

CPD-200ES

SERVICE MANUAL

CPD-200ES
China Model
Chassis No.SCC-L16B-A



X2F CHASSIS

SPECIFICATIONS

Picture Tube	0.26 mm aperture grill pitch 17 inches measured diagonally 90-degree deflection	Standard image area	Approx. 312 x 234 mm (w/h) (12.3 x 9.3 inches)
Video image area	(15.9" maximum viewing image) Approx. 327 x 241 mm (w/h) (12.9 x 9.5 inches)	Deflection frequency	Horizontal: 31 to 70 KHz Vertical: 50 to 120 Hz
Logical resolution	Horizontal: Max. 1280 dots Vertical: Max. 1024 lines	AC input voltage / current	100 to 120 V, 50-60Hz, 1.8A (max.) 220 to 240 V, 50-60 Hz, 1.0 A
Physical resolution	Horizontal: Max. 1024 dots Vertical: Max. 768 lines	Dimensions	406 x 431.5 x 420 mm (w/h/d) (16 x 17 x 16.5 inches)
		Mass	Approx. 19.0 kg (41 lb. 13 oz.)

Design and specifications are subject to change without notice.

TRINITRON® COLOR COMPUTER DISPLAY



SONY®

POWER SAVING FUNCTION

This monitor meets the power saving guidelines set by the EPA Energy Star Program as well as the more stringent TC092 guidelines (NUTEK). It is capable of reduced power consumption when used with a computer equipped with Display Power Management Signaling (DPMS). By sensing the absence of the sync signal coming from the computer, it will reduce the power consumption as follows:

CAUTION: The Power Saving function will automatically put the monitor into Active-off state if the power switch is turned on without any video signal input. Once the horizontal and vertical syncs are sensed, the monitor will automatically return to its Normal operation state.

	State	Power consumption	Required resumption time	⏻ Power indicator
1	Normal Operation	≤110 W	————	green on
2	Suspend (1st step of power saving)	≤15 W	approx. 3 sec.	orange and green flashes alternately
3	Active-off (2nd step of power saving)	≤15 W	approx. 10 sec.	orange and green flashes alternately
4	Active-off (3rd step of power saving)	≤8 W	approx. 10 sec.	orange on
5	Power - Off	0 W	————	off

TIMING SPECIFICATION

Mode	1	2	3	4	5	6	7	8
Resolution(H x V) Dot Clock(MHz)	640 x 480 25.175	640 x 480 36.000	800 x 600 49.500	800 x 600 56.250	832 x 624 57.283	1024 x 768 78.750	1280 x 1024 108.000	1024 x 768 94.500
Horizontal								
Hor. Freq. (kHz)	31.469	43.269	46.875	53.674	49.725	60.023	63.981	68.677
H-Total	31.778	23.111	21.333	18.631	20.111	16.660	15.630	14.561
H-Blanking	6.356	5.333	5.172	4.409	5.586	3.657	3.778	3.725
H-Front Porch	0.636	1.556	0.323	0.569	0.559	0.203	0.444	0.508
H-Sync.	3.813	1.556	1.616	1.138	1.117	1.219	1.037	1.016
H-Back Porch	1.907	2.222	3.232	2.702	3.910	2.235	2.296	2.201
H-Active (μsec)	25.422	17.778	16.162	14.222	14.524	13.003	11.852	10.836
Vertical								
Ver. Freq. (Hz)	59.940	85.008	75.000	85.061	74.550	75.029	60.020	84.997
V-Total	525	509	625	631	667	800	1066	808
V-Blanking	45	29	25	31	43	32	42	40
V-Front Porch	10	1	1	1	1	1	1	1
V-Sync.	2	3	3	3	3	3	3	3
V-Back Porch	33	25	21	27	39	28	38	36
V-Active (lines)	480	480	600	600	624	768	1024	768
Sync.								
INT(G) EXT (H/V)/POLARITY EXT (CS)/POLARITY INT/NON INT	NO YES -/ NO NON INT	NO YES -/ NO NON INT	NO YES +/ NO NON INT	NO YES +/ NO NON INT	NO YES -/ NO NON INT	NO YES +/ NO NON INT	NO YES +/ NO NON INT	NO YES +/ NO NON INT

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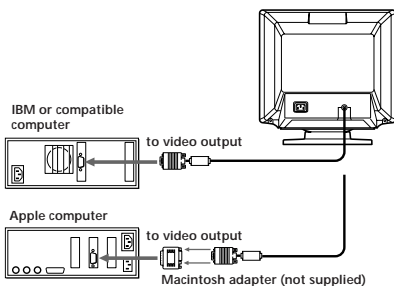
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The operating instructions mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual remain as in the manual.

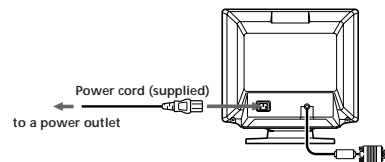
Getting Started

Before using this monitor, please make sure that the following items are included in your package: Multiscan 100ES/200ES monitor (1), power cord (1), warranty card (1), "Windows95 Monitor Information Disk" (1), and this operating instruction manual (1).
This monitor will sync with any IBM or compatible system equipped with VGA or greater graphics capability. Although this monitor will sync to other platforms running at horizontal frequencies between 30 and 70 kHz, including Macintosh and Power Macintosh system, a cable adapter is required. Please consult your dealer for advice on which adapter is suitable for your needs.

Step 1: With the computer switched off, attach the video signal cable to the video output.



Step 2: Attach the power cord to the monitor and the other end to a power outlet.



Step 3: Turn on the monitor and computer.

Step 4: If necessary, adjust the user controls according to your personal preference.

The installation of your Multiscan 100ES/200ES is complete. Enjoy your monitor.

- 1) VGA is a trademark of IBM Corporation.
- 2) VESA is a trademark of the non-profit organization, Video Electronics Standard Association.
- 3) Macintosh is a trademark of Apple Computer Inc.
- 4) Windows® is a registered trademark of Microsoft Corporation in the United States and other countries.

Using Your Monitor

Preset and User Modes

The Multiscan 100ES/200ES has factory preset modes for the 8 most popular industry standards for true "plug and play" capability. For less common modes, the Multiscan 100ES/200ES's Digital Multiscan Technology will perform all of the complex adjustments necessary to ensure a high quality picture for any timing between 30 and 70 kHz.

CPD-100ES/100EST and CPD-200ES/200EST

No.	Resolution (dots x lines)	Horizontal Frequency	Vertical Frequency	Graphics Mode
1	640 x 480	31.5 kHz	60 Hz	VGA Graphic ¹⁾
2	640 x 480	43.3 kHz	85 Hz	VESA ²⁾
3	800 x 600	46.9 kHz	75 Hz	VESA ²⁾
4	800 x 600	53.7 kHz	85 Hz	VESA ²⁾
5	832 x 624	49.7 kHz	75 Hz	Macintosh 16" Color ²⁾
6	1024 x 768	60.0 kHz	75 Hz	VESA ²⁾
7	1024 x 768	68.7 kHz	85 Hz	VESA ²⁾
8	1280 x 1024	64.0 kHz	60 Hz	VESA ²⁾

For the customers using the Windows[®]95

Install the new model information of the Sony computer display from "Windows95 Monitor Information Disk" into your PC. (To install the file, refer to the attached "About the Windows95 Monitor Information Disk/File".)

This monitor complies with "VESA DDC", the standards of Plug&Play. If your PC/graphic board complies with DDC, select "Plug and Play Monitor (VESA DDC)" or this monitor's model name (CPD-100ES/100EST or CPD-200ES/200EST) as "Monitor type" from "Control Panel" on Windows95. Some PC/graphic boards do not comply with DDC. Even if they comply with DDC, they may have some problems on connecting to this monitor. In this case, select this monitor's model name (CPD-100ES/100EST or CPD-200ES/200EST) as "Monitor type" on Windows95.

Recommended horizontal timing conditions

Horizontal sync width should be: >1.0 μsec.
Horizontal blanking width should be: >3.6 μsec. (Multiscan 100ES)/ >3.0 μsec. (Multiscan 200ES).

Vertical sync width should be: < 560 μsec.

Note

CPD-100ES/100EST and CPD-200ES/200EST does not apply to Macintosh 21" color mode.

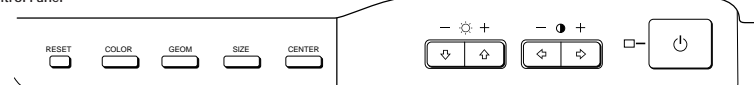
SECTION 1 GENERAL

Adjustments

When one of the preset-type signals is input, no picture adjustment is necessary. You can, however, adjust the picture to your preferences by following the procedure described below. You can adjust all items on the OSD (On Screen Display).

- Before adjusting the items, turn on the unit and feed the video signal from the connected computer/work station.
- Adjustments will be stored automatically.

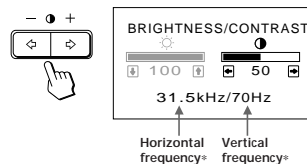
Control Panel



Adjusting the Picture Contrast

The adjustment data becomes the common setting for all input signals.

- 1 Press the button. The "BRIGHTNESS/CONTRAST" OSD appears.



- 2 Press the buttons to adjust picture contrast.
 - ... for more contrast
 - ← ... for less contrast

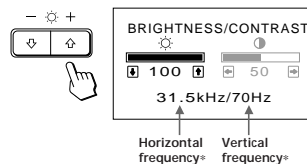
The "BRIGHTNESS/CONTRAST" OSD disappears 3 seconds after you release the buttons.

To reset, press the RESET button while the OSD is on.

Adjusting the Picture Brightness

The adjustment data becomes the common setting for all input signals.

- 1 Press the button. The "BRIGHTNESS/CONTRAST" OSD appears.



- 2 Press the buttons to adjust picture brightness.
 - ↓ ... for less brightness
 - ↑ ... for more brightness

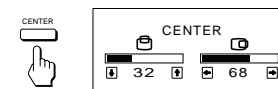
The "BRIGHTNESS/CONTRAST" OSD disappears 3 seconds after you release the buttons.

To reset, press the RESET button while the OSD is on.

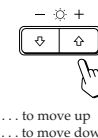
Adjusting the Picture Centering

The adjustment data becomes the individual setting for each input signal received.

- 1 Press the CENTER button. The "CENTER" OSD appears.

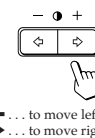


- 2 For vertical adjustment Press the buttons.



↑ ... to move up
↓ ... to move down

- For horizontal adjustment Press the buttons.



← ... to move left
→ ... to move right

To erase the "CENTER" OSD, press the CENTER button again. The "CENTER" OSD automatically disappears 10 seconds after you release the buttons.

To reset, press the RESET button while the OSD is on.

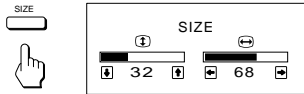
* The horizontal and vertical frequencies for each input signal received appear on the "BRIGHTNESS/CONTRAST" OSD.

Adjustments

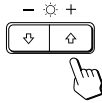
Adjusting the Picture Size

The adjustment data becomes the individual setting for each input signal received.

- 1 Press the SIZE button.
The "SIZE" OSD appears.

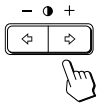


- 2 For vertical adjustment
Press the buttons.



↑ ... to enlarge
↓ ... to diminish

For horizontal adjustment
Press the buttons.



← ... to diminish
→ ... to enlarge

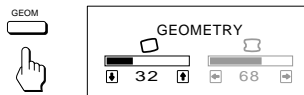
To erase the "SIZE" OSD, press the SIZE button again.
The "SIZE" OSD automatically disappears 10 seconds after you release the buttons.

To reset, press the RESET button while the OSD is on.

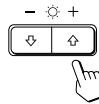
Adjusting the Picture Rotation

The adjustment data becomes the common setting for all input signals.

- 1 Press the GEOM button.
The "GEOMETRY" OSD appears.



- 2 Press the buttons.
↑ ... to rotate clockwise
↓ ... to rotate counterclockwise



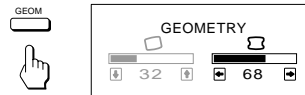
To erase the "GEOMETRY" OSD, press the GEOM button again.
The "GEOMETRY" OSD automatically disappears 10 seconds after you release the buttons.

To reset, press the RESET button while the OSD is on.

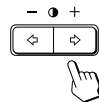
Adjusting the Pincushion

The adjustment data becomes the individual setting for each input signal received.

- 1 Press the GEOM button.
The "GEOMETRY" OSD appears.



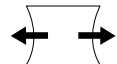
- 2 Press the buttons.



← ... to diminish the picture sides



→ ... to expand the picture sides



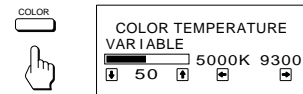
To erase the "GEOMETRY" OSD, press the GEOM button again.
The "GEOMETRY" OSD automatically disappears 10 seconds after you release the buttons.

To reset, press the RESET button while the OSD is on.

Setting the Color Temperature

The selected color temperature becomes the common setting for all input signals.

- 1 Press the COLOR button.
The "COLOR TEMPERATURE" OSD appears.

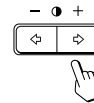


- 2 Adjust with the and buttons.

To select 5000K or 9300K

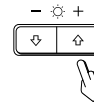
Press the buttons.

The selected color temperature is indicated in yellow.



← ... to select 5000K
→ ... to select 9300K

To obtain the desired color temperature between 5000K and 9300K
Press the buttons.



↑ ... for higher temperature
↓ ... for lower temperature

Your most recent adjusted color temperature will be recalled by pressing the button.

To erase the "COLOR TEMPERATURE" OSD, press the COLOR button again.
The "COLOR TEMPERATURE" OSD automatically disappears 10 seconds after you release the buttons.

To reset, press the RESET button while the OSD is on.

Resetting the Adjustment Data to Factory-preset Levels

To reset an adjustment item

Press the button of the adjustment item you want to reset, and then press the RESET button before the OSD (On Screen Display) disappears.

To reset all adjustment data at once (for the received signal)

Press the RESET button when no OSD is shown.



To reset all adjustment data to factory-preset levels

Press and hold the RESET button for more than 2 seconds.
All adjustment data are reset to factory-preset levels.



Entering New Timings

When using a video mode that is not one of the factory preset modes, some fine tuning may be required to optimize the display to your preferences. Simply adjust the monitor according to the preceding adjustment instructions. The adjustments will be stored automatically and recalled whenever that mode is used.

A total of 8 user-defined modes can be stored in memory. If the 9th mode is entered, it will replace the first.

Power Saving Function

This monitor meets the power saving guidelines set by the International ENERGY STAR Program as well as the more stringent TCO92 803299 (NUTEK) guidelines. It is capable of reduced power consumption when used with a computer equipped with Display Power Management Signaling (DPMS). By sensing the absence of the sync signal coming from the computer, it will reduce the power consumption as follows:

CAUTION: The Power Saving function will automatically put the monitor into Active-off state if the power switch is turned on without any video signal input. Once the horizontal and vertical syncs are sensed, the monitor will automatically return to its Normal operation state.

	State	Power consumption	Required resumption time	POWER indicator
1	Normal operation	≤ 110 W	—	green on
2	Stand-by (1st step of power saving)	≤ 15 W	approx. 3 sec.	Orange and green flashes alternately
3	Suspend (2nd step of power saving)	≤ 15 W	approx. 3 sec.	Orange and green flashes alternately
4	Active-off (3rd step of power saving)	≤ 8 W	approx. 10 sec.	Orange on
5	Power-off	0 W	—	off

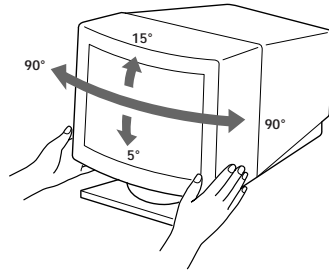
Plug and Play

This monitor complies with DDC™1 and DDC2B, which are the Display Data Channel (DDC) standards of VESA. When a DDC1 host system is connected, the monitor synchronizes with the V. CLK in accordance with the VESA standards and outputs the EDID (Extended Display Identification Data) to the data line. When a DDC2B host system is connected, the monitor automatically switches to the DDC2B communication.

DDC™ is a trademark of the Video Electronics Standard Association.

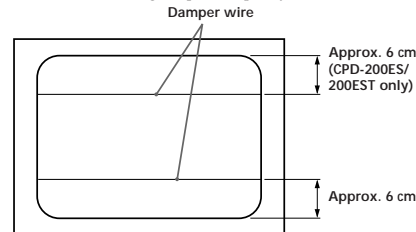
Use of the Tilt-Swivel

With the tilt-swivel, this unit can be adjusted to be viewed at your desired angle within 180° horizontally and 20° vertically. To turn the unit vertically and horizontally, hold it at its bottom with both hands.



Damper Wire

Using a white background, very thin horizontal stripes on the screen are visible as shown on the illustration. These stripes are damper wires. These wires are attached to the aperture grille inside the Trinitron tube and are there to dampen vibrations of the aperture grille in order to prevent them from influencing the picture quality.



Troubleshooting

This section may help you isolate a problem and as a result, eliminate the need to contact technical support, allowing continued productivity.

No picture

- ➔ If the POWER indicator is not lit.
 - Check that the power cord is properly connected.
 - Check that the POWER switch is in the "ON" position.
- ➔ If the POWER indicator is flashing in green and orange alternately.
 - Check that your computer power switch is in the "ON" position.
 - The monitor will recover when you press any key on the keyboard of the computer.
 - Check that the video cable is properly connected.
 - Ensure that no pins are bent or pushed in the HD15 connector of the cable.
 - Check that the video card is seated completely in a proper bus slot.
 - Check that the video sync signal is within that specified for the monitor.
 - If using a Macintosh system, check that a proper HD15 - D15 adapter is provided to work correctly with your Macintosh.
 - The monitor has a self-diagnose function. After disconnecting the video signal cable from the computer, turn on the POWER switch of the monitor. Press and hold the "+" side of the button for 2 seconds, then color bars will appear. The monitor is operating normally if the red, green, and blue color bars appear. Contact the maker of the computer to which the monitor is connected.
- ➔ If the POWER indicator is flashing.
 - There is a potential monitor failure. Contact your dealer.

If the message of "OUT OF SCAN RANGE" appears on the screen

- ➔ Check that the video sync signal is specified for the monitor.

Picture is scrambled

- ➔ Check your graphics board manual for the proper monitor setting on your Multiscan 100ES/200ES.
- ➔ Check this manual and confirm that the graphic mode and the frequency at which you are trying to operate is supported. Even within the proper range some video boards may have a sync pulse that is too narrow for the monitor to sync correctly.

Color is not uniform

- ➔ If the monitor is close to any potential sources of magnetic fields such as a speaker, or you turn the monitor while the POWER switch is in the "ON" position, color may not be uniform. Trip the POWER switch once to activate the Auto-degauss cycle*.

Picture is flickering

- ➔ If the refresh rate is not appropriate, the picture may flicker. Set the refresh rate of the non-interlace mode as high as possible on the computer. For details on how to set the refresh rate, consult the dealer of your computer or video board.

Screen image is not centered or sized properly

- ➔ Adjust the "CENTER," "SIZE," or "GEOMETRY" on the OSD (pages 5, 6).
- ➔ Some video modes do not fill the screen to the edge of the monitor. There is no single answer to solve the problem. There is a tendency to have this problem on higher refresh timings and Macintosh video timings.

Picture is fuzzy

- ➔ Adjust the "CONTRAST" and "BRIGHTNESS" on the OSD (page 5). We have come across several brands of SVGA boards that have an excessive video output level which creates a fuzzy picture at max contrast.
- ➔ Trip the POWER switch once to activate the Auto-degauss cycle*.

Picture bounces or has wavy oscillations

- ➔ Isolate and eliminate any potential sources of electric or magnetic fields. Common causes for this symptom are electric fans, fluorescent lighting, laser printers, and so on.
- ➔ If you have another monitor close to this monitor, increase the distance between them to reduce the interference.
- ➔ Try plugging the monitor into a different AC outlet, preferably on a different circuit.
- ➔ Try the monitor on a completely different computer in a different room.

Picture appears to be ghosting

- ➔ Eliminate the use of video cable extension cables and/or video switch boxes if this symptom occurs. Excessive cable length or weak connections can produce this symptom.

A fine horizontal line (wire) is visible

- ➔ This wire stabilizes the vertically striped Aperture Grille (page 8). This Aperture Grille allows more light to pass through to the screen giving the Trinitron CRT more color and brightness.

Wavy or elliptical (moire) pattern is visible

- ➔ Due to the relationship between resolution, monitor AG pitch and the pitch of some image patterns, certain screen backgrounds, especially gray, sometimes show moire. This can only be eliminated by changing your desktop pattern.

Just after turning the monitor on, a "boon" noise is heard

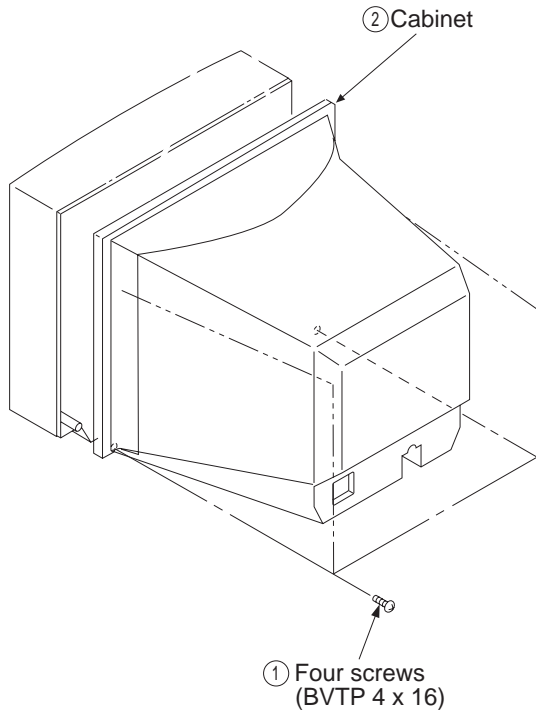
- ➔ Just after turning the monitor on, a noise may be heard for about 3 seconds. This noise is not failure, it is caused by the Auto-degauss cycle*.

* The Auto-degauss function demagnetizes the metal frame of the CRT to obtain a neutral field for uniform color reproduction. If a second degauss cycle is needed, allow a minimum interval of 20 minutes for the best result.

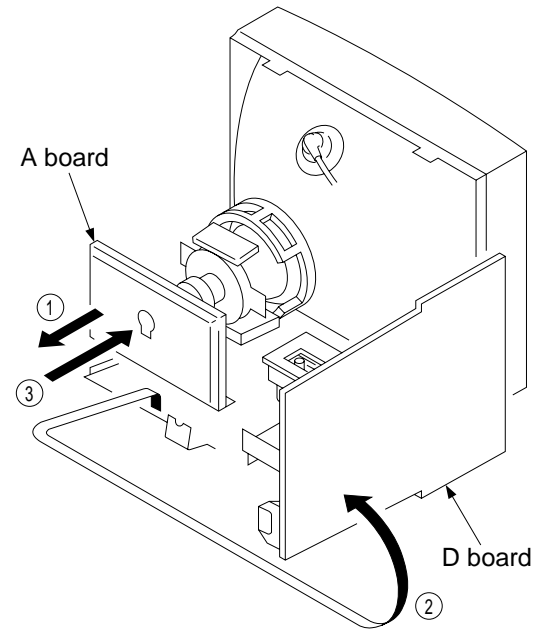
- If the problem persists, call your authorized Sony dealer from a location near your monitor.
- Note the model name and the serial number of your monitor. Also note the make and name of your computer and video board.

SECTION 2 DISASSEMBLY

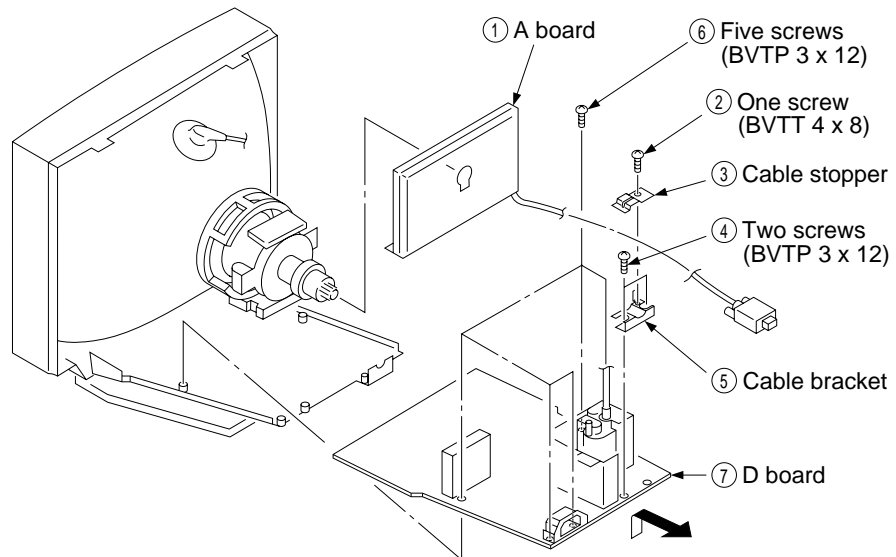
2-1. CABINET REMOVAL



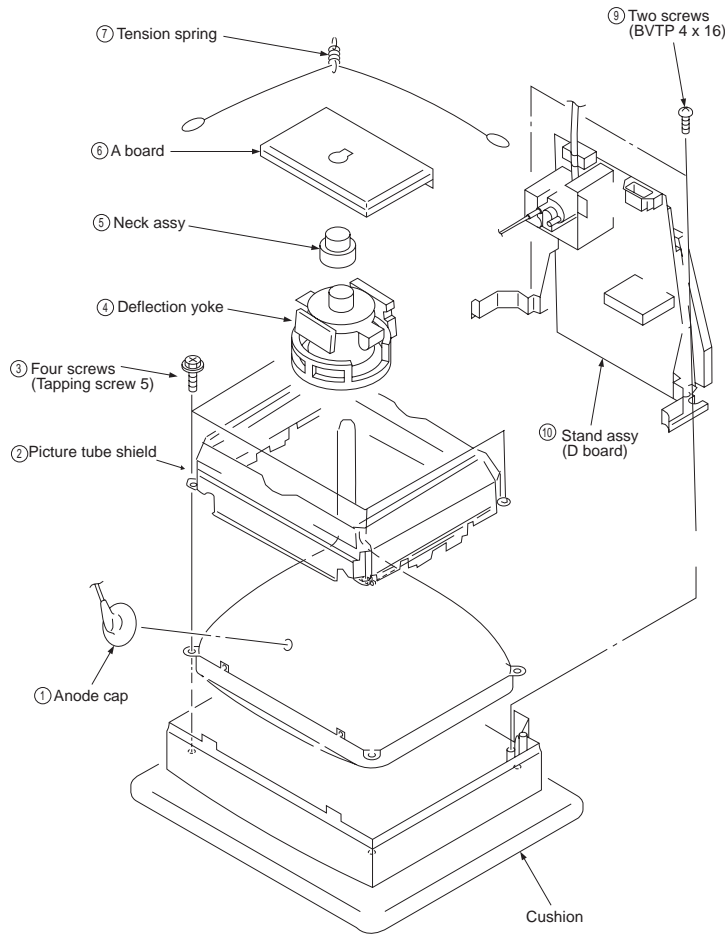
2-2. SERVICE POSITION



2-3. D BOARD REMOVAL



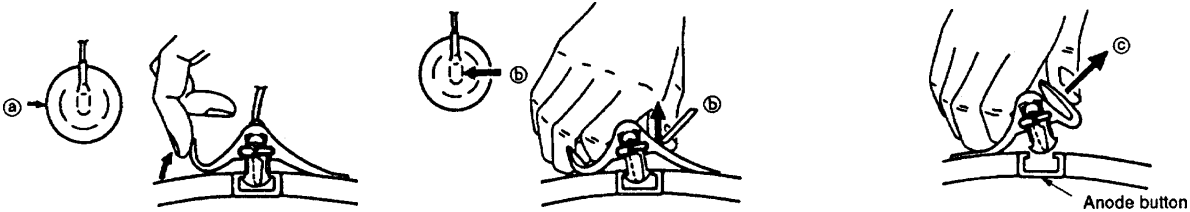
2-4. PICTURE TUBE



• REMOVAL OF THE ANODE-CAP

NOTE: Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield or carbon painted on the CRT, after removing the anode.

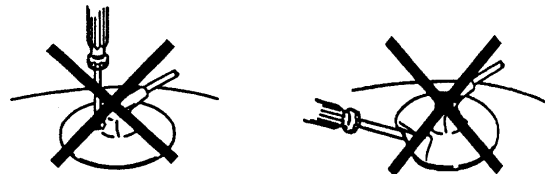
• REMOVAL PROCEDURES



- ① Turn up one side of the rubber cap in the direction indicated by arrow ①.
- ② Use your thumb to pull the rubber cap firmly in the direction indicated by arrow ②.
- ③ When one side of the rubber cap separates from the anode button, the anode-cap can be removed by turning the rubber cap and pulling it in the direction of arrow ③.

• HOW TO HANDLE AN ANODE-CAP

- ① Do not use sharp objects which may cause damage to the surface of the anode-cap.
- ② Do not squeeze the rubber covering too hard to avoid damaging the anode-cap. A material fitting called a shatter-hook terminal is built into the rubber.
- ③ Do not force turn the foot of the rubber cover. This may cause the shatter-hook terminal to protrude and damage the rubber.



SECTION 3 SAFETY RELATED ADJUSTMENT

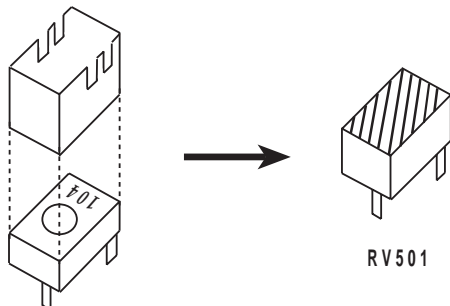
- When replacing parts shown in the table below, the following operational checks must be performed as a safety precaution against X-rays emissions from the unit.

D - BOARD
Part Replaced (☒)
RV501
Part Replaced (☑)
IC801, IC901, IC904, FBT T501, D511, D515, D596, R532, R533, R534, R535, R538, R539, R540, R541, R542, R543, R544, R545, R807, R822, R823, R824, R939, R996, RV501, C509, C515, C516, C517, C519, C531, C542, C548, C549, C802, C814, C815, C904, C910, R598, R599

※ Allow the unit to warm up for one minute prior to checking the following conditions:

a) HV Regulator Check

- 1) Input white cross hatch signal. (fH = 64 kHz)
- 2) Set H.Size data to minimum.
- 3) Cut off Screen VR (G2).
- 4) Input voltage: 120 ± 2 VAC
- 5) Confirm that the voltage is within the voltage range shown below:
Standard voltage: $25.0KV \pm 0.2KV$
- 6) When replacing components identified by ☑, make sure to recheck the High Voltage.
- 7) Verify the High Voltage as shown above ($25.0KV \pm 0.2KV$) is within specification. If not, set H. SIZE data at minimum (-127) and then adjust RV501 on "D" Board.
- 8) After adjusting the High Voltage within specification, put the RV cover on RV501 as shown below and apply sufficient amount of RTV around RV501.



b) HV Hold-Down Check

- 1) Using an external DC Power supply, apply the voltage shown below between cathode of D511 on "D" Board and GND, and confirm that the HV Hold-Down circuit works. (Raster disappears)
Standard voltage: $35.00 + 0.00$ VDC
- 0.10

Check Condition

- Input voltage : 120 ± 2 VAC
- Input signal : Any pattern (fH = 64 kHz)
- Controls : CONT → Maximum
: BRT → Center

c) Beam Protector Check

- 1) Using an external DC power supply, apply the voltage $7.00 + 0.05$ VDC between pin ⑪ of FBT (T501) and GND, and confirm that the voltage of both ends C519 is within the voltage range shown below.
Standard voltage: Less than 3.26 VDC

Check Condition

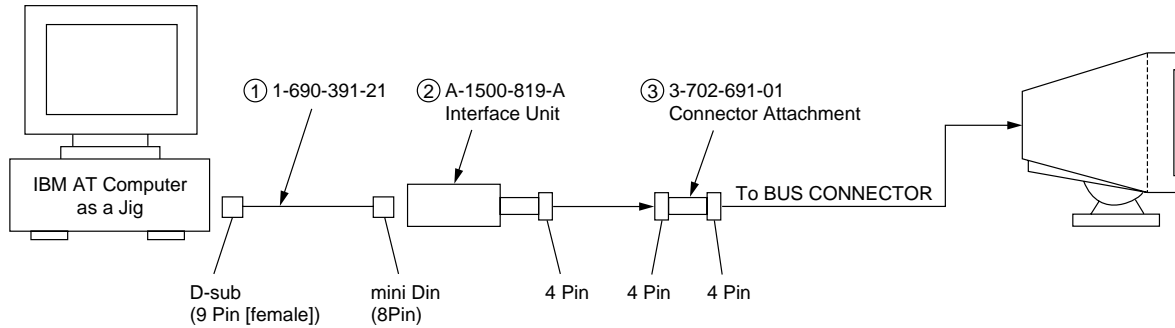
- Input voltage : 120 ± 2 VAC
- Input signal : Any pattern (fH = 64 kHz)
- Controls : CONT → Maximum
: BRT → Center

d) +B MAX. Check

- 1) Input white cross hatch (fH = 64 kHz) signal.
- 2) Set CONT and BRT to Maximum
- 3) Input voltage: 120 ± 2 VAC
Note: Use NF power supply or make sure that distortion factor is 3% or less.
- 4) Confirm that the voltage is within the voltage range shown below.
Standard voltage: 151.0 ± 4.25 VDC
Measurement Point: CN505 Pin 1 and GND

SECTION 4 ADJUSTMENTS

Connect the communication cable of the connector located on the D board on the monitor. Run the service software and then follow the instructions.



*The parts above (1)~(3) are necessary for DAS adjustment.

※ Allow a 30 minute warm-up period prior to making the following adjustments.

● Landing Rough Adjustment

1. Enter the full white signal.
2. Adjust the contrast to the maximum.
3. Make the screen monogreen.
4. Reverse the DY, and adjust coarsely the purity magnet so that a green raster positions in the center of screen.
5. Moving the DY forward, adjust so that an entire screen becomes monogreen.
6. Adjust the tilt of DY, and fix lightly with a clamp.

● Landing Fine Adjustment

1. Place the set in the Helmholtz coil.
2. Enter a green signal only.
3. Degauss the entire screen with hand-degausser. Then auto degauss it.
4. Attach a wobbling coil to the specified position of CRT neck.
5. Attach a landing adjuster sensor on the CRT.
6. Using a landing checker, adjust the DY position, purity on DY, tilt of DY.
7. Clamp the DY screw.

Clamping torque: 22 ± 2 kgcm (2.2 ± 0.2 Nm)

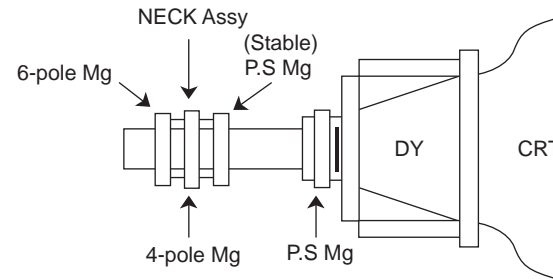
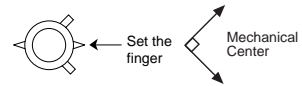
● Convergence Rough Adjustment

1. Enter the white crosshatch signal.
2. Adjust roughly the horizontal and vertical convergence at four-pole magnet.
3. Adjust roughly HMC and VMC at six-pole magnet.

● Convergence Fine Adjustment

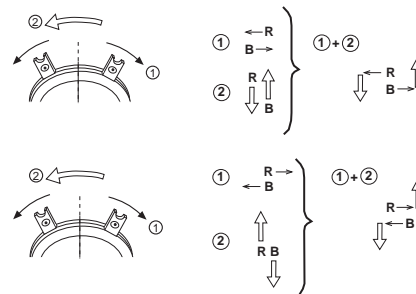
Set DY four-pole magnet to mechanical center before adjustment.

This should be prime mode.



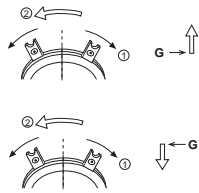
1. Receive R.B. crosshatch.
2. Adjust H. STAT and V. STAT at four-pole magnet.

< 4 Pole Magnet >

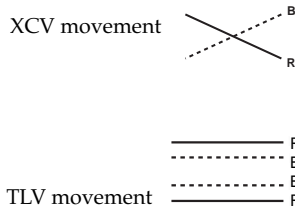


3. Receive White cross-hatch.
4. Adjust HMC and VMC at six-pole magnet.

< 6 Pole Magnet >



5. Display R and B cross hatch patterns.
 6. Adjust H STAT and V STAT with 4-pole magnet.
 7. Display white cross hatch patterns.
 8. Adjust HMC and VMC with 6-pole magnet.
 9. Display R and B cross hatch patterns.
 10. Adjust XCV and XCV roller.
 11. Adjust XBV and XBV reactor.
 12. Adjust V.STAT with 4-pole magnet.
- Repeat steps 7 to 12 above and make R, G, B of both vertical and horizontal lines to be overlaid at the center of the x-axis.
13. Adjust H.TILT with TLH Corrector.
 14. Adjust XCV with XCV core.



15. Adjust V.TILT with TLV VR.

16. Adjust Y.CROSS with YCH VR.

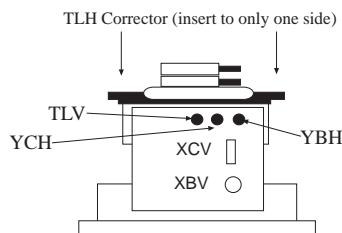


17. Adjust YBH with YBH VR.

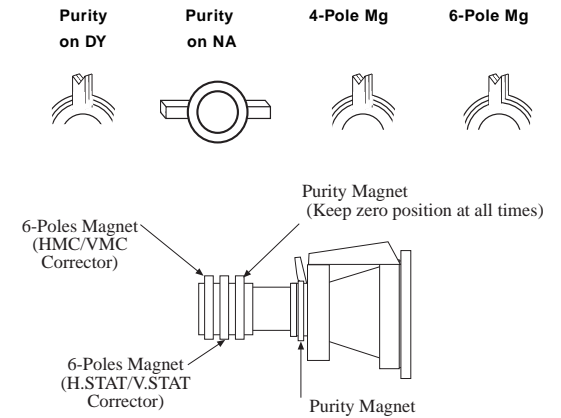


18. Paint lock the four-pole magnet ,six-pole magnet, XBV reactor, XCV corrector and TLH corrector handle.

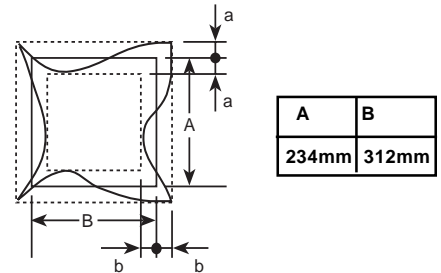
<VR Adjustment on DY>



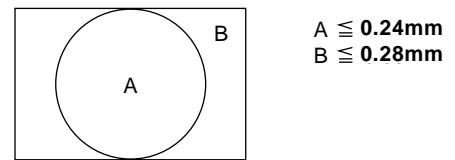
Zero Position NECK Assembly



● Vertical and Horizontal Position and Size Specification

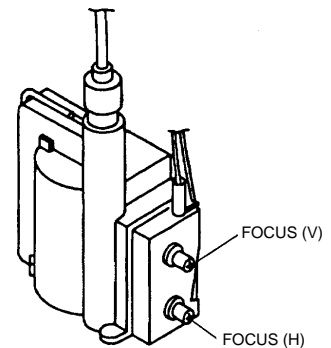


● Convergence Specification

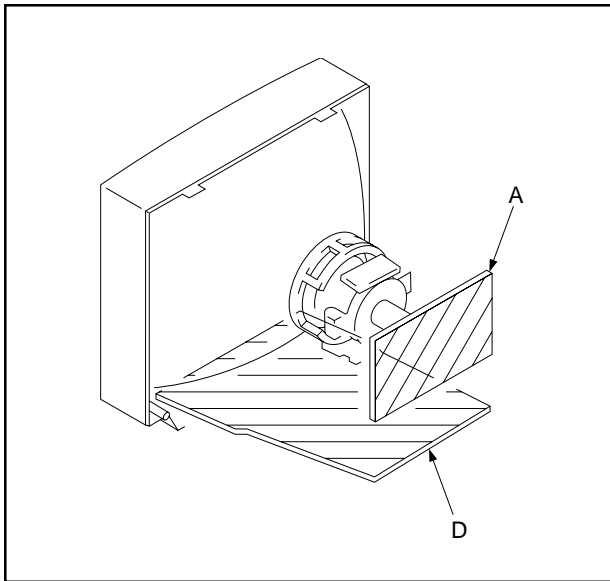


● Focus Adjustment

Adjust focus (V) and focus (H) for optimum focus.



5-2. CIRCUIT BOARDS LOCATION










5-3. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

Note:

- All capacitors are in μF unless otherwise noted. pF: $\mu\mu\text{F}$
- 50 WV or less are not indicated except for electrolytic.
- Indication of resistance, which does not have one for rating electrical power, is as follows.



Pitch: 5 mm
Rating electrical power 1/4 W (CHIP: 1/10 W)



- All resistors are in ohms.
-  : nonflammable resistor.
-  : fusible resistor.
- Δ : internal component.
-  : panel designation and adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- \perp : earth-ground.
-  : earth-chassis.
- The components identified by  in this basic schematic diagram have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- When replacing components identified by  , make the necessary adjustments by using RV501 () as indicated. (See page 9)

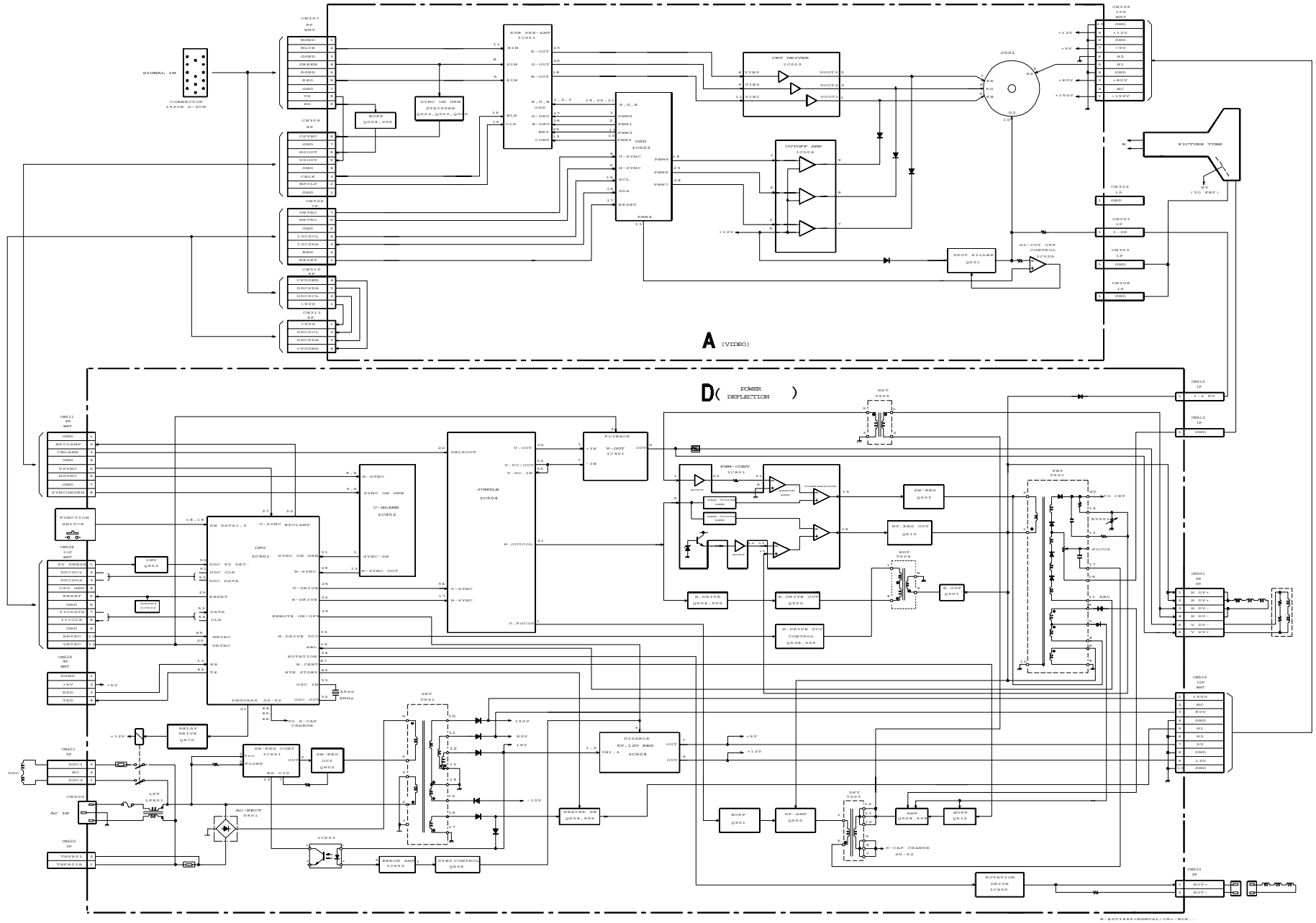
Note: The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par un trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

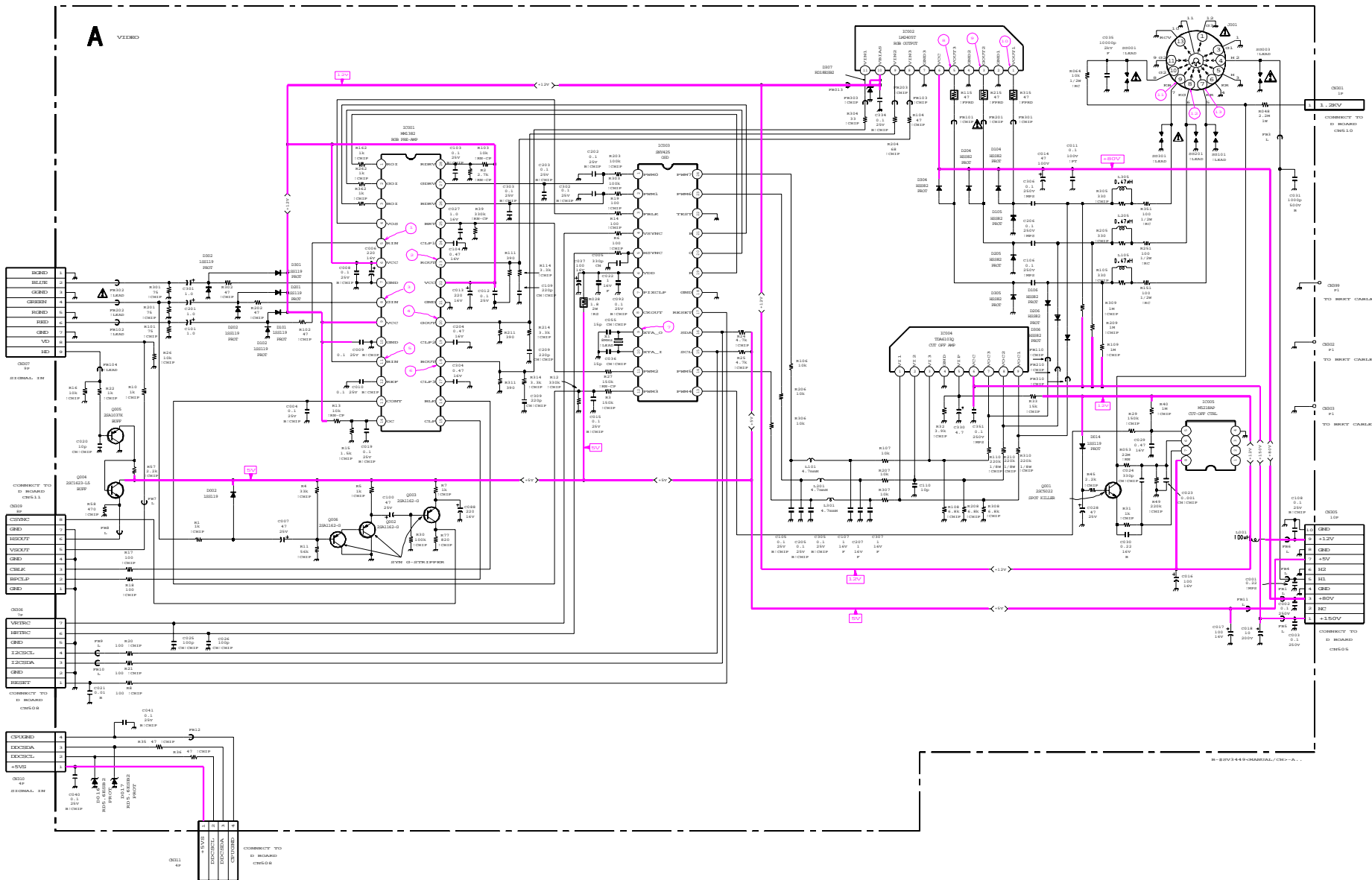
- When replacing parts shown in the table below, be sure to perform the safety related adjustment.

D - BOARD
Part Replaced ()
RV501
Part Replaced ()
IC801, IC901, IC904, FBT T501, D511, D515, D596, R532, R533, R534, R535, R538, R539, R540, R541, R542, R543, R544, R545, R807, R822, R823, R824, R939, R996, RV501, C509, C515, C516, C517, C519, C542, C548, C549, C802, C814, C815, C904, C910, R598, R599, C531

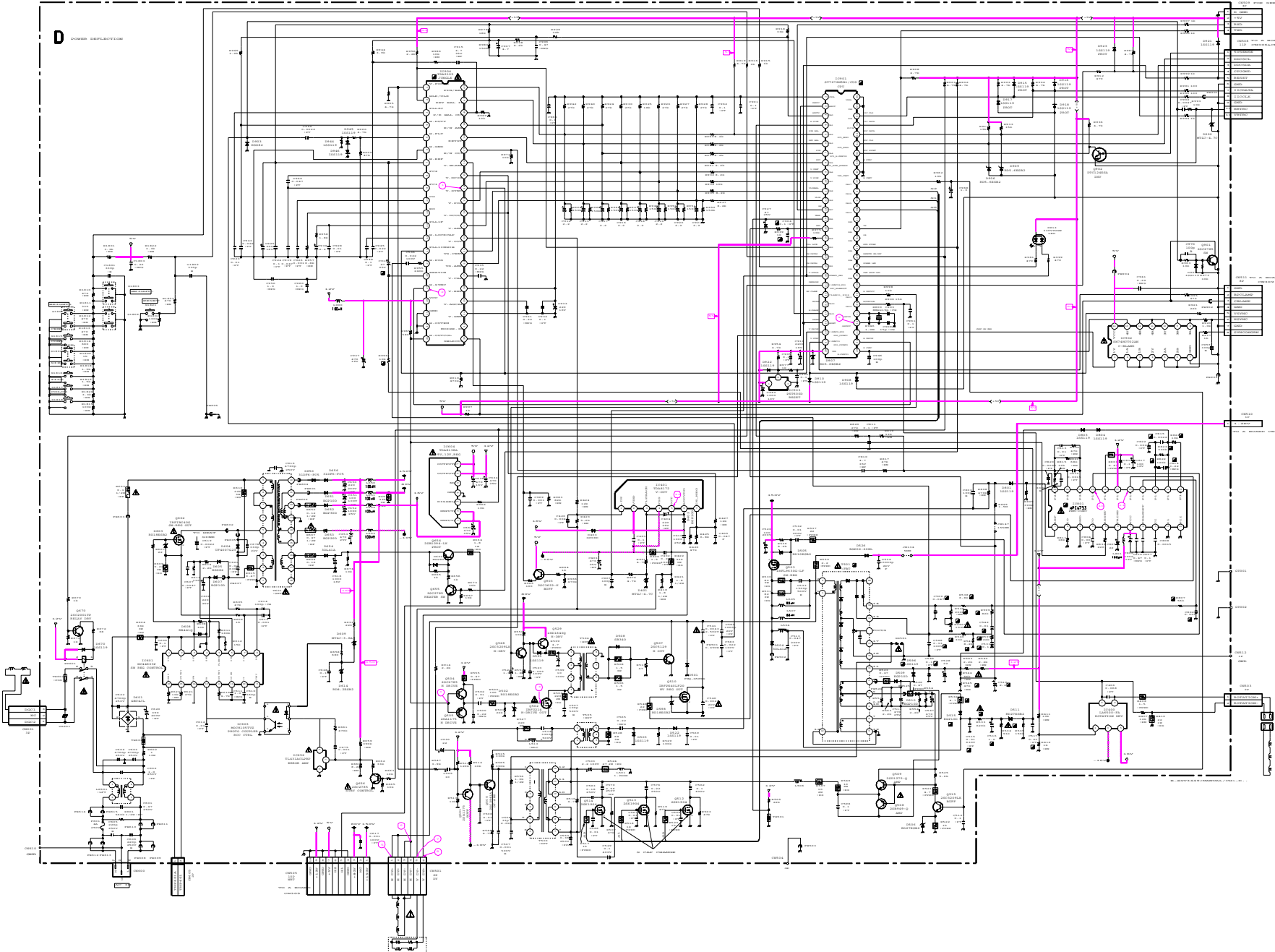
- All voltages are in Volts.
- Readings are taken with a 10 M Ω digital multimeter
- Readings are taken with a color-bar signal input.
- Voltage variations may be noted due to normal production tolerances.
- * : Can not be measured.
- Circled numbers are waveform references.
-  : B +bus.
-  : B - bus.



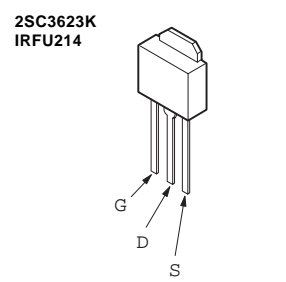
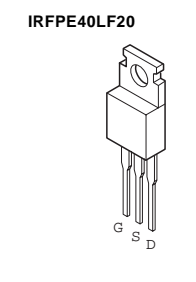
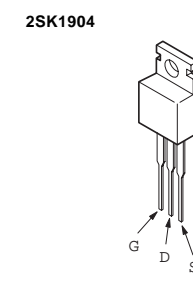
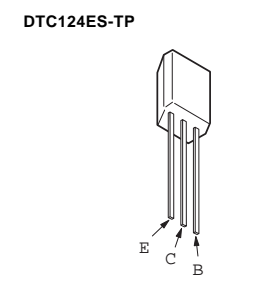
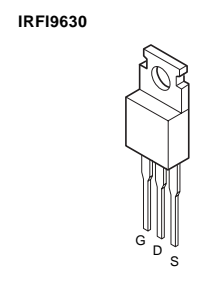
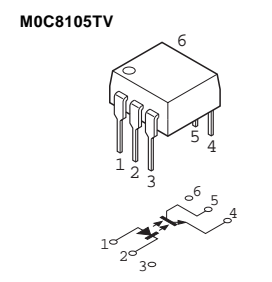
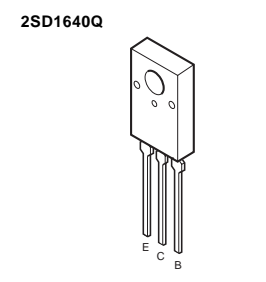
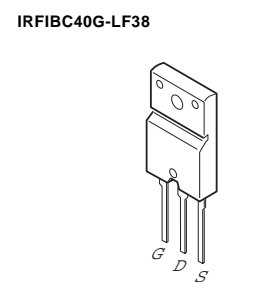
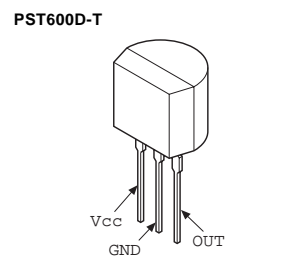
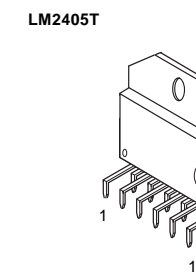
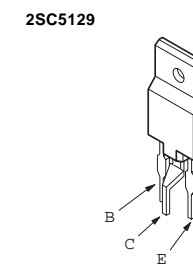
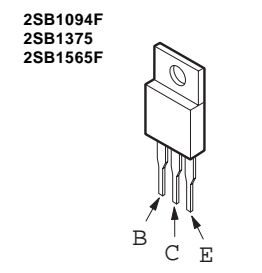
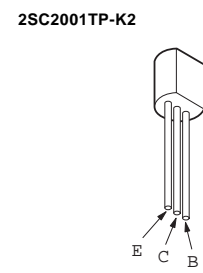
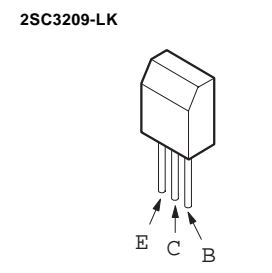
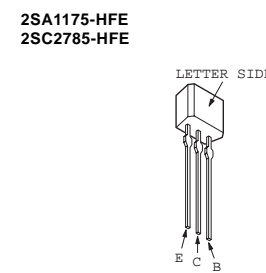
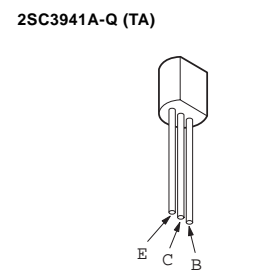
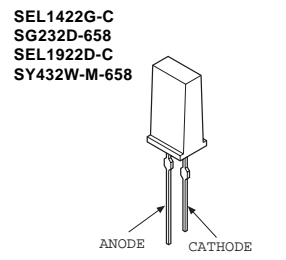
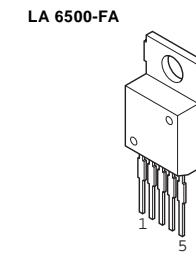
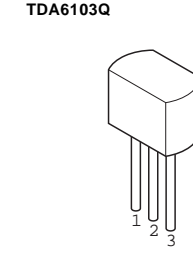
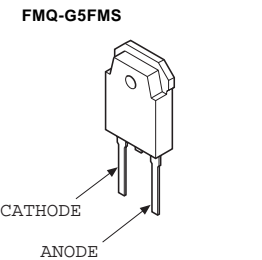
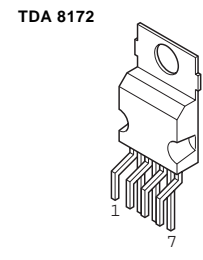
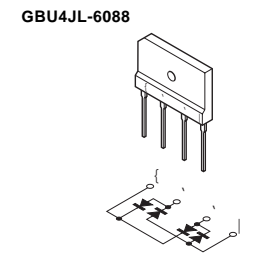
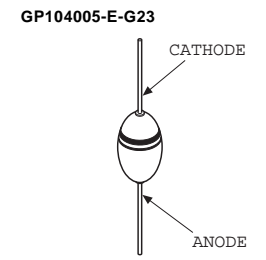
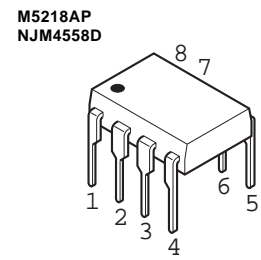
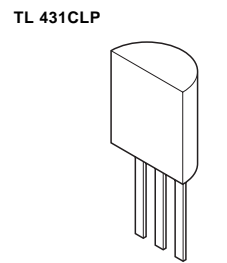
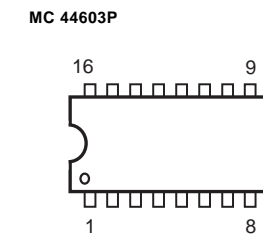
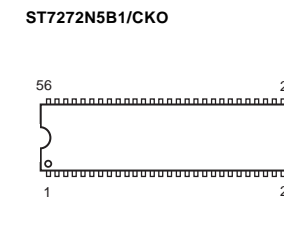
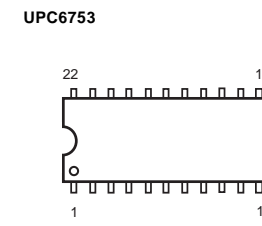
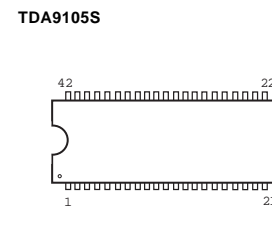
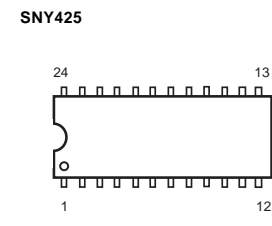
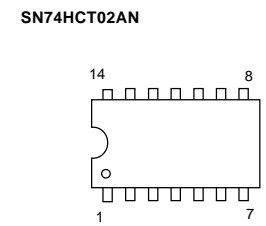
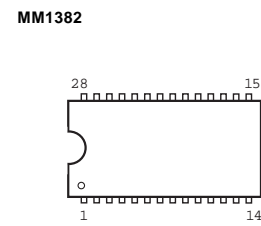
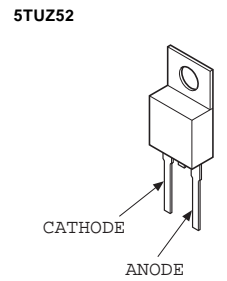
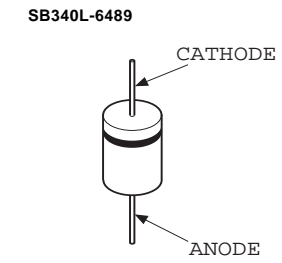
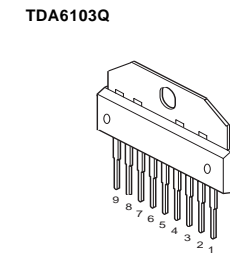
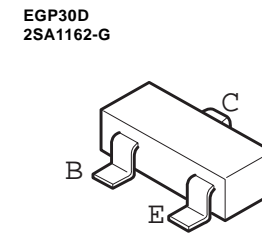
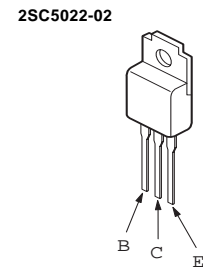
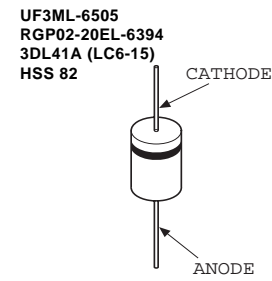
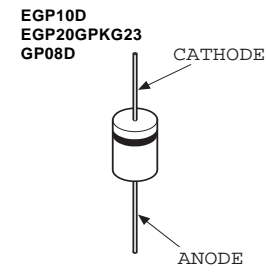
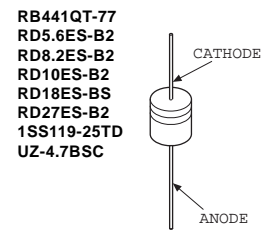
A VIDEO



D POWER DISTRIBUTION



5-4. SEMICONDUCTORS



SECTION 6 EXPLODED VIEWS

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The component parts of an assembly are indicated by the reference numbers in the remarks column.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Note:

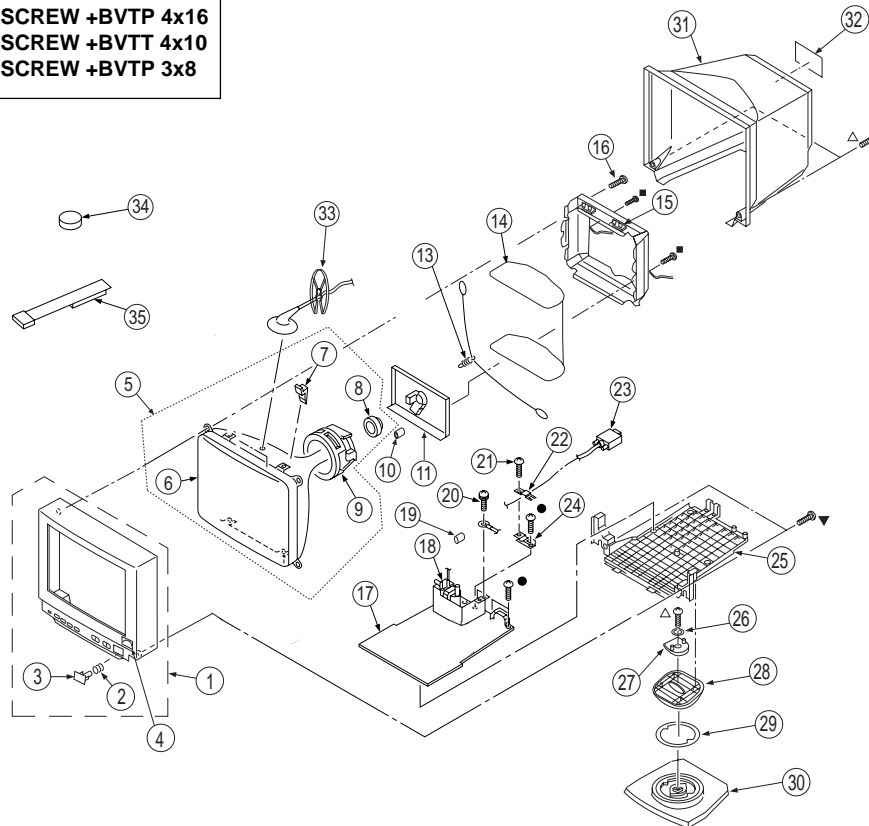
The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Note:

Les composants identifiés par un trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

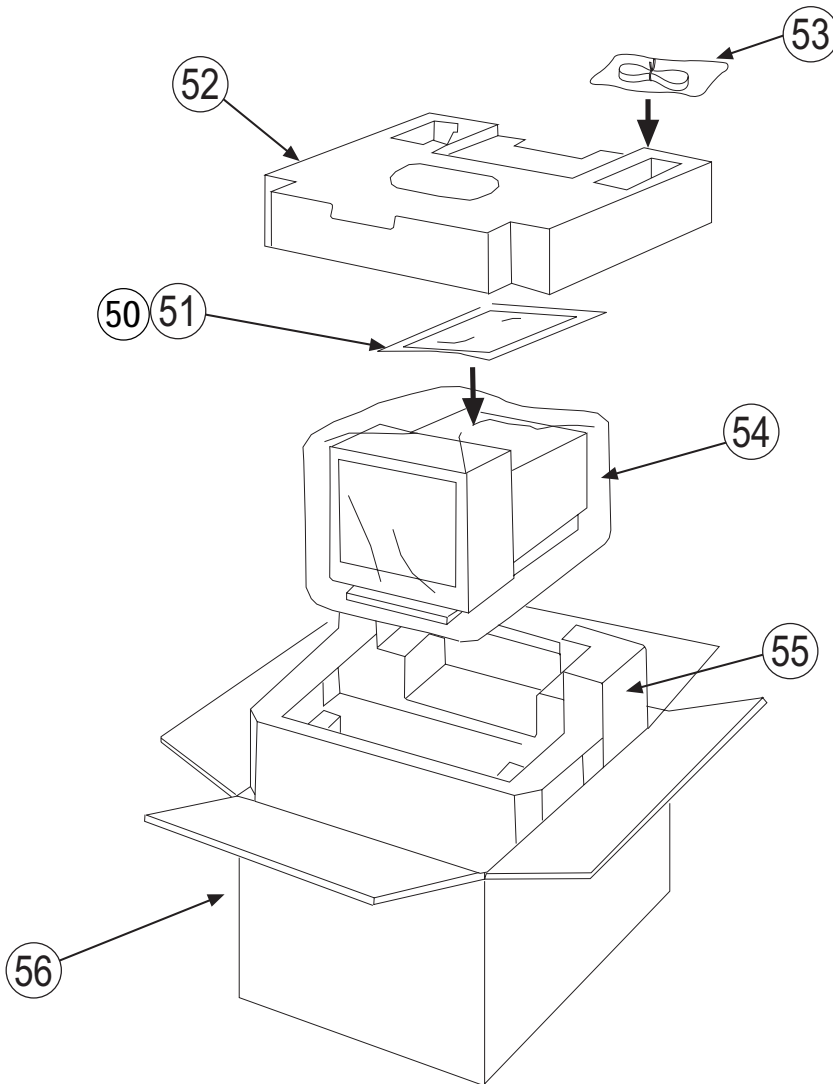
6-1. CHASSIS

●	7-685-648-79	SCREW +BVTP 3x12
△	7-685-663-71	SCREW +BVTP 4x16
▼	7-685-882-09	SCREW +BVTT 4x10
■	7-685-646-79	SCREW +BVTP 3x8



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
1 *	X-4034-876-1	BEZEL ASSY	2-3	19	1-543-653-11	CORE ASSY,BEAD (DIVISION TYPE)	
2	4-060-596-01	SPRING, COMPRESSION		20	4-389-025-01	SCREW (M4x8)(EXT.TOOTHWASHER)	
3	4-060-598-01	BUTTON, POWER		21	7-685-659-71	SCREW + BVTT 4x8 (S)	
4 *	4-060-152-01	LABEL, ENERGY STAR		22 *	4-060-151-01	STOPPER, CABLE	
5 Δ	8-738-733-82	ITC ASSY (17FRFM-R2)		23	1-775-535-11	CABLE ASSY VIDEO (15P D-SUB)	
6 Δ	8-738-731-05	CRT, 17FRSM (M41LKN70X)		24 *	4-060-150-01	BRACKET, CABLE	
7	4-060-166-01	SPACER, DY		25 *	4-060-612-01	COVER, BOTTOM	
8 Δ	1-452-923-21	NECK ASSY (NA-2914)		26 *	4-060-178-01	HOLDER, STAND	
9 Δ	8-451-487-11	DY Y17FRG-M		27	4-060-183-01	STOPPER (A)	
10	1-500-386-11	FILTER CLAMP (FERRITE CORE)		28 *	4-060-613-01	SLIDER	
11 *	A-1298-231-A	A BOARD, COMPLETE		29 *	4-060-180-01	RING, TILT SWIVEL	
13	4-060-603-01	SPRING, TENSION		30 *	X-4034-879-1	STAND BASE, ASSY	
14 Δ	1-416-282-21	COIL, DEMAGNETIZATION		31	X-4034-877-1	CABINET ASSY	
15 *	4-056-260-11	SPACER, DGC		32 *	4-064-116-01	LABEL, INFORMATION	
16	4-365-808-01	SCREW (5), TAPPING		33	4-060-155-01	HOLDER, HV CABLE	
17 *	A-1346-658-A	D BOARD, COMPLETE		34	1-452-032-00	MAGNET, DISC	
18 Δ	1-453-240-21	TRANSFORMER ASSY, FLYBACK(NX-4103/JIE4)		35 *	X-4034-792-1	PERMALLOY ASSY, STAND	

6-2. PACKING MATERIALS



<u>REF.NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>REMARK</u>
50	4-060-206-01	DISK, WINDOWS 95	
51	3-860-654-11	MANUAL, INSTRUCTION	
52 *	4-060-618-01	CUSHION, TOP	
53 Δ	1-783-481-11	CORD SET, POWER	
54 *	4-060-620-01	BAG, POLYETHYLENE	
55 *	4-060-617-01	CUSHION, BOTTOM	
56 *	4-061-139-01	INDIVIDUAL CARTON	

SECTION 7 ELECTRICAL PARTS LIST



Note:

The components identified by shading and mark **Δ** are critical for safety. Replace only with part number specified.

Note:

Les composants identifiés par un trame et une marque **Δ** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by **Δ** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS

- All resistors are in ohms
- F : nonflammable

CAPACITORS

- MF = μF

INDUCTORS

- UH = μH, MMH = mH

When indicating parts by reference number, please include the board name.



REF.NO.	PART NO.	DESCRIPTION	REMARK		
*	A-1298-231-A	A BOARD, COMPLETE			
	4-382-854-01	SCREW (M3X8), P, SW (+)			
		CAPACITOR			
C001	1-136-169-00	FILM	0.22MF	5%	50V
C002	1-137-528-11	FILM	0.1MF	10%	250V
C003	1-137-528-11	FILM	0.1MF	10%	250V
C004	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C005	1-163-263-11	CERAMIC CHIP	330PF	5%	50V
C006	1-126-934-11	ELECT	220MF	20%	16V
C007	1-104-664-11	ELECT	47MF	20%	25V
C008	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C009	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C010	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C011	1-106-220-00	MYLAR	0.1MF	10%	100V
C012	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C013	1-126-934-11	ELECT	220MF	20%	16V
C014	1-107-932-11	ELECT	47MF	20%	100V
C015	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C016	1-126-933-11	ELECT	100MF	20%	16V
C017	1-126-933-11	ELECT	100MF	20%	16V
C018	1-107-746-11	ELECT	10MF	20%	200V
C019	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C020	1-163-227-11	CERAMIC CHIP	10PF	5%	50V
C021	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C022	1-164-346-11	CERAMIC CHIP	1MF		16V
C023	1-163-275-11	CERAMIC CHIP	0.001MF	5%	50V
C024	1-163-263-11	CERAMIC CHIP	330PF	5%	50V
C025	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C026	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C027	1-164-346-11	CERAMIC CHIP	1MF		16V
C028	1-107-888-11	ELECT	47MF	20%	25V
C029	1-107-823-11	CERAMIC CHIP	0.47MF	10%	16V
C030	1-164-489-11	CERAMIC CHIP	0.22MF	10%	16V

REF.NO.	PART NO.	DESCRIPTION	REMARK		
C031	1-162-318-11	CERAMIC	0.001MF	10%	500V
C035	1-115-349-51	CERAMIC	0.01MF		2KV
C036	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C037	1-126-933-11	ELECT	100MF	20%	16V
C040	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C041	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C055	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C088	1-126-934-11	ELECT	220MF	20%	16V
C092	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C100	1-104-664-11	ELECT	47MF	20%	25V
C101	1-126-960-11	ELECT	1MF	20%	50V
C103	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C104	1-107-823-11	CERAMIC CHIP	0.47MF	10%	16V
C105	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C106	1-137-528-11	FILM	0.1MF	10%	250V
C107	1-164-346-11	CERAMIC CHIP	1MF		16V
C108	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C109	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C110	1-163-227-11	CERAMIC CHIP	10PF	5%	50V
C201	1-126-960-11	ELECT	1MF	20%	50V
C202	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C203	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C204	1-107-823-11	CERAMIC CHIP	0.47MF	10%	16V
C205	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C206	1-137-528-11	FILM	0.1MF	10%	250V
C207	1-164-346-11	CERAMIC CHIP	1MF		16V
C209	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C301	1-126-960-11	ELECT	1MF	20%	50V
C302	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C303	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C304	1-107-823-11	CERAMIC CHIP	0.47MF	10%	16V
C305	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C306	1-137-528-11	FILM	0.1MF	10%	250V
C307	1-164-346-11	CERAMIC CHIP	1MF		16V
C309	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C330	1-107-905-11	ELECT	4.7MF	20%	50V
C334	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C351	1-137-528-11	FILM	0.1MF	10%	250V



Note: The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
CONNECTOR							
CN301	1-506-108-41	PIN, CONNECTOR (TERMINAL PIN)		FB103	1-500-104-21	FERRITE	
CN302	1-695-915-11	TAB (CONTACT)		FB104	1-412-911-11	FERRITE	
CN303	1-695-915-11	TAB (CONTACT)		FB110	1-412-911-11	FERRITE	
CN305	1-564-513-11	PLUG, CONNECTOR 10P		FB201 Δ	1-500-104-21	FERRITE	
CN306 *	1-564-510-11	PLUG, CONNECTOR 7P		FB202 Δ	1-414-793-21	FERRITE	
CN307 *	1-564-512-11	PLUG, CONNECTOR 9P		FB203	1-500-104-21	FERRITE	
CN309	1-564-511-11	PLUG, CONNECTOR 8P		FB210	1-412-911-11	FERRITE	
CN310 *	1-564-507-11	PLUG, CONNECTOR 4P		FB301 Δ	1-500-104-21	FERRITE	
CN311 *	1-564-507-11	PLUG, CONNECTOR 4P		FB302 Δ	1-414-793-21	FERRITE	
CN399	1-695-915-11	TAB (CONTACT)		FB303	1-500-104-21	FERRITE	
DIODE							
D002	8-719-911-19	DIODE 1SS119-25		FB310	1-412-911-11	FERRITE	
D014	8-719-911-19	DIODE 1SS119-25		IC			
D016	8-719-109-89	DIODE RD5.6ESB2		IC001	8-759-474-78	IC MM1382	
D017	8-719-109-89	DIODE RD5.6ESB2		IC002	8-759-435-33	IC LM2405T	
D101	8-719-911-19	DIODE 1SS119-25		IC003	8-759-399-76	IC SNY425	
D102	8-719-911-19	DIODE 1SS119-25		IC004	8-759-434-40	IC TDA6103Q/N3,112	
D104	8-719-970-83	DIODE HSS82		IC005	8-759-634-51	IC M5218AP	
D105	8-719-970-83	DIODE HSS82		JACK			
D106	8-719-970-83	DIODE HSS82		J001 Δ	1-251-598-11	SOCKET, CRT	
D201	8-719-911-19	DIODE 1SS119-25		COIL			
D202	8-719-911-19	DIODE 1SS119-25		L001	1-412-537-31	INDUCTOR	100UH
D204	8-719-970-83	DIODE HSS82		L101	1-407-500-00	INDUCTOR	4.7MMH
D205	8-719-970-83	DIODE HSS82		L105	1-410-750-41	INDUCTOR	0.47UH
D206	8-719-970-83	DIODE HSS82		L201	1-407-500-00	INDUCTOR	4.7MMH
D301	8-719-911-19	DIODE 1SS119-25		L205	1-410-750-41	INDUCTOR	0.47UH
D302	8-719-911-19	DIODE 1SS119-25		L301	1-407-500-00	INDUCTOR	4.7MMH
D304	8-719-970-83	DIODE HSS82		L305	1-410-750-41	INDUCTOR	0.47UH
D305	8-719-970-83	DIODE HSS82		TRANSISTOR			
D306	8-719-970-83	DIODE HSS82		Q001	8-729-032-61	TRANSISTOR 2SC5022-02	
D307	8-719-110-49	DIODE RD18ESB2		Q002	8-729-216-22	TRANSISTOR 2SA1162-G	
FERRITE BEAD				Q003	8-729-216-22	TRANSISTOR 2SA1162-G	
FB001	1-412-911-11	FERRITE		Q004	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
FB003	1-412-911-11	FERRITE		Q005	8-729-216-22	TRANSISTOR 2SA1162-G	
FB004	1-412-911-11	FERRITE		Q006	8-729-216-22	TRANSISTOR 2SA1162-G	
FB005	1-412-911-11	FERRITE		RESISTOR			
FB006	1-412-911-11	FERRITE		R001	1-216-049-91	RES,CHIP	1K 5% 1/10W
FB007	1-412-911-11	FERRITE		R002	1-216-661-11	METAL CHIP	2.7K 0.50% 1/10W
FB008	1-412-911-11	FERRITE		R003	1-216-101-00	RES,CHIP	150K 5% 1/10W
FB009	1-412-911-11	FERRITE		R004	1-216-085-00	RES,CHIP	33K 5% 1/10W
FB010	1-412-911-11	FERRITE		R005	1-216-049-91	RES,CHIP	1K 5% 1/10W
FB011	1-412-911-11	FERRITE		R006	1-216-025-91	RES,CHIP	100 5% 1/10W
FB012	1-412-911-11	FERRITE		R007	1-216-049-91	RES,CHIP	1K 5% 1/10W
FB013	1-412-911-11	FERRITE		R008	1-216-025-91	RES,CHIP	100 5% 1/10W
FB101 Δ	1-500-104-21	FERRITE		R010	1-216-049-91	RES,CHIP	1K 5% 1/10W
FB102 Δ	1-414-793-21	FERRITE		R011	1-216-091-00	RES,CHIP	56K 5% 1/10W



Note: The components identified by shading and mark **△** are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un trame et une marque **△** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R012	1-216-109-00	RES,CHIP	330K 5% 1/10W	R202	1-216-017-91	RES,CHIP	47 5% 1/10W
R013	1-216-675-11	METAL CHIP	10K 0.50% 1/10W	R203	1-216-097-91	RES,CHIP	100K 5% 1/10W
R014	1-216-025-91	RES,CHIP	100 5% 1/10W	R204	1-216-021-00	RES,CHIP	68 5% 1/10W
R015	1-216-053-00	RES,CHIP	1.5K 5% 1/10W	R205	1-216-037-00	RES,CHIP	330 5% 1/10W
R016	1-216-073-00	RES,CHIP	10K 5% 1/10W	R206	1-216-073-00	RES,CHIP	10K 5% 1/10W
R017	1-216-025-91	RES,CHIP	100 5% 1/10W	R207	1-216-073-00	RES,CHIP	10K 5% 1/10W
R018	1-216-025-91	RES,CHIP	100 5% 1/10W	R208	1-216-069-00	RES,CHIP	6.8K 5% 1/10W
R019	1-216-025-91	RES,CHIP	100 5% 1/10W	R209	1-216-121-91	RES,CHIP	1M 5% 1/10W
R020	1-216-025-91	RES,CHIP	100 5% 1/10W	R210	1-216-254-00	RES,CHIP	220K 5% 1/8W
R021	1-216-025-91	RES,CHIP	100 5% 1/10W	R211	1-249-412-11	CARBON	390 5% 1/4W
R022	1-216-049-91	RES,CHIP	1K 5% 1/10W	R214	1-216-061-00	RES,CHIP	3.3K 5% 1/10W
R024	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	R215	1-249-401-11	CARBON	47 5% 1/4W F
R025	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	R251	1-202-549-00	SOLID	100 20% 1/2W
R026	1-216-073-00	RES,CHIP	10K 5% 1/10W	R262	1-216-049-91	RES,CHIP	1K 5% 1/10W
R027	1-218-756-11	METAL CHIP	150K 0.50% 1/10W	R301	1-216-022-00	RES,CHIP	75 5% 1/10W
R028	1-216-372-11	METAL OXIDE	1.8 5% 2W F	R302	1-216-017-91	RES,CHIP	47 5% 1/10W
R029	1-216-101-00	RES,CHIP	150K 5% 1/10W	R303	1-216-097-91	RES,CHIP	100K 5% 1/10W
R030	1-216-097-91	RES,CHIP	100K 5% 1/10W	R304	1-216-013-00	RES,CHIP	33 5% 1/10W
R031	1-216-049-91	RES,CHIP	1K 5% 1/10W	R305	1-216-037-00	RES,CHIP	330 5% 1/10W
R032	1-216-665-11	METAL CHIP	3.9K 0.50% 1/10W	R306	1-216-073-00	RES,CHIP	10K 5% 1/10W
R033	1-216-679-11	METAL CHIP	15K 0.50% 1/10W	R307	1-216-073-00	RES,CHIP	10K 5% 1/10W
R035	1-216-017-91	RES,CHIP	47 5% 1/10W	R308	1-216-069-00	RES,CHIP	6.8K 5% 1/10W
R036	1-216-017-91	RES,CHIP	47 5% 1/10W	R309	1-216-121-91	RES,CHIP	1M 5% 1/10W
R039	1-218-764-11	METAL CHIP	330K 0.50% 1/10W	R310	1-216-254-00	RES,CHIP	220K 5% 1/8W
R040	1-216-121-91	RES,CHIP	1M 5% 1/10W	R311	1-249-412-11	CARBON	390 5% 1/4W
R045	1-216-057-00	RES,CHIP	2.2K 5% 1/10W	R314	1-216-061-00	RES,CHIP	3.3K 5% 1/10W
R048	1-211-885-21	METAL	2.2M 5% 1W	R315	1-249-401-11	CARBON	47 5% 1/4W F
R049	1-218-760-11	METAL CHIP	220K 0.50% 1/10W	R351	1-202-549-00	SOLID	100 20% 1/2W
R053	1-219-621-91	METAL	22M 10% 1/4W	R362	1-216-049-91	RES,CHIP	1K 5% 1/10W
R057	1-216-057-00	RES,CHIP	2.2K 5% 1/10W				
R058	1-216-041-00	RES,CHIP	470 5% 1/10W				
R064	1-202-830-00	SOLID	10K 20% 1/2W				
R077	1-216-047-91	RES,CHIP	820 5% 1/10W				
R101	1-216-022-00	RES,CHIP	75 5% 1/10W				
R102	1-216-017-91	RES,CHIP	47 5% 1/10W				
R103	1-216-675-11	METAL CHIP	10K 0.50% 1/10W				
R104	1-216-017-91	RES,CHIP	47 5% 1/10W				
R105	1-216-037-00	RES,CHIP	330 5% 1/10W				
R106	1-216-073-00	RES,CHIP	10K 5% 1/10W				
R107	1-216-073-00	RES,CHIP	10K 5% 1/10W				
R108	1-216-069-00	RES,CHIP	6.8K 5% 1/10W				
R109	1-216-121-91	RES,CHIP	1M 5% 1/10W				
R110	1-216-254-00	RES,CHIP	220K 5% 1/8W				
R111	1-249-412-11	CARBON	390 5% 1/4W				
R114	1-216-061-00	RES,CHIP	3.3K 5% 1/10W				
R115	1-249-401-11	CARBON	47 5% 1/4W F				
R151	1-202-549-00	SOLID	100 20% 1/2W				
R162	1-216-049-91	RES,CHIP	1K 5% 1/10W				
R201	1-216-022-00	RES,CHIP	75 5% 1/10W				

SPARK GAP

SG001	△	1-519-422-11	GAP, SPARK
SG003	△	1-517-499-21	GAP, SPARK
SG101	△	1-517-499-21	GAP, SPARK
SG201	△	1-517-499-21	GAP, SPARK
SG301	△	1-517-499-21	GAP, SPARK

CRYSTAL

X1	1-567-890-11	VIBRATOR, CRYSTAL
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Note: The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifique.

REF.NO.	PART NO.	DESCRIPTION	REMARK		
D					
*	A-1346-658-A D BOARD, COMPLETE				
	1-533-223-11	HOLDER, FUSE			
*	1-900-801-67	CONNECTOR ASSY			
	4-060-502-01	HOLDER, LED (A)			
	4-382-854-11	SCREW (M3X10), P, SW (+)			
	4-389-025-01	SCREW (M4) (EXT TOOTH WASHER)			
	7-685-647-79	SCREW +BVTB 3X10 TYPE2			
	<u>CAPACITOR</u>				
C401	1-128-528-11	ELECT	470MF	20%	25V
C402	1-106-228-00	MYLAR	0.22MF	10%	100V
C403	1-130-495-00	FILM	0.1MF	5%	50V
C404	1-107-894-11	ELECT	220MF	20%	35V
C405	1-101-006-00	CERAMIC	0.047MF		50V
C406	1-137-375-11	FILM	0.068MF	5%	50V
C410	1-107-914-11	ELECT	1000MF	20%	25V
C420	1-137-368-11	FILM	0.0047MF	5%	50V
C500	1-136-169-00	FILM	0.22MF	5%	50V
C502	1-137-370-11	FILM	0.01MF	5%	50V
C503	1-107-667-11	ELECT	2.2MF	20%	160V
C505	1-126-964-11	ELECT	10MF	20%	50V
C506	1-137-370-11	FILM	0.01MF	5%	50V
C507	1-162-318-11	CERAMIC	0.001MF	10%	500V
C508	1-109-843-11	CERAMIC	33PF	5%	2KV
C509	1-137-374-11	FILM	0.047MF	5%	50V
C512	1-130-495-00	FILM	0.1MF	5%	50V
C513	1-106-383-00	MYLAR	0.047MF	10%	200V
C514	1-126-941-11	ELECT	470MF	20%	25V
C515	1-136-203-11	FILM	10000PF	5%	630V
C516	1-126-960-11	ELECT	1MF	20%	50V
C517	1-137-370-11	FILM	0.01MF	5%	50V
C518	1-165-136-11	CERAMIC	3300PF	10%	500V
C519	1-126-961-11	ELECT	2.2MF	20%	50V
C520	1-107-955-11	ELECT	100MF	20%	200V
C521	1-126-960-11	ELECT	1MF	20%	50V
C523	1-106-375-12	MYLAR	0.022MF	10%	100V
C527	1-162-117-00	CERAMIC	100PF	10%	500V
C528	1-126-965-11	ELECT	22MF	20%	50V
C529	1-107-846-11	FILM	0.1MF	5%	400V
C531	1-130-495-00	FILM	0.1MF	5%	50V
C532	1-107-364-11	MYLAR	0.01MF	10%	200V
C533	1-164-735-11	CERAMIC	0.0015MF	10%	500V
C534	1-115-349-51	CERAMIC	0.01MF		2KV
C536	1-106-375-12	MYLAR	0.022MF	10%	100V
C540 Δ	1-136-064-00	FILM	2200PF	3%	2KV

REF.NO.	PART NO.	DESCRIPTION	REMARK		
C541 Δ	1-109-997-11	FILM	0.0043MF	3%	2.5KV
C542	1-137-370-11	FILM	0.01MF	5%	50V
C547	1-126-941-11	ELECT	470MF	20%	25V
C548	1-137-425-11	FILM	0.33MF	10%	100V
C549	1-130-495-00	FILM	0.1MF	5%	50V
C550	1-117-206-21	FILM	0.36MF	5%	250V
C562	1-107-846-11	FILM	0.1MF	5%	400V
C565	1-136-169-00	FILM	0.22MF	5%	50V
C566	1-137-370-11	FILM	0.01MF	5%	50V
C567	1-137-370-11	FILM	0.01MF	5%	50V
C568	1-137-370-11	FILM	0.01MF	5%	50V
C569	1-137-370-11	FILM	0.01MF	5%	50V
C570	1-115-519-11	FILM	0.56MF	5%	250V
C576	1-115-514-11	FILM	0.22MF	5%	250V
C582	1-161-754-00	CERAMIC	0.001MF	10%	2KV
C583	1-106-375-12	MYLAR	0.022MF	10%	100V
C593	1-117-662-71	FILM	0.18MF	5%	250V
C598	1-130-495-00	FILM	0.1MF	5%	50V
C599	1-128-582-11	ELECT	10MF	20%	100V
C601 Δ	1-104-708-11	FILM	0.47MF	20%	250V
C602 Δ	1-107-533-11	FILM	1MF	20%	250V
C603 Δ	1-113-912-11	CERAMIC	0.0047MF	20%	250V
C604 Δ	1-113-912-11	CERAMIC	0.0047MF	20%	250V
C605 Δ	1-113-896-11	CERAMIC	220PF	10%	250V
C606 Δ	1-113-896-11	CERAMIC	220PF	10%	250V
C607	1-137-368-11	FILM	0.0047MF	5%	50V
C608	1-107-894-11	ELECT	220MF	20%	35V
C609	1-130-495-00	FILM	0.1MF	5%	50V
C610	1-102-115-00	CERAMIC	560PF	10%	50V
C611	1-136-177-00	FILM	1MF	5%	50V
C612	1-137-370-11	FILM	0.01MF	5%	50V
C614	1-102-973-00	CERAMIC	100PF	5%	50V
C615	1-137-364-11	FILM	0.001MF	5%	50V
C616	1-113-912-11	CERAMIC	0.0047MF	20%	250V
C617	1-106-343-00	MYLAR	0.001MF	10%	100V
C618	1-107-884-11	ELECT	1000MF	20%	16V
C619	1-137-366-11	FILM	0.0022MF	5%	50V
C620 Δ	1-109-984-11	ELECT(BLOCK)	390MF	20%	400V
C621	1-136-203-11	FILM	10000PF	5%	630V
C622 Δ	1-113-912-11	CERAMIC	0.0047MF	20%	250V
C628	1-130-495-00	FILM	0.1MF	5%	50V
C634	1-126-941-11	ELECT	470MF	20%	25V
C635	1-126-935-11	ELECT	470MF	20%	16V
C650	1-125-700-11	ELECT(BLOCK)	220MF	20%	200V
C651	1-107-933-11	ELECT	100MF	20%	100V
C652	1-107-914-11	ELECT	1000MF	20%	25V
C653	1-126-941-11	ELECT	470MF	20%	25V
C662	1-126-941-11	ELECT	470MF	20%	25V
C675	1-137-364-11	FILM	0.001MF	5%	50V



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REF.NO.	PART NO.	DESCRIPTION	REMARK			REF.NO.	PART NO.	DESCRIPTION	REMARK		
C678	1-162-115-00	CERAMIC	330PF	10%	2KV	C933	1-126-934-11	ELECT	220MF	20%	16V
C802	1-102-074-00	CERAMIC	0.001MF	10%	50V	C934	1-126-961-11	ELECT	2.2MF	20%	50V
C803	1-102-106-00	CERAMIC	100PF	10%	50V	C935	1-136-169-00	FILM	0.22MF	5%	50V
C804	1-137-364-11	FILM	0.001MF	5%	50V	C937	1-126-935-11	ELECT	470MF	20%	16V
C805	1-126-965-11	ELECT	22MF	20%	50V	C939	1-137-374-11	FILM	0.047MF	5%	50V
C806	1-126-767-11	ELECT	1000MF	20%	16V	C940	1-137-374-11	FILM	0.047MF	5%	50V
C807	1-130-495-00	FILM	0.1MF	5%	50V	C941	1-136-169-00	FILM	0.22MF	5%	50V
C808	1-137-365-11	FILM	0.0015MF	5%	50V	C942	1-126-926-11	ELECT	1000MF	20%	10V
C810	1-107-713-11	ELECT	4.7MF	20%	35V	C943	1-137-372-11	FILM	0.022MF	5%	50V
C811	1-130-495-00	FILM	0.1MF	5%	50V	C944	1-137-366-11	FILM	0.0022MF	5%	50V
C812	1-137-365-11	FILM	0.0015MF	5%	50V	C945	1-137-372-11	FILM	0.022MF	5%	50V
C813	1-137-370-11	FILM	0.01MF	5%	50V	C946	1-102-106-00	CERAMIC	100PF	10%	50V
C814	1-136-169-00	FILM	0.22MF	5%	50V	C948	1-130-495-00	FILM	0.1MF	5%	50V
C815	1-137-366-11	FILM	0.0022MF	5%	50V	C950	1-117-378-11	FILM	1MF	5%	50V
C817	1-126-933-11	ELECT	100MF	20%	16V	C955	1-102-106-00	CERAMIC	100PF	10%	50V
C818	1-130-495-00	FILM	0.1MF	5%	50V	C960	1-136-177-00	FILM	1MF	5%	50V
C819	1-136-173-00	FILM	0.47MF	5%	50V	C961	1-130-495-00	FILM	0.1MF	5%	50V
C820	1-137-366-11	FILM	0.0022MF	5%	50V	C962	1-130-495-00	FILM	0.1MF	5%	50V
C821	1-102-112-00	CERAMIC	330PF	10%	50V	C963	1-130-495-00	FILM	0.1MF	5%	50V
C822	1-137-368-11	FILM	0.0047MF	5%	50V	C967	1-102-106-00	CERAMIC	100PF	10%	50V
C901	1-130-495-00	FILM	0.1MF	5%	50V	C968	1-126-960-11	ELECT	1MF	20%	50V
C902	1-137-368-11	FILM	0.0047MF	5%	50V	C969	1-137-364-11	FILM	0.001MF	5%	50V
C903	1-102-951-00	CERAMIC	15PF	5%	50V	C970	1-102-106-00	CERAMIC	100PF	10%	50V
C904	1-130-495-00	FILM	0.1MF	5%	50V	C1801	1-102-112-00	CERAMIC	330PF	10%	50V
C905	1-130-495-00	FILM	0.1MF	5%	50V	C1802	1-102-112-00	CERAMIC	330PF	10%	50V
C906	1-136-173-00	FILM	0.47MF	5%	50V	C1803	1-136-169-00	FILM	0.22MF	5%	50V
C907	1-126-963-11	ELECT	4.7MF	20%	50V						
C908	1-102-951-00	CERAMIC	15PF	5%	50V	CONNECTOR					
C910	1-104-664-11	ELECT	47MF	20%	25V	CN501 *	1-580-798-11	CONNECTOR PIN (DY) 6P			
C911	1-126-768-11	ELECT	2200MF	20%	16V	CN503 *	1-900-801-16	CONNECTOR ASSY, 2P BOARD IN			
C912	1-126-961-11	ELECT	2.2MF	20%	50V	CN504	1-695-915-11	TAB (CONTACT)			
C913	1-126-961-11	ELECT	2.2MF	20%	50V	CN505	1-564-513-11	PLUG, CONNECTOR 10P			
C915	1-107-713-11	ELECT	4.7MF	20%	35V	CN508 *	1-564-514-11	PLUG, CONNECTOR 11P			
C916	1-126-961-11	ELECT	2.2MF	20%	50V	CN509 *	1-508-879-11	BASE POST			
C917	1-126-961-11	ELECT	2.2MF	20%	50V	CN511	1-564-511-11	PLUG, CONNECTOR 8P			
C918	1-126-961-11	ELECT	2.2MF	20%	50V	CN512	1-695-915-11	TAB (CONTACT)			
C919	1-126-961-11	ELECT	2.2MF	20%	50V	CN600 Δ	1-251-227-11	INLET, AC			
C920	1-126-961-11	ELECT	2.2MF	20%	50V	CN601	1-691-960-11	PIN, CONNECTOR (PC BOARD) 3P			
C921	1-126-961-11	ELECT	2.2MF	20%	50V	CN605 *	1-506-371-00	PIN, CONNECTOR 2P			
C923	1-137-370-11	FILM	0.01MF	5%	50V	CN610	1-695-915-11	TAB (CONTACT)			
C924	1-130-495-00	FILM	0.1MF	5%	50V						
C925	1-126-934-11	ELECT	220MF	20%	16V	DIODE					
C926	1-137-364-11	FILM	0.001MF	5%	50V	D401	8-719-921-40	DIODE MTZJ-4.7C			
C927	1-104-664-11	ELECT	47MF	20%	25V	D402	8-719-979-58	DIODE EGP10D			
C928	1-137-370-11	FILM	0.01MF	5%	50V	D403	8-719-908-03	DIODE GP08D			
C929	1-130-495-00	FILM	0.1MF	5%	50V	D501	8-719-061-21	DIODE FMQ-G5FMS			
C930	1-126-965-11	ELECT	22MF	20%	50V	D502	8-719-110-49	DIODE RD18ESB2			
C931	1-136-169-00	FILM	0.22MF	5%	50V	D503	8-719-911-19	DIODE 1SS119-25			
C932	1-130-495-00	FILM	0.1MF	5%	50V						



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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
D504	8-719-051-97	DIODE 3DL41A(LC6-15)		D945	8-719-911-19	DIODE 1SS119-25	
D505	8-719-110-17	DIODE RD10ESB2		D946	8-719-911-19	DIODE 1SS119-25	
D506	8-719-110-67	DIODE RD27ESB2					
D508	8-719-975-77	DIODE SB340					
D509	8-719-979-58	DIODE EGP10D					
D510	8-719-979-58	DIODE EGP10D					
D511 Δ	8-719-110-67	DIODE RD27ESB2					
D515	8-719-979-58	DIODE EGP10D					
D522	8-719-911-19	DIODE 1SS119-25					
D526	8-719-018-82	DIODE RGP02-20EL-6394					
D595	8-719-911-19	DIODE 1SS119-25					
D596	8-719-911-19	DIODE 1SS119-25					
D598	8-719-110-49	DIODE RD18ESB2					
D601 Δ	8-719-025-88	DIODE GBU4JL-6088					
D602	8-719-970-83	DIODE HSS82					
D603	8-719-110-49	DIODE RD18ESB2					
D604	8-719-053-19	DIODE UF4007G23					
D605	8-719-970-83	DIODE HSS82					
D607	8-719-979-58	DIODE EGP10D					
D608	8-719-986-73	DIODE RB441Q					
D609	8-719-982-03	DIODE MTZJ-3.6A					
D614	8-719-110-08	DIODE RD8.2ESB2					
D650	8-719-054-72	DIODE 31DF6-FC5					
D651	8-719-979-58	DIODE EGP10D					
D652	8-719-979-50	DIODE EGP30D					
D653	8-719-979-84	DIODE EGP20DPKG23					
D654	8-719-051-97	DIODE 3DL41A(LC6-15)					
D656	8-719-054-72	DIODE 31DF6-FC5					
D670	8-719-911-19	DIODE 1SS119-25					
D801	8-719-911-19	DIODE 1SS119-25					
D803	8-719-911-19	DIODE 1SS119-25					
D804	8-719-911-19	DIODE 1SS119-25					
D903	8-719-970-83	DIODE HSS82					
D906	8-719-109-89	DIODE RD5.6ESB2					
D907	8-719-109-89	DIODE RD5.6ESB2					
D908	8-719-911-19	DIODE 1SS119-25					
D909	8-719-109-89	DIODE RD5.6ESB2					
D910	8-719-911-19	DIODE 1SS119-25					
D913	8-719-067-04	DIODE 339VYUGW/R2					
D915	8-719-911-19	DIODE 1SS119-25					
D916	8-719-911-19	DIODE 1SS119-25					
D917	8-719-911-19	DIODE 1SS119-25					
D918	8-719-911-19	DIODE 1SS119-25					
D920	8-719-921-40	DIODE MTZJ-4.7C					
D921	8-719-911-19	DIODE 1SS119-25					
D922	8-719-911-19	DIODE 1SS119-25					
D923	8-719-911-19	DIODE 1SS119-25					
D924	8-719-911-19	DIODE 1SS119-25					
D944	8-719-911-19	DIODE 1SS119-25					

FUSE

F601 Δ 1-576-231-11 FUSE (H.B.C.) 4A/250V

FERRITE BEAD

FB501 1-410-396-41 FERRITE 0.45UH

FB502 1-412-911-11 FERRITE

FB503 1-412-911-11 FERRITE

FB524 1-412-911-11 FERRITE

FB525 1-412-911-11 FERRITE

FB601 1-412-911-11 FERRITE

FB602 1-412-911-11 FERRITE

FB603 1-412-911-11 FERRITE

FB604 1-412-911-11 FERRITE

FB605 1-412-911-11 FERRITE

FB606 1-412-911-11 FERRITE

FB607 1-412-911-11 FERRITE

FB608 Δ 1-412-911-11 FERRITE

FB609 Δ 1-412-911-11 FERRITE

FB610 Δ 1-412-911-11 FERRITE

FB611 Δ 1-412-911-11 FERRITE

FB612 Δ 1-412-911-11 FERRITE

FB613 Δ 1-412-911-11 FERRITE

FB614 Δ 1-412-911-11 FERRITE

FB615 Δ 1-412-911-11 FERRITE

FB901 1-412-911-11 FERRITE

FB902 1-412-911-11 FERRITE

FB903 1-412-911-11 FERRITE

FB904 1-412-911-11 FERRITE

FB905 1-412-911-11 FERRITE

TERMINAL

GT001 * 1-537-738-21 TERMINAL, EARTH

GT002 * 1-537-738-21 TERMINAL, EARTH

IC

IC400 8-759-803-42 IC LA6500-FA

IC401 8-759-980-58 IC TDA8172

IC601 Δ 8-759-399-81 IC MC44603P

IC603 Δ 8-749-014-41 IC MOC8105TVZ

IC604 Δ 8-759-072-98 IC TDA8138A

IC652 Δ 8-759-466-13 IC TL431ACLPRP

IC801 Δ 8-759-466-15 IC UPC6753

IC901 8-759-536-91 IC ST7272N5B1/CUS

IC902 Δ 8-759-269-04 IC SN74HCT02AN

IC903 8-759-165-81 IC PST600D-T

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
IC904 Δ	8-759-399-77	IC TDA9105		RESISTOR			
COIL				R401	1-249-425-11	CARBON 4.7K	5% 1/4W
L501	1-412-550-11	INDUCTOR 1.2MMH		R407	1-215-447-00	METAL 12K	1% 1/4W
L504	1-459-104-00	COIL, WITH CORE		R408	1-249-383-11	CARBON 1.5	5% 1/4W F
L505	1-412-531-31	INDUCTOR 33UH		R410	1-215-859-00	METAL OXIDE 22	5% 1W F
L506	1-459-104-00	COIL, WITH CORE		R411	1-215-445-00	METAL 10K	1% 1/4W
L507	1-412-531-31	INDUCTOR 33UH		R412	1-215-421-00	METAL 1K	1% 1/4W
L513	1-409-896-11	COIL, HORIZONTAL LINEARITY		R418	1-214-798-21	METAL 1.8	1% 1/2W
L650	1-412-537-31	INDUCTOR 100UH		R420	1-215-461-00	METAL 47K	1% 1/4W
L651	1-412-537-31	INDUCTOR 100UH		R421	1-214-798-21	METAL 1.8	1% 1/2W
L652	1-406-665-11	INDUCTOR 100UH		R422	1-215-866-11	METAL OXIDE 330	5% 1W F
L653	1-412-537-31	INDUCTOR 100UH		R423	1-215-439-00	METAL 5.6K	1% 1/4W
L801	1-410-645-31	INDUCTOR 100UH		R424	1-215-447-00	METAL 12K	1% 1/4W
L900	1-410-645-31	INDUCTOR 100UH		R425	1-215-441-00	METAL 6.8K	1% 1/4W
FILTER				R426	1-249-383-11	CARBON 1.5	5% 1/4W F
LF601 Δ	1-429-180-11	TRANSFORMER, LINE FILTER		R427	1-215-447-00	METAL 12K	1% 1/4W
TRANSISTOR				R500	1-249-405-11	CARBON 100	5% 1/4W F
Q500	8-729-031-89	TRANSISTOR 2SC3941A-Q(TA)		R501	1-247-863-91	CARBON 22K	5% 1/4W
Q501	8-729-119-76	TRANSISTOR 2SA1175-HFE		R503	1-249-437-11	CARBON 47K	5% 1/4W
Q502 Δ	8-729-043-37	TRANSISTOR IRFU214		R504	1-215-888-00	METAL OXIDE 220	5% 2W F
Q503	8-729-027-97	TRANSISTOR IRFI9630G-LF		R505	1-247-863-91	CARBON 22K	5% 1/4W
Q504	8-729-119-78	TRANSISTOR 2SC2785-HFE		R506	1-216-391-11	METAL OXIDE 1.5	5% 3W F
Q505	8-729-119-76	TRANSISTOR 2SA1175-HFE		R507	1-249-437-11	CARBON 47K	5% 1/4W
Q507	8-729-030-67	TRANSISTOR 2SC5129(LBSONY1)		R508	1-216-391-11	METAL OXIDE 1.5	5% 3W F
Q508 Δ	8-729-042-24	TRANSISTOR 2SB949-Q(LE)		R509	1-249-389-11	CARBON 4.7	5% 1/4W F
Q509 Δ	8-729-042-33	TRANSISTOR 2SD1275Q-LE		R510	1-249-389-11	CARBON 4.7	5% 1/4W
Q510	8-729-027-82	TRANSISTOR IRFPE40LF20		R511	1-249-401-11	CARBON 47	5% 1/4W
	4-060-503-01	SHEET, INSULATING (for Q510)		R512	1-247-881-00	CARBON 120K	5% 1/4W
Q512	8-729-027-14	TRANSISTOR 2SK1904		R513	1-249-429-11	CARBON 10K	5% 1/4W
Q513	8-729-027-14	TRANSISTOR 2SK1904		R514	1-249-429-11	CARBON 10K	5% 1/4W
Q514	8-729-027-14	TRANSISTOR 2SK1904		R515	1-215-481-00	METAL 330K	1% 1/4W
Q515	8-729-140-50	TRANSISTOR 2SC3209LK		R517	1-249-417-11	CARBON 1K	5% 1/4W F
Q528	8-729-140-50	TRANSISTOR 2SC3209LK		R518	1-249-417-11	CARBON 1K	5% 1/4W F
Q529	8-729-028-34	TRANSISTOR 2SD1640Q,R		R519	1-249-437-11	CARBON 47K	5% 1/4W
Q602 Δ	8-729-926-79	TRANSISTOR IRFIBC40		R520	1-249-417-11	CARBON 1K	5% 1/4W F
Q654	8-729-141-83	TRANSISTOR 2SB1094-LK		R521	1-249-389-11	CARBON 4.7	5% 1/4W F
Q655	8-729-119-78	TRANSISTOR 2SC2785-HFE		R522	1-249-417-11	CARBON 1K	5% 1/4W F
Q656 Δ	8-729-119-78	TRANSISTOR 2SC2785-HFE		R523	1-249-377-11	CARBON 0.47	5% 1/4W F
Q670	8-729-011-92	TRANSISTOR 2SC2001TP-K1K2		R524	1-216-447-00	METAL OXIDE 27	5% 2W F
Q901	8-729-119-78	TRANSISTOR 2SC2785-HFE		R525	1-249-426-11	CARBON 5.6K	5% 1/4W
Q902	8-729-029-86	TRANSISTOR DTC124ESA		R526	1-249-377-11	CARBON 0.47	5% 1/4W F
Q903	8-729-107-78	TRANSISTOR 2SC3623-K		R527	1-215-913-11	METAL OXIDE 220	5% 3W F
				R528	1-215-910-00	METAL OXIDE 68	5% 3W F
				R529	1-249-441-11	CARBON 100K	5% 1/4W
				R530	1-216-474-11	METAL OXIDE 82	5% 3W F
				R531	1-216-474-11	METAL OXIDE 82	5% 3W F
				R532	1-249-389-11	CARBON 4.7	5% 1/4W F
				R533 Δ	1-215-488-00	METAL 620K	1% 1/4W



Note: The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifique.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R534 Δ	1-215-468-00	METAL	91K 1% 1/4W	R652 Δ	1-211-874-11	FUSIBLE	0.12 10% 1/2W
R535 Δ	1-215-473-00	METAL	150K 1% 1/4W	R654 Δ	1-219-154-11	FUSIBLE	0.12 10% 1/4W
R536	1-249-428-11	CARBON	8.2K 5% 1/4W	R655	1-249-417-11	CARBON	1K 5% 1/4W
R537	1-249-397-11	CARBON	22 5% 1/4W F	R656	1-249-417-11	CARBON	1K 5% 1/4W
R538	1-215-441-00	METAL	6.8K 1% 1/4W	R657	1-249-429-11	CARBON	10K 5% 1/4W
R539	1-215-476-00	METAL	200K 1% 1/4W	R658	1-215-417-00	METAL	680 1% 1/4W
R540	1-215-457-00	METAL	33K 1% 1/4W	R659	1-215-483-00	METAL	390K 1% 1/4W
R541	1-215-443-00	METAL	8.2K 1% 1/4W	R660	1-215-443-00	METAL	8.2K 1% 1/4W
R542 Δ	1-215-429-00	METAL	2.2K 1% 1/4W	R661	1-247-895-91	CARBON	470K 5% 1/4W
R543 Δ	1-215-429-00	METAL	2.2K 1% 1/4W	R662	1-215-457-00	METAL	33K 1% 1/4W
R544 Δ	1-215-463-00	METAL	56K 1% 1/4W	R663	1-249-429-11	CARBON	10K 5% 1/4W
R545 Δ	1-215-461-00	METAL	47K 1% 1/4W	R664	1-216-352-11	METAL OXIDE	1.8 5% 1W F
R546	1-249-397-11	CARBON	22 5% 1/4W F	R665	1-249-429-11	CARBON	10K 5% 1/4W
R547	1-249-424-11	CARBON	3.9K 5% 1/4W	R666	1-249-429-11	CARBON	10K 5% 1/4W
R548	1-215-437-00	METAL	4.7K 1% 1/4W	R667 Δ	1-211-881-11	FUSIBLE	0.47 10% 1/2W
R549	1-215-880-00	METAL OXIDE	10 5% 2W F	R670	1-249-417-11	CARBON	1K 5% 1/4W
R550	1-249-429-11	CARBON	10K 5% 1/4W	R671	1-249-417-11	CARBON	1K 5% 1/4W
R551	1-215-423-00	METAL	1.2K 1% 1/4W	R672	1-249-403-11	CARBON	68 5% 1/4W
R552	1-249-385-11	CARBON	2.2 5% 1/4W F	R673	1-249-429-11	CARBON	10K 5% 1/4W
R553	1-249-421-11	CARBON	2.2K 5% 1/4W	R674	1-249-429-11	CARBON	10K 5% 1/4W
R554	1-249-421-11	CARBON	2.2K 5% 1/4W	R801	1-249-377-11	CARBON	0.47 5% 1/4W F
R555	1-249-377-11	CARBON	0.47 5% 1/4W F	R807	1-249-438-11	CARBON	56K 5% 1/4W
R556	1-202-818-00	SOLID	1K 20% 1/2W	R808	1-215-485-00	METAL	470K 1% 1/4W
R563	1-249-421-11	CARBON	2.2K 5% 1/4W	R809	1-215-483-00	METAL	390K 1% 1/4W
R564	1-249-421-11	CARBON	2.2K 5% 1/4W	R811	1-249-432-11	CARBON	18K 5% 1/4W
R565	1-215-483-00	METAL	390K 1% 1/4W	R815	1-215-457-00	METAL	33K 1% 1/4W
R567	1-215-880-00	METAL OXIDE	10 5% 2W F	R817	1-215-461-00	METAL	47K 1% 1/4W
R598	1-215-453-00	METAL	22K 1% 1/4W	R819	1-215-457-00	METAL	33K 1% 1/4W
R599	1-215-467-00	METAL	82K 1% 1/4W	R820	1-215-455-00	METAL	27K 1% 1/4W
R601 Δ	1-202-847-00	SOLID	560K 20% 1/2W	R821	1-215-465-00	METAL	68K 1% 1/4W
R602 Δ	1-205-998-11	CEMENTED	1 5% 10W	R822	1-215-471-00	METAL	120K 1% 1/4W
R603 Δ	1-202-933-61	FUSIBLE	0.1 10% 1/2W F	R823	1-215-481-00	METAL	330K 1% 1/4W
R604	1-215-926-00	METAL OXIDE	33K 5% 3W F	R824	1-249-429-11	CARBON	10K 5% 1/4W
R605	1-249-437-11	CARBON	47K 5% 1/4W	R825	1-259-878-11	CARBON	1.5M 5% 1/4W
R606	1-249-417-11	CARBON	1K 5% 1/4W	R830	1-215-461-00	METAL	47K 1% 1/4W
R607	1-247-791-91	CARBON	22 5% 1/4W	R831	1-215-405-00	METAL	220 1% 1/4W
R608	1-249-429-11	CARBON	10K 5% 1/4W	R900	1-249-417-11	CARBON	1K 5% 1/4W
R609	1-216-381-11	METAL OXIDE	0.22 5% 3W F	R901	1-249-425-11	CARBON	4.7K 5% 1/4W
R610	1-215-925-11	METAL OXIDE	22K 5% 3W F	R902	1-249-425-11	CARBON	4.7K 5% 1/4W
R611	1-247-885-00	CARBON	180K 5% 1/4W	R903	1-249-425-11	CARBON	4.7K 5% 1/4W
R612	1-249-431-11	CARBON	15K 5% 1/4W	R904	1-249-425-11	CARBON	4.7K 5% 1/4W
R613	1-249-411-11	CARBON	330 5% 1/4W	R905	1-249-425-11	CARBON	4.7K 5% 1/4W
R614	1-249-421-11	CARBON	2.2K 5% 1/4W	R906	1-215-449-00	METAL	15K 1% 1/4W
R615	1-249-377-11	CARBON	0.47 5% 1/4W F	R907	1-249-417-11	CARBON	1K 5% 1/4W
R619	1-249-425-11	CARBON	4.7K 5% 1/4W	R908	1-249-425-11	CARBON	4.7K 5% 1/4W
R621	1-249-434-11	CARBON	27K 5% 1/4W	R909	1-249-437-11	CARBON	47K 5% 1/4W
R623	1-215-445-00	METAL	10K 1% 1/4W	R910	1-247-895-91	CARBON	470K 5% 1/4W
R631	1-215-405-00	METAL	220 1% 1/4W	R911	1-249-431-11	CARBON	15K 5% 1/4W
R651	1-215-878-00	METAL OXIDE	33K 5% 1W F				

Note: The components identified by shading and mark **Δ** are critical for safety. Replace only with part number specified.

Note: The components identified by **⊠** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.



REF.NO.	PART NO.	DESCRIPTION	REMARK
R912	1-249-413-11	CARBON 470	5% 1/4W
R914	1-249-421-11	CARBON 2.2K	5% 1/4W
R915	1-249-417-11	CARBON 1K	5% 1/4W
R916	1-249-417-11	CARBON 1K	5% 1/4W
R917	1-249-417-11	CARBON 1K	5% 1/4W
R918	1-249-435-11	CARBON 33K	5% 1/4W
R919	1-249-425-11	CARBON 4.7K	5% 1/4W
R920	1-249-417-11	CARBON 1K	5% 1/4W
R921	1-247-863-91	CARBON 22K	5% 1/4W
R924	1-249-434-11	CARBON 27K	5% 1/4W
R925	1-249-432-11	CARBON 18K	5% 1/4W
R926	1-249-434-11	CARBON 27K	5% 1/4W
R927	1-249-434-11	CARBON 27K	5% 1/4W
R928	1-249-434-11	CARBON 27K	5% 1/4W
R929	1-249-436-11	CARBON 39K	5% 1/4W
R930	1-249-434-11	CARBON 27K	5% 1/4W
R931	1-249-428-11	CARBON 8.2K	5% 1/4W
R932	1-249-428-11	CARBON 8.2K	5% 1/4W
R933	1-249-431-11	CARBON 15K	5% 1/4W
R934	1-249-429-11	CARBON 10K	5% 1/4W
R935	1-249-428-11	CARBON 8.2K	5% 1/4W
R936	1-249-425-11	CARBON 4.7K	5% 1/4W
R937	1-249-428-11	CARBON 8.2K	5% 1/4W
R938	1-249-428-11	CARBON 8.2K	5% 1/4W
R939	1-249-417-11	CARBON 1K	5% 1/4W
R940	1-249-434-11	CARBON 27K	5% 1/4W
R941	1-249-428-11	CARBON 8.2K	5% 1/4W
R942	1-249-434-11	CARBON 27K	5% 1/4W
R943	1-249-428-11	CARBON 8.2K	5% 1/4W
R944	1-249-424-11	CARBON 3.9K	5% 1/4W
R945	1-249-424-11	CARBON 3.9K	5% 1/4W
R946	1-247-903-00	CARBON 1M	5% 1/4W
R947	1-247-883-00	CARBON 150K	5% 1/4W
R948	1-247-883-00	CARBON 150K	5% 1/4W
R949	1-247-883-00	CARBON 150K	5% 1/4W
R950	1-247-883-00	CARBON 150K	5% 1/4W
R951	1-247-883-00	CARBON 150K	5% 1/4W
R952	1-247-883-00	CARBON 150K	5% 1/4W
R954	1-249-425-11	CARBON 4.7K	5% 1/4W
R955	1-215-478-00	METAL 240K	1% 1/4W
R956	1-249-421-11	CARBON 2.2K	5% 1/4W
R957	1-215-441-00	METAL 6.8K	1% 1/4W
R958	1-249-420-11	CARBON 1.8K	5% 1/4W
R959	1-249-428-11	CARBON 8.2K	5% 1/4W
R960	1-249-425-11	CARBON 4.7K	5% 1/4W
R962	1-249-429-11	CARBON 10K	5% 1/4W
R963	1-249-429-11	CARBON 10K	5% 1/4W
R964	1-247-883-00	CARBON 150K	5% 1/4W

REF.NO.	PART NO.	DESCRIPTION	REMARK
R965	1-249-415-11	CARBON 680	5% 1/4W
R966	1-247-895-91	CARBON 470K	5% 1/4W
R968	1-247-883-00	CARBON 150K	5% 1/4W
R972	1-249-429-11	CARBON 10K	5% 1/4W
R973	1-249-429-11	CARBON 10K	5% 1/4W
R975	1-249-429-11	CARBON 10K	5% 1/4W
R976	1-249-425-11	CARBON 4.7K	5% 1/4W
R977	1-249-417-11	CARBON 1K	5% 1/4W
R979	1-249-432-11	CARBON 18K	5% 1/4W
R980	1-247-883-00	CARBON 150K	5% 1/4W
R981	1-249-413-11	CARBON 470	5% 1/4W
R983	1-215-467-00	METAL 82K	1% 1/4W
R984	1-249-417-11	CARBON 1K	5% 1/4W
R985	1-247-807-31	CARBON 100	5% 1/4W
R986	1-215-445-00	METAL 10K	1% 1/4W
R987	1-249-425-11	CARBON 4.7K	5% 1/4W
R989	1-249-429-11	CARBON 10K	5% 1/4W
R990	1-247-807-31	CARBON 100	5% 1/4W
R991	1-247-807-31	CARBON 100	5% 1/4W
R992	1-249-417-11	CARBON 1K	5% 1/4W
R993	1-249-429-11	CARBON 10K	5% 1/4W
R994	1-249-417-11	CARBON 1K	5% 1/4W
R995	1-249-413-11	CARBON 470	5% 1/4W
R996	1-249-429-11	CARBON 10K	5% 1/4W
R997	1-249-417-11	CARBON 1K	5% 1/4W
R998	1-249-429-11	CARBON 10K	5% 1/4W
R999	1-249-413-11	CARBON 470	5% 1/4W
R1801	1-215-433-00	METAL 3.3K	1% 1/4W
R1806	1-215-421-00	METAL 1K	1% 1/4W
R1810	1-215-413-00	METAL 470	1% 1/4W
R1811	1-215-409-00	METAL 330	1% 1/4W
R1812	1-215-413-00	METAL 470	1% 1/4W
R1813	1-215-413-00	METAL 470	1% 1/4W
R1814	1-215-417-00	METAL 680	1% 1/4W
R1815	1-215-469-00	METAL 100K	1% 1/4W
R1818	1-215-425-00	METAL 1.5K	1% 1/4W
R1819	1-215-425-00	METAL 1.5K	1% 1/4W
R1820	1-215-433-00	METAL 3.3K	1% 1/4W
R1822	1-215-433-00	METAL 3.3K	1% 1/4W
R1823	1-215-413-00	METAL 470	1% 1/4W
R1832	1-215-469-00	METAL 100K	1% 1/4W

VARIABLE RESISTOR

⊠ RV501 Δ 1-241-767-21 RES, ADJ, CERMET 100K
4-060-176-01 COVER, VOLUME 6 MOLD (for RV501)



Note: The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un trame et une marque Δ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

REF.NO.	PART NO.	DESCRIPTION	REMARK
RELAY			
RY601	Δ 1-755-031-11	RELAY	
SWITCH			
S1801	1-692-431-21	SWITCH, TACTILE	
S1802	1-692-431-21	SWITCH, TACTILE	
S1803	1-692-431-21	SWITCH, TACTILE	
S1809	1-692-431-21	SWITCH, TACTILE	
S1815	1-692-220-11	SWITCH, TACTILE	
S1816	1-692-220-11	SWITCH, TACTILE	
S1817	1-692-220-11	SWITCH, TACTILE	
S1818	1-692-220-11	SWITCH, TACTILE	
S1821	1-692-431-21	SWITCH, TACTILE	
SPARK GAP			
SG501	Δ 1-519-422-11	GAP, SPARK	
TRANSFORMER			
T501	Δ 1-453-240-21	TRANSFORMER ASSY, FLYBACK	
T503	1-429-109-11	TRANSFORMER, FERRITE (DFT)	
T504	Δ 1-426-971-21	TRANSFORMER, FERRITE (HDT)	
T505	1-426-998-11	TRANSFORMER, FERRITE (HST)	
T601	Δ 1-431-247-11	TRANSFORMER, CONVERTER (SRT)	
THERMISTOR			
TH501	1-807-796-11	THERMISTOR	
TH601	Δ 1-809-260-11	THERMISTOR, POWER	
TH602	Δ 1-809-827-11	THERMISTOR, POSITIVE	
VARISTOR			
VA601	Δ 1-810-622-11	VARISTOR	
CRYSTAL			
X900	1-567-890-11	VIBRATOR, CRYSTAL	

REF.NO.	PART NO.	DESCRIPTION	REMARK
MISCELLANEOUS			
Δ	1-416-282-21	COIL, DEMAGNETIZATION	
Δ	1-452-923-21	NECK ASSY (NA-2914)	
	1-543-653-11	CORE ASSY, BEAD (DIVISION TYPE)	
Δ	1-783-481-11	CORD SET, POWER	
	4-060-206-01	DISK, WINDOWS 95	
	3-860-654-11	MANUAL, INSTRUCTION	
Δ	8-451-487-11	DY Y17FRG-M	
Δ	1-453-240-21	TRANSFORMER ASSY, FLYBACK(NX-4103//JIE4)	
Δ	8-738-731-05	CRT, 17FRSM (M41LKN70X)	

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