

General Information

1995

Chassis: EE4

CRT: A51EFS43X09

Remote Control:

MELD464010 - 21M5B*

290P054010 - 21M5B

290P054020 - 25M5BT

Door Flap:

752C600010 - 21M5BT

752C600020 - 21M5B

Main Power Button:

754C6000020

*For CT-21M5B serial numbers

000001 - 0004000 only.

Matrix

Item See Model

Safety Precautions Mitsubishi CT-14MS1

Specifications

Reception System: CCIR-I PAL
Reception Frequency: UHF 470MHz -862MHz
Mains Input: AC 230V 50Hz
Power Consumption: 84w (CT-21M5B & BT)
Aerial Input: 75 ohm
Intermediate Frequency: Video: 39.5MHz
Sound: 33.5MHz
Audio Output: 5W (music power)
Speaker: 100mm round

Recommended Safety Parts

Item	Part No.	Description
	255P917030	CRT A51EFS43X09 (21M5B, 21M5BT)
	255P930010	CRT A59ECY13X01 (25M5BT)
	409P564040	Coil Degaussing (25M5BT)
	409P564060	Coil Degaussing (21M5BT)
	920A414001	ASSY-PWB-Main (21M5B)
	920A417001	ASSY-PWB-Main (25M5BT)
	930C899004	ASSY-PWB-VM/CRT (21M5B, 21M5BT)
	930C899005	ASSY-PWB-VM/CRT (25M5BT)
	930C900003	ASSY-PWB-Power-Sub
	930C901002	ASSY-PWB-LED
	930C938001	ASSY-PCB-UNITEXT (21M5BT, 25M5BT)
	246C162010	AC-Power Cord
	700C602020	ASSY-Back-Cover (21M5B)
	700C602030	ASSY-Back-Cover (21M5BT)
	700C603040	ASSY-Back-Cover (25M5BT)
C981	189P091010	C-Ceramic-AC AC400V E4700P-M
C991	189P117030	C-M-Polyester-AC AC275V 0.22M-M
F991	283D047040	Fuse 250V, T2A
J601	449C126010	CRT Socket 033-0550044
PC951	268P068010	Photo Coupler TCDT1124G
R352	103P378060	R-Fuse 1/4W 3.3-J
R512	103P442020	R-Fuse Metal 1W 560-K-OR-J
R513	103P398040	R-Fuse 1/2W 2.2-J
R514, R516	103P397090	R-Fuse 1/2W 0.82-J

Service Adjustments

Service Adjustment Procedures

1: Introduction

Most service adjustments to these models are made using the remote control (fig. 1) with the TV in service mode. The adjustment data is stored in an EEPROM.

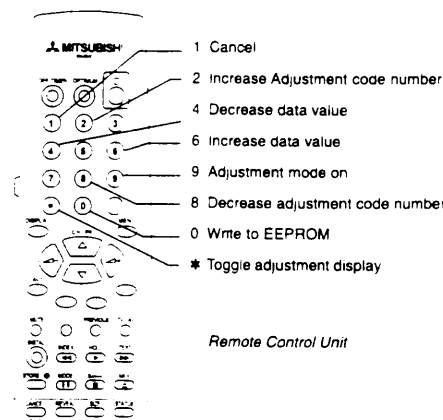
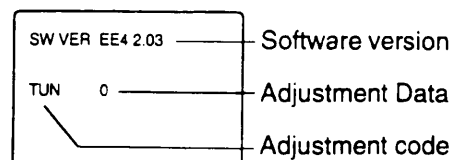


Fig 1.

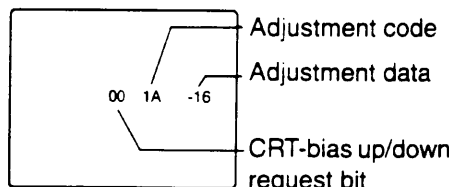
Basic Adjustment Procedure

- Turn the power on. With a small screwdriver, press the Service Switch (S701, next to the aerial socket) and then button "9" within 5 seconds to enter service mode.
- Press the QUAS button to select either the VCJ or OPTION adjustment display (fig. 2 and 3).
- Press buttons "2" or "8" to increase or decrease the adjustment code number.



Options adjustment display

Fig 2



VCJ adjustment display

Fig 3.

- Press buttons "6" or "4" to increase or decrease the data value.
- After completing your adjustments, press button "0" to write the adjustment data to the EEPROM.

To cancel a change, press button "1" (or the standby button) before writing the adjustment to the EEPROM. All data adjusted since the last EEPROM write will be reset.

2: Initialising the EEPROM

If you have replaced the EEPROM (IC702) or if for any reason the adjustment data has become corrupted it will be necessary to initialise the EEPROM.

- If necessary, switch off by the Main switch.
- Hold the service switch (S701, next to the aerial socket) while switching on by the Main switch.
- Release the service switch after 3 seconds.
- Switch off by the Main switch.
- Switch on by the Main switch. Press the service switch and the button "9" within 5 seconds to enter service mode.
- Press the QUAS button to select the OPTIONS adjustment display.
- Press buttons "2" or "8" on the remote control to select the adjustment code.
- Adjust data value for each code using buttons "2" or "4" on the remote control according to the table below:

(Other adjustment codes will be displayed but need not be changed on these models).

Recommended Safety Parts Cont'd.

Item	Part No.	Description
R671	103P447080	R-Fuse-Metal 1W 0.68-K-OR-J (25M5BT)
R671	103P448020	R-Fuse-Metal 1W 1.5ohm-K/J (21M5B, 21M5BT)
R981, R982	109D021020	R-Composition 1/2W 6.8M-K
S991	432C048010	SW-Push AC250V 5A/80A
T551	334P232020	Trans-Flyback (21M5B, 21M5BT)
T551	334P244010	Assy-Trans-Flyback (25M5BT)
T901	350P664010	Trans-Power (25M5BT)
Z552	299P193010	Protector 2000 (25M5BT)
Z951	299P193010	Protector 2000

Note: Numbers in brackets indicates model.

Code:	CT-21 M5B	CT-21 M5BT	CT-25 M5BT
TUN:	0	0	0
ATS:	0	1	1
STD:	1	1	1
SYS:	0	0	0
AVI:	0	0	0
AVD*	0	0	0
SPK*	0	0	0
TXT	0	2	2
EEP	1	1	1
FFT	0	1	1
HTL**	1	1	1

Data values for the OPTIONS adjustments.

* Software version 140 only

** Software versions 2.xx

- Press the "0" button to write the changes to the EEPROM.
- Press the QUAS button to select the VCJ adjustment display.
- Press buttons "2" or "8" on the remote control to select the adjustment code.
- Adjust the data value of each code using buttons "2" or "4" on the remote control according to the table below:

(Other adjustment codes will be displayed but need not be changed on these models).

Code:	CT-21 M5B	CT-21 M5BT	CT-25 M5BT
07	-7	-7	-7
11	100	100	100
12	111	111	111
19	-3	-3	-5
1B	-11	-11	-10
1C	00	00	-2

Data values for the VCJ adjustments.

- Press the "0" button to write the changes to the EEPROM.

EEPROM Default Data Values

These values are adequate to allow the set to be adjusted.
(See tables at top of next column)

3: VIF Circuits

RF-AGC

VR101 (adjacent to the tuner)

- Connect an RF signal such as an off-air broadcast.
- Check the AFT is on for the Current channel.
- Adjust VR101 so that the picture and sound exhibit no noise, beat or intermodulation distortion.

CODE	FUNCTION	DATA VALUE
00	V-Amp	-16
01	V-Correct	-31
02	P-Amp	+05
03	Tilt	-12
04	V-Lin	+23
05	C-Correct	-09
06	H-Amp	-22
07	16x9-SW RGB-Matrix	-7
08	V-Shift	+02
09	H-Phase	+10
0A	S-Drive	+01
0B	G-Drive	+01
0C	R-Drive	+01
0D	Contrast	+14
0E	BRIGHT	+01
0F	Colour-Sat	+10
10	NTSC-Tint	00
11	Sharp	111
12	PAL-Luma-Delay	111
13	Secam-Luma-Delay	111
14	V-Amp-60	00
15	P-Amp	00
16	H-Amp-60	00
17	V-Shift-60	00
18	H-Phase-60	00
19	H-Phase-Text	00
1A	H-Phase-Secam	00
1B	H-Phase-RGB	00
1C	P-Amp-16.9	00
1D	358NTSC-Luma-Delay	111
1E	443NTSC-Luma-Delay	111

	DESCRIPTION	DATA VALUE S/W V 140	DATA VALUE S/W V 2.xx
TUN	Tuner Type	0	0
SAT	Satellite Enable	0	N/A
AUD	Audio System	0	N/A
ATS	Auto Tuning Sort	0	0
STD	Reception Standard	0	0
SYS	Colour System	0	0
AVI	No. of AV inputs	0	0
AVD	AV Dubbing	0	N/A
EEF	Chassis Type	N/A	N/A
SPK	Speaker SW Enabled	0	N/A
EEP	EEPROM Size	1	1
TXT	TELETEXT TYPE	0	0
FFT	FAST/TOPT TEXT	01	0
HTL	HOTEL MODE ENABLE	N/A	1

4: Deflection Circuits

Before making any adjustments, if you have changed the CRT, FLYBACK TRANSFORMER or made any changes in the deflection circuits, adjust the CRT bias as described in Video Circuits - Screen Control steps 1 -6).

Check the VERTICAL BREATHING CORRECTION as follows:

- Select the VCJ adjustment display.
- Set the adjustment code to "01" with buttons "2" or "8" on the remote control.
- If necessary, adjust the data value to "-31" using buttons "4" or "6" on the remote control.

Horizontal Centre

Code 09 (H-PHASE)

- Connect a VCR and play a PAL-Monoscope alignment tape.
- Select the VCJ adjustment display.
- Set the adjustment code to "09" with buttons "2" or "8" on the remote control.
- Adjust the horizontal position with buttons "4" or "6" on the remote control.

Horizontal Width (CT-25M5BT only)

Code 06 (H-AMP)

- Connect a VCR and play a PAL-Monoscope alignment tape.
- Select the VCJ adjustment display.

- Set the adjustment code to "06" with buttons "2" or "8" on the remote control.
- Adjust horizontal width with the buttons "4" or "6" on the remote control.

East-West PCC (CT-25M5BT only)

Code 05 (CORNER CORRECTION)

Code 03 (PARABOLA TILT)

Code 02 (PARABOLA AMP)

- Connect an RF PAL Crosshatch signal.
- Select the VCJ adjustment display.
- Set the adjustment code to "05" with buttons "2" or "8" on the remote control.
- Adjust the data value to "-25" with buttons "4" or "6" on the remote control.
- Set the adjustment code to "03" with buttons "2" or "8" on the remote control.
- Watching the second vertical line in from both sides of the screen (fig. 4), make any upper or lower distortion symmetrical using buttons "4" or "6" on the remote control.
- Set the adjustment code to "02" with buttons "2" or "8" on the remote control.
- Adjust the straightness of both vertical lines (fig. 5) using buttons "4" or "6" on the remote control.
- repeat steps 1 to 8 if necessary.
- Connect a VCR and play a PAL-Monoscope alignment tape.
- Make sure the horizontal width and horizontal centre are correct. If necessary re-adjust Horizontal Centre ("09") and Horizontal Width ("06") again.

Height and Linearity

Code 00 (V-AMP)

Code 04 (V-LIN)

- Connect a VCR and play a PAL-Monoscope alignment tape.
- Select the VCJ adjustment display.
- Set the adjustment code to "00" (V-AMP) with buttons "2" or "8" on the remote control.
- Adjust the circle to a true circle with buttons "4" or "6" on the remote control.
- Set the adjustment code to "04" (V-LIN) with buttons "2" or "8" on the remote control.
- Adjust the linearity to be the same for the top and bottom halves of the circle using buttons "4" or "6" on the remote control.
- Set the adjustment code to "00" (V-AMP) with buttons "2" or "8" on the remote control.
- Re-adjust V-AMP with buttons "4" or "6".
- repeat the steps above if necessary.

Vertical Centre

Code 08 (V-SHIFT)

- Connect a VCR and play a PAL-Monoscope alignment tape.
- Select the VCJ adjustment display.
- Set the adjustment code to "08" (V-SHIFT) with buttons "2" or "8" on the remote control.
- Adjust the centre line of picture to be within +/- 3mm from the vertical centre on the screen using buttons "4" or "6" on the remote control.

60Hz Deflection Circuit Offsets

Code 14 (V-AMP 60)

Code 15 (P-AMP 60)

Code 16 (H-AMP 60)

Code 17 (V-SHIFT 60)

Code 18 (H-PHASE 60)

- Connect an RF 60Hz Crosshatch signal.
- Select the VCJ adjustment display.
- Select each adjustment code in turn with

Service Adjustments Cont'd.

buttons "2" or "8" on the remote control and adjust each item to the figures shown in the table below using buttons "4" or "6" on the remote control.

Code:	CT-21 M5B	CT-21 M5BT	CT-25 M5BT
14	+6	+6	+8
15	-	-	+1
16	-	-	-4
17	+6	+6	+13
18	-6	-6	-4

60Hz adjustment: offsets

5: CRT Circuits

White Balance

Code 0A (B-DRIVE)
Code 0B (G-DRIVE)
Code 0C (R-DRIVE)

- 1: Connect a VCR and play a PAL-Monoscope alignment tape.
- 2: Select the VCJ adjustment display.
- 3: Set the adjustment codes "0A", "0B" and "0C" in turn and pre-adjust each to "0".
- 4: Adjust codes "0A" and "0C" to adjust the white balance.

Focus

Focus control on the Flyback Transformer.

- 1: Connect an RF signal such as an off-air broadcast.
- 2: Adjust the FOCUS control for best overall focus.

6: Video Circuits

Perform the following adjustments after adjusting the Deflection circuits. Allow the TV to warm up for 20 minutes before proceeding.

Brightness and Contrast

SCREEN control on the Flyback Transformer
Code 0F (COLOUR SATURATION)
Code 0E (BRIGHTNESS)
Code 0d (CONTRAST)
BEAM CURRENT (using connector TP adjacent to the Flyback Transformer).

- 1: Connect an RF Crosshatch signal.
- 2: Select the VCJ adjustment display.
- 3: Make sure that the Screen Up/Down Request Bit is set to "00". If not, adjust the SCREEN control on the Flyback Transformer.
- 4: Change the external signal to a Colour-bar.
- 5: Re-adjust the SCREEN control to give "00".
- 6: Repeat steps 1 to 5 until the Screen Up/Down Request Bit is "00" for both signals.
- 7: Connect an RF Colour-bar signal.
- 8: Set the adjustment code "0F" with buttons "2" or "8" on the remote control.
- 9: Adjust the data value to "-32" with buttons "4" or "6" on the remote control.
- 10: Set the adjustment code to "0E" with buttons "2" or "8" on the remote control.
- 11: Adjust using buttons "4" or "6" so that a slight difference in brightness can be seen between blue and black areas.
- 12: Set the adjustment code to "0D" with the buttons "2" or "8" on the remote control.
- 13: Connect a DC ammeter's "+" lead to connector TP pin 1 on the MAIN-PCB and the "-" lead to connector TP pin 2.

- 14: Adjust the beam current using buttons "4" or "6" on the remote control to 1300±20mA for 28AV1B, 1000±20mA for 25AV1B or 950±20mA for 21AV1B.
- 15: Check, and if necessary, readjust the BRIGHTNESS code "0E".
- 16: Check that the Screen Up/Down Request Bit is "00". If not repeat steps 1 to 13 above.
- 17: Now proceed to the Colour Output adjustment.

Colour Output

Make this adjustment only after adjusting the White Balance, Brightness and Contrast.

Code 0F (COLOUR SATURATION)

- 1: Connect an RF Colour-bar signal.
- 2: Select the VCJ adjustment display.
- 3: Set the adjustment code of "0F" with buttons "2" or "8" on the remote control.
- 4: Connect an oscilloscope to the junction of R673 and IC660 Pin 9 (BLUE-OUT) on the CRT PCB.
- 5: Make adjustments using buttons "4" or "6" on the remote control until the waveform is as shown in fig. 6.
- 6: Increase the resulting data value by five steps.

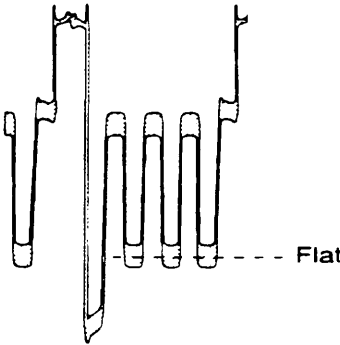


Fig 6.

7: Teletext Circuit (CT-21M5BT and CT-25M5BT only)

Teletext Free Run Frequency

Allow five minutes warm-up time before making this adjustment.

L7754

- 1: Ensure no RF signal is being received.
- 2: Connect a frequency counter between the L7754 side of C7763 and Ground or a voltmeter between pin 28 of IC7751 and Ground.
- 3: Adjust L7754 to give a frequency of 22MHz ± 0.3MHz or 2.5V ± 0.1V.

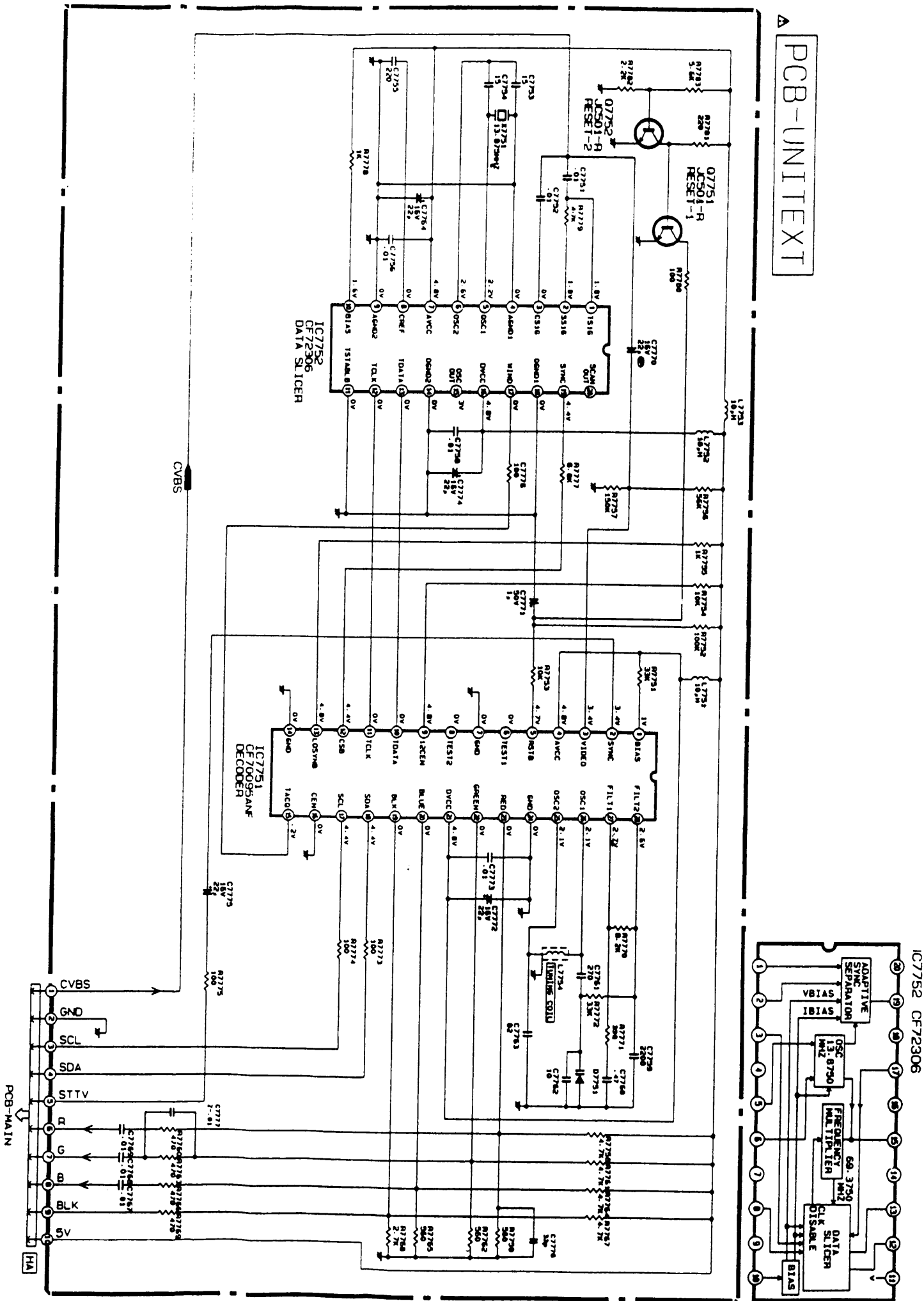
8: Power Circuit

B4 Voltage

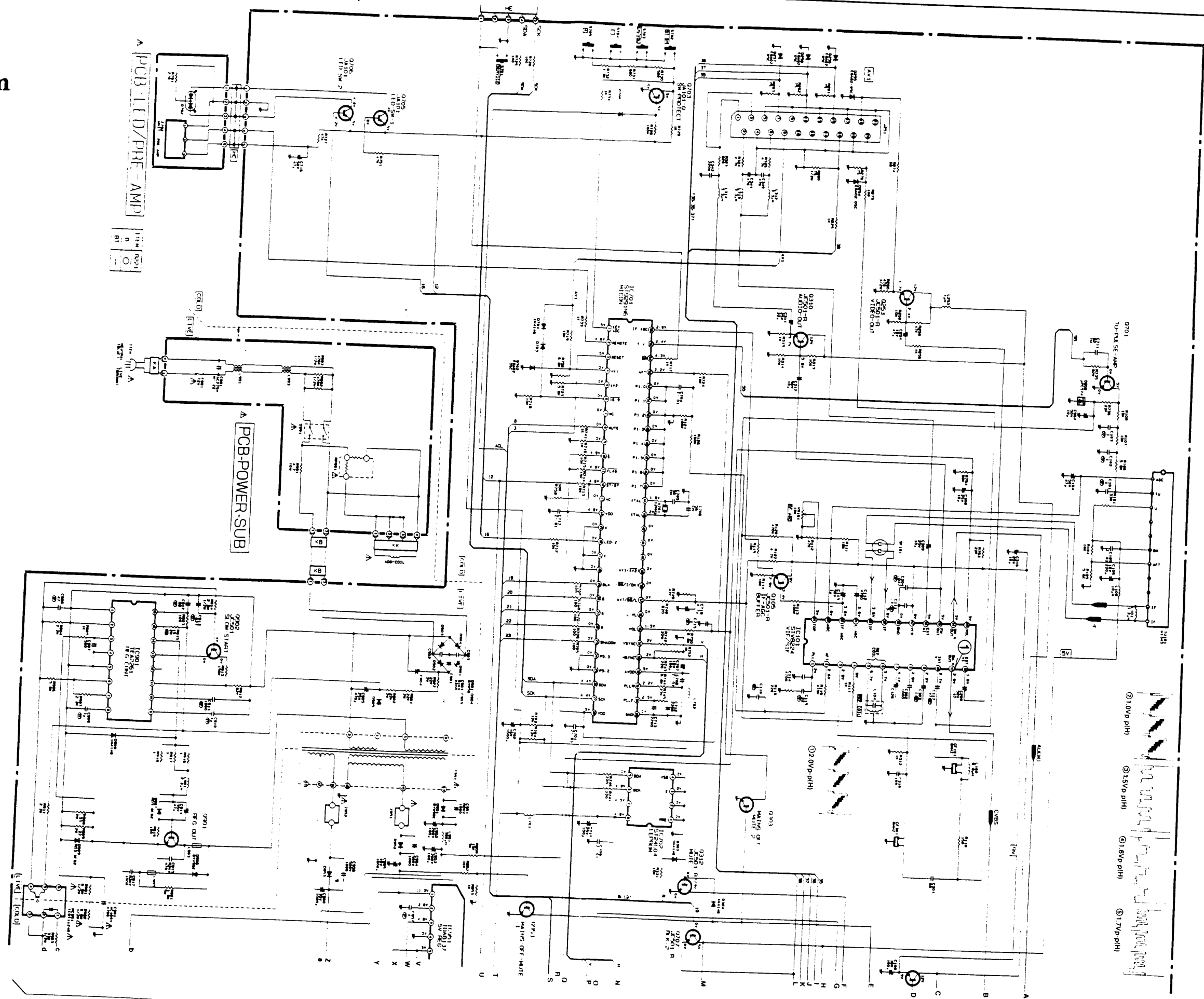
VR951 (on main PCB next to the SMT)

- 1: Connect a VCR and play a PAL-Monoscope alignment tape.
- 2: Push the OPTIMUM button on the remote control.
- 3: Connect a DC voltmeter's "+" lead to TP91 on the MAIN PCB and the "-" lead to GROUND.
- 4: Adjust VR951 so that the voltage is 145±2V for CT-25M5BT or 122±2V for CT-21M5B/BT.

Unitext Diagram



Main
Diagram



Main Diagram Cont'd.

