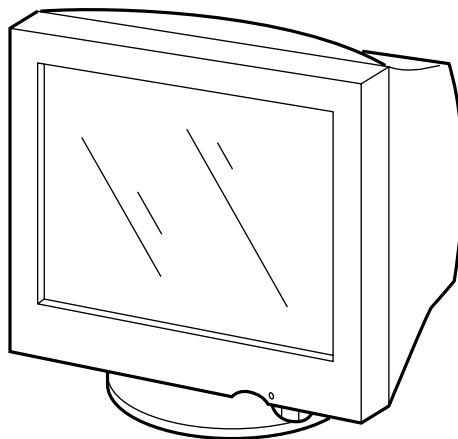


# CPD-E220/E215E/E220E

## SERVICE MANUAL

[CPD-E220]  
*Equator Model*  
*S. Hemisphere Model*  
*N. Hemisphere Model*  
Chassis No. SCC-L35B-A



[CPD-E215E]  
*AEP Model*  
Chassis No. SCC-L35D-A

[CPD-E220E]  
*AEP Model*  
Chassis No. SCC-L35C-A

# H1 CHASSIS

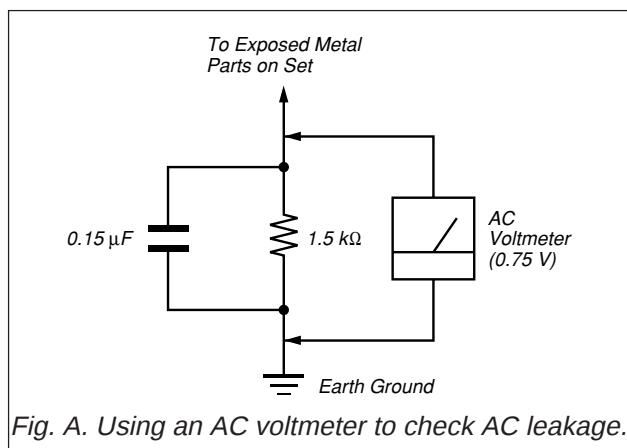
### SPECIFICATIONS

|                          |                                                                                                                          |                                                                                                                                                                                                                                                                                                                                             |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CRT                      | 0.24 mm aperture grille pitch (center)<br>17 inches measured diagonally<br>90-degree deflection<br>FD Trinitron          | * Recommended horizontal and vertical timing condition <ul style="list-style-type: none"><li>• Horizontal sync width should be more than 1.0 <math>\mu</math>sec.</li><li>• Horizontal blanking width should be more than 3.0 <math>\mu</math>sec.</li><li>• Vertical blanking width should be more than 500 <math>\mu</math>sec.</li></ul> |
| Viewable image size      | Approx. 327 $\times$ 243 mm (w/h)<br>(14 $\frac{3}{4}$ $\times$ 9 $\frac{5}{8}$ inches)<br>16.0" viewing image           | Design and specifications are subject to change without notice.                                                                                                                                                                                                                                                                             |
| Resolution               |                                                                                                                          |                                                                                                                                                                                                                                                                                                                                             |
| Maximum                  | Horizontal: 1600 dots (E220/E220E)<br>1280 dots (E215E)<br>Vertical: 1200 lines (E220/E220E)<br>1024 lines (E215E)       |                                                                                                                                                                                                                                                                                                                                             |
| Recommended              | Horizontal: 1024 dots<br>Vertical: 768 lines                                                                             |                                                                                                                                                                                                                                                                                                                                             |
| Standard image area      | Approx. 312 $\times$ 234 mm (w/h)<br>(12 $\frac{3}{8}$ $\times$ 9 $\frac{1}{4}$ inches)                                  |                                                                                                                                                                                                                                                                                                                                             |
| Deflection frequency*    | Horizontal: 30 to 85 kHz (E220/E220E)<br>30 to 70 kHz (E215E)<br>Vertical: 48 to 120 Hz                                  |                                                                                                                                                                                                                                                                                                                                             |
| AC input voltage/current | 220 to 240 V, 50/60 Hz, 0.9 A                                                                                            |                                                                                                                                                                                                                                                                                                                                             |
| Power consumption        | 120 W                                                                                                                    |                                                                                                                                                                                                                                                                                                                                             |
| Dimensions               | Approx. 404 $\times$ 413.5 $\times$ 419.5 mm (w/h/<br>d) (16 $\times$ 16 $\frac{3}{8}$ $\times$ 16 $\frac{5}{8}$ inches) |                                                                                                                                                                                                                                                                                                                                             |
| Mass                     | Approx. 20 kg (44 lb 1 oz)                                                                                               |                                                                                                                                                                                                                                                                                                                                             |
| Plug and Play            | DDC1/DDC2B/DDC2Bi                                                                                                        |                                                                                                                                                                                                                                                                                                                                             |

TRINITRON® COLOR COMPUTER DISPLAY  
**SONY®**

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cords for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the B+ and HV to see if they are specified values. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
8. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC Leakage. Check leakage as described below.



## LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes).

Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOMs that are suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

### WARNING!!

**NEVER TURN ON THE POWER IN A CONDITION IN WHICH THE DEGAUSS COIL HAS BEEN REMOVED.**

### SAFETY-RELATED COMPONENT WARNING!!

**COMPONENTS IDENTIFIED BY SHADING AND MARK  $\triangle$  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL FOR SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL FOR SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.**

### AVERTISSEMENT!!

**NE JAMAIS METTRE SOUS TENSION QUAND LA BOBINE DE DEMAGNETISATION EST ENLEVÉE.**

### ATTENTION AUX COMPOSANTS RELATIFS À LA SÉCURITÉ!!

**LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET UNE MARQUE  $\triangle$  SONT CRITIQUES POUR LA SÉCURITÉ. NE LES REMPLACER QUE PAR UNE PIÈCE PORTANT LE NUMÉRO SPECIFIÉ. LES RÉGLAGES DE CIRCUIT DONT L'IMPORTANCE EST CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT SONT IDENTIFIÉS DANS LE PRÉSENT MANUEL. SUIVRE CES PROCÉDURES LORS DE CHAQUE REMPLACEMENT DE COMPOSANTS CRITIQUES, OU LORSQU'UN MAUVAIS FONCTIONNEMENT EST SUSPECTÉ.**

## POWER SAVING FUNCTION

This monitor meets the power-saving guidelines set by VESA, ENERGY STAR, and NUTEK. If the monitor is connected to a computer or video graphics board that is DPMS (Display Power Management Signaling) compliant, the monitor will automatically reduce power consumption in three stages as shown below.

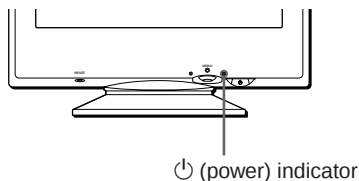
| Power mode                   | Power consumption | ⏻ (power) indicator        |
|------------------------------|-------------------|----------------------------|
| normal operation             | ≤ 120 W           | green                      |
| 1 standby                    | ≤ 15 W            | green and orange alternate |
| 2 suspend (sleep)*           | ≤ 15 W            | green and orange alternate |
| 3 active off** (deep sleep)* | ≤ 3 W             | orange                     |
| power off                    | 0 W               | off                        |

\* “Sleep” and “deep sleep” are power saving modes defined by the Environmental Protection Agency.

\*\* When your computer is in a power saving mode, MONITOR IS IN POWER SAVE MODE appears on the screen if you press any button on the monitor. After a few seconds, the monitor enters the power saving mode again.

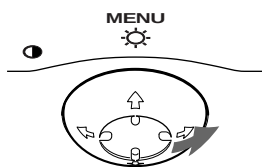
## DIAGNOSIS

This monitor is equipped with a self-diagnosis function. If there is a problem with your monitor or computer, the screen will go blank and the ⏻ (power) indicator will either light up green or flash orange. If the ⏻ (power) indicator is lit in orange, the computer is in power saving mode. Try pressing any key on the keyboard.



### If the ⏻ (power) indicator is green

- 1 Disconnect the video input cable or turn off the connected computer.
- 2 Press the ⏻ (power) button twice to turn the monitor off and then on.
- 3 Move the control button ➡ for 2 seconds before the monitor enters power saving mode.



If all four color bars appear (white, red, green, blue), the monitor is working properly. Reconnect the video input cable and check the condition of your computer.

If the color bars do not appear, there is a potential monitor failure. Inform your authorized Sony dealer of the monitor's condition.

### If the ⏻ (power) indicator is flashing orange

**Press the ⏻ (power) button twice to turn the monitor off and then on.**

If the ⏻ (power) indicator lights up green, the monitor is working properly.

If the ⏻ (power) indicator is still flashing, there is a potential monitor failure. Count the number of seconds between orange flashes of the ⏻ (power) indicator and inform your authorized Sony dealer of the monitor's condition. Be sure to note the model name and serial number of your monitor. Also note the make and model of your computer and video board.

## TIMING SPECIFICATION

| PRIMARY MODE<br>MODE AT PRODUCTION | MODE 1     | MODE 2     | MODE 3     | MODE 4     | MODE 5     | MODE 6     | MODE 7     | MODE 8      |
|------------------------------------|------------|------------|------------|------------|------------|------------|------------|-------------|
| RESOLUTION                         | 640 X 480  | 800 X 600  | 832 X 624  | 1024 X 768 | 1024 X 768 | 720 X 400  | 640 X 480  | 1280 X 1024 |
| CLOCK                              | 25.175 MHz | 56.250 MHz | 57.283 MHz | 78.750 MHz | 94.500 MHz | 28.322 MHz | 36.000 MHz | 135.000 MHz |
| — HORIZONTAL —                     |            |            |            |            |            |            |            |             |
| H-FREQ                             | 31.469 kHz | 53.674 kHz | 49.725 kHz | 60.024 kHz | 68.677 kHz | 31.469 kHz | 43.269 kHz | 79.976 kHz  |
|                                    | usec       | usec       | usec       | usec       | usec       | usec       | usec       | usec        |
| H. TOTAL                           | 31.778     | 18.631     | 20.111     | 16.660     | 14.561     | 31.777     | 23.111     | 12.504      |
| H. BLK                             | 6.356      | 4.409      | 5.586      | 3.657      | 3.725      | 6.355      | 5.333      | 3.022       |
| H. FP                              | 0.636      | 0.569      | 0.559      | 0.203      | 0.508      | 0.636      | 1.556      | 0.119       |
| H. SYNC                            | 3.813      | 1.138      | 1.117      | 1.219      | 1.016      | 3.813      | 1.556      | 1.067       |
| H. BP                              | 1.907      | 2.702      | 3.910      | 2.235      | 2.201      | 1.907      | 2.222      | 1.837       |
| H. ACTIV                           | 25.422     | 14.222     | 14.524     | 13.003     | 10.836     | 25.422     | 17.778     | 9.481       |
| — VERTICAL —                       |            |            |            |            |            |            |            |             |
| V. FREQ(HZ)                        | 59.940 Hz  | 85.061 Hz  | 74.550 Hz  | 75.030 Hz  | 84.997 Hz  | 70.087 Hz  | 85.008 Hz  | 75.025 Hz   |
|                                    | lines      | lines      | lines      | lines      | lines      | lines      | lines      | lines       |
| V. TOTAL                           | 525        | 631        | 667        | 800        | 808        | 449        | 509        | 1066        |
| V. BLK                             | 45         | 31         | 43         | 32         | 40         | 49         | 29         | 42          |
| V. FP                              | 10         | 1          | 1          | 1          | 1          | 12         | 1          | 1           |
| V. SYNC                            | 2          | 3          | 3          | 3          | 3          | 2          | 3          | 3           |
| V. BP                              | 33         | 27         | 39         | 28         | 36         | 35         | 25         | 38          |
| V. ACTIV                           | 480        | 600        | 624        | 768        | 768        | 400        | 480        | 1024        |
| — SYNC —                           |            |            |            |            |            |            |            |             |
| INT(G)                             | NO         | NO         | NO         | NO         | NO         | NO         | NO         | NO          |
| EXT(H/V)/POLARITY                  | YES -/-    | YES +/+    | YES -/-    | YES +/+    | YES +/+    | YES -/+    | YES -/-    | YES +/+     |
| EXT(CS)/POLARITY                   | NO         | NO         | NO         | NO         | NO         | NO         | NO         | NO          |
| INT/NON INT                        | NON INT    | NON INT    | NON INT    | NON INT    | NON INT    | NON INT    | NON INT    | NON INT     |

2000.8.28 VER.

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## SECTION 1 GENERAL

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.

### Precautions

#### Warning on power connections

- Use the supplied power cord. If you use a different power cord, be sure that it is compatible with your local power supply.
- Before disconnecting the power cord, wait at least 30 seconds after turning off the power to allow the static electricity on the screen's surface to discharge.
- After the power is turned on, the screen is demagnetized (degaussed) for about 5 seconds. This generates a strong magnetic field around the screen which may affect data stored on magnetic tapes and disks placed near the monitor. Be sure to keep magnetic recording equipment, tapes, and disks away from the monitor.

The equipment should be installed near an easily accessible outlet.

#### Installation

Do not install the monitor in the following places:

- on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies, etc.) that may block the ventilation holes
- near heat sources such as radiators or air ducts, or in a place subject to direct sunlight
- in a place subject to severe temperature changes
- in a place subject to mechanical vibration or shock
- on an unstable surface
- near equipment which generates magnetism, such as a transformer or high voltage power lines
- near or on an electrically charged metal surface

#### Maintenance

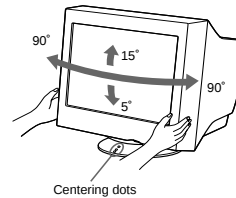
- Clean the screen with a soft cloth. If you use a glass cleaning liquid, do not use any type of cleaner containing an anti-static solution or similar additive as this may scratch the screen's coating.
- Do not rub, touch, or tap the surface of the screen with sharp or abrasive items such as a ballpoint pen or screwdriver. This type of contact may result in a scratched picture tube.
- Clean the cabinet, panel and controls with a soft cloth lightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent, such as alcohol or benzene.

#### Transportation

When you transport this monitor for repair or shipment, use the original carton and packing materials.

#### Use of the tilt-swivel

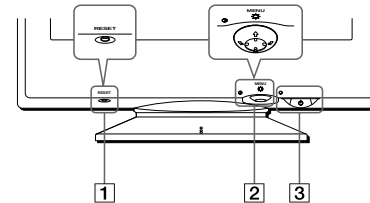
This monitor can be adjusted within the angles shown below. To find the center of the monitor's turning radius, align the center of the monitor's screen with the centering dots on the stand. Hold the monitor at the bottom with both hands when you turn it horizontally or vertically. Be careful not to pinch your fingers at the back of the monitor when you tilt the monitor up vertically.



### Identifying parts and controls

See the pages in parentheses for further details.

#### Front



#### 1 RESET button (page 12)

This button resets the adjustments to the factory settings.

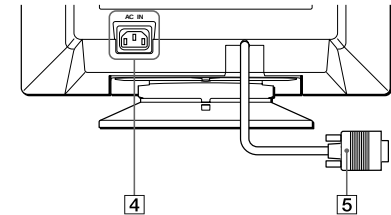
#### 2 Control button (page 9)

The control button is used to display the menu and make adjustments to the monitor, including brightness and contrast adjustments.

#### 3 (power) switch and indicator (pages 7, 13, 16)

This button turns the monitor on and off. The power indicator lights up in green when the monitor is turned on, and either flashes in green and orange, or lights up in orange when the monitor is in power saving mode.

#### Rear

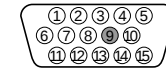


#### 4 AC IN connector (page 6)

This connector provides AC power to the monitor.

#### 5 Video input connector (HD15) (page 6)

This connector inputs RGB video signals (0.700 Vp-p, positive) and sync signals.



| Pin No. | Signal                     |
|---------|----------------------------|
| 1       | Red                        |
| 2       | Green<br>(Sync on Green)   |
| 3       | Blue                       |
| 4       | ID (Ground)                |
| 5       | DDC Ground*                |
| 6       | Red Ground                 |
| 7       | Green Ground               |
| 8       | Blue Ground                |
| 9       | —                          |
| 10      | Ground                     |
| 11      | ID (Ground)                |
| 12      | Bi-Directional Data (SDA)* |
| 13      | H. Sync                    |
| 14      | V. Sync                    |
| 15      | Data Clock (SCL)*          |

\* DDC (Display Data Channel) is a standard of VESA.

US

## Setup

Before using your monitor, check that the following accessories are included in your carton:

- Power cord (1)
- Windows Monitor Information Disk (1)
- Notes on cleaning the screen's surface (1)
- This instruction manual (1)

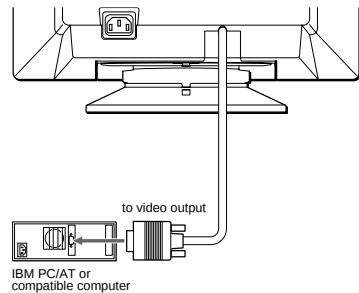
### Step 1: Connect your monitor to your computer

Turn off the monitor and computer before connecting.

#### Note

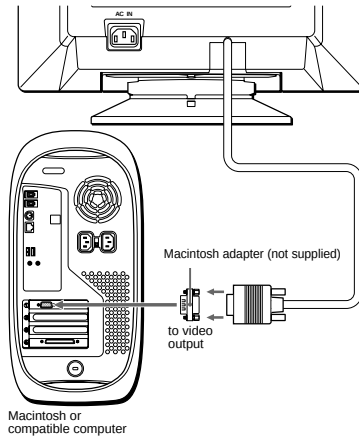
Do not touch the pins of the video cable connector as this might bend the pins.

#### ■ Connecting to an IBM PC/AT or compatible computer



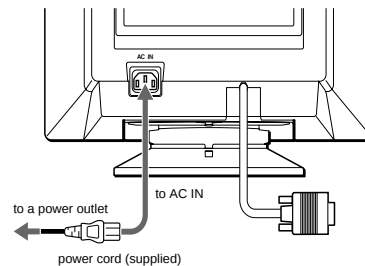
#### ■ Connecting to a Macintosh or compatible computer

You will need a Macintosh adapter (not supplied).



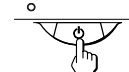
### Step 2: Connect the power cord

With the monitor and computer switched off, first connect the power cord to the monitor, then connect it to a power outlet.



### Step 3: Turn on the monitor and computer

First turn on the monitor, then turn on the computer.



The installation of your monitor is complete. If necessary, use the monitor's controls to adjust the picture.

#### If no picture appears on your screen

- Check that the monitor is correctly connected to the computer.
- If NO INPUT SIGNAL appears on the screen, confirm that the video signal cable is properly connected and all plugs are firmly seated in their sockets.
- If MONITOR IS IN POWER SAVE MODE appeared on the screen, try pressing any key on the computer keyboard.
- If you are replacing an old monitor with this model and OUT OF SCAN RANGE appears on the screen, reconnect the old monitor. Then adjust the computer's graphic board so that the horizontal frequency is between 30 – 85 kHz, and the vertical frequency is between 48 – 120 Hz.

For more information about the on-screen messages, see "Trouble symptoms and remedies" on page 14.

#### For customers using Windows 95/98

To maximize the potential of your monitor, install the new model information file from the supplied Windows Monitor Information Disk onto your PC.

This monitor complies with the "VESA DDC" Plug & Play standard. If your PC/graphics board complies with DDC, select "Plug & Play Monitor (VESA DDC)" or this monitor's model name as the monitor type in the "Control Panel" of Windows 95/98. If your PC/graphics board has difficulty communicating with this monitor, load the Windows Monitor Information Disk and select this monitor's model name as the monitor type.

#### For customers using Windows NT4.0

Monitor setup in Windows NT4.0 is different from Windows 95/98 and does not involve the selection of monitor type. Refer to the Windows NT4.0 instruction manual for further details on adjusting the resolution, refresh rate, and number of colors.

#### Adjusting the monitor's resolution and color number

Adjust the monitor's resolution and color number by referring to your computer's instruction manual. The color number may vary according to your computer or video board. The color palette setting and the actual number of colors are as follows:

- High Color (16 bit) → 65,536 colors
- True Color (24 bit) → about 16.77 million colors

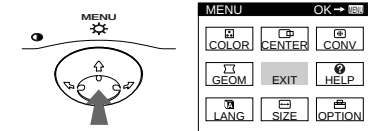
In true color mode (24 bit), speed may be slower.

### Selecting the on-screen menu language (LANG)

English, French, German, Spanish, Italian, Dutch, Swedish, Russian and Japanese versions of the on-screen menus are available. The default setting is English.

#### 1 Press the center of the control button.

See page 9 for more information on using the control button.



#### 2 Move the control button to highlight the LANG option and press the center of the control button again.



#### 3 Move the control button ↓/↑ to select a language.

- ENGLISH
- FRANÇAIS: French
- DEUTSCH: German
- ESPAÑOL: Spanish
- ITALIANO: Italian
- NEDERLANDS: Dutch
- SVENSKA: Swedish
- РУССКИЙ: Russian
- 日本語: Japanese

#### To close the menu

Press the center of the control button once to return to the main MENU, and twice to return to normal viewing. If no buttons are pressed, the menu closes automatically after about 30 seconds.

#### To reset to English

Press the RESET button while the LANGUAGE menu is displayed on the screen.

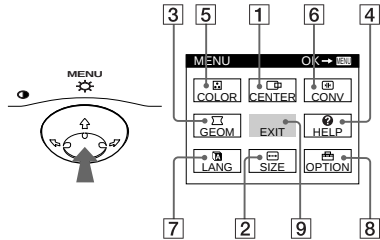
US

## Customizing Your Monitor

You can make numerous adjustments to your monitor using the on-screen menu.

### Navigating the menu

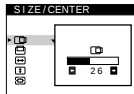
Press the center of the control button to display the main MENU on your screen. See page 9 for more information on using the control button.



Use the control button to select one of the following menus.

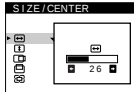
#### 1 CENTER (page 9)

Selects the CENTER menu to adjust the picture's centering, size or zoom.



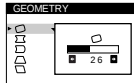
#### 2 SIZE (page 9)

Selects the SIZE menu to adjust the picture's size, centering or zoom.



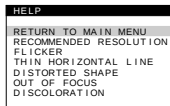
#### 3 GEOM (page 10)

Select the GEOM menu to adjust the picture's rotation and shape.



#### 4 HELP (page 12)

Select the HELP menu to display helpful hints and information about this monitor.



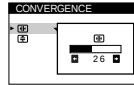
#### 5 COLOR (page 10)

Select the COLOR menu to adjust the picture's color temperature. You can use this to match the monitor's colors to a printed picture's colors.



#### 6 CONV (page 10)

Select the CONV menu to adjust the picture's horizontal and vertical convergence.



#### 7 LANG (page 7)

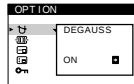
Select LANG to choose the on-screen menu's language.



#### 8 OPTION (page 11)

Select OPTION to adjust the monitor's options. The options include:

- degaussing the screen
- adjusting the moire cancellation level
- changing the on-screen menu position
- locking the controls

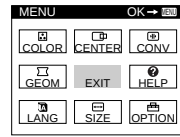


#### 9 EXIT

Select EXIT to close the menu.

### ■ Displaying the current input signal

The horizontal and vertical frequencies of the current input signal are displayed in the main MENU. If the signal matches one of this monitor's factory preset modes, the resolution is also displayed.



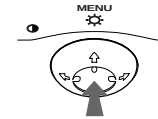
the resolution of the current input signal

the horizontal and vertical frequencies of the current input signal

### ■ Using the control button

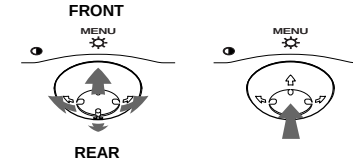
#### 1 Display the main MENU.

Press the center of the control button to display the main MENU on your screen.



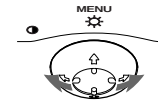
#### 2 Select the menu you want to adjust.

Highlight the desired menu by moving the control button towards the rear to go up (↑), towards the front to go down (↓), and left (←) or right (→) to move sideways.



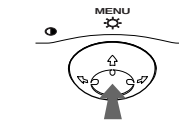
#### 3 Adjust the menu.

Move the control button left (←) or right (→) to make the adjustment.



#### 4 Close the menu.

Press the center of the control button once to return to the main MENU, and twice to return to normal viewing. If no buttons are pressed, the menu closes automatically after about 30 seconds.



### ■ Resetting the adjustments

Press the RESET button. See page 12 for more information on resetting the adjustments.



## Adjusting the brightness and contrast

Brightness and contrast adjustments are made using a separate BRIGHTNESS/CONTRAST menu. These settings are stored in memory for all input signals.

#### 1 Move the control button in any direction.

The BRIGHTNESS/CONTRAST menu appears on the screen.



#### 2 Move the control button ↓/↑ to adjust the brightness (☉), and ←/→ to adjust the contrast (☉).

The menu automatically disappears after about 3 seconds.

## Adjusting the centering of the picture (CENTER)

This setting is stored in memory for the current input signal.

#### 1 Press the center of the control button.

The main MENU appears on the screen.

#### 2 Move the control button to highlight ☐ CENTER and press the center of the control button again.

The SIZE/CENTER menu appears on the screen.

#### 3 First move the control button ↓/↑ to select ☐ for horizontal adjustment, or ☐ for vertical adjustment. Then move the control button ←/→ to adjust the centering.

## Adjusting the size of the picture (SIZE)

This setting is stored in memory for the current input signal.

#### 1 Press the center of the control button.

The main MENU appears on the screen.

#### 2 Move the control button to highlight ☐ SIZE and press the center of the control button again.

The SIZE/CENTER menu appears on the screen.

#### 3 First move the control button ↓/↑ to select ☐ for horizontal adjustment, or ☐ for vertical adjustment. Then move the control button ←/→ to adjust the size.

## Enlarging or reducing the picture (ZOOM)

This setting is stored in memory for the current input signal.

- 1 **Press the center of the control button.**  
The main MENU appears on the screen.
- 2 **Move the control button to highlight  SIZE or  CENTER and press the center of the control button again.**  
The SIZE/CENTER menu appears on the screen.
- 3 **Move the control button  $\downarrow/\uparrow$  to select  (zoom), and move  $\leftarrow/\rightarrow$  to enlarge or reduce the picture.**

### Notes

- Adjustment stops when either the horizontal or vertical size reaches its maximum or minimum value.
- The horizontal adjustment value is not displayed in the menu.

## Adjusting the shape of the picture (GEOM)

The GEOM settings allow you to adjust the rotation and shape of the picture.

The  (rotation) setting is stored in memory for all input signals. All other settings are stored in memory for the current input signal.

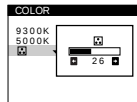
- 1 **Press the center of the control button.**  
The main MENU appears on the screen.
- 2 **Move the control button to highlight  GEOM and press the center of the control button again.**  
The GEOMETRY menu appears on the screen.
- 3 **First move the control button  $\downarrow/\uparrow$  to select the desired adjustment item. Then move the control button  $\leftarrow/\rightarrow$  to make the adjustment.**

| Select                                                                              | To                                                              |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------|
|  | rotate the picture                                              |
|  | expand or contract the picture sides                            |
|  | shift the picture sides to the left or right                    |
|  | adjust the picture width at the top of the screen               |
|  | shift the picture to the left or right at the top of the screen |

## Adjusting the color of the picture (COLOR)

The COLOR settings allow you to adjust the picture's color temperature by changing the color level of the white color field. Colors appear reddish if the temperature is low, and bluish if the temperature is high. This adjustment is useful for matching the monitor's colors to a printed picture's colors. This setting is stored in memory for all input signals.

- 1 **Press the center of the control button.**  
The main MENU appears on the screen.
- 2 **Move the control button to highlight  COLOR and press the center of the control button again.**  
The COLOR menu appears on the screen.
- 3 **Move the control button  $\downarrow/\uparrow$  to select a color temperature.**  
The preset color temperatures are 5000K and 9300K. Since the default setting is 9300K, the whites will change from a bluish hue to a reddish hue as the temperature is lowered to 5000K.
- 4 **If necessary, fine tune the color temperature.**  
You can select your own color temperature between 9300K and 5000K. First move the control button  $\downarrow/\uparrow$  to select . Then move the control button  $\leftarrow/\rightarrow$  to adjust the color temperature.



## Adjusting the convergence (CONV)

The CONV settings allow you to adjust the quality of the picture by controlling the convergence. The convergence refers to the alignment of the red, green, and blue color signals.

If you see red or blue shadows around letters or lines, adjust the convergence.

These settings are stored in memory for all input signals.

- 1 **Press the center of the control button.**  
The main MENU appears on the screen.
- 2 **Move the control button to highlight  CONV and press the center of the control button again.**  
The CONVERGENCE menu appears on the screen.
- 3 **First move the control button  $\downarrow/\uparrow$  to select  for horizontal adjustment, or  for vertical adjustment. Then move the control button  $\leftarrow/\rightarrow$  to adjust the convergence.**

## Additional settings (OPTION)

You can manually degauss (demagnetize) the monitor, adjust the moire cancellation level, change the menu position, and lock the controls.

- 1 **Press the center of the control button.**  
The main MENU appears on the screen.
- 2 **Move the control button to highlight  OPTION and press the center of the control button again.**  
The OPTION menu appears on the screen.
- 3 **Move the control button  $\downarrow/\uparrow$  to select the desired adjustment item.**  
Adjust the selected item according to the following instructions.

### Degaussing the screen

The monitor is automatically demagnetized (degaussed) when the power is turned on.

**To manually degauss the monitor, first move the control button  $\downarrow/\uparrow$  to select  (DEGAUSS). Then move the control button  $\rightarrow$ .**

The screen is degaussed for about 5 seconds. If a second degauss cycle is needed, allow a minimum interval of 20 minutes for the best result.

### Adjusting the moire\*

If elliptical or wavy patterns appear on the screen, adjust the moire cancellation level.

**To adjust the amount of moire cancellation, first move the control button  $\downarrow/\uparrow$  to select  (MOIRE ADJUST). Then move the control button  $\leftarrow/\rightarrow$  until the moire effect is at a minimum.**

\* Moire is a type of natural interference which produces soft, wavy lines on your screen. It may appear due to interference between the pattern of the picture on the screen and the phosphor pitch pattern of the monitor.

Example of moire



### Changing the menu's position

Change the menu's position if it is blocking an image on the screen.

**To change the menu's on-screen position, first move the control button  $\downarrow/\uparrow$  to select  (OSD H POSITION) for horizontal adjustment, or  (OSD V POSITION) for vertical adjustment. Then move the control button  $\leftarrow/\rightarrow$  to shift the on-screen menu.**

### Locking the controls

**To protect adjustment data by locking the controls, first move the control button  $\downarrow/\uparrow$  to select  (CONTROL LOCK). Then move the control button  $\rightarrow$ , to select ON. Only the  (power) switch, EXIT, and  (CONTROL LOCK) of the  menu will operate. If any other items are selected, the  mark appears on the screen.**

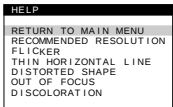
### To cancel the control lock

Repeat the procedure above and set  (CONTROL LOCK) to OFF.

## Helpful hints and information (HELP)

The HELP menu contains helpful hints and information about this monitor. If your monitor is displaying symptoms that match those listed in the HELP menu, follow the on-screen instructions to resolve the problem. If the symptoms do not match those listed in the HELP menu or if the problem persists, see “Trouble symptoms and remedies” on page 14.

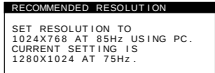
- 1 **Press the center of the control button.**  
The main MENU appears on the screen.
- 2 **Move the control button to highlight  HELP and press the center of the control button again.**  
The following HELP menu appears on the screen.



- 3 **Move the control button   to select a HELP menu item and press the center of the control button again.**  
Instructions or information to resolve the problem appears on the screen. An explanation of each menu item is given below.

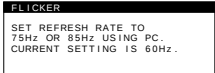
### RECOMMENDED RESOLUTION

If the picture does not fill the screen to the edges or if the picture appears too large for the screen, adjust the resolution to the figures shown in the menu using your computer. If the input signal matches one of this monitor’s factory preset modes, the resolution and refresh rate of the current input signal are displayed.



### FLICKER

If the picture is flickering, adjust the refresh rate to figures shown in the menu. If the input signal matches one of this monitor’s factory preset modes, the refresh rate of the current input signal is displayed.



### THIN HORIZONTAL LINE

The lines that appear on your screen are damper wires. See page 13 for more information about the damper wires.

### DISTORTED SHAPE

If the shape of the picture on the screen seems distorted, try adjusting the picture’s geometry. Move the control button  to jump directly to the GEOMETRY menu.

### OUT OF FOCUS

The picture may seem to be out of focus when the red and blue color signals are not aligned properly, causing red or blue shadows to appear around letters and lines. Try adjusting the picture’s convergence to make the shadows disappear. Move the control button  to jump directly to the CONVERGENCE menu. When the CONVERGENCE menu is displayed, the contrast, brightness and moire adjustment settings are automatically reset for all input signals.

### DISCOLORATION

If the picture’s color appears abnormal in certain areas of the screen, first check for any loose signal cables. After you have checked the cables, try degaussing (demagnetizing) the screen manually. Move the control button  to jump directly to the OPTION menu, then select  (DEGAUSS).

## Resetting the adjustments

This monitor has the following three reset methods. Use the RESET button to reset the adjustments.



### Resetting a single adjustment item

Use the control button to select the adjustment item you want to reset, and press the RESET button.

### Resetting all of the adjustment data for the current input signal

Press the RESET button when no menu is displayed on the screen. Note that the following items are not reset by this method:

- on-screen menu language (page 7)
- on-screen menu position (page 11)
- control lock (page 11)

### Resetting all of the adjustment data for all input signals

Press and hold the RESET button for more than two seconds.

#### Note

The RESET button does not function when  (CONTROL LOCK) is set to ON.

## Technical Features

### Preset and user modes

When the monitor receives an input signal, it automatically matches the signal to one of the factory preset modes stored in the monitor’s memory to provide a high quality picture at the center of the screen. (See Appendix for a list of the factory preset modes.) For input signals that do not match one of the factory preset modes, the digital Multiscan technology of this monitor ensures that a clear picture appears on the screen for any timing in the monitor’s frequency range (horizontal: 30 – 85 kHz, vertical: 48 – 120 Hz). If the picture is adjusted, the adjustment data is stored as a user mode and automatically recalled whenever the same input signal is received.

### Note for Windows users

For Windows users, check your video board manual or the utility program which comes with your graphic board and select the highest available refresh rate to maximize monitor performance.

### Power saving function

This monitor meets the power-saving guidelines set by VESA, ENERGY STAR, and NUTEK. If the monitor is connected to a computer or video graphics board that is DPMS (Display Power Management Signaling) compliant, the monitor will automatically reduce power consumption in three stages as shown below.

| Power mode                   | Power consumption |  (power) indicator |
|------------------------------|-------------------|-------------------------------------------------------------------------------------------------------|
| normal operation             | ≤ 120 W           | green                                                                                                 |
| 1 standby                    | ≤ 15 W            | green and orange alternate                                                                            |
| 2 suspend (sleep)*           | ≤ 15 W            | green and orange alternate                                                                            |
| 3 active off** (deep sleep)* | ≤ 3 W             | orange                                                                                                |
| power off                    | 0 W               | off                                                                                                   |

\* “Sleep” and “deep sleep” are power saving modes defined by the Environmental Protection Agency.

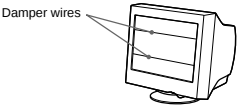
\*\* When your computer is in a power saving mode, MONITOR IS IN POWER SAVE MODE appears on the screen if you press any button on the monitor. After a few seconds, the monitor enters the power saving mode again.

## Troubleshooting

Before contacting technical support, refer to this section.

### If thin lines appear on your screen (damper wires)

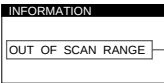
The lines you are experiencing on your screen are normal for the Trinitron monitor and are not a malfunction. These are shadows from the damper wires used to stabilize the aperture grille and are most noticeable when the screen’s background is light (usually white). The aperture grille is the essential element that makes a Trinitron picture tube unique by allowing more light to reach the screen, resulting in a brighter, more detailed picture.



### On-screen messages

If no picture appears on the screen, one of the following messages appears on the screen. To solve the problem, see “Trouble symptoms and remedies” on page 14.

US



Input signal condition

#### The input signal condition

##### OUT OF SCAN RANGE

indicates that the input signal is not supported by the monitor’s specifications.

##### NO INPUT SIGNAL

indicates that no signal is input.

##### MONITOR IS IN POWER SAVE MODE

indicates that the computer is in power saving mode. This message is displayed only when your computer is in a power saving mode and you press any one of the buttons on the monitor.

## Trouble symptoms and remedies

If the problem is caused by the connected computer or other equipment, please refer to the connected equipment's instruction manual. Use the self-diagnosis function (page 16) if the following recommendations do not resolve the problem.

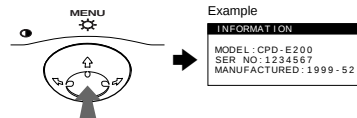
| Symptom                                                                                                                                                   | Check these items                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>No picture</b>                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| If the (power) indicator is not lit                                                                                                                       | <ul style="list-style-type: none"> <li>Check that the power cord is properly connected.</li> <li>Check that the (power) switch is in the "on" position.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| If the NO INPUT SIGNAL message appears on the screen, or if the (power) indicator is either orange or alternating between green and orange                | <ul style="list-style-type: none"> <li>Check that the video signal cable is properly connected and all plugs are firmly seated in their sockets (page 6).</li> <li>Check that the HD15 video input connector's pins are not bent or pushed in.</li> </ul> <p>■ <b>Problems caused by the connected computer or other equipment</b></p> <ul style="list-style-type: none"> <li>Check that the computer's power is "on."</li> <li>Check that the graphic board is completely seated in the proper bus slot.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| If the MONITOR IS IN POWER SAVE MODE message appeared on the screen, or if the (power) indicator is either orange or alternating between green and orange | <p>■ <b>Problems caused by the connected computer or other equipment</b></p> <ul style="list-style-type: none"> <li>The computer is in power saving mode. Try pressing any key on the computer keyboard.</li> <li>Check that the computer's power is "on."</li> <li>Check that the graphic board is completely seated in the proper bus slot.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| If the OUT OF SCAN RANGE message appears on the screen                                                                                                    | <p>■ <b>Problems caused by the connected computer or other equipment</b></p> <ul style="list-style-type: none"> <li>Check that the video frequency range is within that specified for the monitor. If you replaced an old monitor with this monitor, reconnect the old monitor and adjust the frequency range to the following.<br/>Horizontal: 30 – 85 kHz<br/>Vertical: 48 – 120 Hz</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| If no message is displayed and the (power) indicator is green or flashing orange                                                                          | <ul style="list-style-type: none"> <li>Use the Self-diagnosis function (page 16).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| If using Windows 95/98                                                                                                                                    | <ul style="list-style-type: none"> <li>If you replaced an old monitor with this monitor, reconnect the old monitor and do the following. Install the Windows Monitor Information Disk (page 7) and select this monitor ("CPD-E200") from among the Sony monitors in the Windows 95/98 monitor selection screen.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| If using a Macintosh system                                                                                                                               | <ul style="list-style-type: none"> <li>Check that the Macintosh adapter (not supplied) and the video signal cable are properly connected (page 6).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Picture flickers, bounces, oscillates, or is scrambled</b>                                                                                             | <ul style="list-style-type: none"> <li>Isolate and eliminate any potential sources of electric or magnetic fields such as other monitors, laser printers, electric fans, fluorescent lighting, or televisions.</li> <li>Move the monitor away from power lines or place a magnetic shield near the monitor.</li> <li>Try plugging the monitor into a different AC outlet, preferably on a different circuit.</li> <li>Try turning the monitor 90° to the left or right.</li> </ul> <p>■ <b>Problems caused by the connected computer or other equipment</b></p> <ul style="list-style-type: none"> <li>Check your graphics board manual for the proper monitor setting.</li> <li>Confirm that the graphics mode (VESA, Macintosh 16" Color, etc.) and the frequency of the input signal are supported by this monitor (Appendix). Even if the frequency is within the proper range, some video boards may have a sync pulse that is too narrow for the monitor to sync correctly.</li> <li>Adjust the computer's refresh rate (vertical frequency) to obtain the best possible picture.</li> </ul> |
| <b>Picture is fuzzy</b>                                                                                                                                   | <ul style="list-style-type: none"> <li>Adjust the brightness and contrast (page 9).</li> <li>Degauss the monitor* (page 11).</li> <li>Select MOIRE ADJUST and adjust the moire cancellation effect (page 11).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

| Symptom                                                        | Check these items                                                                                                                                                                                                                                                                     |
|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Picture is ghosting</b>                                     | <ul style="list-style-type: none"> <li>Eliminate the use of video cable extensions and/or video switch boxes.</li> <li>Check that all plugs are firmly seated in their sockets.</li> </ul>                                                                                            |
| <b>Picture is not centered or sized properly</b>               | <ul style="list-style-type: none"> <li>Adjust the size (page 9) or centering (page 9). Note that some video modes do not fill the screen to the edges.</li> </ul>                                                                                                                     |
| <b>Edges of the image are curved</b>                           | <ul style="list-style-type: none"> <li>Adjust the geometry (page 10).</li> </ul>                                                                                                                                                                                                      |
| <b>Wavy or elliptical pattern (moire) is visible</b>           | <ul style="list-style-type: none"> <li>Select MOIRE ADJUST and adjust the moire cancellation effect (page 11).</li> </ul> <p>■ <b>Problems caused by the connected computer or other equipment</b></p> <ul style="list-style-type: none"> <li>Change your desktop pattern.</li> </ul> |
| <b>Color is not uniform</b>                                    | <ul style="list-style-type: none"> <li>Degauss the monitor* (page 11). If you place equipment that generates a magnetic field, such as a speaker, near the monitor, or if you change the direction the monitor faces, color may lose uniformity.</li> </ul>                           |
| <b>White does not look white</b>                               | <ul style="list-style-type: none"> <li>Adjust the color temperature (page 10).</li> </ul>                                                                                                                                                                                             |
| <b>Letters and lines show red or blue shadows at the edges</b> | <ul style="list-style-type: none"> <li>Adjust the convergence (page 10).</li> </ul>                                                                                                                                                                                                   |
| <b>Monitor buttons do not operate</b>                          | <ul style="list-style-type: none"> <li>If the control lock is set to ON, set it to OFF (page 11).</li> </ul>                                                                                                                                                                          |
| <b>A hum is heard right after the power is turned on</b>       | <ul style="list-style-type: none"> <li>This is the sound of the auto-degauss cycle. When the power is turned on, the monitor is automatically degaussed for five seconds.</li> </ul>                                                                                                  |

\* If a second degauss cycle is needed, allow a minimum interval of 20 minutes for the best result. A humming noise may be heard, but this is not a malfunction.

### Displaying this monitor's name, serial number, and date of manufacture.

While the monitor is receiving a video signal, press and hold the center of the control button for more than five seconds to display this monitor's information box.



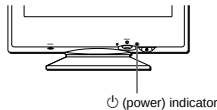
If the problem persists, call your authorized Sony dealer and give the following information.

- Model name: CPD-E200
- Serial number
- Name and specifications of your computer and graphics board.

US

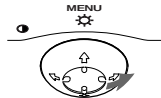
Self-diagnosis function

This monitor is equipped with a self-diagnosis function. If there is a problem with your monitor or computer, the screen will go blank and the ⏻ (power) indicator will either light up green or flash orange. If the ⏻ (power) indicator is lit in orange, the computer is in power saving mode. Try pressing any key on the keyboard.



If the ⏻ (power) indicator is green

- 1 Disconnect the video input cable or turn off the connected computer.
- 2 Press the ⏻ (power) button twice to turn the monitor off and then on.
- 3 Move the control button ➡ for 2 seconds before the monitor enters power saving mode.



If all four color bars appear (white, red, green, blue), the monitor is working properly. Reconnect the video input cable and check the condition of your computer.

If the color bars do not appear, there is a potential monitor failure. Inform your authorized Sony dealer of the monitor's condition.

If the ⏻ (power) indicator is flashing orange

Press the ⏻ (power) button twice to turn the monitor off and then on.

If the ⏻ (power) indicator lights up green, the monitor is working properly.

If the ⏻ (power) indicator is still flashing, there is a potential monitor failure. Count the number of seconds between orange flashes of the ⏻ (power) indicator and inform your authorized Sony dealer of the monitor's condition. Be sure to note the model name and serial number of your monitor. Also note the make and model of your computer and video board.

Specifications

|                          |                                                                                                                              |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------|
| CRT                      | 0.24 mm aperture grille pitch (center)<br>17 inches measured diagonally<br>90-degree deflection<br>FD Trinitron              |
| Viewable image size      | Approx. 327 × 243 mm (w/h)<br>(14 <sup>3</sup> / <sub>4</sub> × 9 <sup>5</sup> / <sub>8</sub> inches)<br>16.0" viewing image |
| Resolution               |                                                                                                                              |
| Maximum                  | Horizontal: 1600 dots<br>Vertical: 1200 lines                                                                                |
| Recommended              | Horizontal: 1024 dots<br>Vertical: 768 lines                                                                                 |
| Standard image area      | Approx. 312 × 234 mm (w/h)<br>(12 <sup>3</sup> / <sub>8</sub> × 9 <sup>1</sup> / <sub>4</sub> inches)                        |
| Deflection frequency*    | Horizontal: 30 to 85 kHz<br>Vertical: 48 to 120 Hz                                                                           |
| AC input voltage/current | 220 to 240 V, 50/60 Hz, 0.9 A                                                                                                |
| Power consumption        | 120 W                                                                                                                        |
| Dimensions               | Approx. 404 × 413.5 × 419.5 mm (w/h/d)<br>(16 × 16 <sup>3</sup> / <sub>8</sub> × 16 <sup>5</sup> / <sub>8</sub> inches)      |
| Mass                     | Approx. 20 kg (44 lb 1 oz)                                                                                                   |
| Plug and Play            | DDC1/DDC2B/DDC2Bi                                                                                                            |
| Supplied accessories     | See page 6                                                                                                                   |

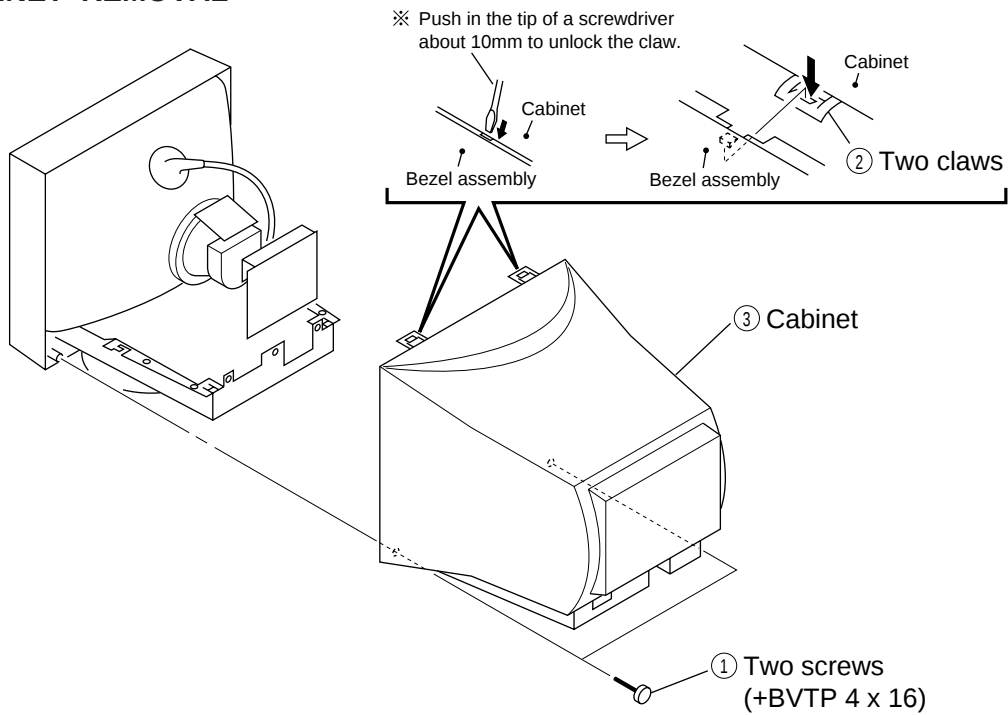
- \* Recommended horizontal and vertical timing condition
- Horizontal sync width should be more than 1.0 μsec.
  - Horizontal blanking width should be more than 3.0 μsec.
  - Vertical blanking width should be more than 500 μsec.

Design and specifications are subject to change without notice.

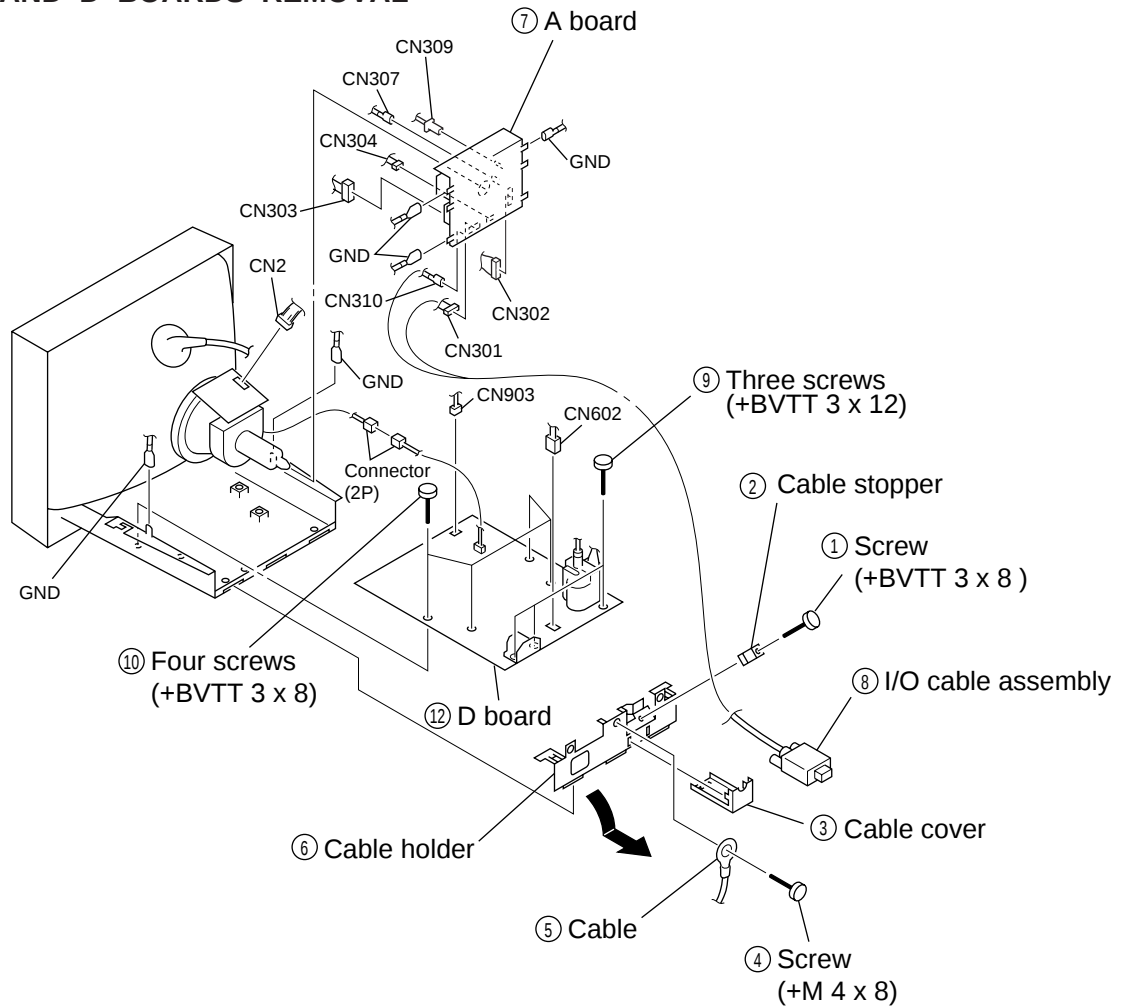
## SECTION 2 DISASSEMBLY

CPD-E220/E215E/E220E

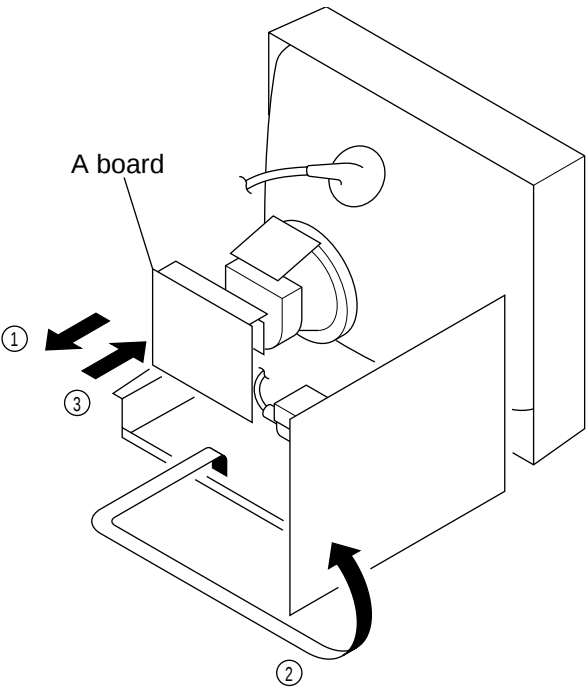
### 2-1. CABINET REMOVAL



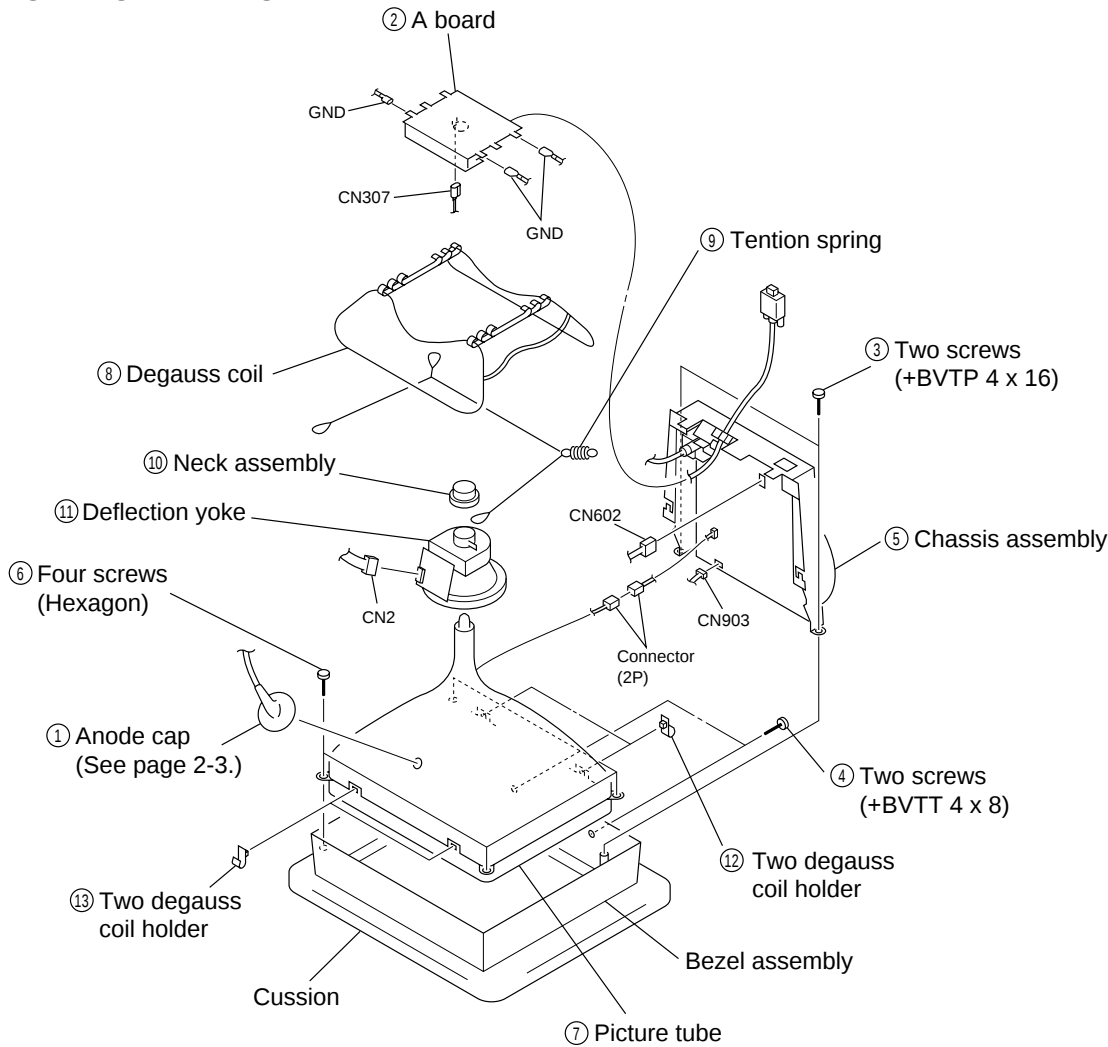
### 2-2. A AND D BOARDS REMOVAL



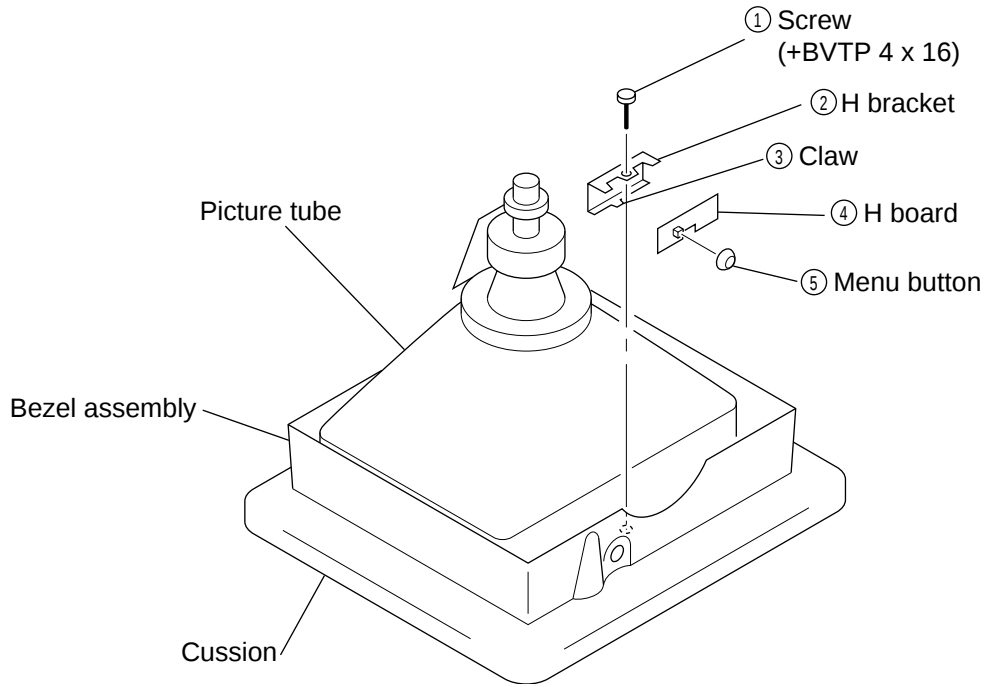
2-3. SERVICE POSITION



2-4. PICTURE TUBE REMOVAL



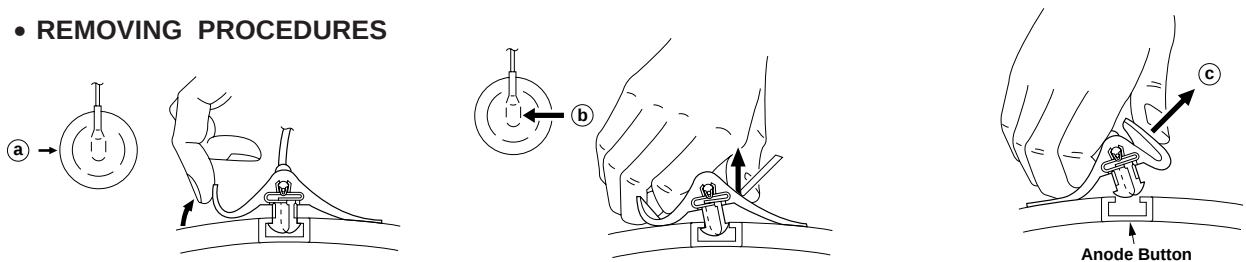
## 2-5. H BOARD REMOVAL



### • REMOVAL OF 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.

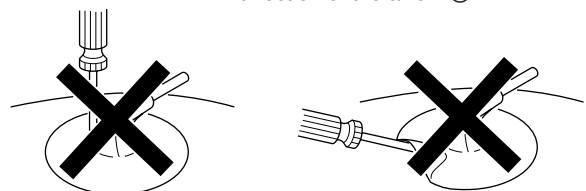
### • REMOVING PROCEDURES



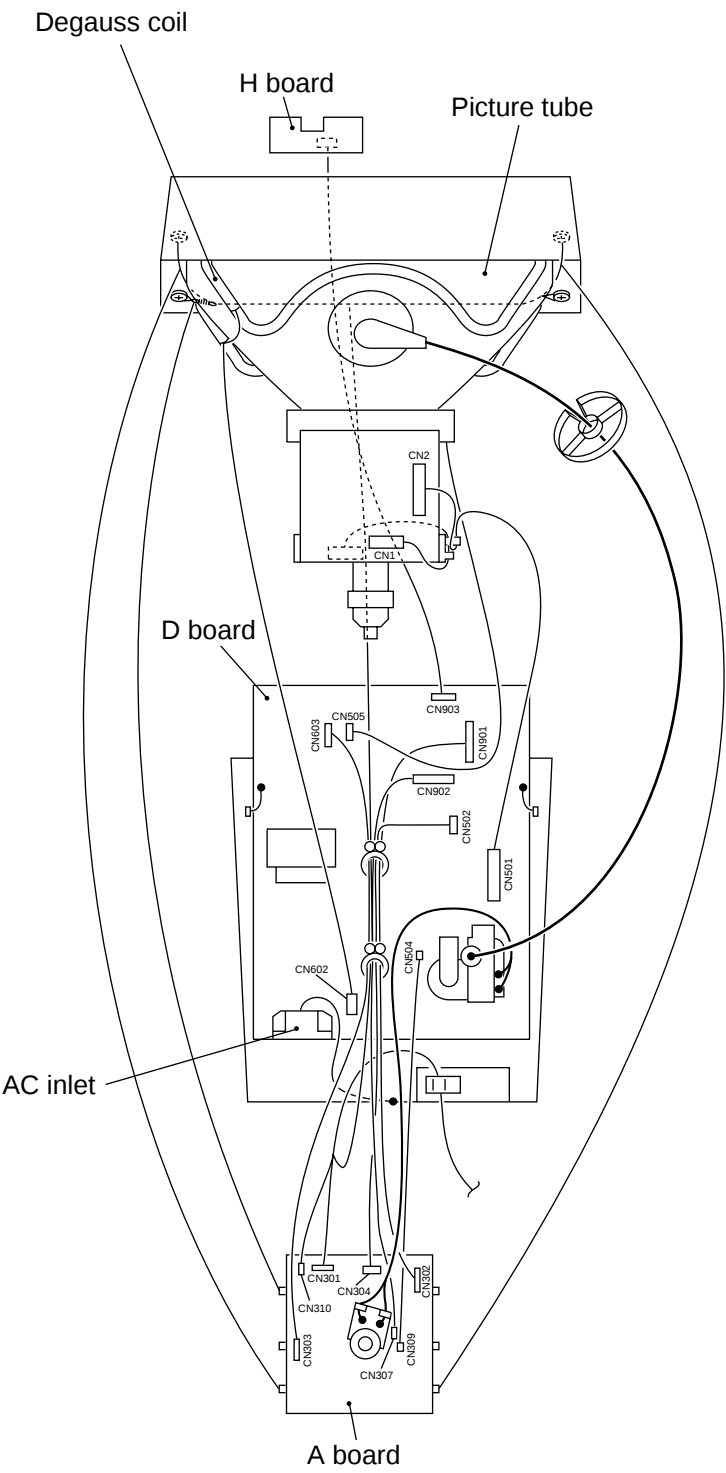
- ① Turn up one side of the rubber cap in the direction indicated by the arrow (A).
- ② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow (B).
- ③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow (C).

### • HOW TO HANDLE AN ANODE-CAP

- ① Don't scratch the surface of anode-caps with sharp shaped material!
- ② Don't press the rubber hardly not to damage inside of anode-caps!  
A material fitting called as shatter-hook terminal is built in the rubber.
- ③ Don't turn the foot of rubber over hardly!  
The shatter-hook terminal will stick out or damage the rubber.



2-6. HARNESS LOCATION



## SAFETY RELATED ADJUSTMENT

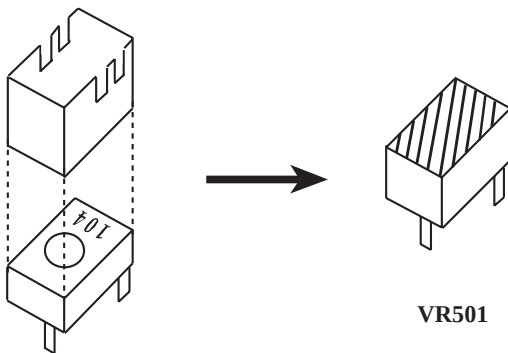
When replacing parts shown in the table below, the following operational checks must be performed as a safety precaution against X-ray emissions from the unit.

|                                | Part Replaced (  ) |                         |
|--------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------|
| HV Regulator Circuit           | D board                                                                                             | IC502, T501 (FBT)       |
| HV HOLD DOWN Circuit           | D board                                                                                             | D538, R521, T501 (FBT)  |
| Beam Current Protector Circuit | D board                                                                                             | IC901, R949, T501 (FBT) |

※ 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 = 69 kHz)
- 2) CONT maximum and BRT center
- 3) Cut off Screen VR (G2).
- 4) Input voltage:  $120 \pm 2$  VAC
- 5) Confirm that the voltage is within the voltage range shown below.  
Standard voltage:  $26.9 \text{ KV} \pm 0.4 \text{ KV}$
- 6) When replacing components identified by , make sure to recheck the High Voltage.
- 7) Verify the High Voltage as shown above ( $26.9 \text{ KV} \pm 0.4 \text{ KV}$ ) is within specification. If not, set H. SIZE data at minimum (-127) and then adjust VR501 on "D" Board.



- 8) After adjusting the High Voltage within specification, put the VR cover on VR501 as shown below and apply sufficient amount of RTV around VR501.

## b) HV Protector Circuit Check

- 1) Confirm that the voltage between cathode of D517 and GND is more than 27.5 VDC.
- 2) Using an external DC Power supply, apply the voltage shown below between cathode of D517 on "D" and GND, and confirm that the HV Hold-Down circuit works. (Raster disappears) Apply DC Voltage: Less than 35.8 VDC.

## Check Condition

- Input voltage :  $120 \pm 2$  VAC
- Input signal : (fH = 69 kHz), White Cross Hatch
- Controls : CONT (max) & BRT (center)
- B+ Voltage :  $179 \pm 3.0$  VDC

## c) Beam Protector Check (Software logic)

- 1) Using an external current source, apply  $< 1.55 \text{ mA}$  between pin ⑪ of FBT (T501) and GND, and confirm that the raster fades out.

## Check Condition

- Input voltage :  $120 \pm 2$  VAC
- Input signal : (fH = 69 kHz), White Cross Hatch
- Controls : CONT (max) & BRT (center)

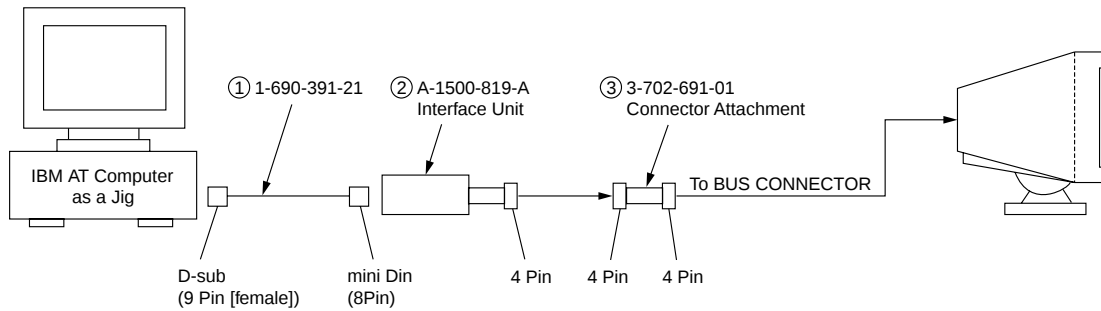
## d) B+ Voltage Check

- 1) Input white cross hatch (fH = 69 kHz) signal.
- 2) CONT (max) & BRT (center)
- 3) Input voltage:  $120 \pm 2$  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:  $179 \pm 3.0$  VDC

## 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.

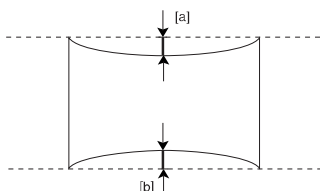
※ Allow a 30 minute warm-up period prior to making the following adjustments:

#### 4-1. Landing Rough Adjustment

1. Display the all white pattern.
2. Adjust the contrast to maximum value.
3. Display the plain green pattern.
4. Slide the DY back and roughly adjust the plain green pattern with the purity magnet so that it is centered on the screen.
5. Moving the DY forward, adjust so that an entire screen becomes pure green.
6. Adjust the tilt of DY and tighten lightly with a clamp.

#### 4-2. Landing Fine Adjustment

1. Place the monitor in the Helmholtz coil.
2. Set TLH plate to zero position.
3. Display plain green pattern.
4. Degauss CRT face and iron parts with degauss equipment or hand-degausser.
5. Perform auto degauss.
6. Attach a wobbling coil to the specified position of CRT neck.
7. Put the sensor of landing checker to CRT face.
8. Adjust purity, DY position and DY tilt.
9. Tighten DY screw.
10. Perform auto degauss.
11. Adjust top and bottom pin by pitching DY up and down with two wedges so that [a] is equal to [b].

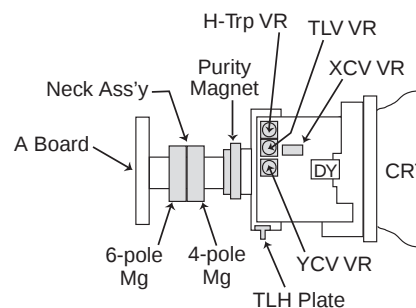


12. If the corner landing is out of specification, use a disk magnet for the landing correction.
13. If disk magnets were used, perform an auto degauss.
14. Remove the wobbling coil and sensor.
15. Fix the purity magnet on DY with white paint.

#### 4-3. Convergence Rough Adjustment

1. Enter the white crosshatch signal.
2. Roughly adjust the horizontal (H.STAT) and vertical (V.STAT) convergence at four-pole magnet.
3. Roughly adjust HMC and VMC at six-pole magnet.

#### 4-4. Convergence and V. Key (H. Trp) Fine Adjustment



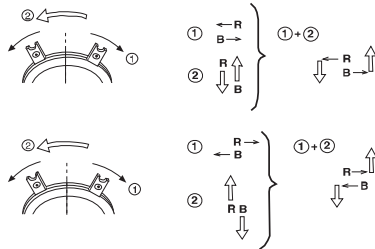
1. Display crosshatch pattern with green lines and black field.
2. Adjust V. Key (=H. Trapezoid) with H-Trp VR so that [a] is equal to [b].



3. Change "CONV\_OFF\_NDX" to "7".

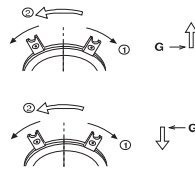
4. Display crosshatch pattern with red and blue lines and black field.
5. Adjust H.STAT and V.STAT with 4 pole magnet. Use 4 pole magnet, not "HSTAT" and "VSTAT".

#### 4 Pole Magnet



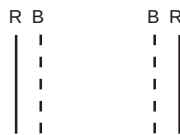
6. Display crosshatch pattern with white lines and black field.
7. Adjust HMC and VMC with 6 pole magnet.

#### 6 Pole Magnet



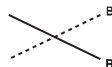
8. Display crosshatch pattern with red and blue lines and black field.
9. If necessary, repeat steps 5-8.
10. Change "CONV\_OFF\_NDX" to "3".
11. Adjust H.TILT with TLH plate.

#### TLH movement



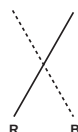
12. Adjust XCV with XCV VR.

#### XCV movement



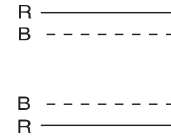
13. Adjust YCH with YCH VR.

#### YCH movement



14. Adjust V.TILT with TLV VR.

#### TLV movement

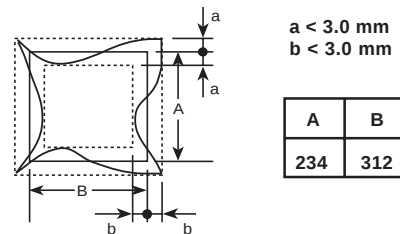


15. If necessary, repeat steps 3-14 to make the optimum condition for the entire screen.
16. Fix 4-pole magnet, 6-pole magnet and XCV VR with white paint.

#### Zero Position NECK Ass'y

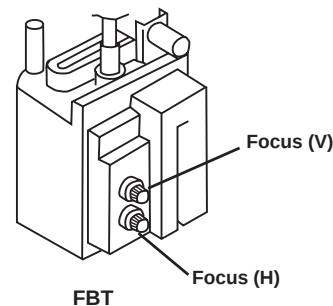


#### 4-5. Vertical and Horizontal Position and Size Specification



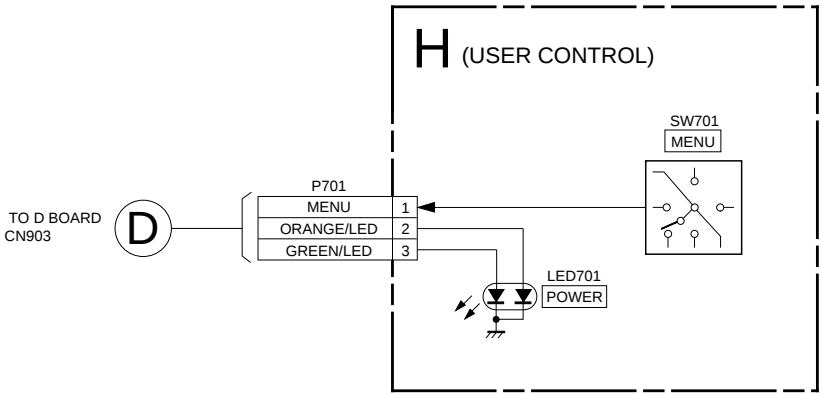
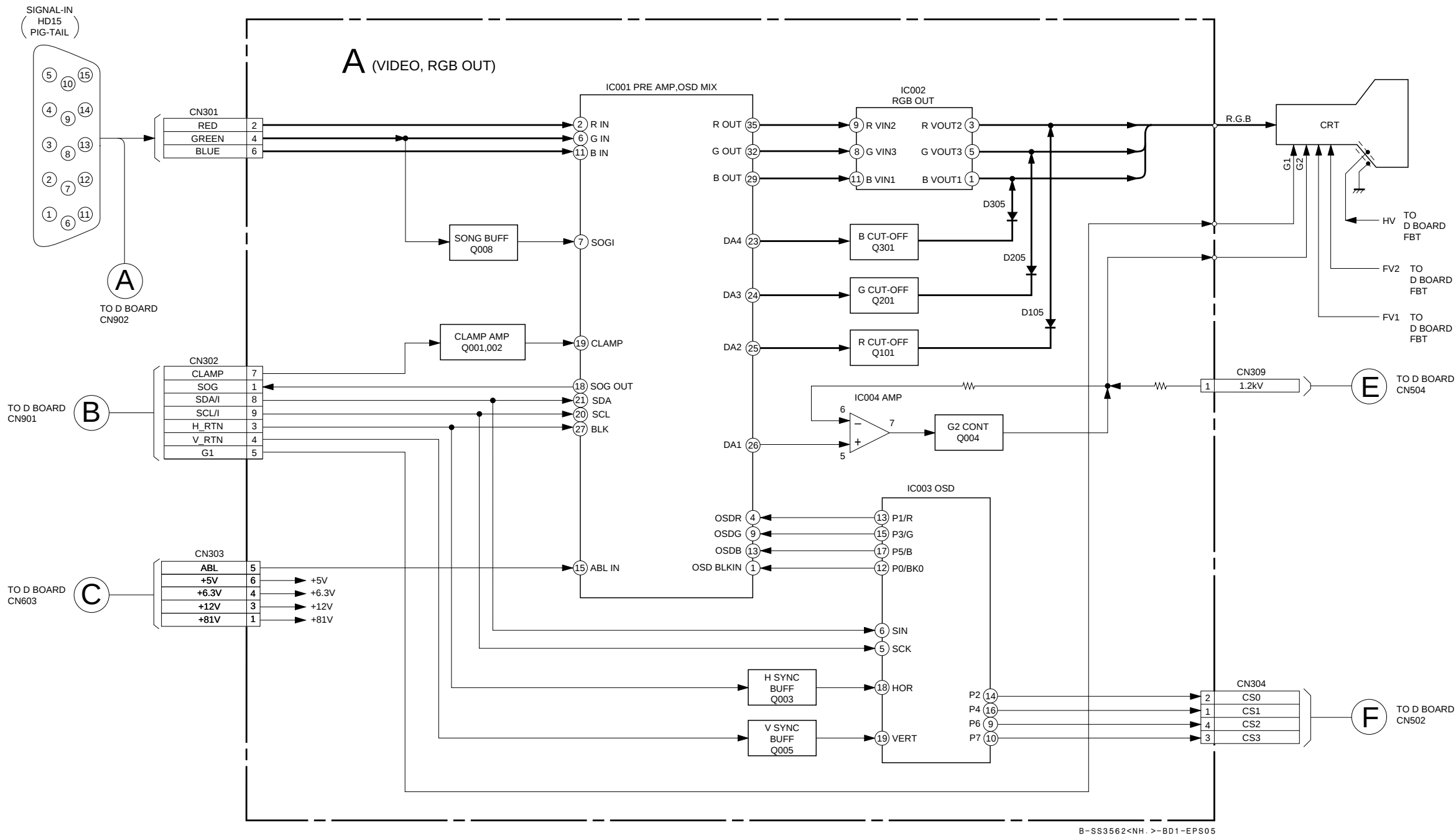
#### 4-6. Focus adjustment

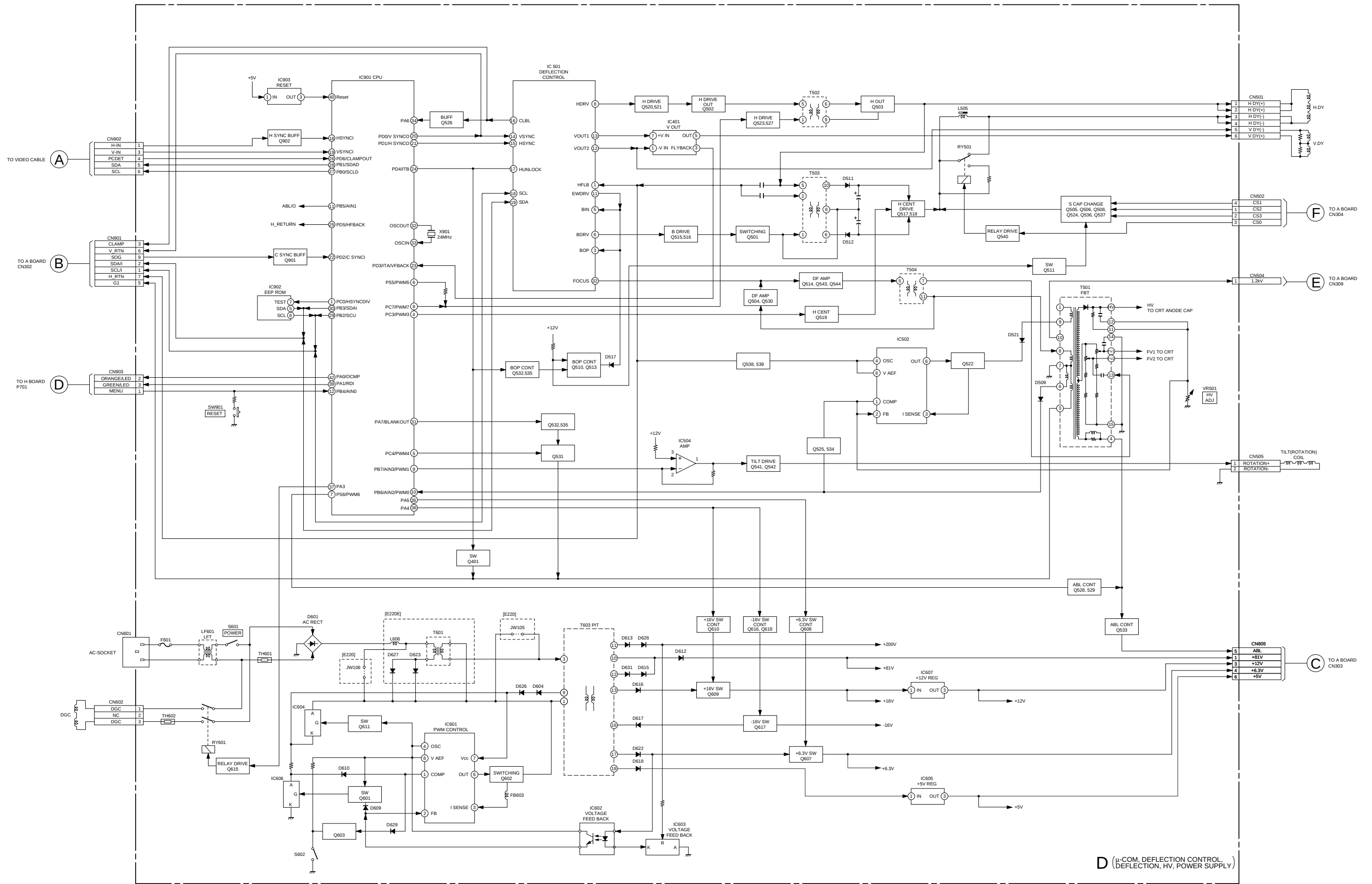
Adjust focus (V) and focus (H) for optimum focus.



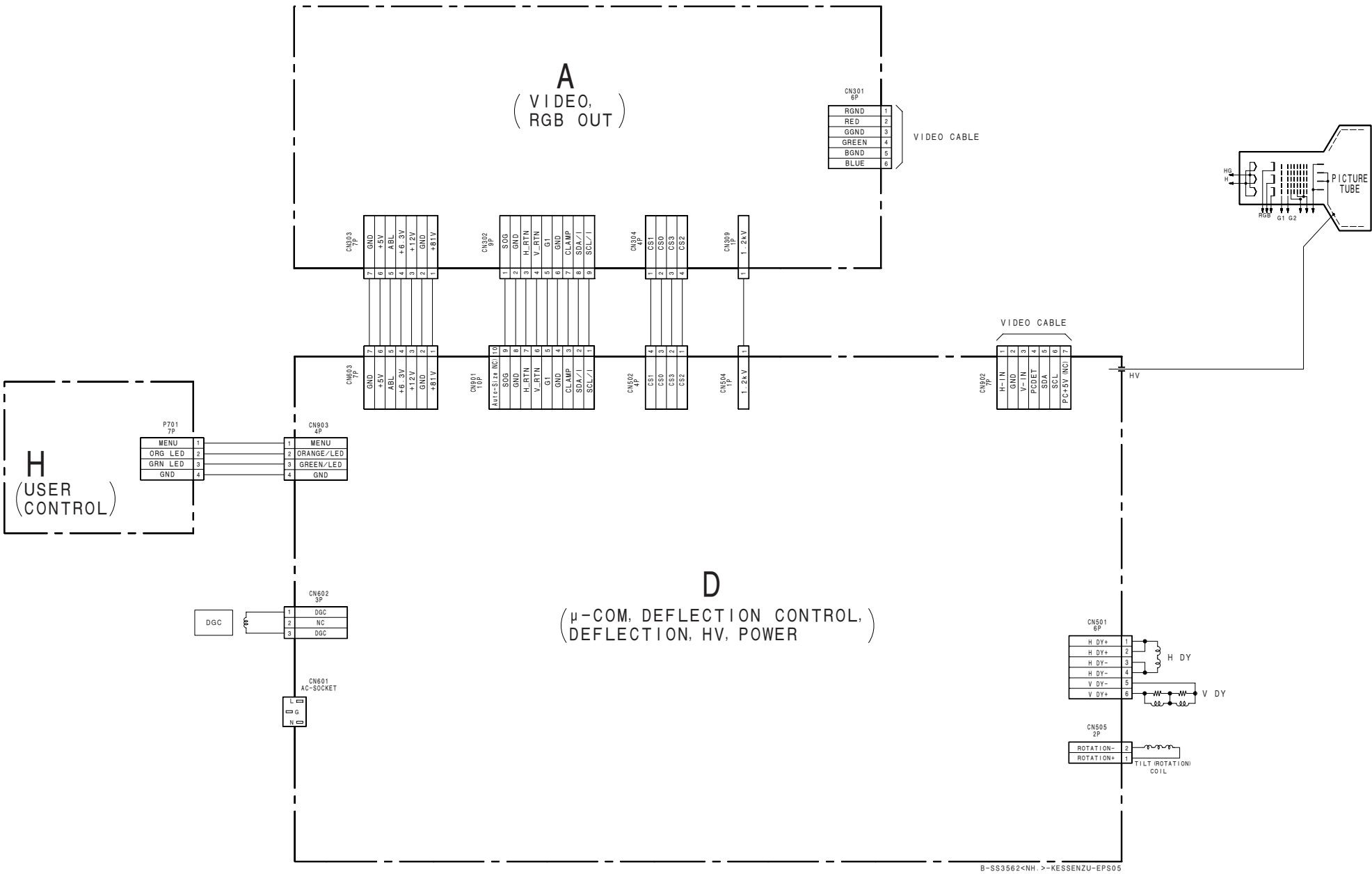
SECTION 5  
DIAGRAMS

5-1. BLOCK DIAGRAMS

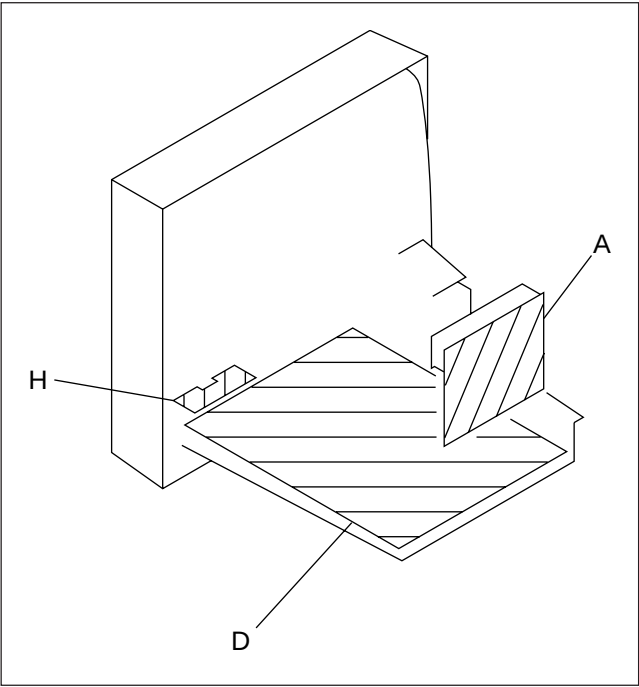




5-2. FRAME SCHEMATIC DIAGRAM



5-3. CIRCUIT BOARDS LOCATION



5-4. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

- Note:**
- All capacitors are in  $\mu\text{F}$  unless otherwise noted. (pF:  $\mu\text{F}$ ) Capacitors without voltage indication are all 50 V.
  - 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.
  - $\Delta$  : 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.
  - All voltages are in V.
  - Readings are taken with a 10 M 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.
  - When replacing components identified by , make the necessary adjustments indicated. (See page 3-1)
  - When replacing the part in below table, be sure to perform the related adjustment.

|                                            | Part Replaced (■)                  |
|--------------------------------------------|------------------------------------|
| HV Regulator<br>Circuit Check              | D board IC502, T501 (FBT)          |
| HV Hold-down<br>Circuit Check              | D board D538, R521,<br>T501 (FBT)  |
| Beam Current<br>Protector Circuit<br>Check | D board IC901, R949,<br>T501 (FBT) |

- Divided circuit diagram  
One sheet of D board circuit diagram is divided into four sheets, each having the code D- to D- . For example, the destination  on the D- sheet is connected to  on the D- sheet.
- a

b

1

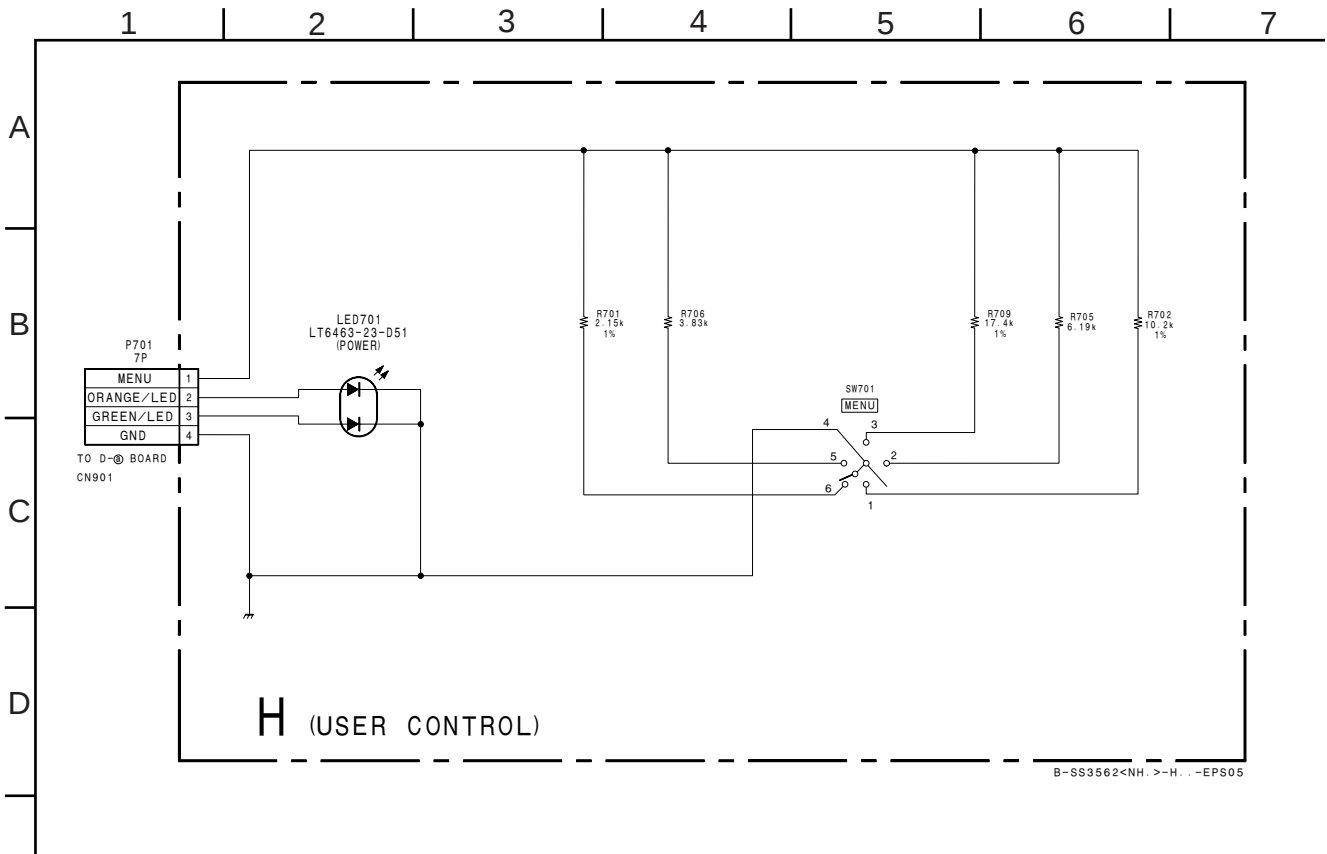
Ref. No.

Circuit diagram division code

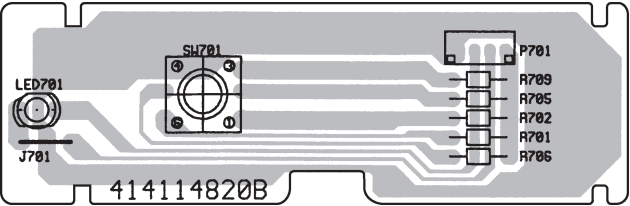
**Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.**

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

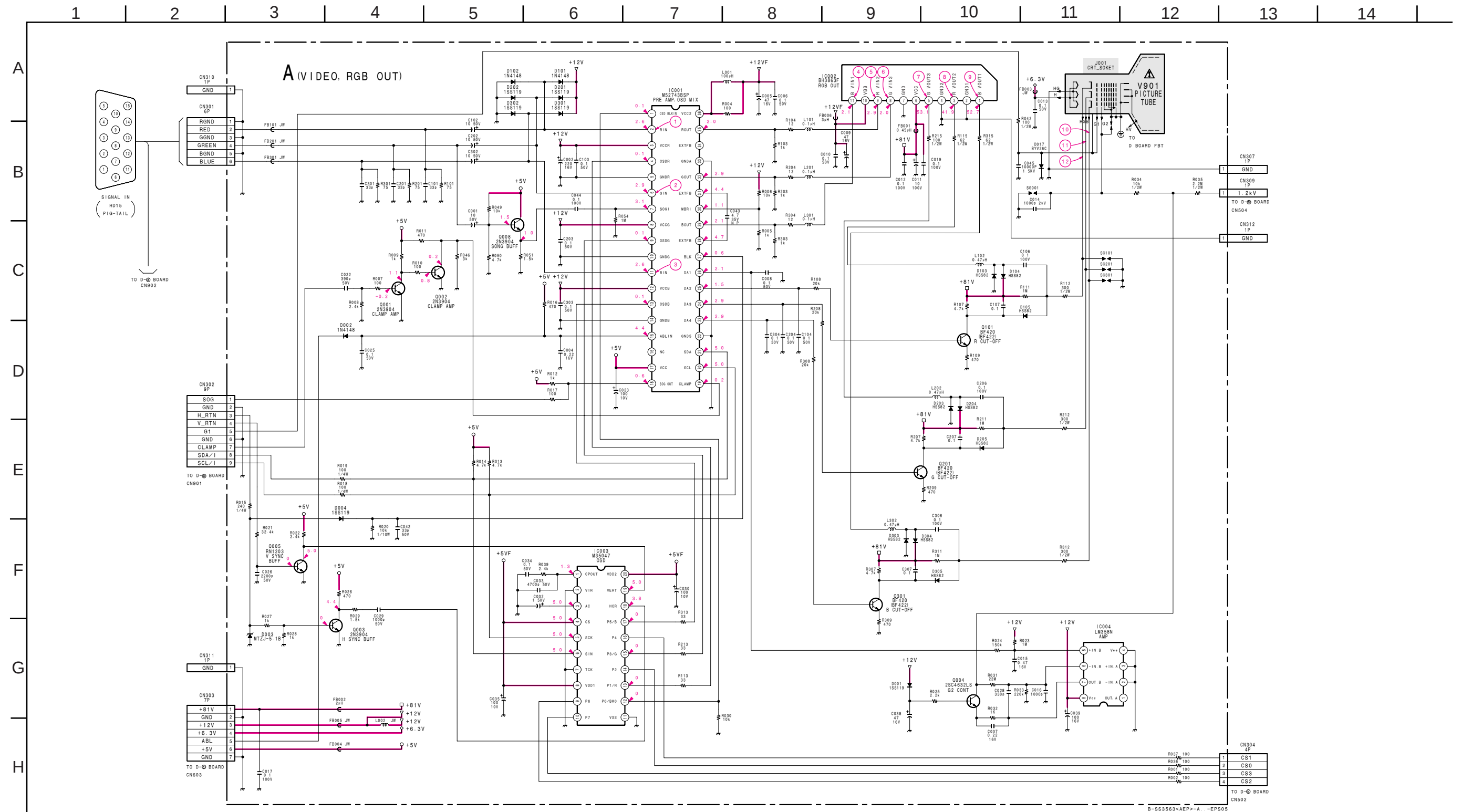
(1) Schematic Diagram of H Board



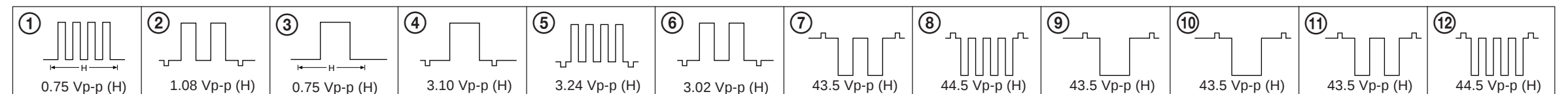
 [USER CONTROL]



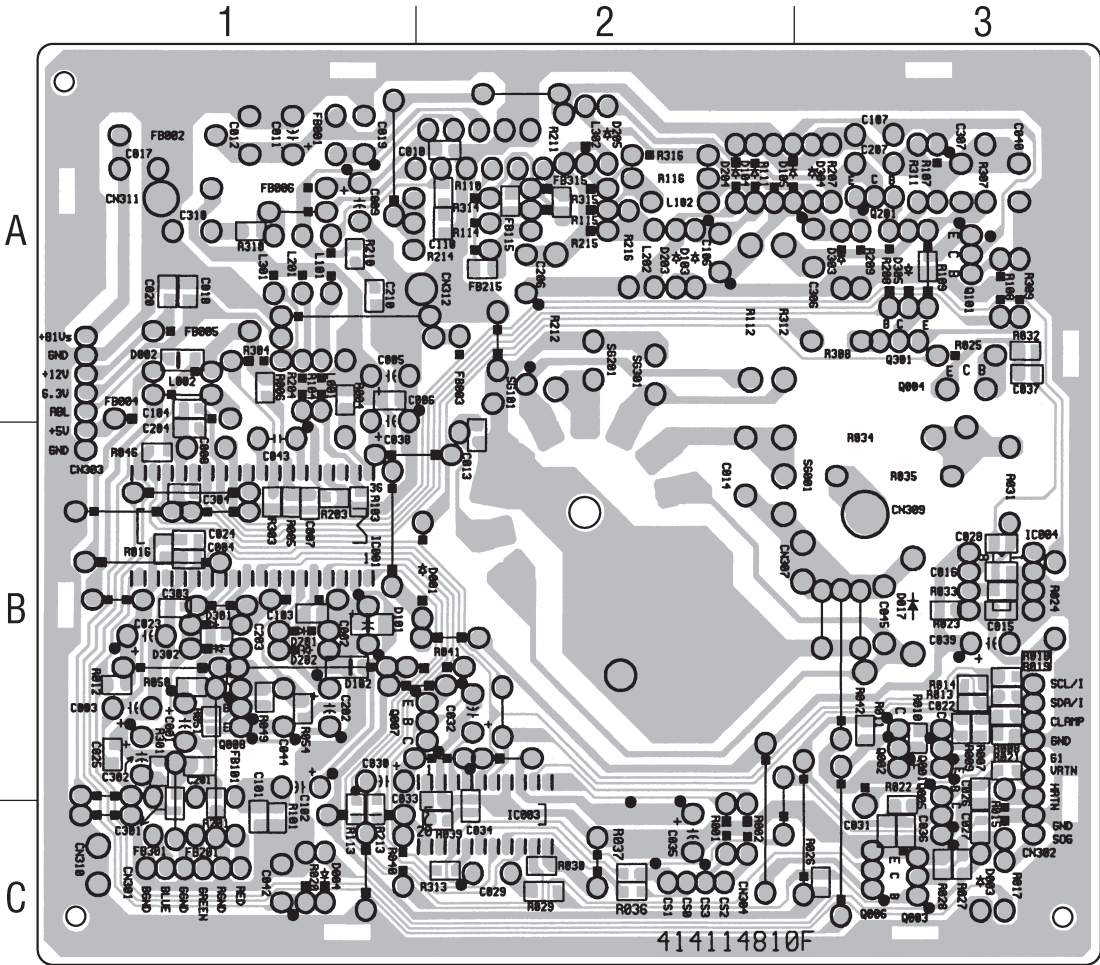
## (2) Schematic Diagram of A Board



- A BOARD WAVEFORMS



— A BOARD (Conductor Side) —

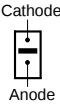


• A BOARD  
SEMICONDUCTOR  
LOCATION

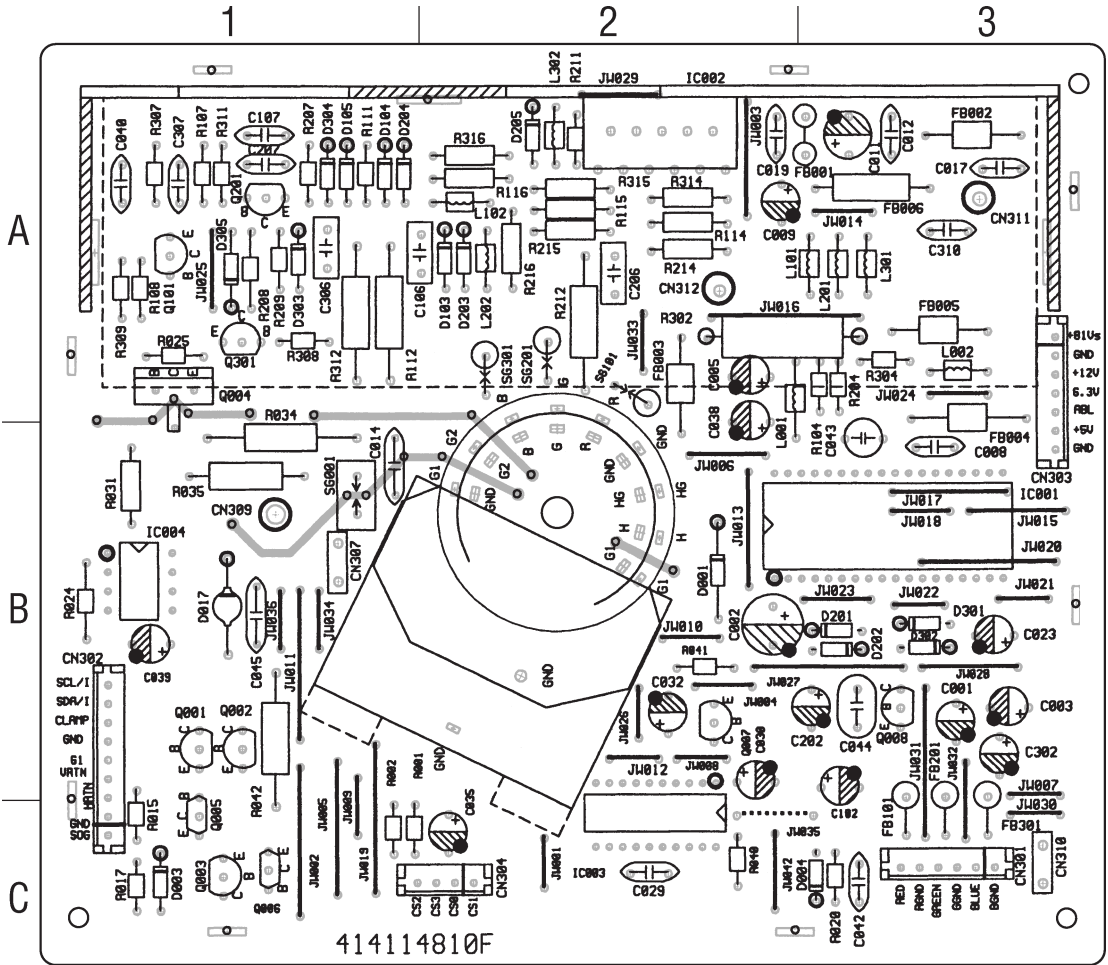
| IC    | (Conductor Side) (Component Side) |                  |
|-------|-----------------------------------|------------------|
|       | (Conductor Side)                  | (Component Side) |
| IC001 | B-1                               | B-3              |
| IC002 |                                   | A-2              |
| IC003 | C-2                               | C-2              |
| IC004 | B-3                               | B-1              |

| TRANSISTOR | (Conductor Side) (Component Side) |                  |
|------------|-----------------------------------|------------------|
|            | (Conductor Side)                  | (Component Side) |
| Q001       | B-3                               | B-1              |
| Q002       | B-3                               | B-1              |
| Q003       | C-3                               | C-1              |
| Q004       | A-3                               | A-1              |
| Q005       | C-3                               | C-1              |
| Q008       | B-1                               | B-3              |
| Q101       | A-3                               | A-1              |
| Q201       | A-3                               | A-1              |
| Q301       | A-3                               | A-1              |

| DIODE | (Conductor Side) (Component Side) |                  |
|-------|-----------------------------------|------------------|
|       | (Conductor Side)                  | (Component Side) |
| D001  | B-1                               | B-2              |
| D002  | A-1                               |                  |
| D003  | C-3                               | C-1              |
| D004  | C-1                               | C-3              |
| D017  | B-3                               | B-1              |
| D101  | B-1                               |                  |
| D102  | B-1                               |                  |
| D103  | A-2                               | A-2              |
| D104  | A-2                               | A-1              |
| D105  | A-2                               | A-1              |
| D201  | B-1                               | B-3              |
| D202  | B-1                               | B-3              |
| D203  | A-2                               | A-2              |
| D204  | A-2                               | A-1              |
| D205  | A-2                               | A-2              |
| D301  | B-1                               | B-3              |
| D302  | B-1                               | B-3              |
| D303  | A-3                               | A-1              |
| D304  | A-3                               | A-1              |
| D305  | A-3                               | A-1              |

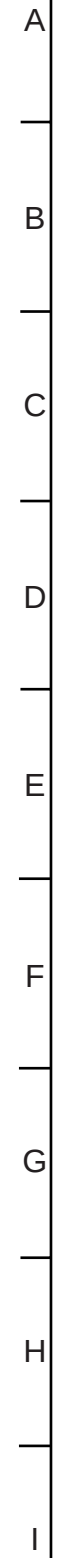


— A BOARD (Component Side) —



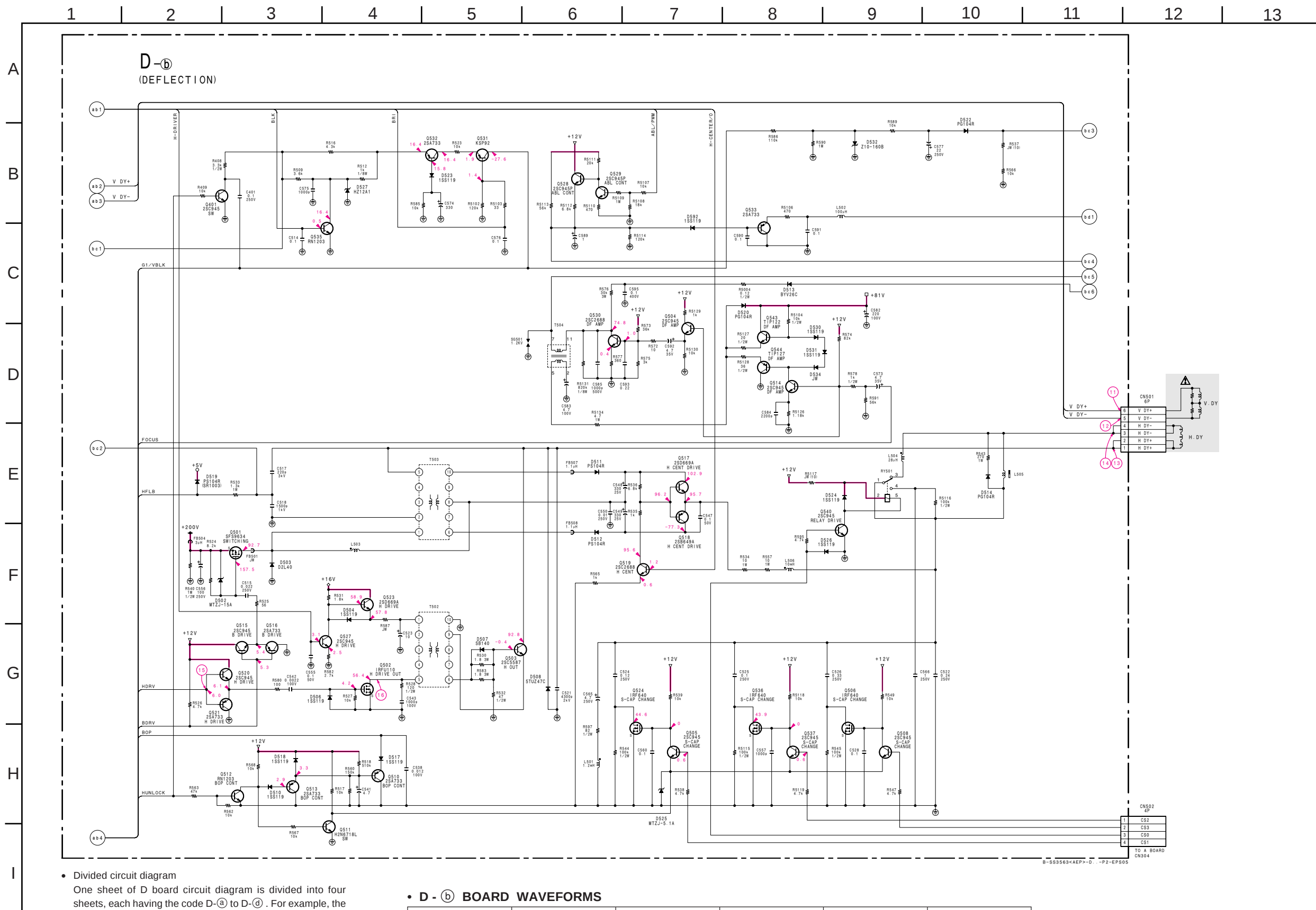
**NOTE:**  
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

A horizontal timeline with 14 numbered segments from 1 to 14. The segments are separated by vertical lines, and the numbers are centered above each segment.

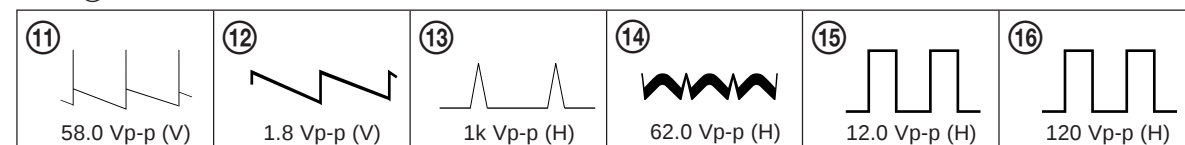


- a b 1  
└─ Ref. No.  
└─ Circuit diagram division code

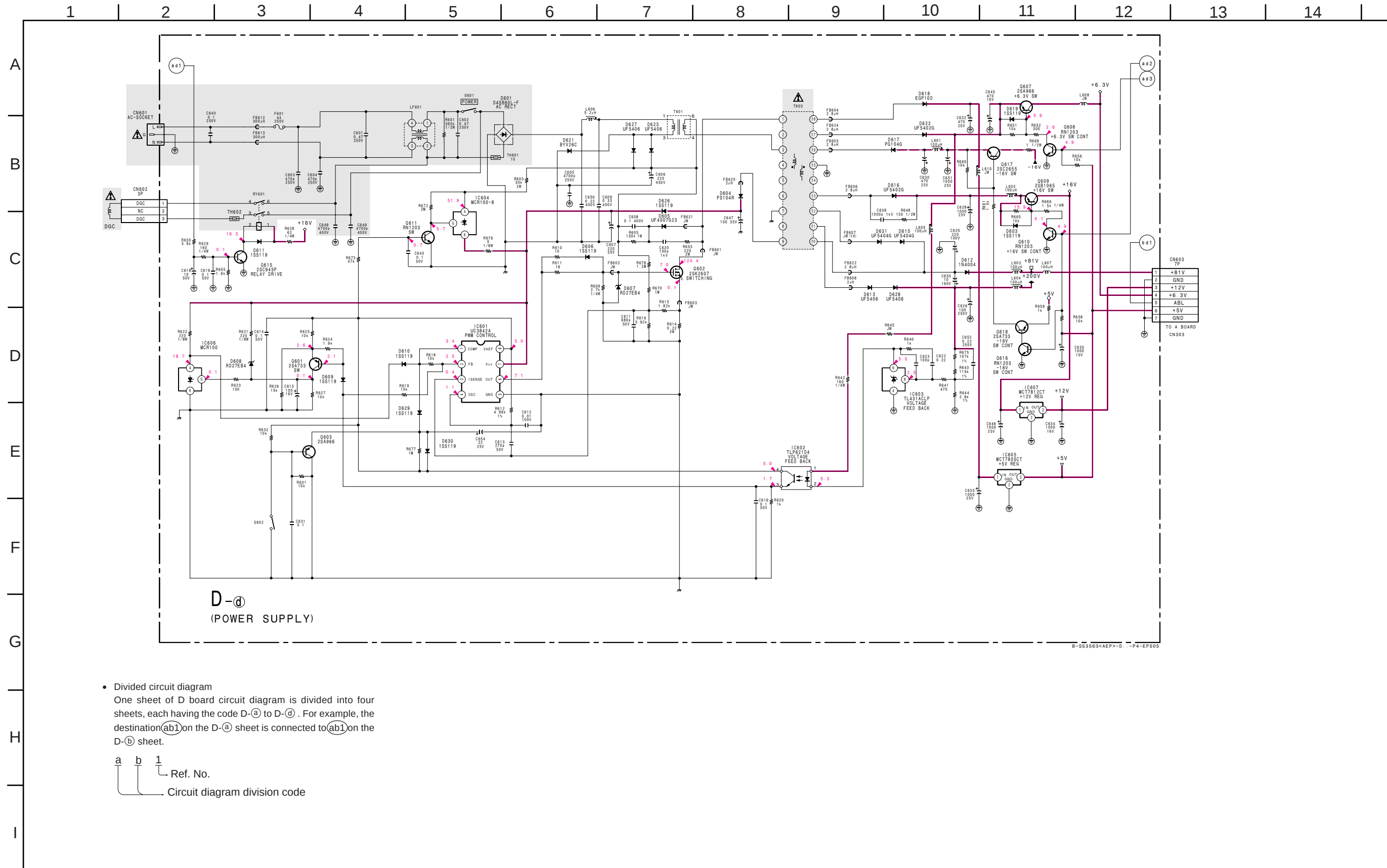
|              |              |              |              |                  |              |              |              |              |               |
|--------------|--------------|--------------|--------------|------------------|--------------|--------------|--------------|--------------|---------------|
| ①            | ②            | ③            | ④            | ⑤                | ⑥            | ⑦            | ⑧            | ⑨            | ⑩             |
|              |              |              |              |                  |              |              |              |              |               |
| 3.2 Vp-p (H) | 3.4 Vp-p (H) | 5.0 Vp-p (H) | 4.0 Vp-p (V) | 2.8 Vp-p (24MHz) | 5.0 Vp-p (H) | 5.0 Vp-p (V) | 3.0 Vp-p (V) | 2.0 Vp-p (V) | 12.0 Vp-p (H) |



#### • D - ⑥ BOARD WAVEFORMS



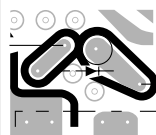




D

[μ-COM, DEFLECTION CONTROL,  
DEFLECTION, HV, POWER SUPPLY]

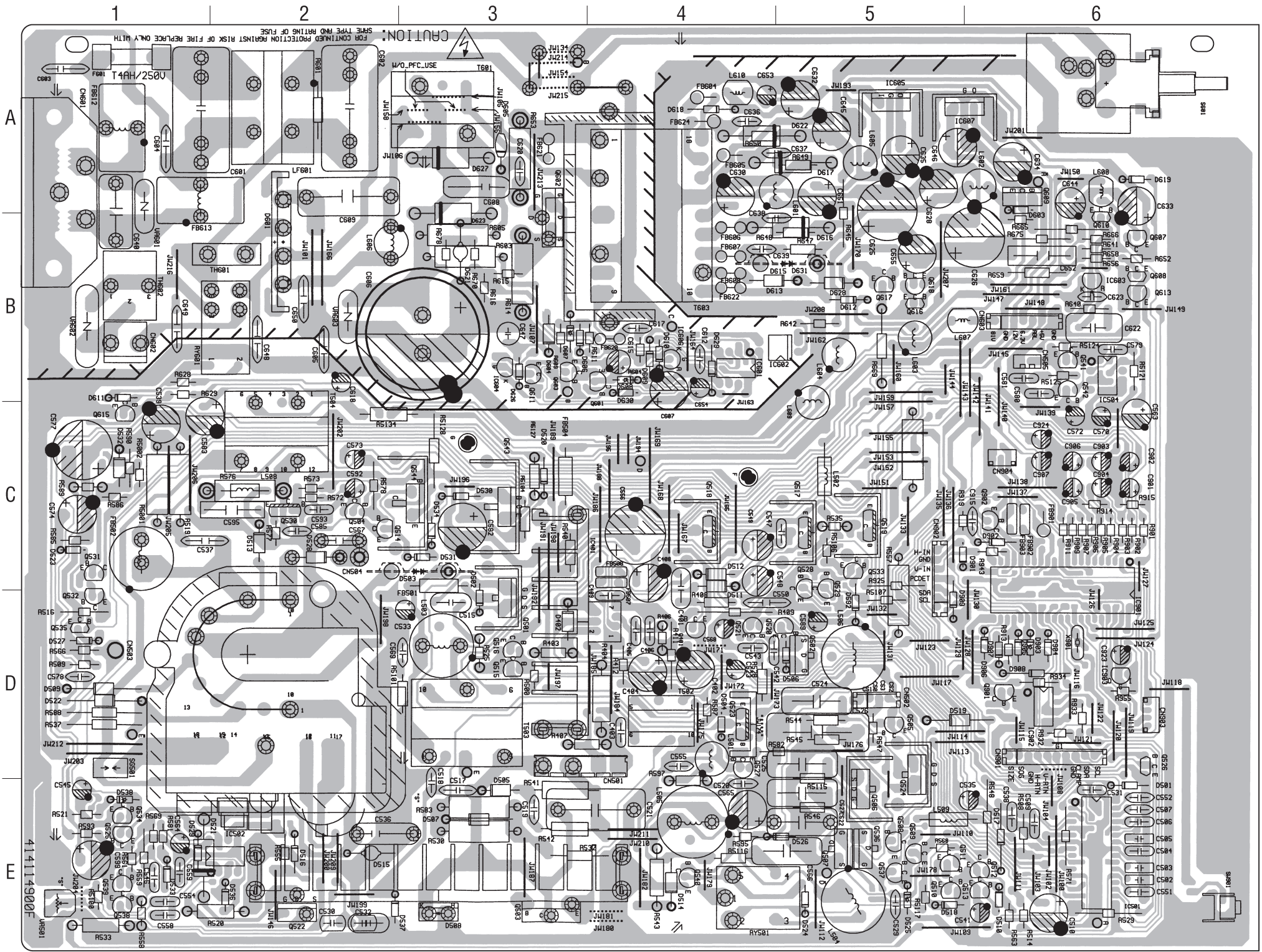
— D BOARD —



**NOTE:**  
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

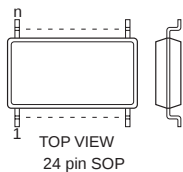
• D BOARD  
SEMICONDUCTOR LOCATION

| IC         |     | D501              | D-6 |
|------------|-----|-------------------|-----|
| IC401      | D-4 | D502              | C-3 |
| IC501      | E-6 | D503              | C-3 |
| IC502      | E-2 | D504              | D-4 |
| IC504      | B-6 | D505              | E-3 |
| IC601      | B-4 | D506              | D-4 |
| IC602      | B-4 | D507              | E-3 |
| IC603      | B-6 | D508              | E-3 |
| IC604      | B-3 | D509              | D-1 |
| IC605      | A-5 | D510              | E-6 |
| IC606      | B-4 | D511              | C-4 |
| IC607      | A-5 | D511              | D-4 |
| IC901      | C-6 | D512              | C-4 |
| IC902      | D-6 | D513              | C-2 |
| IC903      | D-6 | D514              | E-4 |
|            |     | D515              | E-2 |
|            |     | D516              | E-2 |
|            |     | D517              | E-6 |
|            |     | D518              | E-4 |
|            |     | D519              | D-5 |
|            |     | D520              | C-3 |
|            |     | D521              | E-1 |
|            |     | D522              | D-1 |
|            |     | D523              | C-1 |
|            |     | D524              | E-4 |
|            |     | D525              | E-4 |
|            |     | D526              | E-4 |
|            |     | D527              | D-1 |
|            |     | D528              | C-2 |
|            |     | D529              | E-1 |
|            |     | D530              | C-3 |
|            |     | D531              | C-3 |
|            |     | D532              | C-1 |
|            |     | D533              | E-1 |
|            |     | D534              | C-3 |
|            |     | D536              | E-2 |
|            |     | D537              | E-2 |
|            |     | D538              | E-1 |
|            |     | D592              | D-5 |
|            |     | D601              | B-2 |
|            |     | D602              | B-3 |
|            |     | D604              | B-3 |
|            |     | D605              | A-3 |
|            |     | D606              | B-3 |
|            |     | D607              | B-3 |
|            |     | D608              | B-4 |
|            |     | D609              | B-4 |
|            |     | D610              | B-4 |
|            |     | D611              | B-1 |
|            |     | D612              | B-5 |
|            |     | D613              | B-4 |
|            |     | D615              | B-4 |
|            |     | D616              | B-5 |
|            |     | D617              | A-5 |
|            |     | D618              | A-4 |
|            |     | D619              | A-6 |
|            |     | D622              | A-4 |
|            |     | D623              | A-3 |
|            |     | D626              | B-3 |
|            |     | D627              | A-3 |
|            |     | D628              | B-5 |
|            |     | D629              | B-4 |
|            |     | D630              | B-4 |
|            |     | D631              | B-5 |
|            |     | D901              | C-5 |
|            |     | D902              | C-6 |
|            |     | D903              | D-6 |
|            |     | D904              | D-6 |
|            |     | D905              | D-6 |
|            |     | D906              | D-6 |
|            |     | D907              | D-6 |
|            |     | D908              | D-6 |
|            |     | D909              | D-5 |
| TRANSISTOR |     | VARIABLE RESISTOR |     |
| Q401       | D-4 | VR501             | E-1 |
| Q501       | D-3 |                   |     |
| Q502       | D-5 |                   |     |
| Q503       | E-3 |                   |     |
| Q504       | C-2 |                   |     |
| Q505       | D-5 |                   |     |
| Q506       | E-4 |                   |     |
| Q507       | E-4 |                   |     |
| Q508       | E-4 |                   |     |
| Q509       | E-4 |                   |     |
| Q510       | E-4 |                   |     |
| Q511       | E-4 |                   |     |
| Q512       | E-4 |                   |     |
| Q513       | E-4 |                   |     |
| Q514       | C-2 |                   |     |
| Q515       | D-3 |                   |     |
| Q516       | D-3 |                   |     |
| Q517       | C-5 |                   |     |
| Q518       | C-4 |                   |     |
| Q519       | C-5 |                   |     |
| Q520       | D-4 |                   |     |
| Q521       | D-4 |                   |     |
| Q522       | E-2 |                   |     |
| Q523       | D-4 |                   |     |
| Q524       | D-5 |                   |     |
| Q525       | E-1 |                   |     |
| Q526       | D-6 |                   |     |
| Q527       | D-4 |                   |     |
| Q528       | C-5 |                   |     |
| Q529       | C-5 |                   |     |
| Q530       | C-2 |                   |     |
| Q531       | C-1 |                   |     |
| Q532       | D-1 |                   |     |
| Q533       | C-5 |                   |     |
| Q534       | E-1 |                   |     |
| Q535       | D-1 |                   |     |
| Q536       | E-4 |                   |     |
| Q537       | E-4 |                   |     |
| Q538       | E-1 |                   |     |
| Q539       | E-1 |                   |     |
| Q540       | E-4 |                   |     |
| Q541       | B-6 |                   |     |
| Q542       | B-6 |                   |     |
| Q543       | C-3 |                   |     |
| Q544       | C-3 |                   |     |
| Q601       | B-4 |                   |     |
| Q602       | A-3 |                   |     |
| Q603       | B-3 |                   |     |
| Q607       | B-6 |                   |     |
| Q608       | B-6 |                   |     |
| Q609       | A-6 |                   |     |
| Q610       | B-6 |                   |     |
| Q611       | B-3 |                   |     |
| Q613       | B-6 |                   |     |
| Q615       | C-1 |                   |     |
| Q616       | B-5 |                   |     |
| Q617       | B-5 |                   |     |
| Q618       | B-5 |                   |     |
| Q901       | D-6 |                   |     |
| Q902       | C-6 |                   |     |
| DIODE      |     | CRYSTAL           |     |
| D402       | D-3 | X901              | D-6 |

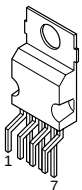


## 5-5. SEMICONDUCTORS

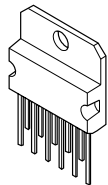
**BH3863F**  
**BH3863F-E2**



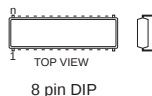
**LA78040**



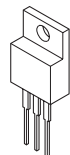
**LM2415T**



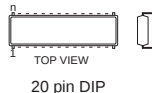
**LM358N**  
**M24C16BN6**  
**UC3842A**  
**C3843A**  
**24LC21/P**



**MCT7812CT**  
**TA7805S**



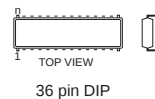
**M35047**



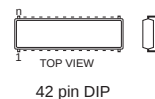
**M51951BSL**



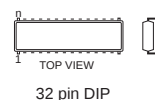
**M52743BSP**



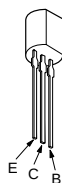
**ST72774**



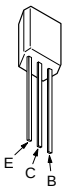
**TDA4841**



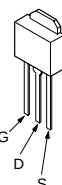
**BF420**



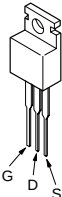
**DTC124ESA**  
**2SC3400**



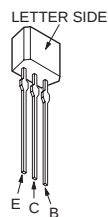
**IRFU110**  
**IRFU110A**



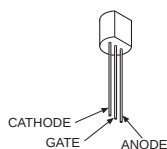
**IRF640**



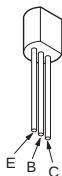
**RN1203**



**MCR100**  
**MCR100-8RL**



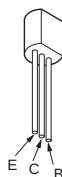
**2N3904**



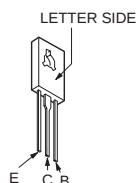
**2SA1221-L**



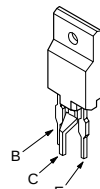
**2SA733-Q**  
**2SA733TP-QP**  
**2SA966-Y**  
**2SB647A-C**  
**2SC2655**  
**2SC2655-Y**  
**2SC945-P**



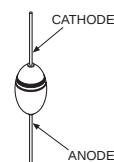
**2SB649-C**  
**2SB649A-B**  
**2SC2688-LK**  
**2SD669AVC**



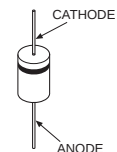
**2SC4632LS-CB7**



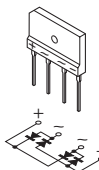
**BYV26C**  
**UF05G**



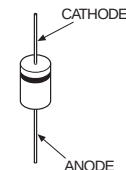
**D2L40-TA**  
**ER106**  
**HSS82**  
**HZ12**  
**HZ18-2**  
**HZ5C1**  
**HZ5C2**  
**MTZJ-T-73-15A**  
**PS104R**  
**RD27EB4**  
**RGP02-18**  
**SB140-6339**  
**UF4007G23**  
**UF5402G**  
**UF5404G**  
**UF5406**  
**10E2**  
**IN4002**  
**IN4004**  
**IN4148**



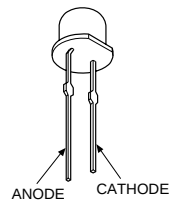
**D4SB60L**  
**D4SB60L-F**



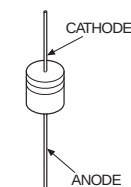
**EGP10D**



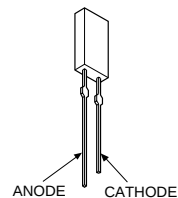
**MAA3371X**



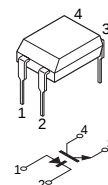
**MTZJ-15A**  
**MTZJ-5.1A**  
**MTZJ-5.1B**  
**RD15ES-B1**  
**RD5.1ESB2**  
**1SS119-25**  
**1SS119-25TD**



**SEL4225R-D**



**TLP621D4-Y-LF2**



SECTION 6  
EXPLODED VIEWS

NOTE:

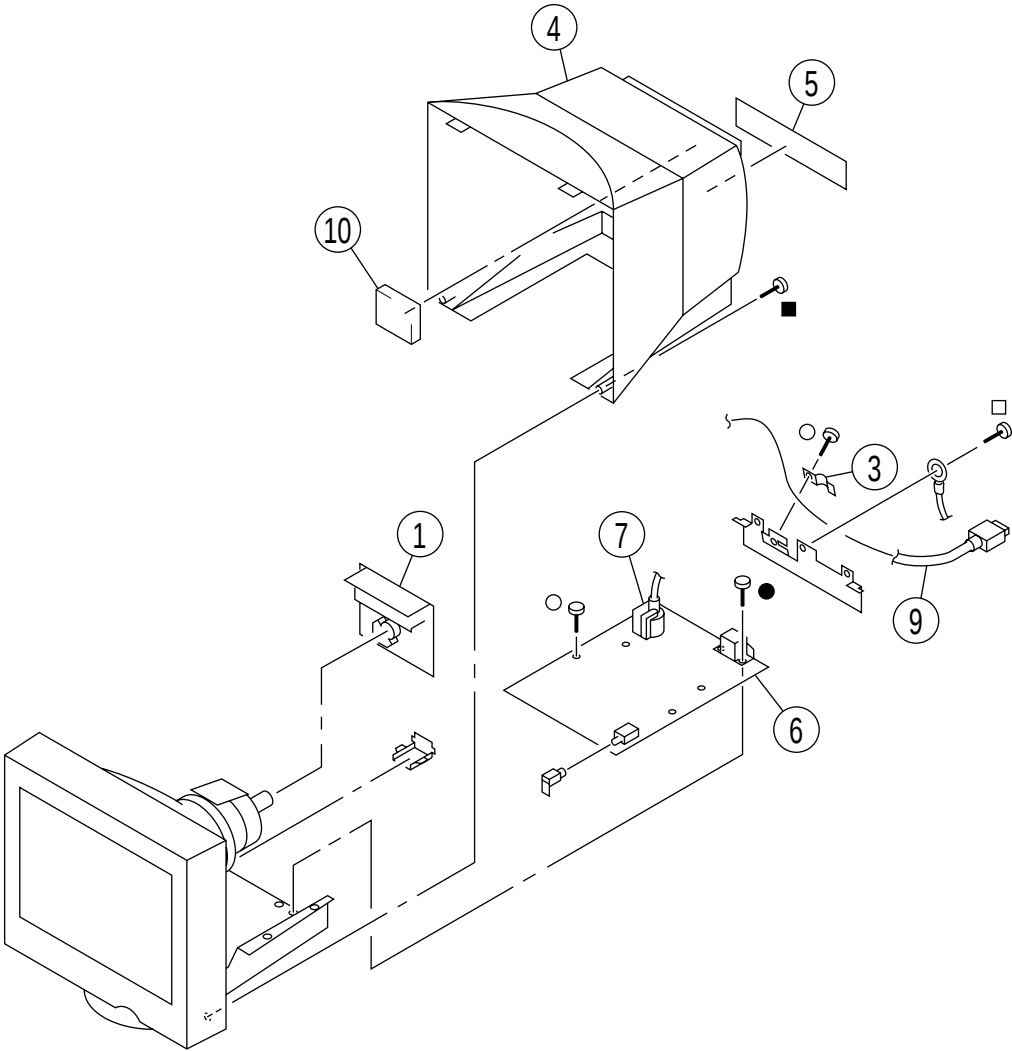
- Items with no part number and no description are not stocked because they are seldom required for routine service.
  - The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " \* " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

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

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

6-1. CHASSIS

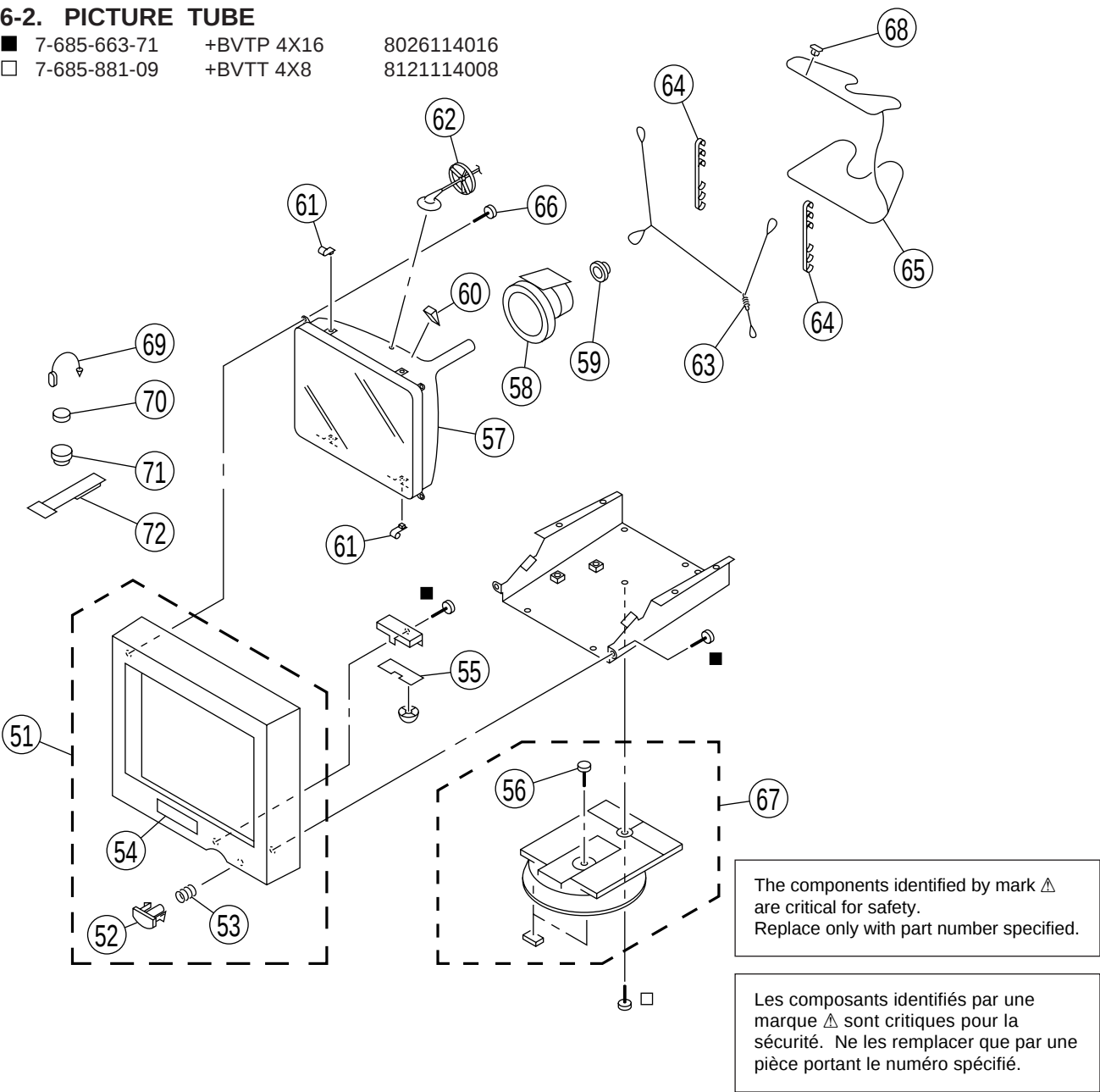
|   |              |            |            |
|---|--------------|------------|------------|
| ● | 7-685-648-71 | +BVTT 3X12 | 8026113012 |
| ○ | 7-685-872-09 | +BVTT 3X8  | 8127113008 |
| ■ | 7-685-663-71 | +BVTP 4X16 | 8026114016 |
| □ | 7-685-881-09 | +BVTT 4X8  | 8121114008 |



| REF.NO. | PART NO.       | DESCRIPTION        | REMARK     | REF.NO. | PART NO.       | DESCRIPTION          | REMARK     |
|---------|----------------|--------------------|------------|---------|----------------|----------------------|------------|
| 1       | * A-1272-229-A | A BOARD, COMPLETE  | S07C2U0242 | 6       | * A-1348-021-A | D BOARD, COMPLETE    | C07C2U0144 |
| 3       | * 4-060-151-01 | STOPPER, CABLE     |            | 7       | △ 1-453-358-11 | TRANSFORMER, FLYBACK | 7050307C2U |
| 4       | 4-072-384-01   | CABINET            |            | 9       | 1-757-540-11   | I/O CABLE ASSY       | C7107C2U11 |
| 5       | * 4-079-241-01 | LABEL, INFORMATION | 9011097C2V | 10      | 4-073-622-01   | SPONGE               | 9010095R51 |

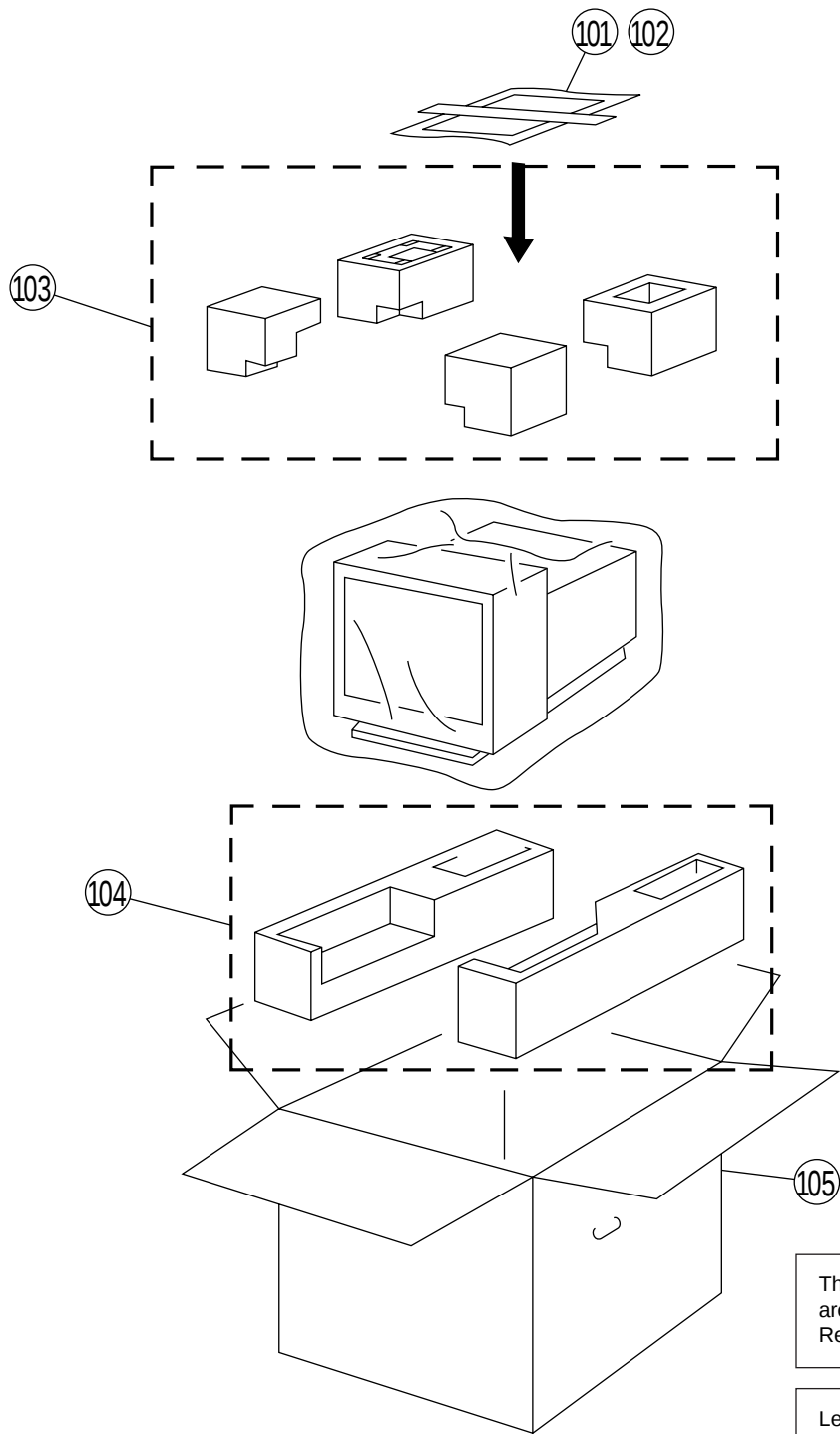
6-2. PICTURE TUBE

|   |              |            |            |
|---|--------------|------------|------------|
| ■ | 7-685-663-71 | +BVTP 4X16 | 8026114016 |
| □ | 7-685-881-09 | +BVTT 4X8  | 8121114008 |



| REF.NO. | PART NO.       | DESCRIPTION                | REMARK     | REF.NO. | PART NO.       | DESCRIPTION                   | REMARK |
|---------|----------------|----------------------------|------------|---------|----------------|-------------------------------|--------|
| 51      | X-4038-291-1   | BEZEL ASSY                 | GP7C2J7001 | 62      | 4-060-155-01   | HOLDER, HV CABLE              |        |
| 52      | 4-072-387-01   | BUTTON, POWER              | 1QA70T7C2A | 63      | 4-060-603-01   | SPRING, TENSION               |        |
| 53      | 3-653-339-01   | SPRING, COMPRESSION        |            | 64      | 4-072-413-01   | BAND, DG COIL                 |        |
| 54      | 4-042-353-11   | EMBLEM (NO.7), SONY        |            | 65      | Δ 1-452-923-41 | DEGAUSS COIL                  |        |
| 55      | * A-1304-219-A | H BOARD, COMPLETE          | S07C2U0342 | 66      | 4-365-808-01   | SCREW (5), TAPPING            |        |
| 56      | 4-384-096-01   | SCREW (4X16), TAPPING, +P  |            | 67      | X-4037-104-1   | STAND ASSY                    |        |
| 57      | Δ 8-738-558-05 | PICTURE TUBE (17TKB)       |            | 68      | 4-072-413-01   | BAND, DG COIL                 |        |
| 58      | Δ 8-451-435-12 | DEFLECTION YOKE (Y17TKJ-M) |            | 69      | 4-308-870-00   | CLIP, LEAD WIRE               |        |
| 59      | Δ 1-452-923-41 | NECK ASSY                  |            | 70      | 1-452-032-00   | MAGNET, DISK; 10mmφ           |        |
| 60      | 4-060-166-01   | SPACER, DEFLECTION YOKE    |            | 71      | 1-452-094-00   | MAGNET, ROTATABLE DISK; 15mmφ |        |
| 61      | 4-045-123-01   | HOLDER, DEGAUSS COIL       |            | 72      | 4-051-736-21   | PIECE A (90), CONV. CORRECT   |        |

6-3. PACKING MATERIALS



The components identified by mark  $\triangle$  are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque  $\triangle$  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     |
|---------|--------------------------|---------------------|------------|---------|----------------|-------------------|------------|
| 101     | $\triangle$ 1-765-718-11 | CORD SET, POWER     |            | 104     | * 4-072-418-01 | CUSION (LOWER)    |            |
| 102     | 4-079-242-11             | MANUAL, INSTRUCTION | 9012097C2V | 105     | 4-079-271-01   | INDIVIDUAL CARTON | 9001097C2V |
| 103     | * 4-072-417-01           | CUSHION (UPPER)     |            |         |                |                   |            |

## SECTION 7

## ELECTRICAL PARTS LIST



## NOTE:

The components identified by mark  $\Delta$  are critical for safety.  
Replace only with part number specified.

Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

## RESISTORS

- All resistors are in ohms
- F : nonflammable

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

| REF.NO. | PART NO.     | DESCRIPTION                      | REMARK      | REF.NO. | PART NO.     | DESCRIPTION                     | REMARK     |
|---------|--------------|----------------------------------|-------------|---------|--------------|---------------------------------|------------|
|         |              | A BOARD, COMPLETE<br>*****       |             | C103    | 1-115-339-91 | CERAMIC 0.1 $\mu$ F 50V         | 7146104456 |
|         |              |                                  |             | C104    | 1-115-339-91 | CERAMIC 0.1 $\mu$ F 50V         | 7146104456 |
|         |              |                                  |             | C106    | 1-135-383-11 | METALIZED FILM 0.1 $\mu$ F 100V | 5075104501 |
|         | 4-382-854-11 | SCREW (M3X10), P, SW (+) (IC002) |             | C107    | 1-136-497-11 | METALIZED FILM 0.1 $\mu$ F 50V  | 5134104452 |
|         |              | <CAPACITOR>                      |             | C201    |              | 33pF 50V                        | 7183330556 |
| C001    | 1-126-964-91 | ELECT 10 $\mu$ F 50V             | 5156100T50  | C202    | 1-126-964-91 | ELECT 10 $\mu$ F 50V            | 5156100T50 |
| C002    | 1-126-934-11 | ELECT 220 $\mu$ F 16V            | 5156221S16  | C203    | 1-115-339-91 | CERAMIC 0.1 $\mu$ F 50V         | 7146104456 |
| C004    | 1-164-489-91 | CERAMIC 0.22 $\mu$ F 16V         | 7144224106  | C204    | 1-115-339-91 | CERAMIC 0.1 $\mu$ F 50V         | 7146104456 |
| C005    | 1-135-397-11 | ELECT 47 $\mu$ F 16V             | 515X470T16  | C206    | 1-135-383-11 | METALIZED FILM 0.1 $\mu$ F 100V | 5075104501 |
| C006    | 1-115-339-91 | CERAMIC 0.1 $\mu$ F 50V          | 7146104456  | C207    | 1-136-497-11 | METALIZED FILM 0.1 $\mu$ F 50V  | 5134104452 |
| C008    | 1-136-497-11 | METALIZED FILM 0.1 $\mu$ F 50V   | 5134104452  | C301    |              | 33pF 50V                        | 7183330556 |
| C009    | 1-104-660-91 | ELECT 47 $\mu$ F 16V             | 5156470T16  | C302    | 1-126-964-91 | ELECT 10 $\mu$ F 50V            | 5156100T50 |
| C010    | 1-115-339-91 | CERAMIC 0.1 $\mu$ F 50V          | 7146104456  | C303    | 1-115-339-91 | CERAMIC 0.1 $\mu$ F 50V         | 7146104456 |
| C011    | 1-128-582-91 | ELECT 10 $\mu$ F 100V            | 5156100T01  | C304    | 1-115-339-91 | CERAMIC 0.1 $\mu$ F 50V         | 7146104456 |
| C012    |              | 0.1 $\mu$ F 100V                 | 5116104111  | C306    | 1-135-383-11 | METALIZED FILM 0.1 $\mu$ F 100V | 5075104501 |
| C013    | 1-115-339-91 | CERAMIC 0.1 $\mu$ F 50V          | 7146104456  | C307    | 1-136-497-11 | METALIZED FILM 0.1 $\mu$ F 50V  | 5134104452 |
| C014    |              | CERAMIC 1000pF 2KV               | 51011021C3  |         |              | <CONNECTOR>                     |            |
| C015    | 1-107-823-11 | CERAMIC 0.47 $\mu$ F 16V         | 7144474106  | CN301   | 1-564-510-51 | PLUG, CONNECTOR 6P              | 4490600330 |
| C016    | 1-163-009-11 | CERAMIC 0.001 $\mu$ F 50V        | 71444102256 | CN302   | 1-564-510-51 | PLUG, CONNECTOR 9P              | 4490900330 |
| C017    |              | 0.1 $\mu$ F 100V                 | 5116104111  | CN303*  | 1-564-510-51 | PLUG, CONNECTOR 7P              | 4490700330 |
| C019    |              | 0.1 $\mu$ F 100V                 | 5116104111  | CN304*  | 1-564-507-51 | PLUG, CONNECTOR 4P              | 4490400330 |
| C022    | 1-163-131-00 | CERAMIC 390pF 50V                | 7183391556  | CN307   | 1-695-915-11 | TAB (CONTACT) 1P                |            |
| C023    | 1-135-393-11 | ELECT 100 $\mu$ F 10V            | 5156101T10  | CN309   | 1-506-108-41 | PIN, CONNECTOR (TERMINAL PIN)   | 3340236016 |
| C025    | 1-115-339-91 | CERAMIC 0.1 $\mu$ F 50V          | 7146104456  | CN310   | 1-695-915-11 | TAB (CONTACT) 1P                |            |
| C026    | 1-163-013-11 | CERAMIC 2200pF 50V               | 7144222156  | CN311   |              | 1P                              |            |
| C028    | 1-163-263-11 | CERAMIC 330pF 50V                | 7183331556  | CN312   |              | 1P                              |            |
| C029    | 1-102-074-11 | CERAMIC 0.001 $\mu$ F 50V        | 5101102152  |         |              | <DIODE>                         |            |
| C030    | 1-135-393-11 | ELECT 100 $\mu$ F 10V            | 5156101T10  | D001    | 8-719-911-19 | DIODE 1SS119-25                 | 4120511900 |
| C032    | 1-135-398-11 | ELECT 1 $\mu$ F 50V              | 5156109T50  | D002    | 8-719-070-90 | DIODE 1N4148                    | 412014148T |
| C033    |              | CERAMIC 4700pF 50V               | 7144472156  | D003    | 8-719-109-85 | ZENER DIODE RD5.1ESB2           | 41205005C2 |
| C034    | 1-115-339-91 | CERAMIC 0.1 $\mu$ F 50V          | 7146104456  | D004    | 8-719-921-20 | DIODE 1SS119-25TD               | 4120511900 |
| C035    | 1-135-393-11 | ELECT 100 $\mu$ F 10V            | 5156101T10  | D017    | 8-719-074-13 | DIODE BYV26C                    | 413010426C |
| C037    | 1-164-489-91 | CERAMIC 0.22 $\mu$ F 16V         | 7144224106  | D101    | 8-719-070-90 | DIODE 1N4148                    | 412014148T |
| C038    | 1-104-660-91 | ELECT 47 $\mu$ F 16V             | 5156470T16  | D102    | 8-719-070-90 | DIODE 1N4148                    | 412014148T |
| C039    | 1-126-933-11 | ELECT 100 $\mu$ F 16V            | 5156101T16  | D103    | 8-719-970-82 | DIODE HSS82                     | 4130190820 |
| C040    |              | 0.01 $\mu$ F 100V                | 5116103511  | D104    | 8-719-970-82 | DIODE HSS82                     | 4130190820 |
| C042    |              | CERAMIC 33pF 50V                 | 5121330552  | D105    | 8-719-970-82 | DIODE HSS82                     | 4130190820 |
| C043    | 1-135-404-11 | ELECT 4.7 $\mu$ F 35V            | 5162479T35  | D201    | 8-719-911-19 | DIODE 1SS119-25                 | 4120511900 |
| C044    | 1-137-399-91 | PETP FILM 0.1 $\mu$ F 100V       | 5116104111  | D202    | 8-719-911-19 | DIODE 1SS119-25                 | 4120511900 |
| C045    |              | CERAMIC 0.01 $\mu$ F 1.5KV       | 5104103463  |         |              |                                 |            |
| C101    |              | 33pF 50V                         | 7183330556  |         |              |                                 |            |
| C102    | 1-126-964-91 | ELECT 10 $\mu$ F 50V             | 5156100T50  |         |              |                                 |            |

# CPD-E220/E215E/E220E



Les composants identifiés par une  
marque  $\Delta$  sont critiques pour la sécurité.  
Ne les remplacer que par une pièce  
portant le numéro spécifié.

The components identified by mark  $\Delta$   
are critical for safety.  
Replace only with part number specified.

| REF.NO.                | PART NO.     | DESCRIPTION                      | REMARK     | REF.NO.    | PART NO.     | DESCRIPTION         | REMARK           |
|------------------------|--------------|----------------------------------|------------|------------|--------------|---------------------|------------------|
| D203                   | 8-719-970-82 | DIODE HSS82                      | 4130190820 | <RESISTOR> |              |                     |                  |
| D204                   | 8-719-970-82 | DIODE HSS82                      | 4130190820 | R001       | 1-247-807-91 | CARBON (SMALL) 100  | 1/4W 4050510155  |
| D205                   | 8-719-970-82 | DIODE HSS82                      | 4130190820 | R002       | 1-247-807-91 | CARBON (SMALL) 100  | 1/4W 4050510155  |
| D301                   | 8-719-911-19 | DIODE 1SS119-25                  | 4120511900 | R004       | 1-216-025-91 | RES-CHIP 100        | 1/10W 4010110152 |
| D302                   | 8-719-911-19 | DIODE 1SS119-25                  | 4120511900 | R005       | 1-216-049-91 | RES-CHIP 1K         | 1/10W 4010110252 |
| D303                   | 8-719-970-82 | DIODE HSS82                      | 4130190820 | R006       | 1-216-073-91 | RES-CHIP 10K        | 1/10W 4010110352 |
| D304                   | 8-719-970-82 | DIODE HSS82                      | 4130190820 | R007       |              | RES-CHIP 100        | 1/10W 4010110152 |
| D305                   | 8-719-970-82 | DIODE HSS82                      | 4130190820 | R008       |              | RES, CHIP 2.4K      | 1/10W 4010124252 |
| <FERRITE BEAD>         |              |                                  |            | R009       | 1-216-049-91 | RES-CHIP 1K         | 1/10W 4010110252 |
| FB001                  |              | BEAD, FERRITE 0.45 $\mu$ H       | 7099458250 | R010       | 1-216-025-91 | RES-CHIP 100        | 1/10W 4010110152 |
| FB002                  | 1-469-611-11 | INDUCTOR, FERRITE BEAD 2 $\mu$ H | 4322209005 | R011       |              | RES-CHIP 470        | 1/10W 4010147152 |
| FB003                  |              | JUMP WIRE                        | 5406100000 | R012       | 1-216-049-91 | RES-CHIP 1K         | 1/10W 4010110252 |
| FB004                  |              | JUMP WIRE                        | 5406100000 | R013       | 1-216-065-11 | RES-CHIP 4.7K       | 1/10W 4010147252 |
| FB005                  |              | JUMP WIRE                        | 5406100000 | R014       | 1-216-065-11 | RES-CHIP 4.7K       | 1/10W 4010147252 |
| FB006                  | 1-469-402-11 | BEAD, FERRITE 3 $\mu$ H          | 4322309006 | R015       | 1-247-816-91 | CARBON (SMALL) 240  | 1/4W 4050524155  |
| FB101                  |              | JUMP WIRE                        | 5406100000 | R016       |              | RES-CHIP 470        | 1/10W 4010147152 |
| FB201                  |              | JUMP WIRE                        | 5406100000 | R017       | 1-247-807-91 | CARBON (SMALL) 100  | 1/4W 4050510155  |
| FB301                  |              | JUMP WIRE                        | 5406100000 | R018       | 1-216-025-91 | RES-CHIP 100        | 1/10W 4010110152 |
| <IC>                   |              |                                  |            | R019       | 1-216-025-91 | RES-CHIP 100        | 1/10W 4010110152 |
| IC001                  | 8-759-582-06 | IC M52743BSP                     | 4159527432 | R020       |              | METAL FILM 4.42K    | 1/4W 4257044421  |
| IC002                  | 8-759-569-64 | IC BH3863F                       |            | R021       |              | RES-CHIP 32.4K      | 1/10W 419A132422 |
| IC003                  |              | IC M35047-XXX                    | 4159350470 | R022       |              | RES, CHIP 2.4K      | 1/10W 4010124252 |
| IC004                  | 8-759-991-16 | IC LM358N                        | 4159358000 | R023       |              | RES-CHIP 1M         | 1/10W 4010110552 |
| <SOCKET, PICTURE TUBE> |              |                                  |            | R024       |              | CARBON (SMALL) 150K | 1/4W 4050515455  |
| J001 $\Delta$          | 1-251-598-11 | SOCKET, PICTURE TUBE             | 4570307Y11 | R025       |              | CARBON (SMALL) 2.2K | 1/4W 4050522255  |
| <COIL>                 |              |                                  |            | R026       |              | RES-CHIP 470        | 1/10W 4010147152 |
| L001                   | 1-469-400-11 | INDUCTOR, MICRO 100 $\mu$ H      | 432B101006 | R027       | 1-216-049-91 | RES-CHIP 1K         | 1/10W 4010110252 |
| L002                   |              | JUMP WIRE                        | 5406100000 | R028       | 1-216-049-91 | RES-CHIP 1K         | 1/10W 4010110252 |
| L101                   | 1-469-398-11 | INDUCTOR, MICRO 0.1 $\mu$ H      | 432B108006 | R029       | 1-216-053-11 | RES-CHIP 1.5K       | 1/10W 4010115252 |
| L102                   |              | INDUCTOR, MICRO 0.47 $\mu$ H     | 432B478006 | R030       | 1-216-073-91 | RES-CHIP 10K        | 1/10W 4010110352 |
| L201                   | 1-469-398-11 | INDUCTOR, MICRO 0.1 $\mu$ H      | 432B108006 | R031       |              | METAL FILM 22M      | 1/4W 4160422655  |
| L202                   |              | INDUCTOR, MICRO 0.47 $\mu$ H     | 432B478006 | R032       | 1-216-049-91 | RES-CHIP 1K         | 1/10W 4010110252 |
| L301                   | 1-469-398-11 | INDUCTOR, MICRO 0.1 $\mu$ H      | 432B108006 | R033       |              | RES-CHIP 220K       | 1/10W 4010122452 |
| L302                   |              | INDUCTOR, MICRO 0.47 $\mu$ H     | 432B478006 | R034       |              | 10K                 | 1/2W 4050210355  |
| <TRANSISTOR>           |              |                                  |            | R035       |              | METAL FILM 2.2M     | 1/2W 4160222555  |
| Q001                   | 8-729-139-04 | TRANSISTOR 2N3904                | 4111139040 | R036       |              | RES-CHIP 100        | 1/10W 4010110152 |
| Q002                   | 8-729-139-04 | TRANSISTOR 2N3904                | 4111139040 | R037       |              | RES-CHIP 100        | 1/10W 4010110152 |
| Q003                   | 8-729-139-04 | TRANSISTOR 2N3904                | 4111139040 | R039       |              | RES, CHIP 2.4K      | 1/10W 4010124252 |
| Q004                   | 8-729-823-81 | TRANSISTOR 2SC4632LS-CB7         | 4100246340 | R042       |              | 100                 | 1/2W 4050210155  |
| Q005                   | 8-729-206-21 | TRANSISTOR RN1203                | 4116612030 | R046       |              | RES-CHIP 3K         | 1/10W 4010130252 |
| Q008                   | 8-729-139-04 | TRANSISTOR 2N3904                | 4111139040 | R049       | 1-216-073-91 | RES-CHIP 10K        | 1/10W 4010110352 |
| Q101                   |              | TRANSISTOR BF420                 | 4114804200 | R050       | 1-216-065-11 | RES-CHIP 4.7K       | 1/10W 4010147252 |
| Q201                   |              | TRANSISTOR BF420                 | 4114804200 | R051       | 1-216-053-11 | RES-CHIP 1.5K       | 1/10W 4010115252 |
| Q301                   |              | TRANSISTOR BF420                 | 4114804200 | R054       |              | RES-CHIP 1M         | 1/10W 4010110552 |
|                        |              |                                  |            | R101       | 1-216-022-11 | RES-CHIP 75         | 1/10W 4010175002 |
|                        |              |                                  |            | R103       | 1-216-049-91 | RES-CHIP 1K         | 1/10W 4010110252 |
|                        |              |                                  |            | R104       |              | CARBON (SMALL) 12   | 1/4W 4050512055  |
|                        |              |                                  |            | R107       | 1-247-847-91 | CARBON (SMALL) 4.7K | 1/4W 4050547255  |
|                        |              |                                  |            | R108       |              | CARBON (SMALL) 20K  | 1/4W 4050520355  |
|                        |              |                                  |            | R109       |              | RES-CHIP 470        | 1/10W 4010147152 |
|                        |              |                                  |            | R111       | 1-247-903-91 | CARBON (SMALL) 1M   | 1/4W 4050510555  |
|                        |              |                                  |            | R112       |              | 300                 | 1/2W 4050230155  |
|                        |              |                                  |            | R113       | 1-216-013-11 | RES-CHIP 33         | 1/10W 4010133052 |
|                        |              |                                  |            | R115       |              | 62                  | 1/2W 4050262055  |
|                        |              |                                  |            | R201       | 1-216-022-11 | RES-CHIP 75         | 1/10W 4010175002 |
|                        |              |                                  |            | R203       | 1-216-049-91 | RES-CHIP 1K         | 1/10W 4010110252 |



| REF.NO.     | PART NO.     | DESCRIPTION              | REMARK           | REF.NO. | PART NO.     | DESCRIPTION            | REMARK           |
|-------------|--------------|--------------------------|------------------|---------|--------------|------------------------|------------------|
| R204        |              | CARBON (SMALL) 12        | 1/4W 4050512055  | C507    | 1-137-391-91 | PETP FILM 0.0047μF     | 100V 5116472511  |
| R207        | 1-247-847-91 | CARBON (SMALL) 4.7K      | 1/4W 4050547255  | C508    | 1-163-251-11 | CERAMIC 100pF          | 50V 7183101556   |
| R208        |              | CARBON (SMALL) 20K       | 1/4W 4050520355  | C509    |              | 0.0033μF               | 50V 5144332550   |
| R209        | 1-247-823-91 | CARBON (SMALL) 470       | 1/4W 4050547155  | C510    | 1-107-884-91 | ELECT 1000μF           | 16V 5153102S25   |
| R211        | 1-247-903-91 | CARBON (SMALL) 1M        | 1/4W 4050510555  | C512    | 1-163-251-11 | CERAMIC 100pF          | 50V 7183101556   |
| R212        |              | 300                      | 1/2W 4050230155  | C513    | 1-163-251-11 | CERAMIC 100pF          | 50V 7183101556   |
| R213        | 1-216-013-11 | RES-CHIP 33              | 1/10W 4010133052 | C514    | 1-165-319-11 | CERAMIC 0.1μF          | 50V 7146104456   |
| R215        |              | 100                      | 1/2W 4050210155  | C515    | 1-136-195-11 | METALIZED FILM 0.022μF | 250V 5074223102  |
| R301        | 1-216-022-11 | RES-CHIP 75              | 1/10W 4010175002 | C517    | 1-128-981-11 | CERAMIC 220pF          | 3KV 510H221193   |
| R302        |              | JUMP WIRE                | 5406100000       | C518    |              | CERAMIC 1500pF         | 1KV 5101152132   |
| R303        | 1-216-049-91 | RES-CHIP 1K              | 1/10W 4010110252 | C521    |              | 4300pF                 | 2KV 51904323A3   |
| R304        |              | CARBON (SMALL) 12        | 1/4W 4050512055  | C522    | 1-117-958-11 | FILM 0.24μF            | 400V 5199244543  |
| R307        | 1-247-847-91 | CARBON (SMALL) 4.7K      | 1/4W 4050547255  | C523    | 1-126-964-91 | ELECT 10μF             | 50V 5156100T50   |
| R308        |              | CARBON (SMALL) 20K       | 1/4W 4050520355  | C524    | 1-117-660-21 | PETP FILM 0.12μF       | 250V 5198124583  |
| R309        | 1-247-823-91 | CARBON (SMALL) 470       | 1/4W 4050547155  | C525    | 1-117-659-21 | PETP FILM 0.1μF        | 250V 5198104583  |
| R311        | 1-247-903-91 | CARBON (SMALL) 1M        | 1/4W 4050510555  | C528    | 1-115-339-91 | CERAMIC 0.1μF          | 50V 7146104456   |
| R312        |              | 300                      | 1/2W 4050230155  | C529    | 1-136-497-11 | METALIZED FILM 0.1μF   | 50V 5134104452   |
| R313        | 1-216-013-11 | RES-CHIP 33              | 1/10W 4010133052 | C531    | 1-137-393-91 | PETP FILM 0.01μF       | 100V 5116103511  |
| R315        |              | 62                       | 1/2W 4050262055  | C532    |              | METALIZED FILM 0.047μF | 100V 5074473101  |
| <SPARK GAP> |              |                          |                  | C533    | 1-126-961-91 | ELECT 2.2μF            | 50V 5156229T50   |
| SG001       |              | SPARK GAP                | 7183330556       | C534    | 1-115-339-91 | CERAMIC 0.1μF          | 50V 7146104456   |
| SG101       |              | SPARK GAP                | 4700000003       | C535    | 1-126-933-11 | ELECT 100μF            | 16V 5156101T16   |
| SG201       |              | SPARK GAP                | 4700000003       | C536    |              | 1500pF                 | 1.6KV 5192152573 |
| SG301       |              | SPARK GAP                | 4700000003       | C537    |              | CERAMIC 3900pF         | 1KV 5101392132   |
| *****       |              |                          |                  | C539    | 1-128-563-11 | ELECT 68μF             | 100V 5156680T01  |
|             |              |                          |                  | C540    | 1-165-319-11 | CERAMIC 0.1μF          | 50V 7146104456   |
|             |              |                          |                  | C541    | 1-135-395-11 | ELECT 4.7μF            | 50V 5156479T50   |
|             |              |                          |                  | C542    | 1-137-395-91 | PETP FILM 0.022μF      | 100V 5116223111  |
|             |              |                          |                  | C543    |              | CERAMIC 1000pF         | 100V 5101102112  |
|             |              |                          |                  | C545    | 1-126-964-91 | ELECT 10μF             | 50V 5156100T50   |
|             |              |                          |                  | C546    |              | CERAMIC 100pF          | 50V 5101101152   |
|             |              |                          |                  | C547    |              | METALIZED FILM 0.1μF   | 50V 5077104505   |
|             |              |                          |                  | C548    |              | ELECT 330μF            | 25V 5156331T25   |
|             |              |                          |                  | C549    |              | ELECT 330μF            | 25V 5156331T25   |
|             |              |                          |                  | C550    | 1-135-352-11 | METALIZED FILM 0.01μF  | 250V 5074103102  |
|             |              |                          |                  | C553    |              | 470pF                  | 50V 7183471556   |
|             |              |                          |                  | C554    |              | CERAMIC 470pF          | 50V 5128471552   |
|             |              |                          |                  | C555    | 1-136-497-11 | METALIZED FILM 0.1μF   | 50V 5134104452   |
|             |              |                          |                  | C556    | 1-165-319-11 | ELECT 100μF            | 250V 515X101S03  |
|             |              |                          |                  | C558    | 1-137-419-11 | PETP FILM 0.0033μF     | 100V 5116333111  |
|             |              |                          |                  | C559    | 1-136-684-51 | PETP FILM 0.0022μF     | 100V 5116222111  |
|             |              |                          |                  | C560    |              | 0.1μF                  | 50V 7146104456   |
|             |              |                          |                  | C561    |              | 680pF                  | 50V 7144681156   |
|             |              |                          |                  | C562    |              | 0.1μF                  | 50V 7146104456   |
|             |              |                          |                  | C563    |              | ELECT 330μF            | 16V 5156331T16   |
|             |              |                          |                  | C564    |              | ELECT 47μF             | 25V 5156470T25   |
|             |              |                          |                  | C565    |              | ELECT 4.7μF            | 250V 5156479S03  |
|             |              |                          |                  | C566    |              | 1μF                    | 250V 5190105583  |
|             |              |                          |                  | C567    |              | CERAMIC 0.01μF         | 2KV 51041034C3   |
|             |              |                          |                  | C570    | 1-126-964-91 | ELECT 10μF             | 50V 5156100T50   |
|             |              |                          |                  | C571    |              | 0.1μF                  | 50V 7146104456   |
|             |              |                          |                  | C572    |              | ELECT 47μF             | 16V 5156470T16   |
|             |              |                          |                  | C573    |              | ELECT 4.7μF            | 35V 5162479T35   |
|             |              |                          |                  | C574    |              | ELECT 330μF            | 50V 5156331S50   |
|             |              |                          |                  | C575    |              | 0.01μF                 | 50V 7146103456   |
|             |              |                          |                  | C576    |              | 0.1μF                  | 50V 7146104456   |
| C401        | 1-137-395-91 | METALIZED FILM 0.1μF     | 250V 5074104102  |         |              |                        |                  |
| C402        | 1-128-528-91 | ELECT 470μF              | 25V 5156471S25   |         |              |                        |                  |
| C403        | 1-137-395-91 | PETP FILM 0.022μF        | 100V 5116223111  |         |              |                        |                  |
| C404        | 1-107-491-91 | ELECT 1000μF             | 25V 5153102S25   |         |              |                        |                  |
| C405        | 1-137-378-91 | PETP FILM 0.22μF         | 50V 5110224550   |         |              |                        |                  |
| C406        | 1-137-390-91 | PETP FILM 0.0033μF       | 100V 5116332111  |         |              |                        |                  |
| C408        | 1-126-951-11 | ELECT 470μF              | 35V 5156471S35   |         |              |                        |                  |
| C409        | 1-108-365-51 | PE TEREPHTHALATE 0.001μF | 100V 5116102111  |         |              |                        |                  |
| C502        |              | METALIZED FILM 0.1μF     | 50V 5077104505   |         |              |                        |                  |
| C503        |              | METALIZED FILM 0.1μF     | 50V 5077104505   |         |              |                        |                  |
| C504        | 1-137-393-91 | PETP FILM 0.01μF         | 100V 5116472511  |         |              |                        |                  |
| C505        |              | METALIZED FILM 0.1μF     | 50V 5077104505   |         |              |                        |                  |
| C506        | 1-137-393-91 | PETP FILM 0.01μF         | 100V 5116103511  |         |              |                        |                  |
| <CAPACITOR> |              |                          |                  |         |              |                        |                  |

D

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

7-4

The components identified by mark  $\triangle$  are critical for safety.  
Replace only with part number specified.

Les composants identifiés par une marque  $\triangle$  sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

CPD-E220/E215E/E220E



| REF.NO.          | PART NO.     | DESCRIPTION             | REMARK     | REF.NO.           | PART NO.     | DESCRIPTION              | REMARK     |
|------------------|--------------|-------------------------|------------|-------------------|--------------|--------------------------|------------|
| D518             | 8-719-911-19 | DIODE 1SS119-25         | 4120511900 |                   |              |                          |            |
| D519             |              | DIODE PS104R            | 4130101040 |                   |              |                          |            |
| D520             | 8-719-074-25 | DIODE PG104R            | 4130101041 |                   |              | <FERRITE BEAD>           |            |
| D521             |              | DIODE BYV26C-200        | 4130204270 | FB502             | 1-419-981-11 | COIL, CHOKE 10.8μH       | 4323100103 |
| D522             | 8-719-074-25 | DIODE PG104R            | 4130101041 | FB504             | 1-469-402-11 | BEAD, FERRITE 3μH        | 4322309006 |
| D523             | 8-719-911-19 | DIODE 1SS119-25         | 4120511900 | FB507             | 1-412-911-11 | BEAD, FERRITE 2.3μH      | 7099159250 |
| D524             | 8-719-911-19 | DIODE 1SS119-25         | 4120511900 | FB508             | 1-412-911-11 | BEAD, FERRITE 2.3μH      | 7099159250 |
| D525             | 8-719-921-42 | ZENER DIODE MTZJ-5.1A   | 41205005C1 | FB604             | 1-469-611-11 | BEAD, FERRITE 2μH        | 4322309504 |
| D526             | 8-719-911-19 | DIODE 1SS119-25         | 4120511900 | FB605             | 1-469-611-11 | BEAD, FERRITE 2μH        | 4322309504 |
| D527             |              | ZENER DIODE HZ12        | 4120501202 | FB606             | 1-469-401-11 | BEAD, FERRITE 2.8μH      | 4322309504 |
| D528             |              | DIODE RGP02-18          | 4130100218 | FB607             | 1-469-611-11 | BEAD, FERRITE 2μH        | 4322309504 |
| D530             | 8-719-911-19 | DIODE 1SS119-25         | 4120511900 | FB608             | 1-469-611-11 | BEAD, FERRITE 2μH        | 4322309504 |
| D531             | 8-719-911-19 | DIODE 1SS119-25         | 4120511900 | FB612             | 1-419-445-11 | COIL, CHOKE 300μH        | 7065R10301 |
| D532             |              | ZENER DIODE Z10-160B    | 4120510160 | FB613             | 1-419-445-11 | COIL, CHOKE 300μH        | 7065R10301 |
| D533             | 8-719-911-19 | DIODE 1SS119-25         | 4120511900 | FB620             | 1-469-611-11 | BEAD, FERRITE 2μH        | 4322309504 |
| D535             | 8-719-921-42 | DIODE MTZJ-5.1A         | 41205015AU | FB622             | 1-469-611-11 | BEAD, FERRITE 2μH        | 4322309504 |
| D538             | 8-719-110-39 | ZENER DIODE RD15ES-B1   | 4120511900 | FB624             | 1-469-611-11 | BEAD, FERRITE 2μH        | 4322309504 |
| D592             | 8-719-921-20 | DIODE 1SS119-25         | 4120511900 |                   |              |                          |            |
| D601 $\triangle$ | 8-719-510-53 | DIODE D4SB60L           | 4130400600 |                   |              | <IC>                     |            |
| D603             | 8-719-911-19 | DIODE 1SS119-25         | 4120511900 | IC401             | 8-759-593-28 | IC LA78040               | 4159817200 |
| D604             |              | DIODE PS104R            | 4130101040 | IC501             |              | IC TDA4841               | 4159484100 |
| D605             | 8-719-053-19 | DIODE UF4007G23         | 413010426D | IC502             |              | IC UC3843A               | 4159384300 |
| D606             | 8-719-911-19 | DIODE 1SS119-25         | 4120511900 | IC504             | 8-759-991-16 | IC LM358N                | 4159358000 |
| D607             |              | ZENER DIODE RD27EB4     | 4120502705 | IC601             | 8-759-582-09 | IC UC3842A               | 4159384200 |
| D608             |              | ZENER DIODE RD27EB4     | 4120502705 |                   |              |                          |            |
| D609             | 8-719-911-19 | DIODE 1SS119-25         | 4120511900 | IC602             | 8-749-016-36 | IC TLP621D4-Y-LF2        |            |
| D610             | 8-719-911-19 | DIODE 1SS119-25         | 4120511900 | IC603             | 8-759-466-12 | IC TL431ACLP             | 415943100A |
| D611             | 8-719-911-19 | DIODE 1SS119-25         | 4120511900 | IC604             | 8-729-051-32 | TRANSISTOR MCR100-8RL    | 4114510080 |
| D612             | 8-719-911-55 | DIODE U05G              | 4120104004 | IC605             | 8-759-231-53 | IC TA7805S               | 4159780501 |
| D613             |              | DIODE UF5406            | 4130305406 | IC606             | 8-729-048-22 | TRANSISTOR MCR100        | 4114501006 |
| D615             | 8-719-077-80 | DIODE UF5404G           | 4130305404 |                   |              |                          |            |
| D616             | 8-719-074-19 | DIODE UF5402G           | 4130305402 | IC607             | 8-759-279-76 | IC MCT7812CT             | 4159781201 |
| D617             | 8-719-074-25 | DIODE PG104R            | 4130101041 | IC901             |              | IC ST72774               | 4159727750 |
| D618             |              | DIODE EGP10D            | 413010110D | IC902             | 8-759-650-44 | IC M24C16BN6             | 415924C160 |
| D619             | 8-719-911-19 | DIODE 1SS119-25         | 4120511900 | IC903             | 8-759-605-05 | IC M51951BSL             | 4159519510 |
| D621             | 8-719-074-13 | DIODE BYV26C            | 4130101060 |                   |              | <COIL>                   |            |
| D622             | 8-719-074-19 | DIODE UF5402G           | 4130305402 | L501              |              | INDUCTOR, MICRO 1.2mH    | 4323122003 |
| D623             | 8-719-979-80 | DIODE UF5406            | 4130305402 | L502              |              | COIL, PEAKING 100μH      | 4321101006 |
| D625             | 8-719-911-19 | DIODE 1SS119-25         |            | L503              |              | COIL, CHOKE 10mH         | 4323103003 |
| D626             | 8-719-911-19 | DIODE 1SS119            | 4120511900 | L504              |              | COIL, CHOKE 28μH         | 4323280003 |
| D627             | 8-719-979-80 | DIODE UF5406            | 4130305402 | L505              |              | COIL, LINEARITY          | 708S205R50 |
| D628             |              | DIODE UF5406            | 4130305406 |                   |              |                          |            |
| D629             | 8-719-911-19 | DIODE 1SS119-25         | 4120511900 | L506              |              | COIL, CHOKE 10mH         | 4323103003 |
| D630             | 8-719-911-19 | DIODE 1SS119-25         | 4120511900 | L509              |              | COIL, PEAKING 150μH      | 4321151006 |
| D631             | 8-719-077-80 | DIODE UF5404G           | 4130305404 | L601              |              | COIL, CHOKE 100μH        | 4323101303 |
| D901             | 8-719-921-42 | ZENER DIODE MTZJ-5.1A   | 41205005C1 | L602              |              | COIL, CHOKE 100μH        | 4323101303 |
| D902             | 8-719-921-42 | ZENER DIODE MTZJ-5.1A   | 41205005C1 | L603              |              | COIL, CHOKE 100μH        | 4323101303 |
| D903             | 8-719-921-42 | ZENER DIODE MTZJ-5.1A   | 41205005C1 |                   |              |                          |            |
| D904             | 8-719-921-42 | ZENER DIODE MTZJ-5.1A   | 41205005C1 | L604              |              | COIL, CHOKE 100μH        | 4323101303 |
| D905             | 8-719-921-42 | ZENER DIODE MTZJ-5.1A   | 41205005C1 | L605              |              | COIL, CHOKE 100μH        | 4323101303 |
| D906             | 8-719-921-42 | ZENER DIODE MTZJ-5.1A   | 41205005C1 | L606              |              | COIL, CHOKE 5.2μH        | 4233529003 |
| D908             | 8-719-911-19 | DIODE 1SS119-25         | 4120511900 | L607              | 1-410-645-41 | INDUCTOR, MICRO 100μH    | 4326101005 |
|                  |              |                         |            |                   |              | <FILTER>                 |            |
|                  |              |                         |            | LF601 $\triangle$ | 1-433-798-11 | TRANSFORMER, LINE FILTER | 7065Y11133 |
| F601 $\triangle$ | 1-576-231-11 | FUSE (H.B.C.) (4A/250V) | 5268400052 |                   |              |                          |            |

# CPD-E220/E215E/E220E



| REF.NO.      | PART NO.     | DESCRIPTION               | REMARK     | REF.NO.    | PART NO.     | DESCRIPTION           | REMARK           |
|--------------|--------------|---------------------------|------------|------------|--------------|-----------------------|------------------|
| <TRANSISTOR> |              |                           |            |            |              |                       |                  |
| Q401         | 8-729-194-57 | TRANSISTOR 2SC945-P       | 411020945P | Q617       | 8-729-265-52 | TRANSISTOR 2SC2655    | 4100226550       |
| Q501         |              | TRANSISTOR SFS9634        | 4107496340 | Q618       | 8-729-141-03 | TRANSISTOR 2SA733-QP  | 4110007330       |
| Q502         | 8-729-042-34 | TRANSISTOR IRFU110        | 4103801100 | Q901       | 8-729-139-04 | TRANSISTOR 2N3904     | 4111139040       |
| Q503         | 8-729-052-42 | TRANSISTOR 2SC5587        | 4100255870 | Q902       | 8-729-139-04 | TRANSISTOR 2N3904     | 4111139040       |
| Q504         | 8-729-194-57 | TRANSISTOR 2SC945-P       | 411020945P | <RESISTOR> |              |                       |                  |
| Q505         | 8-729-194-57 | TRANSISTOR 2SC945-P       | 411020945P | R401       |              | RES-CHIP 1.82K        | 1/10W 419A118212 |
| Q506         | 8-729-906-93 | TRANSISTOR IRF640         | 4105906400 | R402       |              | RES-CHIP 1.82K        | 1/10W 419A118212 |
| Q508         | 8-729-194-57 | TRANSISTOR 2SC945-P       | 411020945P | R403       |              | CARBON (SMALL) 3.3    | 1/2W 4050133955  |
| Q510         | 8-729-141-03 | TRANSISTOR 2SA733-QP      | 4110007330 | R404       |              | METAL OXIDE FILM 0.75 | 1W 4171075856    |
| Q511         |              | TRANSISTOR H2N6718L       | 4111167180 | R406       |              | CARBON (SMALL) 1.5    | 1/4W 4050515955  |
| Q512         | 8-729-029-86 | TRANSISTOR DTC124ESA      | 411020945P | R407       |              | CARBON (SMALL) 330    | 1/2W 4050133155  |
| Q513         | 8-729-141-03 | TRANSISTOR 2SA733-QP      | 4110007330 | R408       |              | CARBON (SMALL) 3.3K   | 1/2W 4050133254  |
| Q514         | 8-729-191-57 | TRANSISTOR 2SC945-P       | 411020945P | R409       |              | RES-CHIP 10K          | 1/10W 4010110202 |
| Q515         | 8-729-191-57 | TRANSISTOR 2SC945-P       | 411020945P | R411       | 1-242-988-11 | METAL FILM 6.81K      | 1/4W 4257046811  |
| Q516         | 8-729-141-03 | TRANSISTOR 2SA733-QP      | 4110007330 | R412       | 1-242-988-11 | METAL FILM 6.81K      | 1/4W 4257046811  |
| Q517         | 8-729-306-92 | TRANSISTOR 2SD669AVC      | 410030669A | R500       |              | CARBON (SMALL) 43     | 1/4W 4050543055  |
| Q518         | 8-729-364-92 | TRANSISTOR 2SB649-C       | 410010649A | R501       |              | RES-CHIP 27K          | 1/10W 4010127352 |
| Q519         | 8-729-119-80 | TRANSISTOR 2SC2688-LK     | 4100226880 | R502       |              | RES-CHIP 22.1K        | 1/10W 419A122122 |
| Q520         | 8-729-191-57 | TRANSISTOR 2SC945-P       | 411020945P | R503       |              | RES-CHIP 4.7K         | 1/10W 4010147252 |
| Q521         | 8-729-141-03 | TRANSISTOR 2SA733-QP      | 4110007330 | R504       |              | RES-CHIP 732          | 1/10W 419A173202 |
| Q522         | 8-729-048-61 | TRANSISTOR 2SK2843LB2SONY | 4101528430 | R505       |              | RES-CHIP 2.8K         | 1/10W 4010128202 |
| Q523         | 8-729-306-92 | TRANSISTOR 2SD669AVC      | 410030669A | R506       |              | RES-CHIP 10K          | 1/10W 4010110352 |
| Q524         | 8-729-906-93 | TRANSISTOR IRF640         | 4105906400 | R507       |              | RES-CHIP 10K          | 1/10W 4010110352 |
| Q525         | 8-729-141-03 | TRANSISTOR 2SA733-QP      | 4110007330 | R508       |              | CARBON (SMALL) 12K    | 1/4W 4050512355  |
| Q526         | 8-729-206-21 | TRANSISTOR RN1203         | 4116612030 | R509       |              | CARBON (SMALL) 3.6K   | 1/4W 4050536255  |
| Q527         | 8-729-191-57 | TRANSISTOR 2SC945-P       | 411020945P | R510       |              | RES-CHIP 100          | 1/10W 4010110152 |
| Q528         | 8-729-191-57 | TRANSISTOR 2SC945-P       | 411020945P | R511       |              | RES-CHIP 100          | 1/10W 4010110152 |
| Q529         | 8-729-191-57 | TRANSISTOR 2SC945-P       | 411020945P | R512       |              | RES-CHIP 1K           | 1/8W 4010810252  |
| Q530         | 8-729-119-80 | TRANSISTOR 2SC2688-LK     | 4100226880 | R513       |              | RES-CHIP 100          | 1/10W 4010110152 |
| Q531         | 8-729-051-31 | TRANSISTOR KSP92          | 4112409200 | R515       |              | RES-CHIP 68K          | 1/10W 4010168302 |
| Q532         | 8-729-141-03 | TRANSISTOR 2SA733-QP      | 4110007330 | R516       |              | CARBON (SMALL) 4.3K   | 1/4W 4050543255  |
| Q533         | 8-729-141-03 | TRANSISTOR 2SA733-QP      | 4110007330 | R517       |              | RES-CHIP 10K          | 1/10W 4010110352 |
| Q534         | 8-729-191-57 | TRANSISTOR 2SC945-P       | 411020945P | R518       |              | RES-CHIP 510K         | 1/10W 4010151452 |
| Q535         | 8-729-029-86 | TRANSISTOR DTC124ESA      | 4116612030 | R519       |              | METAL OXIDE 100       | 2W 4172010156    |
| Q536         | 8-729-906-93 | TRANSISTOR IRF640         | 4105906400 | R520       |              | METAL OXIDE FILM 0.22 | 1W 4171022856    |
| Q537         | 8-729-191-57 | TRANSISTOR 2SC945-P       | 411020945P | R521       |              | METAL FILM 22.6K      | 1/4W 4257042262  |
| Q538         | 8-729-191-57 | TRANSISTOR 2SC945-P       | 411020945P | R522       |              | RES-CHIP 4.7K         | 1/10W 4010147252 |
| Q539         | 8-729-191-57 | TRANSISTOR 2SC945-P       | 411020945P | R523       |              | RES-CHIP 10K          | 1/10W 4010110352 |
| Q540         | 8-729-191-57 | TRANSISTOR 2SC945-P       | 411020945P | R524       |              | RES-CHIP 8.2K         | 1/10W 4010182252 |
| Q541         |              | TRANSISTOR H2N6718L       | 4111167180 | R525       |              | CARBON (SMALL) 56     | 1/4W 4050556055  |
| Q542         | 8-729-122-12 | TRANSISTOR 2SA1221-L      | 411010647A | R526       |              | RES-CHIP 4.7K         | 1/10W 4010147252 |
| Q543         |              | TRANSISTOR TIP122         | 4103200122 | R527       |              | RES-CHIP 10K          | 1/10W 4010110352 |
| Q544         |              | TRANSISTOR TIP127         | 4103200127 | R528       |              | METAL FILM 120        | 1/2W 4077B12155  |
| Q546         | 8-729-029-86 | TRANSISTOR DTC124ESA      | 4110007330 | R529       | 1-247-831-91 | CARBON (SMALL) 1K     | 1/4W 4050510255  |
| Q601         | 8-729-141-03 | TRANSISTOR 2SA733-QP      | 4110007330 | R530       |              | METAL OXIDE 1.8       | 3W 417731895A    |
| Q602         | 8-729-040-92 | TRANSISTOR 2SK2607        | 4102207800 | R531       |              | RES-CHIP 1.8K         | 1/10W 4010118252 |
| Q603         | 8-729-200-36 | TRANSISTOR 2SA966-Y       | 411020945P | R532       |              | CARBON (SMALL) 47     | 1/2W 4050147055  |
| Q604         | 8-729-029-86 | TRANSISTOR DTC124ESA      | 4110009660 | R533       |              | METAL OXIDE 1.3K      | 1W 4177113253    |
| Q607         | 8-729-200-36 | TRANSISTOR 2SA966-Y       | 4110009660 | R534       |              | METAL OXIDE 10        | 1W 4171010053    |
| Q608         | 8-729-206-21 | TRANSISTOR RN1203         | 4116612030 | R535       | 1-247-831-91 | CARBON (SMALL) 1K     | 1/4W 4050510255  |
| Q609         |              | TRANSISTOR 2SB1065        | 4100110650 | R536       |              | RES-CHIP 6.8K         | 1/10W 4010168252 |
| Q610         | 8-729-206-21 | TRANSISTOR RN1203         | 4116612030 | R537       |              | CARBON (SMALL) 15K    | 1/4W 4050115355  |
| Q611         | 8-729-206-21 | TRANSISTOR RN1203         | 4116612030 | R538       |              | RES-CHIP 4.7K         | 1/10W 4010147252 |
| Q615         | 8-729-191-57 | TRANSISTOR 2SC945-P       | 411020945P | R539       |              | RES-CHIP 10K          | 1/10W 4010110352 |
| Q616         | 8-729-029-86 | TRANSISTOR DTC124ESA      | 4116612030 |            |              |                       |                  |

The components identified by mark  $\Delta$  are critical for safety.  
Replace only with part number specified.

Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

CPD-E220/E215E/E220E



| REF.NO.       | PART NO.     | DESCRIPTION           | REMARK           | REF.NO. | PART NO.     | DESCRIPTION         | REMARK           |
|---------------|--------------|-----------------------|------------------|---------|--------------|---------------------|------------------|
| R540          | 1-260-135-91 | CARBON (SMALL) 1M     | 1/2W 4050110555  | R612    |              | RES-CHIP 4.99K      | 1/10W 419A149912 |
| R543          |              | METAL OXIDE 270       | 1W 4177127153    | R614    | 1-216-361-81 | METAL OXIDE 0.22    | 1/4W 4172022855  |
| R544          |              | CARBON (SMALL) 100K   | 1/2W 4050110455  | R615    |              | METAL FILM 1.82K    | 1/4W 4257041821  |
| R545          |              | CARBON (SMALL) 100K   | 1/2W 4050110455  | R616    |              | METAL FILM 3.92K    | 1/4W 4257043921  |
| R547          | 1-247-847-91 | CARBON (SMALL) 4.7K   | 1/4W 4050547255  | R618    |              | RES-CHIP 10K        | 1/10W 4010110352 |
| R549          |              | RES-CHIP 10K          | 1/10W 4010110352 |         |              |                     |                  |
| R551          |              | RES-CHIP 10K          | 1/10W 4010110202 | R619    |              | RES-CHIP 10K        | 1/10W 4010110352 |
| R552          |              | RES-CHIP 100K         | 1/10W 4010110402 | R620    |              | RES-CHIP 1K         | 1/10W 4010110252 |
| R553          |              | RES-CHIP 100K         | 1/10W 4010110402 | R621    |              | RES-CHIP 220        | 1/8W 4010822152  |
| R553          |              | RES-CHIP 15           | 1/8W 4010815052  | R622    |              | RES-CHIP 220        | 1/8W 4010822152  |
| R555          |              | CARBON (SMALL) 100    | 1/4W 4050510155  | R623    |              | RES-CHIP 100        | 1/10W 4010110152 |
| R556          |              | RES-CHIP 10K          | 1/10W 4010110352 | R624    |              | RES-CHIP 1.9K       | 1/10W 4010191252 |
| R557          |              | METAL OXIDE 10        | 1W 4171010053    | R625    |              | RES-CHIP 10K        | 1/10W 4010110352 |
| R558          |              | CARBON (SMALL) 15K    | 1/4W 4050515355  | R626    |              | RES-CHIP 15K        | 1/10W 4010115352 |
| R559          | 1-247-831-91 | CARBON (SMALL) 1K     | 1/4W 4050510255  | R627    |              | RES-CHIP 4.12K      | 1/10W 419A141212 |
| R560          |              | RES-CHIP 150K         | 1/10W 4010115452 | R628    | 1-247-802-91 | CARBON (SMALL) 62   | 1/4W 4050562055  |
| R561          |              | CARBON (SMALL) 47K    | 1/4W 4050547355  | R629    | 1-247-831-91 | CARBON (SMALL) 1K   | 1/4W 4050510255  |
| R562          |              | RES-CHIP 10K          | 1/10W 4010110352 | R630    |              | RES-CHIP 3.9K       | 1/10W 4010139252 |
| R563          |              | CARBON (SMALL) 47K    | 1/4W 4050547355  | R631    |              | RES-CHIP 10K        | 1/10W 4010110202 |
| R565          |              | RES-CHIP 1K           | 1/10W 4010110252 | R632    |              | RES-CHIP 10K        | 1/10W 4010110202 |
| R566          | 1-247-855-91 | CARBON (SMALL) 10K    | 1/4W 4050510355  | R640    | 1-247-855-91 | CARBON (SMALL) 10K  | 1/4W 4050510355  |
| R567          |              | RES-CHIP 10K          | 1/10W 4010110352 | R641    | 1-247-823-91 | CARBON (SMALL) 470  | 1/4W 4050547155  |
| R568          | 1-247-855-91 | CARBON (SMALL) 10K    | 1/4W 4050510355  | R642    | 1-247-815-91 | CARBON (SMALL) 220  | 1/4W 4050522155  |
| R569          |              | CARBON (SMALL) 680    | 1/2W 4050168155  | R643    |              | RES-CHIP 115K       | 1/10W 419A111532 |
| R570          |              | RES-CHIP 2.2K         | 1/10W 4010122252 | R644    |              | RES-CHIP 2.8K       | 1/10W 4010128202 |
| R571          | 1-247-847-91 | CARBON (SMALL) 4.7K   | 1/4W 4050547255  | R648    | 1-260-089-91 | CARBON (SMALL) 150  | 1/2W 4050115155  |
| R572          | 1-247-783-91 | CARBON (SMALL) 10     | 1/4W 4050510055  | R651    |              | RES-CHIP 10K        | 1/10W 4010110352 |
| R573          |              | CARBON (SMALL) 36K    | 1/4W 4050536355  | R652    | 1-243-480-11 | CARBON (SMALL) 300  | 1/4W 4050530155  |
| R574          |              | RES-CHIP 82K          | 1/10W 4010182352 | R653    | 1-215-888-71 | METAL OXIDE 220     | 2W 4172022155    |
| R575          |              | RES-CHIP 3K           | 1/10W 4010130252 | R655    |              | RES-CHIP 1.6K       | 1/10W 4010116252 |
| R576          | 1-242-973-11 | METAL OXIDE 30K       | 3W 4177330355    | R656    | 1-247-855-91 | CARBON (SMALL) 10K  | 1/4W 4050510355  |
| R577          |              | CARBON (SMALL) 68     | 1/4W 4050568055  | R658    | 1-247-855-91 | CARBON (SMALL) 10K  | 1/4W 4050510355  |
| R578          | 1-247-831-91 | CARBON (SMALL) 1K     | 1/4W 4050510255  | R659    | 1-247-831-91 | CARBON (SMALL) 1K   | 1/4W 4050510255  |
| R579          |              | RES-CHIP 2.7K         | 1/10W 4010127252 | R660    | 1-247-855-91 | CARBON (SMALL) 10K  | 1/4W 4050510355  |
| R580          |              | RES-CHIP 100          | 1/10W 4010110152 | R661    | 1-247-835-91 | CARBON (SMALL) 1.5K | 1/4W 4050515255  |
| R581          |              | CARBON (SMALL) 33K    | 1/4W 4050533355  | R665    |              | RES-CHIP 10K        | 1/10W 4010110352 |
| R582          | 1-247-841-91 | CARBON (SMALL) 2.7K   | 1/4W 4050527255  | R666    | 1-247-835-91 | CARBON (SMALL) 1.5K | 1/4W 4050515255  |
| R583          |              | METAL OXIDE 1.8       | 3W 417731895A    | R669    |              | CARBON (SMALL) 1    | 1/2W 4050110955  |
| R584          |              | RES-CHIP 47K          | 1/10W 4010147352 | R670    |              | CARBON (SMALL) 1.5M | 1/4W 4050515555  |
| R585          |              | CARBON (SMALL) 47     | 1/4W 4050547055  | R672    |              | RES-CHIP 2M         | 1/10W 4010120552 |
| R586          |              | METAL FILM 110K       | 1/4W 4257041103  | R673    |              | RES-CHIP 47K        | 1/10W 4010147352 |
| R589          |              | METAL FILM 10K        | 1/4W 4257041002  | R675    |              | METAL FILM 107K     | 1/4W 4257041073  |
| R590          |              | CARBON (SMALL) 1M     | 1/4W 4050510555  | R676    |              | RES-CHIP 0          | 1/8W 4010800052  |
| R591          |              | RES-CHIP 56K          | 1/10W 4010156352 | R677    |              | RES-CHIP 1M         | 1/10W 4010110552 |
| R592          |              | RES-CHIP 47K          | 1/10W 4010147352 | R678    |              | CARBON (SMALL) 2M   | 1/4W 4050520555  |
| R594          |              | RES-CHIP 120K         | 1/10W 4010112452 | R902    | 1-247-831-91 | CARBON (SMALL) 1K   | 1/4W 4050510255  |
| R595          |              | RES-CHIP 4.7K         | 1/10W 4010147252 | R903    | 1-247-831-91 | CARBON (SMALL) 1K   | 1/4W 4050510255  |
| R596          |              | 82K                   | 1/10W 4010182302 | R904    | 1-247-807-91 | CARBON (SMALL) 100  | 1/4W 4050510155  |
| R597          |              | CARBON (SMALL) 82     | 1/2W 4050182055  | R905    | 1-247-831-91 | CARBON (SMALL) 1K   | 1/4W 4050510255  |
| R599          |              | RES-CHIP 1.82K        | 1/10W 419A118212 | R906    | 1-247-831-91 | CARBON (SMALL) 1K   | 1/4W 4050510255  |
| R601 $\Delta$ | 1-260-132-11 | CARBON (SMALL) 560K   | 1/2W 4050156455  | R907    | 1-247-831-91 | CARBON (SMALL) 1K   | 1/4W 4050510255  |
| R603          |              | METAL OXIDE 30K       | 2W 4172030353    | R908    |              | RES-CHIP 10K        | 1/10W 4010110352 |
| R605          |              | METAL OXIDE FILM 150K | 1W 4171015456    | R909    | 1-247-831-91 | CARBON (SMALL) 1K   | 1/4W 4050510255  |
| R609          | 1-247-841-91 | CARBON (SMALL) 2.7K   | 1/4W 4050527255  | R910    |              | RES-CHIP 10K        | 1/10W 4010110352 |
| R610          |              | RES-CHIP 10           | 1/10W 4010110052 | R911    | 1-247-831-91 | CARBON (SMALL) 1K   | 1/4W 4050510255  |
| R611          | 1-247-789-91 | CARBON (SMALL) 18     | 1/4W 4050518055  | R912    |              | RES-CHIP 10K        | 1/8W 4010810352  |
|               |              |                       |                  | R913    | 1-247-831-91 | CARBON (SMALL) 1K   | 1/4W 4050510255  |

D

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

7-8



| REF.NO. | PART NO. | DESCRIPTION | REMARK |
|---------|----------|-------------|--------|
|---------|----------|-------------|--------|

H BOARD, COMPLETE  
\*\*\*\*\*

<CAPACITOR>

|      |              |         |        |            |
|------|--------------|---------|--------|------------|
| C701 | 1-135-360-11 | CERAMIC | 1000pF | 7181102552 |
| C702 | 1-135-360-11 | CERAMIC | 1000pF | 7181102552 |

<LED>

|        |  |                             |  |            |
|--------|--|-----------------------------|--|------------|
| LED701 |  | DIODE LT5J62-23-D63 (POWER) |  | 412065J620 |
|--------|--|-----------------------------|--|------------|

<RESISTOR>

|      |  |            |       |            |
|------|--|------------|-------|------------|
| R701 |  | METAL FILM | 2.15K | 4257042151 |
| R702 |  | METAL FILM | 10.2K | 4257041022 |
| R705 |  | METAL FILM | 6.19K | 4257046191 |
| R706 |  | METAL FILM | 3.83K | 4257043831 |
| R709 |  | METAL FILM | 17.4K | 4257041742 |

<SWITCH>

|       |              |                        |  |            |
|-------|--------------|------------------------|--|------------|
| SW701 | 1-771-734-11 | SWITCH, TACTILE (MENU) |  | 4410606000 |
|-------|--------------|------------------------|--|------------|

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