

General Information

1994

Chassis: C3SSR
CRT: A51EAL30X01
Remote Control:
23120267 (CT 9678)
Door Flap: 23425971
Main Power Button:
23443869

Matrix

Item	See Model
NICAM Diagram	Toshiba 2939 DB

Specifications

Input Power Rating	85 W, AC220 - 240V, 50Hz
Aerial Input Impedence	75 ohm unbalanced type for UHF
Receiving Channels	
PAL-I Standard	UHF 21 - 68
Intermediate Frequencies:	
Picture IF	39.5 MHz
Sound IF	33.5 MHz
Colour Sub-Carrier	35.07 MHz
Picture Tube	90 degree deflection (51cm0
Sound Output	1.0W x 2
Speakers	160mm x 40mm oval 2 pcs (MAIN)
	100mm 2pcs (Hill Top)
Aux Terminals	21 pin socket,
	S-VIDEO/AUDIO input socket
Features	Video Input of PAL/3.58N, 4.43N, Teletext reception, NICAM Digital Stereo, OFF timer

Recommended Safety Parts

Item	Part No.	Description
C440	24082356	PF, 9100pF, $\pm 3\%$, 1500V
C463	24212222	CD, 2200pF, $\pm 10\%$
C801	24082318	PF, 1 μ F, $\pm 20\%$, AC250V
C802, C803	24094656	CD, 2200pF, $\pm 20\%$, AC400V
F801	23144894	Fuse, 3.15A
F803	23144875	Fuse, 0.63A
IC827	A6907751	IC, S1854
L462		DY, Supplied with V901
L901	23200205	Coil, Degaussing, TSB-2333AR
P801	23176934	Power Cord
Q404	23314375	Transistor, ON4409(508D)
Q826	A8643108	IC, Photo Coupler, TLP621(GR-LF)
R327	24339829	MF, 8.2 ohm, 2W
R448	24338338	MF, 0.33 ohm, 1W
R801	24004914	Metal-Glazed Resistor, 5.6 ohm, 1/2W
R878	24531560	FR, 56 ohm, 1/2W
R884	24531120	FR, 12 ohm, 1/2W
R890	24000875	PTC Thermistor, 18 ohm, $\pm 20\%$, 290V
R920	24000910	FR, 2.4 ohm, 2W
RD01	24366473	CF, 47k ohm
RV25	24019261	FR, 47 ohm, $\pm 2\%$, 1/4W
S801	23145434	Switch, Power, 2C2P
T401	23224983	Transformer, Horiz. Drive, TLN1039
T461	23236448	Transformer, Flyback, TFB4116AR
T801	23211891	Line Filter, TRF3164
T803	23217214	Transformer, Converter, TPW3283AR
V901	23112348	Picture Tube, A51EAL30X01
V901A	23902067	Socket, CRT, 10P

Service Adjustments

Safety Instructions

X-Ray Radiation Precaution

1: The E.H.T. must be checked every time the receiver is serviced to ensure that the C.R.T. does not emit X-Ray radiation as result of excessive E.H.T. voltage. The nominal E.H.T. for this receiver is 26.5 kV at zero beam current (minimum brightness) operating at 240v a.c. The maximum E.H.T. voltage permissible in any operating circumstances must not exceed 29.0 kV. When checking the E.H.T. use the 'High Voltage Check' procedure in this manual using an accurate E.H.T. voltmeter.

2: The only source of X-Ray radiation in this receiver is the C.R.T. To prevent X-Ray radiation, the replacement C.R.T. must be identical to the original fitted as specified in the Parts List.

3: Some components used in this receiver have safety related characteristics preventing the C.R.T. from emitting X-Ray radiation.

Safety Precaution

1: This receiver has a nominal working E.H.T. voltage of 24.5 kV. Extreme caution should be exercised when working on the receiver with the back removed. Do not attempt to service this receiver if you are not conversant with the precautions and procedures for working on high voltage equipment. When handling or working on the

C.R.T. always discharge the anode to the receiver chassis before removing the anode cap. The C.R.T. if broken, will violently expel glass fragments. Use shatterproof goggles and take extreme care while handling.

Do not hold the C.R.T. by the neck as this is a very dangerous practice.

2: It is essential that, to maintain the safety of the customer, all cable forms be replaced exactly as supplied from the factory.

3: A small part of the chassis used in this receiver is, when operating, at approximately half mains potential at all times. It is therefore essential, in the interest of safety, that when servicing or connecting any test equipment the receiver should be supplied via a suitable isolating transformer of adequate rating.

4: replace blown fuses within the receiver with the fuse specified in the parts list.

5: When replacing wires or components to terminals or tags, wind the leads around the terminal before soldering. When replacing safety components identified by the international hazard symbols on the circuit diagram and parts list, it must be a Toshiba approved type and must be mounted as the original.

6: Keep wires away from high temperature components.

Product Safety Notice

Many electrical and mechanical components in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection, and the X-ray radiation protection afforded by them cannot necessarily be obtained by using replacements rated at higher voltages or wattage etc. Components which have these special safety characteristics in this manual and its supplements are identified by the international hazard symbols on the schematic diagram and parts list. Before replacing any of these components read the parts list in this manual carefully. Substitute replacement components which do not have the same safety characteristics as specified in the parts list may create X-ray radiation.

Installation and Service Adjustments

General Information

All adjustments are thoroughly checked and corrected when the receiver leaves the factory. Therefore the receiver should operate normally and produce proper colour and B/W pictures upon installation. However several minor adjustments may be required depending on the particular location in which the receiver is operated. This receiver is shipped completely in cardboard carton. Carefully draw out the receiver from the carton and remove all packing materials. Plug the power cord into a convenient 240v 50 Hz AC two pin power outlet. Turn the receiver ON. Check and adjust all the customer controls such as BRIGHTNESS, CONTRAST and COLOUR Controls to obtain natural colour or B/W picture.

Automatic degaussing

A degaussing coil is mounted around the

picture tube so that external degaussing after moving the receiver is normally unnecessary, providing the receiver is properly degaussed upon installation. The degaussing coil operates for about one second after the power to the receiver is switched ON. If the set is moved or faced in a different direction, the power switch must be switched off for at least one hour in order that the automatic degaussing circuit operates properly. Should the chassis or parts of the cabinet become magnetised to cause poor colour purity, use an external degaussing coil. Slowly move the degaussing coil around the faceplate of the picture tube, the sides and front of the receiver and slowly withdraw the coil to about 2m before disconnecting it from AC source. If colour shading still persists, perform the COLOUR PURITY ADJUSTMENT and CONVERGENCE ADJUSTMENTS procedures.

High Voltage Check

Caution: There is no HIGH VOLTAGE ADJUSTMENT on this chassis.

- 1: Connect an accurate high voltage meter to the second anode of the picture tube.
- 2: Turn on the receiver. Set the BRIGHTNESS and CONTRAST Controls to the minimum (zero beam current).
- 3: High voltage will be measured below 29.0 kV.

Horizontal Centre Adjustment

- 1: Receive the UK PHILIPS pattern.
- 2: Set the contrast and colour and brightness to centre.
- 3: Adjust H. CENTRE USER Control (R452) so the pattern centre can be located at the screen centre.

Focus Adjustment

Adjust FOCUS Control on FLYBACK TRANS. (T461) for well defined scanning lines in the centre area on the screen.

SIF FM DET (LG04) Adjustment (NICAM Board)

- 1: Connect SIF generator through 0.01 μ F capacitor to pin D1 of PD01 on NICAM Board.
- 2: Connect the oscilloscope to pin 9 of ICD03.
- 3: Set up the SIF generator as described below.
Sound carrier frequency: 6.0MHz
Modulation frequency: 1000Hz
Frequency deviation: ± 15 kHz
Signal level: 100dBm (50 ohm load).
- 4: Adjust LG04 for the maximum response of 1000 Hz det-out on scope.

PAL Matrix Adjustment

- 1: Tune in the colour programme of the Philips pattern.
- 2: Set the COLOUR Control to obtain the proper colour.
- 3: If the PAL MATRIX adjustment is incorrect, the Venetian Blind would appear in the colour bars area. This case needs adjustment.
- 4: At the first, adjust DL PHASE ADJ. Coil (L551) to minimise the Venetian Blind.
- 5: Next adjust 1H-DL ADJ. VR (R551) to minimise the Blind.
- 6: If the Venetian Blind still remains, adjust 1H-DL PHASE ADJ. Coil (L551)

to minimise the Blind again.

- 7: Repeat the item 5 and 6 procedures, adjust the R551 and L551 until the Blind does not appear.

C.R.T. Grey Scale Adjustment

- 1: Tune in an active channel.
- 2: Set the SERVICE SW. (S202) in the "H LINE" position.
- 3: Turn the SCREEN Control (on T461) fully counterclockwise.
- 4: By rotating the RED, GREEN and BLUE CUT OFF Controls (R557, R558, R559) to the mid position.
- 5: Set the GREEN and BLUE DRIVE Controls (R252, R253) to the centre.
- 6: Rotate the SCREEN Control gradually clockwise until the first line appears slightly on the screen. Set the SCREEN Control to this position.
- 7: Adjust the CUT OFF Controls to obtain the slightly lighted horizontal lines in the same levels of three colours (RED, GREEN and BLUE).
- 8: Set the SERVICE SW. (S202) in the "RECEIVE" position.
- 9: Set the CONTRAST and COLOUR Controls to minimum, and BRIGHTNESS Control to maximum.
- 10: Adjust the BLUE and GREEN DRIVE Controls (R252/R253) to obtain proper white-balanced picture in high light areas.
- 11: Set the BRIGHTNESS and CONTRAST Controls to obtain dark grey raster. Then check the white balance in low brightness. If the white balance is not proper, retouch the CUT OFF Controls and DRIVE Controls to obtain a good white balance in both low and high light areas.

Sub-Brightness Adjustment

- 1: Tune in a colour programme.
- 2: Set the CONTRAST Control to the minimum and the BRIGHTNESS Control to the centre.
- 3: Set the COLOUR Control to the centre.
- 4: Set the SUB-BRIGHT. Control (R255) to the centre and leave the receiver for five minutes in this state.
- 5: Watching the picture well, adjust the SUB-BRIGHT. Control in the position where the picture does not show evidence of blooming in high bright area and not appear too dark in low bright portion.
- 6: Check the proper picture variation by rotating the CONTRAST and BRIGHTNESS Controls to both extremes.
- 7: If the picture does not appear dark with the CONTRAST and BRIGHTNESS Controls turned to the minimum, or not appear bright with the controls turned to the maximum, adjust the SUB-BRIGHT. Control again for the acceptable picture.

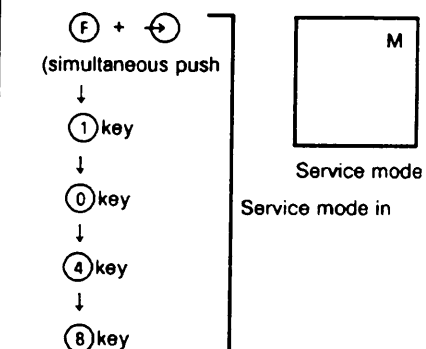
Adjustment Method for Servicing

Outline

Since each IC used is of I²C bus control type, re-adjustment of the TVs also needs adjustment through I²C bus control. In the service mode, sub-bright, deflection system sub-adjustments, picture system sub-adjustments can be made easily with user remote control unit.

Service Mode Operation

How to Enter the Service Mode



How to Exit from the Service Mode

Exit the service mode by turning the power on/off with the remote control.

Adjustment in the Service Mode

Service Mode Level Adjustments

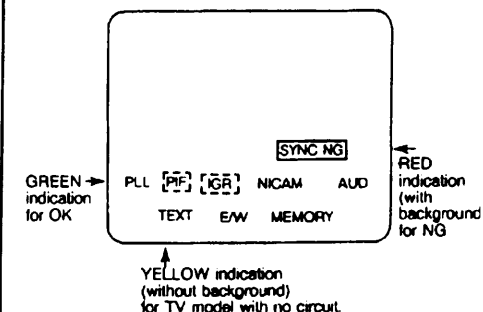
- 1: Push F + key (simultaneous push) (item UP) or F + key (simultaneous push) (item DN) to select item to be adjusted.
- 2: Adjust with the level UP/DN (VOL UP/ DN key).

Other Service Mode Adjustments

F + 2 key (simultaneous push) cut off: (NO VERTICAL DEFLECTION) ON/OFF

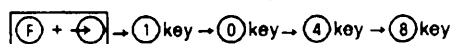
Self Check

- 1: Indicates sync signal and acknowledgement of each IC.



- 2: Example of display on screen
- 3: Operation:

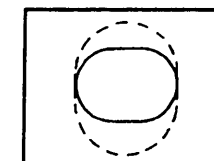
1. TV gets into service mode with key operation.



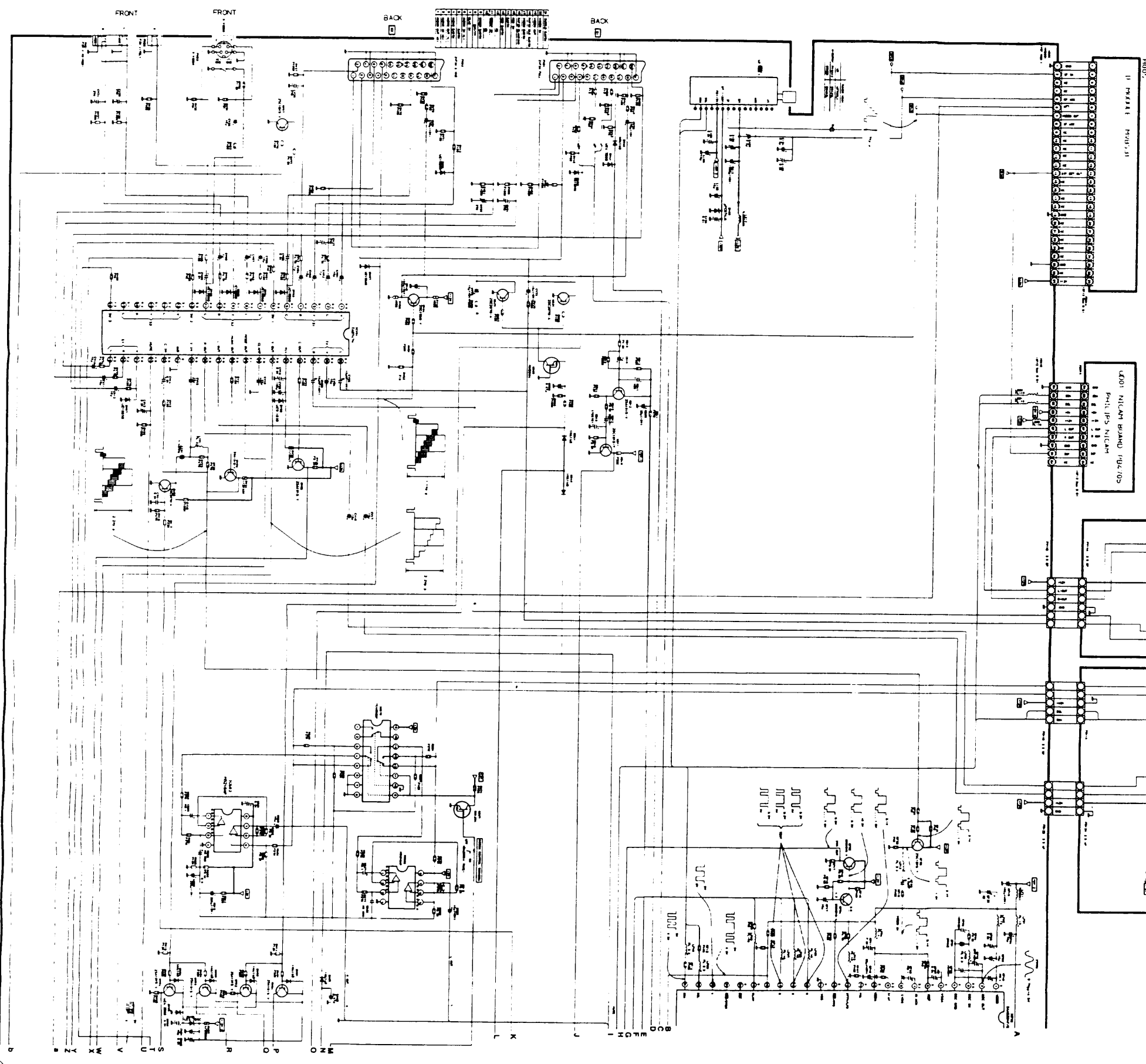
2. TV indicates screen with F + 4 key

Sub-Data

Symbol: HIT
Description: V amplitude adjustment.

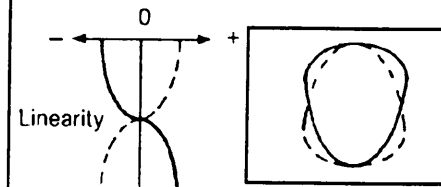


Main Diagram

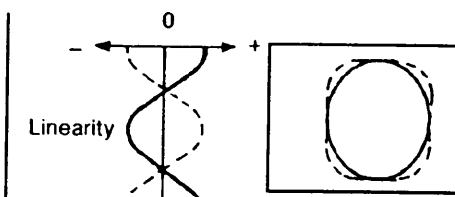


Service Adjustments Cont'd.

Symbol: LIN
Description: V linearity correction 1.

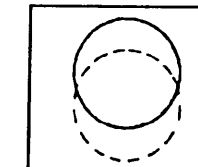


Symbol: VSC
Description: V linearity correction 2.



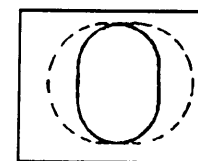
Linearity balance between top/bottom cover.

Symbol: VPS
Description: V picture position adjustment.

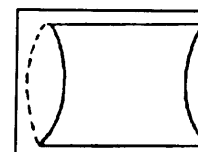


Symbol: VCP
Description: Setting of amount of V amplitude correction against variation of screen brightness.

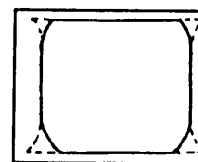
Symbol: WID
Description: H amplitude adjustment.



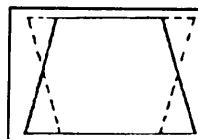
Symbol: DPC
Description: H pin-cushion distortion correction.



Symbol: CNR
Description: H pin-cushion distortion correction at four corners.

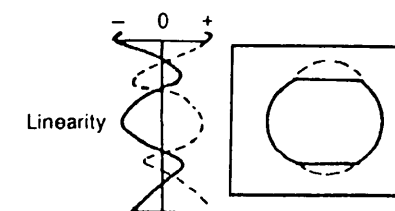


Symbol: KEY
Description: Pedestal distortion correction.



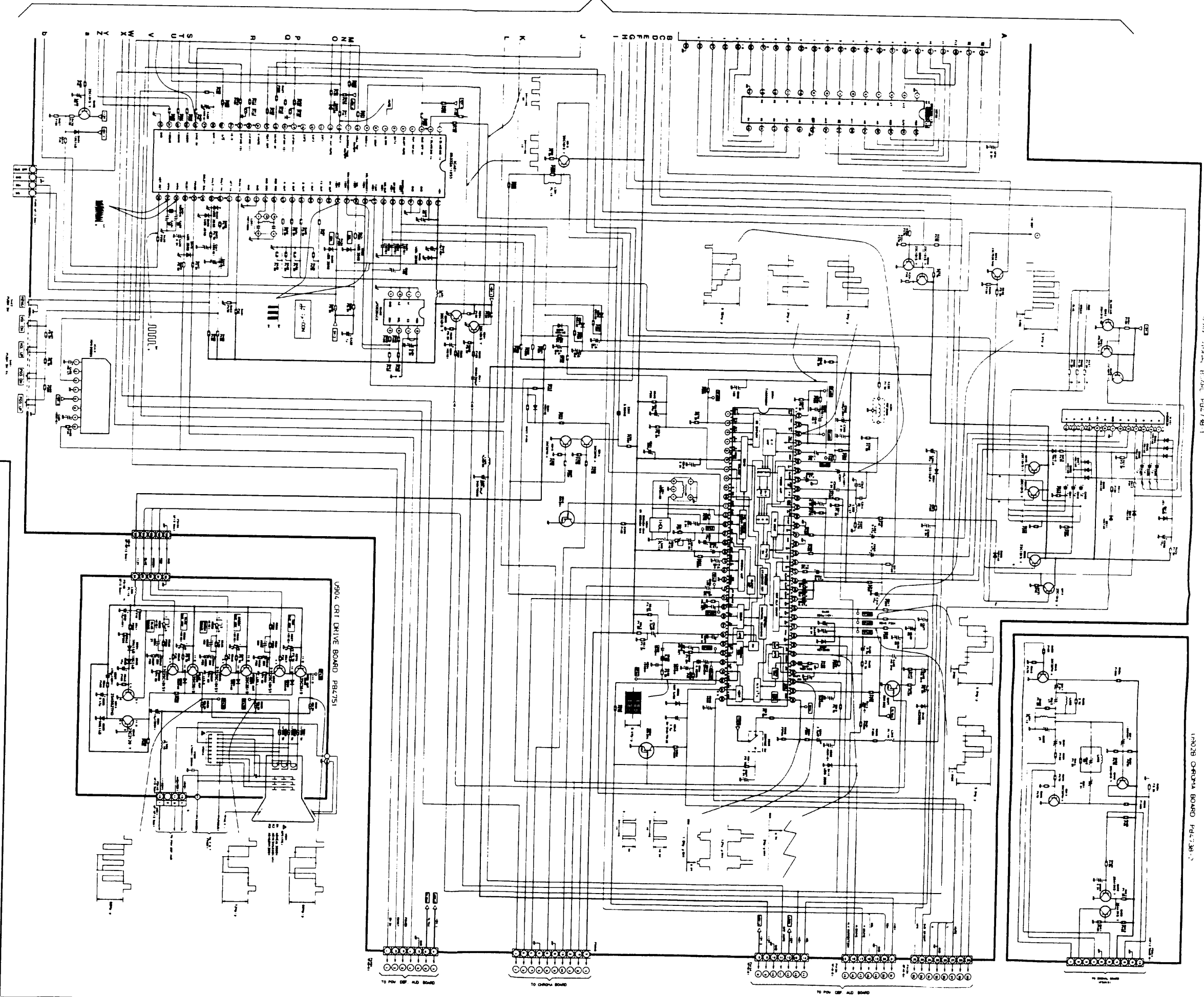
Symbol: HCP
Description: Setting of amount of H amplitude correction against variation of screen brightness.

Symbol: VMC
Description: V linearity correction. Linearity balance at 1/4, 3/4 areas from top.



Main Diagram
Cont'd.

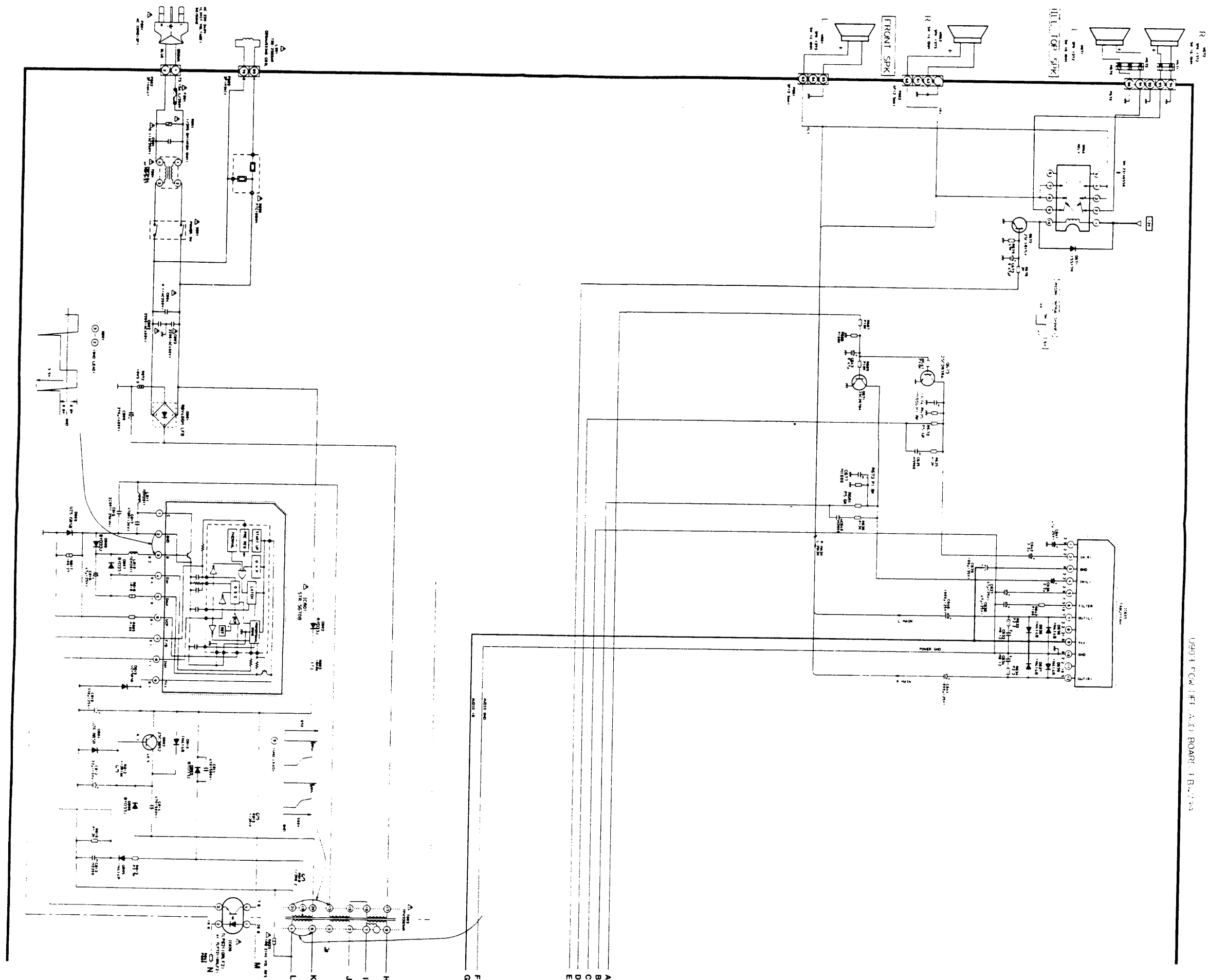
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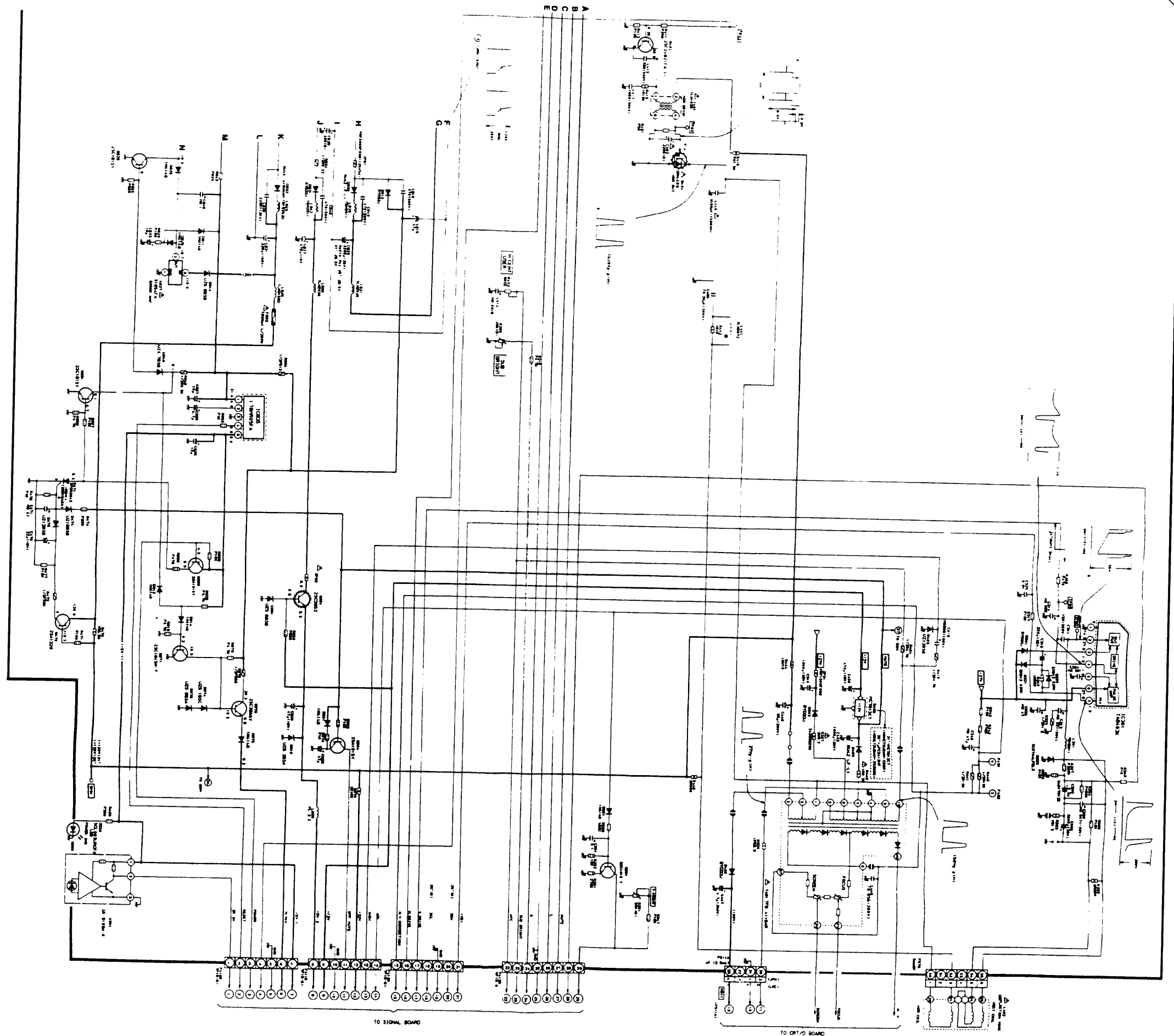
Service Adjustments
Cont'd.

Adjustment parts or Bus control item	Input point/ Output point	Adjustment signal	Adjustment conditions and procedures
: Horizontal amplitude adjustment (WID) : Pin distortion compensation amount adjustment (DPC) : Keystone distortion compensation amount adjustment (KEY)	Visual check of picture (Bus control)	Wg Philips pattern Do not use the Philips pattern of FRANCESECAM	1: Conditions - After V HEIGHT, VERT POSITION and H. CENT have been adjusted, set the controllers as follows: Contrast: Centre Brightness: Centre Colour: Centre 2: Adjustment procedure a - Adjust the horizontal amplitude by the sub address WID. Adjust so that the left and right white flags of Philips pattern disappear at the very limits. b - Make the left and right vertical bars straight by the sub address DPC. c - Compensate the key distortion by the sub address KEY. d - Again, adjust the sub address WID.
: HEIGHT (HIT) : VERT. POSITION	Visual check of picture (Bus control)	WG Philips pattern Do not use the Philips pattern of FRANCESECAM	1: Conditions Contrast: Centre Brightness: Centre Colour: Centre 2: Adjustment procedure a - By the bus address VPS, adjust V position so that the circle of Philips pattern comes to the vertical centre. b - Adjust HIT so that the upper and lower flags of Philips pattern disappear at the very limits.

Power Def
Audio Diagram



2



Power Def Audio Diagram Cont'd