to the base of TS467.

The negative going spike produced at the base of TS467 by a sync pulse leading edge causes it to conduct and ring the damped tuned circuit in its collector.

The first negative going half cycle of the damped oscillation train produced at the collectors of TS467 causes TS468 to conduct, giving rise to a positive going pulse at its collector which is delayed relative to the initiating sync pulse.

In order to suppress half line pulses, a differentiated pulse is fed from TS468 collector to the base of TS569, causing TS469 to be switched off for a period determined by the time constant of C478 and R518.

A positive going pulse is thereby produced at the collector of TS469, the width of which exceeds half a line period. This pulse is fed back to the base of TS468 to hold it in a non-conducting condition during the half line pulse period.

Line pulses are fed from the collector of TS468 to the emitter coupled pair of transistors TS470 and TS471, giving rise to negative going pulses at the collector of TS471.

In the presence of a line pulse the diodes GR463 and GR464 conduct permitting C482 and C483 to assume a charge dependant on the relative phasing of the pulse compared with a sawtooth waveform generated from the line scan to which the common diode point is referred.

A control voltage is thus developed and applied via the emitter followers TS472 and TS473 to the base resistors of the multivibrator pair TS474 and TS475 which drives the line scan unit.

The reference sawtooth for the phase comparator is developed by feeding a line flyback pulse to the pulse shaping transistor TS476 which then drives a miller integrator incorporating TS475 to provide the sawtooth.

A variable d.c. component of voltage is added to the sawtooth by means of the hold control potentiometer T553.

2.6 FIELD SCAN AND PINCUSHION PWB MODULE - CIRCUIT 0178

Field Scan

Field sync pulses are fed to the field multivibrator TS552 and TS553 via the emitter follower TS554.

The field hold control is R558 and 60 Hz field operation when required is obtained by switching R559 with 50/60 Hz system switch on the right-hand side of the front drawer.

TS551 feeds the field flyback blanking pulse to the CRT base PWB module (see Section 2.11). During flyback TS553 discharges C558 and C559 via GR557, R564 and L551. During scan C558 and C559 charge via the constant current source TS555 and the bootstrap feedback from TS557.

The sawtooth voltage developed across C558 and C559 is fed to the transformer coupled output stage via the emitter followers TS556 and TS557.

Control of scan amplitude is obtained by adjusting the voltage on TS555 base by means of R576 (large scan and R577 small scan). Correction for 60 Hz operation is obtained by switching R569 and resetting the emitter potential of TS555.

Non-symmetrical linearity correction is obtained by the feedback from TS557 and is adjusted by R580.

Symmetrical 'S' correction is obtained by integrating a sawtooth voltage which is proportional to field scan, obtained from a resistance in series with the scan coils and using the resultant parabola to modulate the constant current charging source TS555. 'S' correction may be adjusted by R558 for optimum.

Pincushion Correction

This circuit produces the current waveform in the field deflector coil windings necessary to correct for the field component of pincushion distortion.

Transistors TS560 and TS562 form an emitter coupled pair, the emitter current for which is provided by the collector current of TS561. Transistor TS560 is normally conducting TS562 is cut off. Negative going line pulses are applied to the base of TS560 so that during the presence of each line pulse TS560 is cut off and the collector current of TS561 passes through TS562.

Transistors TS563, TS565 and TS566 have a similar configuration to TS560, TS562, and TS561 described above. Since TS560 and TS565 have a common collector load and TS560 is conducting when TS565 is off and vice

versa, then during the presence of a line pulse a current determined by TS564 flows via TS565 into the collector load. During the remainder of the line period the current in the common collector load is determined by the current of TS561 flowing via TS560.

A frame sawtooth of positive polarity is applied to the base of TS564 which is emitter coupled to TS561. The field sawtooth of current appearing in the collector of TS561 is therefore of opposite polarity to that appearing in the collector of TS564. The relative amplitudes are adjusted to be equal to the mark/space ratio of the line drive pulse by means of R613.

The collector current waveform of TS560 is a train of line pulses with a sawtooth modulation at field frequency and having minimum amplitude at the start of the field sawtooth. The collector current of TS565 is also a train of line pulses modulated at field frequency, but having in this case maximum amplitude at the start of the field sawtooth waveform.

The sum of the collector currents of TS560 and TS565 produces positive pulses of maximum amplitude at the start of each field scan, decreasing linearly to zero at the centre of the field period. They then reverse in polarity and increase linearly to a maximum at the end of the field scan.

The output currents from the collectors of TS560 and TS562 drive the cascode miller integrator circuit comprising TS566 and TS567 which produces at the collector of TS566 a "bow tie" waveform composed of line sawtooth modulated at field frequency.

Transistors TS568 and TS569 are emitter followers which serve to drive the field output emitter follower TS926. The field deflector coils are transformer coupled to TS926 emitter - see circuit 0167.

Line non-symmetry of the pincushion current waveform due to losses in the output stage has been compensated for by the introduction of R626 and C583 in the collector of TS567.

2.7 FIELD AND STATIC CONVERGENCE MODULE - CIRCUIT 0180

The static and field frequency components of the currents required by the convergence coils are generated in this unit. The amplitude controls of the Red/Green dynamic currents are matrixed for ease of adjustment.

Transistor TS752 is incorporated in a miller integrator stage. A field sawtooth from the field scan generator applied to the input of the stage gives rise to a parabolic voltage of field frequency at the collector of TS752. This parabolic voltage is fed via the emitter follower TS753 to the Red, Green, Blue and Blue lateral output amplifiers and also to the line scan generator to provide horizontal pincushion correction.

The sawtooth drive is also fed to the emitter coupled pair of transistors TS754 and TS755 to produce sawtooth waveforms of equal amplitude but of opposite polarity at their collectors. Potentiometers R787-R790 enable sawtooth waveforms of adjustable amplitude and polarity to be applied to the Red, Green, Blue and Blue lateral output amplifiers. TS756 is a phase inverter which enables the Red/Green sawtooth components to be matrixed in such a way as to provide maximum simplicity of adjustment.

The Red, Green and Blue output amplifiers are of identical configuration. The Red output amplifier comprises transistors TS757, TS758, TS759 and TS760. Transistors TS757 and TS758 are a complementary pair which feed the convergence coil from their common collectors. The Blue output amplifier comprises transistors TS761, TS762, TS763 and TS764, and Green amplifier TS765 to TS768.

2.8 LINE OUTPUT AND E.H.T. MODULES - CIRCUIT 0170

2.8.2 Line Output and Auxiliary Circuits

Line drive is fed via the coupling capacitor C1151 to the grid of the driver stage B1151a. The output waveform is shaped by C1154 and R1156 and is fed to the output valve B1152 via C1155. DC bias from the control loop is fed to the grid via R1160.

Transformer T1151, Efficiency Diode B1153, together with the boost capacitor C1175, C1161, form an energy recovery line scan generator, the scan coils being connected across Terminals 8 and 5.

An underscan facility is available by switching in L1152 in series with the scan coils, the switch being located in the front drawer of the monitor.

C1166 tunes the system to give a flyback time of approximately $10\mu\text{s}$, and its value is reduced by switching in C1172 in the underscan position in series with C1166.

'S' correction is obtained by the action of the boost capacitors C1175 and C1161, and correction in the underscan position is achieved by switching in parallel C1164 across C1161.

The primary of T1152 is placed in series with the scan coils and the sawtooth voltage across the secondary is fed out to the Line Convergence PWB module - see circuit 0179.

Linearity Circuit

The flyback pulse developed across a winding on the transformer T1151 is rectified by GR1160 and GR1161. The resultant d.c. current charges the capacitors C1178, C1179 and C1180. During the scan period the charge on these capacitors modifies the HT line voltage to achieve the required linearity.

C1181 and R1194 form a clamping network across the linearity winding and C1177, C1176, R1191 and R1190 clamp the width reduction coil L1152.

Damping circuits are fitted to both sides of the scan coils, these being GR1152, R1169, R1168, C1165, GR1156, R1174 and C1167.

±600V Supply

A positive going flyback pulse is taken from Pin 8 on T1151, a.c. coupled through C1174 DC restored by GR1157 and rectified by GR1155. The reservoir capacitor is C1168, and the filter components are R1176, C1201 and C1203.

A flyback pulse is taken from Pins 2 and 3 via R1172 to the Sync processing module (circuit 0463) for use in the line flywheel circuit.

Focus Supply

The positive going pulse appearing at the anode of B1152 is rectified by GR1152 and the resulting d.c. across the reservoir capacitor C1170 is applied to potential divider chain R1180-R1186. The focus potentiometer is part of this chain.

The focus control is situated in the front drawer unit, and the output to the focus electrode is taken from the slider of this control (R1254).

DC Shift

The d.c. component of the cathode current of the output valve B1152 is arranged to flow via the centre tapped shift control, R1256 in the front drawer unit, then through the scan coil unit in a direction dependant on the control setting with respect to the control position.

Width Control

Positive going pulses from Pin 8 on T1151 are fed to a potential divider C1156-C1157-C1158 and then to the anode of the controlled triode rectifier B1151b, where the resulting d.c. forms the bias voltage of the output valve B1152.

The efficiency of rectification and therefore the bias, depends on the grid-cathode voltage of B1151b, and this is determined by the output voltage of the cathode follower B1202a and on the setting of the width control R1255.

Pincushion Correction

The voltage at the cathode of B1202a is determined by the reference neon B1201, plus an added field frequency parabola voltage derived from the Field Convergence PWB module (see circuit 0180).

The line scan amplitude is therefore modulated at field frequency with its amplitude and shape dependant on the incoming waveforms.

+240V Supply

A stabilised supply is used to feed the valve screens and the driver stages in the Line and EHT units. This is derived from a conventional series stabiliser B1204, difference amplifier B1202b and neon reference B1203.

The divider chain R1209-R1208 and R1207 samples the output and the final output voltage is set by R1208. The +350V supply to the anode of B1204 is obtained from the Power Supply unit and the voltage dependant resistor R1216 presents an excessive voltage output if B1202 is removed.

2.8.3 E.H.T. and Beam Current Limit

Line drive is applied via C1001 to the grid of the cathode follower B1001a the output of which is fed to the grid of the driver pentode B1002a.

From the anode of B1002a, the drive waveform is shaped by R1006 and C1005 and is fed to the grid of the output pentode via C1998 and grid stopper R1018.

DC bias from the feedback loop is fed in via R1015 and zener diode GR1001 prevents excessive voltage appearing across R1019 in any fault conditions or during the warm-up period.

The EHT transformer T1001 and efficiency diode B1005 form an energy recovery system together with boost capacitor C1017.

The flyback pulse is rectified by B1006 and forms the approx 25kV EHT output.

A bleed resistor R1021 ensures the discharge of the CRT capacitance after switch off to provide protection during servicing.

A pulse obtained from a winding on T1 is fed via C1016 to the peak rectifier system GR1004-GR1002-GR1005-C1021-C1022, the output of which drives the cathode follower B1002b.

A proportion of the d.c. voltage at the emitter of B1002a, determined by R1031 (the SET EHT control) is applied through R1027 to the grid of B1001b, the cathode potential of which is determined by the reference voltage of neon B1003 and by the divider chain R1013-R1012.

Pulses are also obtained from the divider chain C1009-C1010-C1011, which are applied to the anode of B1001b. This valve acts as a half wave rectifier whose d.c. output depends not only on the input pulse but also on its grid cathode voltage determined as described above.

This d.c. voltage forms the control bias for the output valve and is fed into the grid via R1015.

Provision is made to feed in a large negative voltage via R1016 from the Line Scan unit. This voltage appears on failure of the line scan circuitry and ensures that burning of the screen cannot occur under scan failure conditions since the E.H.T. is removed.

The feedback system described above stabilises the output pulses under no load conditions, but current feedback is required to keep the EHT constant under varying load conditions. This feedback is applied by arranging the EHT output current to flow through R1024 and R1025. The d.c. voltage drop across R1026-R1025 is arranged to add to the d.c. error voltage applied to the grid of B1002b.

The amount of compensation applied is adjusted by R1024, the SET EHT REGULATION control.

The +240V stabilised supply to the EHT and line unit is switched on by the relay RE1200. This relay is controlled in turn by TS1055 and TS1057 in the +24V supply line to ensure that low voltage supplies are made before E.H.T. can be established. Additional protection is provided as follows:

- (a) TS1055 is switched on after a time delay (80 secs) determined by R1066 charging C1056 and C1057 by the F.E.T. TS1056.
- (b) TS1057 is switched on by a field scan waveform fed into the amplifier stages TS1051-TS1052. The output is integrated on C1054 and fed to the base of TS1057.

Beam Current Limit

It is necessary to limit the mean beam current flowing in the CRT to 250 μ A (19") or 1mA for 25". This is achieved by the Beam Current Limit circuit TS1001-TS1002.

The voltage at the cathode of B1004 is proportional to the EHT current and is used to operate the BCL circuit by switching off TS1001 at a current level set by T1039. TS1001 is d.c. coupled by the zener diode GR1008 and R1042-R1043 to TS1002. This transistor is turned off and its collector voltage goes negative towards a potential set by R1044-R1045.

This negative voltage is fed to the grids of the CRT via the 5-button push switch on the front panel.

The potential divider R1040-R1041 supplies -150V to the 5-button push switch where it is switched to the required CRT grids to obtain cut off when a given colour selection is needed for setting up.

The negative voltage supplying the potential divider R1040-R1041 is obtained from the rectifier and smoothing circuit GR1202-GR1201-C1204 which is fed from the mains transformer to the Power Supply Unit module - see circuit 0169.

2.9 LINE CONVERGENCE MODULE - CIRCUIT 0179

The line frequency components of the currents required by the convergence coils are produced by this unit in conjunction with the Line Convergence Output Module - see Section 2.10 and circuit 0373.

A sawtooth of voltage is developed across a small resistor in series with the line scan coils and is transformer coupled to the base circuit of TS651 via connector pin 9.

The sawtooth waveform which appears at the collector of TS651 is of equal voltage but opposite polarity to that which appears at the emitter.

Potentiometers R658, R665 and R670 connected between collectors and emitter enable sawtooth waveforms of adjustable amplitude and polarity to be produced for driving the Blue, Blue lateral, Red and Green line convergence output stages. The phase splitter TS652 enables the controls R665 and R670 to provide common and differential adjustment respectively of the red and green sawtooth amplitudes.

Transistor TS653 is driven from the emitter of TS651 and the transmitter functions as a miller integrator to produce a parabolic waveform at its collector.

The output from the miller integrator is fed to TS654 which produces a parabolic waveform at its collector in opposite phase to that produced at its emitter. The red and green parabola components are fed from the emitter circuit of TS654. The potentiometer R691 varies the amplitude of red and green together, and R702 provides a differential adjustment.

The collector circuit of TS654 feeds the blue output stage. Since the waveform required for good blue convergence is not truly parabolic, a correction is applied by means of a biased diode circuit in the emitter of TS654, this has the effect of steepening the sides of the parabolic waveform appearing at the collector.

The blue lateral output stage, which may require either polarity of the parabola waveform, is driven from a potentiometer connected across collector and emitter of TS654.

The various sawtooth and parabolic outputs from this unit are added and fed to the input of their respective output stages by means of series resistors since the output stages require a current drive.

To provide correction for relative horizontal trapezium distortion between the red and green rasters, a 'bow-tie' waveform composed of line sawtooth modulated waveforms at field frequency is fed into the base circuit of TS652 from the field pincushion corrector.

A constant current of adjustable amplitude and polarity to the Static Blue Lateral coils is provided by means of a complementary pair of transistors TS655 and TS656, the common collectors of which feed the coils. Adjustment of R705 produces a differential current in the transistors which flows into the coils.

Similar circuits are used incorporating TS657 and TS658 for driving the Purity coil 'X' and TS659 and TS660 for driving purity coil 'Y'.

2.10 LINE CONVERGENCE OUTPUT MODULE - CIRCUIT 0373

Blue Convergence

The blue signal from the line convergence module is applied via connector A, Pin 10 to the base circuit of TS851.

The amplified signal at the collector of TS851 is applied via the emitter followers TS852 and TS855 to the push-pull output stage comprising TS853, TS854, TS856 and TS857.

At normal signal level the output stage is approaching 'Class B' operation and to avoid distortion of the waveform feedback is applied from a resistor R879 in series with the blue convergence coils via the phase inverter TS869 to the base of TS851.

The negative feedback gives rise to a low impedance at the base circuit of TS851, therefore the input signal is applied in the form of current drive.

In order to stabilise the mean potential of the common collectors of the output stage, d.c. feedback is applied from their collectors to the bases of TS852 and TS855.

The convergence coil is damped by means of C859 and R878 to prevent spurious ringing waveforms.

The high frequency response characteristic which is essential to prevent instability is determined by C853 and R942.

Red Convergence

The red signal from the line convergence module is applied via Connector A, Pin 5 to the base of TS858. Amplification of the signal is effected by TS858 which drives the push-pull output stage comprising TS859 and TS860 from its collector circuit.

Negative feedback is applied from the emitters of TS859 and TS860 to the base of TS858 in order to prevent distortion of the waveform at the output.

DC feedback from the collectors to the bases of TS859 and TS860 serves to stabilise their mean collector potential.

Green Convergence

This circuit is similar to that used for Red Convergence and the same circuit techniques are employed - see circuit diagram 0373.

Blue Lateral

The blue signal from the line convergence unit is applied via connector A, Pin 14 to the base of TS864.

The amplified signal at the collector of TS864 is applied via the emitter followers TS865 and TS866 to the push-pull output stage comprising TS868 and TS867.

Negative feedback is applied from the emitters of TS868 and TS867 to the base of TS864 in order to ensure the correct and undistorted signals.

The mean collector potential of TS868 and TS867 is stabilised by means of d.c. feedback from their collector circuits to the bases of TS865 and TS866.

2.11 MAIN FRAME ASSEMBLY - CIRCUIT 0167

2.11.1 C.R.T. Potentials and Flashover Protection

Field and line blanking pulses are fed to the base of TS975 and the resultant composite blanking waveform is a.c. coupled, d.c. restored and applied to the R, G and B grids of the C.R.T.

The diodes GR978-GR979-GR980 clamp to the potential present on the capacitors C983-C984 and C985. This potential is 0V for normal operation, but may be taken to -150V via R995-R994 and R993 and the R, G and B selector buttons on the front panel when colour selection is needed for setting up or servicing.

A negative potential is also applied on operation of the beam current limiter circuit which operates to suit the size of C.R.T. employed.

The negative potentials are derived from the -300V supply in the line output unit - see circuit 0170.

Video drive is applied from the video output PWB module (circuit 0183) via wander plugs and leads direct to the R, G and B cathodes. R979-R980 and R981 limit the current flow should C.R.T. flashover occur under fault conditions, and hence the voltage developed back in the video circuits.

The A1 supply is derived from the R, G and B brightness controls in the monitor front drawer, and after decoupling by R976-R977 (blue) is applied via the current limiting resistors R996-R997-R998 to the A1 electrodes of the CRT.

The brightness controls are supplied with +600V generated in the line scan output unit - see circuit 0170.

The focus supply (5 kV) is also derived in the line scan output unit and fed to the focus control in the front drawer. The output from this control is then decoupled by R978 and C978 (on centre chassis) and fed via a current limiting resistor R999 to the focus electrode.

All electrodes are protected from the effects of external flashover of the CRT by spark gaps and by current limiting resistors.

2.11.2 Centre Chassis and Main Frame Assembly

Mounted on this panel are the field output and pincushion output stages together with the edge connectors for the video output PWB modules.

The field output transistor TS927 is driven by the emitter follower on the field scan module, and the output is auto-transformed and capacity coupled to the field scan coils. A voltage proportional to scan current is developed across R928.

The vertical pincushion output emitter follower TS926 is coupled to the primary of T926, the secondary of which is again in series with the field scan coils.

DC shift is applied via R927 and R929.

The degaussing coils are plugged into a 4-pole socket on the centre chassis, also the deflection coil assembly. The convergence output module is located at the top of the main frame and the field convergence socket on the centre chassis.

Provision is made for the decoder module to plug in on the right hand side of the main frame when the unit is supplied.

The indicator lamps on the front panel may be energised from either and internal 6.3V power source, Pins 1 and 5, or from an external supply direct to Pins 2, 3 and 4 on the indicator plug on the main frame rear panel.

On this panel will also be found the remote control socket for use in studio and similar installations. This allows the remote control of signal source selection and brightness of simple/delay for the PAL system, also the coaxial input sockets and 75 Ω termination switches.

2.12 POWER SUPPLY UNIT MODULE - CIRCUIT 0169

The following supplies are derived from transformer T2:

+30V Unstabilised, obtained from GR107-GR110, C7, and is fed via fuse VL101 to the vertical pincushion correction circuits.

+24V Stabilised, derived from the +30V via a conventional series stabiliser circuit.

TS1 is the series element driven by TS151; the difference amplifier TS153, TS152 forms a constant current source and GR154-155-156 the reference potential.

TS154 is used for over current protection and operates to reduce the output when an excessive voltage drop occurs across R159-R162.

The feedback voltage is taken from the +24V bussbar on the centre chassis to reduce the effective output impedance.

+12V Stabilised, obtained from GR111-GR114-C8, and is fed via the series stabiliser circuit similar to the +24V mentioned above.

+6V Is obtained from the +12V supply via R183 and R184 and feeds the CRT heater (0.9A).

Zener diode GK161 protects the CRT heater from over volt damage.

T1 secondaries also supply the 6.3V a.c. for the valve heaters in the line units and the E.H.T. unit.

The degaussing coils are in series with the a.c. input to a bridge rectifier GR102-GR103, whose output charges C2. The leakage current of C2 and the current through R101 flows via GR101, GR106 and R102 and the a.c. current in the degaussing coils is rapidly reduced to zero. C2 rapidly discharges when the monitor is off so that the degaussing facility is immediately available when switching on.

Transformer T1 provides the medium voltages: +400V unstabilised from rectifier GR51, 2 x +270V unstabilised outputs from bridge rectifier GR52-GR55, 300V via the 100mA fuse YL51, and +130V from the bridge rectifier GR56-GR59 via the 200mA fuse YL6.

The transformer primaries are protected by fuses and by a thermal trip device which operates if severe overheating occurs. Fuses are fitted to suit the voltage source in use i.e. 3.15A for 220-240V or 6.3A for 110-107V supply.

SECTION 3

MAINTENANCE

GENERAL

The normal precautions should be taken in servicing the semiconductor modules. Thermal shunts should always be employed when disconnecting semiconductor devices, or when replacing these. Care must be taken to avoid short circuiting biasing components. The monitor should be switched off during replacement of any components to avoid dangerous voltage surges which can damage the transistors.

On printed boards excessive heating and leverage must also be avoided otherwise there is a danger that the copper may be lifted away from the board base material.

The checks and test below are designed to cover a variety of faults and repairs, including a few very unusual adjustments which should normally not be required, but these are given for completeness.

3.1 PRELIMINARY CHECKS

1. Check with an Avo that the earth of the mains input socket is connected to chassis.
2. Check that fuses of the correct ratings are fitted.
3. Check that each coax input socket is connected to the associated socket and that the terminations are switched correctly.
4. Apply mains at the appropriate setting of input voltage selector. Apply 625-line resolution pattern signal to the Test input socket and corresponding syncs to the sync input socket. Check the operation of the following controls:

Brightness, Contrast, Picture Size Switch, Width,
Horizontal Shift, Height, Vertical Shift and Focus.

Check that the Red push button selects the Red gun.
Check that the Green push button selects the Green gun.
Check that the Blue push button selects the Blue gun.

5. Check the following PSU output voltages:

+12V	11.4V to 12.6V
+24V	22.8V to 25.2V
+130V	123.5V to 136.5V

On the Line 'B' board set

+240V at B1204 cathode using R1208

Also check CRT heater volts pins 1-14 to be not greater than 6.3V - to be not smaller than 6.1V. Select value of R178 if necessary to bring within limits.

6. Switch ON. Apply 625 Sawtooth and Syncs.

Set brightness and contrast controls to minimum.

Connect EHT meter to C.R.T. anode and chassis.

Set EHT output control (R1024) to obtain 25.0kV. Increase brightness and contrast to obtain 750 μ A beam current. Adjust EHT regulation control (R1031) to obtain 25.0kV. Return to zero beam current, recheck EHT then increase beam current up to 750 μ A noting EHT volts which should deviate from 25.0kV by not more than 0.2kV.

Adjust R1039 so that beam current limits at 750 μ Amp.

Switch OFF. Remove meters and restore monitor to normal.

7. Apply 625 Grid Signal.

Set to small picture size and adjust picture size so that all four corners of video are visible.

Adjust phasing inductor core if necessary, to centre picture information inside the raster. Do not reseal core at this stage.

Set to large picture size and adjust the width so that the outside vertical lines of the grid are coincident with the mask edge. Set the height to about the right aspect ratio. Adjust if necessary focus chain to obtain optimum focus approximately centre of control range (see Appendix 1).

8. Set the vertical and horizontal linearity to obtain a result satisfactory to the eye.

3.1.1 Pincushion

Examine the waveform at left-hand monitor TP551 on the field scan board with CRO at field rate. Set R623 so that the null of the waveform is central and set R613 for minimum ringing after field flyback if necessary.

Set R605 to obtain straight horizontals at top and bottom.

Set R766 (L11 end of field convergence board) to obtain straight verticals at the picture edges.

3.1.2 Purity - Select R.G.B. in turn

- (a) The first check is only necessary if there is cause to doubt the C.R.T. Observe, using a 25 x magnifying lens, the landing of the electrons beam triads relative to the phosphor triads. These latter may be illuminated by a lamp shining on the screen at an angle of about 10° to 15° . Adjust X and Y Purity so that the geometric centre of the electron beam triad is superimposed on the centre of the phosphor triad at the centre of the picture. Note that the electron beam triad is somewhat smaller than the phosphor triad.
- (b) Select RED.
Position the scan coil so that red everywhere in the picture area is unobstructed.
- (c) Check appearance of R, G and B and white in turn.

3.2 POSITIONAL AND MODULATION HUM

1. Select the 625-line or 525-line grid pattern and check that the p-p positional hum at every point in every direction is less than 0.3mm by using a magnifying glass x 10 or x 20. (the horizontal distance between centres of phosphor dots is 0.38 mm. The vertical distance between phosphor dots is 0.315 mm).

Note: DO NOT CONFUSE PHOSPHOR DOTS WITH ELECTRON DOTS.

2. Check that no brightness modulation occurs when 0.4V p-p of 50 Hz sinewave is added to the signal.
3. Check that there is no signal breakthrough visible at zero contrast.

3.3 CHECK OF DEGAUSSING COILS

Magnetise the shadow mask with any small permanent magnet. Remove magnet. Switch monitor off. Wait a minimum of at least 30 seconds. Switch monitor on again and check that purity is unimpaired.

3.4 CONVERGENCE (1st stage)

Apply a grid signal to the monitor, set line hold control to centre of hold range. Adjust picture size and centre the picture.

Note 1

The 'Static' convergence controls are set to obtain convergence of the three colours at the centre of the raster. Select Red and Green and adjust 'red static' and 'green static' in turn to superimpose red and green vertically and horizontally at the picture centre. Select monochrome, adjust 'blue static' to superimpose blue on the red and green vertically at picture centre. Adjust 'blue lateral' to superimpose blue horizontally at picture level.

Note 2

The 'Field' convergence controls are set to obtain convergence of the three colours up and down the vertical centre line.

Note 3

The 'Line' Convergence is set to obtain convergence along the horizontal centre line.

Note 4

During convergence setting it is necessary to reset the static convergence repeatedly.

Note 5

At this stage the main consideration is to ensure that all convergence controls are working and that the specification requirement is met, i.e. displacement of any two colours anywhere is less than 2 mm.

3.4.1 Switch to the large picture size and adjust the static convergence.

3.4.2 Field Convergence (see note 2 above)

1. Select Red and Green.
2. Adjust R/G Parabola to remove relative vertical bowing.
3. Adjust R/G Parabola BAL and R/G sawtooth BAL so that horizontal lines intercepting the vertical centre line are coincident (note 4 above)
4. Adjust R/G Sawtooth for parallel vertical lines.
5. Repeat foregoing three paragraphs.
6. Select R and B.
7. Adjust B parabola and B sawtooth so that horizontal lines intercepting the vertical are coincident.
8. Adjust B parabola LAT and B sawtooth LAT to obtain parallel vertical lines.
9. Repeat foregoing two paragraphs.

3.4.3 Line Convergence (See Note 3 above)

1. Set B parabola so that the B horizontal centre line matches the R approximately.
2. Select R and G.
3. Adjust R/G parabola BAL and R/G sawtooth BAL to converge horizontal centre lines.
4. Adjust R/G parabola and R/G sawtooth so that vertical lines intersecting the horizontal centre line are coincident.
5. Examine the convergence of horizontal lines near the top and bottom of the picture and adjust R/G keystone in conjunction with R/G parabola BAL and R/G sawtooth BAL to obtain the best overall convergence.
6. Repeat foregoing three paragraphs.
7. Select R and B.
8. Adjust B parabola and B sawtooth to match the horizontal centre lines.
9. Adjust B parabola LAT and B sawtooth LAT to converge the vertical lines intersecting the horizontal centre line.
10. Repeat foregoing two paragraphs.
11. Select R, G, B in turn and then together to recheck purity. Adjust as necessary.

12. At this stage the displacement between any two colours anywhere in the picture should be less than 2 mm.

3.5 LINE SCAN

Increase contrast to normal, rotate line hold clockwise so that the vertical grid line moves off the RHS of the picture. Check that as the line folds back its brightness is reduced and that it vanishes.

3.6 GREY SCALE

1. Apply 625-line Resolution Pattern into Test input.
2. Set brightness to maximum and contrast to minimum. Connect Avometer on 100V d.c. range between each Cathode and technical earth in turn. Adjust B.L. control R959 on Video Output printed board to give +90V at each cathode.

3.7 PRELIMINARY MONITOR SETTING

1. Apply 625-line Resolution Pattern.
2. Set brightness to zero.
3. Set green video gain to centre of its travel and set contrast control to the step giving closes to 30V video swing at the green CRT cathode, then to set video swing to 30V using green video gain.
4. Set the R, G and B cut-off controls so that the fifth step from the left of the grey scale is near extinction and is grey (i.e. not tinted). Consider the colour of the brightest part of the picture, which must be brought to standard white by adjusting the blue and red video gains. Each adjustment of gain to correct the white will require an adjustment of the appropriate cut-off control to correct the grey. If either red or blue video gain controls requires an adjustment outside the range provided, turn the green video gain in the opposite direction.

When satisfied with the colour at white and grey, increase brightness and check that each step of the grey scale is untinted.

3.8 FREQUENCY RESPONSE (1st stage)

1. Switch to test. Connect oscilloscope using 10:1 probe to green cathode. Adjust contrast control to give 30V of video (i.e. not including syncs). Check that no crushing of the grey scale is evident on the oscilloscope. Remove the oscilloscope. Do not touch contrast control again until after (2). Fix sticker beside contrast knob indicating number of clicks for 30V.
2. Connect 625-line mixed syncs into syncs input. Connect 625-line Resolution Pattern into R.G.B. inputs in turn. Select R.G.B. colour operation. Adjust the brightness control as required and check that the peak whites of each frequency band in the upper row are not darker than the peak whites in the 1 MHz band and that the peak whites of each frequency band in the lower row are not brighter than the peak whites in the 1 MHz band (contrast remains as in (1)). Adjust L951 if necessary to achieve the above performance.

THE FOLLOWING TESTS TO BE CARRIED OUT INSIDE THE DARK AREA

3.9 LINEARITY AND GEOMETRY 625 Grid Pattern

- 3.9.1 Select Green and set to small picture size.
- 3.9.2 Break syncs (switch to Ext. Syncs and remove ext. sync sigs if necessary). Set free running line oscillator to centre frequency with line hold control (do not adjust the control again during linearity, centering etc., adjustments).
- 3.9.3 Restore monitor to normal locked picture small size. Readjust phasing inductor core if necessary to centre picture information inside the raster. Seal inductor core if this sealing has been disturbed in previous tests.
- 3.9.4 Switch to large picture size. Project the linearity slide on to the CRT face normally, centrally, and from such a distance as makes the two outside vertical columns of circles just fit within the mask.
- 3.9.5 Adjust the picture size, centring, pincushion and linearities to match the slide image so that all points in the picture area A and B of the grid pattern intersections lie within the 2% dia. circles of the slide image. Follow the adjust directions as below. See appendix II for areas A and B.
- 3.9.6
 - (a) Connect oscilloscope between efficiency diode anode and technical earth. Lock to line speed and observe waveform as below.

- (b) Select value of capacitors C1178, C1179, C1180 if necessary, to produce ideal waveform, i.e. with point A at centre scan.
If intersection at 'B' add capacitance
If intersection at 'C' reduce capacitance
- (c) Observe Assymmetric Non-Linearity on Monitor Tube face.
No cramping should be seen, either right or left.
- (d) Return to the C.R.O. waveform and readjust Capacitor values as in (b) above if incorrect.
- (e) Observe 'S' correction conditions on Monitor tube face. If cramping symmetrically left and right increase boost capacitor C1175 and C1161. If stretching left and right decrease boost capacitor.
Note: These capacitors must be 1600V working types.
- (f) Switch to small picture size, select C1164 if necessary to produce linearity acceptable to the eye and as close to the requirements of 3.9.5 as possible. Set small picture aspect ratio. Adjust pot R577 if necessary.

3.9.7 Switch to large picture size, check that no ringing is present on line scan and that no flyback lines are evident at the edges of pictures.

3.9.8 Check vertical height, aspect ratio and linearity. Repeat in 3.9.7.

3.10 RECHECK PURITY

- 1. Select Red. Make final adjustments to X-Y controls if necessary. Degauss if necessary.
- 2. Check appearance of R, G and B, and white in turn. Purity must be at optimum at this stage.

3.11 RECHECK CONVERGENCE 625 line grid

Select R, G, B. Recheck convergence. Repeat the whole of Section 3 if necessary. This time the following standard must be obtained:

Maximum displacement vertical or horizontal between any two colours in area A to be less than 0.54 mm
 area B to be less than 0.8 mm
 area C to be less than 1.1 mm

(see appendix II for areas A, B and C).

3.12 RECHECK FREQUENCY RESPONSE 625 Resolution Pattern

1. Reset contrast control to obtain 30V of Video as indicated by sticker alongside knob (see 3.8.(1)).
2. Adjust the brightness control as required. Select R.G.B. and white in turn. Adjust L951 and C953 only if necessary, to achieve the full requirement as outlined in 3.8(2).
3. Remove sticker. Reseal L951 core if sealing disturbed in previous tests.

3.13 DECODER

1. If a decoder is fitted apply the appropriate encoded signal at a level of 0.7V p-p. Check the video output swing at the cathodes of CRT is 30V min, also check that no crushing of the signal is evident.
2. Check the appearance of the picture. Switch to monochrome. Check that the picture appears to be truly monochrome. Apply the resolution pattern to the decoder input. Check that on colour and monochrome the frequency response etc. appears satisfactory. There should be no changing from monochrome to colour.

3.14 LINE AND FIELD HOLD

1. Check that line hold is obtained over at least 60% of the range of the control. Check that field hold is obtained over at least 60% of the range of the control.
2. Check that interlace is better than 45:55 throughout the field hold range.
3. Check that the synchronisation of the picture is unimpaired and check that no brightness modulation hum is present:
 - (a) with the addition to the video signal of 50 Hz sinewave of 0.4V p-p amplitude.
 - (b) when passing the video signal through a capacitor of 1 μ F.

3.15 RECHECK FLYBACK

On 625-lines at low contrast check that no flyback is evident at edges of picture and that no ringing is present on line scan.

3.16 SOAK TEST

Operate all monitors for 4 hours with normal signal and nominal main voltage applied after any major repairs.

APPENDIX I - ADJUSTMENT OF FOCUS RESISTOR

The resistor to be fitted must be Philips 1 watt type CR68. The value will be around 680k Ω for optimum focus in the centre of the control range. Measure voltage drop across the resistor (Avo 1000V range). If the voltage exceeds 730 volts the value of resistor must be made up of 2 resistors in series.

APPENDIX II

Area A is an ellipse of minor (vertical) axis equal to picture height, and major axis equal to 0.8 of picture width.

Area B is an ellipse of minor axis equal to picture height and major axis equal to picture width.

Area C is outside Area B.

SECTION 4

SETTING UP PROCEDURES

4.1 GENERAL CHECKS

4.1.1 Power Supply

1. Set the two carousels on rear panel for the required mains voltage. Check that VL1 and VL2 are 3.15A rating for 220/234V working, or 6.3A for 110/117V working.
2. Set 0V link on rear panel to connect black and yellow terminals for floating 0V or to connect black and green for capacitive earth.
3. Check the 12V stabilised supply. The output voltage is to be between 11.8V and 12.6V under local conditions. R178 may be replaced if necessary by a different valve.
4. Check the 24V stabilised supply. The output voltage is to be between 22.8V and 25.2V under loaded conditions. R163 may be replaced if necessary by a different value to bring within the limits stated.

4.1.2 Field Scan and Pincushion

1. Field Hold

Set 50/60 Hz system switch to required system and set hold control on monitor front and drawer (R558) to the centre of the range over which synchronism is obtained. Ensure that picture locking is satisfactory.

2. Field Amplitude

Switch to large picture size and adjust R576 for correct aspect ratio of 4:3.

Switch to small picture size and adjust R577 for correct aspect ratio.

(For R576, R577 see circuit 0178).

3. Linearity

Correct the linearity, if necessary, of the top relative to the bottom of the picture by adjustment of R580.

Correct the linearity of the centre area of the picture relative to the top and bottom by adjustment of R588.

(for R580 and R588 see circuit 0178).

4. Pincushion

Examine the waveform on monitor point TP551 with an oscilloscope trace locked at field repetition frequency (for TP551 see Field Scan Module Circuit 0178).

Set R623 so that the null point of the waveform envelope is central.

Set R613 for minimum ringing after field flyback (ignore 100 Hz hum).

Set R605 to obtain straight horizontals at top and bottom of picture.

Set R766 on field convergence board (see circuit 0180) to obtain straight verticals at the picture edges.

Note: R623, 613, 605 are shown on circuit diagram 0178 for the Field Scan and Pincushion Module.

4.1.3 Sync Process (See Circuit 0463)

1. Polarity of External Sync

For negative sync input connect link across R456 and also connect link from RLA(1) to collector circuit of TS451. No link should be across R454.

For positive sync input remove link from across R456 and connect across R454. Connect link from RLA(1) to the emitter circuit of TS451.

2. Amplitude of External Sync

Set link in the emitter circuit of TS451 for the required range of input amplitude, 0.5V to 3V or 1.5V to 6V if necessary.

3. Line Hold

Connect video signal to Test input socket. Remove syncs. (switch to external syncs and remove external sync signal if video signal is composite). Set free running line oscillator speed with hold control R553 so that picture is moving slowly sideways across screen. Restore syncs.

4. Line Phase

Set line hold control as in 3 above. Switch to small picture size and adjust L452 core to centre the picture information inside the raster.

5. Brightness Pulse Width

Check that the mean width of the brightness pulse as measured on monitor point TP459 is $2.2\mu\text{S} \pm 10\%$. Value of R495 may be selected if necessary to bring within limits stated.

6. Clamp Pulse Width

Check that the mean width of the clamp pulse as measured on monitor point TP456 is $1.5\mu\text{S} \pm 10\%$. Select value of R507 if necessary to bring within limits.

4.1.4 Line Output Unit

1. Screen Stabiliser

Adjust R1208 to obtain +240V at the cathode of B1204 - see circuit 0170.

2. Linearity

Check with an oscilloscope on the anode of B1153 that the linearising sawtooth finishes at approx the centre of the scan period. If necessary adjust capacitors C1178, C1179, C1180 for value to achieve this.

If crushing occurs symmetrically outwards from centre, increase capacity of C1175 and C1161.

If stretching occurs symmetrically outwards from centre, increase capacity of C1175 and C1161.

3. Amplitude and Shift (Controls in Front Drawer)

Adjust so that with picture size switch set to large the picture width just fits the mask.

4.1.5 E.H.T. Unit (See Circuit 0170)

1. Output Voltage

Adjust R1024, if necessary, to obtain 25kV when the cathode ray tube beam current is zero. 25kV must be measured on an electrostatic voltmeter.

2. Regulation

Adjust R1051, if necessary, for minimum change in picture size when the beam current of the CRT is changed from 0 to 750 μ A.

3. Beam Current Limit

Connect voltmeter (20,000 Ω /volt) across R1025. Set R1039 so that voltage is limited to 5.5V for 19" CRT or 7V for 25" CRT when brightness and contrast controls are operated.

4.1.6 Video Output Amplifiers (See Circuit 0183)

Black Level

Turn contrast control to minimum and brightness control to maximum. Both controls are on monitor front panel.

Control voltmeter between cathode of CRT and 0V line. Set R959 to give 9V at the cathode.

Return controls to normal position.

4.1.7 Frequency Response

Adjust L951 on the video output module - see circuit 0183, for flat response to 5 MHz. Minimum for the output amplifier.

Maximum measured deviation from response at 1 MHz is ± 0.5 dB.

4.2 SETTING UP PROCEDURE FOR PURITY, CONVERGENCE AND GREY SCALE TRACKING

4.2.1 Purity

- (a) Allow the set to run at a beam current of approximately 750 μ A for 15 minutes with a plain white raster.
- (b) Using a microscope or other suitable device, of magnification x20, examine the centre of the screen and adjust the X and Y purity controls until the centre of the illuminated RGB triangles coincides with the centre of the RGB phosphor dot triangles.
- (c) Switch on the Red beam only. Adjust the position of the deflection coils until correct beam landing is achieved at the picture edges.
- (d) Check Blue and Green rasters for optimum purity in the same manner. Lock deflection coils. Check with White raster only.
- (e) Recheck picture centering, and Static convergence - see 4.2.2(b).

Note: Final adjustments for the white area appearance are carried out in 4.2.2(f) below.

4.2.2 Convergence

- (a) A medium luminance cross hatch grid pattern is recommended for the test signals. Set line hold to centre of locking range. Set to large picture size and centre within frame.
- (b) Static convergence is achieved by adjusting the three radially acting controls R, G and B, and one lateral control (blue) to obtain coincidence of Red, Green and Blue in the centre of the picture. First select R and G and adjust R static and G static in turn to superimpose R and G vertically and horizontally at the picture centre. Then select monochrome and adjust blue static to superimpose blue on the red and green vertically. Finally adjust B lateral to superimpose blue horizontally at picture centre.
- (c) Dynamic Vertical Convergence controls are set to obtain convergence of the three colours up and down the vertical centre line.

Adjust controls as below, resetting the static convergence controls as necessary for optimum result.

Select Red and Green.

Adjust R/G Parabola to remove relative vertical bowing.

Adjust R/G Parabola Balance and R/G Sawtooth Balance so that horizontal lines intercepting at the vertical centre line are coincident.

Adjust R/G Sawtooth for parallel vertical lines.
Repeat the above adjustments. Select R and B.
Adjust B Parabola and B sawtooth so that horizontal lines intercepting at the vertical are coincident.
Adjust B Parabola Lateral and B Sawtooth Lateral to obtain parallel vertical lines. Repeat adjustments for R and B selection.

- (d) Dynamic Horizontal Convergence controls are set to obtain convergence along the horizontal centre line.

Adjust controls as below, resetting the static convergence controls as necessary for optimum results.

Adjust B Parabola so that the B horizontal line matches the R approximately. Select R and G.
Adjust R/G Parabola Balance and R/G Sawtooth Balance to converge the horizontal centre lines.
Adjust R/G Parabola and R/G Sawtooth so that the vertical lines intersecting the horizontal centre line are coincident.
Examine the convergence of horizontal lines near the top and bottom of the picture and adjust R/G Trapezium in conjunction with the Balance controls for R/G Sawtooth and R/G Parabola to obtain the best overall convergence.
Repeat adjustments from selection of R and G. Select R and B.
Adjust B Parabola and B Sawtooth to match up the horizontal centre lines.
Adjust B Parabola Lateral and B Sawtooth Lateral to converge the vertical lines intersecting at the horizontal centre lines.
Repeat last two adjustments.

(e) General

The sequence of adjustments is not important, but the pairs of controls should be adjusted simultaneously, i.e. Red/Green ST with Red/Green P, Blue ST with Blue P, the usual sequence is:

- (i) Red/Green Static
- (ii) Red/Green Vertical
- (iii) Red/Green Horizontal
- (iv) Blue Static Radial
- (v) Blue Static Lateral
- (vi) Blue Vertical
- (vii) Blue Horizontal

Interaction within the Convergence Unit means that the procedure has to be repeated until satisfactory conditions are obtained.

(f) White Point and Grey Scale Tracking

- (i) A test signal containing a sequence of steps (staircase and waveform) from black to white is used for this setting.
- (ii) Set Master Brightness Control on Front of monitor fully clockwise.
- (iii) Adjust R, G and B Brightness controls in front drawer unit to be just above cut-off in the black areas.
- (iv) Set R, G and B Video Gains in front drawer unit to 80%-90% of fully clockwise position.
- (v) Adjust any one or two controls in an anticlockwise direction to achieve the desired White Point (Hue) in the peak white areas of the test signal, i. e.:

If the White area is:	Red	Reduce Red gain
	Blue	Reduce Blue gain
	Magenta	Reduce Red and Blue
	Cyan	Reduce Blue and Green
	Yellow	Reduce Red and Green

- (vi) Set the Master Brightness Control on monitor front panel anticlockwise to 20° - 30° and adjust the R, G and B Brightness controls to obtain the same Hue as in (v) above in the dark grey areas of the test pattern. The black areas should be just cut off.

4.3 PROCEDURE FOR CHECKING PERFORMANCE OF PAL DECODERS EL8618 WHEN FITTED IN MONITOR ET9954

NOTE

This method in no way replaces the setting up procedure laid down in the Test Specification but is intended to allow circuit performance to be checked and any minor adjustments thought necessary to be made.

Signal Required Composite coded (PAL) colour bars 1V p-p 100%
 Luminance to 100% Saturation

Oscilloscope 10 Mc/s bandwidth, X sensitivity 1V/cm with a low
 capacitance probe.

4.3.1 Luminance Gain

1. Monitor decoder input (C113 negative end). Note amplitude of white bar.
2. Monitor blue channel output (Pin 1). Adjust contrast (R123) if necessary to give unity gain for white bar, i.e. 1V peak to peak.

Check white amplitudes of Red (Pin 21) and Green (Pin 18) channels. The maximum amplitude difference between the two channels shall be less than 1% of Blue channel output at pin 11.

4.3.2 Chroma

With crocodile clips connect collector (case) of TS804 to 0V line.

1. Monitor the junction of R209, C204. This shall be a negative going pulse of $1.4 \pm 0.3V$ p-p and of width $4.5 \pm 0.1\mu S$. Adjust R221 (set gate width) if necessary to alter pulse width.
2. Monitor link 'F'. Adjust chroma gain control if necessary to give about 1V p-p burst waveform.
3. Monitor the junction of C801, C802. Check that a half line frequency sine wave is present. Amplitude to be greater than 1.5V p-p (this sine wave may be slightly distorted).
4. Connect +V monitor point to scope Y input and +U monitor point to scope X input.

The display will be similar to a vectorscope display. All colour points should be single dots or two dots in very close proximity. On units fitted with delay/simple relays, switch from delay to simple operation. The amplitude and form of the display should not alter.

5. If there is any doubt as to the accuracy of the decoder setting up with respect to this display, the following procedure extracted from the Test Specification should be followed:

(N.B., If no relay fitted, short test points e to g for Delay or e to c for simple).

Set Decoder for Delay operation.
Set R912 to mid-position.

Procedure

- (a) Adjust core of T201 to give maximum amplitude display.
- (b) Adjust R657 (180° switch balance) for best dot alignment in Y directions on the oscilloscope display.
- (c) Adjust core of T902 for best coincidence of two dots along centre axis (X direction) of display.
- (d) Adjust core of T901 for best overall dot coincidence.
- (e) Switch to Simple. Adjust core of T201 for best dot coincidence.
- (f) Adjust R906 (gain compensate) so that vector amplitudes of displays for Simple and Delay operation are equal.
- (g) On Delay readjust cores of T901, T902 for best dot coincidence as in (c) and (d).
- (h) On Simple adjust core of T504 for best dot coincidence. Readjust core of T201 for best dot coincidence.

This procedure may require repeating in parts in order to obtain the correct display.

6. Remove oscilloscope X input.

Monitor Blue output. Adjust core of L103 if necessary for minimum subcarrier. Subcarrier should be at least 30 dB down on i/p value, with unity luminance gain, i.e. with 1V peak to peak as set up in 4.3.1.

4.3.3 Chroma Gain

1. For Decoders not fitted with Remote Chroma Gain Facility

Adjust R125 (chroma gain) for equal amplitude blue bars. Monitor green o/p and adjust R651 (set gain) for correct green bar pulse.

2. For Decoders fitted with Remote Chroma Gain Facility

Attenuate signal by 3 dB.

Turn monitor chroma gain to approximately mid-position. Adjust R125 on decoder for equal amplitude blue bars. Monitor +U and note signal amplitude. Readjust R125 so that signal amplitude varies by at least ± 3 dB from minimum to maximum setting of remote chroma control. Set monitor chroma for equal blue bars. Adjust R651 (set gain) for correct green bar pulse. Check red o/p.

Remove link from TS804 to 0V line.

With i/p signal attenuated by 3 dB adjust R307 (colour killer) so that signal is only just visible.

PARTS LIST

CONTENTS

Note: Prefix to all numbers is 3913-426

1.	Power Supply	0169
	Diode Board 'A' P.W.B. Assembly	0253
	Diode Board 'B' P.W.B. Assembly	0252
	Power Supply P.W.B. Assembly	0284
	Heat Sink Assembly	0286
	Rear Control Panel	0386
2.	Input Matrix P.W.B. Assembly	0175
3.	Video Amplifier P.W.B. Assembly	0176
4.	Video Output P.W.B. Assembly	0183
5.	Link Convergence P.W.B. Assembly	0179
6.	Line E.H.T. Output Assembly	0170
	Line Stage 'A' P.W.B. Assembly	0265
	Line Stage 'B' P.W.B. Assembly	0266
	E.H.T. Stage 'A' P.W.B. Assembly	0267
	E.H.T. Stage 'B' P.W.B. Assembly	0268
	Beam Current Limit P.W.B. Assembly	0479
	High Voltage Assembly	0269
7.	Field Scan and Pincushion P.W.B. Assembly	0178
8.	Field Convergence P.W.B. Assembly	0180
9.	Sync. Process P.W.B. Assembly	0463
10.	Main Frame Assembly	0167
	Centre Chassis Assembly	0361
	Spark Suppression P.W.B. Assembly	0173
	Purity and Convergence Unit Assembly	0319
	Video Panel	0260
	Contrast Switch	0274
11.	Convergence Output	0373
12.	Front Control Panel Assembly	0382
	Brightness Control	0381
13.	Front Drawer Assembly Mk II	0391
	Linearity Board Assembly	0422

1. POWER SUPPLY ASSEMBLY

0169

<u>Code</u>		<u>Part No.</u>
T1	Transformer	3122 108 32681
T2	Transformer	3122 108 32691

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
C1	0.47 μ F	10	250	2222 341 89474
C2	2500 μ F		64	2222 060 18252
C3	100 μ F		300	2222 080 34107
C4	100 μ F		450	2013 005 01013
C5	100 μ F		450	2013 005 01013
C6	2x125 μ F		200	2222 081 42131
C7	5600 μ F		40	2222 102 17562
C8	8000 μ F		25	2222 102 16802
C9	0.01 μ F	10	250	2222 341 89103

<u>Code</u>				<u>Part No.</u>
R1	180k Ω	5	0.25	2322 212 13184
R2	180k Ω	5	0.25	2322 212 13184
R3	1k Ω	5	0.5	2322 101 63102
R5	330 Ω	5	10W	2322 320 12331
R6	68 Ω	5	16W	2113 256 02128
R8	180k Ω	5	0.25W	2322 212 13184
R9	33k Ω	5	0.5W	2322 101 63333
R10	270k Ω	5	0.5W	2322 101 63274
R11	270k Ω	5	0.5W	2322 101 63274
R12	56k Ω	5	0.5W	2322 101 63563

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
TS1	2N3055	9330 226 50XX0
TS2	2N3055	9330 226 50XX0

<u>Code</u>		<u>Part No.</u>
CS1	Mains Plug	5722 660 20880
LA5 to 7	Miniature Neon Signal Lamp	8213 198 00087
SK7 and 8	Voltage Adaptor	3922 840 67810
VL1	Fuse 3.15 amp	2422 086 01033
VL2	Fuse 3.15 amp	2422 086 01033
VL3	Fuse 100mA	2422 086 01005
VL4	Fuse 200mA	2422 086 01011

<u>Code</u>			<u>Part No.</u>
VL5	Fuse	315mA	2422 086 01013
VL6	Fuse	200mA	2422 086 01011
VL7	Fuse	6.3 amp	2422 086 01036
VL8	Fuse	6.3 amp	2422 086 01036

Diode Board 'A' P.W.B. Assembly 0253

<u>Code</u>	<u>Value</u>			<u>Part No.</u>
R51	150Ω	5%	8W	2113 256 00957

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
GR51	BYX10	9330 087 10XX0
GR52-GR59	BYX22/800	9330 137 00XX0
VL51	Fuse 100mA	2422 086 01005

Diode Board 'B' P.W.B. Assembly 0252

<u>Code</u>	<u>Value</u>			<u>Part No.</u>
R101	100kΩ	5%	0.25W	2322 212 13104
R102	1kΩ	5%	0.25W	2322 212 13102

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
GR101-106	BYX10	9330 087 10XX0
GR107-114	BYX21/200R	9330 052 90XX0
VL101	Fuse 1 amp	2422 086 00033

Power Supply P.W.B. Assembly 0254

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
C151	50μF		40	2222 001 17509
C153	125μF		16	2222 001 15131
C154 & 155	0.01μF	10	250	2222 341 89103
C156	125μF		16	2222 001 15131

<u>Code</u>	<u>Value</u>			<u>Part No.</u>
R151	27k Ω	5%	0.25W	2322 212 13273
R152	100 Ω	5%	0.25W	2322 212 13101
R153	2k2 Ω	5%	0.25W	2322 212 13222
R155	2k7 Ω	5%	0.25W	2322 212 13272
R156	1k Ω	5%	0.25W	2322 212 13102
R157	22k Ω	5%	0.25W	2322 212 13223
R158	1k Ω	5%	0.25W	2322 212 13102
R159 to 162	1 Ω	10%	5W	2113 256 00491
R163	56k Ω	5%	0.25W	2322 212 13563
or				
R163	82k Ω	5%	0.25W	2322 212 13823
or				
R163	68k Ω	5%	0.25W	2322 212 13683
R164	2k7 Ω	5%	0.25W	2322 212 13272
R165	1k5 Ω	5%	0.25W	2322 212 13152
R166	33 Ω	5%	0.25W	2322 212 13339
R167	560 Ω	5%	0.25W	2322 212 13561
R168	820 Ω	5%	0.25W	2322 212 13821
R169	1k Ω	5%	0.25W	2322 212 13102
R170	33 Ω	5%	0.25W	2322 212 13339
R171	1k2 Ω	5%	0.25W	2322 212 13122
R172	390 Ω	5%	0.25W	2322 212 13391
R173	12k Ω	5%	0.25W	2322 212 13123
R174 to 177	1 Ω	10%	5W	2113 256 00491
R178	68k Ω	5%	0.25W	2322 212 13683
or				
R178	56k Ω	5%	0.25W	2322 212 13563
or				
R178	47k Ω	5%	0.25W	2322 212 13473
R179	560 Ω	5%	0.25W	2322 212 13561
R180	1k5 Ω	5%	0.25W	2322 212 13152
R181	2k Ω	5%	0.25W	2322 212 13272
R182	33 Ω	5%	0.25W	2322 212 13339
R183	3 Ω	10%	5W	2113 256 00498
R184	2 Ω	10%	5W	2113 256 00497

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
TS151	2N3054	9330 741 30762
TS152	BCY32	9330 117 70XX0
TS153	2N930	9330 175 10XX0
TS154, 155 & TS157	BFY50	9330 116 00XX0
TS156	2N930	9330 175 10XX0

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
GR151	OA47	9330 041 90XX0
GR152 & 153	BAY38	9330 042 40XX0
GR154 & 155	BZY88/C6V2	9330 092 90XX0
GR156	BAY38	9330 042 40XX0
GR157	BYX10	9330 087 10XX0
GR158	BZY88/C6V2	9330 092 90XX0
GR159	BYX10	9330 087 10XX0
GR160	BZY88/C6V2	9330 092 90XX0
GR161	OAZ224	9220 096 91XX0

Heat Sink Assembly 0286

<u>Code</u>	<u>Part No.</u>
1 Heat Sink	3913 423 02910

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
TS926	2N3054	9330 741 30762
TS927	2N3055	9330 226 50XX0

Rear Control Panel Assembly 0386

<u>Code</u>	<u>Value</u>	<u>Part No.</u>
R1254	POT 1M Lin. 20% 1W	2113 377 00185

<u>Code</u>	<u>Part No.</u>
SK5 Switch Slider	2413 127 00001
SK6 Switch 2x4 pole 2-way	8213 198 00486

<u>Code</u>	<u>Value</u>	<u>Working Voltage</u>	<u>Part No.</u>
C251 to 253	12.5 μ F	25	2222 001 16139
C254	125 μ F	16	2222 001 15131
C255	160 μ F	25	2222 023 16161
C256 to 258	250 μ F	25	2222 023 16251
C259	25 μ F	25	2222 001 16259
C260	12.5 μ F	25	2222 001 16139
C261	160 μ F	25	2222 023 16161
C262	12.5 μ F	25	2222 001 16139
C263 & 264	80 μ F	16	2222 001 15809
C265 & 266	12.5 μ F	25	2222 001 16139

<u>Code</u>	<u>Value</u>	<u>Part No.</u>
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(all at 5% and 0.25W unless otherwise stated)

R251	150k Ω		2322 212 13154
R252	120k Ω		2322 212 13124
R253	680 Ω		2322 212 13681
R254	100 Ω		2322 212 13101
R255	10k Ω		2322 212 13103
R256	3k Ω	1%	2322 114 53002
R257	75 Ω	1%	2322 114 57509
R258	150k Ω		2322 212 13154
R259	120k Ω		2322 212 13124
R260	100 Ω		2322 212 13101
R261	560 Ω	1%	2322 114 55601
R262	150k Ω		2322 212 13154
R263	120k Ω		2322 212 13124
R264	1k2 Ω		2322 212 13122
R265	100 Ω		2322 212 13101
R266	1k1 Ω	1%	2322 114 51102
R267	75 Ω	1%	2322 114 57509
R268	10 Ω		2322 212 13109
R269	330 Ω	1%	2322 114 53301
R270 & 271	1k Ω		2322 212 13102
R272	68 Ω		2322 212 13689
R273	220 Ω		2322 212 13221
R274	1k Ω		2322 212 13102
R275	68 Ω		2322 212 13689
R276	220 Ω		2322 212 13221
R277	1k Ω		2322 212 13102
R278	68 Ω		2322 212 13689
R279	220 Ω		2322 212 13221
R280 & R281	3k9 Ω	1%	2322 114 53902
R282	3k9 Ω	1%	2322 114 53902
R283	68 Ω		2322 212 13689

<u>Code</u>	<u>Value</u>		<u>Part No.</u>
(all at 5% and 0.25W unless otherwise stated)			
R284	150k Ω		2322 212 13154
R285	120k Ω		2322 212 13124
R286	560 Ω		2322 212 13561
R287	100 Ω		2322 213 13101
R288	680 Ω		2322 212 13681
R289	10 Ω		2322 212 13109
R290	150k Ω		2322 212 13514
R291	120k Ω		2322 212 13124
R292	680 Ω		2322 212 13681
R293	100 Ω		2322 212 13101
R294	10k Ω		2322 212 13103
R296	3k Ω	1%	2322 114 53002
R297	560E Ω	1%	2322 114 55601
R298	100 Ω		2322 212 13101
R299	150k Ω		2322 212 13154
R300	120k Ω		2322 212 13124
R301	150k Ω		2322 212 13154
R302	120k Ω		2322 212 13124
R303	1k2 Ω		2322 212 13122
R304	100 Ω		2322 212 13101
R305	1k1 Ω	1%	2322 114 51102
R306	75 Ω	1%	2322 114 57509
R307	10k Ω		2322 212 13103
R308-311	220 Ω		2322 212 13221
R312	1k Ω		2322 212 13102
R313	220 Ω		2322 212 13221
R314	56 Ω		2322 212 13569
R315 & 316	10 Ω		2322 212 13109

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
TS251	BC107	9330 013 30XX0
TS252 & 253	BC107	9330 013 30XX0
TS254	BCY71	9330 441 10XX0
TS255 to 257	BFY50	9330 116 00XX0
TS258	BC107	9330 013 30XX0
GR251 to 280	BAY38	9330 042 40XX0

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
C351	125 μ F		16	2222 001 15131
C352	80 μ F		25	2222 001 16809
C354	125 μ F		16	2222 001 15131
C355	0.1 μ F	10	100	2222 341 29104
C356	0.047 μ F	10	250	2222 341 89473
C357	1.0 μ F	10	100	2222 341 29105
C358	0.1 μ F	10	100	2222 341 29104
C359	80 μ F		16	2222 001 15809
C360	80 μ F		25	2222 001 16809
C361 & 363	125 μ F		16	2222 001 15131
C354	0.047 μ F	10	250	2222 341 89473
C365	0.22 μ F	10	100	2222 341 29224
C366	1.0 μ F	10	100	2222 341 29105
C367	0.1 μ F	10	100	2222 341 29104
C368	80 μ F		16	2222 001 15809
C369	125 μ F		16	2222 001 15131
C370	80 μ F		25	2222 001 16809
C372	0.1 μ F	10	100	2222 341 29104
C373	125 μ F		16	2222 001 15131
C374	0.047 μ F	10	250	2222 341 89473
C375	1.0 μ F	10	100	2222 341 29105
C376	0.1 μ F	10	100	2222 341 29104
C377	80 μ F		16	2222 001 15809
C381	100 μ F	5	30	2013 315 05382
C382	10pF	5	30	2013 315 05371
C383	100pF	5	30	2013 315 05382
C384	10pF	5	30	2013 315 05371
C385	100pF	5	30	2013 315 05382
C386	10pF	5	30	2013 315 05371

<u>Code</u>	<u>Value</u>	<u>Part No.</u>
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(all at 5% and 0.25W unless otherwise stated)

R351	18k Ω		2322 212 13183
R352	120 Ω		2322 212 13121
R353	2k7 Ω		2322 212 13272
R354	150 Ω	1%	2322 114 51501
R355	560 Ω		2322 212 13561
R356	680 Ω		2322 212 13681
R357	4k7 Ω	1%	2322 114 54702
R358 & 359	10 Ω		2322 212 13109
R360	1k5 Ω		2322 212 13152
R361	10k Ω	POT 20%	2322 380 06007
R362	1k5 Ω		2322 212 13152
R363	270 Ω		2322 101 63271

<u>Code</u>	<u>Value</u>				<u>Part No.</u>
(all at 5% and 0.25W unless otherwise stated)					
R365	2k Ω				2322 212 13222
R366	68k Ω				2322 212 13683
R367	2k Ω				2322 212 13272
R368	1k Ω				2322 212 13102
R369	12 Ω				2322 212 13129
R370	47 Ω			5W	2113 256 00376
R371	18k Ω				2322 212 13183
R372	120 Ω				2322 212 13121
R373	2k Ω				2322 212 13272
R374	150 Ω		1%		2322 114 51501
R375	560 Ω				2322 212 13561
R376	680 Ω				2322 212 13681
R377	4k7 Ω		1%		2322 114 54702
R378	10 Ω				2322 212 13109
R379	10 Ω				2322 212 13109
R380	1k5 Ω				2322 212 13152
R381	10k Ω	LIN	20%	0.1W	2322 380 06007
R382	1k5 Ω				2322 212 13152
R383	270 Ω			0.5W	2322 101 63271
R385	2k2 Ω				2322 212 13222
R386	68k Ω				2322 212 13683
R387	2k7 Ω				2322 212 13272
R388	1k Ω				2322 212 13102
R389	12 Ω				2322 212 13129
R390	47 Ω			5W	2113 256 00376
R391	10k Ω				2322 212 13183
R392	120 Ω				2322 212 13121
R393	2k7 Ω				2322 212 13272
R394	150 Ω		1%		2322 114 51501
R395	560 Ω				2322 212 13561
R396	680 Ω				2322 212 13681
R397	4k7 Ω		1%		2322 114 54702
R398 & 399	10 Ω				2322 212 13109
R400	1k5 Ω				2322 212 13152
R401	POT 10k Ω	LIN	20%	0.1W	2322 380 06007
R402	1k5 Ω				2322 212 13152
R403	270 Ω			0.5W	2322 101 63271
R405	2k2 Ω				2322 212 13222
R406	68k Ω				2322 212 13683
R407	2k7 Ω				2322 212 13272
R408	1k Ω				2322 212 13102
R409	12 Ω				2322 212 13129
R410	47 Ω			5W	2113 256 00376
R412, 414, 416	5k6 Ω				2322 212 13562
R417	75 Ω				2322 212 13759
R419	470 Ω				2322 212 13471
R420	75 Ω				2322 212 13759
R422	470 Ω				2322 212 13471
R423	75 Ω				2322 212 13759
R425	470 Ω				2322 212 13471

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
TS355	BSY38	9330 047 60XX0
TS356	BCY71	9330 441 10XX0
TS357	BC109	9330 013 50XX0
TS358	BSY39	9330 047 70XX0
TS359 & 361	BC107	9330 013 30XX0
TS363	BSY38	9330 047 60XX0
TS364	BCY71	9330 441 10XX0
TS365	BC109	9330 013 50XX0
TS366	BSY39	9330 047 70XX0
TS367 & 369	BC107	9330 013 30XX0
TS371	BSY38	9330 047 60XX0
TS372	BCY71	9330 441 10XX0
TS373	BC109	9330 013 50XX0
TS374	BSY39	9330 047 70XX0

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
GR351 & 352	BZY88/C6V2	9330 092 90XX0
GR353 & 354	BZY88/C3V6	9330 092 30XX0
GR355 & 356	BZY88/C6V2	9330 092 90XX0
GR357 & 358	BZY88/C3V6	9330 092 30XX0
GR359 & 360	BZY88/C6V2	9330 092 90XX0
GR361 & 362	BZY88/C3V6	9330 092 30XX0

4. VIDEO OUTPUT P.W.B. ASSEMBLY

0183

<u>Code</u>		<u>Part No.</u>
L951	Coil	3913 429 00200

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
C951	0.1 μ F	10	250	2222 341 89104
C952	0.1 μ F	10	100	2222 341 29104
C953	220pF	5	160	2013 315 05811
C954	0.1 μ F	10	100	2222 341 29104
C955	220pF	5	160	2013 315 05811
C956	0.022 μ F	10	250	2222 341 89223
C957	2.2 μ F	20	35	2013 009 00017
C958	0.1 μ F	10	100	2222 341 29104

<u>Code</u>	<u>Value</u>	<u>Part No.</u>
(all at 5% and 0.25W unless otherwise stated)		
R 951	10 Ω	2322 212 13109
R 952	120 Ω	2322 212 13121
R 953	75 Ω	0.5W 2322 101 63759
R 954 to 956	100 Ω	2322 212 13101
R 957	3k3 Ω	3.25W 2113 109 00082
R 958	1k Ω	2322 212 13122
R 959	POT 2k5 Ω	LIN 20% 2113 378 00006
R 960	6k8 Ω	2322 212 13682
R 961	68k Ω	2322 212 13683
R 962	2k2 Ω	2322 212 13222
R 963	100 Ω	2322 212 13101
R 964	3k9 Ω	2322 212 13392
R 965	2k2 Ω	2322 212 13222
R 966	3k3 Ω	2322 212 13332
R 967	10k Ω	2322 212 13103
R 968	3k9 Ω	2322 212 13392
R 969	220 Ω	2322 212 13221
R 970	3M3 Ω	10% 2322 212 12335

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
TS951	BF179	9330 279 30XX0
TS952	BSY39	9330 047 70XX0
TS953	BC109	9330 013 50XX0
TS954	BCY70	9330 441 00XX0
TS955	BSY38	9330 047 60XX0
TS956 & 957	BCY70	9330 441 00XX0

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
GR951 to 953	BA248	9330 229 20XX0

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
CD951	P.C. Socket, 1-way Orange	8213 198 00496

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
C651 & 653 to 656	0.1 μ F	10	100	2222 341 29104
C657	2700pF	10	400	2222 311 51272
C658 & 659	0.1 μ F	10	100	2222 341 29104
C660	640 μ F		16	2222 023 15641
C661	0.22 μ F	10	250	2222 341 89224
C662	4700pF	10	400	2222 311 51472
C663	2 μ F		40	2222 120 17208
C664	0.1 μ F	10	100	2222 341 29104
C665	1 μ F	10	100	2222 341 29105
C666 & 667	0.47 μ F	10	100	2222 341 29474
C668	0.22 μ F	10	100	2222 341 29224
C669	0.022 μ F	10	250	2222 341 89223

<u>Code</u>	<u>Value</u>	<u>Part No.</u>
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(all at 5% and 0.25W unless otherwise stated)

R651	1k Ω			2322 212 13182	
R653	12k Ω			2322 212 13123	
R654	22k Ω			2322 212 13223	
R655	220 Ω			2322 212 13221	
R656 & 657	180 Ω			2322 212 13181	
R658 POT	10k Ω	LIN	20%	0.1W	2322 380 06007
R660	1k Ω			2322 212 13182	
R662 & 665 POT	10k Ω	LIN	20%	0.1W	2322 380 06007
R667 & 668	2k7 Ω			2322 212 13272	
R669	22 Ω			2322 212 13229	
R670 POT	10k Ω	LIN	20%	0.1W	2322 380 06007
R671 & 672	2k7 Ω			2322 212 13272	
R673	4k7 Ω			2322 212 13472	
R674	10k Ω			2322 212 13103	
R675 & 676	220 Ω			2322 212 13221	
R677	1k Ω			2322 212 13102	
R678	1k5 Ω			2322 212 13152	
R679	1k Ω			2322 212 13102	
R680	22k Ω			2322 212 13223	
R681	56k Ω			2322 212 13563	
R682	2k7 Ω			2322 212 13272	
R683	1k2 Ω			2322 212 13122	
R684	330 Ω			2322 212 13331	
R685	1k8 Ω			2322 212 13182	
R686	150 Ω			2322 212 13151	
R687	10k Ω			2322 212 13103	
R688	22k Ω			2322 212 13223	
R689	220 Ω			2322 212 13221	
R690	47 Ω			2322 212 13479	

<u>Code</u>	<u>Value</u>				<u>Part No.</u>
(all at 5% and 0.25W unless otherwise stated)					
R691	POT	100Ω	Modified		3913 423 05010
R692		56Ω			2322 212 13569
R693	POT	100Ω	Modified		3913 423 05010
R694	Car.	10Ω			2322 212 13109
R695		47Ω			2322 212 13479
R696		1kΩ			2322 212 13102
R697		2k7Ω			2322 212 13272
R698		2k2Ω			2322 212 13222
R699		10kΩ	LIN 20%	0.1W	2322 380 06007
R700		1Ω			2322 212 13102
R701		100Ω			2322 212 13101
R702	POT	500Ω	Modified		3913 423 05020
R703		100Ω			2322 212 13101
R704		270Ω			2322 212 13271
R705	POT	2k2Ω	LIN 20%	0.1W	2322 380 06005
R706		270Ω			2322 212 13271
R707		150Ω			2322 212 13151
R708 & 709		680Ω			2322 212 13681
R710		150Ω			2322 212 13151
R711 & 712		27Ω			2322 212 13279
R713		390Ω			2322 212 13391
R714	POT	2k2Ω	LIN 20%	0.1W	2322 380 06005
R715		390Ω			2322 212 13391
R716		270Ω			2322 212 13271
R717 & 718		820Ω			2322 212 13821
R719		270Ω			2322 212 13271
R720 & 721		56Ω			2322 212 13569
R722		47Ω			2322 212 13479
R723		390Ω			2322 212 13391
R724	POT	2k2Ω	LIN 20%	0.1W	2322 380 06005
R725		390Ω			2322 212 13391
R726		270Ω			2322 212 13271
R727 & 728		820Ω			2322 212 13821
R729		270Ω			2322 212 13271
R730 & 731		56Ω			2322 212 13569
R732		47Ω			2322 212 13479
R733		1k5Ω			2322 212 13152
R734		2k2Ω			2322 212 13222
R735		100kΩ	LIN 20%	0.1W	2322 380 06011

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
TS651 to 654	BC109	9330 013 50XX0
TS655	2N4036	9330 620 10762
TS656	BFY50	9330 116 00XX0
TS657	2N4036	9330 620 10762
TS658	BFY50	9330 116 00XX0
TS659	2N4036	9330 620 10762
TS660	BFY50	9330 116 00XX0
GR651	BAY38	9330 042 40XX0

6. LINE E.H.T. OUTPUT ASSEMBLY

0170

Line Stage 'A' P.W.B. Assembly

0265

<u>Code</u>		<u>Part No.</u>
T1151	Line O/P Transformer	3122 108 39390
T1152	Convergence Transformer	3913 429 00420

<u>Code</u>		<u>Part No.</u>
L1152	Coil	3913 429 00180

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
C1151	0.01 μ F	10	250	2222 341 89103
C1152	4 μ F		400	2222 040 16408
C1153	6.4 μ F		6.4	2222 001 13648
C1154	680pF	10	630	2013 315 06201
C1155	0.001 μ F	10	400	2222 311 51102
C1156	470pF	5	500	2222 753 34701
C1157	680pF	5	500	2222 753 36801
C1158	2200pF	5	500	2222 753 32202
C1159	2000 μ F		10	2222 063 04202
C1160	32 μ F		300	2222 080 04329
C1161	0.033 μ F	10	1600	2222 341 81333
C1162	2.2 μ F	10	250	2222 341 89225
C1163	See 0269			
C1164	0.0068pF	10	1600	2222 341 81682
C1165	0.0015 μ F	10	400	2222 311 51152
C1166	See 0269			
C1167	0.0015 μ F	10	400	2222 311 51152
C1168	0.022 μ F	10	1000	2222 341 71223
C1169	100 μ F		450	2222 080 37101
C1170 & 1172	See 0269			
C1174	0.022 μ F	10	1000	2222 341 71223
C1175	0.033 μ F	10	1600	2222 341 81332
C1176)				
C1177)				
C1178)				
C1179)	See 0422			
C1180)				
C1181)				

<u>Code</u>	<u>Value</u>		<u>Part No.</u>
(all at 5% and 0.25W unless otherwise stated)			
R1151	1M Ω		2322 212 13105
R1152	1k Ω		2322 212 13102
R1153	820 Ω		2322 212 13821
R1154	12k Ω	1W	2322 214 13123
R1156	8k2 Ω		2322 212 13822
R1157	2k2 Ω		2322 212 13222
R1158	220k Ω		2322 212 13224
R1159	56k Ω		2322 212 13563
R1160	1M Ω	0.5W	2322 101 63105
R1161	1k Ω		2322 212 13102
R1162	1M Ω		2322 212 13105
R1163	680k Ω		2322 212 13684
R1164	1k Ω		2322 212 13102
R1165	120k Ω	0.5W	2322 101 63124
R1166	270 Ω	5.5W	2322 320 32271
R1167	See 0269		
R1168	22k Ω	0.5W	2322 101 63223
R1169	680 Ω		2322 212 13681
R1170	470 Ω		2322 212 13474
R1172	22k Ω		2322 212 13323
R1174	22k Ω	0.5W	2322 101 63223
R1175	680 Ω		2322 212 13681
R1176	47k Ω		2322 212 13473
R1177	390k Ω	2W	2322 102 83394
R1180 to 1184	1M Ω	2W	2322 102 83105
R1186	See 0269		
R1187	560k Ω		2322 212 13564
R1188	2k7 Ω	5.5W	2322 320 32272
R1189	0.33 Ω	10% 3W at 20°C	2113 256 03401
R1190)			
to)	See 0422		
R1194)			

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
B1151	Valve ECC88	9300 006 50XX0
B1152	Valve EL504	9300 001 40XX0
B1153	Valve EY88	9330 020 70XX0

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
GR1151	OAZ226	9330 097 11XX0
GR1152	BYX10	9330 087 10XX0
GR1153	See 0269	
GR1154	BYX10	9330 087 10XX0
to 1157		
GR1158 to 1162 - see 0422		

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
C1201	0.022 μ F	10	250	2222 341 89223
C1202 & 1203	1 μ F	10	400	2222 341 59105
C1204	16 μ F		400	2222 040 46169
C1205	10 μ F		400	2222 040 46109
C1206	0.47 μ F	10	400	2222 341 59474
C1207	1.2 μ F	10	250	2222 341 89125

<u>Code</u>	<u>Value</u>	<u>Part No.</u>
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(all at 5% and 0.25W unless otherwise stated)

R1201	470k Ω			2322 212 13474
R1202	1k Ω			2322 212 13102
R1203	56k Ω		0.5W	2322 101 63563
R1204 & 1205	4M7 Ω	10%	0.5W	2322 101 62475
R1207	220k Ω	1%		2322 114 52204
R1208 POT	22k Ω LIN	20%	0.1W	2322 380 06008
R1209	470k Ω	1%		2322 114 54704
R1210	1k Ω			2322 212 13102
R1211	68k Ω		0.5W	2322 101 63683
R1213	1k Ω			2322 212 13102
R1214	150k Ω		0.5W	2322 101 63154
R1215	68k Ω		1W	2322 214 13683
R1216	270V Ω	10%	2W 1mA	2322 554 03522
R1218	270 Ω			2322 212 13271

<u>Code</u>	<u>Part No.</u>
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B1201	Sub Min Ref Tube	ZZ1000	9300 236 80XX0
B1202	Valve	ECC81	9300 022 91XX0
B1203	Sub Min Ref Tube	ZZ1000	9300 236 80XX0
B1204	Valve	EL86	9300 016 70XX0

<u>Code</u>	<u>Value</u>	<u>Part No.</u>
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RE1200	740 Ω	Relay 24V d.c. Coil No. 12 1M Contact	2412 131 00033
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<u>Code</u>	<u>Type</u>	<u>Part No.</u>
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GR1201 to GR1204	BYX10	9330 087 10XX0
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<u>Code</u>		<u>Part No.</u>
T1001	EHT O/P Transformer	3122 108 39850

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
C1001	0.01 μ F	10	250	2222 341 89103
C1002	0.33 μ F	10	400	2222 341 59334
C1003	4 μ F		400	2222 040 16408
C1004	0.01 μ F	10	250	2222 341 89103
C1005	0.1 μ F	10	400	2222 341 59104
C1006	20 μ F		16	2222 001 15209
C1007	220pF	10	630	2013 315 16101
C1008	0.001 μ F	10	400	2222 311 51102
C1009	120pF	5	8k	2013 564 00303
C1010 & 1011	270pF	5	5k	2013 564 00101
C1012	1250 μ F		4	2222 023 12132
C1013	32 μ F		300	2222 080 04329
C1014	0.0033 μ F	10	400	2222 311 51332
C1015	0.056 μ F	10	100	2222 341 29563
C1016	0.1 μ F	10	400	2222 341 59104
C1017	0.015 μ F	10	1000	2222 341 71154
C1018 & 1019	100 μ F		450	2222 080 37101
C1020	0.1 μ F	10	100	2222 341 29104
C1021	0.001 μ F	5	500	2222 753 31002
C1022	220pF	10	160	2013 315 05923

<u>Code</u>	<u>Value</u>		<u>Part No.</u>
(all at 5% and 0.25W unless otherwise stated)			
R1001	330k Ω		2322 212 13334
R1002	560k Ω		2322 212 13564
R1003	470k Ω		2322 212 13474
R1004	1k Ω		2322 212 13102
R1005	18k Ω		2322 212 13183
R1006	39k Ω		2322 101 63393
R1007	470k Ω		2322 212 13474
R1008	1k Ω		2322 212 13102
R1009	270 Ω		2322 212 13271
R1010	68k Ω		2322 101 63683
R1012	33k Ω		2322 214 13333
R1013	18k Ω		2322 212 13183
R1014	68k Ω		2322 212 13683
R1015	270k Ω		2322 214 13274
R1016	330k Ω		2322 214 13334
R1017	33k Ω		2322 212 13333
R1018	1k Ω		2322 212 13102
R1019	8 Ω	10%	2322 320 31828

<u>Code</u>	<u>Value</u>			<u>Part No.</u>
(all at 5% and 0.25W unless otherwise stated)				
R1020	270Ω	10%	5.5W	2322 320 32271
R1021	560MΩ	20%	30kV	2113 108 00003
R1022	47kΩ	1%	1W	2322 117 54703
R1023	4k7Ω			2322 212 13472
R1024	POT 10kΩ	LIN 20%	0.1W	2322 300 06007
R1025	6k8Ω			2322 212 13682
R1026	See 3941			
R1027	680kΩ			2322 212 13684
R1028	4M7Ω	10%		2322 212 12475
R1029	1kΩ			2322 212 13102
R1030	12kΩ			2322 212 13123
R1031	4k7Ω	LIN 20%	0.1W	2322 380 06006
R1032	2k2Ω			2322 212 13222
R1033	330Ω		5.5W	2322 320 32331

<u>Code</u>			<u>Part No.</u>
B1001	Valve	ECC81	9300 022 91XX0
B1002	Valve	ECF802	9300 009 30XX0
B1003	Sub Min Ref Tube	ZZ1000	9300 236 80XX0
B1004	Valve	EL509	9300 366 00XX0
B1005	Valve	EY500	9300 000 80XX0
B1006	Valve	GY501	9300 001 10XX0

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
GR1001	OAZ226	9330 097 11XX0
GR1002 to GR1005	BYX10	9330 087 10XX0

EHT Stage 'B' P.W.B. Assembly 0268

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
C1051	1000μF		6.4	2222 023 13102
C1052	400μF		25	2222 023 16401
C1053	250μF		25	2222 023 16251
C1054	10μF		25	2222 002 16109
C1056 & 1057	5.6μF	10	100	2222 341 29565
C1058	4μF		40	2222 001 17408

<u>Code</u>	<u>Value</u>		<u>Part No.</u>
(all at 5% and 0.25W unless otherwise stated)			
R1051	2k2Ω		2322 212 13222
R1052	470Ω		2322 212 13471
R1053	220Ω		2322 212 13221
R1054	560Ω		2322 212 13561
R1055	150Ω		2322 212 13151
R1056	1k2Ω		2322 212 13122
R1057	5k6Ω		2322 212 13562
R1058	270Ω		2322 212 13271
R1059	15kΩ		2322 212 13153
R1066	10MΩ	10%	2322 212 12106
R1067	3k3Ω		2322 212 13332
R1068	1k2Ω		2322 212 13122
R1069	2k2Ω		2322 212 13222
R1070	1kΩ		2322 212 13102
R1072	2k2Ω		2322 212 13222

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
GR1053	BYX10	9330 087 10XX0

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
TS1051 & TS1052	BCY32	9330 113 70XX0
TS1055	BCY71	9330 441 10XX0
TS1056	MPF103	9330 896 70702
TS1057	BC107	9330 013 30XX0

Beam Current Limit P.W.B. Assembly 0479

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
C1025	125μF		10	2222 001 14131
C1026	0.1μF	10	250	2222 341 89104

<u>Code</u>	<u>Value</u>			<u>Part No.</u>
(all at 5% and 0.25W unless otherwise stated)				
R1034	22k Ω			2322 212 13223
R1035	1k5 Ω			2322 212 13152
R1036	8k2 Ω			2322 212 13822
R1037	120 Ω			2322 212 13121
R1038	100 Ω			2322 212 13101
R1039	100 Ω	LIN	20%	2113 378 00002
R1040	22k Ω		1W	2322 214 13223
R1041	33k Ω		1W	2322 214 13333
R1042	18k Ω			2322 212 13183
R1043	8k2 Ω			2322 212 13822
R1044	270k Ω		0.5W	2322 101 63274
R1045	47k Ω			2322 212 13473
R1046 & 1047	120 Ω			2322 212 13121

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
TS1001	BC107	9330 013 30XX0
TS1002	BCY71	9330 441 10XX0

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
GR1006	BAY38	9330 042 40XX0
GR1007	BZX61-C36	9330 879 30XX0
GR1008	BZY88-C5V6	9330 092 80XX0
GR1009	BAY38	9330 042 40XX0

High Voltage Assembly 0269

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
C1163	120pF	10	3.5kV	2013 564 00003
C1166	100pF	5	8kV	2013 564 00305
C1170	150pF	5	8kV	2013 564 00304
C1172	470pF	10	1500V	2013 564 00051

<u>Code</u>	<u>Value</u>			<u>Part No.</u>
R1167	2k2 Ω	5%	0.5W	2322 101 63222
R1186	100k Ω	5%	0.5W	2322 101 63104

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
GR1153	BY140	9330 458 60XX0

<u>Code</u>		<u>Part No.</u>
L351	Inductor	3522 149 02620

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
C551	80 μ F		25	2222 001 16809
C552	1M2 Ω	10	100	2222 341 29125
C553	47k Ω	2	63	2222 435 34703
C554	2k2 Ω	10	125	2222 436 12202
C555	47k Ω	10	100	2222 341 29473
C556	47k Ω	10	100	2222 341 29473
C557	25 μ F		25	2222 001 16259
C558 & 559	10 μ F	10	20	2013 009 00041
C560	12M5 Ω		25	2222 001 16139
C561	47 μ F	20	20	2013 009 00032
C562	47 μ F	20	35	2013 009 00036
C563	470pF	5	30	2013 315 05386
C572	160 μ F		25	2222 023 16161
C573	0.1 μ F	10	100	2222 341 29104
C574	0.1 μ F	10	100	2222 341 29104
C575	125 μ F		16	2222 001 15131
C576 & 577	0.1 μ F	10	100	2222 341 29104
C578 & 579	100pF	5	500	2222 555 08101
C580	0.1 μ F	10	250	2222 341 89104
C581	3k3 Ω	10	400	2222 311 51332
C582	47 μ F	20	35	2013 009 00036
C583	0.01 μ F	10	250	2222 341 89103
C584	100pF	5	500	2222 555 08101
C585	32 μ F		64	2222 001 18329
C586	2.2 μ F	10	100	2222 341 29225
C587	0.47 μ F	10	100	2222 341 29474
C588	0.1 μ F	10	250	2222 341 89104
C590	3k3 Ω	10	400	2222 311 51332

<u>Code</u>	<u>Value</u>	<u>Part No.</u>
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(all at 5% and 0.25W unless otherwise stated)

R551	1k Ω			2322 212 13102
R552	10k Ω			2322 212 13103
R553	470 Ω			2322 212 13471
R554	12k Ω			2322 212 13123
R555	1k2 Ω		0.5W	2322 101 63112
R556	27k Ω	1%	0.125W	2322 113 52703
R557	39k Ω	1%	0.125W	2322 113 53903
R558	10k Ω	LIN 20%	0.1W	2322 380 06007
R559	180k Ω			2322 212 13184
R560	2k2 Ω			2322 212 13222

<u>Code</u>	<u>Value</u>			<u>Part No.</u>
(all at 5% and 0.25W unless otherwise stated)				
R561	1k2Ω			2322 212 13122
R562	4k7Ω			2322 212 13472
R563	470Ω			2322 212 13471
R564	27Ω			2322 212 13279
R565	220Ω			2322 212 13221
R566	470Ω			2322 212 13471
R567	4k7Ω			2322 212 13472
R568	47kΩ			2322 212 13473
R569	15kΩ	1%	0.125W	2322 113 51503
R570 & 571	1k2Ω	1%	0.125W	2322 113 51202
R572	1kΩ	1%	0.125W	2322 113 51002
R573	1kΩ			2322 212 13102
R574	100Ω			2322 212 13101
R575	270Ω			2322 212 13271
R576 & 577	500Ω	POT	Modified	3913 423 05020
R578	3k3Ω			2322 212 13332
R579	3k3Ω			2322 212 13332
R580	500Ω	POT	Modified	3913 423 05020
R581	1kΩ			2322 212 13102
R582	3k3Ω			2322 212 13332
R583	56Ω			2322 212 13569
R584	220Ω			2322 212 13221
R585	1kΩ			2322 212 13102
R586	180Ω		0.5W	2322 101 63181
R587	1kΩ			2322 212 13102
R588	POT 4k7Ω	LIN	20%	0.1W 2322 380 06006
R589	1kΩ			2322 212 13102
R590	470Ω			2322 212 13471
R591	390Ω			2322 212 13391
R592	250Ω	POT	Modified	3913 423 05000
R593	39Ω		0.5W	2322 101 63390
R594	270Ω		0.5W	2322 101 63271
R595	2k7Ω			2322 212 13272
R596	68Ω			2322 212 13689
R597	22kΩ		1W	2322 214 13223
R598	1kΩ			2322 212 13102
R599	470Ω			2322 212 13471
R600	1kΩ			2322 212 13102
R601	330Ω			2322 212 13331
R602	15kΩ			2322 212 13153
R603	6k8Ω			2322 212 13682
R604	2k7Ω			2322 212 13272
R605	POT 1kΩ	LIN	20%	0.1W 2322 380 06004
R606	1k5Ω			2322 212 13152
R607	22Ω			2322 212 13229
R608	150Ω			2322 212 13151
R609	22kΩ		1W	2322 214 13223
R610	330EΩ			2322 212 13331
R611	22Ω			2322 212 13229
R612	330Ω			2322 212 13331

<u>Code</u>	<u>Value</u>				<u>Part No.</u>	
(all at 5% and 0.25W unless otherwise stated)						
R613	POT	1k Ω	LIN	20%	0.1W	2322 380 06004
R614		1k2 Ω				2322 212 13122
R615		22 Ω				2322 212 13229
R616		330 Ω				2322 212 13331
R617		3k3 Ω			0.5W	2322 101 63332
R618		22 Ω				2322 212 13229
R619		150 Ω				2322 212 13151
R620		6k8 Ω				2322 212 13682
R621		3k3 Ω				2322 212 13332
R622		470 Ω				2322 212 13471
R623	POT	2k2 Ω	LIN	20%	0.1W	2322 380 06005
R624		150 Ω				2322 212 13151
R625		220 Ω				2322 212 13221
R626		4k7 Ω				2322 101 63472
R627		100 Ω				2322 212 13101
R628		2k2 Ω				2322 212 13222
R629		100 Ω				2322 212 13101
R630		100k Ω				2322 212 13104
R631		39k Ω				2322 212 13393
R632		8k2 Ω				2322 212 13822
R633		1k5 Ω				2322 212 13152
R634		330 Ω				2322 212 13331
R635		27k Ω				2322 212 13273
R636		6k8 Ω				2322 212 13682

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
TS551	BC107	9330 013 30XX0
TS552 & 553	BFY50	9330 116 00XX0
TS554	BC107	9330 013 30XX0
TS555	BCY70	9330 441 00XX0
TS556	BCY71	9330 441 10XX0
TS557 to 559	BFY51	9330 116 10XX0
TS560	BFY50	9330 116 00XX0
TS561	BC107	9330 013 30XX0
TS562 & 563	BFY50	9330 116 00XX0
TS564	BC107	9330 013 30XX0
TS565	BFY50	9330 116 00XX0
TS566	BF178	9330 216 10XX0
TS567 & 568	BC107	9330 013 30XX0
TS569	BFY50	9330 116 00XX0

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
GR551	BAY38	9330 042 40XX0
GR552	AAZ15	9330 041 60XX0
GR553 & 554	BAY38	9330 042 40XX0
GR556 & 557	BZY39	9330 042 60XX0
GR558	BZY88-C3V3	9330 092 20XX0
GR559	OA47	9330 041 90XX0
GR560	BAY38	9330 042 40XX0
GR561 & 562	OA202	9330 086 50XX0

8. FIELD CONVERGENCE P.W.B. ASSEMBLY

0180

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
C751	160 μ F		25	2222 023 16161
C752 & 753	125 μ F		16	2222 001 15131
C754 & 755	0.1 μ F	10	100	2222 341 29104
C756	125 μ F		16	2222 001 15131
C757	22 μ F	20	15	2013 009 00034
C758	0.47 μ F	10	100	2222 341 29474
C759	200 μ F		6.4	2222 001 13201
C760	2.2 μ F	10	100	2222 341 29225
C761	68 μ F	20	15	2013 009 00035
C762	0.47 μ F	10	100	2222 341 29474

<u>Code</u>	<u>Value</u>	<u>Part No.</u>
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(all at 5% and 0.25W unless otherwise stated)

R751	5k6 Ω			2322 212 13562	
R752	8k2 Ω			2322 212 13822	
R753 & 754	680 Ω			2322 212 13681	
R755	220 Ω			2322 212 13221	
R756	2k7 Ω			2322 212 13272	
R757	4k7 Ω	LIN	20%	0.1W	2322 380 06006
R758	2k7 Ω			2322 212 13272	
R759	100 Ω			2322 212 13101	
R760	1k8 Ω			2322 212 13182	
R761	4k7 Ω			2322 212 13472	
R762	1k5 Ω			2322 212 13152	
R763	3k9 Ω			2322 212 13392	
R764	220 Ω			2322 212 13221	
R765	2k7 Ω			2322 212 13272	
R766	POT 47k Ω	LIN	20	0.1W	2322 380 06009
R767	1k8 Ω			2322 212 13182	
R768	4k7 Ω			2322 212 13472	
R769	680 Ω			2322 212 13681	
R770	1k Ω			2322 212 13102	

<u>Code</u>	<u>Value</u>				<u>Part No.</u>
(all at 5% and 0.25W unless otherwise stated)					
R771	4k7 Ω				2322 212 13472
R772 & 773	10k Ω				2322 212 13103
R774	2k2 Ω				2322 212 13222
R775	POT 2k2 Ω	LIN	20	0.1W	2322 380 06005
R776	POT 4k7 Ω	LIN	20	0.1W	2322 380 06006
R777	1k2 Ω				2322 212 13122
R778	2k2 Ω				2322 212 13222
R779	POT 10k Ω	LIN	20	0.1W	2322 380 06007
R780 & 781	1k2 Ω				2322 212 13122
R782	220 Ω				2322 212 13221
R783	680 Ω				2322 212 13681
R784	1k Ω			0.5W	2322 101 63102
R785	270 Ω				2322 212 13271
R786	75 Ω				2322 212 13759
R787 & 788	4k7 Ω	POT LIN	20	0.1W	2322 380 06006
R789 & 790	4k7 Ω	POT LIN	20	0.1W	2322 380 06006
R791	270 Ω				2322 212 13271
R792 to 794	10k Ω				2322 212 13103
R795	3k9 Ω				2322 212 13392
R796	1k2 Ω				2322 212 13122
R797	1k Ω			0.5W	2322 101 63102
R798	8k2 Ω				2322 212 13822
R799	4k7 Ω				2322 212 13472
R800	1k8 Ω				2322 212 13182
R801	4k7 Ω				2322 212 13472
R802	8k2 Ω				2322 212 13822
R803	1k Ω				2322 212 13102
R804	1k2 Ω				2322 212 13122
R805 & 806	270 Ω				2322 212 13271
R807	820 Ω				2322 212 13821
R808 & 809	1k2 Ω				2322 212 13122
R810 & 811	820 Ω				2322 212 13821
R812	1k Ω				2322 212 13102
R813	2k2 Ω				2322 212 13222
R814	POT 2k2 Ω	LIN	20	0.1W	2322 380 06005
R815	2k7 Ω				2322 212 13272
R816	270E Ω				2322 212 13271
R817	820 Ω			0.5W	2322 101 63821
R818	POT 2k2 Ω	LIN	20	0.1W	2322 380 06005
R819	330 Ω				2322 212 13331
R820	POT 2k2 Ω	LIN	20	0.1W	2322 380 06005
R821	1k Ω				2322 212 13102
R822	2k2 Ω				2322 212 13222
R823 & 824	820 Ω				2322 212 13821
R825 & 826	1k2 Ω				2322 212 13122
R827	820 Ω				2322 212 13821
R828 & 829	270 Ω				2322 212 13271
R830	1k Ω				2322 212 13102
R831	2k2 Ω				2322 212 13222
R832 & 833	820 Ω				2322 212 13821

<u>Code</u>	<u>Value</u>	<u>Part No.</u>
(all at 5% and 0.25W unless otherwise stated)		
R834 & 835	1k2Ω	2322 212 13122
R836	820Ω	2322 212 13821
R837 & 838	270Ω	2322 212 13271
R842	1k8Ω	2322 212 13182

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
TS751	BC109	9330 013 50XX0
TS752 & 753	BC107	9330 013 30XX0
TS754 to 757	BCY70	9330 441 00XX0
TS758 to 762	BC107	9330 013 30XX0
TS763	BCY70	9330 441 00XX0
TS764 to 766	BC107	9330 013 30XX0
TS767	BCY70	9330 441 00XX0
TS768	BC107	9330 013 30XX0

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
GR752 & 753	BZY78	9330 109 00XX0
GR754 & 755	BAY38	9330 042 40XX0
GR756	BZY78	9330 109 00XX0
GR757 & 758	BAY38	9330 042 40XX0

9. SYNC. PROC. P.W.B. ASSEMBLY 0463

<u>Code</u>		<u>Part No.</u>
L451 & 452	Inductor	3122 108 94820

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
C451	12.5μF		25	2222 001 16139
C452	20μF		16	2222 001 15209
C453	25μF		25	2222 001 16259
C454	25μF		6.4	2222 001 13259
C455	25μF		25	2222 001 16259
C456 & 457	0.1μF	10	100	2222 341 29104
C458	125μF		16	2222 001 15131
C459	100μF	5	160	2013 315 05797
C460	33pF	5	160	2013 315 05791
C461	22kΩ	10	250	2222 341 89223
C462	470pF	5	160	2013 315 05821
C463	68pF	5	160	2013 315 05795
C464	18pF	5	160	2013 315 05786
C465	270pF	5	160	2013 315 05812
C466 & 477	120pF	5	160	2013 315 05798

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
C468	270pF	5	160	2013 315 05812
C469	0.012μF	10	250	2222 341 89123
C470	3900pF	10	400	2222 311 51392
C471	0.1μF	10	100	2222 341 29104
C472	22pF	5	160	2013 315 05787
C473	50μF		25	2222 001 16509
C474	100pF	5	160	2013 315 05797
C475	1800pF	5	160	2013 315 05871
C476	2.5μF		16	2222 002 15258
C477	10μF		16	2222 001 15109
C478	1500pF	5	160	2013 315 05878
C479	0.22μF	10	100	2222 341 29224
C480	0.0047μF	5	160	2013 315 08053
C481	10μF		16	2222 001 15109
C482 & 483	0.01μF	10	100	2222 341 29103
C484	1μF	10	100	2222 341 29105
C485	3900pF	2.5	160	2013 315 05771
C486	0.001μF	2.5	160	2013 315 05772
C487	68pF	5	160	2013 315 05795
C488 & 489	80μF		25	2222 001 16809
C490	0.1μF	10	100	2222 341 29104
C491	1200pF	10	400	2222 311 51122
C492	0.1μF	10	100	2222 341 29104
C493	80μF		25	2222 001 16809
C494	50μF		25	2222 001 16509
C495	33pF	5	160	2013 315 05791
C496	80μF		16	2222 001 15809
C497	0.47μF	10	100	2222 341 29474
C498	100pF	5	160	2013 315 05797
C499	10μF		16	2222 001 15109

<u>Code</u>	<u>Value</u>	<u>Part No.</u>
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(all at 5% and 0.125W unless otherwise stated)

R451	12kΩ	2322 211 13123
R452	3k3Ω	2322 211 13332
R453	1k2Ω	2322 211 13122
R454	6k8Ω	2322 211 13682
R455	22kΩ	2322 211 13223
R456 & 457	270Ω	2322 211 13271
R458	150Ω	2322 211 13151
R459	120Ω	2322 211 13121
R460	47Ω	2322 211 13479
R461	15kΩ	2322 211 13153
R462	8k2Ω	2322 211 13822
R463	3k9Ω	2322 211 13392
R464	100Ω	2322 211 13101
R465	1kΩ	2322 211 13102
R466	470Ω	2322 211 13471
R467	3k3Ω	2322 211 13332
R468	15kΩ	2322 211 13153

<u>Code</u>	<u>Value</u>		<u>Part No.</u>
(all at 5% and 0.125W unless otherwise stated)			
R469	10 Ω	0.25W	2322 212 13109
R470	10 Ω		2322 211 13109
R471	2k2 Ω		2322 211 13222
R472	68 Ω		2322 211 13689
R473	2M2 Ω	10 0.25W	2322 212 12225
R474	27k Ω		2322 211 13273
R475	330k Ω	0.25W	2322 212 13334
R476 & 477	2k2 Ω		2322 211 13222
R478	2k7 Ω		2322 211 13272
R479	470 Ω		2322 211 13471
R480	680 Ω		2322 211 13681
R481	82 Ω		2322 211 13829
R482	330 Ω		2322 211 13331
R483	10k Ω		2322 211 13103
R484	6k8 Ω		2322 211 13682
R485	5k6 Ω		2322 211 13562
R486	2k2 Ω		2322 211 13222
R487	33k Ω		2322 211 13333
R488	270k Ω	0.25W	2322 212 13274
R489	1k2 Ω		2322 211 13122
R490	680 Ω		2322 211 13681
R491	1k5 Ω		2322 211 13152
R492	3k9 Ω		2322 211 13392
R493	8k2 Ω		2322 211 13822
R494	33k Ω		2322 211 13333
R495	330k Ω		2322 211 13334
R496	1k5 Ω		2322 211 13152
R497	3k3 Ω		2322 211 13332
R498	5k6 Ω		2322 211 13562
R499	180 Ω		2322 211 13181
R500	1k5 Ω		2322 211 13152
R501	390 Ω		2322 211 13391
R502	4k7 Ω		2322 211 13472
R503	2k7 Ω		2322 211 13272
R504	680 Ω		2322 211 13681
R505	33k Ω		2322 211 13333
R506	1k5 Ω		2322 211 13152
R507	100k Ω		2322 211 13104
R508	3k3 Ω		2322 211 13332
R509	150 Ω		2322 211 13151
R510	330 Ω	5W	2113 256 00399
R511	2k2 Ω		2322 211 13222
R512	1k Ω		2322 211 13102
R513	3k3 Ω		2322 211 13332
R514	3k9 Ω		2322 211 13392
R515	1k5 Ω		2322 211 13152
R516	270 Ω		2322 211 13271
R517	1k Ω		2322 211 13102
R518	47k Ω		2322 211 13473
R519	470 Ω	0.5W	2322 101 63471

<u>Code</u>	<u>Value</u>			<u>Part No.</u>
(all at 5% and 0.125W unless otherwise stated)				
R520	12k Ω			2322 211 13123
R521	3k3 Ω			2322 211 13332
R522 & 523	470 Ω			2322 211 13471
R524	120 Ω			2322 211 13121
R525	470 Ω		0.25W	2322 212 13471
R526	1k8 Ω			2322 211 13182
R527	12k Ω			2322 211 13123
R528 & 529	150k Ω			2322 211 13154
R530	5k6 Ω			2322 211 13562
R531	22k Ω			2322 211 13223
R532	1k Ω			2322 211 13102
R533	22k Ω	1%		2322 113 52203
R534	1k Ω		0.25W	2322 212 13102
R535	22k Ω	1%		2322 113 52203
R536	68 Ω			2322 211 13689
R537	1k Ω			2322 211 13102
R538	270 Ω			2322 211 13271
R539	2k2 Ω			2322 211 13222
R540 & 541	1k Ω			2322 211 13102
R542	1k5 Ω			2322 211 13152
R543	2k2 Ω			2322 211 13222
R544	3k3 Ω			2322 211 13332
R545	18k Ω			2322 211 13183
R546	1k2 Ω			2322 211 13122
R547 & 548	22k Ω			2322 211 13223
R549	150 Ω			2322 211 13151
R550	1k Ω			2322 211 13102
R551	10k Ω			2322 211 13103
R552	1k8 Ω			2322 211 13182
R553	POT 1k Ω	LIN	20%	0.1W 2322 380 06004
R554	560 Ω			2322 211 13561
R555	6k8 Ω			2322 211 13682
R556	820 Ω			2322 211 13821
R557	4k7 Ω			2322 211 13472
R558	1k Ω			2322 211 13102
R559	330 Ω			2322 211 13331
R560	560 Ω		0.5W	2322 101 63561
R561	150 Ω			2322 211 13151
R562	3k9 Ω			2322 211 13392
R563	33k Ω			2322 211 13333
R564	100 Ω			2322 211 13101
R565	470 Ω		0.25W	2322 212 13471
R566	10 Ω		0.25W	2322 212 13109
R567	33k Ω			2322 211 13333
R568	6k8 Ω			2322 211 13682
R569	4k7 Ω			2322 211 13472
R571	1k8 Ω			2322 211 13182
R572	10k Ω			2322 211 13103

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
TS451	BC109	9330 013 50XX0
TS452 & 454	BC107	9330 013 30XX0
TS455	BCY72	9330 441 20XX0
TS456	BC107	9330 013 30XX0
TS457	BCY72	9330 441 20XX0
TS458	BCY71	9330 441 10XX0
TS459	BCY72	9330 441 20XX0
TS460 & 461	BCY71	9330 441 10XX0
TS462	BC107	9330 013 30XX0
TS463	BCY72	9330 441 20XX0
TS464 & 465	BC107	9330 013 30XX0
TS466	BFY51	9330 116 10XX0
TS467 & 468	BCY71	9330 441 10XX0
TS469 to 472	BC107	9330 013 30XX0
TS473	BCY71	9330 441 10XX0
TS474 & 475	BCY70	9330 441 00XX0
TS476	BSY38	9330 047 60XX0
TS477 & 478	BC107	9330 013 30XX0
TS479	BSY38	9330 047 60XX0
TS480	BC107	9330 013 30XX0

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
GR451 to 458	BAY38	9330 042 40XX0
GR459 to 466	BZY88/C4V7	9330 092 60XX0
GR468 & 469	BZY78	9330 109 00XX0
GR470 & 471	BAY38	9330 042 40XX0
RE451 & 452	Relay 1110 Ω D.C. Coil No. 13, C/O 10 Contact Single Pole	2412 131 00057

10. MAIN FRAME ASSEMBLY 0167

Centre Chassis Assembly 0361

<u>Code</u>	<u>Description</u>	<u>Part No.</u>
T926	Transformer	3913 429 00350
T927	Transformer	8213 198 00574
or		
T927	Transformer	3122 107 30740

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
C 926	0.68 μ F	10	100	2222 341 29684
C 927	160 μ F		64	2222 023 18161
C 928	0.068 μ F	10	250	2222 341 89683
C 929	1250 μ F		25	2222 063 16132
C 930	32 μ F		64	2222 001 18329
C 987	0.025 μ F	20	6kV	2013 205 00084

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
R 926	22 Ω	5%	16W	2322 320 02229
R 927	1k5 Ω	5%	16W	2322 320 02152
R 928	3 Ω	10%	5W	2113 256 00498
R 929	360 Ω	5%	2W	2322 102 83361
R 930	3 Ω	10%	9W	2113 256 02401
R 931	1k2 Ω	5%	0.25W	2322 212 13122

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
GR927 & 928	BZY78	9330 109 00XX0

Spark Suppression P.W.B. Assembly 0173

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
C 975 to 977	0.1 μ F	10	1000	2222 341 71104
C 978	See 0361			
C 979 & 980	0.1 μ F	10	100	2222 341 29104
C 981	680pF	5	400	2013 315 07251
C 982	0.1 μ F	10	100	2222 341 29104
C 983 to 985	2.2 μ F	10	250	2222 341 89225
C 986	32 μ F		100	2222 040 10329
C 987	0.1 μ F	10	250	2222 341 89104

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
R 975 to 978	1M Ω	5%	0.5W	2322 101 63105
R 979 to 981	220 Ω	5%	0.5W	2322 101 63221
R 982	6k8 Ω	5%	8W	2113 256 01003
R 983	2k2 Ω	5%	0.25W	2322 212 13222
R 984	47k Ω	5%	1W	2322 214 13473
R 985	1k5 Ω	5%	0.25W	2322 212 13152
R 986	1k5 Ω	5%	5W	2113 256 00417
R 987	470k Ω	5%	0.25W	2322 212 13474
R 988 to 990	4k7 Ω	5%	0.5W	2322 101 63472
R 991 & 992	470k Ω	5%	0.25W	2322 212 13474
R 993 to 995	22k Ω	5%	0.25W	2322 212 13223
R 996 to 998	22k Ω	5%	0.5W	2322 101 63223
R 999	100k Ω	5%	0.5W	2322 101 63104

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
TS975	BF179	9330 279 30XX0

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
GR975	BZY94-C36	9330 221 70XX0
GR978 to 980	BA148	9330 229 20XX0

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
SG975 to 983	Spark Gap	3122 100 10131
SG984	Spark Gap	8213 198 00712

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
CS975	Plug-Red	8213 198 00498
CS976	Plug-Green	8213 198 00501
CS977	Plug-Blue	8213 198 00499

Purity and Convergence Unit Assembly 0319

<u>Code</u>	<u>Value</u>	<u>Part No.</u>
R1601 to R1606	3k3Ω 5% 0.25W	2322 212 13332

Video Panel Assembly 0260

<u>Code</u>	<u>Value</u>	<u>Part No.</u>
R1301 to 1306	75Ω 1% 0.125W	2322 113 57509

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
CD1301 to CD1312	Socket	8213 198 00528
CD1313	Socket, 7-way	8213 198 00687

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
CS1301	Plug, 5-pole	2412 026 00003

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
SK1301 to SK1306	Switch Slider	3922 815 77150

Contrast Switch Assembly 0274

<u>Code</u>	<u>Value</u>	<u>Part No.</u>
R1268 to R1269	12Ω	2322 113 51209
R1292 to R1313	12Ω	2322 113 51209
R1316 to R1337	12Ω	2322 113 51209

11. CONVERGENCE OUTPUT P.W.B. ASSEMBLY 0373

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
C851	160μF		25	2222 023 16161
C852	10μF		16	2222 001 15109
C853	100pF	5	160	2013 315 05797
C854	50μF		10	2222 120 14509
C855 to 857	10μF		16	2222 001 15109
C858	0.68μF	10	100	2222 341 29684
C859	0.022μF	10	250	2222 341 89223
C960	10μF		16	2222 001 15109
C861	100pF	5	160	2013 315 05797
C862	50μF		10	2222 120 14509
C863 & 864	20μF		16	2222 001 15209
C865	10μF		16	2222 001 15109
C866	80μF		25	2222 001 16809
C867	0.012μF	10	250	2222 341 89123
C868	80μF		25	2222 001 16809
C869	10μF		16	2222 001 15109
C870	100pF	5	160	2013 315 05797
C871	50μF		10	2222 120 14509
C872 & 873	20μF		16	2222 001 15209
C874	10μF		16	2222 001 15109
C875	80μF		25	2222 001 16809
C876	0.012μF	10	250	2222 341 89123
C877 & 878	80μF		25	2222 001 16809
C879	100pF	5	160	2013 315 05797
C880	200μF		6.4	2222 001 13201
C881 to 883	125μF		16	2222 001 15131
C884	400μF		25	2222 023 16401
C885	0.0022μF	10	400	2222 311 51222
C886	400μF		25	2222 023 16401
C887	10μF		16	2222 001 15109

<u>Code</u>	<u>Value</u>			<u>Part No.</u>
(all at 5% and 0.25W unless otherwise stated)				
R851	27 Ω			2322 212 13279
R852	15k Ω			2322 212 13153
R853	3k9 Ω			2322 212 13392
R854	1k5 Ω			2322 212 13152
R855 & 856	10 Ω			2322 212 13109
R857	220 Ω			2322 212 13221
R858	3 Ω	10%	5W	2113 258 00499
R859	1k5 Ω			2322 212 13152
R860 & 861	10k Ω			2322 212 13103
R862	1k5 Ω			2322 212 13152
R863	330 Ω			2322 212 13331
R864 & 865	330 Ω			2322 212 13331
R866 & 867	33 Ω			2322 212 13339
R868 & 869	12 Ω			2322 212 13129
R870 & 871	33 Ω			2322 212 13339
R872 & 873	12 Ω			2322 212 13129
R874	22k Ω			2322 212 13223
R875	1k5 Ω			2322 212 13152
R876	2k2 Ω			2322 212 13222
R877	330 Ω			2322 212 13331
R878	180 Ω			2322 212 13181
R879	2 Ω	10%	5W	2113 256 00496
R880	27 Ω			2322 212 13279
R881	18k Ω			2322 212 13183
R882	4k7 Ω			2322 212 13472
R883	1k2 Ω			2322 212 13122
R884	10 Ω			2322 212 13109
R885	390 Ω			2322 212 13391
R886	10 Ω			2322 212 13109
R887	1k8 Ω			2322 212 13182
R888 & 889	15k Ω			2322 212 13153
R890	1k8 Ω			2322 212 13182
R891	2k2 Ω			2322 212 13222
R892 & 893	27 Ω		0.5W	2322 101 63279
R894	680 Ω			2322 212 13681
R895 & 896	8k2 Ω			2322 212 13822
R897	2E2 Ω	10%	5W	2113 256 00496
R898	10 Ω			2322 212 13109
R899	27 Ω			2322 212 13279
R900	18k Ω			2322 212 13183
R901	4k7 Ω			2322 212 13472
R902	1k2 Ω			2322 212 13122
R903	10 Ω			2322 212 13109
R904	390 Ω			2322 212 13391
R905	10 Ω			2322 212 13109
R906	1k8 Ω			2322 212 13182
R907 & 908	15k Ω			2322 212 13153
R909	1k8 Ω			2322 212 13182
R910	2k2 Ω			2322 212 13222
R911 & 912	27 Ω		0.5W	2322 101 63279

<u>Code</u>	<u>Value</u>			<u>Part No.</u>
(all at 5% and 0.25W unless otherwise stated)				
R 913	680Ω			2322 212 13681
R 914 & 915	8k2Ω			2322 212 13822
R 916	2kΩ	10%	5W	2113 256 00496
R 917	10EΩ			2322 212 13109
R 918	27Ω			2322 212 13279
R 919	2k2Ω			2322 212 13222
R 920	3k9Ω			2322 212 13392
R 921	680Ω			2322 212 13681
R 922	10Ω			2322 212 13109
R 923	150Ω			2322 212 13151
R 924	10Ω			2322 212 13109
R 925	1k8Ω			2322 212 13182
R 926 & 927	8k2Ω			2322 212 13822
R 928	1k8Ω			2322 212 13182
R 929	2k7Ω			2322 212 13272
R 930 & 931	330Ω			2322 212 13331
R 932 & 933	120Ω			2322 212 13121
R 934 & 935	15Ω		0.5W	2322 101 63159
R 936 & 937	18kΩ			2322 212 13183
R 938	68Ω			2322 212 13689
R 939	2E2Ω	10%	5W	2113 256 00496
R 940	12Ω		0.5W	2322 101 63129
R 941	5k6Ω			2322 212 13562
R 942	10kΩ			2322 212 13103
R 943	1k5Ω			2322 212 13152

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
TS851	BC109	9330 013 50XX0
TS852 to 854	2N4036	9330 620 10762
TS855 to 857	BFY51	9330 116 10XX0
TS858	BC109	9330 013 50XX0
TS859	2N4036	9330 620 10762
TS860	BFY51	9330 116 10XX0
TS861	BC109	9330 013 50XX0
TS862	2N4036	9330 620 10762
TS863	BFY51	9330 116 10XX0
TS864	BC109	9330 013 50XX0
TS865	2N4036	9330 620 10762
TS866 & 867	BFY51	9330 116 10XX0
TS868	2N4036	9330 620 10762
TS869	BC107	9330 013 30XX0

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
GR851	BZY88/C3V6	9330 092 30XX0

Front Control Panel Assembly 0382

<u>Code</u>	<u>Value</u>	<u>Part No.</u>
R1255	POT 25k Ω LIN 20% 0.25W	2113 379 00008
R1256	POT 15 Ω LIN 10% 1W	2113 020 00154
R1258	POT 1M Ω LIN 20% 1W	2113 377 00018
R1261	POT 1M Ω LIN 20% 1W	2113 377 00018
R1264	POT 1M Ω LIN 20% 1W	2113 377 00018
R1259&1260	10k Ω	2322 212 13103

Brightness Control Bracket Assembly 0381

<u>Code</u>	<u>Value</u>	<u>Part No.</u>
R1266	POT 500 Ω LIN 20% 1W	2113 377 00024

13. FRONT DRAWER ASSEMBLY, MK. II 0391

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
LA1 to LA4	Lamp 6.5V 0.11A 8073D	9235 421 11200

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
SK1	Mains Switch	2422 126 01018
SK2	5-Button Switch	8213 198 00188
SK3	3-Button Switch	8213 198 00187

<u>Code</u>	<u>Value</u>	<u>Part No.</u>
R1267	68k Ω 5% 0.25W	2322 212 13683

<u>Code</u>	<u>Value</u>	<u>Tolerance (%)</u>	<u>Working Voltage</u>	<u>Part No.</u>
C1176	33k Ω	10	400	2222 311 51333
C1177	2k7 Ω	10	400	2222 311 51272
C1178	27k Ω	10	400	2222 311 51273
C1179	22k Ω	10	400	2222 311 51223
C1180	6k8 Ω	10	400	2222 311 51682
C1181	3k Ω	10	400	2222 311 51332

<u>Code</u>	<u>Value</u>	<u>Part No.</u>
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(all at 5% and 0.25W unless otherwise stated)

R1190	180 Ω		2322 212 13181
R1191	3k9 Ω	1W	2322 214 13392
R1192 & 1193	10 Ω	0.5W	2322 101 63109
R1194	47 Ω		2322 212 13479

<u>Code</u>	<u>Type</u>	<u>Part No.</u>
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GR1159 to GR1162	BA148	9330 229 20XX0
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Code	Old Part No.	New Part No.
T1	3122 108 32681	5322 146 60067
T2	3122 108 80075	5322 146 80075
C1	2222 341 89474	4822 121 40015
C2	2222 060 18252	4822 124 70024
C3	2222 080 34107	4822 124 40014
C4	2013 005 01013	5322 124 30065
C5	2013 005 01013	5322 124 30065
C6	2222 081 42131	5322 124 40107
C7	2222 102 17562	5322 124 70056
C8	2222 102 16802	5322 124 70162
C9	2222 341 89103	4822 121 40088
R1	2322 212 13184	4822 110 50167
R2	2322 212 13184	4822 110 50167
R3	2322 101 63102	4822 110 40107
R5	2322 320 12331	4822 112 30094
R6	2113 256 02128	5322 113 80142
R8	2322 212 13184	4822 110 50167
R9	2322 101 63333	4822 110 40147
R10	2322 101 63274	4822 110 40172
R11	2322 101 63274	4822 110 40172
R12	2322 101 63563	4822 110 40154
T51	9330 226 50XX0	4822 130 40109
T52	9330 226 50XX0	4822 130 40109
CS1	5722 660 20880	5322 265 30066
LA5 to 7	8213 198 00087	5322 134 20085
SK7 and 8	3922 840 67810	5322 272 10006
VL1	2422 086 01033	4822 253 30027
VL2	2422 086 01033	4822 253 30027
VL3	2422 086 01005	4822 253 30006
VL4	2422 086 01011	4822 253 30012
VL5	2422 086 01013	4822 253 30014
VL6	2422 086 01011	4822 253 30012
VL7	2422 086 01036	4822 253 30031
VL8	2422 086 01036	4822 253 30031
<u>Diode Board 'A' P.W.B. Assembly</u>		
R51	2113 256 00957	5322 113 80137
GR51	9330 087 10XX0	4822 130 30195
GR52-GR59	9330 137 00XX0	5322 130 30561
VL51	2422 086 01005	5322 253 30006
<u>Diode Board 'B' P.W.B. Assembly</u>		
R101	2322 212 13104	4822 110 50161
R102	2322 212 13102	4822 110 50107

<u>Code</u>	<u>Old Part No.</u>	<u>New Part No.</u>
GR101-106	9330 087 10XX0	4822 130 30195
GR107 - 114	9330 052 90XX0	5322 130 30542
VL101	2422 086 00033	4822 253 20018
<u>Power Supply P.W.B. Assembly</u>		
C151	2222 001 17509	4822 124 20374
C153	2222 001 15131	4822 124 20388
C154 & 155	2222 341 89103	4822 121 40088
C156	2222 001 15131	4822 124 20388
R151	2322 212 13273	4822 110 50145
R152	2322 212 13101	4822 110 50081
R153	2322 212 13222	4822 110 50116
R155	2322 212 13272	4822 110 50118
R156	2322 212 13102	4822 110 50107
R157	2322 212 13223	4822 110 50143
R158	2322 212 13102	4822 110 50107
R159-162	2113 256 00491	5322 113 80084
R163	2322 212 13563	4822 110 50154
or		
R163	2322 212 13823	4822 110 50158
or		
R163	2322 212 13683	4822 110 50156
R164	2322 212 13272	4822 110 50118
R165	2322 212 13152	4822 110 50112
R166	2322 212 13339	4822 110 50067
R167	2322 212 13561	4822 110 50101
R168	2322 212 13821	4822 110 50105
R169	2322 212 13102	4822 110 50107
R170	2322 212 13339	4822 110 50067
R171	2322 212 13122	4822 110 50108
R172	2322 212 13391	4822 110 50096
R173	2322 212 13123	5322 110 50136
R174 to 177	2113 256 00491	5322 113 80084
R178	2322 212 13683	4822 110 50156
or		
R178	2322 212 13563	4822 110 50154
or		
R178	2322 212 13473	4822 110 50152
R179	2322 212 13561	4822 110 50101
R180	2322 212 13152	4822 110 50112
R181	2322 212 13272	4822 110 50118
R182	2322 212 13339	4822 110 50067
R183	2113 256 00498	5322 113 80135
R184	2113 256 00497	5322 113 80134
TS151	9330 741 30762	5322 130 40535
TS152	9330 117 70XX0	5322 130 40289
TS153	9330 175 10XX0	5322 130 40051
TS154, 155 & 157	9330 116 00XX0	5322 130 40294
TS156	9330 175 10XX0	5322 130 40051

Code	Old Part No.	New Part No.
GR 151	9330 041 90XX0	4822 130 30234
GR 152 & 153	9330 042 40XX0	4822 130 40256
GR 154 & 155	9330 092 90XX0	4822 130 30286
GR156	9330 042 40XX0	4822 130 40256
GR157	9330 087 10XX0	4822 130 30195
GR158	9330 092 90XX0	4822 130 30286
GR159	9330 087 10XX0	4822 130 30195
GR160	9330 092 90XX0	4822 130 30286
GR161	9220 096 91XX0	5322 130 30558
<u>Heat Sink Assembly</u>		
TS926	9330 741 30762	5322 130 40535
TS927	9330 226 50XX0	5322 130 40109
<u>Hear Control Panel Assembly</u>		
R1254	2113 377 00185	5322 101 20352
SK5	2413 127 00001	5322 277 20103
SK6	8213 198 00486	5322 273 80137
<u>Input Matrix P...S. Assembly</u>		
C251-253	2222 001 16139	4822 124 20355
C254	2222 001 15131	4822 124 20388
C255	2222 023 16161	4822 124 20394
C256-258	2222 023 16251	4822 124 20532
C259	2222 001 16259	4822 124 20366
C260	2222 001 16139	4822 124 20355
C261	2222 023 16161	4822 124 20394
C262	2222 001 16139	4822 124 20355
C263 & 264	2222 001 15809	4822 124 20379
C265 & 266	2222 001 16139	4822 124 20355
R251	2322 212 13154	4822 110 50165
R252	2322 212 13124	4822 110 50163
R253	2322 212 13681	4822 110 50103
R254	2322 212 13101	4822 110 50081
R255	2322 212 13103	4822 110 50134
R256	2322 114 53002	5322 110 30119
R257	2322 114 57509	5322 110 30077
R258	2322 114 57509	4822 110 50165
R259	2322 212 13124	4822 110 50163
R260	2322 212 13101	4822 110 50081
R261	2322 114 55601	5322 110 30101
R262	2322 212 13154	4822 110 50165
R263	2322 212 13124	4822 110 50163
R264	2322 212 13122	4822 110 50109
R265	2322 212 13122	4822 110 50081
R266	2322 114 51102	5322 110 30108
R267	2322 114 57509	5322 110 30077
R268	2322 212 13109	4822 110 50054
R269	2322 114 53301	5322 110 30094

<u>Code</u>	<u>Old Part No.</u>	<u>New Part No.</u>
R270 & 271	2322 212 13102	4822 110 50107
R272	2322 212 13689	4822 110 50076
R273	2322 212 13221	4822 110 50089
R274	2322 212 13102	4822 110 50107
R275	2322 212 13689	4822 110 50076
R276	2322 212 13221	4822 110 50089
R277	2322 212 13221	4822 110 50089
R278	2322 212 13689	4822 110 50076
R279	2322 212 13221	4822 110 50089
R280 & 281	2322 114 53902	5322 110 30123
R282	2322 114 53902	5322 110 30123
R283	2322 212 13689	4822 110 50076
R284	2322 212 13154	4822 110 50165
R285	2322 212 13124	4822 110 50163
R286	2322 212 13561	4822 110 50101
R287	2322 212 13101	4822 110 50081
R288	2322 212 13681	4822 110 50103
R289	2322 212 13109	4822 110 50054
R290	2322 212 13154	4822 110 50165
R291	2322 212 13124	4822 110 50163
R292	2322 212 13681	4822 110 50103
R293	2322 212 13101	4822 110 50081
R294	2322 212 13103	4822 110 50134
R296	2322 114 53002	5322 110 30119
R297	2322 114 55601	5322 110 30101
R298	2322 212 13101	4822 110 50081
R299	2322 212 13154	4822 110 50165
R300	2322 212 13124	4822 110 50163
R301	2322 212 13154	4822 110 50165
R302	2322 212 13124	4822 110 50163
R303	2322 212 13122	4822 110 50109
R304	2322 212 13101	4822 110 50081
R305	2322 114 51102	5322 110 30108
R306	2322 114 57509	5322 110 30077
R307	2322 212 13103	4822 110 50134
R308-311	2322 212 13221	4822 110 50089
R312	2322 212 13102	4822 110 50107
R313	2322 212 13221	4822 110 50089
R314	2322 212 13569	4822 110 50074
R315 & 316	2322 212 13109	4822 110 50054
TS251	9330 013 30XXO	4822 130 40357
TS252 & 253	9330 013 30XXO	4822 130 40357
TS254	9330 441 10XXO	5322 130 40373
TS255 to 257	9330 116 00XXO	5322 130 40294
TS258	9330 013 30XXO	4822 130 40357
GR251	9330 042 40XXO	4822 130 40256

Code	Old Part No.	New Part No.
C351	2222 001 15131	4822 124 20388
C352	2222 001 16809	4822 124 20488
C354	2222 001 15131	4822 124 20388
C355	2222 341 29104	5322 121 40036
C356	2222 341 89473	4822 121 40042
C357	2222 341 29105	5322 121 40176
C366	2222 341 29105	4822 121 40194
C365	2222 341 29224	4822 121 40422
C367	2222 341 29104	5322 121 40036
C368	2222 001 15809	4822 124 20379
C369	2222 001 15131	4822 124 20388
C370	2222 001 16809	4822 124 20488
C372	2222 341 29104	5322 121 40036
C373	2222 001 15131	4822 124 20388
C374	2222 341 89473	4822 121 40042
C375	2222 341 29105	5322 121 40176
C376	2222 341 29104	5322 121 40036
C377	2222 001 15809	4822 124 20379
C381	2013 315 05382	4822 121 50387
C382	2013 315 05371	4822 120 33054
C383	2013 315 05382	4822 121 50387
C384	2013 315 05371	4822 120 33054
C385	2013 315 05382	4822 121 50387
C386	2013 315 05371	4822 120 33054
R351	2322 212 13183	4822 110 50141
R352	2322 212 13121	4822 110 50083
R353	2322 212 13272	4822 110 50118
R354	2322 114 51501	5322 110 30085
R355	2322 212 13561	4822 110 50101
R356	2322 212 13681	4822 110 50103
R357	2322 114 54702	5322 110 30125
R358 & 359	2322 212 13109	4822 110 50054
R360	2322 212 13152	4822 110 50112
R361	2322 380 06007	5322 101 20003
R362	2322 212 13152	4822 110 50112
R363	2322 101 63271	4822 110 40092
R365	2322 212 13222	4822 110 50116
R366	2322 212 13683	4822 110 50156
R367	2322 212 13272	4822 110 50118
R368	2322 212 13102	4822 110 50107
R369	2322 212 13129	4822 110 50056
R370	2113 256 00376	5322 112 20072

<u>Code</u>	<u>Old Part No.</u>	<u>New Part No.</u>
TS355	9330 047 60XXO	5322 130 40138
TS356	9330 441 10XXO	5322 130 40373
TS357	9330 013 50XXO	5322 130 40144
TS358	9330 047 70XXO	5322 130 40125
TS359 & 361	9330 013 30XXO	4822 130 40357
TS363	9330 047 60XXO	5322 130 40138
TS364	9330 441 10XXO	5322 130 40373
TS365	9330 013 50XXO	5322 130 40144
TS366	9330 047 70XXO	5322 130 40125
TS367 & 369	9330 013 30XXO	5322 130 40357
TS371	9330 047 60XXO	5322 130 40138
TS372	9330 441 10XXO	5322 130 40373
TS373	9330 013 50XXO	5322 130 40144
TS374	9330 047 70XXO	5322 130 40125
GR351 & 352	9330 092 90XXO	4822 130 30286
GR353 & 354	9330 092 30XXO	4822 130 30342
GR355 & 356	9330 092 90XXO	4822 130 30286
GR357 & 358	9330 092 30XXO	4822 130 30342
GR359 & 360	9330 092 90XXO	4822 130 30286
GR361 & 362	9330 092 30XXO	4822 130 30342
<u>Video Output P.w.B. Assembly</u>		
L951	3913 429 00200	5322 156 20556
C951	2222 341 89104	4822 121 40036
C952	2222 341 29104	5322 121 40036
C953	2013 315 05811	4822 121 50371
C954	2222 341 29104	5322 121 40036
C955	2013 315 05811	4822 121 50371
C956	2222 341 89223	4822 121 40171
C957	2013 009 00017	5322 124 10058
C958	2222 341 29104	5322 121 40036
R951	2322 212 13109	4822 110 50054
R952	2322 212 13121	4822 110 50083
R953	2322 101 63759	5322 110 30077
R954 to 956	2322 212 13101	4822 110 50061
R957	2113 109 00082	4822 112 20121
R958	2322 212 13122	4822 110 50109
R959	2113 378 00006	-
R960	2322 212 13682	4822 110 50129
R961	2322 212 13683	4822 110 50156

<u>Code</u>	<u>Old Part No.</u>	<u>New Part No.</u>
R962	2322 212 13222	4822 110 50116
R963	2322 212 13101	4822 110 50081
R964	2322 212 13392	4822 110 50123
R965	2322 212 13222	4822 110 50116
R966	2322 212 13322	4822 110 50121
R967	2322 212 13103	4822 110 50134
R968	2322 212 13392	4822 110 50123
R969	2322 212 13221	4822 110 50089
R970	2322 212 12335	4822 110 50201
TS951	9330 279 30XXO	5322 130 40661
TS952	9330 047 70XXO	5322 130 40125
TS953	9330 013 50XXO	5322 130 40144
TS954	9330 441 00XXO	5322 130 40324
TS955	9330 047 60XXO	5322 130 40138
TS956 & 957	9330 441 00XXO	5322 130 40324
GR951 to 953	9330 229 20XXO	5322 130 30256
CD951	8213 198 00496	5322 267 30206
<u>Line Convergence P.W.B. Assembly</u>		
C651 & 653 to 656	2222 341 29104	5322 121 40036
C657	2222 311 51272	4822 120 40118
C658 & 659	2222 341 29104	5322 121 40036
C660	2222 023 15641	4822 124 20528
C661	2222 341 89224	4822 121 40061
C662	2222 311 51472	4822 120 40125
C663	2222 120 17208	5322 124 10058
C664	2222 341 29104	5322 121 40036
C665	2222 341 29105	5322 121 40176
C666 & 667	2222 341 29474	5322 121 40218
C668	2222 341 29224	4822 121 40061
C669	2222 341 89223	4822 121 40061
R651	2322 212 13182	4822 110 50114
R653	2322 212 13123	5322 110 50136
R654	2322 212 13223	4822 110 50143
R655	2322 212 13221	4822 110 50089
R656 & 657	2322 212 13181	4822 110 50087
R658	2322 380 06007	5322 101 2003
R660	2322 212 13182	4822 110 50114
R662 & 665	2322 380 06007	5322 101 20003
R667 & 668	2322 212 13272	4822 110 50118
R669	2322 212 13229	4822 110 50063

Code	Old Part No.	New Part No.
R670	2322 380 06007	5322 101 20003
R671 & 672	2322 212 13272	4822 110 50118
R673	2322 212 13472	4822 110 50125
R674	2322 212 13103	4822 110 50134
R675 & 676	2322 212 13221	4822 110 50089
R677	2322 212 13102	4822 110 50107
R678	2322 212 13152	4822 110 50112
R679	2322 212 13102	4822 110 50107
R680	2322 212 13223	4822 110 50143
R681	2322 212 13563	4822 110 50154
R682	2322 212 13272	4822 110 50118
R683	2322 212 13122	4822 110 50109
R684	2322 212 13331	4822 110 50094
R685	2322 212 13182	4822 110 50114
R686	2322 212 13151	4822 110 50085
R687	2322 212 13103	4822 110 50134
R688	2322 212 13223	4822 110 50143
R689	2322 212 13221	4822 110 50089
R690	2322 212 13479	4822 110 50072
R691	3913 423 05010	5322 101 20355
R692	2322 212 13569	4822 110 50074
R693	3913 423 05010	5322 101 20355
R694	2322 212 13109	4822 110 50054
R695	2322 212 13479	4822 110 50072
R696	2322 212 13102	4822 110 50107
R697	2322 212 13272	4822 110 50118
R698	2322 212 13222	4822 110 50116
R699	2322 380 06007	5322 101 20003
R700	2322 212 13102	4822 110 50107
R701	2322 212 13101	4822 110 50081
R702	3912 423 05020	5322 101 20356
R703	2322 212 13101	4822 110 50081
R704	2322 212 13271	4822 110 50092
R705	2322 380 06005	5322 101 20277
R706	2322 212 13271	4822 110 50092
R707	2322 212 13151	4822 110 50085
R708 & 709	2322 212 13681	4822 110 50103
R710	2322 212 13151	4822 110 50085
R711 & 712	2322 212 13279	4822 110 50065
R713	2322 212 13391	4822 110 50096
R714	2322 380 06005	5322 101 20277
R715	2322 212 13271	4822 110 50092
R716	2322 212 13271	4822 110 50092
R717 & 718	2322 212 13821	4822 110 50105

<u>Code</u>	<u>Old Part No.</u>	<u>New Part No.</u>
R719	2322 212 13271	4822 110 50092
R720 & 721	2322 212 13569	4822 110 50074
R722	2322 212 13479	4822 110 50072
R723	2322 212 13391	4822 110 50096
R724	2322 380 06005	5322 101 20277
R725	2322 212 13391	4822 110 50096
R726	2322 212 13271	4822 110 50092
R727 & 728	2322 212 13821	4822 110 50105
R729	2322 212 13271	4822 110 50092
R730 & 731	2322 212 13569	4822 110 50074
R732	2322 212 13479	4822 110 50072
R733	2322 212 13152	4822 110 50112
R734	2322 212 13222	4822 110 50116
R735	2322 380 06011	5322 101 20242
TS651	9330 013 50XX0	5322 130 40144
TS655	9330 620 10762	5322 130 40431
TS656	9330 116 00XX0	5322 130 40294
TS657	9330 620 10762	5322 130 40431
TS658	9330 116 00XX0	5322 130 40294
TS659	9330 620 10762	5322 130 40431
TS660	9330 116 00XX0	5322 130 40294
GR651	9330 042 40XX0	4822 130 40256
<u>Line E.H.T. Output Assembly</u>		
T1151	3122 108 39390	5322 140 10118
T1152	3913 429 00420	5322 150 20014
L1152	3913 429 00180	5322 157 50642
C1151	2222 341 89103	4822 121 40088
C1152	2222 040 16408	4822 124 20035
C1153	2222 001 13648	4822 124 20349
C1154	2013 315 06201	4822 120 33103
C1155	2222 311 51102	4822 120 40107
C1156	2222 753 34701	4822 120 60098
C1157	2222 753 36801	4822 120 60103
C1158	2222 753 32202	4822 120 60116
C1159	2222 063 04202	-
C1160	2222 080 04329	5322 124 40105
C1161	2222 341 81333	5322 121 40195
C1162	2222 341 89225	4822 121 40024
C1164	2222 341 81683	5322 121 40179

<u>Code</u>	<u>Old Part No.</u>	<u>New Part No.</u>
C1165	2222 311 51152	4822 120 40112
C1167	2222 311 51152	4822 120 40112
C1168	2222 341 71223	5322 121 40229
C1169	2222 080 30101	5322 124 30065
C1174	2222 341 71223	5322 121 40229
C1175	2222 341 81333	4822 121 40195
R1151	2322 212 13105	4822 110 50187
R1152	2322 212 13102	4822 110 50107
R1153	2322 212 13821	4822 110 50105
R1154	2322 214 13123	4822 110 20136
R1156	2322 212 13822	4822 110 50132
R1157	2322 212 13222	4822 110 50116
R1158	2322 212 13224	4822 110 50169
R1159	2322 212 13563	4822 110 50154
R1160	2322 101 63105	4822 110 40187
R1161	2322 212 13102	4822 110 50107
R1162	2322 212 13105	4822 110 50187
R1163	2322 212 13684	4822 110 50183
R1164	2322 212 13102	4822 110 50107
R1165	2322 101 63124	4822 110 40163
R1166	2322 320 32271	4822 112 20092
R1168	2322 101 63223	4822 110 40143
R1169	2322 212 13681	4822 110 50103
R1170	2322 212 13474	4822 110 50178
R1172	2322 212 13223	4822 110 50143
R1174	2322 101 63223	4822 110 40143
R1175	2322 212 13681	4822 110 50103
R1176	2322 212 13473	4822 110 50152
R1177	2322 102 83105	4822 110 10187
R1180 to 1184	2322 102 83105	4822 110 10187
R1187	2322 212 13564	4822 110 50181
R1188	2322 320 32272	4822 112 20118
R1189	2113 256 03401	-
B1151	9300 006 50XX0	5322 131 80029
B1152	9300 001 40XX0	-
B1153	9330 020 70XX0	5322 131 80025
GR1151	9330 097 11XX0	5322 130 30559
GR1152	9330 087 10XX0	4822 130 30195
GR1154 to 1157	9330 087 10XX0	4822 130 30195
GR1155		4822 130 30296

<u>Code</u>	<u>Old Part No.</u>	<u>New Part No.</u>
<u>Line Stage 'B' P.W.B. Assembly</u>		
C1201	2222 341 89223	4822 121 40171
C1202 & 1203	2222 341 59105	5322 121 40117
C1204	2222 040 46169	-
C1205	2222 040 46109	-
C1206	2222 341 59474	4822 121 40182
C1207	2222 341 89125	4822 121 40022
R1201	2322 212 13474	4822 110 50178
R1202	2322 212 13102	4822 110 50107
R1203	2322 101 63563	4822 110 40154
R1204 & 1205	2322 101 62475	4822 110 40205
R1207	2322 114 52204	5322 110 30169
R1208	2322 380 06008	-
R1209	2322 114 54704	5322 110 30178
R1210	2322 212 13102	4822 110 50107
R1211	2322 101 63683	4822 110 40156
R1213	2322 212 13102	4822 110 50107
R1214	2322 101 63154	4822 110 40165
R1215	2322 214 13683	4822 110 20156
R1216	2322 552 03522	-
R1218	2322 212 13271	4822 110 50092
B1201	9300 236 80XX0	5322 140 40006
B1202	9300 022 91XX0	5322 131 80026
B1203	9300 236 90XX0	5322 140 40006
B1204	9300 016 70XX0	5322 131 80024
RE1200	2412 131 00033	-
GR1201 to 1204	9330 087 10XX0	4822 130 30195
<u>EHT Stage 'A' P.W.B. Assembly</u>		
T1001	3122 108 39850	5322 140 10119
C1001	2222 341 89103	4822 121 40088
C1002	2222 341 59334	5322 121 40121
C1003	2222 040 16408	4822 124 20035
C1004	2222 341 89103	4822 121 40088
C1005	2222 341 59104	5322 121 40012
C1006	2222 001 15209	4822 124 20362
C1007	2013 315 16101	4822 120 33089
C1008	2222 311 51102	4822 120 40107

<u>Code</u>	<u>Old Part No.</u>	<u>New Part No.</u>
C1009	2013 564 00303	5322 122 50038
C1010 & 1011	2013 564 00101	5322 121 50039
C1012	2222 023 12132	4822 124 20514
C1013	2222 080 04329	5322 124 40105
C1014	2222 311 51332	4822 120 40121
C1015	2222 341 29563	4822 121 40093
C1016	2222 341 59104	5322 121 40012
C1017	2222 341 71154	5322 121 40178
C1018 & 1019	2222 080 37101	-
C1020	2222 341 29104	5322 121 40036
C1021	2222 753 31002	4822 120 60107
C1022	2013 315 05923	4822 121 50371
R1001	2322 212 13334	4822 110 50174
R1002	2322 212 13564	4822 110 50181
R1003	2322 212 13474	4822 110 50178
R1004	2322 212 13102	4822 110 50107
R1005	2322 212 13183	4822 110 50141
R1006	2322 101 63393	4822 110 40149
R1007	2322 212 13474	4822 110 50178
R1008	2322 212 13102	4822 110 50107
R1009	2322 212 13271	4822 110 50092
R1010	2322 101 63683	4822 110 40156
R1012	2322 214 13333	4822 110 20147
R1013	2322 212 13183	4822 110 50141
R1014	2322 212 13683	4822 110 50156
R1015	2322 214 13274	4822 110 20172
R1016	2322 214 13334	4822 110 20174
R1017	2322 212 13333	4822 110 50147
R1018	2322 212 13102	4822 110 50107
R1019	2322 320 31828	4822 112 20052
R1020	2322 320 32271	4822 112 20092
R1021	2113 108 00003	5322 280 70114
R1022	2322 117 54703	-
R1023	2322 212 13472	4822 110 50125
R1024	2322 300 06007	5322 101 20003
R1025	2322 212 13682	4822 110 50129
R1027	2322 212 13684	4822 110 50183
R1028	2322 212 12475	4822 110 50205
R1029	2322 212 13102	4822 110 50107
R1030	2322 212 13123	5322 110 50136
R1031	2322 380 06006	5322 101 20002
R1032	2322 212 13222	4822 110 50116
R1033	2322 320 32331	4822 112 20094

<u>Code</u>	<u>Old Part No.</u>	<u>New Part No.</u>
B1001	9330 022 91XX0	5322 131 80026
B1002	9300 009 30XX0	5322 131 80023
B1003	9300 236 80XX0	5322 131 40006
B1004	9300 366 00XX0	5322 131 80027
B1005	9300 000 80XX0	5322 131 80021
B1006	9300 001 10XX0	5322 131 80022
BR1001	9330 097 11XX0	5322 130 30559
GR1002 to GR1005	9330 087 10XX0	4822 130 30195

EHT Stage 'B' P.W.B. Assembly

C1051	2222 023 13102	4822 124 20418
C1052	2222 023 16401	4822 124 20407
C1053	2222 023 16251	4822 124 20532
C1054	2222 002 16109	-
C1056 & 1057	2222 341 29565	5322 121 40175
C1058	2222 001 17408	4822 124 20346
R1051	2322 212 13222	4822 110 50116
R1052	2322 212 13471	4822 110 50098
R1053	2322 212 13221	4822 110 50089
R1054	2322 212 13561	4822 110 50101
R1055	2322 212 13151	4822 110 50085
R1056	2322 212 13122	4822 110 50109
R1057	2322 212 13562	4822 110 50127
R1058	2322 212 13271	4822 110 50092
R1059	2322 212 13153	4822 110 50138
R1066	2322 212 12106	4822 110 50214
R1067	2322 212 13332	4822 110 50121
R1068	2322 212 13122	4822 110 50109
R1069	2322 212 13222	4822 110 50116
R1070	2322 212 13102	4822 110 50107
R1072	2322 212 13222	4822 110 50116
GR1053	9330 087 10XX0	4822 130 30195
TS1051 & 1052	9330 113 70XX0	5322 130 40289
TS1055	9330 441 10XX0	5322 130 40373
TS1056	9330 896 70702	-
TS1057	9330 013 30XX0	4822 130 40357

Beam Current Limit P.W.B. Assembly

C1025	2222 001 14131	4822 124 20078
C1026	2222 341 89104	4822 121 40036

<u>Code</u>	<u>Old Part No.</u>	<u>New Part No.</u>
R1034	2322 212 13223	4822 110 50143
R1035	2322 212 13152	4822 110 50112
R1036	2322 212 13822	4822 110 50132
R1037	2322 212 13121	4822 110 50083
R1038	2322 212 13101	4822 110 50081
R1039	2113 378 00002	5322 101 20353
R1040	2322 214 13223	4822 110 20143
R1041	2322 214 13333	4822 110 20147
R1042	2322 212 13183	4822 110 50141
R1043	2322 101 63274	4822 110 40172
R1044	2322 212 13473	4822 110 50152
R1045	2322 212 13121	4822 110 50083
R1046 & 1047	2322 212 13121	4822 110 50083
TS1001	9330 013 30XX0	4822 130 40357
TS1002	9330 441 10XX0	5322 130 40373
GR1006	9330 042 40XX0	4822 130 40256
GR1007	9330 879 30XX0	5322 130 30507
GR1008	9330 092 80XX0	4822 130 30193
GR1009	9330 042 40XX0	4822 130 40256
<u>High Voltage Assembly</u>		
C1163	2013 564 00003	5322 122 50038
C1166	2013 564 00305	5322 122 50042
C1170	2013 564 00304	5322 122 50041
C1172	2013 564 00051	-
R1167	2322 101 63222	4822 110 40116
R1186	2322 101 63104	4822 110 40161
GR1153	9330 458 60XX0	4822 130 30296
<u>Field Scan and Pin Cushion P.w.B. Assembly</u>		
L551	3522 149 02620	5322 157 30171
C551	2222 001 16809	4822 124 20488
C552	2222 341 29125	5322 121 40225
C553	2222 435 34703	5322 121 50375
C554	2222 436 12202	4822 121 50372
C555	2222 341 29473	4822 121 40042
C556	2222 341 29473	4822 121 40042
C557	2222 001 16259	4822 124 20366
C558 & 559	2013 009 00041	5322 124 10074
C560	2222 001 16139	4822 124 20355

Code	Old Part No.	New Part No.
R551	2322 212 13102	4822 110 50107
R552	2322 212 13103	4822 110 50134
R553	2322 212 13471	4822 110 50098
R554	2322 212 13123	5322 110 50136
R555	2322 101 63122	4822 110 40109
R556	2322 113 52703	4622 110 30145
R557	2322 113 53903	5322 110 30149
R558	2322 380 06007	5322 101 20003
R559	2322 212 13184	4822 110 50167
R560	2322 212 13222	4822 110 50116
R561	2322 212 13122	4822 110 50109
R562	2322 212 13472	4822 110 50125
R563	2322 212 13471	4822 110 50098
R564	2322 212 13279	4822 110 50065
R565	2322 212 13221	4822 110 50089
R566	2322 212 13471	4822 110 50098
R567	2322 212 13472	4822 110 50125
R568	2322 212 13473	4822 110 50152
R569	2322 113 51503	4822 111 20038
R570 & 571	2322 113 51202	4822 110 30109
R572	2322 113 51002	4822 111 20018
R573	2322 212 13102	4822 110 50107
R574	2322 212 13271	4822 110 50092
R575	2322 212 13271	4822 110 50092
R576 & 577	3913 423 05020	5322 110 20356
R578	2322 212 13332	4822 110 50121
R579	2322 212 13332	4822 110 50121
R580	3912 423 05020	5322 101 20356
C561	2013 009 00032	5322 124 10026
C562	2013 009 00036	5322 124 10026
C563	2013 315 05386	4822 121 50054
C572	2222 023 16161	4822 124 20394
C573	2222 341 29104	5322 121 40036
C574	2222 341 29104	5322 121 40036
C575	2222 001 15131	4822 124 20388
C576 & 577	2222 341 29104	5322 121 40036
C578 & 579	2222 555 08101	4822 120 11081
C580	2222 341 89104	4822 121 40036
C581	2222 311 51332	4822 120 40121
C582	2013 009 00036	5322 124 10026
C583	2222 341 89103	4822 121 40086
C584	2222 555 08101	4822 120 11081
C585	2222 001 18329	4822 124 20097
C586	2222 341 29225	5322 121 40188
C587	2222 341 29474	5322 121 40218
C590	2222 311 51332	4822 120 40121

4622	110	50107
4822	110	50089
4822	110	50107
4822	110	40087
4822	110	50107
5322	101	20002
4622	110	50107
4822	110	50098
4622	110	50096
5322	101	20354
4822	110	40069
4822	110	40092
4822	110	50118
4822	110	50076
4822	110	20143
4822	110	50107
4822	110	50098
4822	110	50107
4822	110	50094
4822	110	50138
4822	110	50129
4822	110	50118
4822	110	50063
4822	110	50085
4822	110	20143
4822	110	50094
4822	110	50063
4822	110	50094
4822	110	50063
4822	110	50109
4822	110	50063
4822	110	40121
4822	110	50063
4822	110	50085
4822	110	50129
4822	110	50121
4822	110	50098
5322	101	20277
4822	110	50085
4822	110	50089
4822	110	40125

New Part No.

2322	212	13102
2322	212	13221
2322	212	13102
2322	212	13151
2322	380	06005
2322	212	13471
2322	212	13332
2322	212	13682
2322	212	13151
2322	212	13229
2322	101	63332
2322	212	13331
2322	212	13229
2322	212	13122
2322	380	06004
2322	212	13331
2322	212	13229
2322	212	13331
2322	214	13223
2322	212	13151
2322	212	13229
2322	212	13152
2322	380	06004
2322	212	13272
2322	212	13682
2322	212	13153
2322	212	13331
2322	212	13102
2322	212	13471
2322	212	13102
2322	214	13223
2322	212	13689
2322	212	13272
2322	101	63271
2322	101	63390
3913	423	05000
2322	212	13391
2322	212	13471
2322	212	13102
2322	380	06006
2322	212	13102
2322	101	63181
2322	212	13102
2322	212	13221
2322	212	13569
2322	212	13332
2322	212	13102
2322	101	63472

Old Part No.

R581
R582
R583
R584
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R625
R626

Code

<u>Code</u>	<u>Old Part No.</u>	<u>New Part No.</u>
R627	2322 212 13101	4822 110 50081
R628	2322 212 13222	4822 110 50116
R629	2322 212 13101	4822 110 50081
R630	2322 212 13104	4822 110 50161
R631	2322 212 13393	4822 110 50149
R632	2322 212 13822	4822 110 50132
R633	2322 212 13152	4822 110 50112
R634	2322 212 13331	4822 110 50094
R635	2322 212 13273	4822 110 50145
R636	2322 212 13682	4822 110 50129
TS551	9330 013 30XXO	4822 130 40357
TS552 & 553	9330 116 00XXO	5322 130 40294
TS554	9330 113 30XXO	4822 130 40357
TS555	9330 441 00XXO	4822 130 40357
TS556	9330 441 10XXO	5322 130 40373
TS557 to 559	9330 116 10XXO	5322 130 40356
TS560	9330 116 00XXO	5322 130 40294
TS561	9330 013 30XXO	4822 130 40357
TS562 & 563	9330 116 00XXO	5322 130 40294
TS564	9330 013 30XXO	4822 130 40357
TS565	9330 116 00XXO	5322 130 40294
TS566	9330 216 10XXO	4822 130 40299
TS567 & 568	9330 013 30XXO	4822 130 40357
TS569	9330 116 00XXO	5322 130 40294
GR551	9330 042 40XXO	4822 130 40256
GR552	9330 041 60XXO	4822 130 30229
GR553 & 554	9330 042 40XXO	4822 130 40256
GR556 & 557	9330 042 60XXO	-
GR558	9330 092 20XXO	5322 130 30392
GR559	9330 041 90XXO	4822 130 30234
GR560	9330 042 40XXO	4822 130 40256
GR561 & 562	9330 086 50XXO	4822 130 30239

Field Convergence P.W.B. Assembly

C751	2222 023 16161	4822 124 20394
C752 & 753	2222 001 15131	4822 124 20388
C754 & 755	2222 341 29104	5322 121 40036
C756	2222 001 15131	4822 124 20388
C757	2013 009 000034	5322 124 10008
C758	2222 341 29474	5322 121 40218
C759	2222 001 13201	4822 124 20473
C760	2222 341 29225	5322 121 40188

<u>Code</u>	<u>Old Part No.</u>	<u>New Part No.</u>
C761	2013 009 00035	5322 124 10016
C762	2222 341 29474	5322 121 40218
R751	2322 212 13562	4822 110 50127
R752	2322 212 13822	4822 110 50132
R753 & 754	2322 212 13681	4822 110 50103
R755	2322 212 13221	4822 110 50089
R756	2322 212 13272	4822 110 50118
R757	2322 380 06006	5322 101 20002
R758	2322 212 13272	4822 110 50118
R759	2322 212 13101	4822 110 50081
R760	2322 212 13182	4822 110 50114
R761	2322 212 13472	4822 110 50125
R762	2322 212 13152	4822 110 50112
R763	2322 212 13392	4822 110 50123
R764	2322 212 13221	4822 110 50089
R765	2322 212 13272	4822 110 50118
R766	2322 380 06009	-
R767	2322 212 13182	4822 110 50114
R768	2322 212 13472	4822 110 50125
R769	2322 212 13681	4822 110 50103
R770	2322 212 13102	4822 110 50107
R771	2322 212 13472	4822 110 50125
R772 & 773	2322 212 13103	4822 110 50134
R774	2322 212 13222	4822 110 50116
R775	2322 380 06005	5322 101 20277
R776	2322 380 06006	5322 101 20002
R777	2322 212 13122	4822 110 50109
R778	2322 212 13222	4822 110 50116
R779	2322 380 06007	5322 101 20003
R780 & 781	2322 212 13122	4822 110 50109
R782	2322 212 13221	4822 110 50089
R783	2322 212 13681	4822 110 50103
R784	2322 101 63102	4822 110 40107
R785	2322 212 13271	4822 110 50092
R786	2322 212 13759	5322 110 30077
R787 & 788	2322 380 06006	5322 101 20002
R789 & 790	2322 380 06006	5322 101 20002
R791	2322 212 13271	4822 101 50092
R792 to 794	2322 212 13103	4822 110 50134
R795	2322 212 13392	4822 110 50123
R796	2322 212 13122	4822 110 50109
R797	2322 101 63102	4822 110 40107
R798	2322 212 13822	4822 110 50132

Code	Old Part No.	New Part No.
R799	2322 212 13472	4622 110 50125
R800	2322 212 13182	4622 110 50114
R801	2322 212 13472	4622 110 50125
R802	2322 212 13622	4622 110 50132
R803	2322 212 13102	4622 110 50107
R804	2322 212 13122	4622 110 50109
R805 & 806	2322 212 13271	4622 110 50092
R807	2322 212 13621	4622 110 50105
R808 & 809	2322 212 13122	4622 110 50109
R810 & 811	2322 212 13821	4622 110 50105
R812	2322 212 13102	4622 110 50107
R813	2322 212 13222	4622 110 50116
R814	2322 380 06005	5322 101 20277
R815	2322 212 13272	4622 110 50118
R816	2322 212 13271	4622 110 50092
R817	2322 101 63821	4622 110 40105
R818	2322 380 06005	5322 101 20277
R819	2322 212 13331	4622 110 50094
R820	2322 380 06005	5322 101 20277
R821	2322 212 13102	4622 110 50107
R822	2322 212 13222	4622 110 50116
R823 & 824	2322 212 13821	4622 110 50105
R825 & 826	2322 212 13122	4622 110 50109
R827	2322 212 13821	4622 110 50105
R828 & 829	2322 212 13271	4622 110 50092
R830	2322 212 13102	4622 110 50107
R831	2322 212 13222	4622 110 50116
R832 & 833	2322 212 13821	4622 110 50105
R834 & 835	2322 212 13122	4622 110 50109
R836	2322 212 13821	4622 110 50105
R837 & 838	2322 212 13271	4622 110 50092
R842	2322 212 13182	4622 110 50114
TS751	9330 013 50XX0	5322 130 40144
TS752 & 753	9330 013 30XX0	4622 130 40357
TS754 to 757	9330 441 00XX0	5322 130 40324
TS758 to 762	9330 013 30XX0	4622 130 40357
TS763	9330 441 00XX0	5322 130 40324
TS764 to 766	9330 013 30XX0	4622 130 40357
TS767	9330 441 00XX0	5322 130 40324
TS768	9330 013 30XX0	4622 130 40357

<u>Code</u>	<u>Old Part No.</u>	<u>New Part No.</u>
GR752 & 753	9330 109 00XX0	5322 130 30335
GR754 & 755	9330 042 40XX0	4822 130 40256
GR756	9330 109 00XX0	5322 130 30335
GR757 & 758	9330 042 40XX0	4822 130 40256

Sync. Proc. P.L.S. Assembly

L451 & 452	3122 108 94820	5322 156 10364
C451	2222 001 16139	4822 124 20355
C452	2222 001 15209	4822 124 20362
C453	2222 001 16259	4822 124 20366
C454	2222 001 13259	4822 124 20265
C455	2222 001 16259	4822 124 20366
C456 & 457	2222 341 29104	5322 121 40036
C458	2222 001 15131	4822 124 20388
C459	2013 315 05797	4822 121 50411
C460	2013 315 05791	4822 120 33067
C461	2222 341 89223	4822 121 40171
C462	2013 315 05821	4822 121 50413
C463	2013 315 05795	5322 121 50406
C464	2013 315 05786	4822 120 33061
C465	2013 315 05812	4822 121 50409
C466 & 477	2013 315 05798	4822 121 50404
C468	2013 315 05812	4822 121 50409
C469	2222 341 89123	4822 121 40039
C470	2222 311 51392	4822 120 40123
C471	2222 341 29104	5322 121 40036
C472	2013 315 05787	4822 120 33063
C473	2222 001 16509	4822 124 20374
C474	2013 315 05797	4822 121 50411
C475	2013 315 05871	5322 121 50473
C476	2222 002 15258	4822 124 20545
C477	2222 001 15109	4822 124 20475
C478	2013 315 05878	4822 121 50432
C479	2222 341 29224	4822 121 40194
C480	2013 315 08053	4822 121 50093
C481	2222 001 15109	4822 124 20475
C482 & 483	2222 341 29103	4822 121 40088
C484	2222 341 29105	5322 121 40176
C485	2013 315 05771	4822 121 50089
C486	2013 315 05772	4822 121 50424
C487	2013 315 05795	5322 121 50406
C488 & 489	2222 001 16800	4822 124 20488

<u>Code</u>	<u>Old Part No.</u>	<u>New Part No.</u>
C490	2222 341 29104	5322 121 40036
C491	2222 311 51122	4822 120 40109
C492	2222 341 29104	5322 121 40036
C493	2222 001 16809	4822 124 20488
C494	2222 001 16509	4822 124 20374
C495	2013 315 05791	4822 120 30067
C496	2222 001 15809	4822 124 20379
C497	2222 341 29474	5322 121 40218
C498	2013 315 05797	4822 121 50411
C499	2222 001 15109	4822 124 20475
R451	2322 211 13123	4822 110 60136
R452	2322 211 13332	4822 110 60121
R453	2322 211 13122	4822 110 60109
R454	2322 211 13682	4822 110 60129
R455	2322 211 13223	4822 110 60143
R456 & 457	2322 211 13271	4822 110 60092
R458	2322 211 13151	4822 110 60085
R459	2322 211 13121	4822 110 60083
R460	2322 211 13479	4822 110 60072
R461	2322 211 13153	4822 110 60138
R462	2322 211 13822	4822 110 60132
R463	2322 211 13392	4822 110 60123
R464	2322 211 13101	4822 110 60081
R465	2322 211 13102	4822 110 60107
R466	2322 211 13471	4822 110 60098
R467	2322 211 13332	4822 110 60121
R468	2322 211 13153	4822 110 60138
R469	2322 212 13109	4822 110 50054
R470	2322 211 13109	4822 110 60054
R471	2322 211 13222	4822 110 60116
R472	2322 211 13689	4822 110 60076
R473	2322 212 12225	4822 110 50196
R474	2322 211 13273	4822 110 60145
R475	2322 212 13334	4822 110 50174
R476 & 477	2322 211 13222	4822 110 60116
R478	2322 211 13272	4822 110 60118
R479	2322 211 13471	4822 110 60098
R480	2322 211 13681	4822 110 60103
R481	2322 211 13829	4822 110 60078
R482	2322 211 13331	4822 110 60094
R483	2322 211 13103	4822 110 60134
R484	2322 211 13682	4822 110 60129
R485	2322 211 13562	4822 110 60127
R486	2322 211 13222	4822 110 60116

<u>Code</u>	<u>Old Part No.</u>	<u>New Part No.</u>
R487	2322 211 13333	4822 110 60147
R488	2322 212 13274	4822 110 50172
R489	2322 211 13122	4822 110 60109
R490	2322 211 13681	4822 110 60103
R491	2322 211 13152	4822 110 60112
R492	2322 211 13392	4822 110 60123
R493	2322 211 13822	4822 110 60132
R494	2322 211 13333	4822 110 60147
R495	2322 211 13334	4822 110 60174
R496	2322 211 13152	4822 110 60112
R497	2322 211 13332	4822 110 60121
R498	2322 211 13562	4822 110 60127
R499	2322 211 13181	4822 110 60087
R500	2322 211 13152	4822 110 60112
R501	2322 211 13391	4822 110 60096
R502	2322 211 13472	4822 110 60125
R503	2322 211 13272	4822 110 60118
R504	2322 211 13681	4822 110 60103
R505	2322 211 13333	4822 110 60147
R506	2322 211 13152	4822 110 60112
R507	2322 211 13104	4822 110 60161
R508	2322 211 13332	4822 110 60121
R509	2322 211 13151	4822 110 60085
R510	2113 256 00399	5322 113 80132
R511	2322 211 13222	4822 110 60116
R512	2322 211 13102	4822 110 60107
R513	2322 211 13332	4822 110 60121
R514	2322 211 13392	4822 110 60123
R515	2322 211 13152	4822 110 60112
R516	2322 211 13271	4822 110 60092
R517	2322 211 13102	4822 110 60107
R518	2322 211 13473	4822 110 60152
R519	2322 101 63471	4822 110 40098
R520	2322 211 13123	4822 110 60136
R521	2322 211 13332	4822 110 60121
R522 & 523	2322 211 13471	4822 110 60098
R524	2322 211 13121	4822 110 60083
R525	2322 212 13471	4822 110 50098
R526	2322 211 13182	4822 110 60114
R527	2322 211 13123	4822 110 60136
R528 & 529	2322 211 13154	4822 110 60165
R530	2322 211 13562	4822 110 60127
R531	2322 211 13223	4822 110 60143
R532	2322 211 13102	4822 110 60107
R533	2322 113 52203	5322 110 30143
R534	2322 212 13102	4822 110 50107
R535	2322 113 52203	5322 110 30143
R536	2322 211 13689	4822 110 60076
R537	2322 211 13102	4822 110 60107
R538	2322 211 13271	4822 110 60092

<u>Code</u>	<u>Old Part No.</u>	<u>New Part No.</u>
R539	2322 211 13222	4822 110 60116
R540 & 541	2322 211 13102	4822 110 60107
R542	2322 211 13152	4822 110 60112
R543	2322 211 13222	4822 110 60116
R544	2322 211 13332	4822 110 60121
R545	2322 211 13183	4822 110 60141
R546	2322 211 13122	4822 110 60109
R547 & 548	2322 211 13223	4822 110 60143
R549	2322 211 13151	4822 110 60085
R550	2322 211 13102	4822 110 60107
R551	2322 211 13103	4822 110 60134
R552	2322 211 13182	4822 110 60114
R553	2322 380 06004	5322 101 20241
R554	2322 211 13561	4822 110 60101
R555	2322 211 13682	4822 110 60129
R556	2322 211 13821	4822 110 60105
R557	2322 211 13472	4822 110 60125
R558	2322 211 13102	4822 110 60107
R559	2322 211 13331	4822 110 60094
R560	2322 101 63561	4822 110 40101
R561	2322 211 13151	4822 110 60085
R562	2322 211 13392	4822 110 60123
R563	2322 211 13333	4822 110 60147
R564	2322 211 13101	4822 110 60081
R565	2322 212 13471	4822 110 50098
R566	2322 212 13109	4822 110 50054
R567	2322 211 13333	4822 110 60147
R568	2322 211 13682	4822 110 60129
R569	2322 211 13472	4822 110 60125
R571	2322 211 13182	4822 110 60114
R572	2322 211 13103	4922 110 60134
TS451	9330 013 50XXO	5322 130 40144
TS452 & 454	9330 013 30XXO	4822 130 40357
TS455	9330 441 20XXO	5322 130 40486
TS456	9330 013 30XXO	4822 130 40357
TS457	9330 441 20XXO	5322 130 40486
TS458	9330 441 10XXO	5322 130 40373
TS459	9330 441 20XXO	4822 130 40486
TS460 & 461	9330 441 10XXO	5322 130 40373
TS462	9330 013 30XXO	5322 130 40357
TS463	9330 441 20XXO	5322 130 40486
TS464 & 465	9330 013 30XXO	4822 130 40357
TS466	9330 116 10XXO	5322 130 40356
TS467 & 468	9330 441 10XXO	5322 130 40373
TS469 to 472	9330 013 30XXO	5322 130 40357
TS473	9330 441 10XXO	5322 130 40373
TS474 & 475	9330 441 00XXO	5322 130 40324
TS476	9330 047 60XXO	5322 130 40138
TS477 & 478	9330 013 30XXO	5322 130 40357

Code	Old Part No.	New Part No.
TS479	9330 047 60XX0	5322 130 40138
TS480	9330 013 30XX0	5322 130 40357
GR451 to 458	9330 042 40XX0	4822 130 40256
GR459 to 466	9330 092 60XX0	4822 130 30264
GR468 to 469	9330 109 00XX0	5322 130 30335
GR470 & 471	9330 042 40XX0	4822 130 40256
RE451 & 452	2412 131 00057	5322 280 70113
<u>Main Frame Assembly</u>		
<u>Centre Chassis Assembly</u>		
T926	3913 429 00350	5322 140 10121
T927	8213 198 00574	5322 152 20455
or		
T927	3122 107 30740	-
G926	2222 341 29684	5322 121 40219
G927	2222 023 18161	4822 124 20396
G928	2222 341 89683	4822 121 40094
G929	2222 063 16132	4822 124 70022
G930	2222 001 18329	4822 124 20097
G987	2013 205 00084	5322 121 10309
H926	2322 320 02229	4822 113 80145
H927	2322 320 02152	5322 113 80009
H928	2113 256 00498	5322 113 80135
H929	2322 102 83361	4822 113 80044
H930	2113 256 02401	5322 113 80143
H931	2322 212 13122	4822 110 50109
GR927 to 928	9330 109 00XX0	5322 130 30335
<u>Spark Suppression P.C.C. Assembly</u>		
G975 to 977	2222 341 71104	5322 121 40214
G979 & 980	2222 341 29104	5322 121 40036
G981	2013 315 07251	4822 121 50181
G982	2222 341 29104	5322 121 40036
G983 to 985	2222 341 89225	4822 121 40024
G986	2222 040 10329	4822 124 20042
G987	2222 341 89104	4822 121 40036
H975 to 978	2322 101 63105	4822 110 40187
H979 to 981	2322 101 63221	4822 110 40089
H982	2113 256 01003	5322 113 80139
H983	2322 212 13222	4822 110 50116

Code	Old Part No.	New Part No.
R84	2322 214 13473	4822 110 20152
R85	2322 212 13152	4822 110 50112
R86	2113 256 00417	5322 113 80133
R87	2322 212 13474	4822 110 50178
R88 to 990	2322 101 63472	4822 110 40125
R91 & 992	2322 212 13474	4822 110 50178
R93 to 995	2322 212 13223	4822 110 50143
R96 to 998	2322 101 63223	4822 110 40143
R99	2322 101 63104	4822 110 40161
CS975	9330 279 30XX0	5322 130 40661
GR975	9330 221 70XX0	4822 130 30433
GR976 to 980	9330 229 20XX0	4822 130 30256
SG975 to 983	3122 100 10131	5322 252 60002
SC984	8213 198 00712	5322 252 60021
CS975	8213 198 00498	5322 264 30092
CS976	8213 198 00501	5322 264 30094
CS977	8213 198 00499	5322 264 30093
R1601 to 1606	2322 212 13332	4822 110 50121
<u>Video Panel Assembly</u>		
R1301 to 1306	2322 113 57509	5322 111 20002
CD1301 to 1312	8213 198 00528	5322 267 10004
CD1313	8213 198 00687	5322 267 50112
CS1301	2412 026 00003	5322 267 40117
SK1301 to 1306	3922 815 77150	4822 277 20019
<u>Contrast Switch Assembly</u>		
R1268 to 1269	2322 113 51209	5322 110 30056
R1292 to 1313	2322 113 51209	5322 110 30056
R1316 to 1337	2322 113 51209	5322 110 30056
<u>Convergence Output P.W.B. Assembly</u>		
CS51	2222 023 16161	4822 124 20394
CS52	2222 001 15109	4822 124 20355
CS53	2013 315 05797	4822 121 50411
CS54	2222 120 14509	4822 124 10025

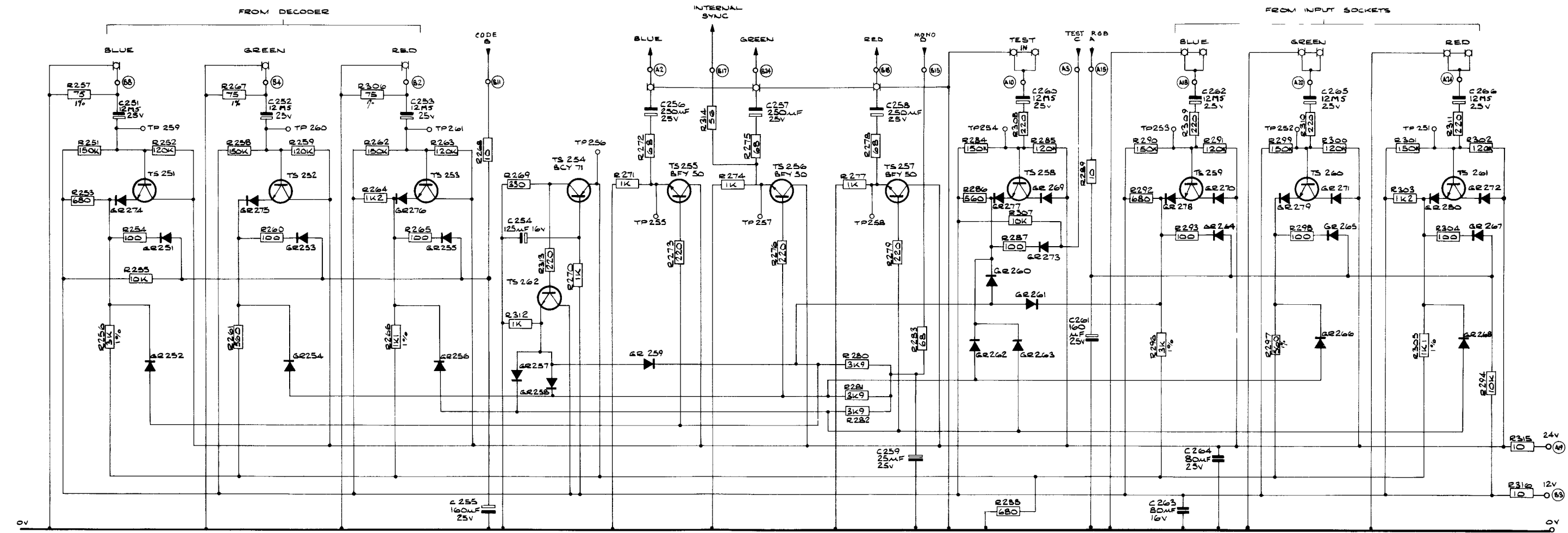
Code	Old Part No.	New Part No.
0855 to 857	2222 001 15109	4822 124 20355
0858	2222 341 29684	5322 121 40219
0859	2222 341 89223	4822 121 40171
0860	2222 001 15109	4822 124 20355
0861	2013 315 05797	4822 121 50411
0862	2222 120 14509	4822 124 10025
0863 & 864	2222 001 15209	4822 124 20362
0865	2222 001 15109	4822 124 20355
0866	2222 001 16809	4822 124 20488
0867	2222 341 89123	4822 121 40039
0868	2222 001 16809	4822 124 20488
0869	2222 001 15109	4822 124 20355
0870	2013 315 05797	4822 121 50411
0871	2222 120 14509	4822 124 10025
0872 & 873	2222 001 15209	4822 124 20362
0874	2222 001 15109	4822 124 20355
0875	2222 001 16809	4822 124 20488
0876	2222 341 89123	4822 121 40039
0877 & 878	2222 001 16809	4822 124 20488
0879	2013 315 05797	4822 121 50411
0880	2222 001 13101	4822 124 20214
0881 to 883	2222 001 15131	4822 124 20388
0884	2222 023 16401	4822 124 20538
0885	2222 311 51222	4822 120 40116
0886	2222 023 16401	4822 124 20538
0887	2222 001 15109	4822 124 20355
0851	2322 212 13279	4822 110 50065
0852	2322 212 13153	4822 110 50138
0853	2322 212 13392	4822 110 50123
0854	2322 212 13152	4822 110 50112
0855 & 856	2322 212 13109	4822 110 20054
0857	2322 212 13221	4822 110 20089
0858	2113 258 00499	5322 113 80136
0859	2322 212 13152	4822 110 50112
0860 & 861	2322 212 13103	4822 110 20134
0862	2322 212 13152	4822 110 50112
0863	2322 212 13331	4822 110 20094
0864 & 865	2322 212 13339	4822 110 50067
0866 & 867	2322 212 13129	4822 110 50056
0868 & 869	2322 212 13339	4822 110 50067
0870 & 871	2322 212 13129	4822 110 50056
0872 & 873	2322 212 13223	4822 110 50143
0874	2322 212 13152	4822 110 50112
0875	2322 212 13222	4822 110 50116
0876	2322 212 13331	4822 110 20094

<u>Code</u>	<u>Old Part No.</u>	<u>New Part No.</u>
R929	2322 212 13272	4822 110 50118
R930 & 931	2322 212 13331	4822 110 50094
R932 & 933	2322 212 13121	4822 110 50083
R934 & 935	2322 101 63159	4822 110 40058
R936 & 937	2322 212 13183	4822 110 50141
R938	2322 212 13689	4822 110 50076
R939	2113 256 00496	5322 113 80082
R940	2322 101 63129	4822 110 40056
R941	2322 212 13562	4822 110 50127
R942	2322 212 13103	4822 110 50134
R943	2322 212 13152	4822 110 50112
TS851	9330 013 50XX0	-
TS852	9330 620 10762	5322 130 40431
TS855 to 857	9330 116 10XX0	5322 130 40356
TS858	9330 013 50XX0	5322 130 40144
TS859	9330 620 10762	5322 130 40431
TS860	9330 116 10XX0	5322 130 40356
TS861	9330 013 50XX0	5322 130 40144
TS862	9330 620 10762	5322 130 40431
TS863	9330 116 10XX0	5322 130 40431
TS864	9330 013 50XX0	5322 130 40144
TS865	9330 620 10762	5322 130 40431
TS866 & 067	9330 116 10XX0	5322 130 40356
TS868	9330 620 10762	5322 130 40431
TS869	9330 013 30XX0	4822 130 40357
GR851	9330 092 30XX0	4822 130 30342
<u>Front Control Panel Assembly</u>		
R1254		5322 101 20352
R1255	2113 379 00008	5322 101 20329
R1256	2113 020 00154	5322 103 20073
R1258	2113 377 00018	5322 101 20351
R1261	2113 377 00018	5322 101 20351
R1264	2113 377 00018	5322 101 20351
R1259 & 1260	2113 377 00301	5322 101 30251
<u>Brightness Control Bracket Assembly</u>		
R1266	2113 377 00024	-
<u>Front Drawer Assembly Mk. II</u>		
LA1 to LA4	9235 421 11200	5322 134 4005
SK1	2422 126 01018	5322 277 10167
SK2	8213 198 00188	5322 276 50178
SK3	8213 198 00187	5322 276 30185

<u>Code</u>	<u>Old Part No.</u>	<u>New Part No.</u>
R1267	2322 212 13683	4822 110 50156

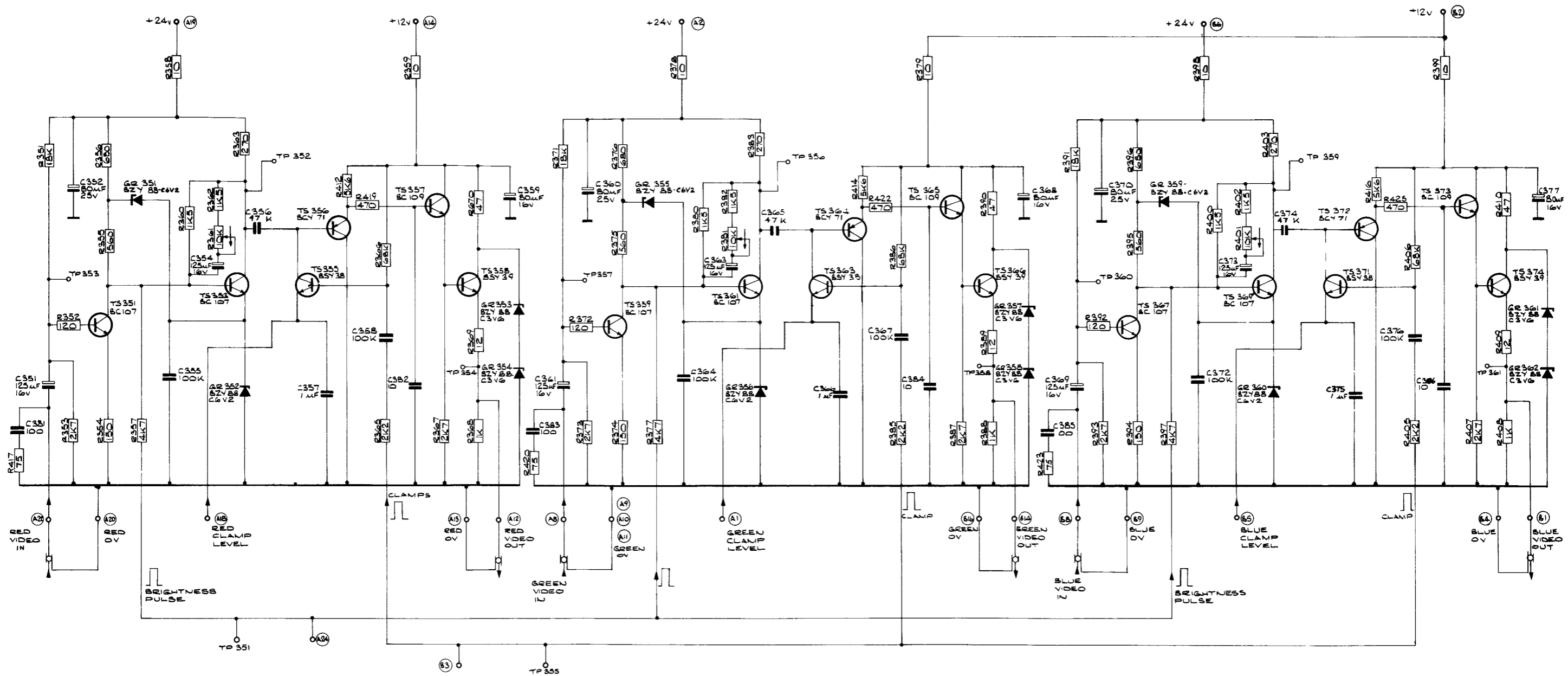
Linearity Board Assembly

C1176	2222 311 51333	4822 120 40147
C1177	2222 311 51272	4822 120 40118
C1178	2222 311 51273	4822 120 40145
C1179	2222 311 51223	4822 120 40143
C1180	2222 311 51682	4822 120 40129
C1181	2222 311 51332	4822 120 40121
R1190	2322 212 13181	4822 110 50087
R1191	2322 214 13392	4822 110 20123
R1192 & 1193	2322 101 63109	4822 110 40054
R1194	2322 212 13479	4822 110 50072
GR1159 to 1162	9330 229 20XX0	4822 130 30256

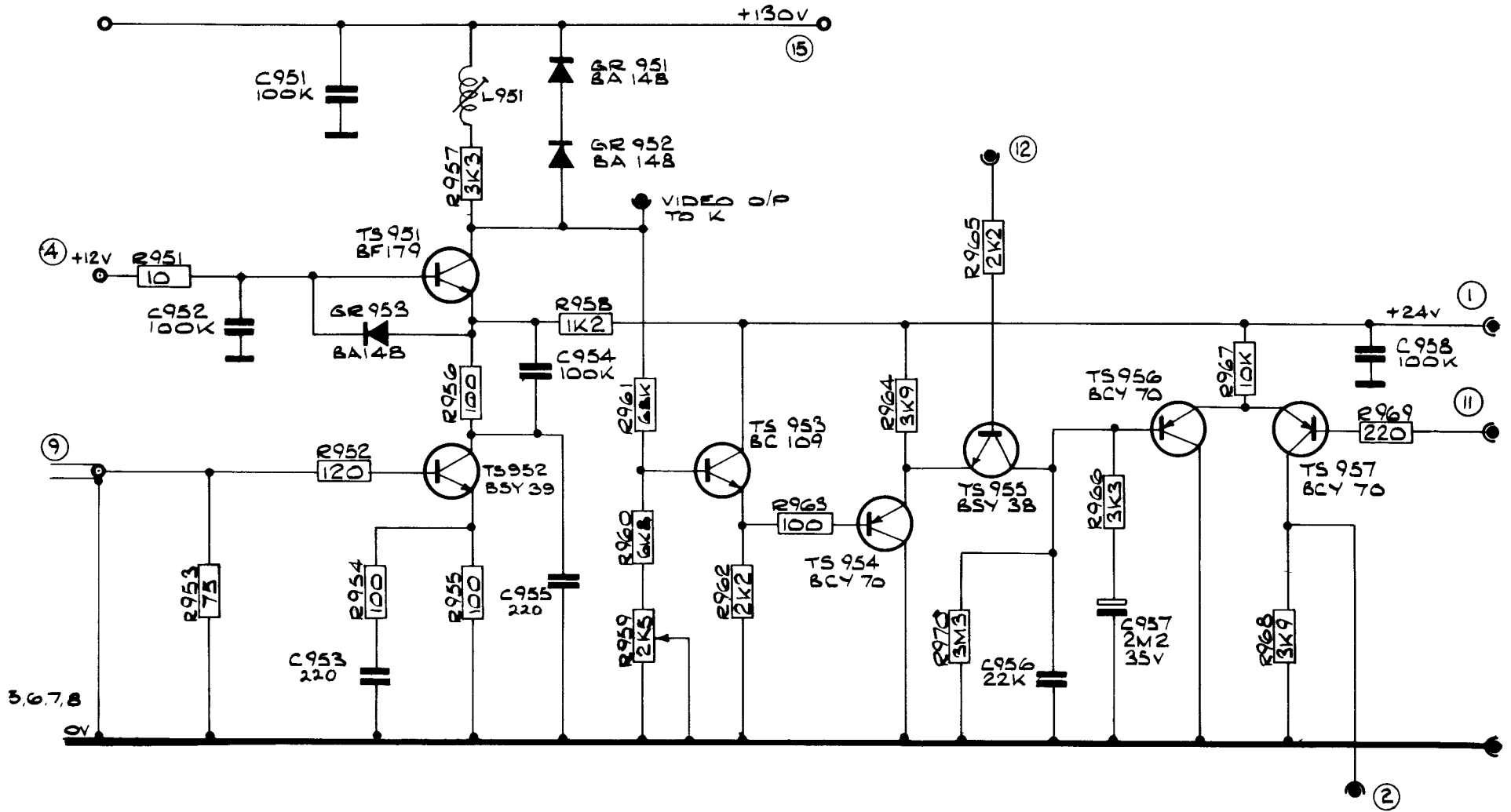


NOTE -
 ALL DIODES BAY 36
 ALL UNIDENTIFIED TRANSISTORS BC 107

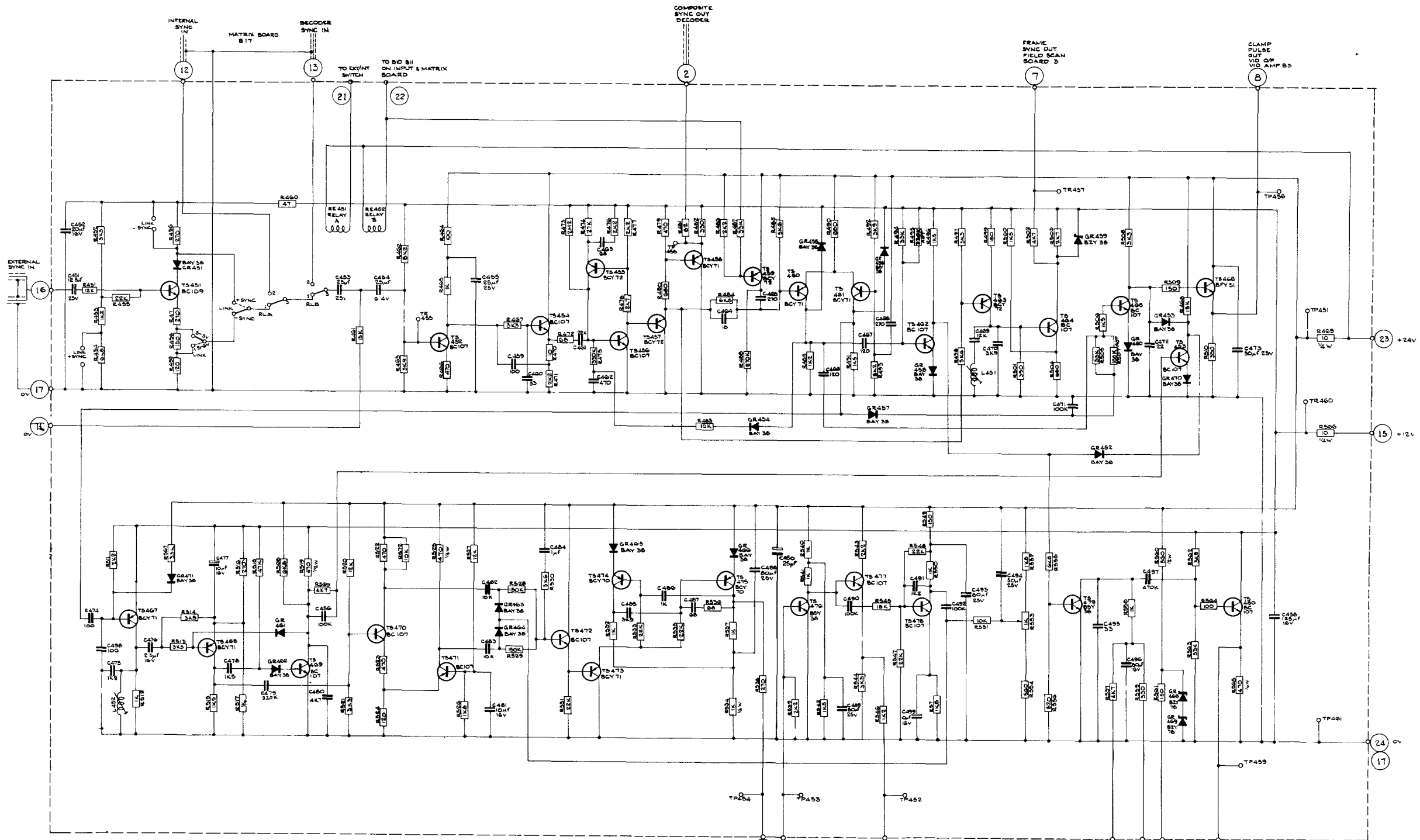
INPUT & MATRIX CIRCUIT
 (3913-426-0175)



VIDEO AMPLIFIER CIRCUIT
(3913-426-0176)



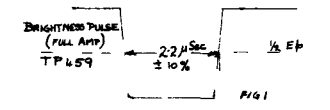
VIDEO OUTPUT CIRCUIT
(3913-426-0183)



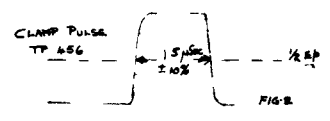
SYNC SEP-BRIGHTNESS # CLAMP PULSE WIDTHS.



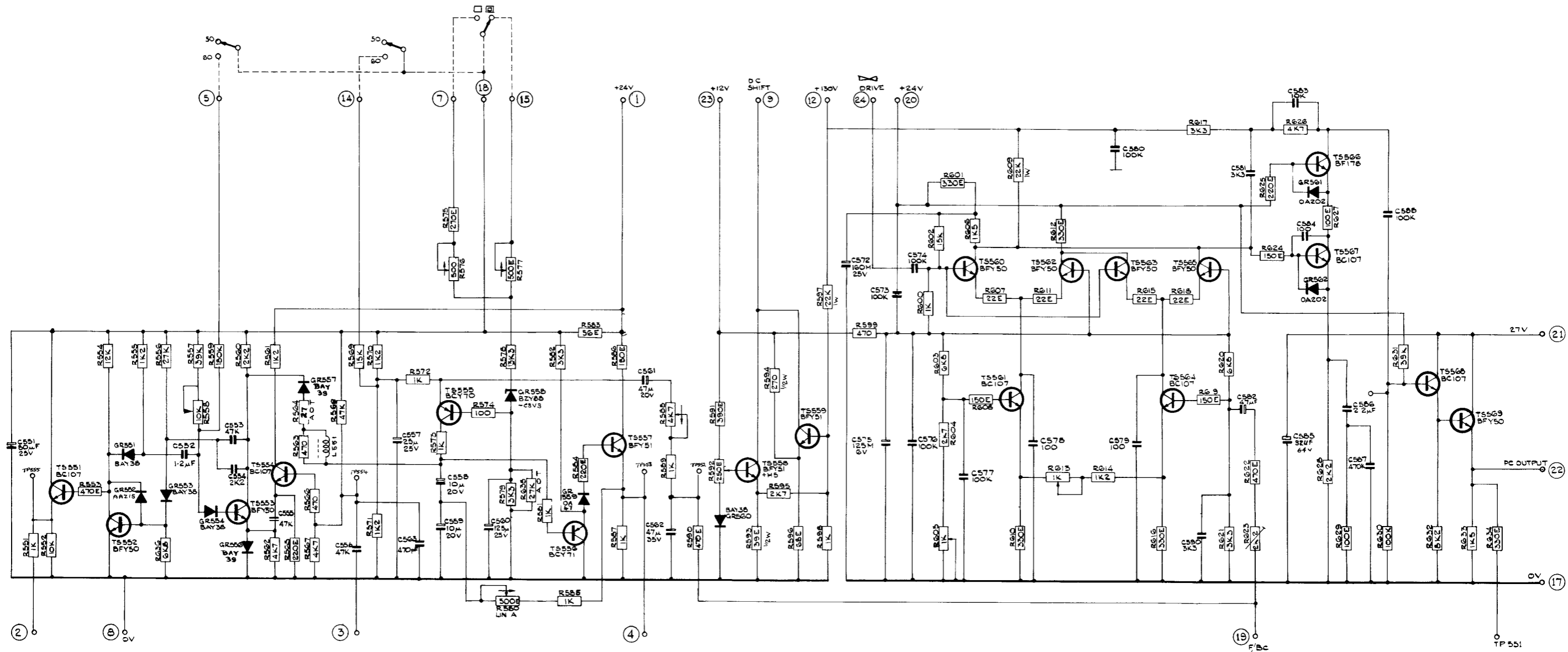
SKETCH TO SHOW PIN NUMBERS OF RELAYS FROM U/SIDE



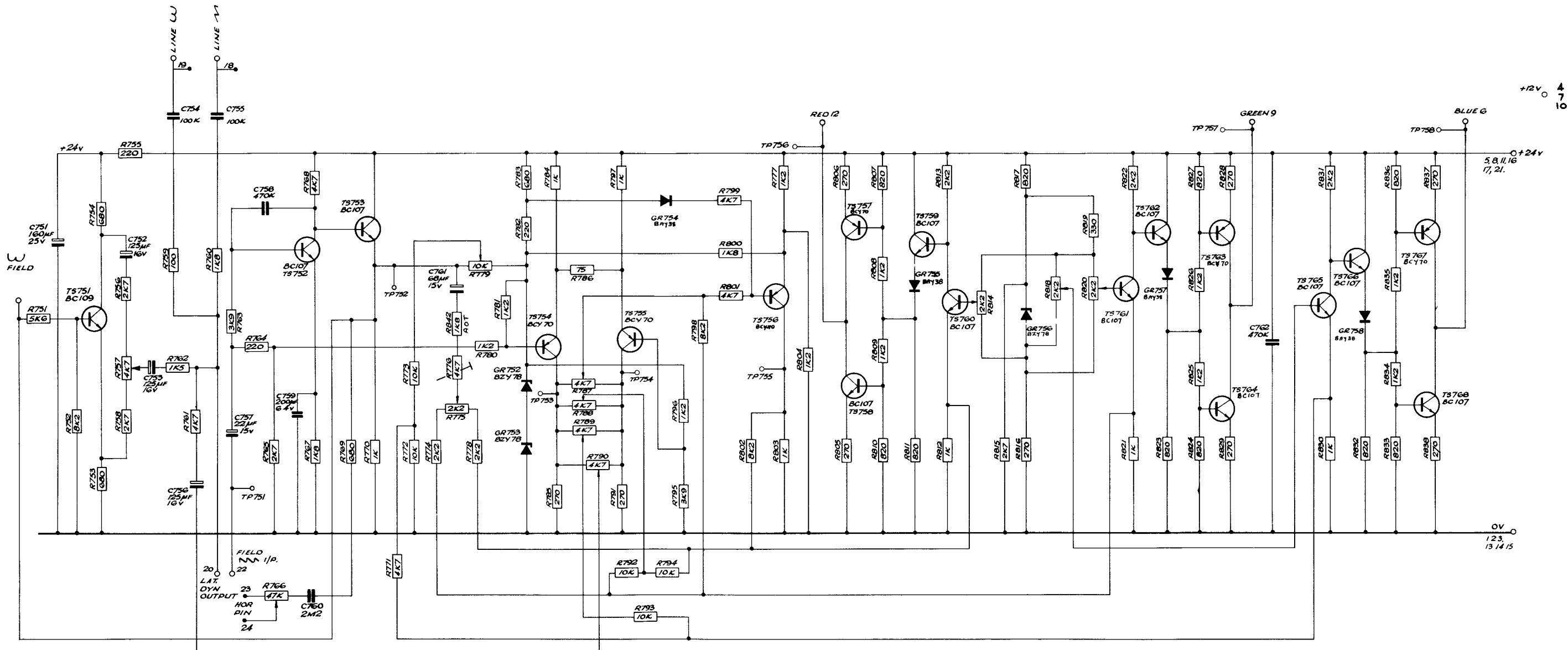
- 1) ADJUST R495 TO OBTAIN FIG 1
- 2) ADJUST R507 TO OBTAIN FIG 2



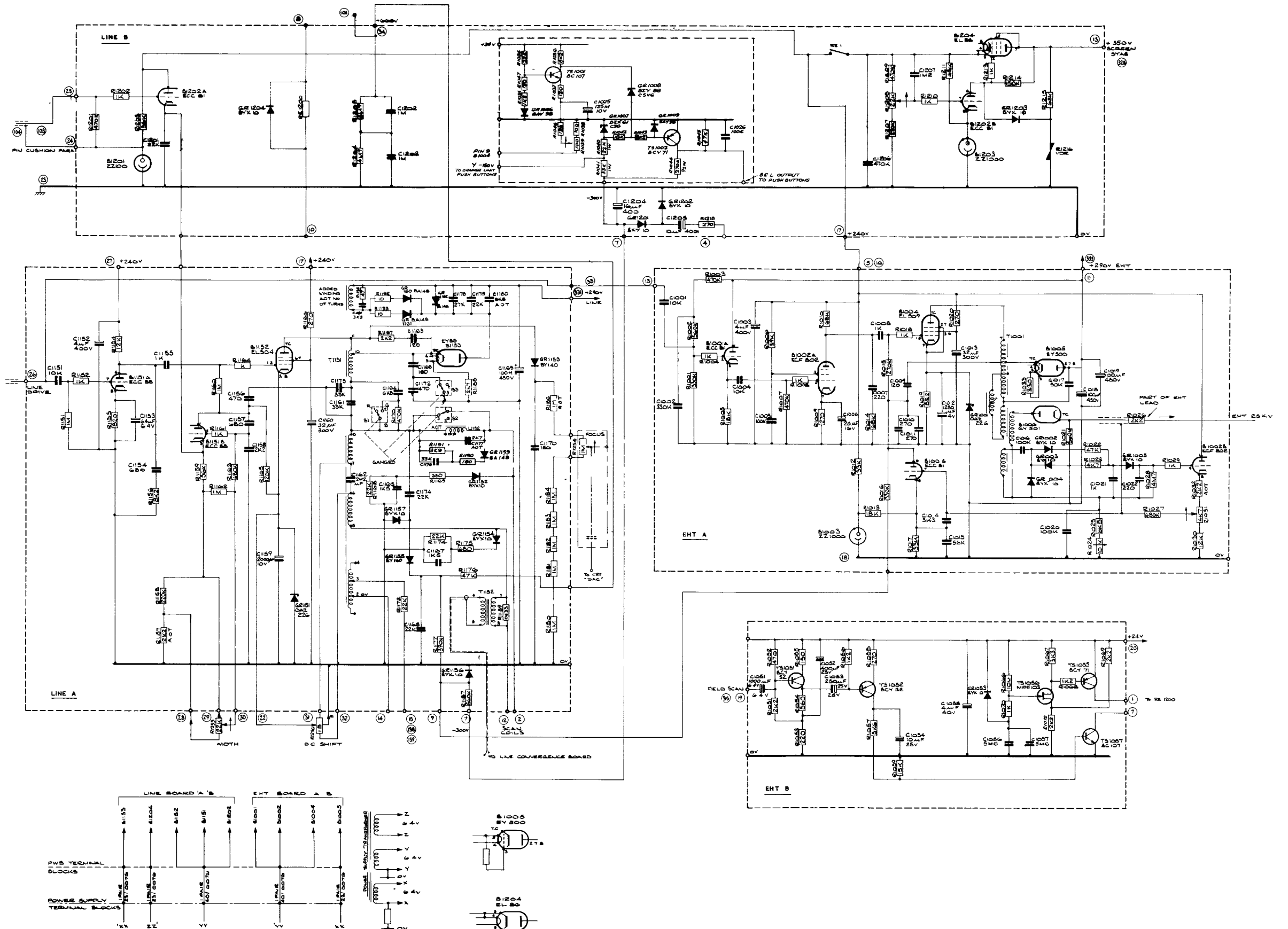
- 18 LINE DRIVE OUT LINE/ENT BOARDS
- 19 LINE F/B PULSE IN LINE BOARD
- 20 BOW TIE DRIVE OUT FIELD SCAN BOARD
- 3 REMOTE BRIGHTNESS OUT REMOTE CONTROL SOCKET
- 5 BRIGHT WIPER OUT BRIGHTNESS CONTROL
- 6 BRIGHT END REMOTE CONTROL
- 1 BRIGHTNESS PULSE OUT VID AMP BOARD A24



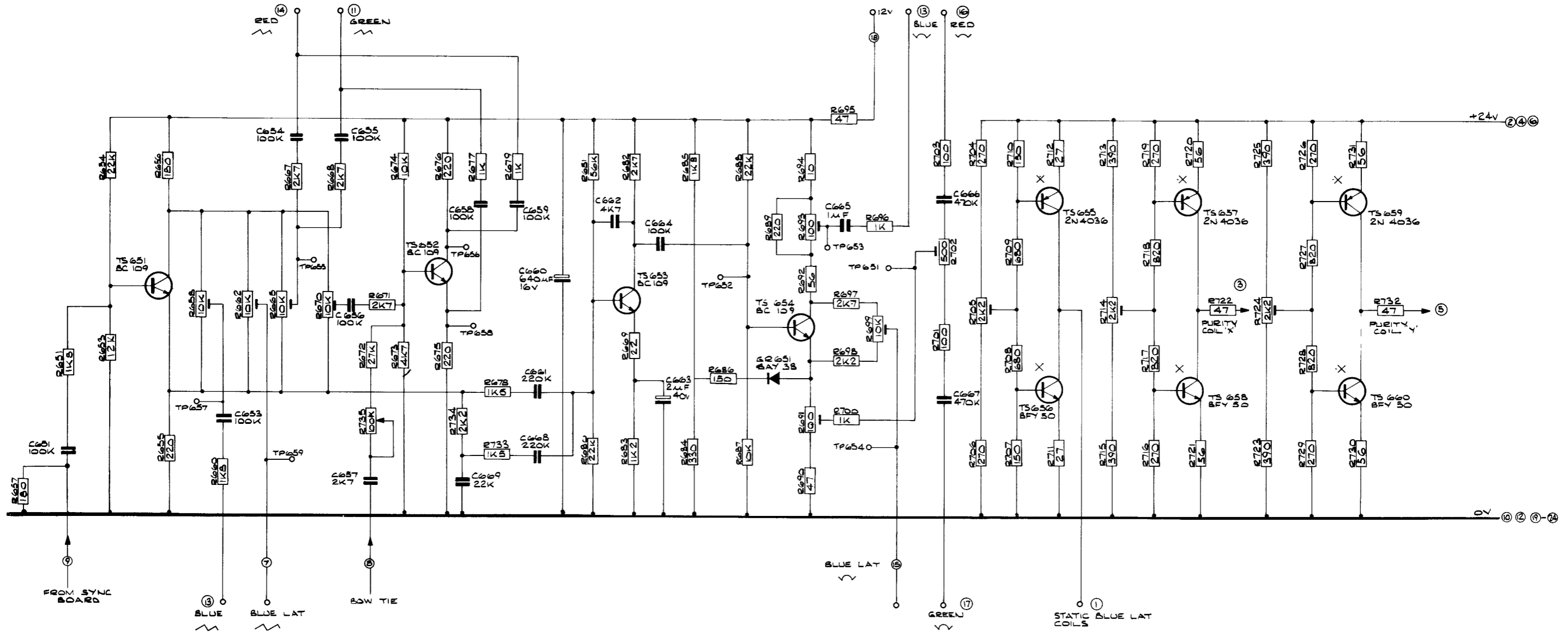
FIELD SCAN AND PINCUSHION CIRCUIT
(3913-426-0178)



FIELD CONVERGENCE CIRCUIT
(3913-426-0180)

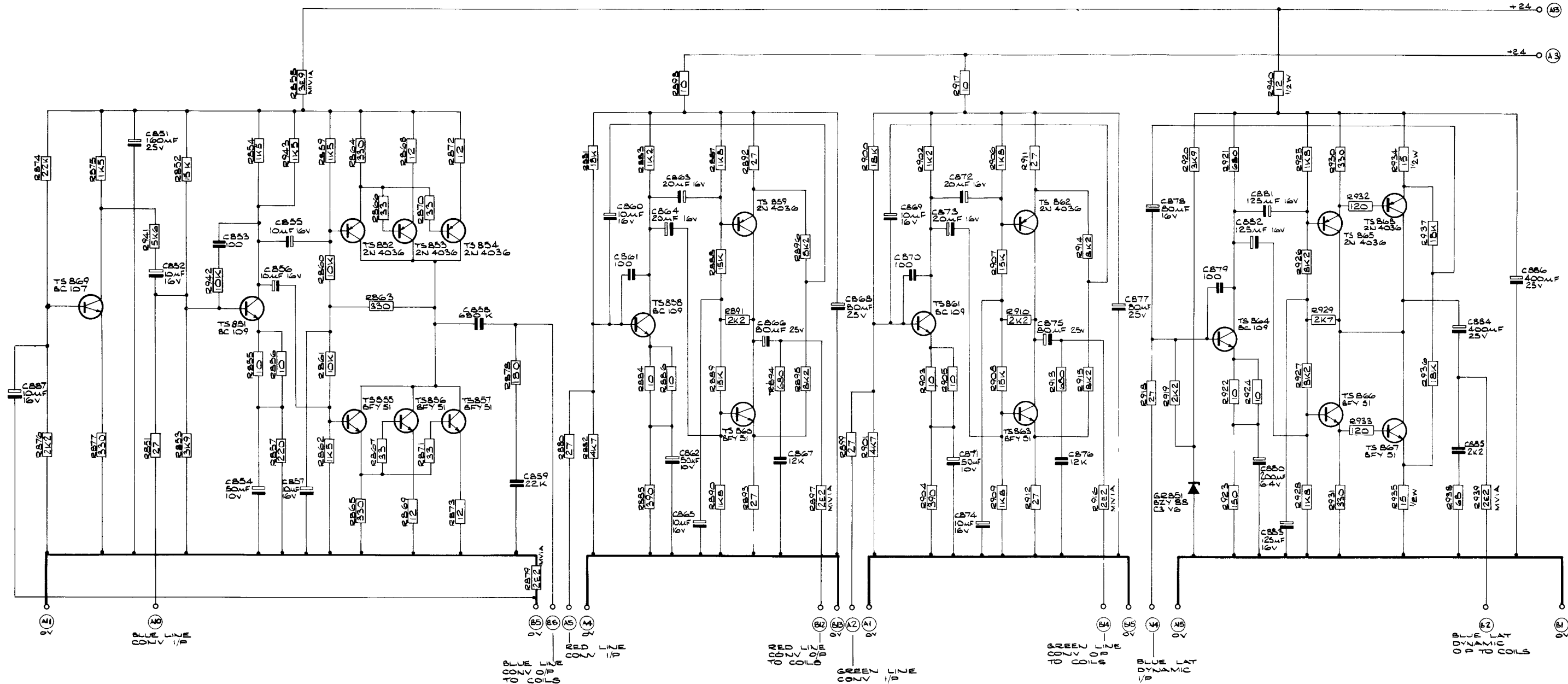


LINE OUTPUT UNITS & EHT UNIT CIRCUIT
(3913-426-0170)

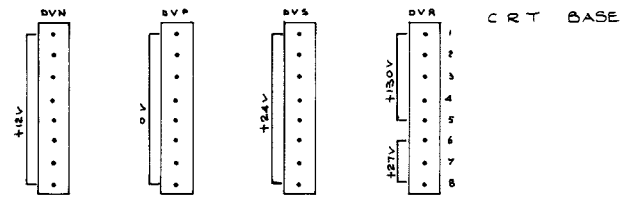
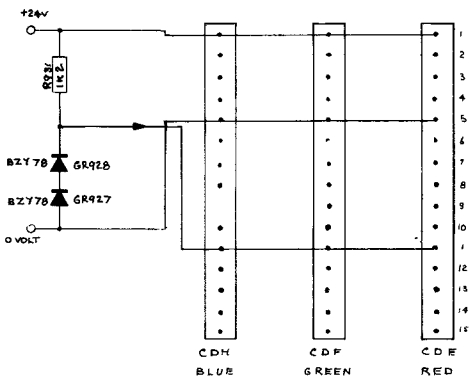
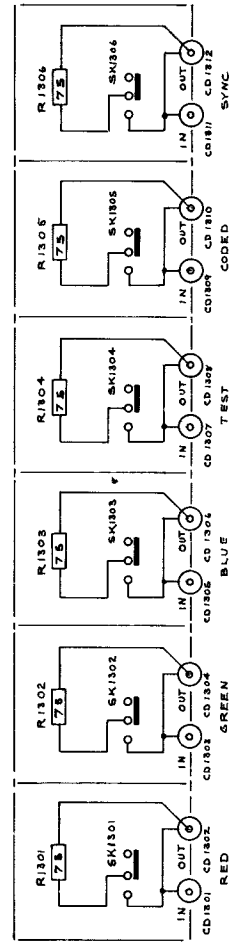
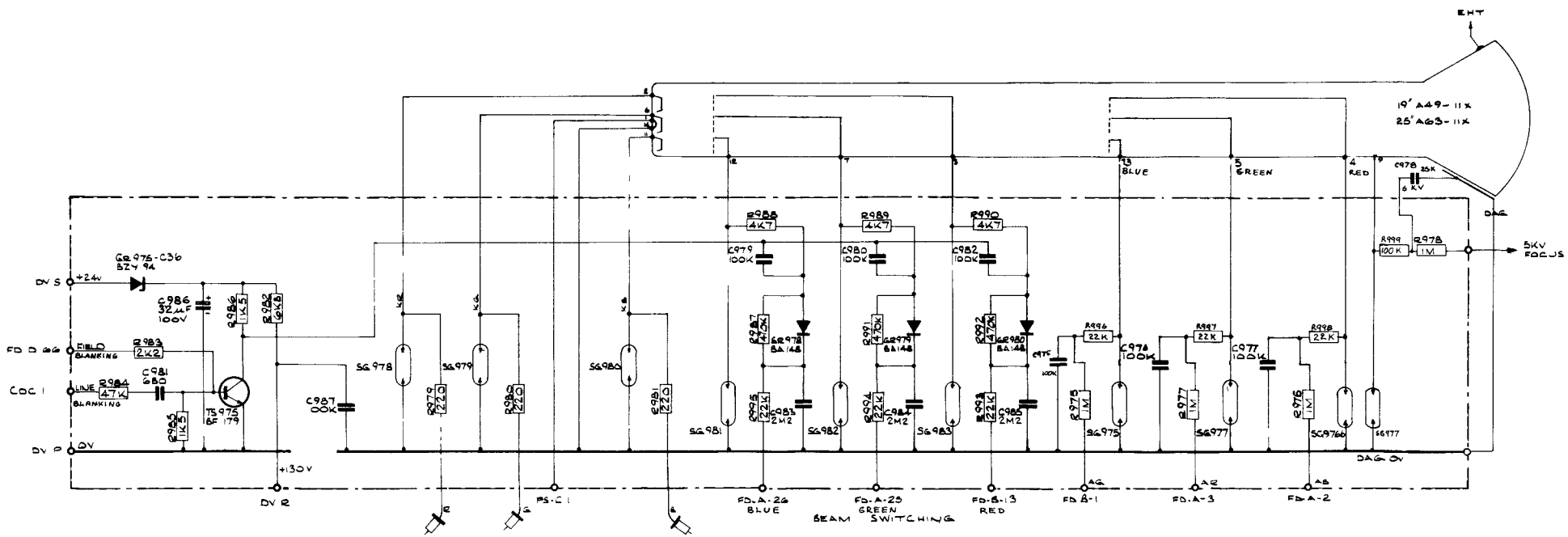


NOTE - X INDICATES HEATSHIELD

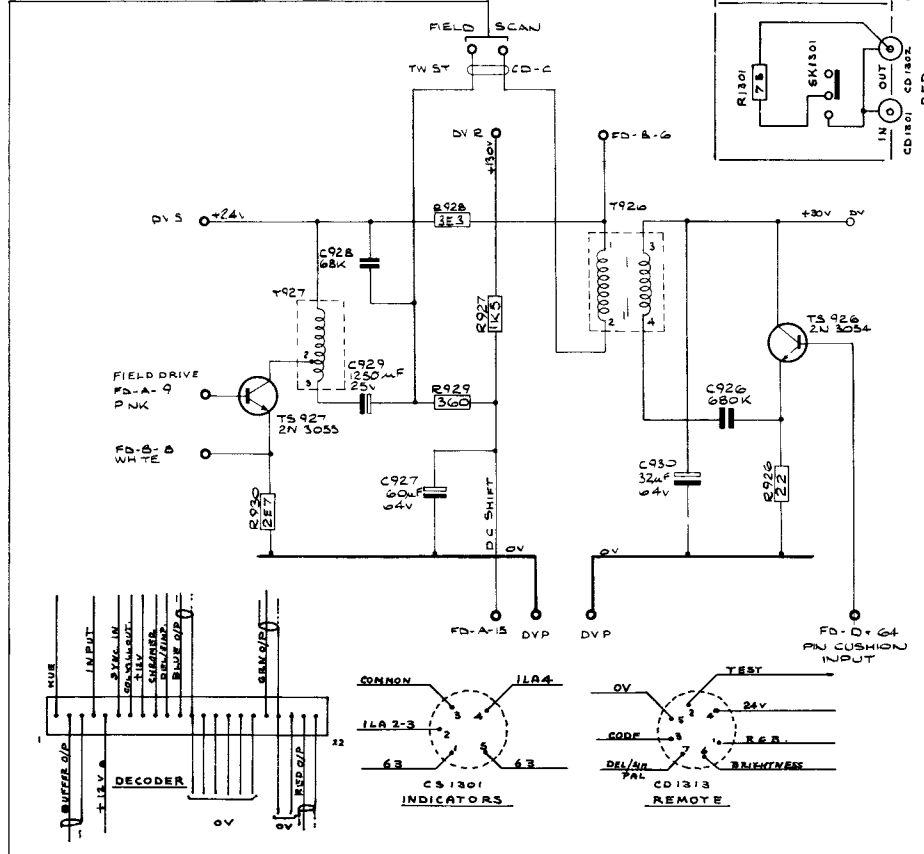
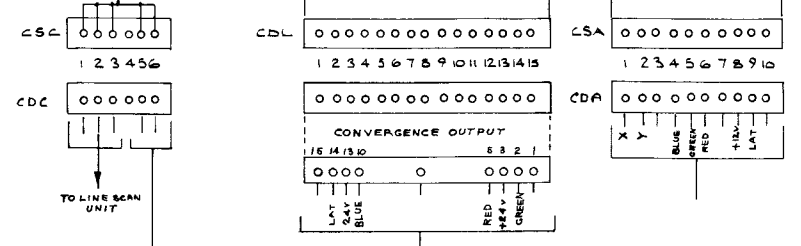
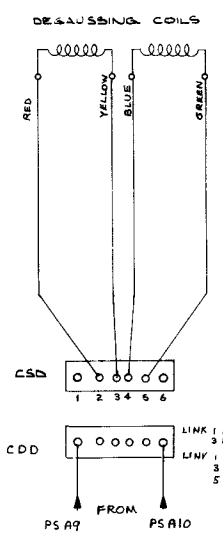
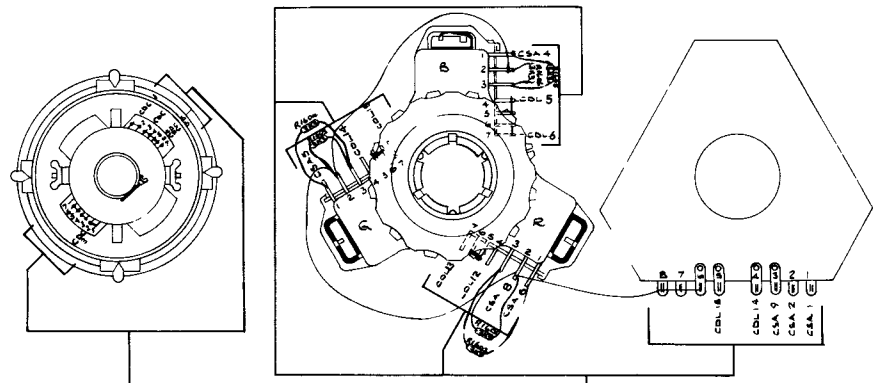
LINE CONVERGENCE CIRCUIT
(3913-426-0179)



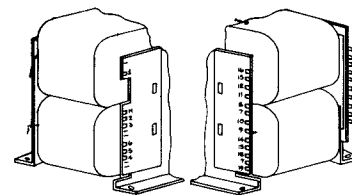
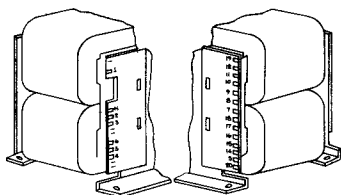
LINE CONVERGENCE OUTPUT CIRCUIT
(3913-426-0373)



CONVERGENCE UNIT PURITY UNIT

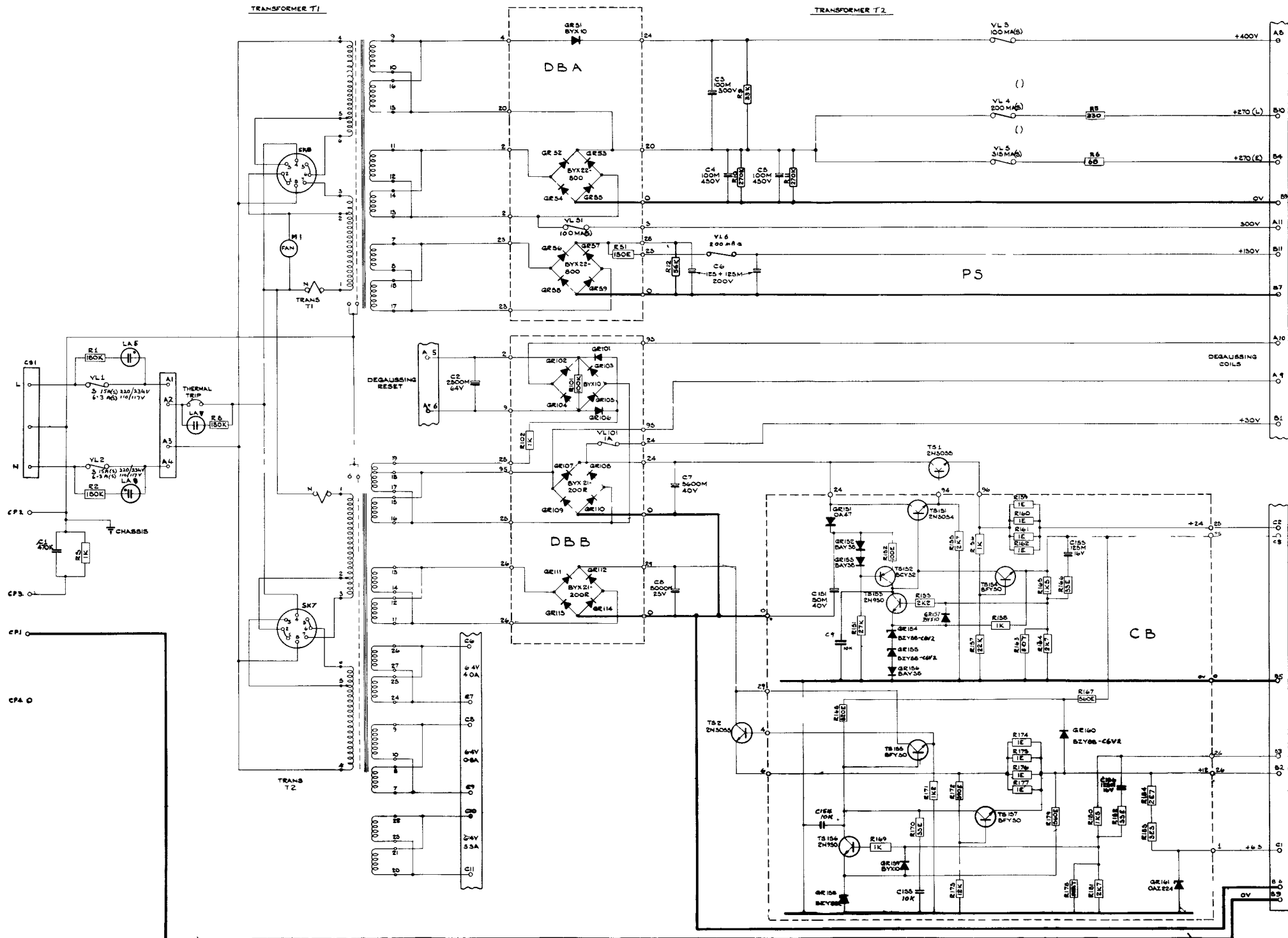


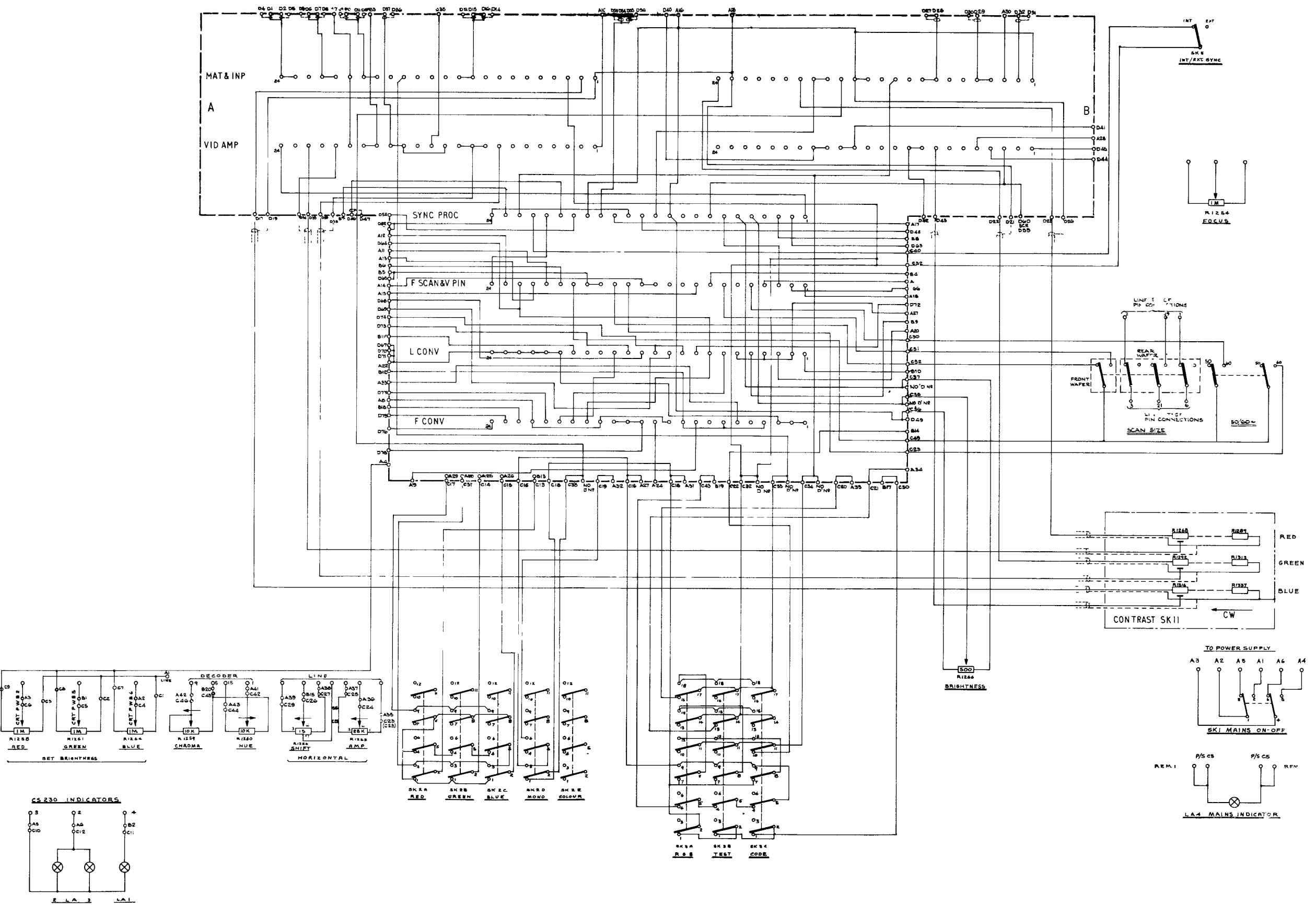
CENTRE CHASSIS, AND SPARK SUPPRESSION CIRCUITS (3913-426-0167)



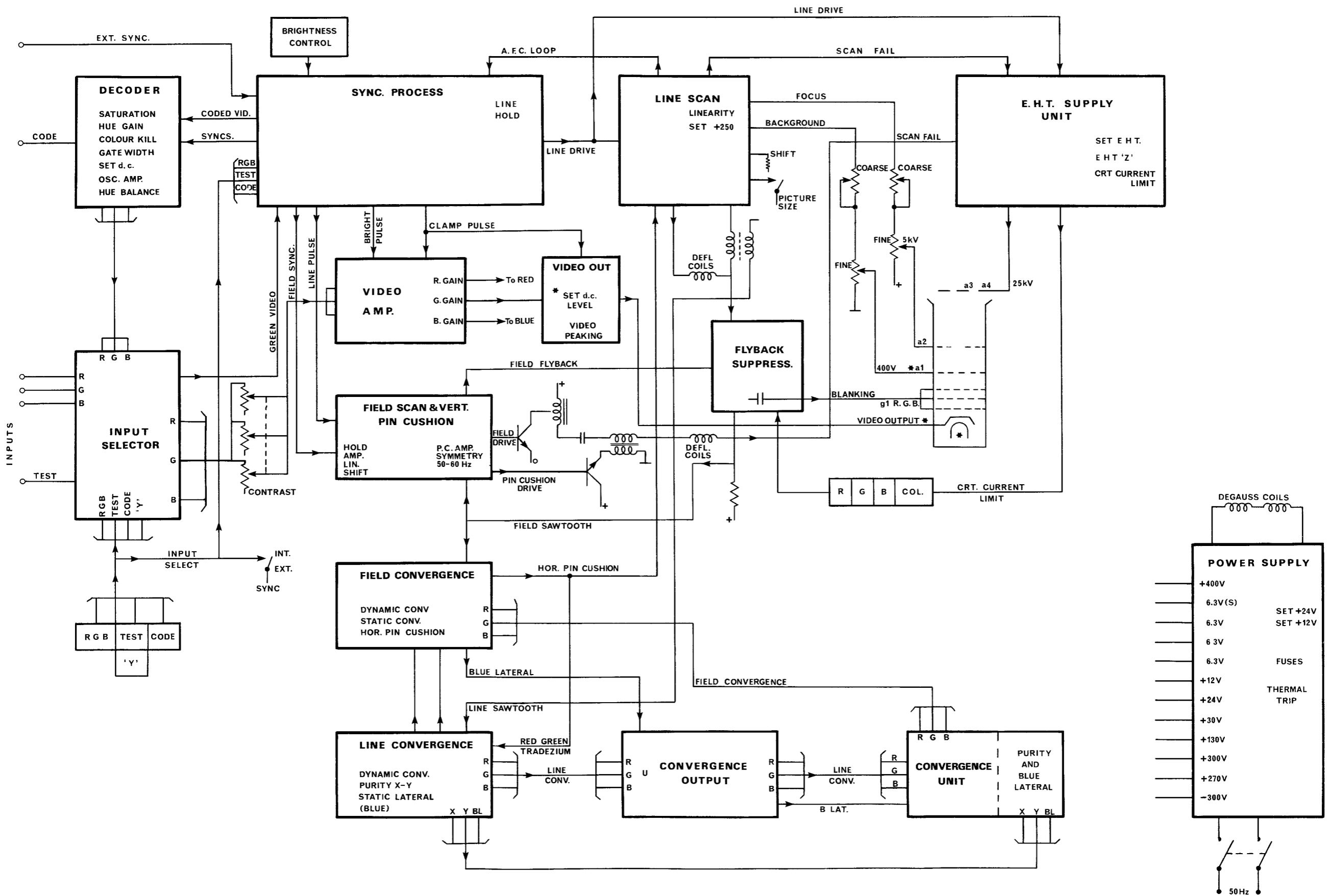
TRANSFORMER T1

TRANSFORMER T2





FRONT DRAWER ASSEMBLY
(3913-426-0391)



COLOUR MONITOR BLOCK DIAGRAM