
CDU 439 14" COLOUR MONITOR UNIT

Manufactured by **GOLDSTAR**, this monitor is available in two versions each identified by an appropriate label on the back of the monitor itself.

- GS01 Not certified for Northern Europe.
- GS02 Certified for Northern Europe.

CHARACTERISTICS

VGA-compatible analog color monitor

- Diagonal screen size: 14"
Horizontal size: 240 mm +/- 6 mm
Vertical size: 180 mm +/- 6 mm
- Input voltage: 110 V: 98 - 132 V a.c.
220 V: 198 - 264 V a.c.
Mains frequency: 50 Hz: 47 - 63 Hz
Degaussing: At switch-on
- Horizontal sync:
Frequency: 31.469 KHz
Polarity: Negative or positive
Level: TTL
- Vertical sync:
Frequency: 60 - 70 Hz
Polarity: Negative or positive
Level: TTL
- Input signals:
Video: R, G, B (Red, Green, Blue) driver
Signal: Linear voltage steps (63 11 mV steps)
Level: 0 - 700 mV
Polarity: Positive
- Displayed resolutions: 640 x 350 rows by columns
640 x 400 rows by columns
640 x 480 rows by columns
- External adjustments: Brightness
Contrast

REMOVING THE CASING AND DISSASSEMBLING THE MONITOR

1. Set the monitor as shown in the figure; put a cloth between the screen and workbench to avoid scratching the CRT screen.
Remove the four screws (V1, V2, V3 and V4) that secure the casing.

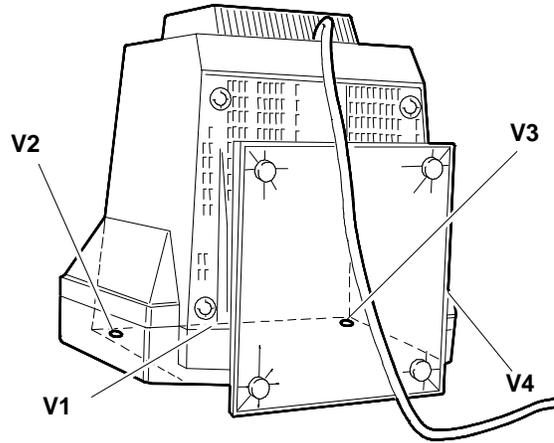


Fig. 16-1 Removing the casing securing screws

2. Remove the casing, passing the cables through the slot. Be careful not to damage the cables nor board components.

DISCHARGING HIGH VOLTAGE

3. Before removing any board, discharge the 25 KV CRT anode voltage. Discharge the CRT anode using a screwdriver connected with a wire to the monitor's frame ground.

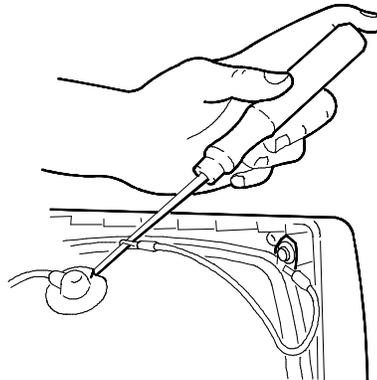


Fig. 16-2 Connecting the screwdriver to ground

4. Insert the blade of a screwdriver under the anode suction cup so that it touches the two CRT anode contacts. Maintain contact for a few seconds.

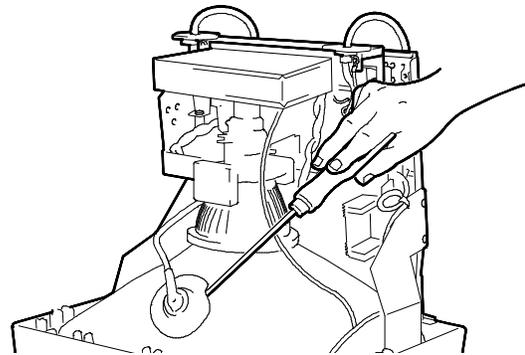


Fig. 16-3 Discharging the video

REMOVING THE VIDEO AMPLIFIER BOARD

5. Remove the silicone adhesive that holds the CRT to its connector on the video amplifier board (for safe transportation).
6. Remove screw (V).
7. Remove connectors A and B shown in the figure.

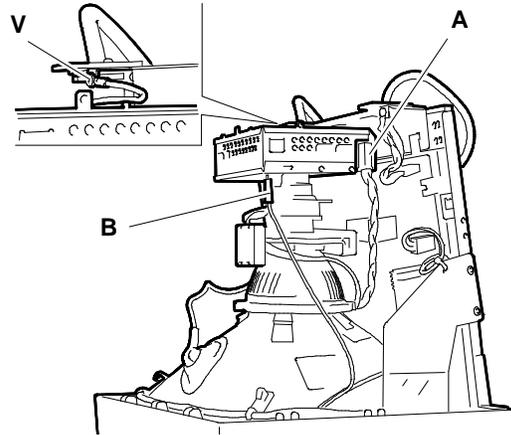


Fig. 16-4 Disconnecting the cables from the video amplifier board

8. Remove the video amplifier board from the CRT connector.
9. Disconnect cables C and D from the video.
10. Lift the shield that covers grid G3 and unsolder the connection.
11. Straighten the four tabs (S) that secure the cover of the video amplifier board and remove this cover so you have access to the soldered side of this board.
12. Unsolder grid G2 connection on the soldered side.

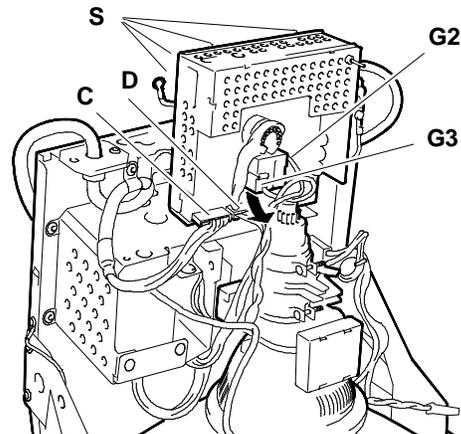


Fig. 16-5 Removing the video amplifier board

REMOVING THE MAIN BOARD

13. Disconnect cables A and B.
14. Remove the anode suction cup (W) from the CRT as follows:
 - Turn the anode plastic cover up-side down.
 - Unclip the two hooks of the anode contact.
 - Lift the anode suction cup.

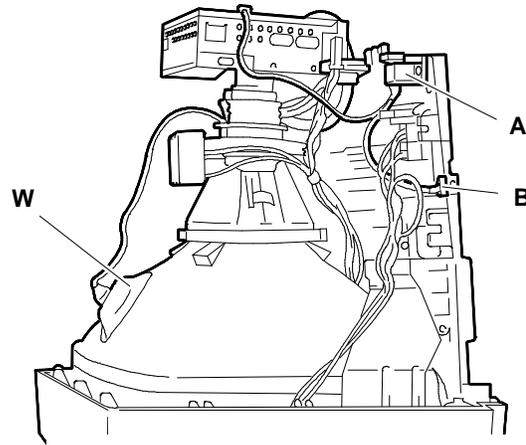


Fig. 16-6 Disconnecting the cables from the main board

NOTE: The main board is fixed to a support plate from which it must never be separated.

15. Remove screws (V).
16. Lift tabs (S) that secure the main board.

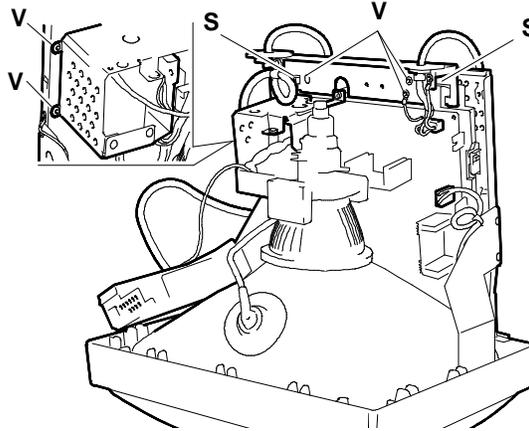


Fig. 16-7 Removing the main board securing screws

17. Remove deflection yoke connector (C).
18. Remove potentiometer connector (D).
19. Press retaining clips (R) on the right-hand side of the video and lift the main board from this side.
20. Press retaining clip (R) on the opposite side and remove the main board.

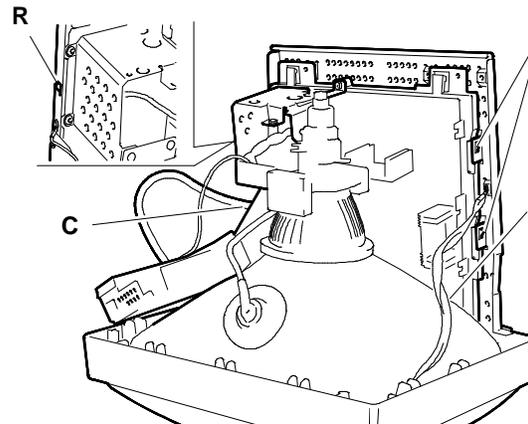


Fig. 16-8 Removing the main board

REMOVING THE CRT

NOTE: Besides the cathode ray tube, the CRT unit also integrates the deflection yoke and the geometric distortion correction magnets. No adjustments need to be made to the magnets.

21. Open and remove the four clips (P) that secure the degaussing coil.
22. Remove the screws (V5 and V6) that secure the main board metal support to the front of the monitor.
23. Remove the four screws (V) to free the CRT from the monitor's front frame.

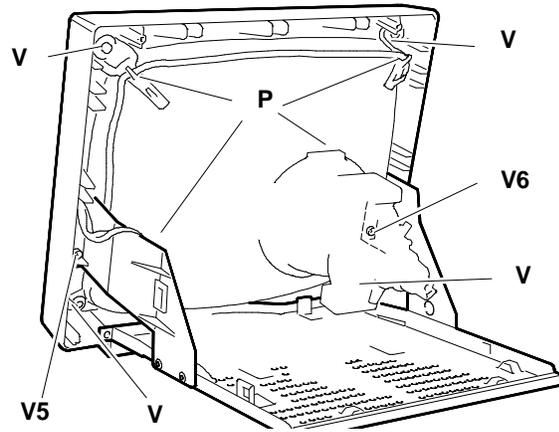
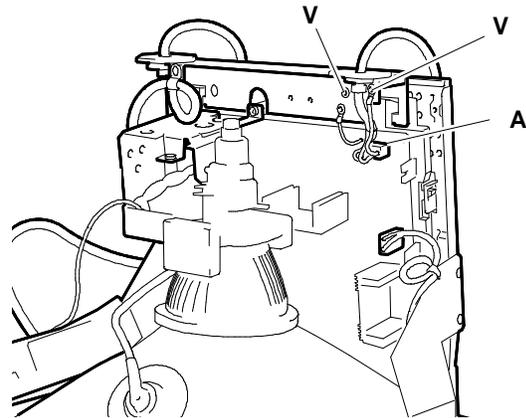


Fig. 16-9 Removing the CRT

REPLACING THE MONITOR SIGNALS AND POWER CABLES

To replace the power cable, proceed as follows:

24. Remove the power cable connector (A) from the main board.
25. Remove the two screws (V) that secure the power cable to the frame of the monitor.



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Fig. 16-10 Removing the video power cable

To replace the signals cable, proceed as follows:

26. Remove the signals cable connector (B) from the video amplifier board.
27. Remove the two screws (V) that secure the signals cable to the frame of the monitor.

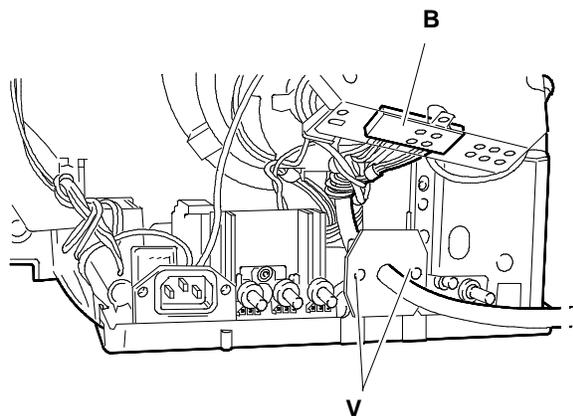


Fig. 16-11 Removing the video signals cable

DISPLAY ADJUSTMENTS

The following procedure must be carried out one step at a time and in the order given since some of the adjustments affect those that follow.

GOLDSTAR GS01 MONITOR

Video Amplifier Board Adjustment Points

- VR350 - Red cut-off
- VR370 - Green cut-off
- VR390 - Blue cut-off
- VR332 - Red adjustment
- VR352 - Blue adjustment.

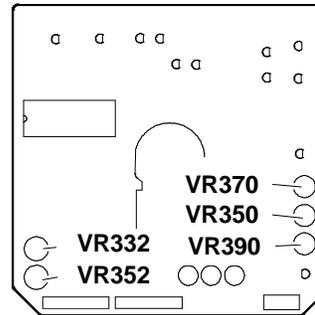
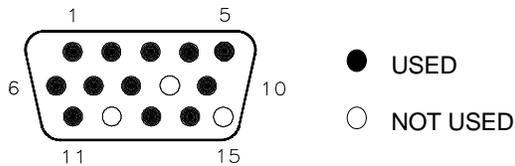


Fig. 16-12 Video amplifier board

Main Board Adjustment Points

HORIZONTAL FREQUENCY ADJUSTMENT

- System Test: *640 BY 480 GRAPHICS REVERSE PATTERN.*
- Disconnect the wire of the H-SYNC video signal. To do this, remove wire no. 13 from the video signals cable connector.



- Adjust VR703 (H FREQ) to obtain the best possible fixed image on the screen.

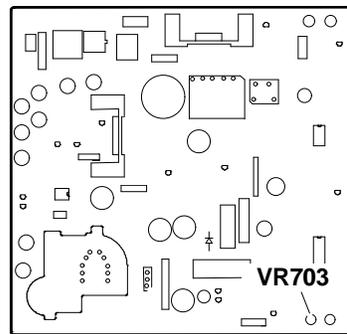


Fig. 16-13 Horizontal frequency adjustment

VERTICAL LINEARITY ADJUSTMENT

- System Test: *640 BY 480 GRAPHICS. CROSS HATCH PATTERN.*
- Adjust VR603 to obtain vertical linearity.

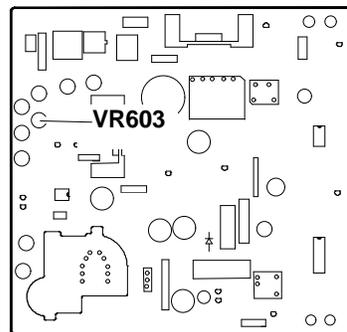


Fig. 16-14 Vertical linearity adjustment

VERTICAL WIDTH ADJUSTMENT

- System Test: *640 BY 480 GRAPHICS*.
- Adjust VR602 to center the image on the screen.
- Adjust VR601 to obtain a vertical width of 180 mm +/- 2 mm.
- System Test: *640 BY 350 GRAPHICS*.
- Adjust VR620 to obtain a vertical width of 180 mm +/- 2 mm.
- System Test: *640 BY 400 GRAPHICS*.
- Adjust VR621 to obtain a vertical width of 180 mm +/- 2 mm.

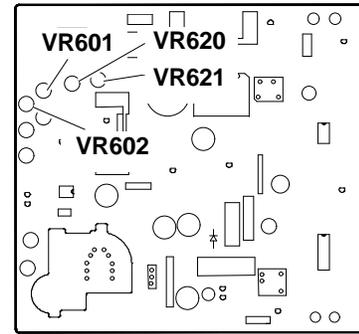


Fig. 16-15 Vertical width adjustment for 640x350, 640x400 and 640x480 resolutions

VERTICAL CENTERING ADJUSTMENT

- System Test: *CROSS HATCH WITH CIRCLE AT CENTER OF SCREEN*.
- Adjust VR607 to center the image vertically on the screen.

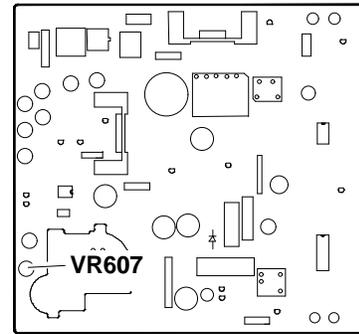


Fig. 16-16 Vertical centering adjustment

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PINCUSHION DISTORTION ADJUSTMENT

- System Test: *CROSS HATCH PATTERN*.
- Adjust VR605 to reduce distortion.

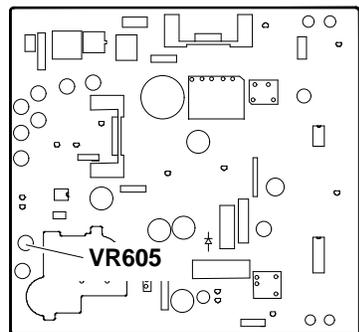


Fig. 16-17 Pincushion distortion adjustment

HORIZONTAL WIDTH ADJUSTMENT

- System Test: *CROSS HATCH PATTERN*.
- Adjust VR608 to obtain a horizontal width of 240 mm +/- 2 mm.
- Set the brightness control half way and the contrast control to maximum contrast.

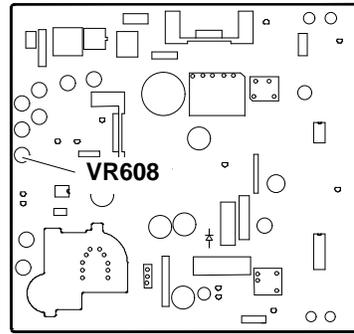


Fig. 16-18 Horizontal width adjustment

FOCUS ADJUSTMENT

- System Test: *CHECK LINEARITY*.
- Set the brightness control half way and the contrast control to maximum contrast.
- Adjust the "FOCUS" potentiometer on the T702 transformer until the best possible focus is obtained.

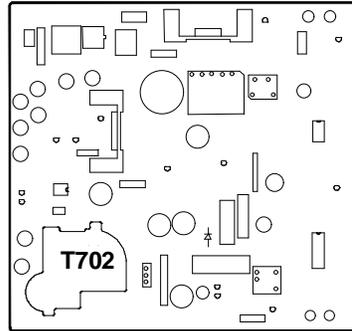


Fig. 16-19 Focus adjustment

GOLDSTAR GS01 MONITOR

The adjustments that can be carried out on this monitor model are exactly the same as those for the GOLDSTAR GS01 with the exception of the **VERTICAL WIDTH** and **FOCUS ADJUSTMENTS**.

VERTICAL WIDTH ADJUSTMENT

- System Test: *640 BY 480 GRAPHICS*.
- Adjust VR601 until the image is centered on the screen.
- Adjust VR604 to obtain a vertical width of 180 mm +/- 2 mm.
- System Test: *640 BY 350 GRAPHICS*.
- Adjust VR602 to obtain a vertical width of 180 mm +/- 2 mm.
- System Test: *640 BY 400 GRAPHICS*.
- Adjust VR602 to obtain a vertical width of 180 mm +/- 2 mm.

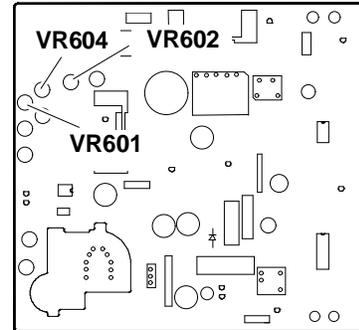


Fig. 16-20 Vertical width adjustment 640x350, 640x400 and 640x480 resolutions

FOCUS ADJUSTMENT

The focus on this monitor is adjusted the same way as the focus on the GOLDSTAR GS01.

On this monitor you can also have different shades of white.

This manual does not explain this adjustment since laboratory measuring instruments are required. For information on this adjustment, refer to the manual "CDU 439 Theory of Operation, Schematics and Components".