

COLOUR VIDEO UNIT CDU 1438GN/GS01

This unit is manufactured by **GOLDSTAR** and bears the marking **DSM 28-142PS** on the front and on the rear of the video on the Progetto di Gestione. The **CDU 1438GN/GS01** confirmation plate is located on the rear of the video.

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CHARACTERISTICS

Ergonomic, power saving, low emission, VGA-compatible, analog video.

- Screen dimensions: 14"
Horizontal dimension: 250 ± 5 mm (250 +8/-0 mm per 1024x768)
Vertical dimension: 188 ± 5 mm (188 +8/-0 mm per 800x600 60 Hz)
- Input voltage: 90 - 264 V (universal power supply)
Mains frequency: 50 - 60 Hz ± 3 %
Degauss: At power-on time
- Presetting timing:

VIDEO MODE	UNIT OF MEASURE	VGA STANDARD			VGA ERGO	SUPER VGA		XGA
HORIZONTAL RESOLUTION	DOTS	640			640	800	800	1024
FREQUENCY	KHz	31.469			37.86	35.156	37.879	35.524
VERTICAL RESOLUTION	LINES	350	400	480	480	600	600	768
FREQUENCY	Hz	70.08	70.08	59.95	72.8	56.25	60.316	87
V/O POLARITY		-/+	+/-	-/-	-/-	+/+	+/+	+/+
LEVEL		TTL	TTL	TTL	TTL	TTL	TTL	TTL
INTERLACED		NO	NO	NO	NO	NO	NO	YES

- Input signals:
Video: R, G, B (Red, Green, Blue) Driving
Signal: Depend on video controller (i.e.: voltage steps)
Level: 0 - 700 mV
Polarity: Positive
- External controls: Brightness - Contrast - Width -
Height - Horizontal shift
- Power Saving function

VIDEO STATUS	HORIZ. SYNC.	VERT. SYNC.	VIDEO	POWER. SAV.	CONSUMPTION
On	Present	Present	Active	No	< 70 W
Stand-by	Absent	Present	Dark	Minimum	< 15 W
Suspend	Present	Absent	Dark	Considerable	< 15 W
Off	Absent	Absent	Dark	Maximum	< 8 W

REMOVING THE COVER AND DISASSEMBLY

1. Disconnect the power supply and video signal cables from the connectors on the rear of the video unit. Lift and remove the two plastic tabs (A) as shown in the figure.

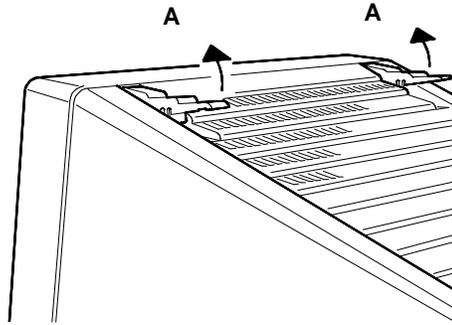
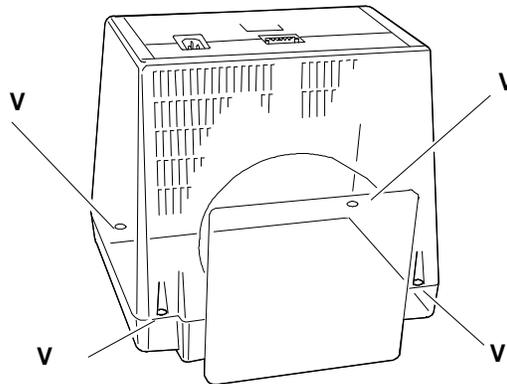


Fig. 30-1 Removing the Plastic Tabs Covering the Screws

2. Position the display as shown in the figure; put a cloth on the table under the unit so as not to scratch the CRT glass screen. Remove the 4 cover (V) screws.



3. Remove the cover.

Fig. 30-2 Removal Screws Securing the Video Cover

DISCHARGING THE HIGH VOLTAGE

4. Before removing any board, you must first discharge the high voltages (25 KV CRT anode voltage). To discharge the CRT anode, use a screwdriver, connecting it with a wire conductor to the monitor chassis ground.
5. Put the point of the screwdriver under the rubber suction cap of the anode unitl it touches the two contacts of the CRT anode. Hold the screwdriver in contact with the anode for a few seconds until the high voltage is fully discharged.

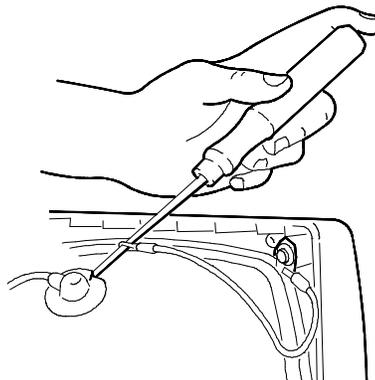
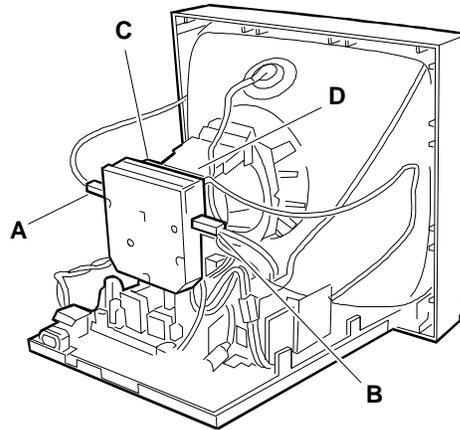


Fig. 30-3 Connecting of Screwdriver to Ground and Discharging the EHT

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 video protection during transport.
7. Unplug the CRT ground cables from connectors A, B, C and D.



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8. Withdraw and overturn the video amplifier board to release it from the CRT.

Fig. 30-4 Removing the Video Amplifier Board

9. Disconnect the cables from the video amplifier board connectors. The connectors involved are: P301, P302, P303, G2, G3. To remove the cable from the G3 connector, lift the cover and unsolder the connection.
10. The video amplifier board is now free of all connections.

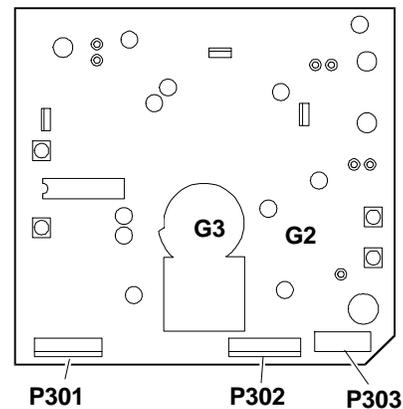


Fig. 30-5 Video Amplifier Board Connectors Location

REMOVING THE MOTHERBOARD

11. Remove all the cables from the motherboard connectors, to free it from the connections:

The connectors involved are:

- P702 and P502 that interface with the video amplifier
- P701 that interfaces with the deflection yoke
- P703 and P704 that interface with the external adjustments
- E1 that interfaces with the CRT ground cable
- P902 that interfaces with the degauss cable

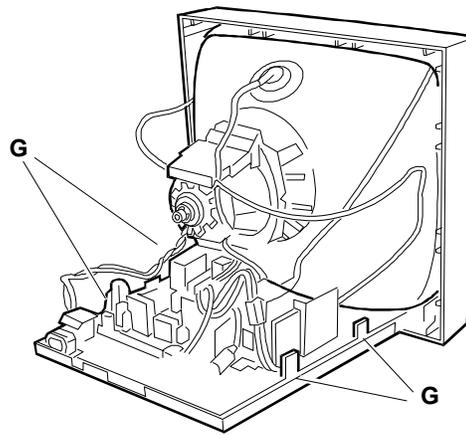


Fig. 30-6 Removing the Motherboard

12. Disconnect the anode sucker from the CRT. To do so, proceed as follows:

- Turn the anode plastic cover over.
- Bring the two hooks for the anode contact close together.
- Withdraw the anode sucker.

13. To separate the motherboard from its plastic support, unscrew the (V) screws and take the motherboard out of its catches (G) on the support.

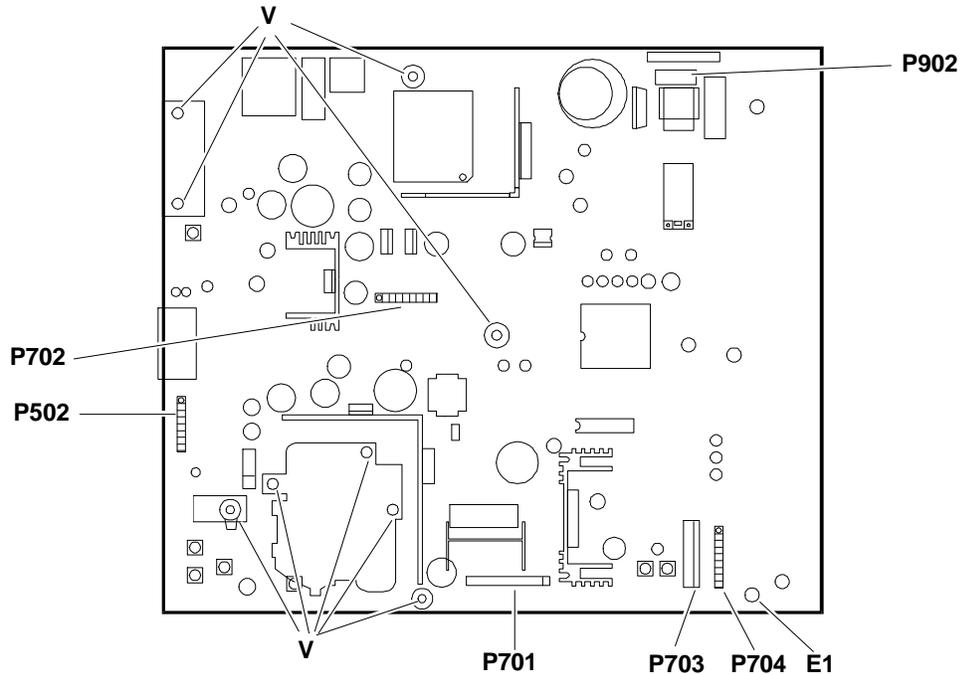
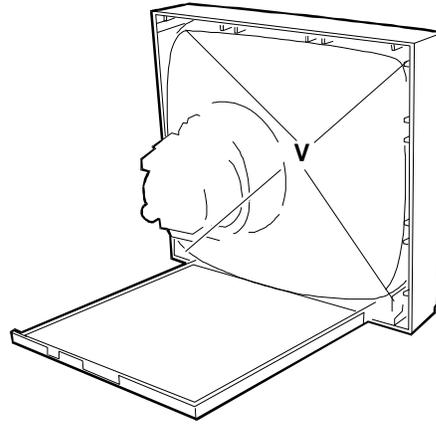


Fig. 30-7 Removing the Motherboard - Connectors and Screws Position

REMOVING THE CRT

NOTE: In addition to the cathode ray tube, the CRT also comprises the deflection yoke and the geometric distortion regulation magnets. These magnets should not need to be adjusted.

14. Remove the 4 screws (V) securing the CRT to the front casing of the monitor
15. Lift the CRT from the front casing of the video and free the degauss winding,
16. Remove the CRT ground cable releasing the spring that tensions it and release it from the fixing brackets.



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Fig. 30-8 Removing the CRT

VIDEO ADJUSTMENTS

Two types of video adjustments are available:

- External controls and adjustments that can be carried out by the user.
- Internal adjustments that can be carried out by the service engineer.

EXTERNAL CONTROLS AND ADJUSTMENTS

On the video unit front panel there are trimmers that can be used by the user or service engineer to adjust:

- Contrast
- Brightness
- Width
- Height
- Horizontal shift

The last three trimmers are in a control panel.

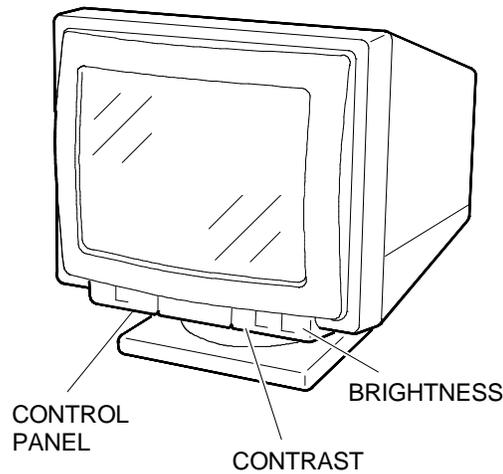


Fig. 30-9 Video External Adjustments

CONTRAST AND BRIGHTNESS TRIMMERS

CONTRAST - By turning the trimmer knob to the right or the left the picture contrast is increased or decreased.

BRIGHTNESS - By turning the trimmer knob to the right or the left, the picture brightness is increased or decreased. When turning a "click" will be heard that indicates that the best position has been obtained (click point), if desired this point can be changed.

CONTROL PANEL

To have access to the control panel commands, press the hatch cover lightly, pushing downwards. The control panel contains three trimmers to adjust the following:

- Width
- Height
- Horizontal shift.

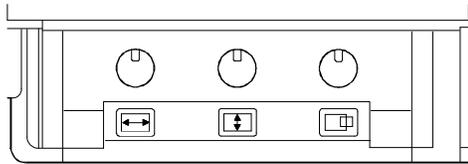
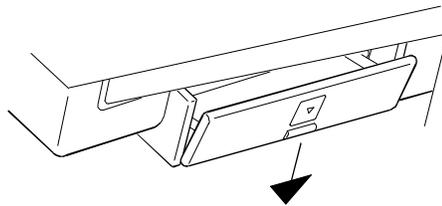
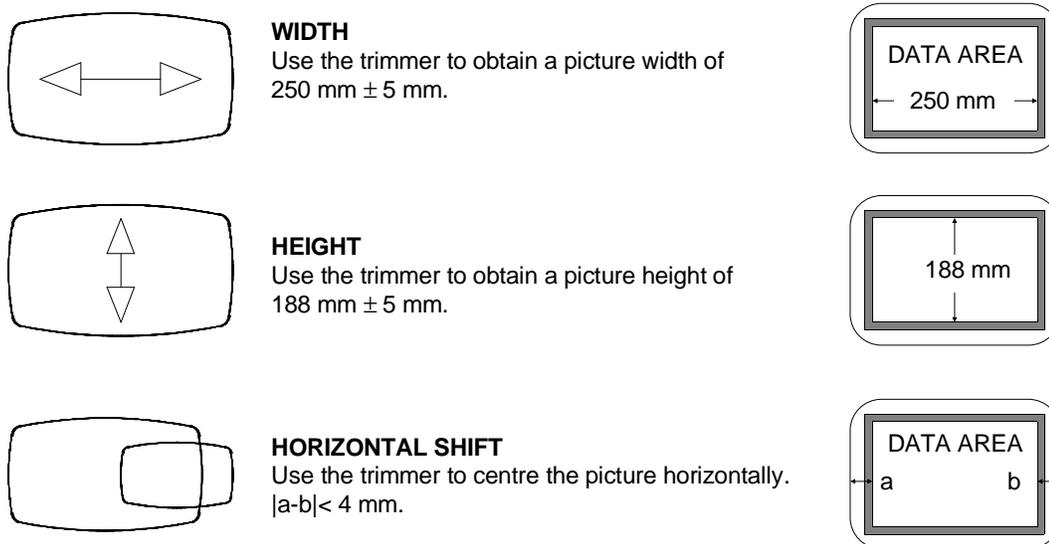


Fig. 30-10 Control Panel



INTERNAL VIDEO ADJUSTMENTS

The following is a list of the trimmer to use during the video adjustments. The sequence illustrated must be followed in the order because some of the adjustments influence those coming afterwards.

VIDEO AMPLIFIER BOARD

VR301	Blue drive
VR302	Green drive
VR303	Red cut-off
VR304	Green cut-off

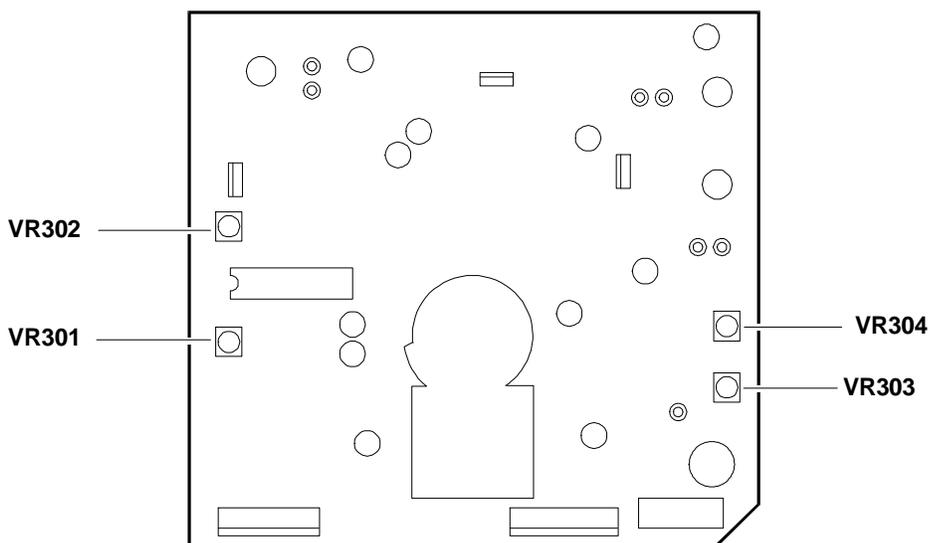


Fig. 30-11 Video Amplifier Board Adjustments

MOTHERBOARD

VR901	B+ voltage adjustment
VR705	SPCC adjustment
VR706	Sub-brightness adjustment
VR707	Sub-contrast adjustment
VR709	ABL (Automatic Beam Limiter) adjustment
VR708	Horizontal hold adjustment
VR602	V-POSITION adjustment
SW701	H-CENT adjustment
FOCUS	Focus adjustment
SCREEN	Screen adjustment

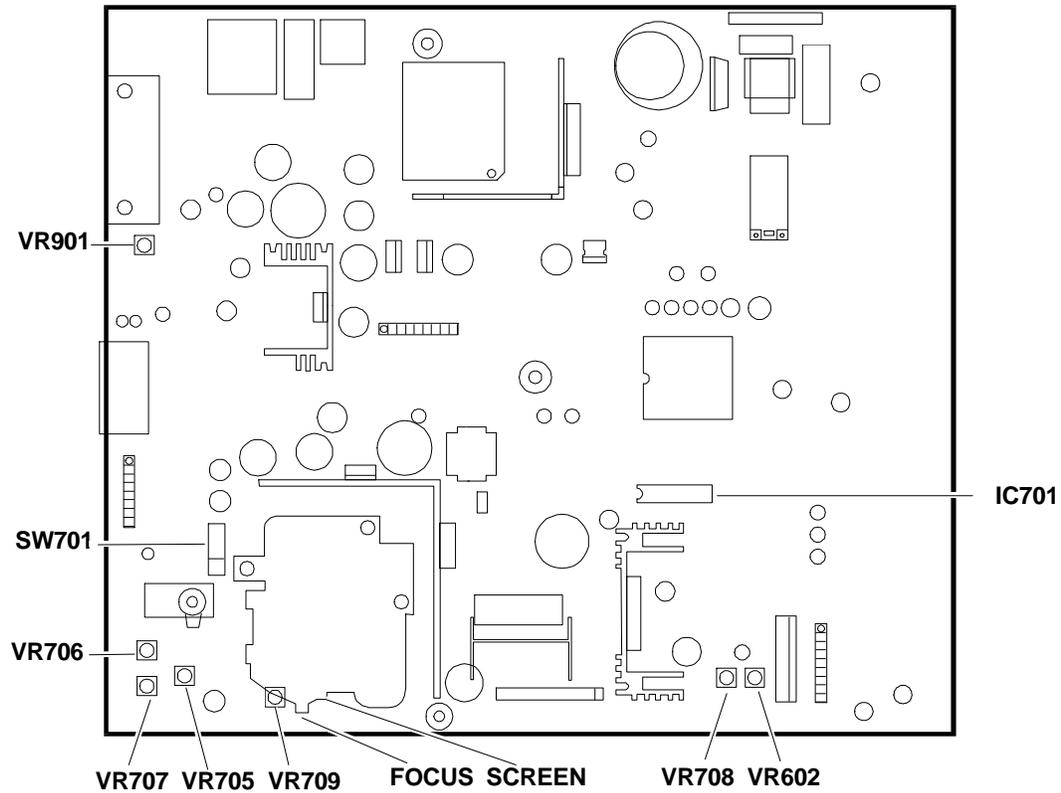


Fig. 30-12 Motherboard Adjustments

EXTERNAL CONTROLS BOARD (CONTRAST/BRIGHTNESS)

- VR701 Contrast adjustment (external access)
 VR702 Brightness adjustment (external access)

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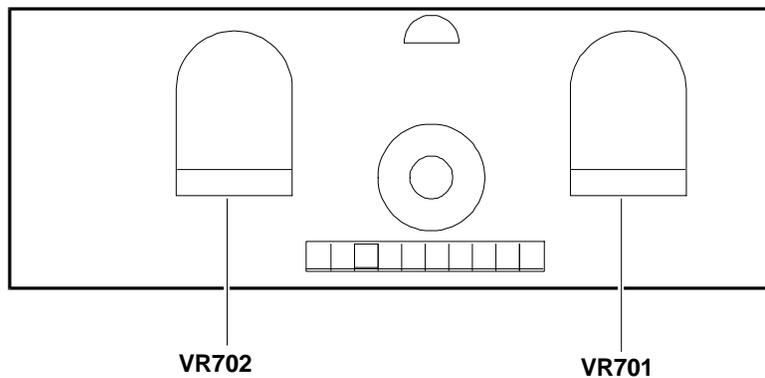


Fig. 30-13 External Controls Board Adjustments(Contrast/Brightness)

EXTERNAL CONTROLS BOARD (HEIGHT/WIDTH/HORIZONTAL SHIFT)

- VR703 Width adjustment (external access)
 VR704 Horizontal shift adjustment (external access)
 VR601 Height adjustment (external access)

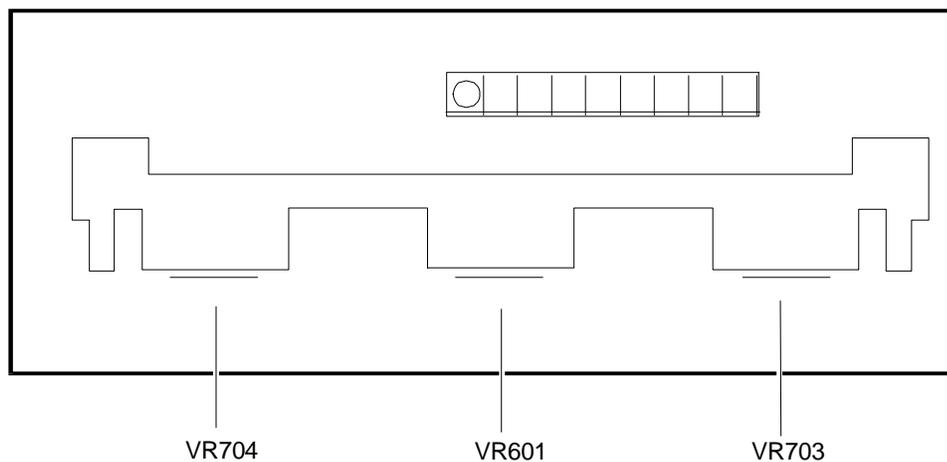


Fig. 30-14 External Controls Board Adjustment (Width/Height/ Horizontal Shift)

HORIZONTAL HOLD ADJUSTMENT

NOTE: To perform this adjustment is necessary a **voltmeter**.

- Display a pattern test in 800x600 (56 Hz) video mode.
- Connect a voltmeter to pin 17 of IC701
- With the VR708 motherboard trimmer, adjust the voltage reading on the voltmeter to 3.125 ± 0.8 V.

CUT-OFF ADJUSTMENT

NOTE: To perform this adjustment correctly a **color analyzer** is needed.

- Display a black video page (0 mV) in 640x480 (60 Hz) video mode.
- Adjust the VR303 and VR304 trimmers of the video amplifier board to obtain the chromatic co-ordinated $X = 0.290 \pm 0.020$ and $Y = 0.280 \pm 0.020$ at the center of the screen.

SUB-BRIGHTNESS ADJUSTMENT

NOTE: To perform this adjustment correctly a **brightnees meter** is needed.

- Display a black video page (0 mV) in 640x480 (60 Hz) video mode.
- Set the external brightness control to its maximum position.
- Adjust the VR706 motherboard trimmer to obtain 0.6-0.7 F/L (Foot/Lambert) of luminance.

WHITE BALANCE ADJUSTMENT

NOTE: To perform this adjustment correctly a **color analyzer** is needed.

- Display a white pattern (700 mV) size 70 x 70 mm in 640x480 (60 Hz) video mode.
- Set the external brightness and contrast controls to theri maximum position.
- Adjust the VR301 and VR302 trimmers of the video amplifier board to obtain the chromatic co-ordinates $X = 0.290 \pm 0.020$ and $Y = 0.280 \pm 0.020$ at the center of the screen.

SUB-CONTRAST ADJUSTMENT

NOTE: To perform this adjustment correctly a **brightnees meter** is needed.

- Display a white pattern size 70 x 70 mm in 640x480 (60 Hz) video mode.
- Set the external brightness and contrast controls to theri maximum position.
- Adjust the VR707 motherboard trimmer to obtain 60 ± 2 F/L (Foot/Lambert) of luminance.

FOCUS ADJUSTMENT

- Display a "H" video page.
- Adjust the FOCUS trimmer to obtain the best focus of the image.

