

17" COLOUR VIDEO UNIT - CDU 1782MS

This unit is manufactured by **SALCOMP** and bears the marking **CDU 1782MS** on the rear and **DSM 28-171 HR** on the Progetto di Gestione.

CHARACTERISTICS

Ergonomic, multiscan, VGA-compatible, analog video, with digital control panel.

- Screen dimensions: 17"
Horizontal dimension: 300 ± 3 mm (281 ± 3 mm only for 1280 x 1024)
Vertical dimension: 225 ± 3 mm
- Input voltage: 110 V: 90 - 127 V a.c.
220 V: 195 - 265 V a.c.
Mains frequency: 50 - 60 Hz ± 5 %
Degauss: At power-on time
- Presetting timing:

VIDEO MODE		VGA STANDARD			VGA ERGO		SVGA		VGA PLUS			HIGH RESOLUTION	
		HORIZ. DOTS			FREQ. KHz		VERT. LINES		FREQ. Hz			V/O POLAR.	
HORIZ.	DOTS	640			640	640	800	800	1024	1024	1024	1280	1280
FREQ.	KHz	31.469			37.86	37.5	48.08	46.87	48.36	56.48	60.02	64.252	79.976
VERT.	LINES	350	400	480	480	480	600	600	768	768	768	1024	1024
FREQ.	Hz	70.08	70.08	59.95	72.8	75	72.18	75	60	70.07	75.03	60.049	75.025
V/O POLAR.		-/+	+/-	-/-	-/-	-/-	+/+	+/+	-/-	-/-	+/+	-/-	+/+
INTER.		N	N	N	N	N	N	N	N	N	N	N	N

- Input signals:
Video: R, G, B (Red, Green, Blue) with separated O/V synchronisms
R, G, B (Red, Green, Blue) with composite O/V synchronisms
R, G, B (Red, Green, Blue) with composite on green O/V synchronisms
Level: 0 - 700 mV (- 300 mV p.p. with composites on green O/V synchronism)
Polarity: Positive (Negative with composites on green O/V synchronism)
- Power Saving function:

VIDEO STATUS	HORIZONT. SYNC.	VERTICAL SYNC.	VIDEO	POWER SAVING	CONSUMPTION
ON	PRESENT	PRESENT	ACTIVE	NO	<180 W (105W)
STAND-BY	ABSENT	PRESENT	DARK	MINIMUM	~ 70 W
SUSPEND	PRESENT	ABSENT	DARK	CONSIDERABLE	< 30 W
OFF	ABSENT	ABSENT	DARK	MAXIMUM	< 8 W

- External controls: ON/OFF switch - Degauss - Contrast - Brightness - Width - Height - Horizontal/vertical centering - Horizontal/vertical Convergence - Factory preset - Tilt - Pincushion distortion - Trapezoidal distortion - Colour temperature

REMOVING THE CASING

1. Disconnect the power cord from its connector on the rear of the monitor.
2. Unscrew the four screws (V) as shown in the figure, using a cross or hexagonal-head screwdriver.
3. Lift the casing and take the video signals cable through the hole in the cover.

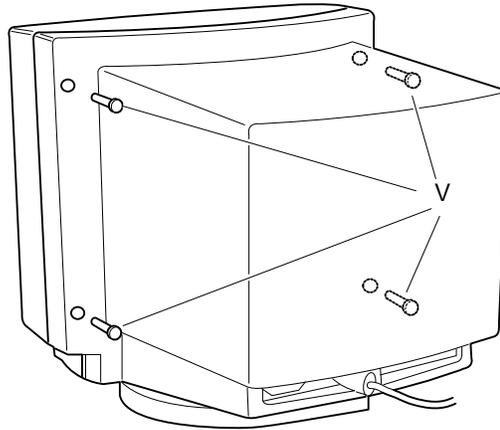


Fig. 26-1 Removal of Monitor Casing

4. Unscrew the hexagonal screws illustrated in the figure and remove the metal internal casing. First remove the rear casing and then the upper and lateral casings.

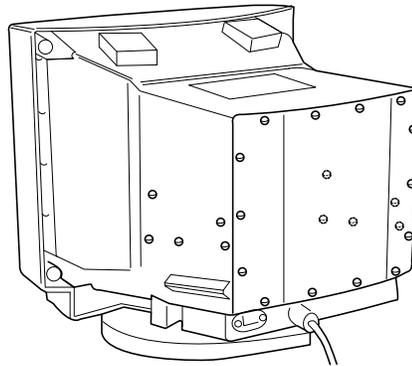


Fig. 26-2 Removal of Internal Casing

DISCHARGING THE HIGH VOLTAGE

5. After removing the casing and before performing any work on the unit boards and cables, the extra high voltage (25 KV anode voltage) must be discharged. Use a screwdriver to discharge the CRT anode through a cable to the display chassis ground.

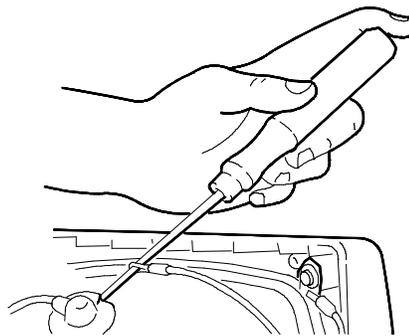


Fig. 26-3 Discharging the EHT

REMOVING THE VIDEO AMPLIFIER BOARD

6. Remove the layer of adhesive silicon on the connection between the CRT connector and the connector of the video amplifier board, used for monitor protection during transport. Then turn over the video amplifier board.
7. Disconnect or desolder the cables from the **Q1, Q2, Q3, Q4, Q5, G2, G4 FOCUS** and **DYN FOCUS** connectors as shown in the figure to disconnect the board from the video.

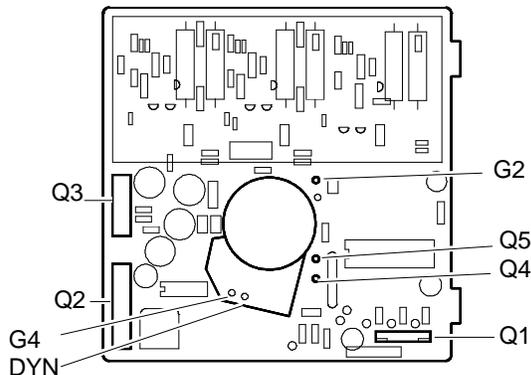


Fig. 26-4 Video Amplifier Board Connectors Location

8. To remove the cover of the video amplifier board, unscrew the hexagonal screws.

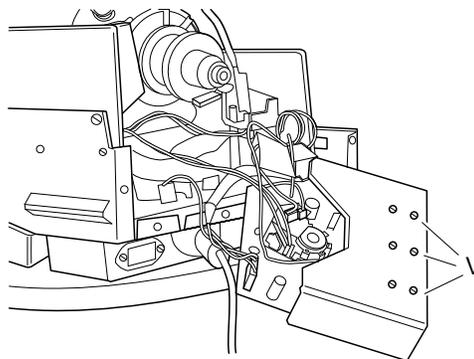


Fig. 26-5 Removing the Video Amplifier Board

REMOVING THE POWER SUPPLY BOARD

9. To remove the power supply board (P), unscrew the hexagonal screws (V), disconnect the board from the Q2 and Q3 motherboard connectors and remove the cable from the Q3 connector.

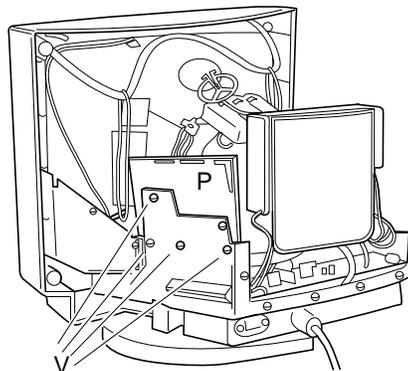


Fig. 26-6 Removing the Power Supply Board

REMOVING THE MOTHERBOARD

10. Be sure to discharge the EHT (25 KV) before removing the anode.
11. To remove the anode, lift up the rubber cap, squeeze the metal contacts with a pair of pliers and remove them from the hole in the CRT.
12. Remove all the cables from the motherboard connectors to free them. The connectors involved are: **Q1, Q2, Q3, Q7, Q8, Q10, Q11, Q13, Q14 and Q15.**
13. To remove the motherboard, unscrew the 3 screws (V) and take out the board.

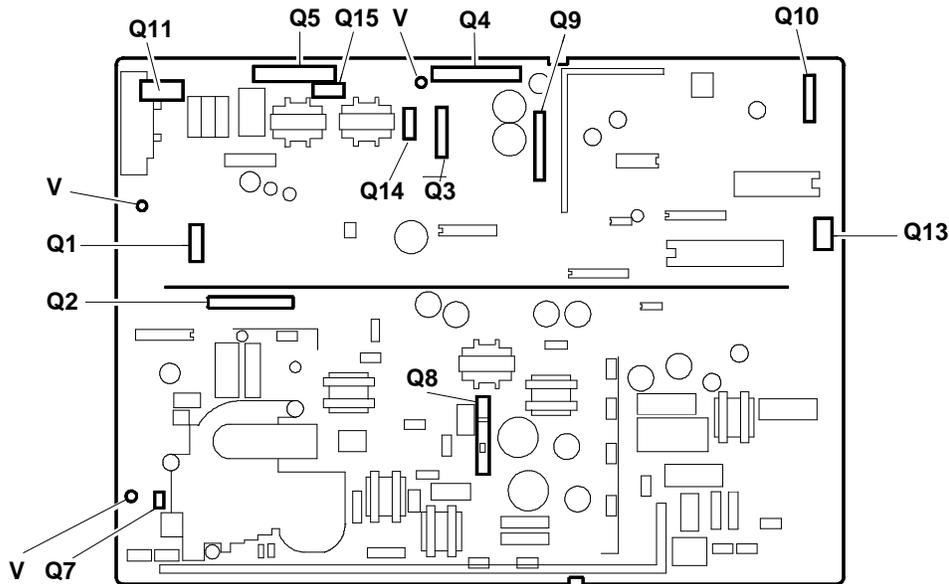


Fig. 26-7 Motherboard Connectors and Screws

REMOVING THE CRT

NOTE: The CRT forms a whole with the yoke on which the deflection windings and convergence magnets are mounted. The magnets are laid on the yoke by the CRT manufacturer and must not be moved, otherwise there may be mis-convergence errors which are very difficult to correct. Spare tubes come with the yoke already assembled.

14. Unscrew the four screws (A) securing the CRT to the front frame of the monitor.
15. Cut the bands holding the degauss coil and lift the CRT from the front cover.
16. Remove the catching braid from the CRT by unhooking the earthing braid tensioning spring. The earthing braid should be fixed to the replacement tube.

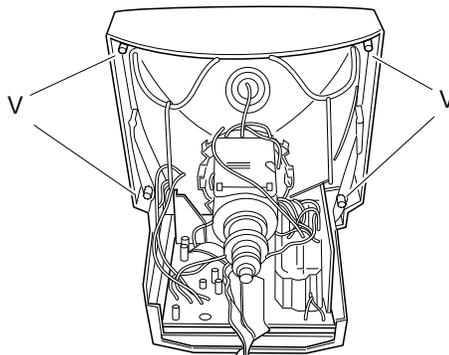


Fig. 26-8 Disassembling the CRT

VIDEO ADJUSTMENTS

Two types of video adjustment are available:

- User Mode
- Service Mode

USER MODE

To run the **User Mode** adjustments, the operator must push lightly and open the door of the control panel, as shown in the following figure.

The operator can run two types of adjustment:

- Primary functions
- Secondary functions.

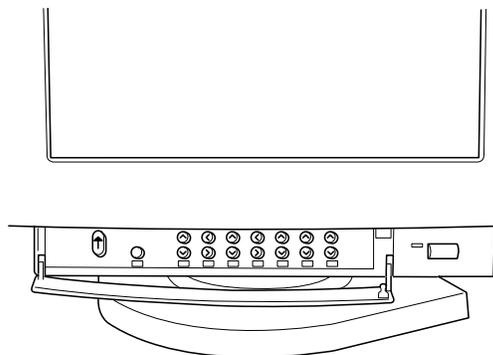


Fig. 26-9 View of the CDU 1782MS Unit Control Panel

PRIMARY FUNCTIONS

The following adjustments are available on the control panel:

Contrast, Brightness, Colour temperature, Width, Height, Horizontal centering, Vertical centering, Degauss.

The following figure shows the adjustment keys position. For each adjustment (except the degauss) two keys are provided, to increase or decrease the value until the optimum figure is obtained.

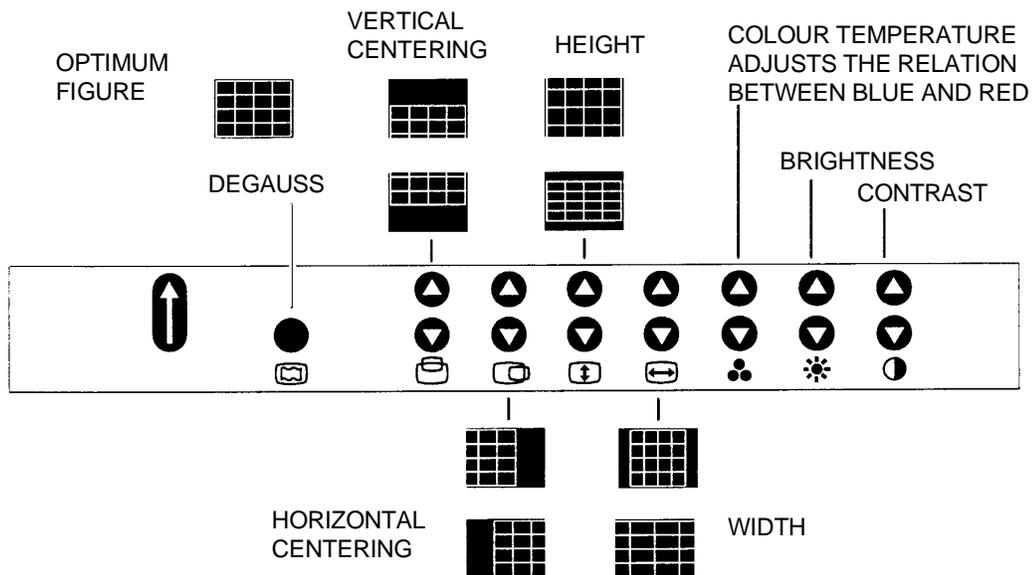


Fig. 26-10 Primary Functions

SECONDARY FUNCTIONS

The following adjustments are available on the control panel by pushing the shift key:

Vertical convergence, Horizontal convergence, Trapezoidal distortion, Pincushion distortion, Tilt.

To return to the factory settings, push simultaneously the shift key with the two contrast keys.

The following figure shows the adjustment keys position. For each adjustment two keys are provided, to increase or decrease the value until the optimum figure is obtained. The shift key gives other functions to these keys.

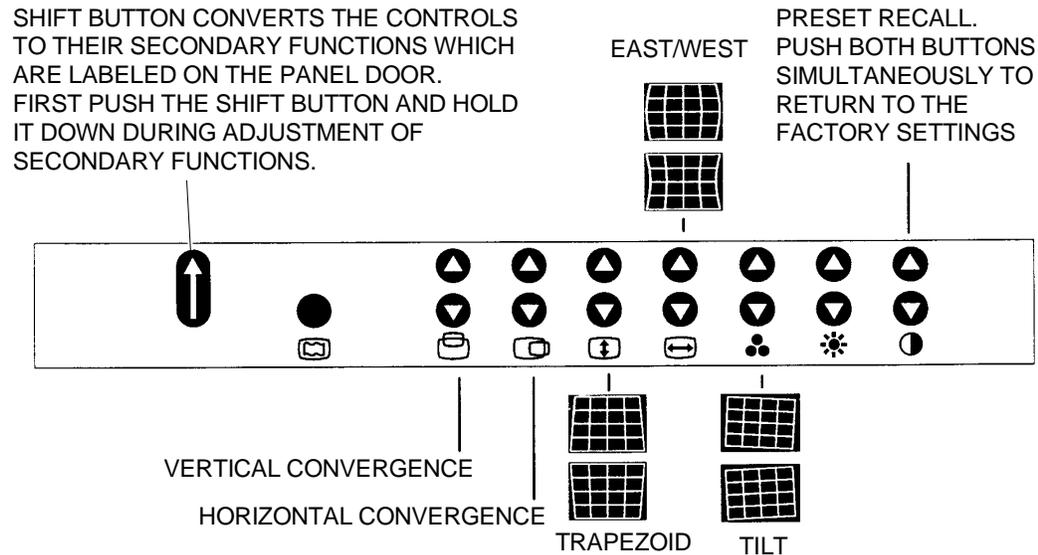


Fig. 26-11 Secondary Functions

SERVICE MODE

Service Mode adjustments are needed for updating of the factory adjustments for all the timings. If there is no location in factory adjustment memory for the display mode currently in use, the adjustment affects the memory for user adjustments.

WRITE ENABLE

Memorizing in Service Mode requires that service connector pins 1 and 2 must be short circuited. Make the short circuit before you start the service mode and disconnect it after you have completed the whole adjustment procedure.

NOTE: Forgetting to disconnect the short circuit may cause corruption of the memory content during normal use.

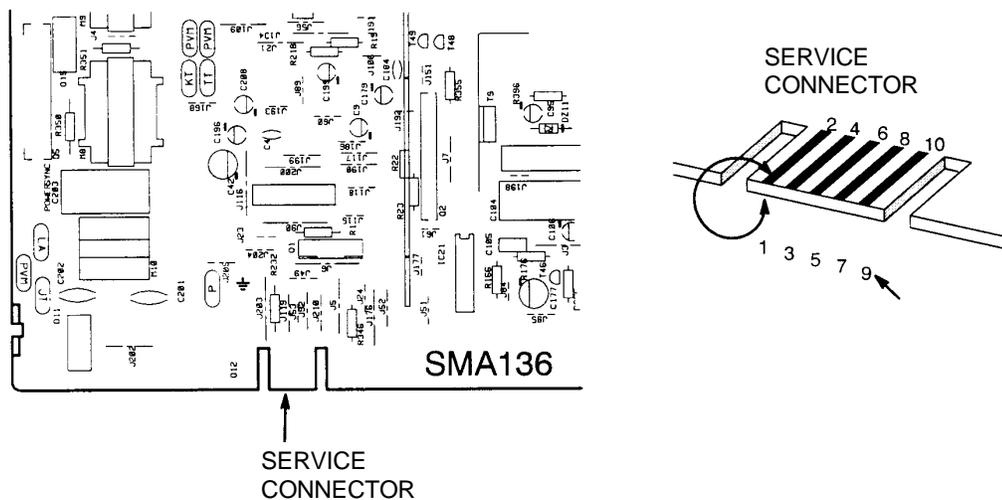


Fig. 26-12 Memory Write Enable

SERVICE MODE ADJUSTMENTS

There are three groups of adjustments in Service Mode:

Group 1 - 1st geometry adjustment set

Group 2 - 2nd geometry adjustment set

Group 3 - Grey scale adjustment set (this group has been divided into two subgroups: 3A and 3B)

The following table shows how the adjustments act in relation to the display modes.

ADJUSTMENTS	ADJUSTMENTS COMMON FOR ALL DISPLAY MODES	ADJUSTMENTS SEPARATE FOR EACH DISPLAY MODE	ADJUSTMENTS AVAILABLE IN USER MODE	ADJUSTMENTS AVAILABLE IN SERVICE MODE
CONTRAST	X		X	
BRIGHTNESS	X		X	
HORIZONTAL CENTERING		X	X	1
VERTICAL CENTERING		X	X	1
HEIGHT		X	X	1
WIDTH		X	X	1
EAST/WEST DISTORTION		X	X	1
HORIZONTAL TRAPEZOID		X	X	1

ADJUSTMENTS	ADJUSTMENTS COMMON FOR ALL DISPLAY MODES	ADJUSTMENTS SEPARATE FOR EACH DISPLAY MODE	ADJUSTMENTS AVAILABLE IN USER MODE	ADJUSTMENTS AVAILABLE IN SERVICE MODE
HORIZONTAL CONVERGENCE	X		X	1
VERTICAL CONVERGENCE	X		X	1
TILT	X		X	1
ORTHOGONALITY		X		2
EAST/WEST BALANCE		X		2
HORIZONTAL RASTER CENTERING	X			2
R BLACK LEVEL, COARSE/FINE	X			3A
G BLACK LEVEL, COARSE	X			3A
B BLACK LEVEL, COARSE/FINE	X			3A
G2 GRID	X			3A
RED GAIN	X		X	3B
GREEN GAIN	X			3B
BLUE GAIN	X		X	3B
MINIMUM/MAXIMUM CONTRAST	X			3B

Common adjustments need to be adjusted only once. Separate adjustment must be performed for every display mode to be stored.

ACCESS TO THE SERVICE MODE

The groups have common control buttons. Brightness and contrast control buttons always have the original meaning.

To access to each adjustment group (1, 2, 3a, 3b):

- Keep the **ENTRY** button illustrated in the figures of the adjustments group, pressed down.
- Switch the monitor on.
- Release the **ENTRY** button.

To exit to the Service Mode:

- Press the **EXIT** buttons simultaneously.

NOTE: There is a short cut from adjustment set 3a to 3b.

GROUP 1 - 1st GEOMETRY ADJUSTMENT SET

Group 1 - 1st geometry adjustment set has the following adjustments:

Horizontal centering, Vertical centering, Height, Width, East/west distortion, Horizontal trapezoidal distortion, Tilt, Horizontal convergence, Vertical convergence, Contrast, Brightness.

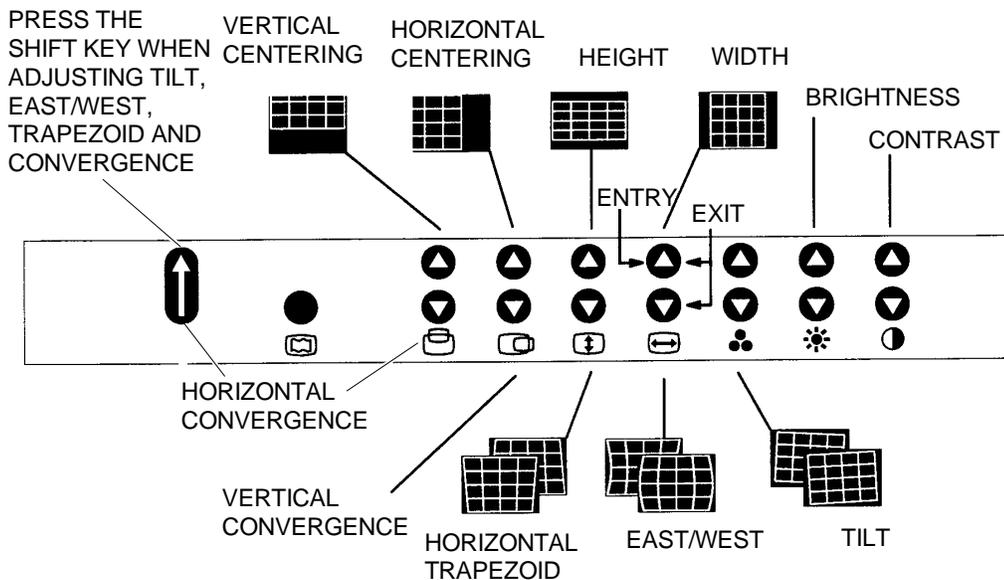


Fig. 26-13 Group 1 - 1st Geometry Adjustment Set

GROUP 2 - 2nd GEOMETRY ADJUSTMENT SET

Group 2 - 2nd geometry adjustment set has the following adjustments:

Horizontal raster centering, East/west distortion balance, Orthogonality, Vertical trapezoidal distortion.

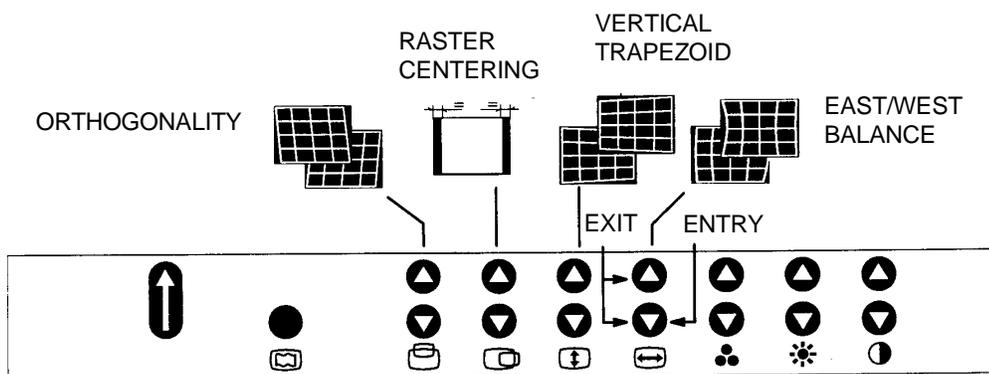


Fig. 26-14 Group 2 - 2nd Geometry Adjustment Set

GROUP 3 - GRAY SCALE ADJUSTMENT SET

Group 3 - gray scale adjustment set is divided into two subgroups which have **Entry** buttons separated but **Exit** buttons common. When, pressing **Exit**, you exit from subgroup **3a** automatically enter subgroup **3b**:

3a - Black level coarse and fine adjustment of the red and blue colors, black level coarse adjustment of the green colour and G2 grid adjustment.

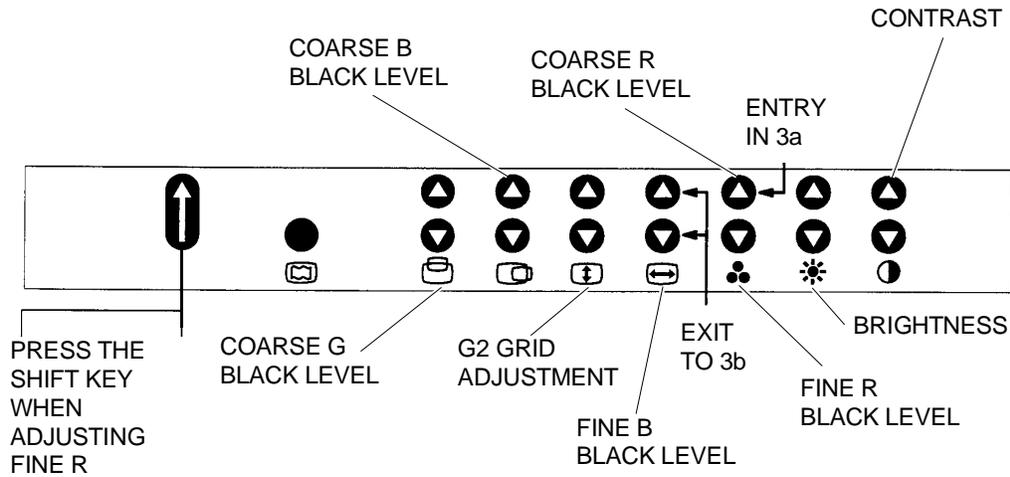


Fig. 26-15 Group 3 - Gray Scale Adjustment Set/Subgroup 3A

3b - Blue, green and red gain adjustment and minimum and maximum contrast adjustment.

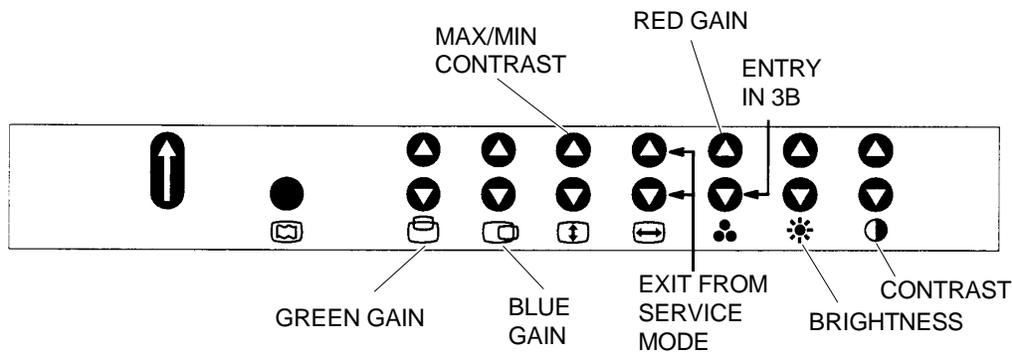


Fig. 26-16 Group 3 - Gray Scale Adjustment Set/Subgroup 3B

STORING AND RETURNING TO THE USER MODE

Common adjustments are stored at the moment of returning to user mode. Separate adjustments are stored automatically 5 seconds after the latest adjustment. When you exit from **Service Mode** by pressing the **Exit** button, the monitor turns to normal **User Mode**. If you want to leave the service mode without storing common adjustments, switch off the monitor in Service Mode. Display modes can be changed without leaving service mode when making separate adjustments.

MEMORY USE FOR PICTURE ADJUSTMENTS

The picture adjustment values are stored in non-volatile memory. The memory has separated areas for **User** and **Factory** adjustments.

MEMORY FOR USER ADJUSTMENTS

ADJUSTMENT - If there are values available in the memory for user adjustments corresponding to the present timing signals, they are always used.

RESETTING THE USER MEMORY - User memory can be emptied from user made settings. Resetting affects only the timing which is currently active. The reset function if no corresponding factory preset timing exists.

MEMORY FOR FACTORY ADJUSTMENTS

All measures to the factory adjustments require that the write protection jumpers must be connected.

ADJUSTMENT - Factory adjustments can be updated with user controls in service mode. If there is no location in "Factory" memory for timing currently in use, the adjustment affects the memory for user adjustments.

If the user memory location is empty, the picture adjustment values are read from "Factory" memory. Factory adjustments, corresponding to the current timings, are transferred to user memory if any picture property is adjusted. Then the operation is described in the MEMORY FOR USER ADJUSTMENT paragraph.

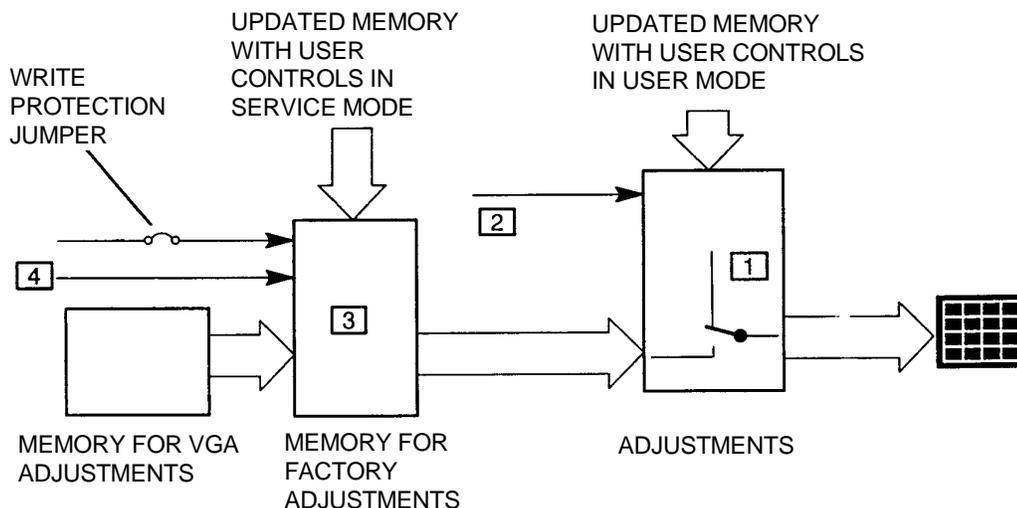


Fig. 26-17 Memory for Factory Adjustments

INITIALIZING THE REPLACEMENT MEMORY

If the memory for factory adjustments is replaced, (IC26 component on the motherboard) the new memory must be initialized. During initializing all memory locations are written with approximate values. They can be updated in service mode in the following way:

- Switch the monitor off
- Keep both initializing buttons down
- Switch the monitor on
- Release the buttons
- Wait 20 seconds

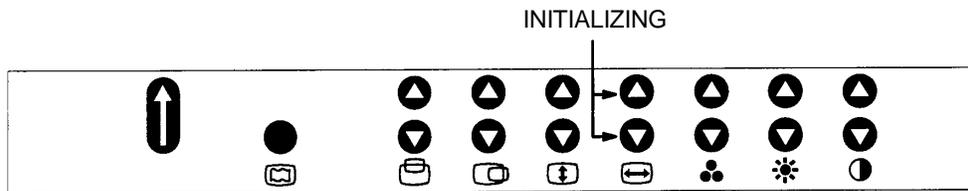


Fig. 26-18 Initializing of the Replacement Memory

After initializing, the monitor remains in normal user mode. Switch off the monitor and start service mode.

NOTE: Initializing of a programmed memory deletes all user and factory made adjustments.

