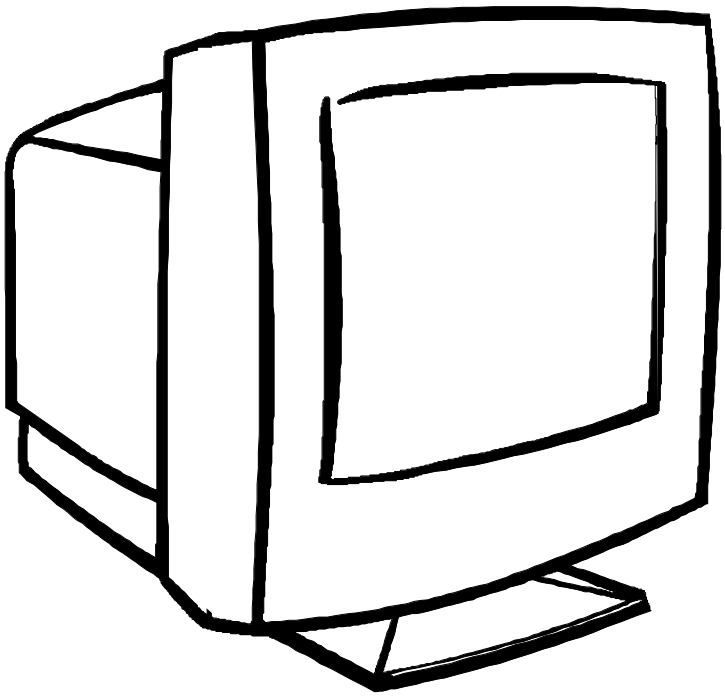
Service Manual



Model: Belinea 103055

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Belinea 103055 Service Manual

First edition December 2001

1. Precautions

Follow these safety, servicing and ESD precautions to prevent damage and to protect against potential hazards such as electrical shock and X-ray exposure.

1-1 Safety Precautions

1-1-1 Warnings

1. For continued safety, do not attempt to modify the circuit board.

2. Disconnect the AC power before servicing.

3. With AC power applied, semiconductor heat sinks are potential shock hazards.

1-1-2 Servicing the High Voltage System and CRT

1. When servicing the high voltage system, remove the static charge by connecting a 10 kohm resistor in series with an insulated wire(such as a test probe) between the chassis and the anode lead. (Disconnect the AC line cord from the AC outlet.)

2. Do not lift the CRT by the neck.

3. Handle the CRT only while wearing shatterproof goggles and after completely discharging the high voltage anode.

1-1-3 X-Rays and High Voltage Limits

1. Keep the high voltage below the specified maximum level. Be sure all service personnel are aware of the procedures and instructions covering X-rays. The only potential source of X-ray in current solid state display monitors is the CRT.
   However, the CRT does not emit measurable X-ray radiation if the high voltage is as specified in the fire and shock hazard instruction. Only when high voltage is excessive are X-rays capable of penetrating the shell of the CRT, including the lead in glass material.

2. It is essential that service technicians have an accurate high voltage meter available at all times. Check the calibration of this meter periodically.

3. High voltage should always be kept at the rated value, no higher. Operation at high voltage may cause failure of the CRT or high voltage circuitry and, under certain conditions, may produce X-rays in excess of acceptable levels.

4. When the high voltage regulator is operating properly, there is no possibility of an X-ray problem. Test the brightness and use a meter to monitor the high voltage each time a color monitor is serviced. Make sure the high voltage does not exceed its specified value and that it is regulating correctly.

5. The CRT is especially designed to prohibit X-ray emissions. To ensure continued X-ray protection, replace the CRT only with one of the same type or an equivalent of the original. Carefully reinstall the CRT shields and mounting hardware; these also provide X-ray protection.

6. When troubleshooting a monitor with excessively high voltage, avoid being unnecessarily close to the monitor. Do not operate the monitor for longer than is necessary to locate the cause of excessive voltage.

1-1-4 Fire and Shock Hazard

Before returning the monitor to the user, perform the following safety checks :

1. Inspect each lead dress to make certain that the leads are not pinched or that hardware is not lodged between the chassis and other metal parts inside the monitor.

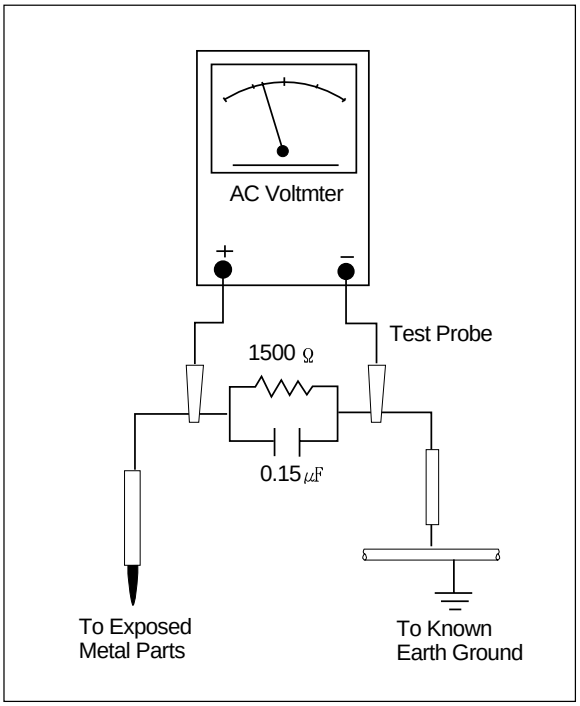


Figure 1-1.
Leakage Current Test Circut

2. Inspect all protective devices such as nonmetallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacitor network mechanical insulators, etc.

3. To be sure that no shock hazard exists, check for leakage current in the following manner.

a. Plug the AC line cord directly into a 230 Volt AC outlet.
(Do not use an isolation transformer for this test)

b. Using two clip leads, connect a 1.5k Ω, 10 watt resistor paralleled by a 0.15μF capacitor in series with an exposed metal cabinet part and a known earth ground, such as an electrical conduit or electrical ground connected to an earth ground.

c. Use a SSVM or VOM with 1000 ohms per-volt or higher sensitivity to measure the AC voltage drop across the resistor (see Figure 1-1).

d. Connect the resistor to an exposed metal part having a return path to the chassis(metal cabinet, screw heads, knobs, shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor.

e. Any reading of 5.25 Volt RMS(this corresponds to 3.5 milliampere AC) or more is excessive and indicates a potential shock hazard. Correct the shock hazard before returning the monitor to the user.

1-1-5 Product Safety Notices

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection. The protection they give may not be obtained by replacing them with components rated for higher voltage, wattage, etc. A substitute replacement that does not have the same safety characteristics as the recommended replacement part may create shock, fire and / or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

WARNING : This product includes critical mechanical and electrical parts which are essential for x-radiation safety. For continued safety replace critical components indicated in the service manual only with exact replacement parts given in the parts list. Operating high voltage for this product is 25.8kV at maximum brightness. Refer to service manual for measurement procedures and proper service adjustments.

1-2 Servicing Precautions

WARNING : An electrolytic capacitor installed with the wrong polarity might explode.

Caution : Before servicing instruments covered by this service manual and its supplements, read and follow the Safety Precautions section of this manual.

Note : If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions.

1-2-1. General Servicing Precautions

1. Servicing precautions are printed on the cabinet, and should be followed closely.

2. Always unplug the unit's AC power cord from the AC power source before attempting to :
   (a)remove or reinstall any component or assembly, (b) disconnect PCB plugs or connectors,
   (c) connect a test component in parallel with an electrolytic capacitor.

3. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.

4. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the portion around the serviced part has not been damaged.

5. Check the insulation between the blades of the AC plug and accessible conductive parts(exampls: metal panels, input terminals and earphone jacks).

6. Insulation Checking Procedure : Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter(500 V) to the blades of the AC plug.

   The insulation resistance between each blade of the AC plug and accessible conductive parts(see above) should be greater than 1㏁.

7. Never defeat any of the +B voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.

8. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.

1-3 Electrostatically Sensitive Devices(ESD) Precautions

Some semiconductor (solid state) devices can be easily damaged by static electricity. Such components are commonly called Electrostatically Sensitive Devices(ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors. The following techniques will reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. To avoid a shock hazard, be sure to remove the wrist strap before applying power to the monitor.

2. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of an electrostatic charge.

3. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESDs.

4. Use only a grounded-tip soldering iron to solder ESDs.

5. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESDs.

6. Do not remove a replacement ESD from its protecitive package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.

7. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.

   Caution : Be sure no power is applied to the chassis or circuit and observe all other safety precautions.

8. Minimize body motions when handling unpackaged replacement ESDs.
   Motions such as brushing clothes together, or lifting your foot from a carpeted floor can generate enough static electricity to damage an ESD.

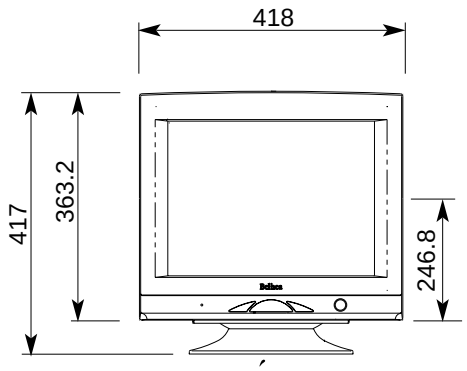
2. Product Specifications

2-1 Specifications

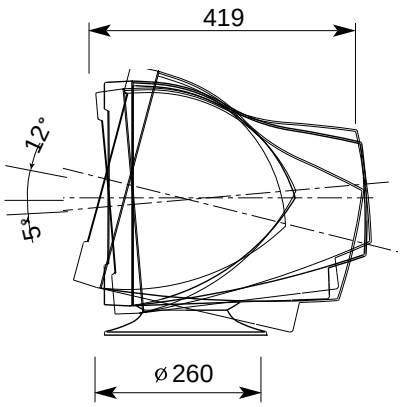
ITEM	DESCRIPTION
Picture Tube :	17 Inch (43cm) : 15.87 Inch (40.3cm) Visual, flat face tube, 90° deflection 0.24mm Dot pitch, Semi-tint, Non-glare and Anti-static coating.
Scanning Frequency	Horizontal : 30KHz to 96KHz (Automatic) Vertical : 50Hz to 160Hz (Automatic)
Display Colors Analog input	Unlimited Colors
Maximum Resolution	Horizontal : 1600 Dots Vertical : 1200 Lines
Input Video Signal	Analog 700mVpp positive at 75 Ω internally terminated
Input Sync signal	Composite Sync : TTL level positive/negative Separate Sync : TTL level positive/negative
Video Bandwidth	170 MHz
Active Display	Horizontal : 322mm ± 4.0mm Vertical : 242.5mm ± 4.0mm
Input Voltage	200~240V AC ±10%, 60Hz/50Hz ±3Hz
Power Consumption	120 Watts (Max), 100 Watts (typical)
Dimensions unit (WxDxH) Carton(WxDxH)	16.5 × 16.5 × 16.4Inch(418 × 419 × 417mm) 20.9 × 20.0 × 18.2Inch(530 × 508 × 462mm)
Weight	Net/Gross : 17.0kg / 20.3kg
Environmental Considerations	Operating Temperature : 32°F to 104°F(0°C to 35°C) Humidity : 10% to 80% Storage Temperature : -4°F to 140°F(-20°C to 60°C) Humidity : 5% to 95%
CRT Code No	× M41QCJ 761 × 172(SDD)

2-2 Dimensions

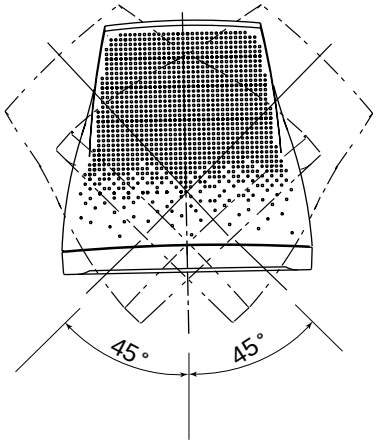
■FRONT VIEW



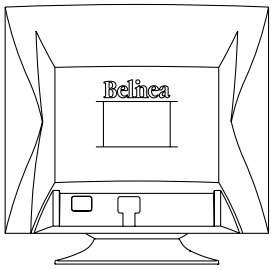
■SIDE VIEW



■TOP VIEW

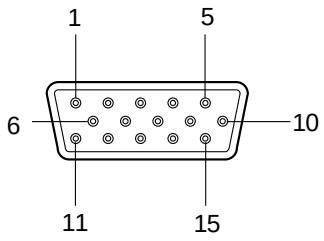


■REAR VIEW



2-3 Pin Assignment Table D-sub 15 Pin Connector

The 15-pin D-sub connector(male) of the signal cable (IBM systems) :



Pin No	Assignment	Pin No	Assignment
1	Red Video	9	N/C
2	Green Video	10	ID
3	Blue Video	11	Ground
4	Frame Ground	12	SDA
5	Ground	13	H.Sync
6	Red Video Ground	14	V.Sync
7	Green Video Ground	15	SCL
8	Blue Video Ground		

2-4 Timing chart

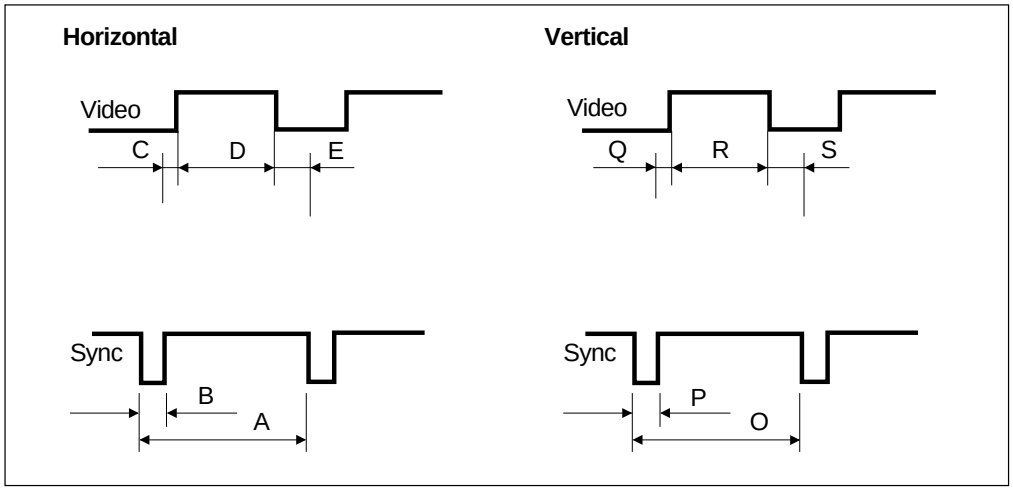
This section of the service manual describes the timing that the computer industry recognizes as standard for computer-generated video signals.

■ Table 2-1 Timing Chart

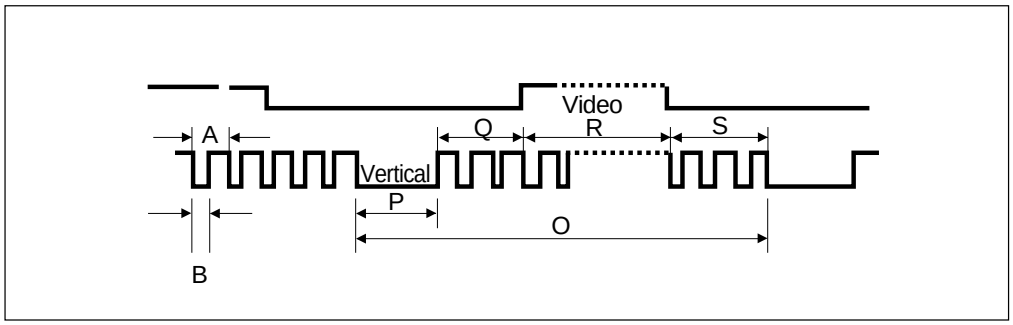
Descrpion \ RESOLUTION		640 ×480			720 ×400	800 ×600		832 ×624
H	f KHz	31.469	35.000	37.500	31.469	46.875	53.674	49.726
	Aμsec	31.778	31.778	21.333	18.631	16.660	14.561	12.387
	Bμsec	3.813	3.813	1.616	1.138	1.219	1.016	1.057
	Cμsec	1.907	1.907	3.232	14.222	13.003	10.836	1.491
	Dμsec	25.422	25.442	16.162	25.422	16.162	14.222	9.39
	Eμsec	0.636	0.616	0.323	0.569	0.203	0.508	0.449
	Polarity	NEG.	NEG.	POS.	NEG.	POS.	POS.	NEG.
V	f Hz	59.940	66.667	75.000	70.090	75.000	85.061	74.551
	Om sec	16.683	14.268	13.333	11.756	13.328	11.765	10.021
	Pm sec	0.064	0.064	0.064	0.056	0.050	0.044	0.037
	Qm sec	1.048#	1.111	0.448	0.503	0.466	0.524	0.471
	Rm sec	15.253	12.711	12.800	11.179	12.795	11.183	9.513
	Smsec	0.318	0.382	0.021	0.019	0.017	0.015	0
	Polarity	NEG.	NEG.	POS.	POS.	POS.	POS.	NEG.

Descrpion \ RESOLUTION		1152 ×870	1024 ×768			1280 ×1024		1600 ×1200
H	f KHz	68.681	60.023	68.677	80.741	79.976	91.146	93.750
	Aμsec	12.504	10.971	10.667	12.387	28.571	20.11	14.56
	Bμsec	1.067	1.016	0.948	1.057	2.116	1.117	1.28
	Cμsec	1.837	1.422	1.501	1.491	3.175	3.91	1.44
	Dμsec	9.481	8.127	7.901	9.39	21.164	14.524	11.52
	Eμsec	0.119	0.406	0.316	0.449	2.116	0.559	0.32
	Polarity	NEG.	POS.	POS.	POS.	POS.	POS.	POS.
V	f Hz	75.062	75.029	84.997	99.803	75.025	85.024	75.000
	Om sec	13.329	11.761	13.333	10.021	15	13.414	13.32
	Pm sec	0.038	0.033	0.032	0.037	0.086	0.06	0.04
	Qm sec	0.475	0.483	0.491	0.471	1.114	0.784	0.56
	Rm sec	12.804	11.215	12.800	9.513	13.714	12.549	12.66
	Sm sec	0.013	0.011	0.011	0	0.086	0.02	0.04
	Polarity	NEG.	POS.	POS.	POS.	POS.	POS.	POS.

■ **Separate Sync**



■ **H/V Composite Sync**

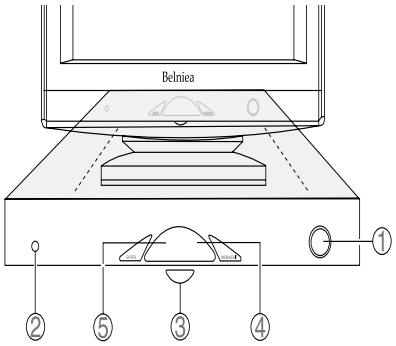


A	Line time total	O	Frame time total
B	Sync width	P	Sync width
C	Back porch	Q	Back porch
D	Active time	R	Active time
E	Front porch	S	Front porch
O	Frame time total		

3. Operating Instructions

3-1 Front View and Controls Panel

The OSD menu appears in a window on your screen. It allows you to select the image settings you want to change.



■ How to open the OSD menu.....

1. Press the **MENU/EXIT** button (④ in figure 4) to display the OSD menu on the screen.
2. Select the desired function icon using the OSD dial(③ in figure 4, see the following section "OSD Menulcons").
3. Press the **ENTER** button(⑤ in figure 4) to activate the function
4. Enter the desired value by turning the OSD dial.
5. To store the setting, press the **ENTER** button again. Repeat steps 2-4 to make further adjustments as needed.
6. The OSD menu will automatically disappear if no changes are made for more than 10 seconds. The current settings will be saved. You can also close it maually by pressing the **MENU/EXIT** button.

On Screen Display

This monitor features an On Screen Display(OSD) that shows information about the display settings. The OSD appears on the screen when you select a MENU button. "ON SCREEN MENU" controls include the following extended controls such as size, position, Geometry, color Adjust, Brightness and contrast utilities. Adjustments are saved instantly. The currently addressed control can be reset to factory settings by choosing the recall menu.

3-2 Display Power management Signaling (DPMS)

This monitor is EPA Energy Star compliant and NUTEK compliant when used with a computer equipped with the VESA DPMS function. If your computer system cannot support a display power management function, you may purchase an optional DPMS software program to take advantage of the power saving function. Please contact Hansol or your dealer, for more information.

■ **Table 3-1 Display Power Management Signaling (DPMS) Standard**

State / Item	Normal Mode	Stand-by Mode	Suspend Mode	Power off Mode
H- Sync	ON	OFF	ON	OFF
V- Sync	ON	ON	OFF	OFF
Color of Power LED	Green	Orange	Orange	Flash orange
Power Consumption Typical	< 100 Watts	< 15 Watts	< 15 Watts	< 3 Watts
Power Consumption maximum	< 120 Watts	< 15 Watts	< 15 Watts	< 3 Watts
Recovery time	-	< 3 seconds	< 3 seconds	< 20 seconds

For Energy conservation turn your monitor off when the monitor is not needed, or when leaving it unattended for long periods.

The monitor automatically returns to the normal operation state when horizontal and vertical sync returns.
This occurs when you move your mouse or press a key on your keyboard.

4. Disassembly and Reassembly

This section of the service manual describes the disassembly and reassembly procedure for the Belinea 103055 Monitor

WARNING : This monitor contains electrostatically sensitive devices.
Use caution when handling any components.

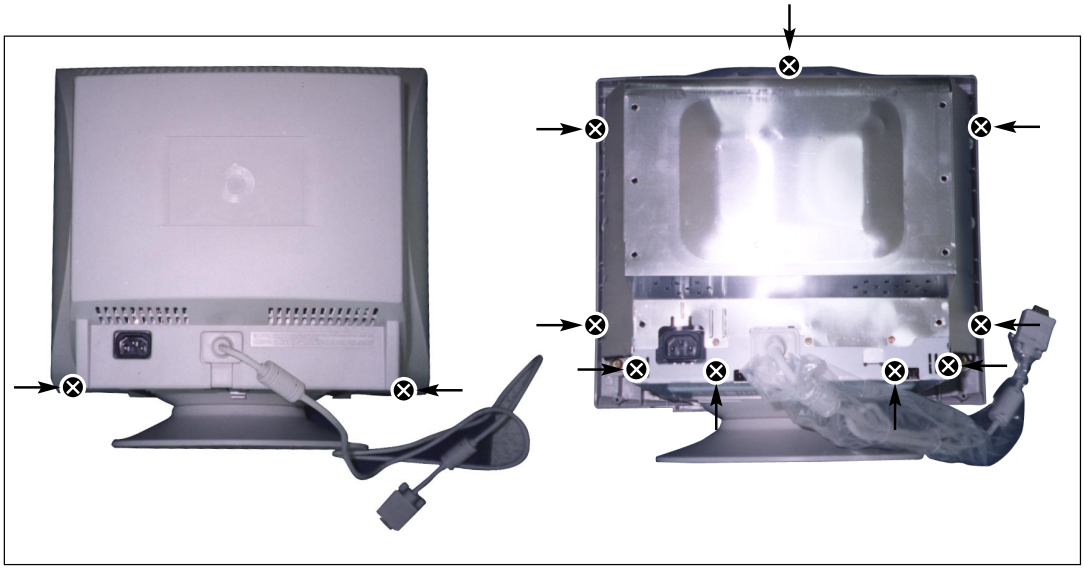
4-1 Disassembly

4-1-1 Cabinet and Shield Cover Ass'y Removal

1. With a pad beneath it, stand monitor on its front with the CRT faceplate facing downward and the base closest to you. Make sure nothing will damage the CRT faceplate.

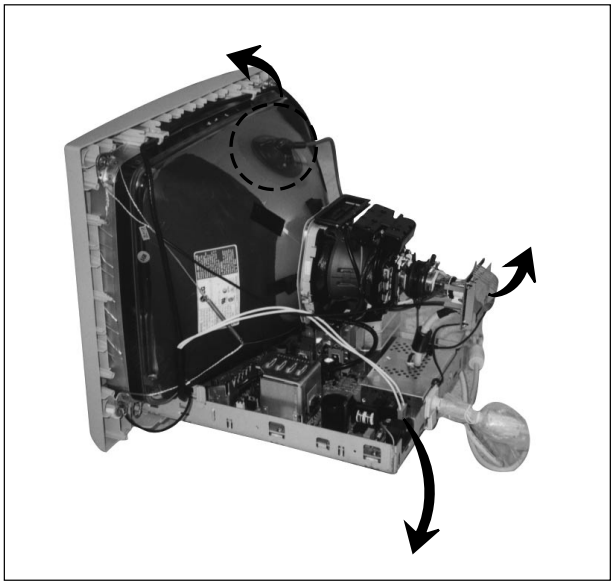
2. Working from back of the monitor, remove the 2 screws, and then remove the rear housing.

3. Remove the 9 screws, and then remove the Shield Cover Ass'y.



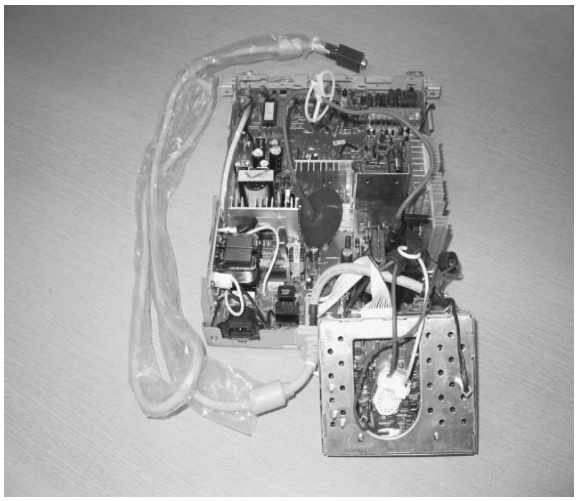
4-1-2 Main PCB and Socket PCB Removal

1. Remove the Anode Cap.(Be careful!!)
2. Remove the Degaussing connector(CN102) in the Main PCB.
3. Remove the CN602 in the Socket PCB. (CRT Ground)
4. Remove the Socket PCB from the CRT.
5. Remove the stand from the Main Chassis.
6. Remove the 2 screw from the Main Chassis and Front Bezel.
7. Remove the CN701 and CN801 from the PCB as pulling the Socket PCB and Main PCB assembly.



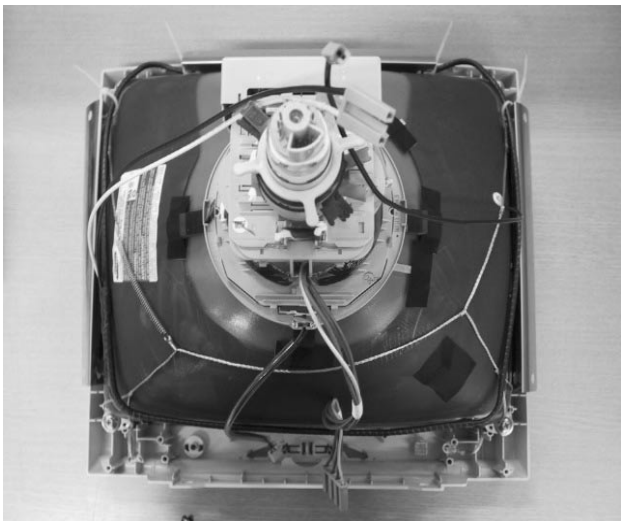
4-1-3 Main PCB and Socket PCB Division

1. Remove the connectors CN601 and CN 603 on the Socket PCB.
2. Remove the Focus wire(Red and White) from the CN604.
3. Remove the Socket PCB from the Main PCB.
4. Remove the 4 screws on the main PCB and 1 screw in the FBT Heat Sink and 1 screw in the video Shield Cover.
5. Remove the CRT SUPPORT-R and CRT SUPPORT-L.
7. Remove the Main Chassis from the Main PCB.



4-1-4 CRT Removal

1. Remove the Degaussing Coil.
2. Remove the 4 screws from the Front Bezel.
3. Remove the CRT ground wire.
4. Remove the Bezel.



Caution: 1 Do not lift the CRT by the neck.

2. If you will be reinstalling this CRT to the monitor, be sure to place the CRT face down on a protective pad.

4-2 Reassembly

Caution : Always use a protective pad under the CRT to protect its faceplate.

4-2-1 CRT Reassembly

1. If removed, replace the ground wire Ass'y.
2. Position the CRT on the Bezel and replace the 4 screws.
3. Replace the Degaussing Coil.

4-2-2 Main PCB and Socket PCB Combination

1. Position the Main PCB on the Main Chassis and replace the 4 screws.
2. Replace the 2 screws of the FBT Heat Sink and video Shield Cover.
3. Replace the CRT SUPPORT-R and CRTSUPPORT-L.
4. Reconnect the FOCUS WIRE(Red and White) to the CN604.
5. Reconnect the CN601 and the CN603.

4-2-3 Main PCB and Socket PCB Reassembly

1. Reconnect the Connector CN701 and CN801.
2. Reconnect the Socket PCB and the Degaussing Connector(CN102).
3. Reconnect the CRT Ground Wire(CN602).
4. Reconnect the Anode cap. (Be Careful!!)
5. Put the assembly and replace the 2 screws of the Main Chassis and Front Bezel.
6. Replace the stand.

4-2-4 Cabinet Reassembly

1. Lay the monitor down on its faceplace.
2. Replace the Shield Cover Ass'y and 6 screws.
3. Replace the rear housing and 2 screws.
3. Set the monitor on its stand and make sure the CRT faceplate was not scratched or otherwise damaged.

5. Alignment and Adjustments

This section of the service manual explains how to make permanent adjustments to the monitor.

5-1 General Instructions

5-1-1 Before making Adjustments

5-1-1(a) ORIENTATION

When servicing, always face monitor to the east.

5-1-1(b) MAGNETIC FIELDS

Whenever possible, use magnetic field isolation equipment such as a Helmholtz field to surround the monitor. If a Helmholtz field is not available frequently degauss the unit under test.

Caution : Other electrical equipment may cause external magnetic fields which may interfere with monitor performance.
Use an external degaussing coil to limit magnetic build up on the monitor.
If an external degaussing coil is not available, use the internal degaussing circuit.
However, do not use the internal degaussing circuit more than once per 30 minutes.

5-1-1(c) TEST AND BURN-IN MODE

Remove the signal cable from the monitor.
Warm it up for 30 minutes before servicing the monitor.

5-1-1(d) WARM-UP TIME

The monitor must be on for 30 minutes before starting alignment. Warm-up time is especially critical in color temperature and white balance adjustments.

5-1-1(e) SIGNAL

Analog, 700mVpp positive at 75 ohm termination sync:Separate/composite
(TTL level negative/positive)

5-1-1(f) SCANNING FREQUENCY

Horizontal : 30kHz to 96kHz (Automatic)
Vertical : 50Hz to 160Hz (Automatic)

Unless otherwise specified, adjust to 1280 $\times$ 1024
mode (H:91kHz, V:85Hz) signals.
Refer to Table 2-1

5-1-1(g) HIGH VOLTAGE ADJUSTMENT

Signal : 1280 $\times$ 1024(H:91kHz and V:85Hz)
Contrast : Maximum
Brightness : Maximun

Adjust High Voltage to 25.8kV $\pm$ 0.1kV.

5-1-1(h) CENTER RASTER

Adjust SW301 so that back raster comes to center when you apply a signal
of H:91kHz/V:85Hz.

5-1-1(i) Brightness and Contrast

Unless otherwise specified, adjust the OSD Controls;
Brightness : Cut-off($\leq$ 0.08 Fl)
Contrast : Maximum

5-1-2 Required Equipment

The following equipment may be necessary for adjustment procedures:

5-1-2-(a) Display Control Adjustment

1. Non-metallic(-)screwdriver : 1.5mm
   Non-metallic(-)screwdriver : 3mm

2. Philips(+)screwdriver : 3mm

3. Non-metallic hex key : 2.5mm

4. Digital Multimeter(DMM), or Digital Voltmeter(DVM)

5. Signal generator, or computer with a video board 1600 × 1200 @75Hz
   Required software: displaymate for windows from Sonera technologies

5-1-3(b) Color Adjustments

1. Color analyzer, or any luminance measurement equipment

5-1-3 After making Adjustments

After finishing all adjustments, test monitor in all directions. If, for example, the monitor does not meet adjustment specifications when facing north, reposition the monitor to face the east and readjust it. This time, try for an adjustment closer to the ideal setting within the tolerance range. Test the unit again in all directions.
If the monitor again fails to meet specifications, contact your Regional After Service Center for possible CRT replacement.

5-2 Display Control Adjustments

5-2-1 Centering

Centering means to position the center point of the display in the middle of the display area. Horizontal size and position and vertical size and position control the centering of the display.

CONDITIONS

Scanning frequency : 91kHz/85Hz
Display image : Crosshatch pattern
Brightness : Cut-off($\leq$ 0.08 Fl)
Contrast : Maximum

Adjust the horizontal size and vertical size to their optimal settings
300(H) $\times$ 225m(V).

Adjust the horizontal position and vertical position to $\leq$6.0 and 4.0mm of the center point of the screen.

- | A - B | $\leq$ 4.0mm
- | C - D | $\leq$ 4.0mm

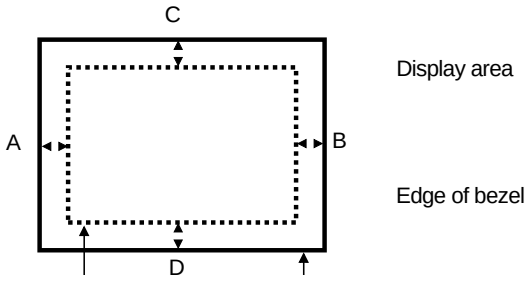


Fig. 5-1 Centering

5-2-2 Linearity

Linearty affects the symmetry of images as they display on the screen. Unless each row or column of blocks in a crosshatch pattern is of equal size, or within the tolerances shown in Tables 5-1, the image appears distorted, elongated or aquashed.
Linearity is controlled both horizontally and vertically.

CONDITIONS

Scanning frequency : 91kHz/85Hz
Display image : Crosshatch pattern
Brightness : Cut-off($\leq$ 0.08 Fl)
Contrast : Maximum

Table 5-1

Horizontal Linearity	(All modes) $\leq$ 5%
Vertical Linearity	(All modes) $\leq$ 5%

$$\frac{MAX-MIN}{MAX+MIN} \times 100$$

5-2-3 Trapezoid Adjustment

CONDITIONS

Scanning frequency : 91kHz/85Hz
Display image : Crosshatch pattern
Brightness : Cut-off($\leq$ 0.08 Fl)
Contrast : Maximum

At the TRAPEZOID on the geometry menu, Using the OSD dial to make the image or the test pattern rectangular.

• | A - B | $\leq$ 1.5mm

• | C - D | $\leq$ 1.5mm

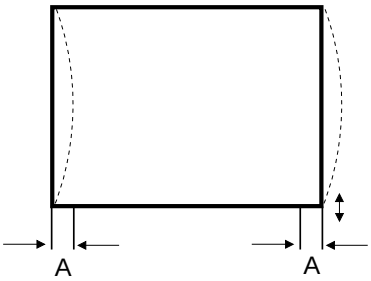
Fig. 5-2 Trapezoid

5-2-4 Pinbalance Adjustment

CONDITIONS

Scanning frequency : 91kHz/85Hz
Display image : Crosshatch pattern
Brightness : Cut-off($\leq$ 0.08 Fl)
Contrast : Maximum

At the Pinbalance on the geometry menu, Using the OSD dial to make the image or the test pattern rectangular.



• 2.0mm $\leq$A

Fig. 5-3 Pinbalance

5-2-5 Parallelogram Adjustment

CONDITIONS

Scanning frequency : 91kHz/85Hz
Display image : Crosshatch pattern
Brightness : Cut-off($\leq$ 0.08 Fl)
Contrast : Maximum

At the PARALLELOGRAM on the GEOMETRY menu, Using the OSD dial to make the image or the test pattern rectangular.

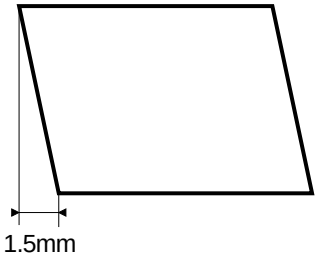


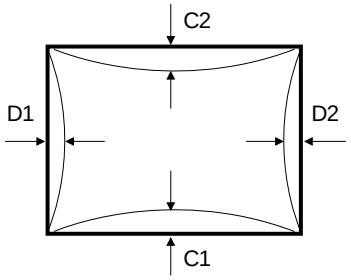
Fig. 5-4 Parallelogram

5-2-6 Side Pincushion Adjustment

CONDITIONS

Scanning frequency : 91kHz/85Hz
Display image : Crosshatch pattern
Brightness : Cut-off(≤ 0.08 Fl)
Contrast : Maximum

At the Pincushion on the geometry menu, Using the OSD dial to make the image or the test pattern rectangular.



/C1/, /C2/ ≦1mm, /D1/, /D2/ ≦2.0mm
/C1/ +/C2/ ≦2.0mm, /D1/ +/D2/ ≦3.5mm

Fig. 5-5 Pincushion

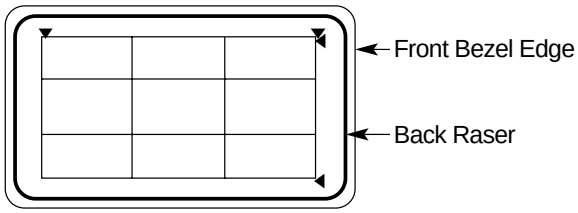
5-2-7 Tilt Adjustment

CONDITIONS

Scanning frequency : 91kHz/85Hz
Display image : Crosshatch pattern
Brightness : Cut-off(≤ 0.08 Fl)
Contrast : Maximum

At the Rotation on the geometry menu, Using the OSD dial to make the image or the test pattern rectangular.

Use mechanical adjustment if correction needed is > 1.3mm



Tilt ≦2.0mm

Fig. 5-6 CRT Tilt Adjustment

5-2-8 Degauss

The degaussing circuit can effectively function only once per 30 minutes. If available, use an external degaussing coil during servicing. No adjustments are available for the degaussing circuit.

* After Finishing from step 5-2-1 to step 5-2-7. Repeat for all modes.

5-3 Color Adjustment

Color temperature is a measurement of the radiant energy transmitted by a color.
For computer monitors, the color temperature refers to the radiant energy transmitted by white.
Color coordinates are the X and Y coordinates on the chromaticity diagram of wavelengths for the visible specturm.

To make color adjustments you must have following configurations.

1. Color adjustment Jig and computer with software
2. Signal source
   Video : Analog 700mVpp, 75ohms
   white box and Full white pattern
   Sync : Separate TTL level
   1280 × 1024/85HZ
2. Monitor Condition : Factory Mode(Menu key+power button)

5-3-1 Color Adjustments for 9300°k

5-3-1(a) Back raster adjustment

1.Conditions

- Resolution: 1280 × 1024/85HZ
- Display image: Back raster pattern
- Brightness : Cut-off(≤ 0.08 Fl)
- Contrast : Maximum

2. Procedure(R.G.B Bias Adjustment)

a) Use the color adjustment Jig to set the "Y" coordinate to 0.297 ±0.015

b) Use color adjustment Jig to set the "X" coordinate to 0.283 ±0.015

5-3-1(b) Video Gain Adjustment

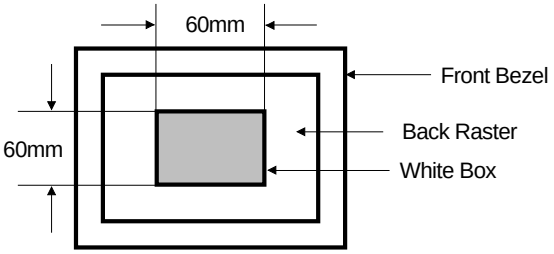


Fig. 5-7 White Box Pattern

1.Conditions

- Resolution: 1280 × 1024/85HZ
- Display image: White Box and Full white pattern
- Brightness : Cut-off(≤ 0.08 Fl)
- Contrast : Maximum

2. Procedure(R.G.B Gain Adjustment)

a) Use the color adjustment Jig and to adjust sub-contrast so that the brightness of white box is about 40 Fl ±5 Fl with X=0.283 ±0.01 and Y=0.297 ±0.01

b) use the color adjustment Jig and to adjust the ACL so that the brightness of the full white pattern is about 33 Fl ±3 Fl

5-3-2 Color Adjustment for 6500°k

5-3-2(a) Back Rast Adjustment

1.Conditions

- Resolution: 1280 × 1024/85HZ
- Display image: Back raster pattern
- Brightness : Cut-off(≤ 0.08 Fl)
- Contrast : Maximum

2. Procedure(R.G.B Bias Adjustment)

a) Use the color adjustment Jig and to download the 6500°k color Data.

b) use the color adjustment Jig to set the "Y" coordinate to 0.329 ±0.015
(Don't Adjust G-bias)

c) Use color adjustment Jig to set the "X" coordinate to 0.313 ±0.015

5-3-2(b) Video Gain Adjustment

1.Conditions

- Resolution: 1280 × 1024/85HZ
- Display image: White Box and Full white pattern
- Brightness : Cut-off(≤ 0.08 Fl)
- Contrast : Maximum

a) Use the color adjustment Jig and to adjust sub contrast so that the brightness of white box is about 40 Fl ±5 F-L With X=0.313 ±0.01 and Y=0.329 ±0.01 (Don't Adjust G-Gain)

b) Use the color adjustment Jig and to check whether the brightness of full white pattern is about 33 Fl ± 3 Fl

* NOTE : After completing the color adjustment, perform the recall function to save the data.

5-3-3 Focus Adjustment

CONDITIONS

Scanning frequency : 91kHz/85Hz(1280 $\times$1024)
Display image : Crosshatch pattern
Brightness : Cut-off($\leq$ 0.08 Fl)
Contrast : Maximum

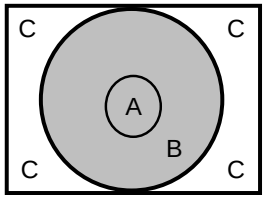
PROCEDURE

1. Adjust Focus VR on FBT to display sharpest image possible.

2. Use Locktite to seal Focus VR in position.

5-4 Convergence Adjustments

Zone A(center point)	≤0.15 mm in all modes
Zone B(ϕ 225)	≤0.30 mm in all modes
Zone c(300X225)	≤0.40 mm in all modes
Full size(325X244)	≤0.40 mm in all modes



5-4-1 Static (Center) Convergence

Static convergence involves the alignment of the red, blue and green lines in the center area of the display. See “Dynamic Convergence” for alignment of the color fields around the edges of the display.

CONDITIONS

Orientation : Monitor facing east
Warm-up : 30 minutes
Display Image : Crosshatch pattern
Tolerances : See Table 5-2

As shown in Figure 5-8, the CRT used in these monitors has the same magnet cofiguration.

Use the following steps to correct any static misconvergence:

1. Locate the pair of 4-pole magnet rings.

2. Unlock the rings and rotate the individual rings (change the spacing between tabs) to converge the vertical red and blue lines.

3. Rotate the pair of rings (maintaining the spacing between tabs) to converge the horizontal red and blue lines.

4. After completing the red and blue center convergence adjustment, locate the pair of 6-pole magnet rings.

5. Rotate the individual rings (change the space between tabs) to converge the vertical red and blue (magenta) and green lines.

6. Rotate the pair of rings (maintaining the space between tabs) to converge the horizontal red and blue (magenta) and green lines. Don't rotate the 2-pole magnets, as they adjust for color purity.

7. Mark the correct position for the magnets and apply a small line of glue to hold the magnets in place. Lock the rings in place.

5-4-2 Dynamic (Edge) Convergence

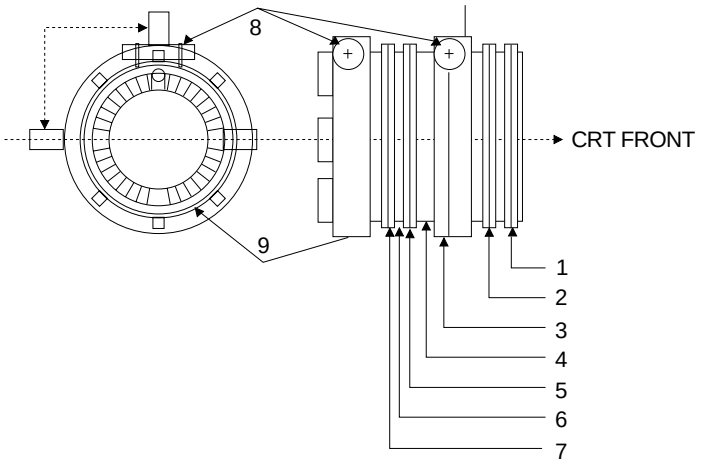
Use the following procedure to correct minor dynamic (edge) misconvergence. If, after using this procedure, dynamic misconvergence is still greater than the tolerance around the periphery of the display area, contact the Regional After Service Center for possible CRT replacement.

1. Make sure the display is not affected by external magnetic fields.

2. Make sure the static convergence is properly adjusted.

3. Strategically place small magnetic strips on the back of the CRT to correct the misconvergence.
   Be careful not to remove the paper protecting the adhesive on the magnetic strip until you are satisfied with their placement and the dynamic convergence.

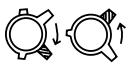
4. When you are satisfied with the convergence around the edge of the CRT, permanently glue the magnets to the back of the CRT.



1. 2 Pole
2. Bow magnet
3. Locking
4. Spacer
5. 6-Pole magnet
6. Spacer
7. 4-Pole magnet
8. Set-up Bolt
9. Band
10. Tabs

Fig. 5-8 Magnet Configuration

■ **Red, Blue and Green Alignment(4-Pole Magnet Movement)**

V-line		H-line	
Beam Displacement	4-Pole magnet Displacement	Beam Displacement	4-pole magnet Displacement
			
			
			
			
			

■ **Red, Blue and Green Alignment(6-Pole Magnet Movement)**

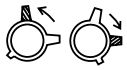
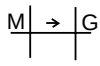
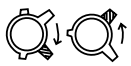
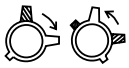
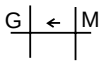
V-line		H-line	
Beam Displacement	6-Pole magnet Displacement	Beam Displacement	6-pole magnet Displacement
			
			
			
			
			

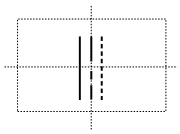
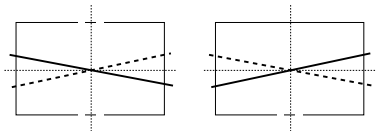
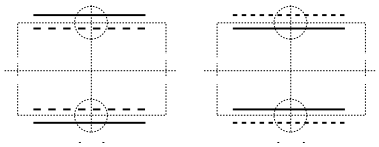
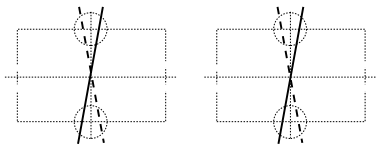
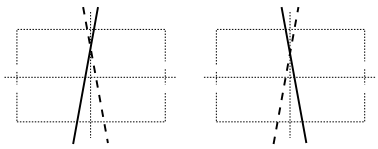
Fig 5-9. Magnet Movements

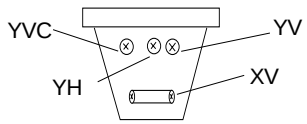
5-5 Balance Convergence Adjustments

CONDITIONS

Orientation : Monitor facing east
Display Image : Crosshatch pattern mixed with RGB colors.
Required Tools : +Screwdriver hex key

※ Red ——— Blue - - - - - - - - Green —·—·—·—

Marks	Mis-convergence pattern	Procedure/Remarks
Static Conv		• Re-checking of statlc Conv Best adjustment →White(Zero) • By purity Conv. magnet (4 poles and 6 poles)
XV		• Positions → Right Side • Cross pattern of red and blue • Using XV.Coil → Clockwise or counter-clockwise by core driver
YV		• Positions → T.B • Plus or minus pattern of red and blue • Using YV.volume → Clockwise or counter-clockwise by core driver
YH		• Positions → T.B • Plus or minus pattern of red/ blue(M) and green • Using YH.volume → Clockwise or counter-clockwise by core driver
YHC		• Positions → T.B • Unbalanced Plus or minus pattern of red/ blue(M) and green • Using YHC.volume →Clockwise or counter-clockwise by core driver



[DY]

• The positions of adjustment coil and volumes (XY, YV, YH, YHc) on the terminal board are different depending on DY types.

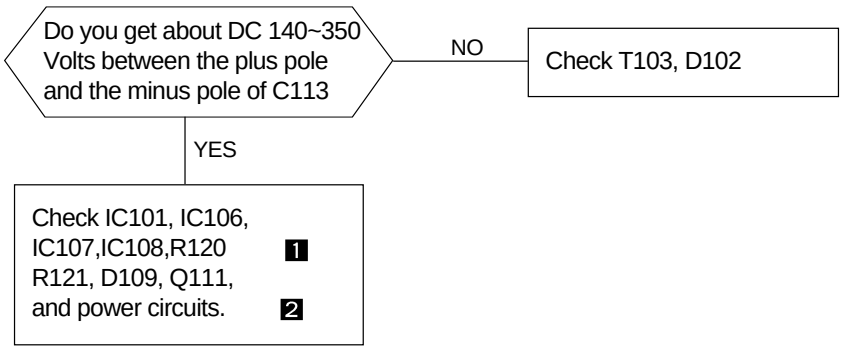
6. Troubleshooting

Notes :

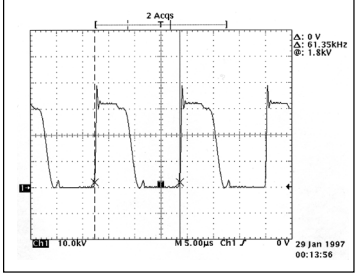
1. If picture does not appear, check the brightness and contrast controls before inspection.

2. Check the following circuits:
   - No raster appears : Power circuit, horizontal output circuit, High Voltage control circuit and High voltage output circuit.
   - High voltage develops but no raster appears: Video output circuits.
   - High voltage does not develop: High Voltage output circuits.

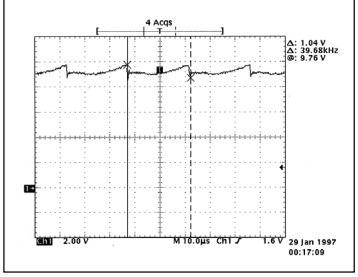
6-1 No Power



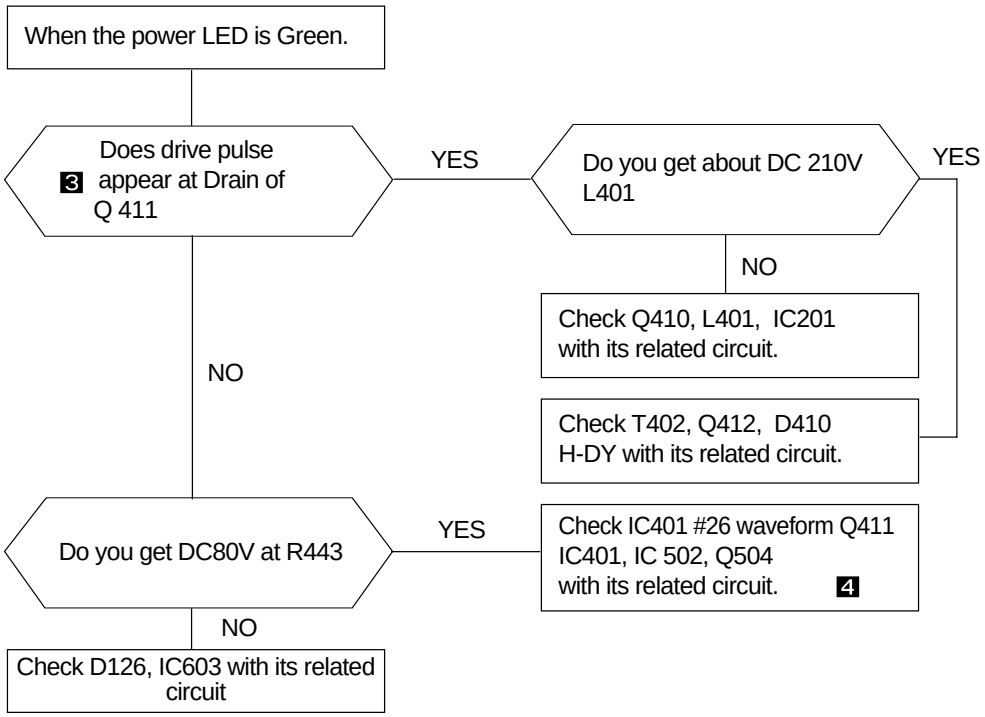
1 IC101 Pin ①



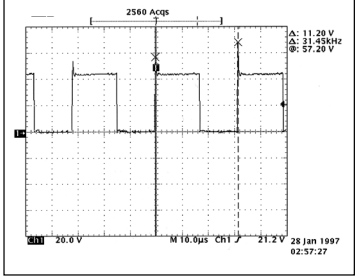
2 T103 Pin ②



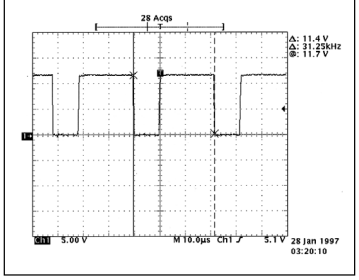
6-2 No Raster(1)



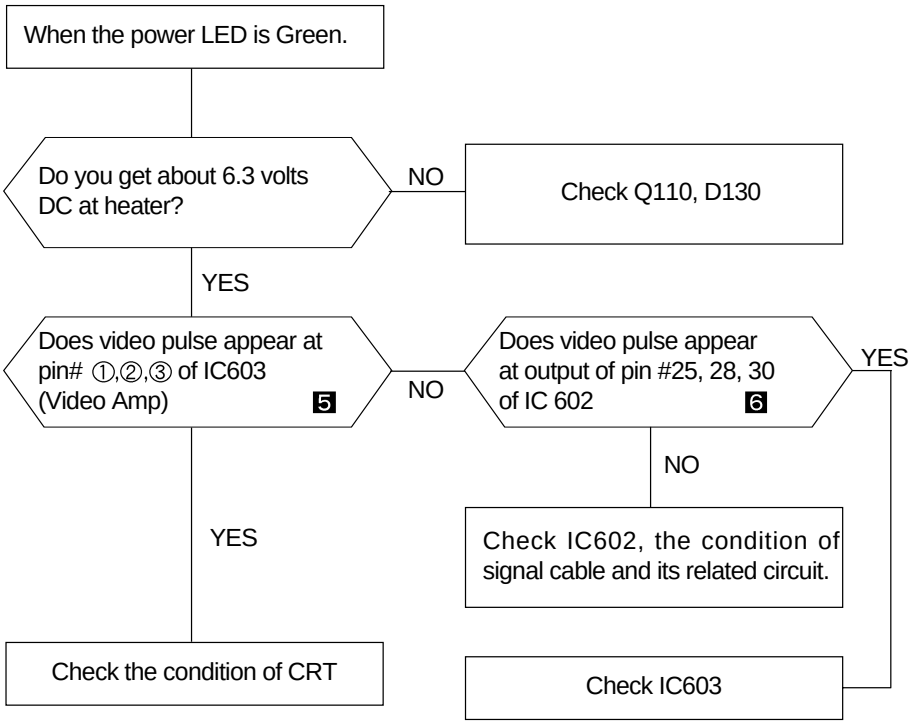
3 Q411 (Drain)



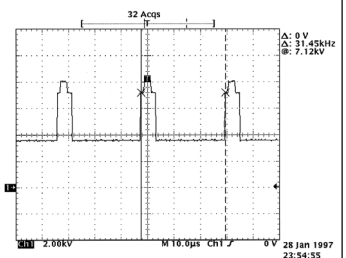
4 IC401 Pin ㉖



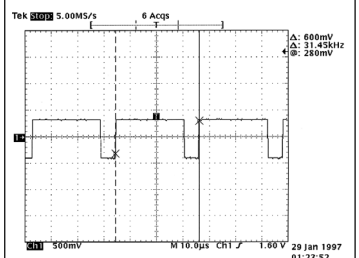
6-3 No Raster(2)



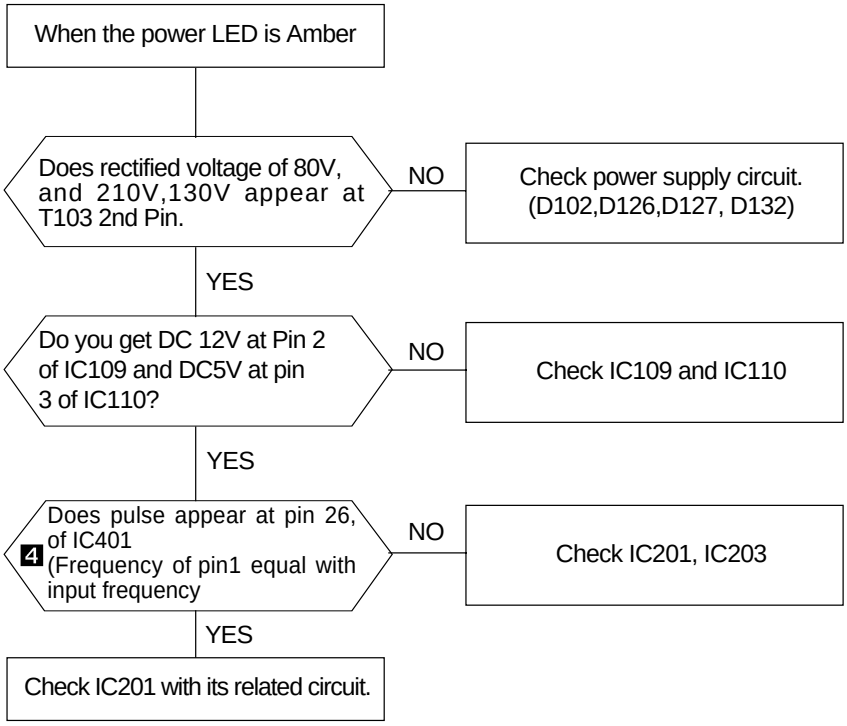
5 Pin ① ② ③ of IC603

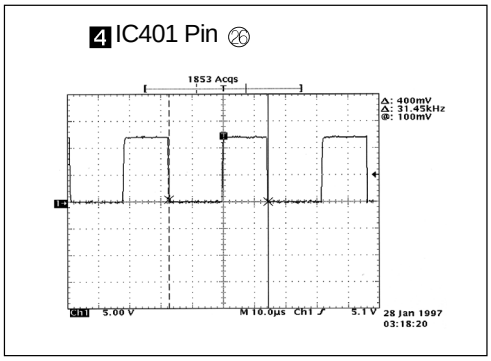


6 IC602 Pin ㉕, ㉘, ㉚



6-4 No Raster(3)





6-5 No Raster (4)

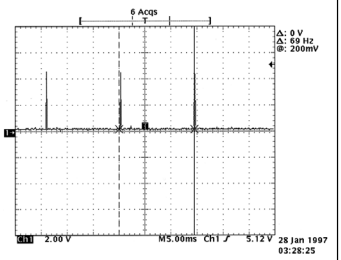
When the power LED is Amber with blinking

Does H-sync and V-sync appear at IC201? H-sync: 9 Pin 40, 8 V-sync : pin 41

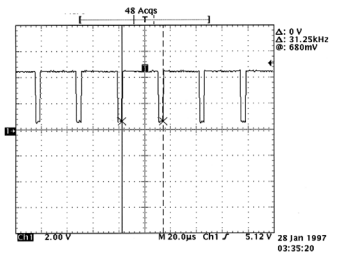
NO → Check to see that signal source is turned on and signal cable is connected.

Check IC201, Q115

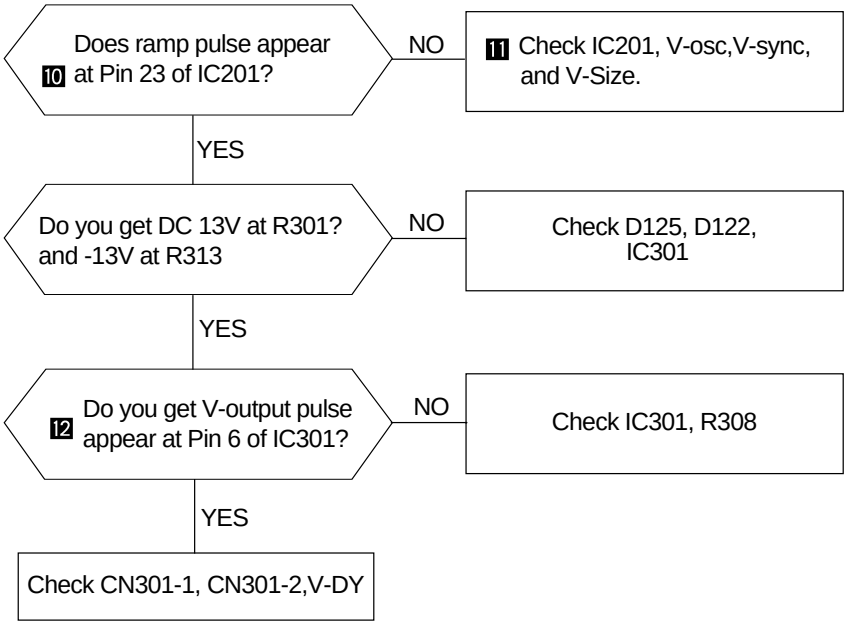
8 V-SYNC Pin ㊵ of IC201



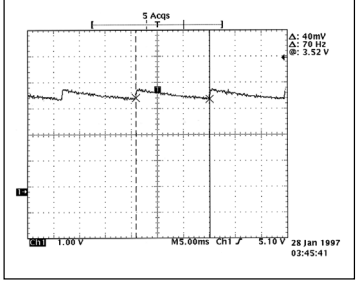
9 H-SYNC Pin ㊶ of IC201



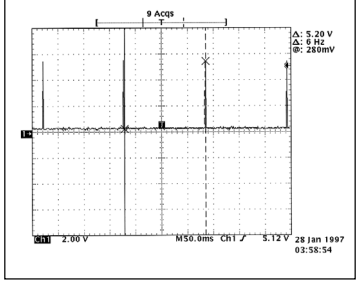
6-6 Horizontal Line On Raster



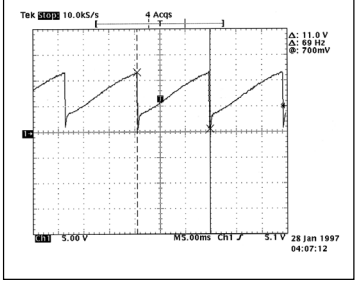
10 IC201 Pin ㉓



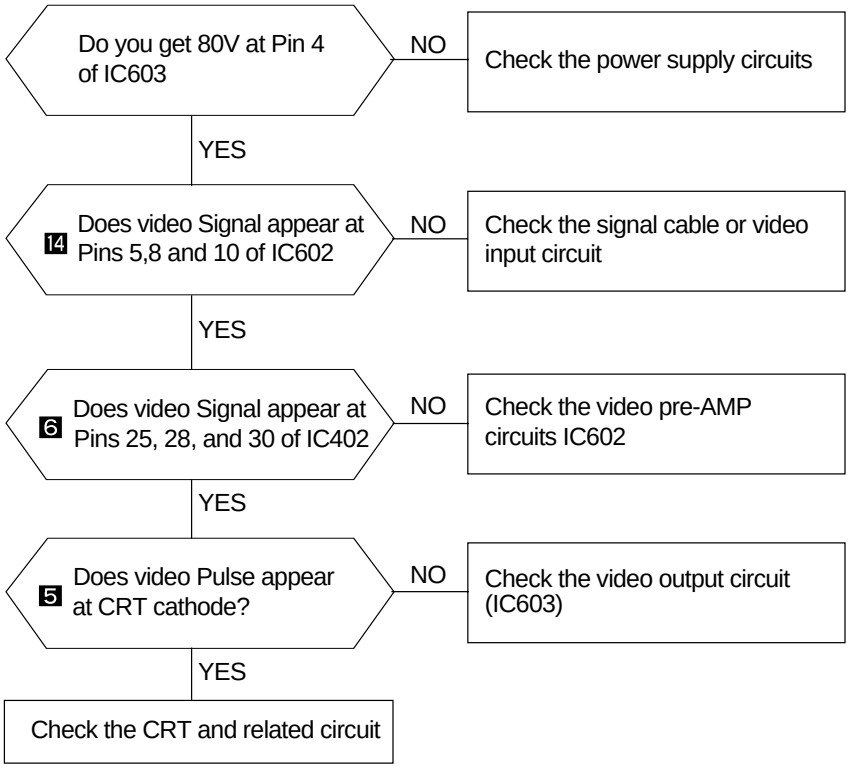
11 IC201 Pin ⑭



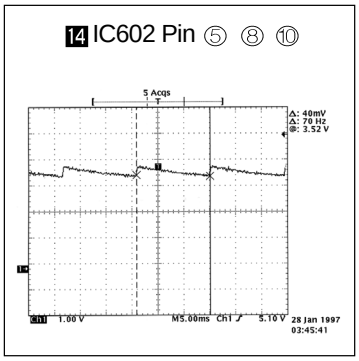
12 IC301 Pin ⑥



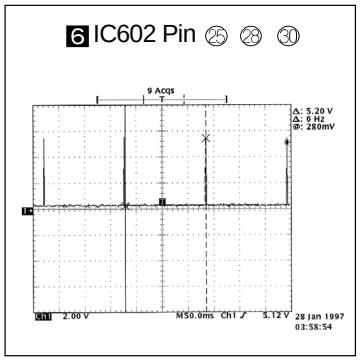
6-7 Raster Appears But Picture Does Not Show



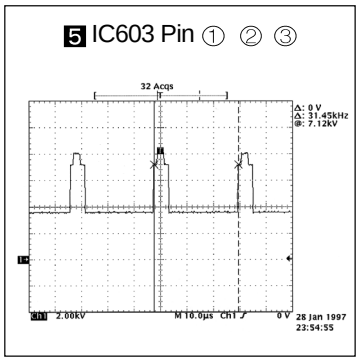
14 IC602 Pin ⑤ ⑧ ⑩



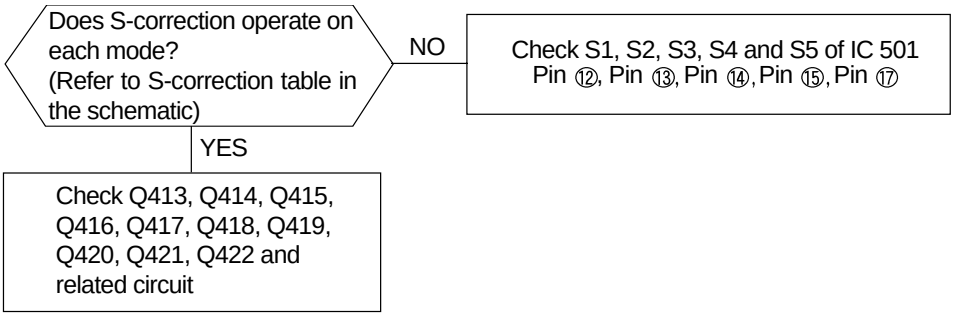
6 IC602 Pin ㉕ ㉘ ㉚



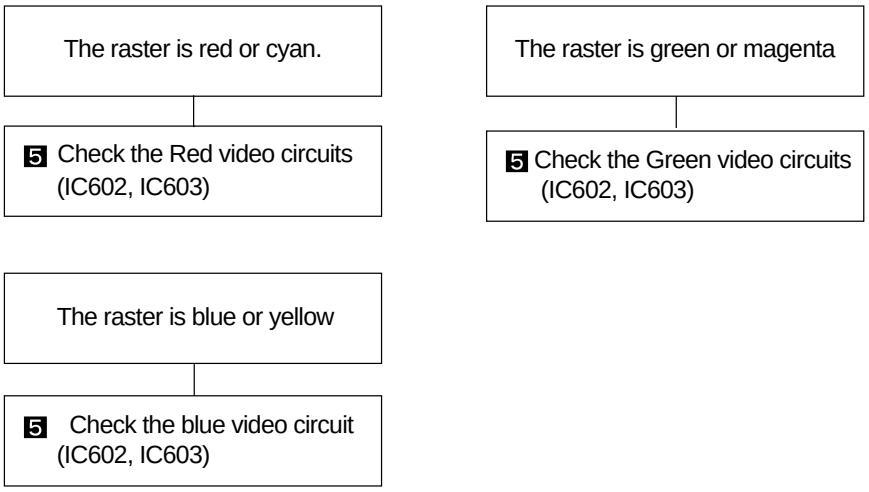
5 IC603 Pin ① ② ③



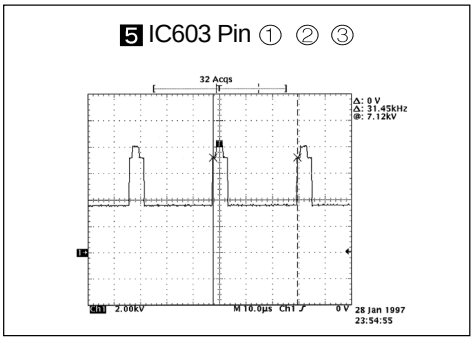
6-8 No S-Correction Value Each Mode



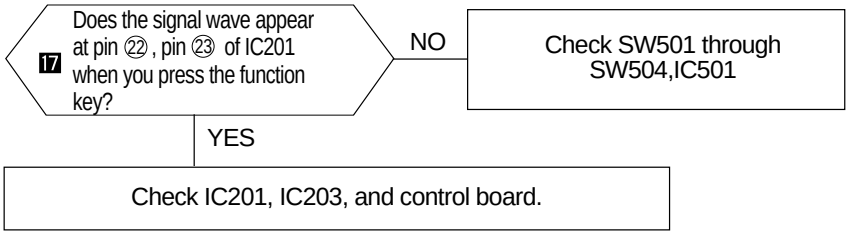
6-9 No Specific Color Appears

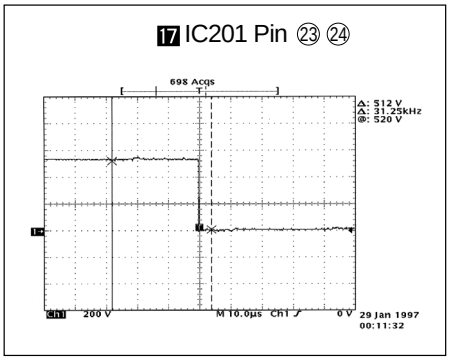


5 IC603 Pin ① ② ③

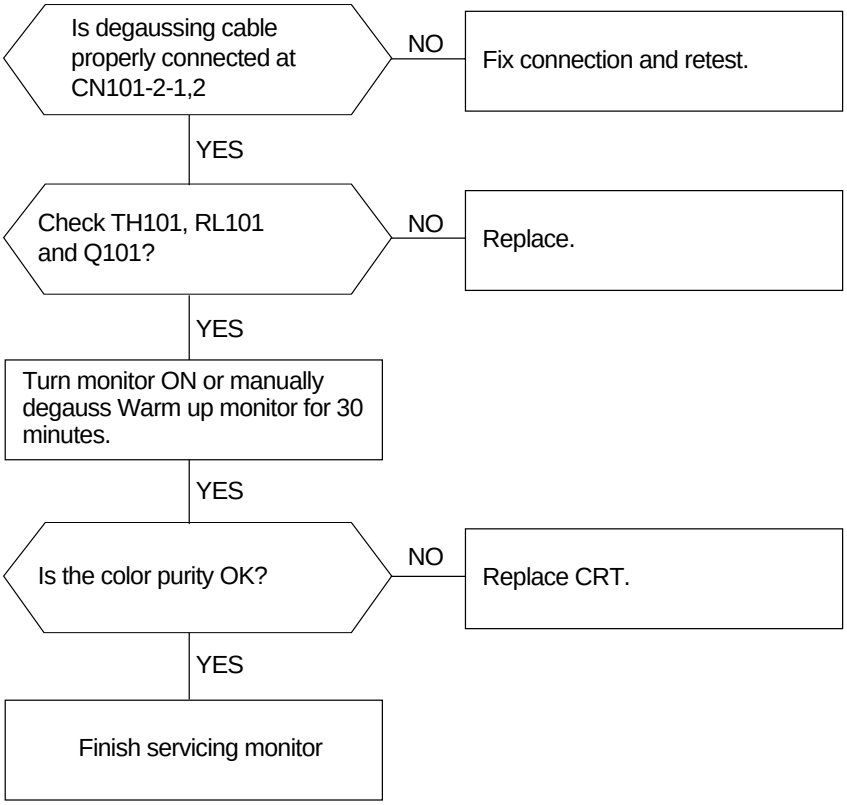


6-10 Function Key Doesn't Operate

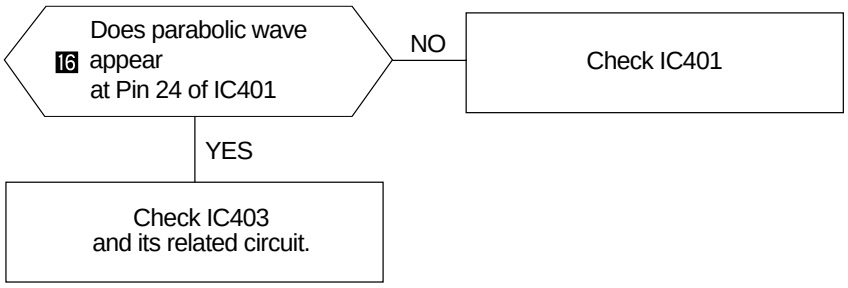


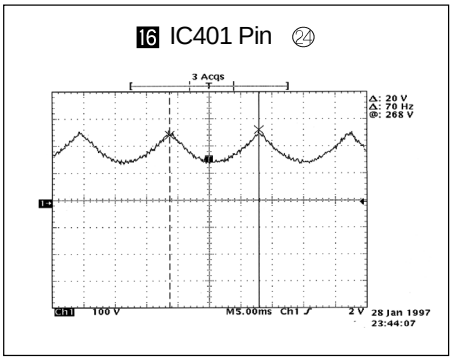


6-11 Color Purity Failure

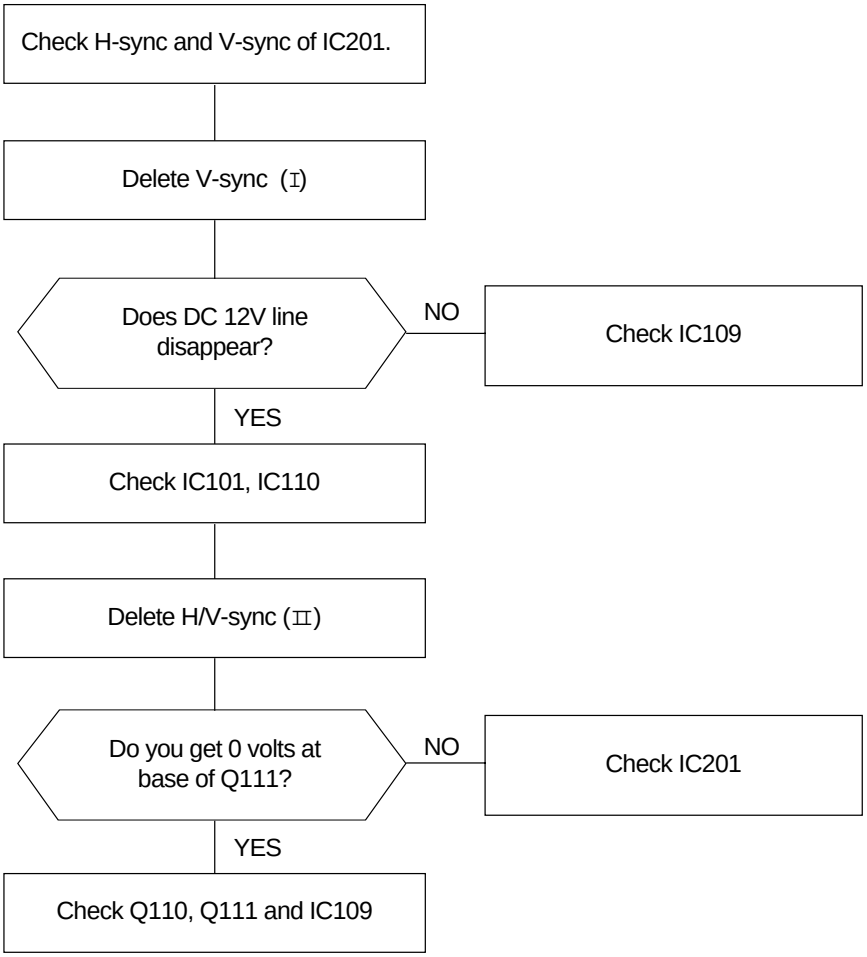


6-12 Side Pin and Trapezoid Functions Do Not Operate

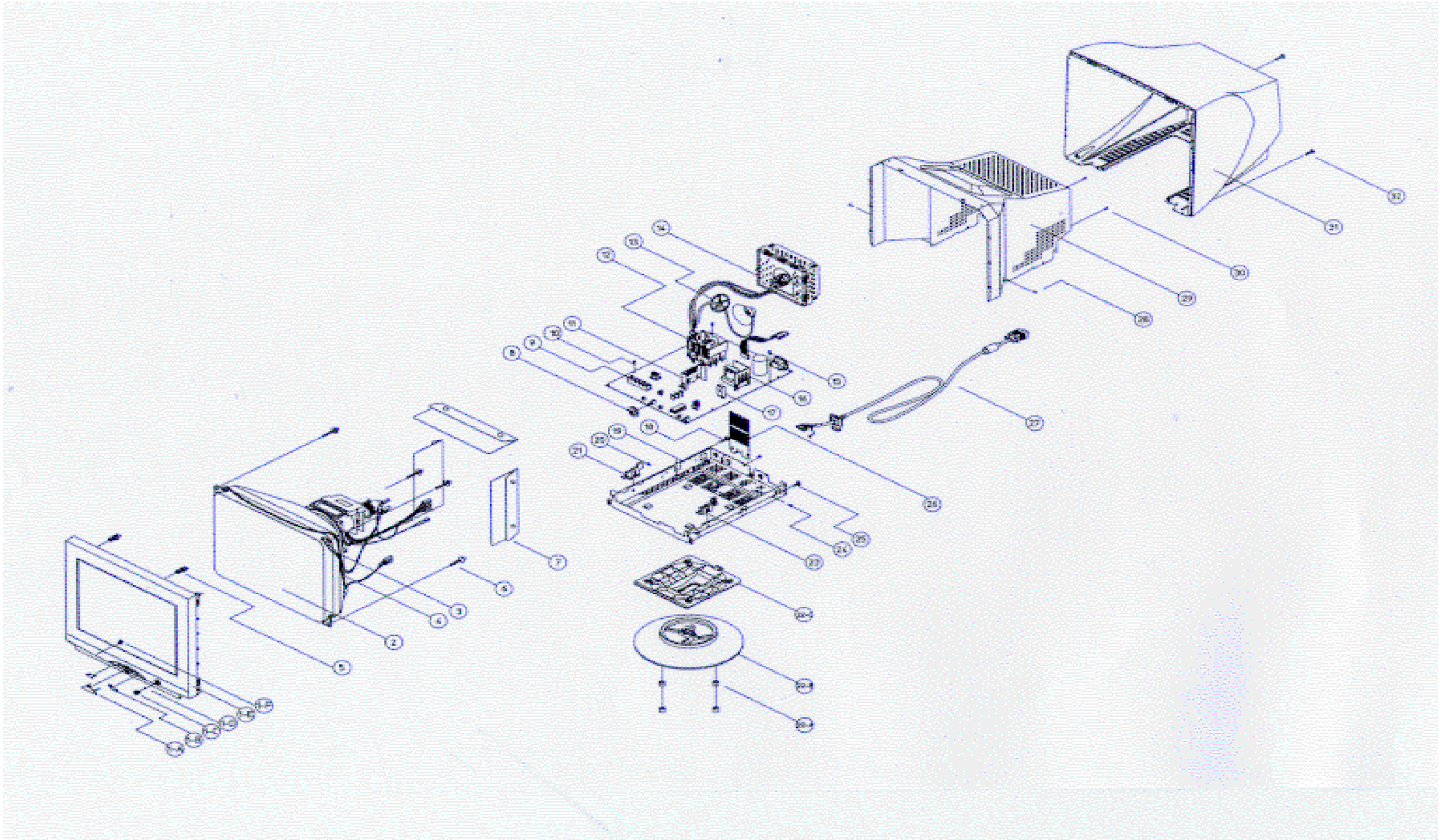




6-13 Power Save Mode Does Not Operate



7. Exploded View & Parts List

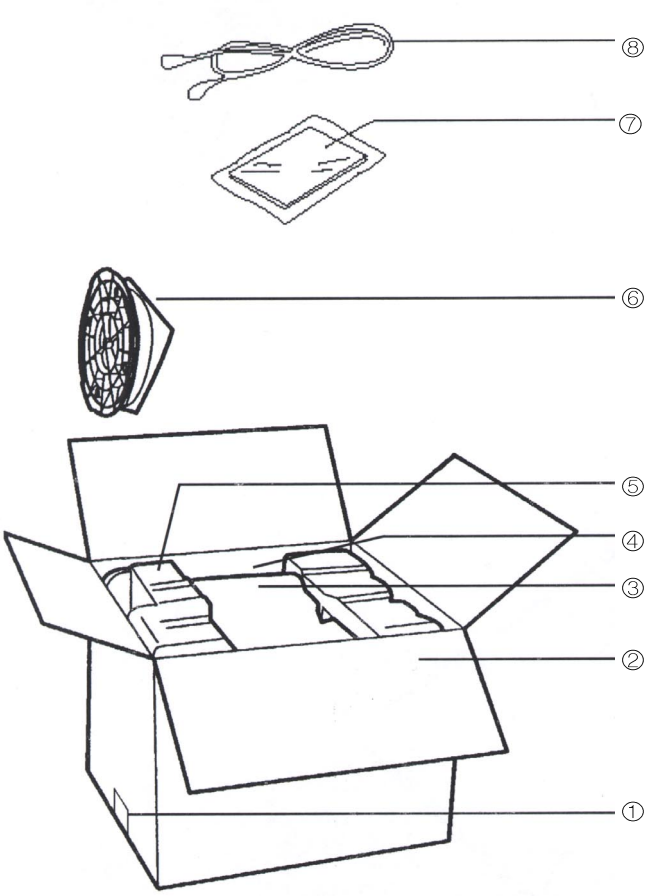


Exploded View & Parts List

NO.	PART NAME	CODE NO.	DESCRIPTION	Q'TY	REMARKS
1	BEZEL FRONT ASS'Y	6521970060AD	-	(1)	
1-A	KNOB FUNTION	6221990064AD	ABS,G6771	1	
1-B	KNOB ORNAMENT(L,R)	6221990065AD	ABS,G6771	1	
1-C	KNOB POWER	6221990066AD	ABS-5V,73499	1	
1-D	SPRING POWER	75210001AA	SUS304	1	
1-E	BEZEL FRONT	6221970045AD	ABS,C81253	1	
1-F	LENS POWER	6221990067AD	P.C(NATURAL)	1	
2	17 COLOR CDT	5417007732TD	0.25DOT,380mG	1	
3	HARNESS,FORM	4921320021KD	UL1015#18	1	
4	DEGAUSSING COIL	3421310011BD	IND 9.20mH ±20%	1	
5	D-COIL CRAMP	6221770015AD	ABS,C7425	2	
6	T/T SCREW	6769310010AD	BH,B,5X288	4	
7	EMI GND SPRING	6421970004AD	SUS304 0.1T	3	
8	KNOB VOLUME	6221990063AD	ABS,G6771	1	
9	HEAT SINK ,S	6423370008AD	AL3.0T,EXTRUSION	1	
10	T/T SCREW	67613004AA	BH,B,3X8	1	
11	HEAT SINK ,V	6521970073AD	AL,EXTRUSION	1	
12	HEAT SINK ,FBT	6521970074AD	AL,EXTRUSION	1	
13	HEAT SINK ,HIGH-VOL	6423370004AD	AL,1.0T	1	
14	RING INSULATOR	65214203AA	N66,MONI	1	
15	SOCKET COVER ASS'Y	6521290018AD	SPTE0.3T	1	
16	T/T SCREW	67613004AA	BH,B,3X8	1	
17	HEAT,SINK,SMPS	6423370007AD	AL 2.5T	1	
18	HEAT SINK ,A	6423370005AD	CRS,1.0T	4	
19	T/T SCREW	67613004AA	BH,B,4X15	1	
20	MAIN CHASSIS	6521770007AD	SECC1.0T	1	
21	T/T SCREW	67613004AA	BH,B,3X8	2	
22	CRT SUPPORT L	6221770007AD	ABS-VO,C7425	1	
23-A	FOOT RUBBER	62214221AA	PVC RUBBER	4	
23-B	STAND	6221970046AD	ABS,C81253	1	
23-C	NECK	6221970047AD	ABS,C81253	1	
24	CRT SUPPORT R	6221770008AD	ABS-VO,C7425	1	
25	T/T SCREW	67622001AAAD	BH,C,M4X8	1	
26	T/T SCREW	67613004AA	BH,B,4X15	1	

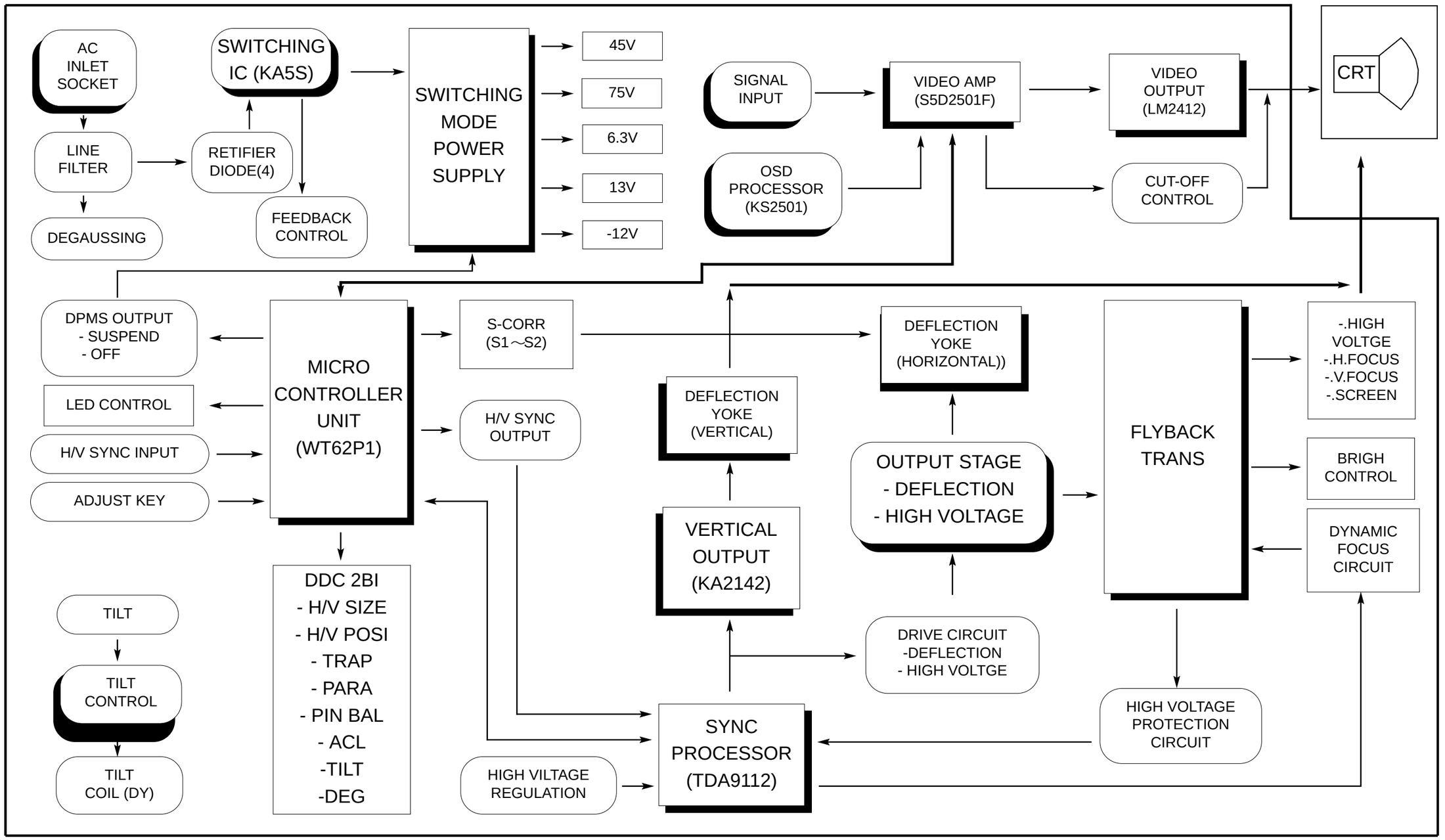
NO.	PART NAME	CODE NO.	DESCRIPTION	Q'TY	REMARKS
27	PCB BRACKET	6321990003AD	SECC1.0T	1	
28	EMI GND PLATE	6423370011AD	SUS304 0.1T	1	
29	SIGNAL CABLE	4821210016CD	1800 ±50mm,ATTACHED	1	
30	T/T SCREW	67613004AA	BH,B,3X8	2	
31	SHIELD COVER ASS'Y	6521770007AD	AL0.3T	1	
32	T/T SCREW	67613004AA	BH,B,3X8	2	
33	REAR HOUSING	6221970048AD	ABS,C81253	1	
34	T/T SCREW	67613003AA	BH,B,4X15	2	

8. Packing & Unpacking

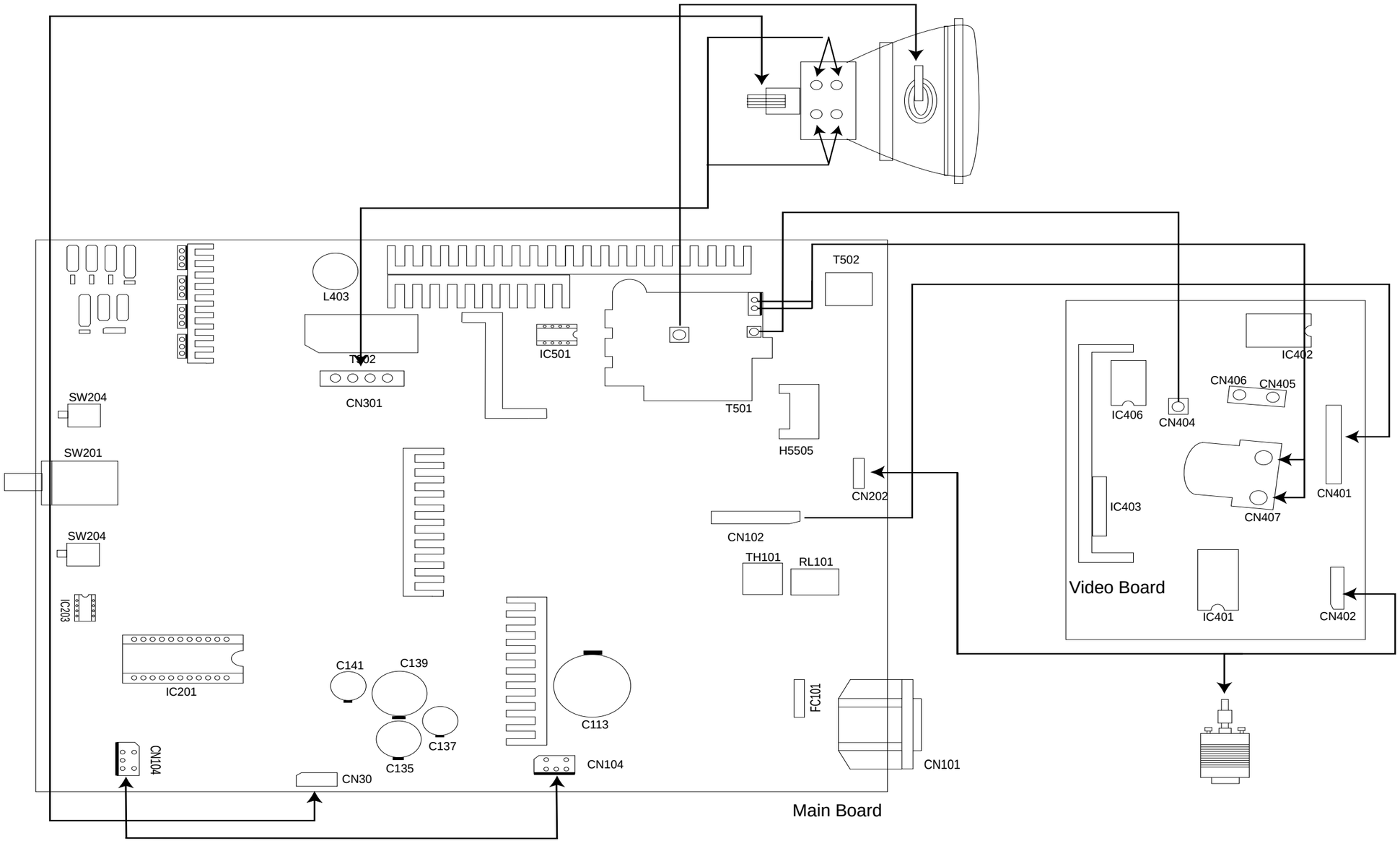


No	Description	Specification	Quantity	Remarks
1	Masking Tape	OPP W75CLR	1.5Mt	-
2	Packing Case	B17CL	1EA	CB DW-3 Yellow
3	Set-Monitor, Color	B17CL	1Set	17" Color Monitor
4	PE-Bag	HDPE T=0.015	1EA	-
5	Cushion	B17CL	1Set	EPS 50M C=0.020
6	Stand Ass'y	B17CL	1EA	-
7	Manual Ass'y	B17CL	1EA	-
8	Power Cord	Refer to product spec	1EA	Detachable Type

9. Block Diagram



10. Wiring diagram



11-3 Electrical Parts List

LOCATION NO.	PART NO.	TYPE	DESCRIPTION
D101,D103,D104,D114,D202, D302,D304,D401,D402,D403, D404,D407,D416,D417,D418, D419,D420,D474,D501,D502, D504,D505,D506,D507,D509, D514,D515,D516	35114148	DIODE, SW	Rev.01, 1N4148,75V, 200mA, 500mW, AT
D616,D601,D602,D603,D604, D605,D606,D617	35114148	DIODE, SW	Rev.01, 1N4148,75V, 200mA, 500mW, AT
D105	35190002	DIODE, RET	1SS244/BAV21,0.25A,250V, GP, AT
D607,D608,D609,D610,D611, D612,D613,D614,D615	35190002	DIODE, RET	1SS244/BAV21,0.25A,250V, GP, AT
SG501	38130001	CAP,SPARK-GAP	Rev.01, 1KV,S-23
SC605	38130001	CAP,SPARK-GAP	Rev.01, 1KV,S-23
F101	50510002	FUSE,MINIATURE CERAMIC TUBE	TIME LAG,50CT, 3.15A, UL/CSA/VDE
FC1,FC2	52260001	FUSE CLIP	FC51F/AFC-520,FUSE 5.20mm,CLIP
IC201	14811N42AACF	IC, •Ï-PROCESSOR	WT62P1-N42,OTP,8BIT,FLASH MEMORY TYPE,42P PDIP,MCU(TDA9113)
IC501	15110358AAAD	IC,LINEAR	KA358,DUAL OPERATIONAL AMPLIFIERS,8PIN DIP.
IC201	15112142BAAD	IC,LINEAR	KA2142,VERTICAL DEFLECTION OUTPUT CIRCUIT 10-SIP-HS
IC602	15113X01AAAD	IC, LINEAR	Rev.01, S1D2503X01,32-DIP,VIDEO PRE AMP E-2000
IC105,IC108	15210431TA	IC, LINEAR	KA431AZTA/TL431CLPR,TO-92,TAPING,REGULATOR
IC202	15217045JAAP	IC, LINEAR	KIA7045P, CPU RESET, TO-92
IC110	15317805KA	IC, LINEAR	Rev.01, KA7805, 5V, REGULATOR
IC109	15317812JAAD	IC,LINEAR	KA78R12,TO-220F,LOWDROPOUT VOLTAGE REGULATOR 1A/12V 4PIN
IC102	15510232JAAF	IC, LINEAR	TOP232Y,5PIN,TO-220,EcoSmart,Intergrated Off-Line,SWITCHER
IC502	15710494AA	IC, LINEAR	TL494/KA7500B,16DIP,PWM CONTROLLER
IC106	15711265JAAD	IC,POWER	KA5S1265/DP308P,650V,0.9ßŸ,12A,T0-3P
IC601	15712501AAAD	IC,LINEAR	S5D2501E18-DOBO,OSD PROCESSOR, 24-DIP-300
IC403	15713843AAAD	IC,LINEAR	KA3843,CURRENT MODE PWM CONTROLLERS, 8PIN DIP.
IC402	15715452AAAF	Bipolar Linear ICs	AN5452,Deflection Processing/Vertical Output,13.5V
IC401	15719113AAAF	IC, LINEAR	TDA9112,32DIP,I©˜C CONTROLLED DEFLECTION PROCESSOR,710A/P
IC403	15912412JAAF	IC,LINEAR	LM2412T,11TO-220, Monolithic triple 2.8 ns CRT Driver
IC203	16624C08AAKF	IC,MEMORY,EEPROM (2.7V~5.5V,(DIP))	AT24C08(10PC,2.7),24LC08B/P,S 524C80D81-DCBO,M24C08-WN6
R659	211010078F	RES,CARBON,AT	10 OHM, 5%, 1/2W
R444,R535	211010078FTD	RES,CARBON,AT	10 Ω,5%, 1/2W, SMALL TYPE
R137,R206,R209,R210,R215, R217,R218,R219,R226,R227, R228,R232,R233,R234,R238, R239,R311,R401,R402,R425, R441	211010174F	RES,CARBON,AT	100 OHM, 5%, 1/6W
R608,R609,R610,R612,R613, R614,R615,R616,R618,R619, R629	211010174F	RES,CARBON,AT	100 OHM, 5%, 1/6W
R447,R448	211010178FTD	RES,CARBON,AT	100 Ω,5%, 1/2W, SMALL TYPE
R135,R151,R154,R208,R418, R424,R430,R431,R458,R461, R464,R467,R470,R488,R489, R501,R502,R519,R520	211010274F	RES,CARBON,AT	1K OHM, 5%, 1/6W
R437	211010275F	RES CARBON,AT	1K OHM, 5%, 1/4W
R308,R314	211010278FTD	RES,CARBON,AT	1K Ω,5%, 1/2W, SMALL TYPE

LOCATION NO.	PART NO.	TYPE	DESCRIPTION
R203,R213,R214,R224,R317, R417,R423,R426,R442,R485, R486	211010374F	RES,CARBON,AT	10K OHM, 5%, 1/6W
R631,R633,R640	211010374F	RES,CARBON,AT	10K OHM, 5%, 1/6W
R533	211010378FTD	RES,CARBON,AT	10K Ω,5%, 1/2W, SMALL TYPE
R409,R457	211010474FAH	RES,CARBON,AT	100K OHM, 5%, 1/6W
R456,R543	211010475FAH	RES,CARBON,AT	100K OHM, 5%, 1/4W
R321	211010575ATD	RES,CARBON,AT	1M OHM, 5%, 1/4W
R459,R462,R465,R468,R471	211012274FAH	RES,CARBON,AT	1.2K OHM, 5%, 1/6W
R516	211012374F	RES,CARBON,AT	12K OHM, 5%, 1/6W
R419,R536	211012474F	RES,CARBON,AT	120K OHM, 5%, 1/6W
R168,R124	211015074ATD	RES,CARBON,AT	15 OHM, 5%, 1/6W
R412	211015374FAH	RES,CARBON,AT	15K OHM, 5%, 1/6W
R508	211015474FAH	RES,CARBON,AT	150K OHM, 5%, 1/6W
R542	211015475ATD	RES,CARBON,AT	150K OHM, 5%, 1/4W
R231,R404,R537	211018274ATD	RES,CARBON,AT	1.8K OHM, 5%, 1/6W
R460,R463,R466,R469,R472	211018374F	RES,CARBON,AT	18K OHM, 5%, 1/6W
R100,R101,R540,R541	211018478FTD	RES,CARBON,AT	180K Ω,5%, 1/2W, SMALL TYPE
R207,R235,R505	211020374ATD	RES,CARBON,AT	20K OHM, 5%, 1/6W
R602,R604,R606	211022074ATD	RES,CARBON,AT	22 OHM, 5%, 1/6W
R159,R160	211022174F	RES,CARBON,AT	220 OHM, 5%, 1/6W
R323	211022274F	RES,CARBON,AT	2.2K OHM, 5%, 1/6W
R607,R664,R665,R666	211022274F	RES,CARBON,AT	2.2K OHM, 5%, 1/6W
R103	211022278FTD	RES,CARBON,AT	2.2K Ω,5%, 1/2W, SMALL TYPE
R473,R511	211022374F	RES,CARBON,AT	22K OHM, 5%, 1/6W
R453	211022378FTD	RES,CARBON,AT	22K Ω,5%, 1/2W, SMALL TYPE
R153	211022474F	RES,CARBON,AT	220K OHM, 5%, 1/6W
R474,R545	211024274ATD	RES,CARBON,AT	2.4K OHM, 5%, 1/6W
R162	211027175F	RES,CARBON,AT	270 OHM, 5%, 1/4W
R630	211027274F	RES,CARBON,AT	2.7K OHM, 5%, 1/6W
R506,R544	211027374F	RES,CARBON,AT	27K OHM, 5%, 1/6W
R627	211027374F	RES,CARBON,AT	27K OHM, 5%, 1/6W
R318	211027475F	RES,CARBON,AT	270K OHM, 5%, 1/4W
R622	211033074F	RES,CARBON,AT	33 OHM, 5%, 1/6W
R450	211033078FTD	RES,CARBON,AT	33 Ω,5%, 1/2W, SMALL TYPE
R163	211033174ATD	RES,CARBON,AT	330 OHM, 5%, 1/6W
R201	211033175ATD	RES,CARBON,AT	330 OHM, 5%, 1/4W
R230,R316,R518,R406	211033274F	RES,CARBON,AT	3.3K OHM, 5%, 1/6W
R477,R507	211033374F	RES,CARBON,AT	33K OHM, 5%, 1/6W
R526	211033375ATD	RES,CARBON,AT	33K OHM, 5%, 1/4W
R143	211033378FTD	RES,CARBON,AT	33K Ω,5%, 1/2W, SMALL TYPE
R478	211033474F	RES,CARBON,AT	330K OHM, 5%, 1/6W
R211,R212,R225	211039174F	RES,CARBON,AT	390 OHM, 5%, 1/6W
R623,R624,R625,R635,R636 R637,R638	211039174F	RES,CARBON,AT	390 OHM, 5%, 1/6W
R116	211039178FTD	RES,CARBON,AT	390 Ω,5%, 1/2W, SMALL TYPE
R538	211039274F	RES,CARBON,AT	3.9K OHM, 5%, 1/6W
R514	211039574FAH	RES,CARBON,AT	390K OHM, 5%, 1/6W
R620,R621	211047074F	RES,CARBON,AT	47 OHM, 5%, 1/6W
R102,R117	211047075F	RES,CARBON,AT	47 OHM, 5%, 1/4W
R650	211047075F	RES,CARBON,AT	47 OHM, 5%, 1/4W
R656,R657,R658	211047078F	RES,CARBON,AT	47 OHM, 5%, 1/2W
R534	211047078FTD	RES,CARBON,AT	47 Ω,5%, 1/2W, SMALL TYPE
R104,R166,R521,R546	211047174F	RES,CARBON,AT	470 OHM, 5%, 1/6W
R205,R221,R222,R229,R240 R241,R427	211047274F	RES,CARBON,AT	4.7K OHM, 5%, 1/6W
R634	211047274F	RES,CARBON,AT	4.7K OHM, 5%, 1/6W
R134,R509	211047374F	RES,CARBON,AT	47K OHM, 5%, 1/6W

LOCATION NO.	PART NO.	TYPE	DESCRIPTION
R653,R654,R655	211047475F	RES,CARBON,AT	470K OHM, 5%, 1/4W
R216,R487,R515,R529	211051274F	RES,CARBON,AT	5.1K OHM, 5%, 1/6W
R220,R223,R236,R237,R421, R422	211056074ATD	RES,CARBON,AT	56 OHM, 5%, 1/6W
R443	211056178FTD	RES,CARBON,AT	560 Ω,5%, 1/2W, SMALL TYPE
R411	211056274F	RES,CARBON,AT	5.6K OHM, 5%, 1/6W
R319	211056375ATD	RES,CARBON,AT	56K OHM, 5%, 1/4W
R651,R652,R667	211068075ATD	RES,CARBON,AT	68 OHM,5%,1/4W
R161,R322,R475,R407	211068274F	RES,CARBON,AT	6.8K OHM, 5%, 1/6W
R626	211068274F	RES,CARBON,AT	6.8K OHM, 5%, 1/6W
R476	211075174ATD	RES,CARBON,AT	750 OHM, 5%, 1/6W
R405,R428,R512	211075274ATD	RES,CARBON,AT	7.5K OHM, 5%, 1/6W
R433	211075374ATD	RES,CARBON,AT	75K OHM,5%,1/6W
R661,R662,R663	211075375ATD	RES,CARBON,AT	75K OHM, 5%, 1/4W
R315,R513,R517	211082274F	RES,CARBON,AT	8.2K OHM, 5%, 1/6W
R632	211082274F	RES,CARBON,AT	8.2K OHM, 5%, 1/6W
R167	211082474ATD	RES,CARBON,AT	820K OHM, 5%, 1/6W
R312	2111R0078FTD	RES,CARBON,AT	1 Ω,5%, 1/2W, SMALL TYPE
R313,BD105	2111R2078FTD	RES,CARBON,AT	1.2ßŸ,5%, 1/2W, SMALL TYPE
R479	2114R7075ATD	RES,CARBON,AT	4.7 OHM, 5%, 1/4W
R522	2116R8074ATD	RES,CARBON,AT	6.8 OHM, 5%, 1/6W
R131	2116R8078FTD	RES,CARBON,AT	6.8 Ω,5%, 1/2W, SMALL TYPE
R301	211R56078FTD	RES,CARBON,AT	0.56 Ω,5%, 1/2W, SMALL TYPE
R307	21300107EATD	RES,METAL,OXIDE,AT	1 OHM, 5%, 3W
R446	21301007EA	RES,METAL,OXIDE,AT	10 OHM, 5%, 3W
R528,R539	21301037CFTD	RES,METAL,OXIDE,AT	10K OHM,5%,2W, SMALL TYPE
R144,R452	21301047CFTD	RES,METAL,OXIDE,AT	100K OHM,5%,2W,SMALL TYPE
R454	21301237BFTD	RES,METAL,OXIDE,AT	12K OHM,5%,1W, SMALL TYPE
R120,R121	21301847BATD	RES,METAL,OXIDE,AT	180K OHM,5%,1W
R413,R438,R439,R440	21302207EATD	RES,METAL,OXIDE,AT	22 OHM, 5%, 3W
R451	21303307CFTD	RES,METAL,OXIDE,AT	33 OHM, 5%, 2W, SMALL TYPE
R202	21303317BFTD	RES,METAL,OXIDE,AT	330 OHM, 5%, 1W, SMALL TYPE
R532	21304707BFTD	RES,METAL,OXIDE,AT	47 OHM, 5%, 1W, SMALL TYPE
R122,R123	21305637EATD	RES,METAL,OXIDE,AT	56K OHM,5%,3W
R455	21306827BFTD	RES,METAL,OXIDE,AT	6.8K OHM, 5%, 1W, SMALL TYPE
R125	21306827EATD	RES,METAL,OXIDE,AT	6.8K OHM,5%,3W
R432	2131R207EATD	RES,METAL,OXIDE,AT	1.2 OHM, 5%, 3W
R445	2132R207EATD	RES, METAL OXIDE, AT	2.2 OHM, 5%, 3W
R155	214002355FTD	RES,METAL,AT	2K OHM,1%,1/4W
R481	214010355FTD	RES,METAL,AT	10K OHM,1%,1/4W
R530,R531,D503	214010455ATD	RES,METAL,AT	100K OHM, 1%, 1/4W
R482,R503	214012355ATD	RES,METAL,AT	12K OHM,1%,1/4W
R320	214012455ATD	RES,METAL,AT	120K OHM,1%,1/4W
R156	214015155FTD	RES,METAL,AT	150 OHM,1%,1/4W
R302	214015355ATD	RES,METAL,AT	15K OHM,1%,1/4W
R484	214020355ATD	RES,METAL,AT	20K OHM,1%,1/4W
R129	214022255FTD	RES,METAL,AT	2.2K OHM, 1%, 1/4W
R504	214022355ATD	RES,METAL,AT	22K OHM,1%,1/4W
R126,R128	214022555ATD	RES,METAL,AT	2.2M OHM,1%,1/4W
R480	214023353ATD	RES,METAL,AT	23K OHM,1%,1/8W
R138	214027355ATD	RES,METAL,AT	27K OHM,1%,1/4W
R165	214033055ATD	RES,METAL,AT	33 OHM,1%,1/4W
R310	214033155ATD	RES,METAL,AT	330 OHM,1%,1/4W
R304	214039255FTD	RES,METAL,AT	3.9K OHM,1%,1/4W
R483	214043255ATD	RES,METAL,AT	4.3K OHM,1%,1/4W
R403	214050255ATD	RES,METAL,AT	5K OHM,1%,1/4W
R303	214068155ATD	RES,METAL,AT	680 OHM,1%,1/4W

LOCATION NO.	PART NO.	TYPE	DESCRIPTION
R601,R603,R605	214075053FTD	RES,METAL,AT	75 OHM, 1%, 1/8W
R306	214082255ATD	RES,METAL,AT	8.2K OHM,1%,1/4W
R157,R158	214090355ATD	RES,METAL,AT	90K OHM,1%,1/4W
R309	214162255ATD	RES,METAL,AT	16.2K OHM,1%,1/4W
R139	214174255ATD	RES,METAL,AT	17.4K OHM,1%,1/4W
R136	216R2207BVTD	RES,WIRE/WOUND,AT	0.22 OHM,5%,1W,NON-IND
R523	216R3307BVTD	RES,WIRE/WOUND,AT	0.33 OHM,5%,1W,NON-IND
R434,J46	2182R2078ATD	RES,FUSIBLE,AT	2.2 OHM,5%,1/2W
R436	2184R7075ATD	RES,FUSIBLE,AT	4.7 OHM, 5%, 1/4W
R449	21B01517HYBD	RES,CERAMIC,CEMENT	REV.01, 150 OHM,5%,5W,MS/CWR,WIRE WOUND
R527	21B03307JZBD	RES,CERAMIC,CEMENT	33 OHM,5%,7W,RQP-TYPE,50Vmax
VR401	221201017ABD	Volume, HORI.NO-HANDLE	100 OHM,30%,0.1W
VR501	2242000585TD	VAR,RES	50K OHM °æ30%, 0.2W, RVM 639T
C511	23110104B9TD	CAP,IND-POLYESTER	0.1uF,100V,°æ5%,-40/85'C,5.0mm,RT
C433	23110333BATD	CAP,IND-POLYESTER	0.033uF,100V,°æ10%,RT
C154	2311B90183TD	CAP,IND-POLYESTER	0.018uF,100V,°æ5%,-40/80'C, 5.0mm, RT
C461	2311B90278TD	CAP,IND-POLYESTER	2700pF,100V,°æ5%,-40/80'C, 5.0mm, RT
C124,C312,C306	2311B90472TD	CAP,IND-POLYESTER	4700pF,100V,°æ5%,-40/80'C,RT
C307	2311B90823TD	CAP,IND-POLYESTER	0.082UF,100V,°æ5%,-40/80'C, 5.0mm, RT
C419	2311BA0154TD	CAP,IND-POLYESTER	0.15uF, 100V, 10%, -40/80'C, RT
C429,C435,C458	2311BA0273TD	CAP,IND-POLYESTER	0.027uF,100V,10%,-40/80'C,RT
C457	23160102B9CH	CAP,IND-POLYESTER	1000PF, 100V , 5%, -40/80'C, RT
C402,C405,C506	23160103BACH	CAP,IND-POLYESTER	0.01UF, 100V, 10%, -40/80'C, RT
C120,C123,C126,C401,C523	23160104BACH	CAP,IND-POLYESTER	0.1UF, 100V, 10%, -40/85'C, RT
C155,C453 C451,C527	23160222B9CH 23160223BACH	CAP,IND-POLYESTER CAP,IND-POLYESTER	2200PF, 100V, 5%, -40/80'C, RT 0.022UF, 100V, 10%, -40/80'C, RT
C308,C418,C530	2340990474TD	CAP,METALZ-POLYESTER	0.47UF, 63V, 5%, -55/100'C, 5.0mm, RT
C406,C436,C438	2340BA0474TA	CAP,METALZ-POLYESTER	0.47uF,100V,°æ10%,-40/85'C,5.0mm,RT
C430	2340FA0014TD	CAP,METALZ-POLYESTER	0.01ßfi,250V,°æ10%,-40/80'C,DMEU(230S),5.Omm,RT
C313	2341FA0104TD	CAP,METALZ-POLYESTER	Rev.01,0.1uF,250V,°æ10%,-40/80'C,DMEU(230S), 5.0mm,RT
C621	2341FA0104TD	CAP,METALZ-POLYESTER	Rev.01,0.1uF,250V,°æ10%,- 40/80'C, DMEU(230S), 5.0mm,RT
C622	23420103BATD	CAP,METALZ-POLYESTER	0.01uF,100V,°æ10%,-55/100.C,5.0mm,RT
C510	234202249ATD	CAP,METALZ-POLYESTER	0.22uF,63V,°æ10%,-40/85'C,RT
C447	2350F90105BD	CAP,METALZ -POLYPROPYLENE	1uF,250V,°æ5%,-25/85'C,KMP,22.5mm,RB (SHORT)
C446	2351F90564BD	CAP,METALZ -POLYPROPYLENE	0.56uF, 250V, 5%, -25/85'C, KMP, 20mm, RB
C443	23520124K9TD	CAP,METALZ-POLYPROPYLENE	0.12uF,400V,°æ5%,-25/85'C,KMP,7.5mm,RT
C448	23520274F9TD	CAP,METALZ-POLYPROPYLENE	0.27uF,250V,°æ5%,-25/85'C,KMP,7.5mm,RT
C515	23560102R9CH	CAP,METALZ-	
		PE,POLYPROPYLENE	1000pF, 2KV, 10%, -25/85'C, SMP, 7.5mm, RT
C618,C619,C620,C634	23560104B9CH	CAP METALZ-POLYESTER	0.1UF, 100V, 5%, -40/80'C, DMEU, 5mm, RT
C408	23560104BACH	CAP,METALZ-POLYESTER	0.1UF, 100V, 10%, -55/100'C, 5.0mm, RT
C526	23560224BACH	CAP,METALZ-POLYESTER	0.22UF, 100V, 10%, -55/100'C, 5.0mm, RT
C439,C440	23560252R9CH	CAP,METALZ-PE, POLYPROPYLENE	2500pF, 2KV, 5%, -25/85'C, SMP, 20mm, RB
C444,C445	23660104J9CH	CAP,METALZ-POLYPROPYLENE	0.1uF, 400V, 5%, -25/85'C, KMP, 7.5mm, RT
C102	2380GA0473BD	CAP,METALZ-POLYPROPYLENE	0.047UF, 275VAC, 10%, 85'C, MKP, 15mm, PCX2 335M, RB
C101	2380GA1154BD	CAP,METALZ-	0.15uF,275VAC,22.5mm PITCH,25mm*6mm,AB
		POLYPROPYLENE	

LOCATION NO.	PART NO.	TYPE	DESCRIPTION
C449	2380K90683TD	CAP, METALZ-POLYPROPYLENE	0.068UF, 400V ,5%
C403	26238A01027D	CAP,DISC,CERAMIC,MONO	1000pF, 50V, 10%, -25/85'C, AT
C105,C118,C130,C136,C142, C148,C152,C164,C202,C208, C209,C210,C213,C302,C305, C309,C422,C424,C455,C501, C504	26238R01041F	CAP,CERAMIC,MONO	0.1uF,50V,+80%/-20%,Z5U,AT
C601,C602,C603,C675	26238R01041F	CAP,CERAMIC,MONO	0.1uF,50V,+80%/-20%,Z5U,AT
C604,C606,C609,C610,C613,			
C614,C616,C624,C626,C628,	263101048AEH	CAP,DISC,CERAMIC,CK	0.1uF, 50V, F, +80/-20%, -25/85'C, 5.0mm, RT
C630,C666,C669,C671,C673			
C633	263101518ATD	CAP,DISC,CERAMIC,CC	150pF, 50V, B, °æ10%, -25/85'C, 5.0mm, RT
C206,C207	2631022089EH	CAP,DISC,CERAMIC,CK	22pF, 50V, CH, 5%, -25/85'C, 5.0mm, RT
C452	263103318ATD	CAP,DISC,CERAMIC,CC	330pF, 50V, B, 10%, -25/85'C, 5.0mm, RT
C629	263104708ATD	CAP,DISC,CERAMIC,CC	47pF, 50V, CH, 5%, -25/58'C, 5.0mm, RT
C459	26318908218D	CAP,DISC,CERAMIC,CC	820pF,50V,5%,-25/85'C,RT
C215	26318A01017D	CAP,DISC,CERAMIC,CC	100pF, 50V, CH, 5%, -25/85°…, 5.0mm, RT
C216	26318A01027D	CAP,DISC,CERAMIC,CC	1000pF, 50V, B, 10%, -25/85'C, 5.0mm, RT
C454	26318A01037D	CAP,DISC,CERAMIC,CC	0.01uF, 50V, F, +80/-20%, -25/85°…, 5.0mm, RT
C509	26318A01037D	CAP,DISC,CERAMIC,CC	0.01uF, 50V, F, +80/-20%, -25/85°…, 5.0mm, RT
C635	26318A0270RD	CAP,DISC,CERAMIC	27pF, 50V, CH, 5%, -25/85°…, 5.0mm, RT
C450	26318A06817D	CAP,DISC CERAMIC CC	680pF, 50V, B, 10%, -25/85°…, 5.0mm, RT
C103,C104	2631JC0228ZD	CAP, DISC, CERAMIC	2200pF, AC250V, E, 20%, -25/85°…, 7.5mm, RT
C631	2631RA0014RD	CAP,DISC,CERAMIC	0.01uF, 2kV, E, +80/-20%, -25/85°…, 7.5mm, RT
C460	26370101QAEH	CAP DISC CERAMIC, CK	100pF, 2KV, B, 10%, -25/85'C, 5.0mm, RT
C434	26370102MAEH	CAP,DISC,CERAMIC,CK	1000pF, 500V, B, 20%, -20/85'C, 5.0mm, RT
C612	26370102MAEH	CAP,DISC,CERAMIC,CK	1000pF, 500V, B, 20%, -20/85'C, 5.0mm, RT
C109	26370102PAEH	CAP,DISC,CERAMIC,EK	1000pF, 1KV, B, 10%, -25/85'C, 5.0mm, RT
C114,C138,C140,C156,C425	26370103MAEH	CAP,DISC,CERAMIC, CK	0.01uF, 500V, +80/-20%, -25/85'C, RT
C670	26370103MAEH	CAP,DISC,CERAMIC, CK	0.01uF, 500V, +80/-20%, -25/85'C, RT
C632	26370272QAEH	CAP,DISC,CERAMIC,EK	2700pF, 2KV, B, 10%, -25/85'C, 7.5mm, RT
C121,C528	26410222RATD	CAP,DISC,CERAMIC,EK	2200pF, 2KV, B, 10%, -25/85'C, 7.5mm, RT
C117	2641MA02717D	CAP,DISC,CERAMIC,CK	270pF, 500V, B, 10%, -25/85'C, 5.0mm, RT
C431,C462	2641MA0471RD	CAP,DISC,CERAMIC,CK	470PF, 500V, 10%, -25/85'C, RT
C115	2641PA0101RD	CAP. DISC CERAMIC,CK	100pF, 1KV, B, 10%, -28/85'C, 5.0mm, RT
C529	2645RA0221FD	CAP,DISC,CERAMIC,EK	220pF, 2KV, B, 10%, -25/85'C, 5.0mm, RT
C465,C517,C518	2645RA0681RD	CAP,DISC,CERAMIC,EK	680pF, 2KV, B, 10%, -25/85'C, 5.0mm, RT
C121,C107,C110	2682JC0222RD	CAP, DISC CERAMIC, AD,DA,SD	Y1, 2200pF, 400V, E, 20%, -25°≠+85°…, 10.0mm, RB
C106,C116	2682JC0472RD	CAP, DISC CERAMIC, AD,DA,SD	Y1, 4700pF, 400V, E, 20%, -25°≠+85°…, 10.0mm, RB
C636,C638,C640	27120105BCHD	CAP,AL-ELECT,G.P	1uF,100V,°æ20%,-40/85'C,5.0mm,5°ø11,RT
C205,C420,C423	271201063CHD	CAP,AL-ELECT,G.P	10uF,16V,°æ20%,-40/80'C,5.08mm,5*11,RT
C508	271201075CHD	CAP,AL-ELECT,GP	100uF, 25V, 20%, -40/85'C, 5.0mm, 6.3*11, RT
C667,C625,C611,C672	271201075CHD	CAP,AL-ELECT,GP	100uF, 25V, 20%, -40/85'C, 5.0mm, 6.3*11, RT
C139	27120107FCRD	CAP,AL-ELECT,G.P	100uF,250V,20%,-55/105'C,7.5mm,16*30,RB
C141	271201086CHD	CAP,AL-ELECT,G.P	1000uF,35V,°æ20%,-40/85'C,12.5°ø25, 5.0mm,RT
C516,C522	27120225HCHD	CAP,AL-ELECT,G.P	2.2uF,350V,20%,-40/85'C,5.08mm,8*11,RT
C163	271202268CHD	CAP,AL-ELECT,G.P	22uF,50V,°æ20%,-40/85'C,5.0mm,5°ø11,RT
C303	271202276CHD	CAP,AL-ELECT,G.P	220uF,35V,°æ20%-40/85'C,5.0mm,10°ø12.5,RT
C135	271202286CFD	CAP,AL-ELECT,G.P	2200uF,35V,20%,-55/105'C,7.5mm,16*25,RT
C201	271203373CHD	CAP,AL-ELECT,G.P	330uF,16V,°æ20%,-40/85'C,5.0mm,8°ø11,RT
C432	271204706CHD	CAP,AL-ELECT,G.P	47uF,35V,°æ20%,-55/105'C,5.0mm,6.3°ø11,RT
C637,C639,C641	271204748CHD	CAP,AL-ELECT,G.P	0.47uF,50V,°æ20%,-40/85'C,5.0mm,5°ø11,RT
C127,C456	271204765CHD	CAP. AL-ELEC,GP	47uF,25V,°æ20%,-40/85'C,5.08mm,(6.3X11) RT
C119	271204766CHD	CAP,AL-ELECT,G.P	47uF,35V,°æ20%,-40/85'C,5.0mm,6.3°ø11,RT

LOCATION NO.	PART NO.	TYPE	DESCRIPTION
C146,C147	271204773CHD	CAP,AL-ELECT,G,P	470uF,16V,20%,-40/85' C,5.0mm,10*12.5,RT
C524	272202258CHD	CAP,AL-ELECT,B.P	2.2uF,50V, ±20%,-40/85 'C,5.08mm5*11
C442,C521	272203358CHD	CAP,AL-ELECT,B.P	3.3uF,50V, ±20%,-40/85 'C,5.0mm,5 × 11,RT
C129	277404775CAH	CAP AL-ELECT,GP	470uF,25V,20%,-55/105' C,5.08mm,10*16,RT
C157,C212,C311,C427,C441	277501058CAH	CAP AL-ELECT,GP	1uF,50V,20%,-40/85 'C,5.08mm,5*11,RT
C607	277501058CAH	CAP AL-ELECT,GP	1uF,50V,20%,-40/85 'C,5.08mm,5*11,RT
C525	27750105DCAH	CAP,AL-ELECT,G.P	1uF,160V,20%,-40/85 'C,5.08mm,6.3*11,RT
C204	277501065CAH	CAP AL-ELECT,GP	10uF,25V,20%,-40/85 'C,5.08mm,5*11,RT
C407,C503	277501068CAH	CAP AL-ELECT.GP	10uF,50V,20%,-40/85 'C,5.08mm,5*11,RT
C605	27750106BCAJ	CAP,AL-ELECT,GP	10uF,100V,20%,-40/85' C,5.08mm,6.3*11,RT
C428	27750106FCAH	CAP,AL-ELECT,GP	10uF,250V,20%,-40/85' C,5.08mm,10*20/16,RT
C165,C421,C426,C108,C411	277501073CAH	CAP,AL-ELECT,GP	100uF,16V,20%,-40/85' C,5.08mm,6.3*11,RT
C623,C627	277501073CAH	CAP,AL-ELECT,GP	100uF,16V,20%,-40/85' C,5.08mm,6.3*11,RT
C145	277501083CAH	CAP AL-ELECT G.P	1000uF,16V,20%,-40/85' C,5.08mm,10*20,RT
C301,C310	277501083CHD	CAP,AL-ELECT,GP	1000uF,16V,20%,-40/105' C,5.08mm,10*20,RT
C162,C507,C513	277502273CAH	CAP,AL-ELECT,GP	220uF,16V,20%,-40/85' C,5.08mm,8*11.5,RT
C137,C520	27750227BCAH	CAP AL-ELECT G.P	220uF,100V,20%,-40/85' C,7.5mm,16*25,RT
C113	27750337JCAH	CAP AL-ELECT G.P	Rev.01, 330uF,400V,20%,-40/85' C,30*40,RB
C203,C214,C404	277504758CAH	CAP AL-ELECT G.P	4.7uF,50V,20%,-40/85 'C,5.08mm,5*11,RT
C674	277504758CAH	CAP AL-ELECT G.P	4.7uF,50V,20%,-40/85 'C,5.08mm,5*11,RT
C410,C417	277504763CAH	CAP AL-ELECT G.P	47uF,16V,20%,-40/85 'C,5.08mm,5*11,RT
C304,C502,C512,C519	277504768CAH	CAP AL-ELECT G.P	47uF,50V,20%,-40/85 'C,5.08mm,6.3*11,RT
Q503	30123906TAYD	TR, PNP	Rev.01, 2N3906Y/2N3906,TO-92,40V,625mW,0.2A
Q301	30126520AA	TR, PNP	2N6520,350V,625mW,500mW,TO-92,RT
Q303,Q403,Q408,Q424	30140733AA	TR, PNP	KSA733,60V,250mW,150mA,TO-92,Y,RT
Q608	30323904TAYD	TR, NPN	2N3904Y,TO-92,625mW,40V,0.2A
Q111,Q201,Q302,Q401,Q404, Q406,Q407,Q418,Q419,Q420, Q421,Q422,Q423,Q425,Q426, Q501,Q502,Q507	30360945AA	TR, NPN	KSC945/KTC9014B,TO-92,250mW,60V,50V,Y,RT,0.15A
Q607	30360945AA	TR, NPN	KSC945/KTC9014B,TO-92,250mW,60V,50V,Y,RT,0.15A
Q101,Q115,Q402	30361008AA	TR, NPN	Rev. 01,KSC1008/MPS651,TO-92,800mW,80V,60V,Y,RT,0.7A
Q508	30390003AA	TR, NPN	Rev.01, KSP44/MPSA44,TO-92,625mW,500V,500V,RT,300mA
Q601,Q602,Q603	30390042TAZD	TR, NPN	Rev.01, KSP42/MPSA42,S/S,TO-92,625mW,300V,0.5A
Q604,Q605,Q606	30390092TAZD	TR, PNP	Rev.01, KSP92/MPSA92,TO-92,625mW,-300V,-0.5A
Q110	30391116TAAD	TR,PNP	KSB1116,60V/50V,0.75W,1A,TO-92, PNP, 60V
Q412	30465584QZZF	TR,NPN	Rev.01, 2SC5584, TOP-3L, 150W, 20A, 1500V/600V, BULK
Q505	30490029QBZD	TR,polar,NPN	TIP-29,MEDIUM POWER LINEAR SWITCHING APPLICATIONS,TO-220
Q506	30490030QBZD	TR,Bipolar,NPN	TIP-30,MEDIUM POWER LINEAR SWITCHING APPLICATIONS,TO-220
Q706	30682141QZZF	TR,FET	2SK2141,MP-45F,600V,40W,3.0A,BULK
Q410	30789634QBZD	FET,P-CH	Rev.01, SFP9634,TO-220,70W,-250V,-5.0A,BULK
Q411,Q417	30890001AA	FET,N	IRF640A,TO-220,125W,200V,18A,BULK
Q413,Q414,Q415,Q416	30890N20QBZD	FET,N	Rev.01, FQPF10N20,TO-220,40W,200V,6.8A,BULK
X201	31101200MZAD	CRYSTAL, AT	HC-49/U, 12MHz, -55 ℃/120 ℃, 16pF
T105	3321110010AD	TRANS,SYNC (+SMART IC)	IND 250uH/250uH ±30%,4PIN,(900P,900PVI,710A.P)
T103	3321110020QD	TRANS,SWITCHING	Rev.01, 720NF, ind:130uH ±8%,DC:0.12 OHM,18PIN
T502	3321120005GD	TRANS,FOCUS	Rev.01, IND 3.8mH,0.9 OHM,10PIN,720NF
T501	3321130012MD	TRANS,FBT	Re.02, 920D/eF,FQM19A002/FHA0009, H/V27.B+IN/V80VDC,15PIN
T401	3321210005GD	TRANS,SCAN	720NF,IND:1.0mH/92uH/0.66uH DC/RES:1.20 Ω/0.32 Ω/0.035 10PIN

LOCATION NO.	PART NO.	TYPE	DESCRIPTION
T104	3321230001GD	TRANS,DPMS	Rev.01, 720NF, IND:810uH10%,DC/RES:1.1 OHM ±10%,10PIN
LF101	3321250006AD	TRANS,LINE,FILTER	Rev.01, 720NF, IND 24.0mH,DC/RES 0.200 OHM,4PIN
T402	3321260011GD	TRANS,H.D.T	Rev.01, IND 2.75mH,0.6 OHM,10PIN,720NF
L403	3421150015TD	COIL,CHOKE	920D,IND 3.5mH ±10% DC/RES6.0 OHM MAX
T1	3421150018BD	PFC Coil (Hybrid Choke Coil)	Rev.02, HCA208-049A, φ0.45, 320 ±3T
L501	3421150019BD	COIL,CHOKE	Rev.01, 720NF,IND 6.8uH ±10% DC/RES 0.03 OHM MAX (hori)
L405	3421180017BD	COIL,H/LINEARITY	710D MAXDATA,IND:3.5uH ±20%, DC/RES:0.02 OHM MAX
L611,L612,L613	3421260004TD	COIL,AXIAL,INDUCTOR	0.22uH, ±10%,AL03T,AT
L401,L502	3421260013TD	COIL,AXIAL,INDUCTOR	33uH, ±10%,AL03T,AT
BD502	3421260016TD	COIL,AXIAL,INDUCTOR	4.7uH, ±10%,AL04T,AT
L614	3421260024TD	COIL,AXIAL,INDUCTOR	0.47uH, ±10%,AL02T,AT
BD103,BD104,BD107,BD109, BD402,BD404,BD405,BD501, BD503,J27,J87	3421410001TD	COIL,BEAD,CORE	100 Ω,BFS3565A0LD8 / ATS3565L(90 Ω), AT
L601,L602,L603,L604,L605, L607,L608,L610	3421410001TD	COIL,BEAD,CORE	100 Ω,BFS3565A0LD8 / ATS3565L(90 Ω), AT
D410	3512010F92TD	DIODE,DAMPER	FFPF10F150S,1500V,10A,Trr170ns,TO-220F
D409	3512034096TF	DIODE, RET	Rev.01, SB340,3A,40V,MEDIUM C URRENT SCHOTTKY BARRIER,BULK
D125	351208GT96BF	DIODE, RET	Rev.01, UGF8GT,280V,8A,35nS,ITO-220AC,BULK
D128	3512570191TD	DIODE,FR	UF1G-5704,400V,1.2A,52mm,AMMO PACK
D127,D132,D508,D510	3512G46091TF	DIODE, FR	GUR460L-5702,600V,4.0A, ULTRAFAST PLASTIC RECTIFIER,FORMING
D126	3512RG4C22BF	DIODE, RET	RG4C,Ultrafast
			Rectifier,1000V,2.0A,3V,GLASS,100ns,S/T TYPE
D405,D405-1	35133104G3AB	DIODE, FR	UF-5404,400V/280V,50ns,10uA,1.0V, G.I.
D102	3513G36092BF	DIODE,BR	G3SBA60L-5700,600V,4A
D113	3531001392TD	DIODE, ZEN	MTZJ 4.7B/UZ-4.7BSB, 4.7V, 5mA, 500mW,T-72, AT
D305	3531001492TD	DIODE, ZEN	MTZJ 5.1B/UZ-5.1BSB, 5.1V, 5mA, 500mW,T-72, AT
D203,D204,D205,D206	3531001592TD	DIODE, ZEN	Rev.01, MTZJ 5.6B/UZ-5.6BSB/1N5232B,5.6V, 5mA, 500mW,T-72,AT
D210,D211,D212,D213,D214	3531001692TD	DIODE, ZEN	MTZJ 6.2B/UZ-6.2BSB, 6.2V, 5mA, 500mW,T-72, AT
D406	3531002192TD	DIODE, ZEN	MTZJ 12B/UZ-12BSB, 12V, 5mA, 500mW,T-72, AT
D111	3531002492TD	DIODE, ZEN	MTZJ 27B/UZ-27BSB, 27V, 5mA, 500mW,T-72, AT
D415	35314002AA	DIODE, RET	1N4002GP,1A,100V, GP
D411,D412	35314937AA	DIODE, RET	1N4937GP, 1A,600V, FR
D109,D122,D130,D131,D301, D408,D512	35390007AA	DIODE,RET	UF4004,1A,400V,50NS, FR, AT
D108,D110,D118,D119,D303, D413,D414,D511,D513	35390008AA	DIODE, RET	UF4007, 1A, 1000V, 75NS, FR, AT
D620	35390008AA	DIODE, RET	UF4007, 1A, 1000V, 75NS, FR, AT
D505	3541290368BF	DIODE, LED	Rev.01, LTL-368DJW/HB4-31Y,5VG,100mW(G),60mW(Y),475m,BULK
D107,D117	3552020091TD	DIODE, TVS	P6KE200A, 210V max, 2.2A max, AT
IC101,IC107	375208171APN	OPTO ELECTRONIC	OPTO ISOLATOR, LTV-817M-SM
TH101	38110010AA9D	PTC THERMISTOR	090Q,9ohm+30%-20%,220Vrms
TH102	38110011AAAD	NTC	4.7 OHM,DISC Φ13,MAX 5A, DSC-4.7D-13, ±15%, LONG LEAD
SC601,SC602,SC603	38130008201D	SURGE ABSORBER	200V ±20%,WSP-201M,TAPING
SC604	38130009AAAD	SURGE ABSORBER	400V, ±20%,KSA-401M/WSP-401M/DSP-401, TAPING
RL101	4333000312AD	RELAY POWER	DY3M,DC12V,250VAC(5A)/30VDC(5A),DPST
J2~J16,J18~J26,J28~J45, J47~J85,J88~J179,R150,D421	44504701AA	WIRE,LEAD	TIN ANNEALING DIPPED COPPER WIRE,CU+SN+PB,0.6t

LOCATION NO.	PART NO.	TYPE	DESCRIPTION
CN1,CN2	4622150003WD	CONNECTOR,	YW396-03AV, 2PIN, 7.92mm, PIN BASE, MALE, ST, BULK
CN607	4623050003WD	CONNECTOR,	Rev.02, Φ29 DUAL-FOCUS,
		CRT SOCKET	ISDS11S-P/PCS 026D,10PIN
CN202-1	4623150001WD	CON,SHROUNDED HEADER	7PIN,2.0mm,MALE, SMW200-07
CN602	4623150002WD	CON,SHROUNDED HEADER	6PIN,2.0mm,MALE,R/A, SMAW200-06
CN3	46240903AA	CONNECTOR,LOCK HEADER	35300-0350,LOCK HEADER 3PIN,STICK
CN301	4625150001ID	CONNECTOR, PIN HEADER, MALE,ST(LV CONN)	4PIN,8.0±0.1,10±0.1, Φ2.36±0.03,B4P-LV-TA
CN601	4632110013ID	CON.SHROUNDED HEADER	13PIN,2.5mm,MALE,R/A,SMAW250-13
TCO	4632150001WD	CONNECTOR, SHROUNDED HEADER	3PIN,2.5mm,MALE,ST,SMW250-03,BULK
CN101	4653110005KD	AC INLET SOCKET	Rev.02, 250V/10A,UL94V-0, DAC-14SG/UPS-00-013
CN101-2,CN101-3,GT1, GT2,TP1~TP8	46890101AA	CONNECTOR,G/T PIN	G/T, 1PIN, 2.36PAI, NI
CN604,CN603,CN606	46890101AA	CONNECTOR,G/T PIN	G/T, 1PIN, 2.36PAI, NI
CN102-1,CN102-2,CN103-1, CN103-2	4921110004WD	HARNESS, PFC WIRE ASS'Y	120±5mm, UL1015 #20, YH396-32V(7.92mm Pitch)
CN102	4921130008GD	HARNESS,VIDEO POWER CONN'WIRE ASS'Y	180 ±10mm,UL 1007AWG26, 13PIN
SW101	58130005CAAD	PUSH SWITCH	JPS2259S(SELF-LOCK),30V DC,0.3A,FULL:3.5,LOCK:2.5,2POLE
SW203,SW204	58210004RAAF	SWITCH,TACT	DC 15V,20mA,160±50g,2P,TAPING,THVH472GAA
SW201	58220002RAAD	SWITCH,ENCODER	Rev.01, ENC:15Pulses/360°EACH PHASE(2CLICK 1Pulse)

REV.	CONTENTS	DATE
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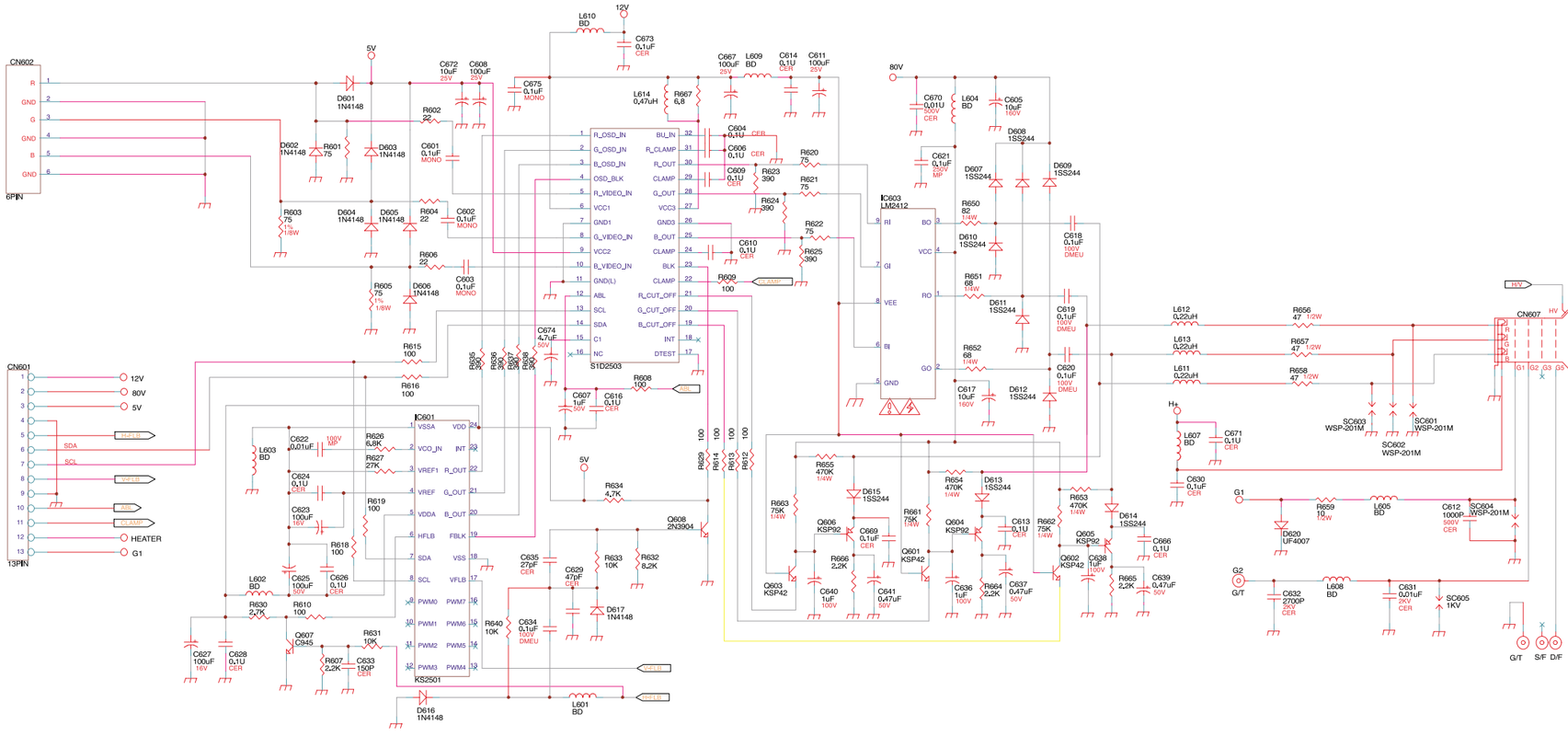

Rev	Contents	Date
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			xref3
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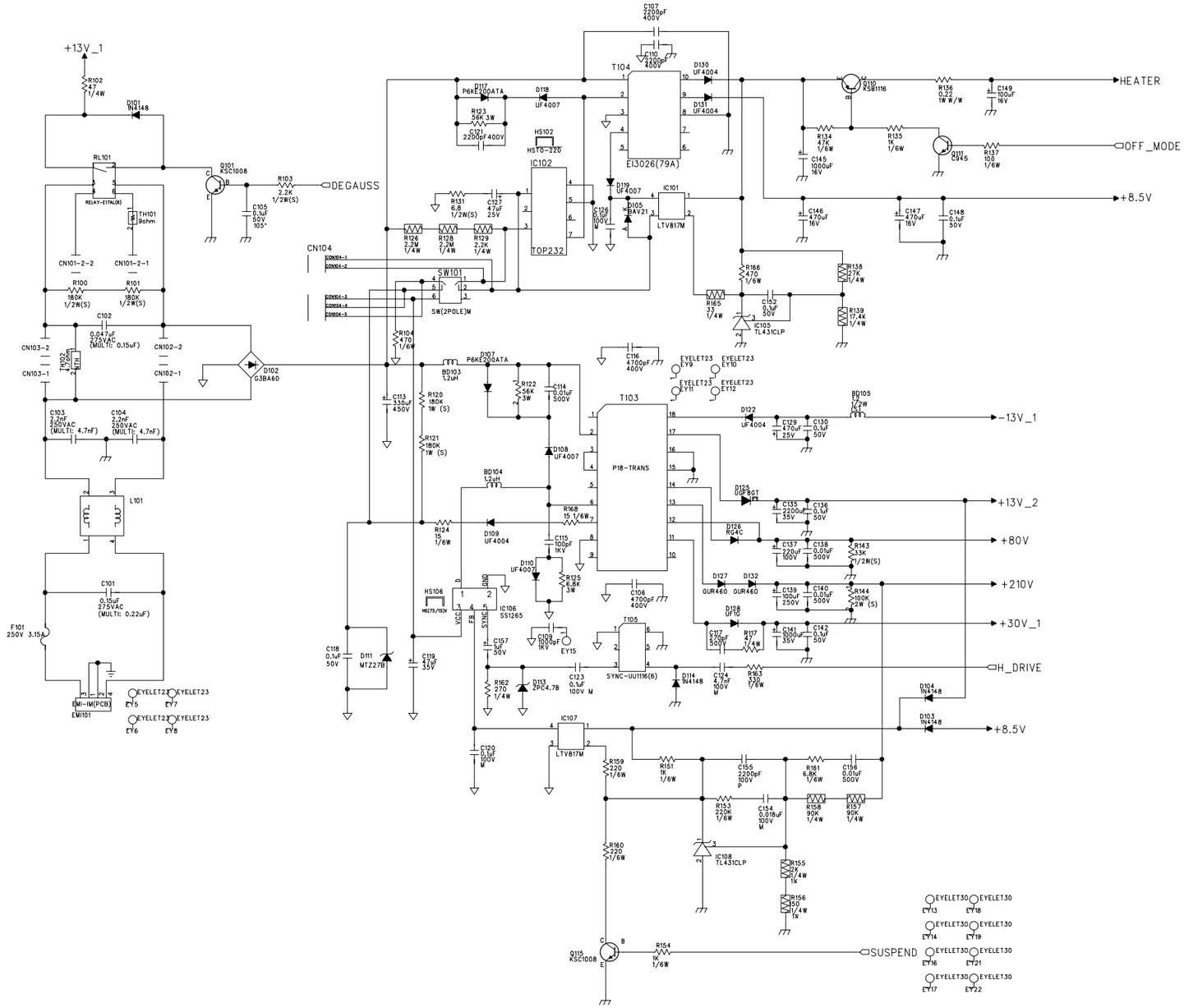
REV	CONTENTS	DATE



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CODE: 012197XXXXCA	DATE: 2001.11.15
Power	SHEET: 1 OF 3

MAXDATA.dsn-3 - Tue Oct 29 11:48:11 2002

REV	CONTENTE	DATE

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33–36	1	0	0	1	1
36–40	1	1	0	1	1
40–45	1	0	1	0	0
45–51	0	1	1	0	0
51–55	1	1	1	0	1
58–65	1	0	1	1	1
65–74	0	1	1	1	0
74–84	0	1	1	1	1
84–96	1	1	1	1	1

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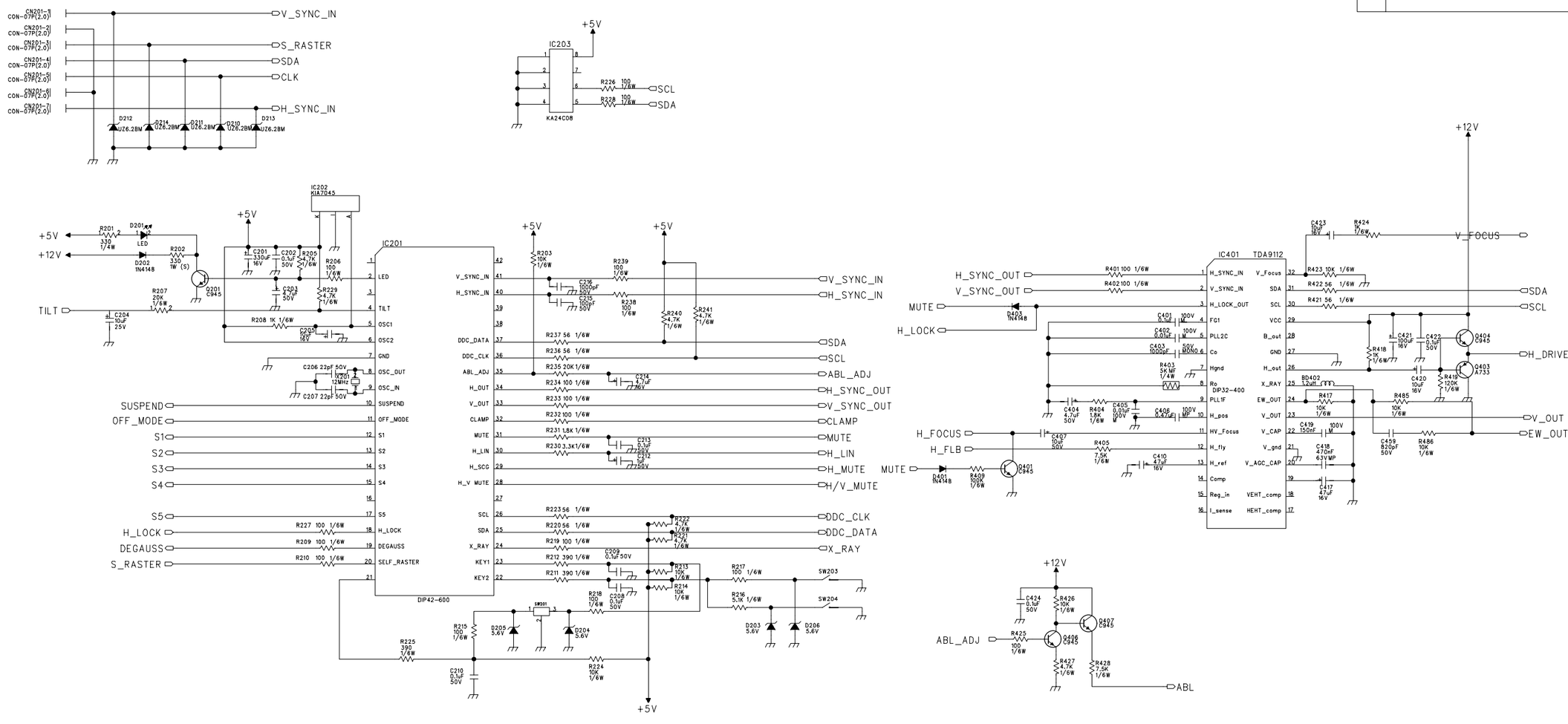
H/V – OUT	SHEET: 3 OF 3

REV	CONTENTS	DATE



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REV: 01	
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