

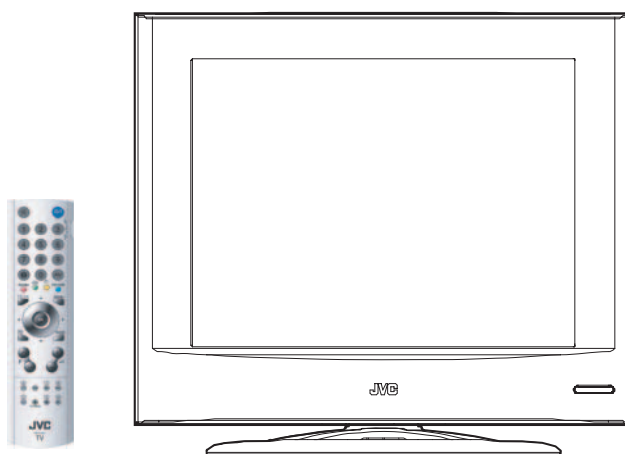
# JVC

## SERVICE MANUAL

LCD PANEL TELEVISION

### LT-20J50SJ, LT-20J50SU

InteriArt



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## SPECIFICATION

| Items                        |                               | Contents                                                                                                                                                                                                                                                                                   |
|------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimensions ( W × H × D )     |                               | 53.0cm × 47.7cm × 21.3cm [Included stand]<br>53.0cm × 44.0cm × 12.5cm [TV only]                                                                                                                                                                                                            |
| Mass                         |                               | 8.2kg [Included stand]<br>7.2kg [TV only]                                                                                                                                                                                                                                                  |
| Power Input                  | ADAPTOR<br>TV                 | AC100 - 240V 50Hz<br>DC12V                                                                                                                                                                                                                                                                 |
| Power Consumption            |                               | 60W (Standby:1.2W)                                                                                                                                                                                                                                                                         |
| TV RF System                 |                               | CCIR (B/G, DK, I, L)                                                                                                                                                                                                                                                                       |
| Colour System                |                               | PAL / SECAM / NTSC 3.58/4.43 [EXT only]                                                                                                                                                                                                                                                    |
| Stereo System                |                               | A2 (B/G) / NICAM (B/G, I, L)                                                                                                                                                                                                                                                               |
| Receiving Frequency          | VHF<br>UHF<br>CATV            | 47 MHz - 470 MHz<br>470 MHz - 862 MHz<br>S1 - S20 / S21 - S41                                                                                                                                                                                                                              |
| Intermediate Frequency       | VIF<br>SIF                    | 38.9 MHz (B/G, I, L)<br>33.4 MHz (5.5MHz : B/G)<br>32.9 MHz (6.0MHz : I)<br>32.4 MHz (6.5MHz : L)                                                                                                                                                                                          |
| Colour Sub Carrier Frequency | PAL<br>SECAM<br>NTSC          | 4.43 MHz<br>4.40625 MHz / 4.25MHz<br>3.58 MHz / 4.43 MHz                                                                                                                                                                                                                                   |
| Teletext System              |                               | FLOF (Fastext level 2.5), WST(World Standard system)<br>TOP (German system)                                                                                                                                                                                                                |
| LCD panel                    |                               | 20V-inch (4 : 3)                                                                                                                                                                                                                                                                           |
| Screen Size                  |                               | Diagonal : 50.9cm (H: 40.8cm × V: 30.6cm)                                                                                                                                                                                                                                                  |
| Display Pixels               |                               | Horizontal : 800 dots × Vertical : 600 dots (SVGA)                                                                                                                                                                                                                                         |
| Audio Power Output           |                               | 3W + 3W(10% THD)                                                                                                                                                                                                                                                                           |
| Speaker                      |                               | 3cm × 10cm × 2                                                                                                                                                                                                                                                                             |
| Aerial terminal (VHF/UHF)    |                               | F-type connector, 75Ω unbalanced, coaxial                                                                                                                                                                                                                                                  |
| EXT-1 (Input / Output)       |                               | 21-pin Euro connector (SCART socket ) × 1                                                                                                                                                                                                                                                  |
| EXT-2 (Input)                | S-Video<br><br>Video<br>Audio | Mini-DIN 4 pin × 1<br>Y: 1V (p-p), Positive (Negative sync provided), 75 Ω<br>C: 0.286V (p-p) (Burst signal), 75 Ω<br>1V (p-p), Positive (Negative sync provided), 75 Ω, RCA pin jack × 1<br>500mV (rms), High impedance, RCA pin jack × 2                                                 |
| PC (RGB) Input               |                               | D-sub 15pin × 1<br>R/G/B : 0.7V (p-p), 75Ω<br>HD / VD : 1V (p-p) to 5V (p-p), high impedance<br>< Available signal ><br>Horizontal : 30kHz - 69kHz<br>Vertical : 50Hz - 70Hz<br>[Resolution : 640 pixels × 480 pixels(VGA), 800 pixels × 600 pixels(SVGA), 1024 pixels × 768 pixels (XGA)] |
| PC AUDIO input               |                               | 3.5mm stereo mini jack × 1                                                                                                                                                                                                                                                                 |
| Headphone                    |                               | 3.5mm stereo mini jack × 1                                                                                                                                                                                                                                                                 |
| Remote Control Unit          |                               | RM-C1861 (AA/R6 dry cell battery × 2)                                                                                                                                                                                                                                                      |

Design & specifications are subject to change without notice.

# SECTION 1

## PRECAUTION

### 1.1 SAFETY PRECAUTIONS [EXCEPT FOR UK]

- (1) The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
- (2) Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
- (3) Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (  $\Delta$  ) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.
- (4) **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.**  
Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (  $\perp$  ) side GND, the ISOLATED (NEUTRAL) : (  $\equiv$  ) side GND and EARTH : (  $\oplus$  ) side GND.  
Don't short between the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND and never measure the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND at the same time with a measuring apparatus (oscilloscope etc.). If above note will not be kept, a fuse or any parts will be broken.
- (5) When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

#### (6) Isolation Check (Safety for Electrical Shock Hazard)

After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screw heads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

##### a) Dielectric Strength Test

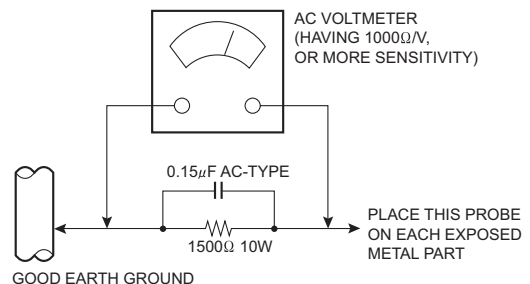
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3000V AC (r.m.s.) for a period of one second. (. . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.) This method of test requires a test equipment not generally found in the service trade.

##### b) Leakage Current Check

Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.). However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).

#### Alternate Check Method

Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 $\Omega$  per volt or more sensitivity in the following manner. Connect a 1500 $\Omega$  10W resistor paralleled by a 0.15 $\mu$ F AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.). However, in tropical area, this must not exceed 0.3V AC (r.m.s.). This corresponds to 0.2mA AC (r.m.s.).



## 1.2 SAFETY PRECAUTIONS [FOR UK]

- (1) The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
- (2) Alterations of the design or circuitry of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
- (3) Many electrical and mechanical parts in the product have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessary be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (  ) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the Parts List of Service Manual may cause shock, fire, or other hazards.
- (4) The leads in the products are routed and dressed with ties, clamps, tubing's, barriers and the like to be separated from live parts, high temperature parts, moving parts and / or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.

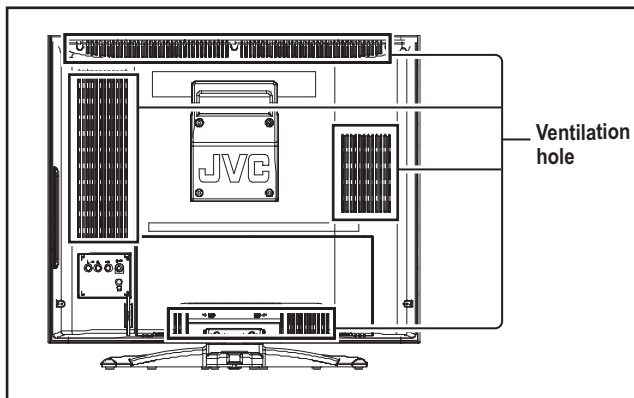
### WARNING

- (1) The equipment has been designed and manufactured to meet international safety standards.
- (2) It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
- (3) Repairs must be made in accordance with the relevant safety standards.
- (4) It is essential that safety critical components are replaced by approved parts.
- (5) If mains voltage selector is provided, check setting for local voltage.

## 1.3 INSTALLATION

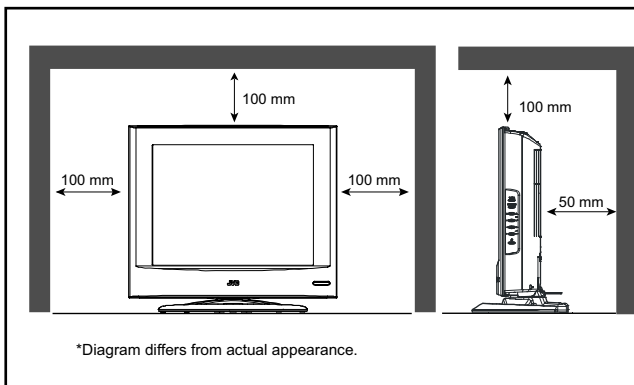
### 1.3.1 HEAT DISSIPATION

If the heat dissipation vent behind this unit is blocked, cooling efficiency may deteriorate and temperature inside the unit will rise. The temperature sensor that protects the unit will be activated when internal temperature exceeds the pre-determined level and power will be turned off automatically. Therefore, please make sure pay attention not to block the heat dissipation vent as well as the ventilation outlet behind the unit and ensure that there is room for ventilation around it.



### 1.3.2 INSTALLATION REQUIREMENTS

Ensure that the minimal distance is maintained, as specified below, between the unit with and the surrounding walls, as well as the floor etc. Install the unit on stable flooring or stands. Take precautionary measures to prevent the unit from tipping in order to protect against accidents and earthquakes.



### 1.3.3 NOTES ON HANDLING

#### (1) WHEN TAKING UNIT OUT OF A PACKING CASE

When taking the unit out of a packing case, do not grasp the upper part of the unit. If you take the unit out while grasping the upper part, the LCD PANEL may be damaged because of a pressure. Instead of grasping the upper part, put your hands on the lower backside or sides of the unit.

#### (2) AS FOR PRESSING OR TOUCHING A SPEAKER

Be careful not to press the opening of the speaker in the lower part of the unit and around them since the decorative sheet on the surface of the openings may be deformed.

## **1.4 HANDLING LCD PANEL**

### **1.4.1 PRECAUTIONS FOR TRANSPORTATION**

When transporting the unit, pressure exerted on the internal LCD panel due to improper handling (such as tossing and dropping) may cause damages even when the unit is carefully packed. To prevent accidents from occurring during transportation, pay careful attention before delivery, such as through explaining the handling instructions to transporters.

Ensure that the following requirements are met during transportation, as the LCD panel of this unit is made of glass and therefore fragile:

- (1) **USE A SPECIAL PACKING CASE FOR THE LCD PANEL**  
When transporting the LCD panel of the unit, use a special packing case (packing materials). A special packing case is used when a LCD panel is supplied as a service spare part.
- (2) **ATTACH PROTECTION SHEET TO THE FRONT**  
Since the front (display part) of the panel is vulnerable, attach the protection sheet to the front of the LCD panel before transportation. Protection sheet is used when a LCD panel is supplied as a service spare part.
- (3) **AVOID VIBRATIONS AND IMPACTS**  
The unit may be broken if it is toppled sideways even when properly packed. Continuous vibration may shift the gap of the panel, and the unit may not be able to display images properly. Ensure that the unit is carried by at least 2 persons and pay careful attention not to exert any vibration or impact on it.
- (4) **DO NOT PLACE EQUIPMENT HORIZONTALLY**  
Ensure that it is placed upright and not horizontally during transportation and storage as the LCD panel is very vulnerable to lateral impacts and may break. During transportation, ensure that the unit is loaded along the traveling direction of the vehicle, and avoid stacking them on one another. For storage, ensure that they are stacked in 2 layers or less even when placed upright.

### **1.4.2 OPTICAL FILTER (ON THE FRONT OF THE LCD PANEL)**

- (1) Avoid placing the unit under direct sunlight over a prolonged period of time. This may cause the optical filter to deteriorate in quality and COLOUR.
- (2) Clean the filter surface by wiping it softly and lightly with a soft and lightly fuzz cloth (such as outing flannel).
- (3) Do not use solvents such as benzene or thinner to wipe the filter surface. This may cause the filter to deteriorate in quality or the coating on the surface to come off. When cleaning the filter, usually use the neutral detergent diluted with water. When cleaning the dirty filter, use water-diluted ethanol.
- (4) Since the filter surface is fragile, do not scratch or hit it with hard materials. Be careful enough not to touch the front surface, especially when taking the unit out of the packing case or during transportation.

### **1.4.3 PRECAUTIONS FOR REPLACEMENT OF EXTERIOR PARTS**

Take note of the following when replacing exterior parts (REAR COVER, FRONT PANEL, etc.):

- (1) Do not exert pressure on the front of the LCD panel (filter surface). It may cause irregular COLOUR.
- (2) Pay careful attention not to scratch or stain the front of the LCD panel (filter surface) with hands.
- (3) When replacing exterior parts, the front (LCD panel) should be placed facing downward. Place a mat, etc. underneath to avoid causing scratches to the front (filter surface).

## SECTION 2

### SPECIFIC SERVICE INSTRUCTIONS

#### 2.1 FEATURES

##### ZOOM

This function can change the screen size according to the picture aspect ratio.

##### COLOUR SYSTEM

If the picture is not clear or no colour appears, change the current colour system to another colour system.

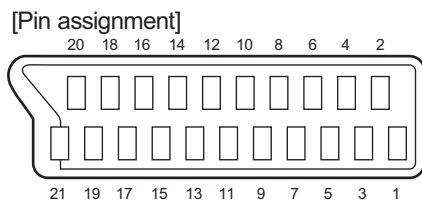
##### OFF TIMER

This function can set the TV to automatically turn off after a set time.

#### 2.2 21-PIN EURO CONNECTOR (SCART) : EXT-1

| Pin No. | Signal designation    | Matching value                                                       | EXT-1         |
|---------|-----------------------|----------------------------------------------------------------------|---------------|
| 1       | AUDIO R output        | 500mV(rms) (Nominal),, Low impedance                                 | Used (TV OUT) |
| 2       | AUDIO R input         | 500mV(rms) (Nominal),, High impedance                                | Used (R1)     |
| 3       | AUDIO L output        | 500mV(rms) (Nominal),, Low impedance                                 | Used (TV OUT) |
| 4       | AUDIO GND             |                                                                      | Used          |
| 5       | GND (B)               |                                                                      | Used          |
| 6       | AUDIO L input         | 500mV(rms) (Nominal),, High impedance                                | Used (L1)     |
| 7       | B input               | 700mV <sub>(B-W)</sub> , 75Ω                                         | Used          |
| 8       | FUNCTION SW (SLOW SW) | Low : 0V-3V<br>High : 8V-12V, High impedance                         | Used          |
| 9       | GND (G)               |                                                                      | Used          |
| 10      | SCL / T-V LINK        |                                                                      | Not used      |
| 11      | G input               | 700mV <sub>(B-W)</sub> , 75Ω                                         | Used          |
| 12      | SDA                   |                                                                      | Not used      |
| 13      | GND (R)               |                                                                      | Used          |
| 14      | GND (YS)              |                                                                      | Used          |
| 15      | R / C input           | R : 700mV <sub>(B-W)</sub> , 75Ω<br>C : 300mV <sub>(P-P)</sub> , 75Ω | Used (R/C)    |
| 16      | Ys input (FAST SW)    | Low : 0V-0.4V, High : 1V-3V, 75Ω                                     | Used          |
| 17      | GND (VIDEO output)    |                                                                      | Used          |
| 18      | GND (VIDEO input)     |                                                                      | Used          |
| 19      | VIDEO output          | 1V <sub>(P-P)</sub> (Negative sync), 75Ω                             | Used (TV OUT) |
| 20      | VIDEO / Y input       | 1V <sub>(P-P)</sub> (Negative sync), 75Ω                             | Used          |
| 21      | COMMON GND            |                                                                      | Used          |

(P-P= Peak to Peak, B-W= Blanking to white peak)



## 2.3 TECHNICAL INFORMATION

### 2.3.1 LCD PANEL

This unit uses the flat type panel LCD (Liquid Crystal Display) panel that occupies as little space as possible, instead of the conventional CRT (Cathode Ray Tube), as a display unit.

Since the unit has the two polarizing filter that are at right angles to each other, the unit adopts "normally black" mode, where light does not pass through the polarizing filter and the screen is black when no voltage is applied to the liquid crystals.

#### 2.3.1.1 SPECIFICATIONS

The following table shows the specifications of this unit.

| Item             | Specifications                       | Remarks                     |
|------------------|--------------------------------------|-----------------------------|
| Displayed colour | 16777216 colours                     | 256 colours for R, G, and B |
| Brightness       | 450cd/m <sup>2</sup>                 |                             |
| Contrast ratio   | 500 : 1                              |                             |
| Response time    | 16ms                                 |                             |
| View angle       | Horizontally: 160°, Vertically: 120° |                             |

#### 2.3.1.2 PIXEL FAULT

There are three pixel faults - bright fault , dark fault and flicker fault - that are respectively defined as follows.

##### ■ BRIGHT FAULT

In this pixel fault, a cell that should not light originally is lighting on and off.

For checking this pixel fault, input ALL BLACK SCREEN and find out the cell that is lighting on and off.

##### ■ DARK FAULT

In this pixel fault, a cell that should light originally is not lighting or lighting with the brightness twice as brighter as originally lighting.

For checking this pixel fault, input 100% of each R/G/B colour and find out the cell that is not lighting.

##### ■ FLICKER FAULT

In the pixel fault, a cell that should light originally or not light originally is flashing on and off.

For checking this pixel fault, input ALL BLACK SCREEN signal or 100% of each RGB colour and find out the cell that is flashing on and off.

## SECTION 3 DISASSEMBLY

### 3.1 DISASSEMBLY PROCEDURE

#### NOTE:

- Make sure that the power cord is disconnected from the outlet.
- Pay special attention not to break or damage the parts.
- When removing each board, remove the connectors as required.
- Taking notes of the connecting points (connector numbers) makes service procedure manageable.
- Make sure that there is no bent or stain on the connectors before inserting, and firmly insert the connectors.

#### 3.1.1 REMOVING THE HINGE COVER

- (1) Remove the 2 screws [A].
- (2) Remove the HINGE COVER.

#### 3.1.2 REMOVING THE FOOT TOP COVER

- Remove the HINGE COVER.
  - (1) Remove the 2 screws [B].
  - (2) Pull out the FOOT TOP COVER.

#### 3.1.3 REMOVING THE FOOT ASSEMBLY

- (1) Remove the 4 screws [C].
- (2) Remove the FOOT ASSEMBLY.

#### 3.1.4 REMOVING THE HANDLE

- Remove the HINGE COVER.
- Remove the FOOT TOP COVER.
  - (1) Remove the 4 screws [D].
  - (2) Remove the THE HANDLE.

#### 3.1.5 REMOVIE BACK COVER

- Remove the FOOT ASSEMBLY.
  - (1) Remove the 7 screws [E].
  - (2) Remove the BACK COVER toward you.

#### NOTE:

If necessary, remove the HANDLE, SIDE AV DOOR and BACK DOOR.

#### 3.1.6 REMOVING THE SIDE CONTROL PWB

- Remove the FOOT ASSEMBLY.
- Remove the BACK COVER.
  - (1) Remove the 2 screws [F].
  - (2) Remove the FUNCTION BUTTON with SIDE CONTROL PWB.
  - (3) Remove the 4 claws which is fixing the SIDE CONTROL PWB.
  - (4) Remove the SIDE CONTROL PWB.

#### 3.1.7 REMOVING THE AV JACK PWB

- Remove the FOOT ASSEMBLY.
- Remove the BACK COVER.
  - (1) Remove the 4 screws [G].
  - (2) Remove the AV JACK PWB.

#### 3.1.8 REMOVING THE METAL HANG

- Remove the FOOT ASSEMBLY.
- Remove the HANDLE.
- Remove the BACK COVER.
  - (1) Remove the 1 screw [H].
  - (2) Remove the METAL HANG.
  - (3) Remove the opposite METAL HANG same steps.

#### 3.1.9 REMOVING THE BRACKET SOCKET COVER

- Remove the FOOT ASSEMBLY.
- Remove the BACK COVER.
  - (1) Remove the 2 screws [J].
  - (2) Remove the BRACKET SOCKET COVER.

#### 3.1.10 REMOVING THE MAIN PWB

- Remove the FOOT ASSEMBLY.
- Remove the BACK COVER.
- Remove the BRACKET SOCKET COVER.
  - (1) Remove the 5 screws [K].
  - (2) Remove the MAIN PWB.

#### 3.1.11 REMOVING THE LED PWB

- Remove the FOOT ASSEMBLY.
- Remove the BACK COVER.
  - (1) Remove the 2 screws [L].
  - (2) Remove the LED PWB.

#### 3.1.12 REMOVING THE SPEAKER

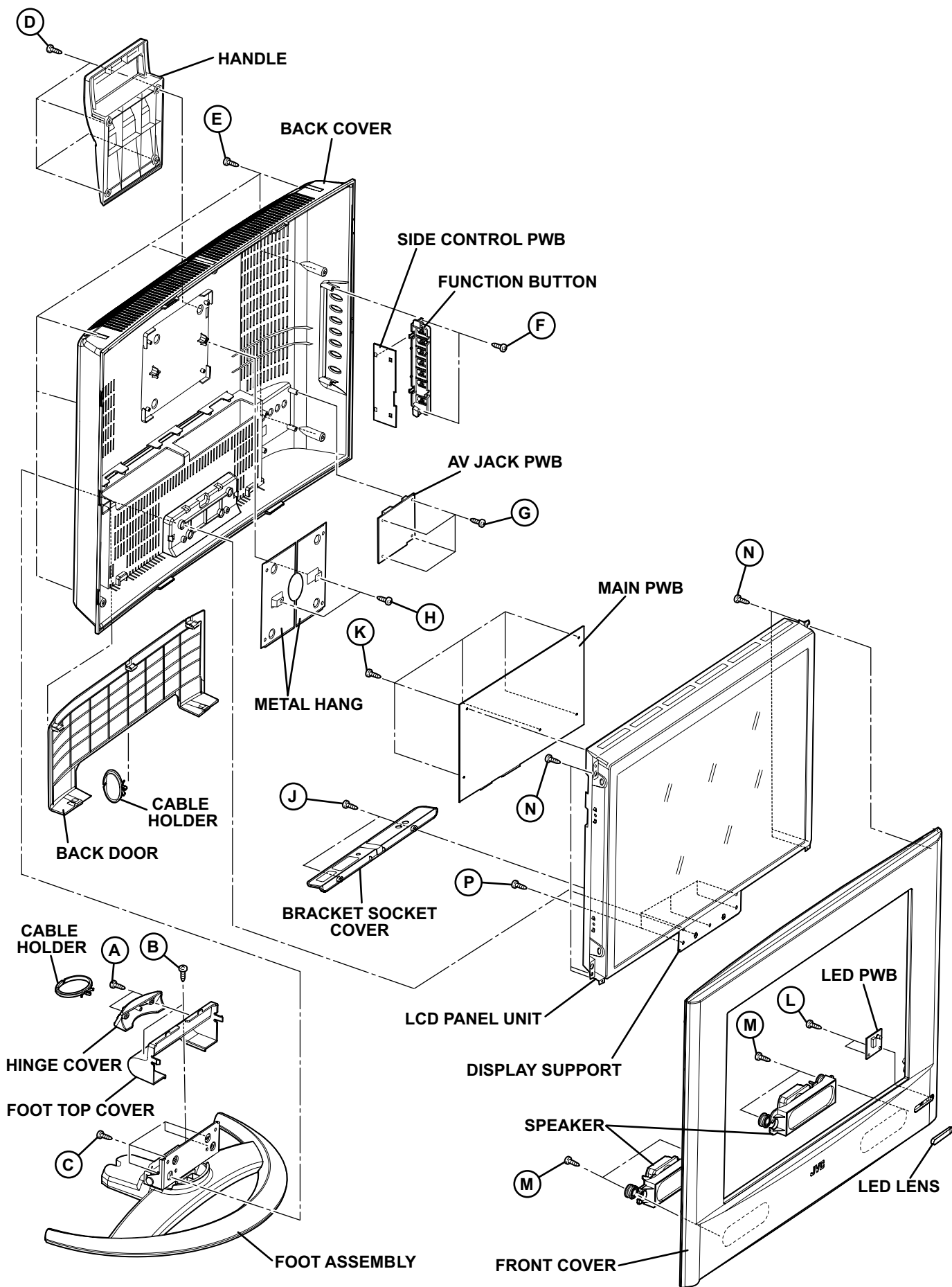
- Remove the FOOT ASSEMBLY.
- Remove the BACK COVER.
  - (1) Remove the speaker wire from speaker terminal.
  - (2) Remove the 2 screws [M].
  - (3) Remove the SPEAKER.
  - (4) Remove the opposite speaker same steps.

#### 3.1.13 REMOVING THE LCD PANEL UNIT

- Remove the FOOT ASSEMBLY.
- Remove the BACK COVER.
- Remove the MAIN PWB.
- Remove the REGULATOR PWB.
- Remove the AV JACK PWB.
  - (1) Remove the 6 screws [N].
  - (2) Remove the 5 screws [P] fixing the DISPLAY SUPPORT and LCD PANEL UNIT.
  - (3) Slightly raise the both sides of the LCD PANEL by hand from the FRONT COVER.

#### NOTE:

- Pay special attention not to break or damage on the front of the LCD PANEL.
- The LCD PANEL UNIT is fixed to the FRONT COVER (at the back side) by using double-side adhesive tapes. To remove the LCD PANEL UNIT, remove the adhesive tape on the FRONT COVER slowly.



## 3.2 MEMORY IC REPLACEMENT

- This model uses the memory IC.
- This memory IC stores data for proper operation of the video and drive circuits.
- When replacing, be sure to use an IC containing this (initial value) data.

### 3.2.1 SETTINGS OF FACTORY SHIPMENT

#### 3.2.1.1 BUTTON OPERATION

| Setting item | Setting position |
|--------------|------------------|
| POWER        | Off              |
| TV/AV        | TV               |

#### 3.2.1.2 REMOTE CONTROL DIRECT OPERATION

| Setting item | Setting position |
|--------------|------------------|
| ZOOM         | Auto             |

#### 3.2.1.3 REMOTE CONTROL MENU OPERATION

##### (1) PICTURE

| Setting item       | Setting position |
|--------------------|------------------|
| Mode               | Bright           |
| Contrast           | 75 Step          |
| Bright-1           | 30 Step          |
| Sharpness          | 25 Step          |
| Colour             | 32 Step          |
| Bright-2           | Max.             |
| Colour Temperature | Cool             |
| Hue                | 25 Step          |

##### (2) SOUND

| Setting item | Setting position |
|--------------|------------------|
| Volume       | 10 Step          |
| Bass         | 0 Step           |
| Treble       | 0 Step           |
| Balance      | 0 Step           |
| Hyper Sound  | Off              |

##### (3) FEATURE

| Setting item | Setting position |
|--------------|------------------|
| Sleep Timer  | Off              |
| Child Lock   | Off              |
| Language     | English          |
| Blue Back    | Off              |

##### (4) INSTALLATION

| Setting item  | Setting position |
|---------------|------------------|
| Colour System | AUTO             |
| VCR           | Off              |

### 3.3 REPLACEMENT OF CHIP COMPONENT

#### 3.3.1 CAUTIONS

- (1) Avoid heating for more than 3 seconds.
- (2) Do not rub the electrodes and the resist parts of the pattern.
- (3) When removing a chip part, melt the solder adequately.
- (4) Do not reuse a chip part after removing it.

#### 3.3.2 SOLDERING IRON

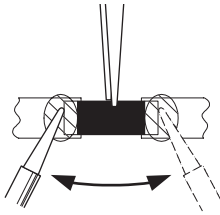
- (1) Use a high insulation soldering iron with a thin pointed end of it.
- (2) A 30w soldering iron is recommended for easily removing parts.

#### 3.3.3 REPLACEMENT STEPS

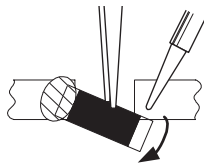
##### 1. How to remove Chip parts

[Resistors, capacitors, etc.]

- (1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.



- (2) Shift with the tweezers and remove the chip part.

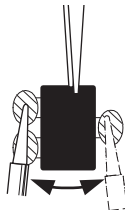


[Transistors, diodes, variable resistors, etc.]

- (1) Apply extra solder to each lead.



- (2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.



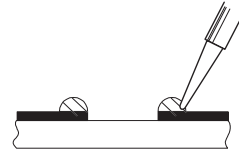
#### NOTE :

After removing the part, remove remaining solder from the pattern.

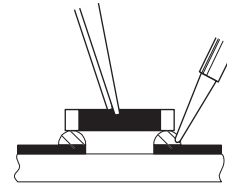
##### 2. How to install Chip parts

[Resistors, capacitors, etc.]

- (1) Apply solder to the pattern as indicated in the figure.

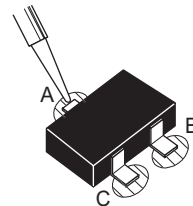


- (2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

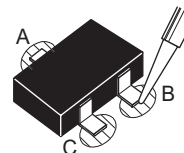


[Transistors, diodes, variable resistors, etc.]

- (1) Apply solder to the pattern as indicated in the figure.
- (2) Grasp the chip part with tweezers and place it on the solder.
- (3) First solder lead **A** as indicated in the figure.



- (4) Then solder leads **B** and **C**.



## SECTION 4 ADJUSTMENT

### 4.1 ADJUSTMENT PREPARATION

- (1) The setting (adjustment) using the REMOTE CONTROL UNIT is made on the basis of the initial setting values.  
The setting values which adjust the screen to the optimum condition can be different from the initial setting values.
- (2) Make sure that connection is correctly made to AC power source.
- (3) Turn on the power of the monitor and measuring instrument for warming up for at least 30 minutes before starting adjustment.
- (4) If the input signal is not specified, use the most appropriate signal for adjustment.
- (5) Never touch parts (such as variable resistors, transformers and condensers) or setting items/values not shown in the adjustment items of this service adjustment.

### 4.2 BASIC OPERATION OF UOCIII SERVICE MODE

#### 4.2.1 HOW TO ENTER THE UOCIII SERVICE MODE

- (1) Press [MENU] key.
- (2) Press the [4], [7], [2] and [5] key, and UOCIII SERVICE MODE screen will be displayed.

##### UOCIII SERVICE MODE SCREEN

|           |               |       |
|-----------|---------------|-------|
| GTV 3.2.1 |               |       |
| 000       | EurAsia TVSub | 00.95 |
|           |               |       |
| 00000000  | 00111100      |       |
| 01000000  | 01100100      |       |
| 11000101  | 01100100      |       |
| 00000000  | 01100100      |       |

#### 4.2.2 HOW TO EXIT THE UOCIII SERVICE MODE

Press [MENU] key to exit the UOCIII SERVICE MODE.

#### 4.2.3 CHANGE AND MEMORY OF SETTING VALUE

##### ■ SELECTION OF SETTING MENU & ITEM

- [P +/-] key.

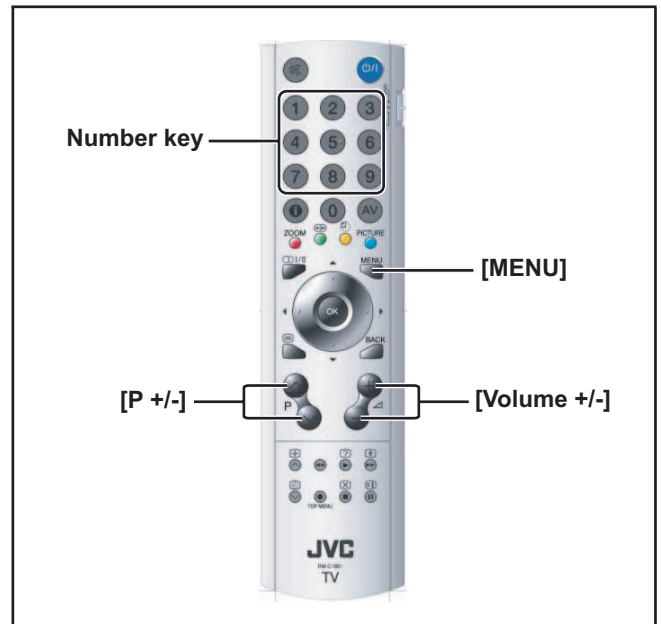
##### ■ CHANGE OF SETTING VALUE(DATA)

- [Volume +/-] key.

##### ■ MEMORY OF SETTING VALUE(DATA)

The setting value will be stored automatically when release the REMOTE CONTROL UNIT keys.

#### 4.2.4 UOCIII SERVICE MODE SELECT KEY LOCATION



#### 4.2.5 UOCIII SERVICE MODE SETTING ITEMS

| Item No. | Setting items   | Function                                                                                                                         | Variable range | Setting value |
|----------|-----------------|----------------------------------------------------------------------------------------------------------------------------------|----------------|---------------|
| 000      | EurAsia TVSub   |                                                                                                                                  | ---            | 00.95         |
| 001      | Init TV         | Sets the UOC default values and turns the tv to Stdbby                                                                           | 0-1            | 0             |
| 002      | ISP Mode        | Sets the TV into ISP state.                                                                                                      | 0-1            | 0             |
| 003      | DCXO            | DCXO crystal alignment                                                                                                           | 0-127          | 77            |
| 004      | DCXO Auto       | Automatic DCXO frequency alignment. When it is set to 1; UOC automaticaly calculates DCXO values and writes it to item number 3. | 0-1            | 0             |
| 005      | Track. Mode     |                                                                                                                                  | 0-1            | 0             |
| 006      | Hor. Shift      |                                                                                                                                  | 0-63           | 32            |
| 007      | HBL             |                                                                                                                                  | 0-1            | 0             |
| 008      | WBF             |                                                                                                                                  | 0-15           | 4             |
| 009      | WBR             |                                                                                                                                  | 0-15           | 8             |
| 010      | WSS             | WSS (Wide Screen Siganling) enable                                                                                               | 0-1            | 1             |
| 011      | Gld-SCART       |                                                                                                                                  | 0-1            | 1             |
| 012      | Col Fe          | Color Saturation adjustment for RF input                                                                                         | 0-50           | 32            |
| 013      | Col AV1         | Color Saturation adjustment for Scart CVBS input                                                                                 | 0-50           | 32            |
| 014      | Col AV1S        |                                                                                                                                  | 0-50           | 32            |
| 015      | Col AV2         | Color Saturation adjustment for AV CVBS input                                                                                    | 0-50           | 32            |
| 016      | Col AV2S        | Color Saturation adjustment for for SVHS S-video input                                                                           | 0-50           | 32            |
| 017      | BLOR            |                                                                                                                                  | 0-63           | 32            |
| 018      | BLOG            |                                                                                                                                  | 0-63           | 32            |
| 019      | RGB             |                                                                                                                                  | 0-15           | 14            |
| 020      | YSECAM          | "Y delay" setting. (SECAM)                                                                                                       | 0-15           | 8             |
| 021      | YNTSC           | "Y delay" setting. (NTSC)                                                                                                        | 0-15           | 8             |
| 022      | YPAL            | "Y delay" setting. (PAL)                                                                                                         | 0-15           | 8             |
| 023      | YAV1            | "Y delay" setting. (SCART)                                                                                                       | 0-15           | 4             |
| 024      | YAV2            | "Y delay" setting. (FAV)                                                                                                         | 0-15           | 4             |
| 025      | YSVHS1          | "Y delay" setting.                                                                                                               | 0-15           | 4             |
| 026      | YSVHS2          | "Y delay" setting. (S-Video)                                                                                                     | 0-15           | 4             |
| 027      | ACL             |                                                                                                                                  | 0-1            | 0             |
| 028      | MUS             |                                                                                                                                  | 0-1            | 0             |
| 029      | PWL             |                                                                                                                                  | 0-15           | 8             |
| 030      | CB              |                                                                                                                                  | 0-1            | 0             |
| 031      | BPS             |                                                                                                                                  | 0-1            | 0             |
| 032      | FCO             |                                                                                                                                  | 0-1            | 0             |
| 033      | PeakFreqPAL443  |                                                                                                                                  | 0-3            | 1             |
| 034      | PeakFreqPALM    |                                                                                                                                  | 0-3            | 1             |
| 035      | PeakFreqPALN    |                                                                                                                                  | 0-3            | 1             |
| 036      | PeakFreqNTSC443 |                                                                                                                                  | 0-3            | 1             |
| 037      | PeakFreqNTSCM   |                                                                                                                                  | 0-3            | 1             |
| 038      | PeakFreqSECAM   |                                                                                                                                  | 0-3            | 1             |
| 039      | PeakFreqAV      |                                                                                                                                  | 0-3            | 1             |
| 040      | Blackstretch    |                                                                                                                                  | 0-1            | 1             |
| 041      | Bluestretch     |                                                                                                                                  | 0-1            | 0             |
| 042      | Whitestretch    |                                                                                                                                  | 0-3            | 0             |
| 043      | Transfer Ratio  |                                                                                                                                  | 0-1            | 1             |
| 044      | PeakRatioOvShot |                                                                                                                                  | 0-3            | 1             |
| 045      | Tint NTSC       |                                                                                                                                  | 0-50           | 31            |
| 046      | OSO             |                                                                                                                                  | 0-1            | 0             |
| 047      | FSL             |                                                                                                                                  | 0-1            | 0             |
| 048      | HP2             |                                                                                                                                  | 0-1            | 0             |
| 049      | SoftClipLevel   |                                                                                                                                  | 0-3            | 0             |
| 050      | OP AUDIO CONFIG |                                                                                                                                  | 0-2            | 2             |

| Item No. | Setting items | Function                        | Variable range | Setting value |
|----------|---------------|---------------------------------|----------------|---------------|
| 051      | OP BILING     |                                 | 0-1            | 1             |
| 052      | OP HP         |                                 | 0-1            | 1             |
| 053      | OP EQUAL      |                                 | 0-1            | 1             |
| 054      | OP DOLBY      |                                 | 0-1            | 0             |
| 055      | OP TRUSUR     |                                 | 0-1            | 0             |
| 056      | OP DUB DBE    |                                 | 0-1            | 0             |
| 057      | OP BBE        |                                 | 0-1            | 0             |
| 058      | AVL-LEV       | AVL Level setting               | 0-15           | 1             |
| 059      | AVL-WGT       | AVL Weight setting              | 0-1            | 0             |
| 060      | AVL-MOD       | AVL Response Time setting       | 0-5            | 2             |
| 061      | AVLE          | AVL enable/disable              | 0-1            | 1             |
| 062      | LOUD-NA       |                                 | 0-7            | 5             |
| 063      | LOUD-CH       |                                 | 0-1            | 1             |
| 064      | BBE-CONT      |                                 | 0-15           | 7             |
| 065      | BBE-PROC      |                                 | 0-15           | 7             |
| 066      | OP CLIP       |                                 | 0-4            | 0             |
| 067      | DEC-LEV       | FM German Str. Prescale setting | 0-31           | 23            |
| 068      | MONO-LEV      | FM Mono Prescale setting        | 0-31           | 23            |
| 069      | NIC-LEV       | Nicam Str. Prescale setting     | 0-31           | 17            |
| 070      | ADC-AM-L      | AM Mono Prescale setting        | 0-31           | 21            |
| 071      | ADC-AV-L      | Scart/Line in Prescale setting  | 0-31           | 18            |
| 072      | BGSCAL DEC    |                                 | 0-31           | 0             |
| 073      | BGSCAL MONO   |                                 | 0-31           | 0             |
| 074      | BGSCAL NIC    |                                 | 0-31           | 0             |
| 075      | BGSCAL SAP    |                                 | 0-31           | 0             |
| 076      | MSCAL DEC     |                                 | 0-31           | 0             |
| 077      | MSCAL MONO    |                                 | 0-31           | 0             |
| 078      | MSCAL NIC     |                                 | 0-31           | 0             |
| 079      | MSCAL SAP     |                                 | 0-31           | 0             |
| 080      | LSCAL DEC     |                                 | 0-31           | 0             |
| 081      | LSCAL MONO    |                                 | 0-31           | 0             |
| 082      | LSCAL NIC     |                                 | 0-31           | 0             |
| 083      | LSCAL SAP     |                                 | 0-31           | 0             |
| 084      | E2D           |                                 | 0-1            | 0             |
| 085      | FFI           |                                 | 0-1            | 0             |
| 086      | CMUTE         |                                 | 0-1            | 1             |
| 087      | PA-BA-VO      |                                 | 0-63           | 31            |
| 088      | PA-TR-VO      |                                 | 0-63           | 15            |
| 089      | PA-LM-VO      |                                 | 0-4            | 1             |
| 090      | PA-ST-VO      |                                 | 0-5            | 5             |
| 091      | PA-LO-VO      |                                 | 0-1            | 0             |
| 092      | PA-B1-VO      |                                 | 0-63           | 21            |
| 093      | PA-B2-VO      |                                 | 0-63           | 50            |
| 094      | PA-B3-VO      |                                 | 0-63           | 55            |
| 095      | PA-B4-VO      |                                 | 0-63           | 45            |
| 096      | PA-B5-VO      |                                 | 0-63           | 34            |
| 097      | PA-BA-MU      |                                 | 0-63           | 34            |
| 098      | PA-TR-MU      |                                 | 0-63           | 39            |
| 099      | PA-LM-MU      |                                 | 0-4            | 1             |
| 100      | PA-ST-MU      |                                 | 0-5            | 5             |
| 101      | PA-LO-MU      |                                 | 0-1            | 1             |
| 102      | PA-B1-MU      |                                 | 0-63           | 52            |
| 103      | PA-B2-MU      |                                 | 0-63           | 47            |
| 104      | PA-B3-MU      |                                 | 0-63           | 29            |
| 105      | PA-B4-MU      |                                 | 0-63           | 29            |
| 106      | PA-B5-MU      |                                 | 0-63           | 45            |
| 107      | PA-BA-TH      |                                 | 0-63           | 36            |

| Item No. | Setting items | Function                       | Variable range | Setting value |
|----------|---------------|--------------------------------|----------------|---------------|
| 108      | PA-TR-TH      |                                | 0-63           | 34            |
| 109      | PA-LM-TH      |                                | 0-4            | 1             |
| 110      | PA-ST-TH      |                                | 0-5            | 5             |
| 111      | PA-LO-TH      |                                | 0-1            | 0             |
| 112      | PA-B1-TH      |                                | 0-63           | 47            |
| 113      | PA-B2-TH      |                                | 0-63           | 45            |
| 114      | PA-B3-TH      |                                | 0-63           | 42            |
| 115      | PA-B4-TH      |                                | 0-63           | 45            |
| 116      | PA-B5-TH      |                                | 0-63           | 42            |
| 117      | AGC Speed     | AGC Speed setting              | 0-3            | 1             |
| 118      | AGC Take over | AGC setting                    | 0-63           | 27            |
| 119      | OIF           | IF Demodulator Offset          | 0-63           | 32            |
| 120      | IF            | IF Frequency                   | 0-5            | 2             |
| 121      | SVO           |                                | 0-1            | 0             |
| 122      | GD            |                                | 0-1            | 1             |
| 123      | BPB           |                                | 0-1            | 0             |
| 124      | BPB2          |                                | 0-1            | 0             |
| 125      | RGB-IN        |                                | 0-1            | 1             |
| 126      | DVD1-IN       |                                | 0-1            | 0             |
| 127      | AV2-IN        |                                | 0-1            | 1             |
| 128      | DVD2-IN       |                                | 0-1            | 0             |
| 129      | AV1S-IN       |                                | 0-1            | 1             |
| 130      | AV1D-IN       |                                | 0-1            | 0             |
| 131      | AV2S-IN       |                                | 0-1            | 1             |
| 132      | CBVS-OUT      |                                | 0-1            | 1             |
| 133      | INCL-AV       |                                | 0-1            | 0             |
| 134      | OTHER1        |                                | 0-1            | 0             |
| 135      | OTHER2        |                                | 0-1            | 0             |
| 136      | TXT-H-POS     |                                | 0-31           | 11            |
| 137      | OTHER:BG-DK   |                                | 0-1            | 0             |
| 138      | TIM-SLP       |                                | 0-1            | 1             |
| 139      | TIM-SW        |                                | 0-1            | 1             |
| 140      | TIM-OFF       |                                | 0-1            | 1             |
| 141      | TIM-SKP       |                                | 0-1            | 1             |
| 142      | TIM-RT        |                                | 0-1            | 1             |
| 143      | PWR-SAVING    |                                | 0-1            | 1             |
| 144      | PWR-PERF      |                                | 0-3            | 3             |
| 145      | PWR-REST      |                                | 0-1            | 1             |
| 146      | PWR-ONKEY     |                                | 0-1            | 1             |
| 147      | Factory Mode  |                                | 0-1            | 0             |
| 148      | CombFil       | Combfilter enable/disable      | 0-1            | 1             |
| 149      | ATS           |                                | 0-1            | 1             |
| 150      | EVG           |                                | 0-1            | 0             |
| 151      | DFL           |                                | 0-1            | 0             |
| 152      | XDT           |                                | 0-1            | 0             |
| 153      | AKB           |                                | 0-1            | 1             |
| 154      | OSVE          |                                | 0-1            | 0             |
| 155      | CL            |                                | 0-15           | 10            |
| 156      | LCD-BRT       | UOC Brightness                 | 0-63           | 36            |
| 157      | LCD-CON       | UOC Contrast                   | 0-63           | 32            |
| 158      | LCD-CON-FE    | RF Frontend Contrast adjust.   | 0-63           | 30            |
| 159      | LCD-CON-AV1   | Scart CVBS Contrast adjust.    | 0-63           | 32            |
| 160      | LCD-CON-AV1S  |                                | 0-63           | 32            |
| 161      | LCD-CON-AV2   | AV CVBS Contrast adjust.       | 0-63           | 32            |
| 162      | LCD-CON-AV2S  | S-Video input Contrast adjust. | 0-63           | 32            |
| 163      | RBL           |                                | 0-1            | 0             |
| 164      | EGL           |                                | 0-1            | 0             |

| Item No. | Setting items | Function                          | Variable range | Setting value |
|----------|---------------|-----------------------------------|----------------|---------------|
| 165      | LPG           |                                   | 0-1            | 1             |
| 166      | PGR           | UOC Red Contrast                  | 0-127          | 32            |
| 167      | PGG-CVBS      | UOC Green Contrast for CVBS input | 0-127          | 32            |
| 168      | PGG-RGB       | UOC Green Contrast for RGB input  | 0-127          | 34            |
| 169      | PGB           | UOC Blue Contrast                 | 0-127          | 32            |

### 4.3 BASIC OPERATION OF PW SERVICE MODE

#### 4.3.1 HOW TO ENTER THE PW SERVICE MODE

(1) Press **[INFORMATION]** key and **[MUTING]** key simultaneously, and PW SERVICE MODE screen will be displayed.

#### 4.3.2 HOW TO EXIT THE PW SERVICE MODE

Press **[MENU]** key to exit the PW SERVICE MODE.

#### 4.3.3 CHANGE AND MEMORY OF SETTING VALUE

##### ■ SELECTION OF SETTING MENU & ITEM

• **[FUNCTION ▲/▼]** and **[FUNCTION ◀/▶]** key.

##### ■ CHANGE OF SETTING VALUE(DATA)

• **[FUNCTION ◀/▶]** key.

##### ■ MEMORY OF SETTING VALUE(DATA)

<In case of Service Submenu 1 and Service Submenu 2>:

The setting value will be stored automatically when release the REMOTE CONTROL UNIT keys.

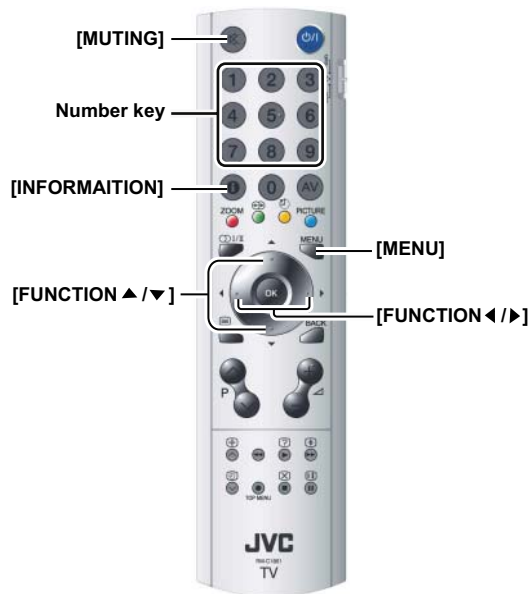
<In case of Factory Settings 1 and Factory Settings 2>:

(1) Press **[MENU]** key.

(2) Press the **[4]**, **[7]**, **[2]** and **[9]** key to store the setting value.

(3) After storing the setting value, the message "Factory Settings OK" will be displayed.

#### 4.3.4 PW SERVICE MODE SELECT KEY LOCATION



#### 4.3.5 PW SERVICE MODE SETTING ITEMS

| Setting menu       | Setting items   | Setting value  |
|--------------------|-----------------|----------------|
| Service Submenu 1  | UOC Hposition   | 128            |
|                    | ADC_Calibration | -              |
|                    | UOC_Calibration | -              |
| Service Submenu 2  | Panel Type      | AU_20_VGA_V4WB |
|                    | Init NVM        | -              |
|                    | AVL             | On             |
|                    | PC Mode         | On             |
|                    | Burn-In Mode    | Off            |
| Factory Settings 1 | Initial APS     | Off            |
|                    | Language        | English        |
|                    | Country         | -              |
|                    | Model Name      | -              |

| Setting menu       | Setting items | Setting value |          |      |         |          |      |        |          |      |        |          |      |
|--------------------|---------------|---------------|----------|------|---------|----------|------|--------|----------|------|--------|----------|------|
|                    | Group         | TV-CVBS       |          |      | S-VIDEO |          |      | RGB    |          |      | PC     |          |      |
|                    | Mode          | Bright        | Standard | Soft | Bright  | Standard | Soft | Bright | Standard | Soft | Bright | Standard | Soft |
| Factory Settings 2 | Contrast      | 38            | 33       | 28   | 43      | 38       | 33   | 38     | 33       | 28   | 30     | 33       | 28   |
|                    | Bright-1      | 14            | 14       | 14   | 18      | 18       | 18   | 14     | 14       | 14   | 14     | 14       | 14   |
|                    | Sharpness     | 40            | 35       | 30   | 40      | 35       | 30   | 40     | 35       | 30   | -      | -        | -    |
|                    | Colour        | 28            | 28       | 26   | 29      | 28       | 26   | 28     | 28       | 26   | -      | -        | -    |

## **SECTION 5**

### **TROUBLESHOOTING**

This service manual does not describe TROUBLESHOOTING.



Victor Company of Japan, Limited  
Flat Panel Display Category 12, 3-chome, Moriya-cho, Kanagawa-ku, Yokohama-city, Kanagawa-prefecture, 221-8528, Japan

(No.YA413)



Printed in Japan  
VPT



# JVC

ENGLISH  
DEUTSCH  
FRANÇAIS  
ITALIANO  
CASTELLANO

# JVC

InteríArt  
**LT-20J50SU**

LCD PANEL TV

INSTRUCTIONS

LCD-TV-GERÄT  
PANNEAU LCD TELEVISEUR  
TV A SCHERMO LCD  
TV CON PANTALLA LCD

BEDIENUNGSANLEITUNG  
MANUEL D'INSTRUCTIONS  
ISTRUZIONI  
MANUAL DE INSTRUCCIONES



50083724

0206TKH-VT-VT

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## For your safety

This equipment has been designed and manufactured to meet international safety standards but, like any electrical equipment, care must be taken if you are to obtain the best results and safety is to be assured. So, please read the points below for your own safety. They are of a general nature, intended to help you with all your electronic consumer products and some points may not apply to the goods you have just purchased.

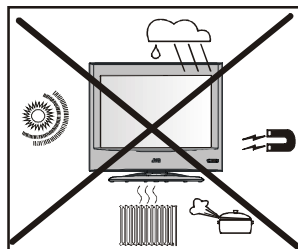
### Some “DOs” and “DON'Ts” for you

#### Air Circulation...

Leave at least 10cm clearance around the television to allow adequate ventilation. This will prevent the TV from overheating and consequential possible damage to the TV. Dusty places should also be avoided.

#### Heat Damage...

Damage may occur if you leave the TV in direct sunlight or near a heater. Avoid places subject to extremely high temperatures or humidity, or locations where the temperature is likely to fall below 5°C (41°F).



#### Mains Supply...

The mains supply required for this equipment is **100-240 V AC, 50 Hz**. Never connect to a DC supply or any other power source. DO ensure that the TV is not standing on the mains lead. DO NOT cut off the mains plug from this equipment, this incorporates a special Radio Interference Filter, the removal of which will impair its performance.

#### Hot / Moderate Climate Conditions

This device is suitable for working in hot and moderate climate conditions.

IF IN DOUBT PLEASE CONSULT A COMPETENT ELECTRICIAN.

**DO...**

**DO** read the operating instructions before you attempt to use the equipment.

**DO** ensure that all electrical connections (including the mains plug, extension leads and inter-connections between pieces of equipment) are properly made and in accordance with the manufacturers' instructions.

Switch off and withdraw the mains plug before making or changing connections.

**DO** consult your dealer if you are ever in doubt about the installation, operation or safety of your equipment.

**DO** be careful with glass panels or doors on equipment.

**DO NOT...**

**DON'T** remove any fixed cover as this may expose dangerous voltages.

**DON'T** obstruct the ventilation openings of the equipment with items such as newspapers, table-cloths, curtains etc. Overheating will cause damage and shorten the life of the equipment.

**DON'T** allow electrical equipment to be exposed to dripping or splashing or objects filled with liquids, such as vases, to be placed on the equipment.

**DON'T** place hot objects or naked flame sources, such as lighted candles or night-lights on, or close to the equipment. High temperatures can melt plastic and lead to fires.

**DON'T** use makeshift stands and NEVER fix legs with wood screws. To ensure complete safety, always fit the manufacturer's approved stand or legs with the fixings provided according to the instructions.

**DON'T** listen to headphones at high volume, as such use can permanently damage your hearing.

**DON'T** leave equipment switched on when it is unattended, unless it is specifically stated that it is designed for unattended operation or has a standby mode. Switch the equipment off and make sure your family know how to do

this. Special arrangements may need to be made for infirm or handicapped people.

**DON'T** continue to operate the equipment if you are in any doubt about it working normally, or it is damaged in any way – switch off, withdraw the mains plug and consult your dealer.

**DON'T** put the empty batteries into garbage instead of recycle bin to reduce harmful effects to the environment.

**ABOVE ALL – NEVER let anyone, especially children, push anything into holes, slots or any other openings in the case – this could result in a fatal electric shock.**

NEVER guess or take chances with electrical equipment of any kind – it is better to be safe than sorry.

**To fully disconnect the TV, switch off the mains socket and remove the Power plug. Safety Precautions for Power adaptor**

- Be careful! May become hot.
- For indoor and dry location use only.
- Risk of electric shock.
- Shock hazard, do not open.
- Keep all power adaptors away from any other heat source.
- Always use power adaptor(s) well-ventilated area.

*\*\* Cold cathode fluorescent lamp in LCD PANEL contains a small amount of mercury, please follow local ordinances or regulations for disposal.*

**"The LCD panel is very high technology product with about a million thin film transistors, giving you fine picture details. Occasionally, a few non-active pixels may appear on the screen as a fixed point of blue, green or red. Please note that this does not affect the performance of your product." Please note that certain light guns used with games consoles may not work on this product.**

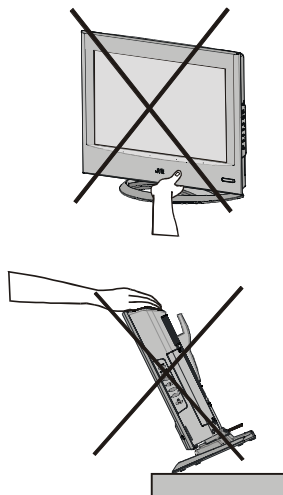
**Warning:**

**This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.**

**WARNING:** TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

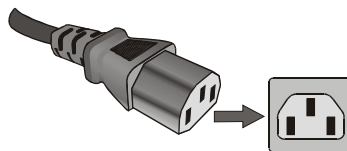
**WARNING**

- *Fingers may be trapped under the TV causing injuries. Hold the TV at the bottom in the middle, and do not allow it to tilt up or down.*
- *The TV may fall causing injuries. Hold the bottom of the stand with your hand and tilt the TV up and down.*
- *Do not allow children to hang from the TV, place their elbows on the TV or lean against the TV. Doing so may cause the TV to fall over and lead to injuries.*



**CAUTION:**

- *To avoid electric shock or damage to the unit, first firmly insert the small end of the power cord into the AC Adapter unit it is no longer wobbly, and then plug the larger end of power cord into an AC outlet.*



## Important Information

### Please take note

#### EXCLUSION CLAUSE

JVC shall under no circumstances be liable for loss and/or damage to the product caused by:

- fire;
- earthquake;
- accidental damage;
- intentional misuse of the product;
- use of the product in improper conditions;
- loss and/or damage caused to the product whilst in the possession of a third party;
- any damage or loss caused as a result of the owner's failure and/or neglect to follow the instructions set out in the owner's manual;
- any loss or damage caused directly as a result of misuse or malfunction of the product when used simultaneously with associated equipment;

Furthermore, under no circumstances shall JVC be liable for any consequential loss and/or damage including but not limited to the following, loss of profit, interruption of business, the loss of recorded data whether caused during normal operation or misuse of the product.

#### **WARNING! NEVER LEAVE A STATIONARY IMAGE ON THE SCREEN**

If stationary images generated by TELETEXT, CHANNEL IDENTIFICATION LOGOS, COMPUTER DISPLAYS, VIDEO GAMES, ON SCREEN MENUS, etc. are left on the TV screen for any length of time, they could become permanently ingrained.

If you use your television to display completely still images, or moving pictures which have a permanent still image superimposed e.g. broadcast network logos, it is always advisable to reduce BOTH the brightness and contrast settings.

#### **Care and disposal**

##### **Cleaning the screen and cabinet...**

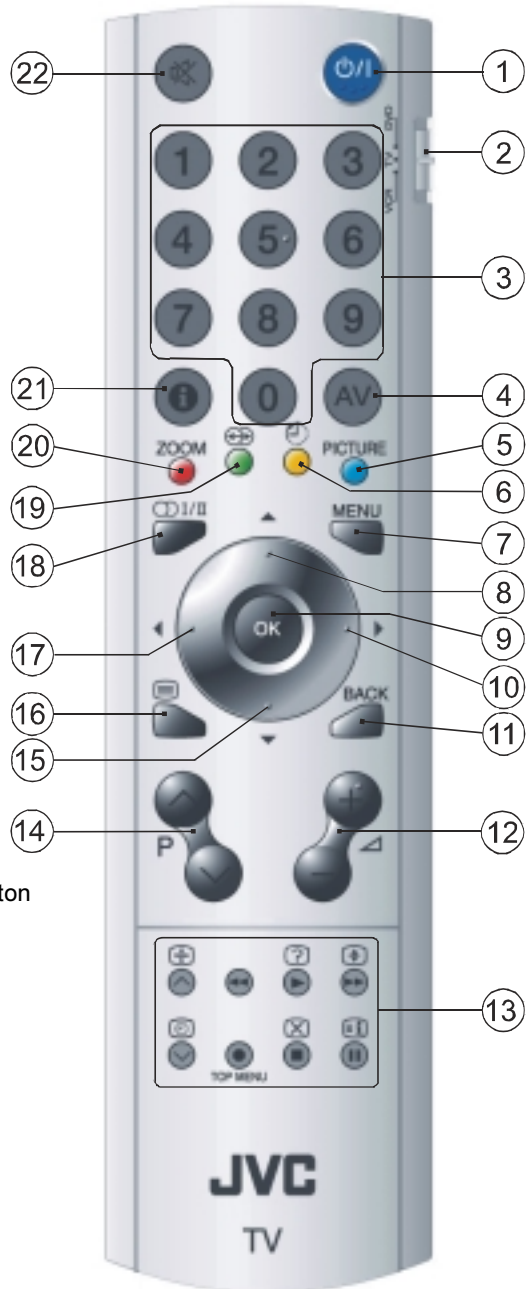
Turn off the power, clean the screen and cabinet with a soft, dry cloth. We recommend that you do not use any proprietary polishes or solvents on the screen or cabinet as this may cause damage.

##### **Disposal...**

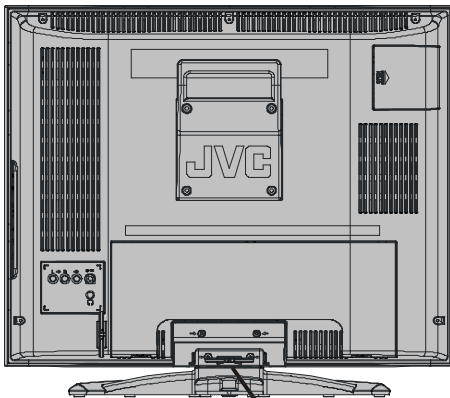
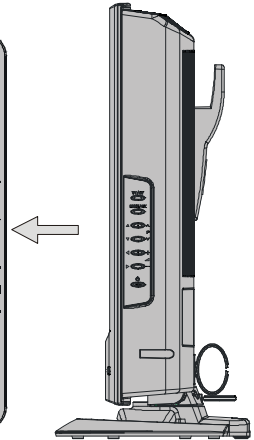
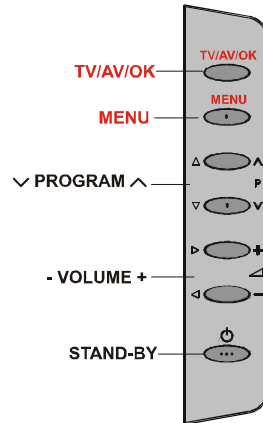
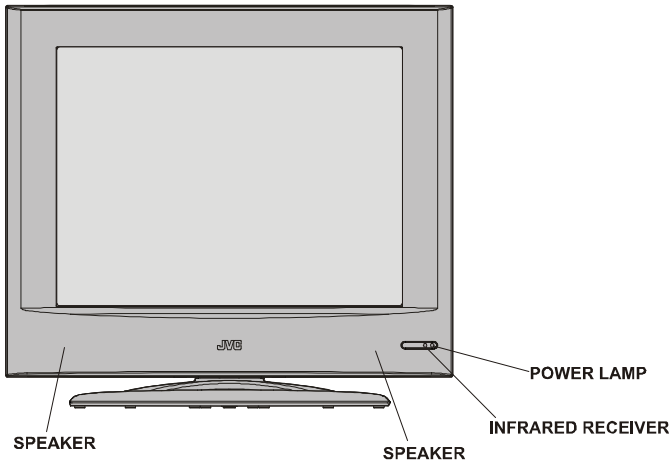
When the set reaches the end of its useful life please dispose of it in accordance with Local Government Regulations or at a recycling centre.

## Remote Control Buttons

- ① = (Stand By) button
- ② TV / VCR / DVD Switch
- ③ Number buttons
- ④ **AV** button (EXT-1, EXT-1S, EXT-1RGB, EXT-2, EXT-2S or PC)
- ⑤ **BLUE / PICTURE** Mode button
- ⑥ **YELLOW** / Sleep Timer button
- ⑦ **MENU** button
- ⑧ = Cursor Up button
- ⑨ OK button
- ⑩ = Cursor Right button
- ⑪ **BACK** button
- ⑫ Volume Up/Down buttons
- ⑬ Teletext / VCR /DVD Control buttons
- ⑭ Programme Up/Down buttons
- ⑮ = Cursor Down button
- ⑯ = Teletext Button
- ⑰ = Cursor Left button
- ⑱ = Stereo / Bilingual button
- ⑲ **GREEN** / Hyper Sound On/Off button
- ⑳ **RED / ZOOM** Mode button
- ㉑ = Information Button
- ㉒ = Mute button



## Control Panel Buttons



**FOOT TOP COVER**

With certain combinations of connectors and leads the back cover may not be easily fitted. If the cover is left off, this in no way infringes safety requirements.

## Using the stand

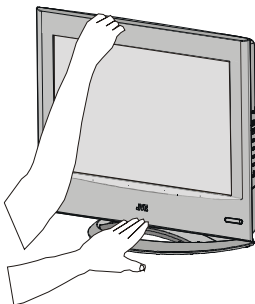
**This TV comes with a Table Top Stand already attached.**

This stand can be used to adjust the direction of the TV screen 10° up, 5° down, and 20° to the left or right.

### **Tilt the TV up and down:**

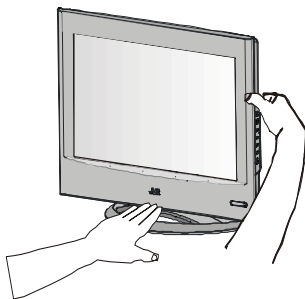
While holding the bottom of the stand with one hand, use your other hand to hold the middle of the top of the TV and slowly tilt the TV up and down.

- As a safety measure, the stand is constructed so that it requires a certain amount of force to tilt the TV.



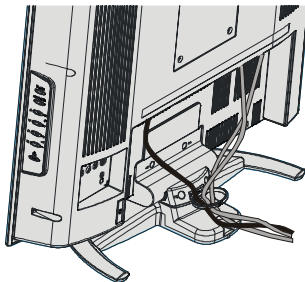
### **Rotate the TV to the left and right:**

While holding the bottom of the stand with one hand, use your other hand to hold the edge of the panel and slowly adjust the direction of the TV screen.



### **Cable holder**

A cable holder which is used to keep the connection cables tidy is attached to the back of the stand.

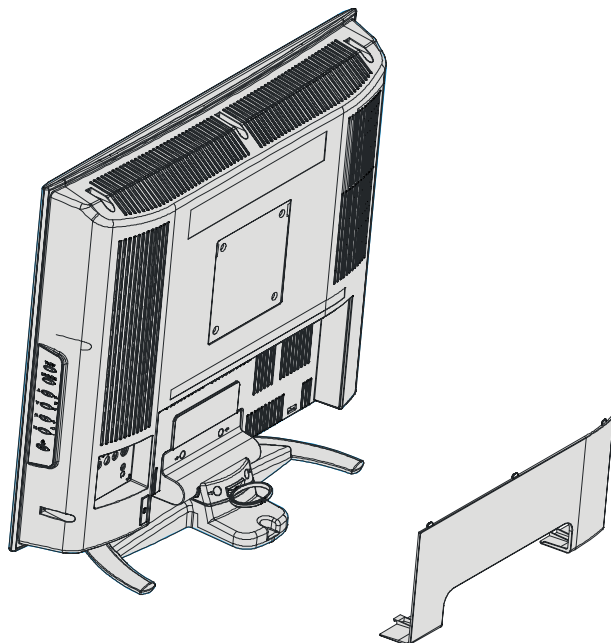


## Remove the terminal Cover

There are connection terminals behind the covers of the rear of the TV. Remove the cover before connecting an antenna, DVD or VCR.

Remove the covers by removing the hooks. When replacing the covers, place the side or bottom of the covers against the TV and insert the hooks.

- Leave the covers off if they do not fit properly. DO NOT force to replace the covers. Doing so may cause damages of the connection cables and the covers.
- Leave these covers off when mounting the TV on a wall.



- 100 mm mount based on VESA regulation is equipped.
- The handle and the stand can be left by loosening the screws with a screwdriver when mounting the TV on a wall.
- Spread a soft cloth on a flat table and then place the TV on the cloth with the screen facing downwards when you leave the handle and the stand.

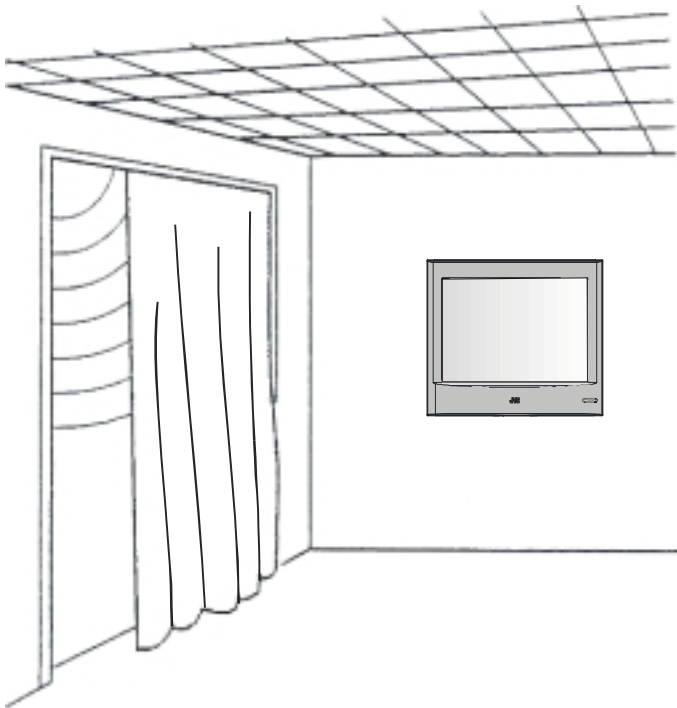
## Where to install

Locate the TV away from direct sunlight and strong lights, soft, indirect lighting is recommended for comfortable viewing. Place on a sturdy platform, the mounting surface should be flat and steady, it should then be secured to the wall with a sturdy tie using the hook on the back of the TV, this will prevent it from falling over. Use curtains or blinds to prevent direct sunlight falling on the screen.

A floor and table top stand are available for this television, or an angled bracket which enables the TV to be wall-mounted.

The LCD display panels are manufactured using an extremely high level of precision technology, however sometimes some parts of the screen may be missing picture elements or have luminous spots. This is not a sign of a malfunction.

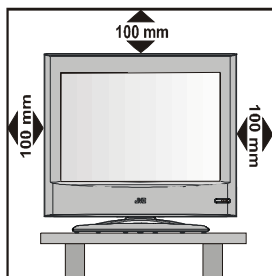
Make sure the TV is located in a position where it cannot be pushed or hit by objects, as pressure will break or damage the screen.



## Preparation

Install Display on solid horizontal surface such as a table or desk.

For ventilation, leave a space of at least 10 cm free all around the set. To prevent any fault and unsafe situations, please do not place any objects on top of the set.



## Features

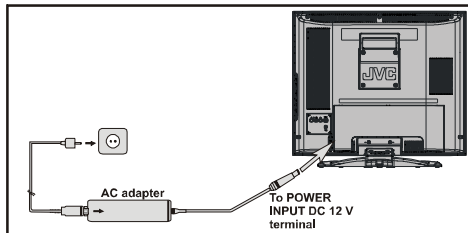
- It is a remote controlled colour television and PC monitor.
- 100 programmes from VHF, UHF bands or cable channels can be preset.
- It can tune cable channels.
- Controlling the TV is very easy by its menu driven system.
- It has an Euroconnector socket for an external device (such as VCR, DVD player, video games etc.)
- **A2+**Nicam stereo sound system.
- Multilanguage OSD.
- Teletext (**FLOF(Fastext)**, **TOP**, **WST**).
- It is possible to connect headphone.
- A.P.S. (Automatic programming system)
- All programmes can be named.
- Forward or backward automatic tuning.
- Sleep timer.
- Child lock
- **Auto**, **4:3**, **16:9**
- Automatic sound mute when no transmission.
- When no valid signal is detected, after 5 minutes the TV switches itself automatically to stand-by mode.

- NTSC Playback.
- PLL (Frequency Search)
- PC input (Support Up to **1024 x 768**)

## Before Switching on your TV

### Power connection

Only use the adaptor supplied with this product.

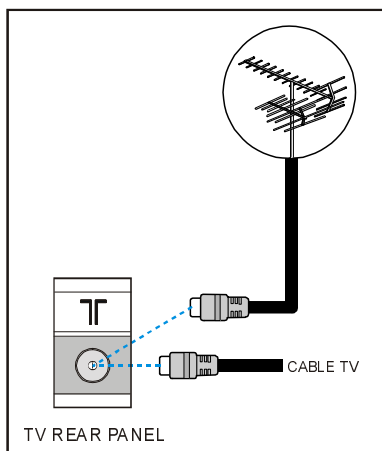


**IMPORTANT:** The TV set is designed to operate on 12 V DC. For this, an adaptor is used which gives 12V DC voltage. Connect this adaptor to a system that supplies 100-240V AC, 50 Hz.

- After unpacking, allow the TV set to reach the ambient room temperature before you connect the set to the mains.

### Connections to the RF input socket

- Connect the aerial or cable TV plug to the RF input socket located at the back of the TV and connect the cable plug coming out from the TV out socket located at the devices (VCR, DVB etc.) to this socket as well.



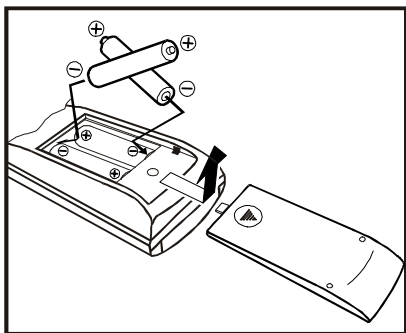
## How to connect other devices

**IMPORTANT:** Switch off the TV before connecting any external device.

Sockets for external connections are at the back of the TV. For connection of other devices via Euroconnector refer to the manuals of the related devices.

## Inserting batteries in the remote control handset

- Remove the battery cover located on the back of the handset by gently pulling downwards from the indicated part.
- Insert two AA/R6 dry cell or equivalent type of batteries inside.
- Replace the battery cover.



**NOTE:** Remove the batteries from remote control handset when it is not to be used for a long period. Otherwise it can be damaged due to any leakage of battery.

Old batteries must be disposed in a designated area. If performance of the remote control reduces, replace the batteries with the correct type. Do not combine a used, old battery or a new one or mixed battery types. Remove dead batteries immediately to prevent acid from leaking into the battery compartment.

## Switching the TV ON/OFF

### To switch the TV on

Your TV will switch on in two steps:

- 1- Connect the power supply cord to the system. Then the TV switches itself to stand-by mode and the power lamp becomes red.
- 2- To switch on the TV from stand-by mode either:

Press the “ / I” button on the remote control or on the right side of the TV,

or,

Press a digit button on the remote control so that a programme number is selected,

or,

Press “P/Ch” buttons on the right side of the TV or press “P” or “P” buttons on the remote control, so that last switched off programme is selected.

Either way the TV will switch on and the power lamp will become green.

### To switch the TV off

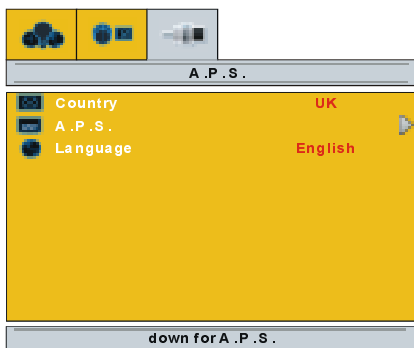
- Press the “ / I” button on the remote control or on the right side of the TV, so the TV will switch to stand-by mode and the power lamp will become red.

**NOTE:** To switch the TV off completely remove the mains plug from the socket.

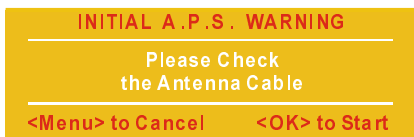
## Initial Settings

### First A.P.S. (Automatic Programming System)

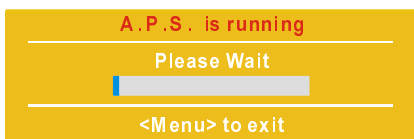
The following menu will be displayed on the screen when you turn the TV on for the first time. A.P.S. searches and sorts all channels and stores them automatically on your TV, according to the transmission of programme systems in your area.



First of all choose **language** and **country** by using “▲” / “▼” and “◀” / “▶” buttons. This will affect the sort process in A.P.S. To start A.P.S., select **A.P.S.** by using “▲” / “▼” buttons and press the “▶” or “OK” button. The following warning is displayed.



Press the “OK” button to start A.P.S.



After A.P.S. is finalized, Program Table will be displayed on the screen. In the Program Table you will see the programme numbers and names assigned to the programmes.

## Operating the TV

*You can operate your TV using both the remote control handset and onset buttons.*

Volume setting and programme selection can be made by using the buttons at the control panel on the right side of the TV.

### Operating with the buttons on the TV

#### Volume Setting

- Press “-” button to decrease volume or “+” button to increase volume, so a volume level scale (slider) will be displayed at the middle of the bottom on the screen.

#### Programme Selection

- Press “P^” button to select the next programme or “V^P” button to select the previous programme.

#### Switching input mode

- Pressing **TV/AV/OK** button will change the input mode.

#### Entering Main Menu

- Press “**MENU**” button to enter Main menu. In the Main menu select submenu using “V^P” or “P^” button and enter the sub-menu using “-” / “+” or **TV/AV/OK** button. To learn the usage of the menus, refer to the Menu System sections.

### Operating with Remote Control

The remote control handset of your TV is designed to control all the functions of the model you selected. The functions will be described in accordance with the menu system of your TV.

Functions of the menu system are described in following sections.

#### Volume Setting

Press “▲ +” button to increase volume. Press “▲ -” button to decrease volume. A volume level scale (slider) will be displayed in the middle at the bottom of the screen.



### Programme Selection (Previous or next programme)

- Press “**P**◀” button to select the previous programme.
- Press “**P**▶” button to select the next programme.

### Programme Selection (direct access)

Press digit buttons on the remote control to select programmes between 0 and 9. TV will switch to the selected programme. To select programmes between 10 - 99, press the digit buttons consecutively which programme you want to select (eg. for programme 27, first press 2 and then 7). When it is late to press second digit button only the first digit programme will be displayed. The limit of the delay time is 3 seconds.

Example: PR6 → press 6

PR12 → press 1 and 2

Press directly the programme number to reselect single digit programmes.

**Hint:** The channel list numbers are assigned by the broadcasters. Because not all channels are broadcast free-to-air and stored by the receiver, the channel list numbers do not run continuously. The fifteenth channel in the list, for example, may not be channel number 15 but channel number 17.

## Menu System

Your TV has been designed with a menu system to provide an easy manipulation of a multi-function system. The TV is controlled by choosing the commands, which are displayed on the screen.

Press the “**MENU**” button. The menu will be displayed in the middle of the screen.

Press “◀” or “▶” button to select a menu title and then “▲” or “▼” button to select a menu item. Press “◀” / “▶” or “**OK**” buttons to enter the menu item.

In AV modes, menus appear the same as in TV mode except the Installation menu.

- Press the “**MENU**” button again to remove menu.
- Press the “**BACK**” button to return to the previous menu.

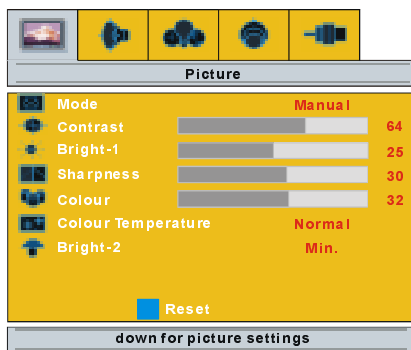
### Picture Menu

By pressing “◀” or “▶” button, select the first icon. Picture menu appears on the screen.

#### Setting Mode

- As you enter the picture menu, Mode will be the first item.
- By pressing “◀” or “▶” button you may choose one of these options:

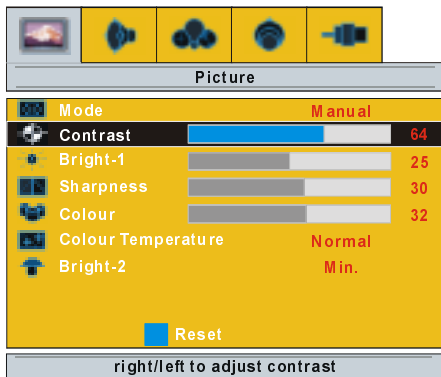
#### Manual, Bright, Standard and Soft.



- **Bright, Standard and Soft** modes are all preset. When these modes are selected Contrast, Bright-1, Sharpness and Colour can not be changed. They can only be changed when **Manual** is selected as a picture mode.

## Setting Contrast

- Using “▲” or “▼” button select **Contrast**.
- Press “▶” button to increase contrast level.
- Press “◀” button to decrease contrast level.



## Setting Bright-1

- Using “▲” or “▼” button select **Bright-1**.
- Press “▶” button to increase brightness.
- Press “◀” button to decrease brightness.

## Setting Sharpness

- Using “▲” or “▼” button select **Sharpness**.
- Press “▶” button to increase sharpness level.
- Press “◀” button to decrease sharpness level.

## Setting Colour

- Using “▲” or “▼” button select **Colour**.
- Press “▶” button to increase colour level.
- Press “◀” button to decrease colour level.

## Setting Colour Temperature

- Using “▲” or “▼” button select **Colour Temperature**.
- Press “◀” or “▶” button to select “Warm”, “Cool” or “Normal”.

## Setting Bright-2

This item changes the back light of the picture.

- Using “▲” or “▼” button select **Bright-2**.

- Press “◀” or “▶” button to select “Min.”, “Med.” or “Max.”.

## Setting Hue

This item is displayed in Picture menu when the TV receives an NTSC signal.

- Using “▲” or “▼” button select **Hue**.
- Press “▶” button to increase hue level.
- Press “◀” button to decrease hue level.



## Reset

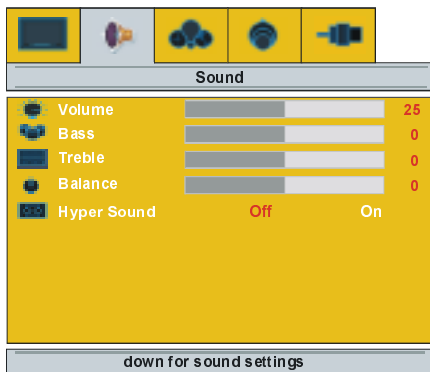
Press BLUE button to reset the **Manual** mode settings to factory default settings.

## To Store the Settings

In the Picture Menu, all settings are stored automatically.

## Sound Menu

By pressing “◀” or “▶” button, select the second icon. Sound menu appears on the screen.



## Setting Volume

- Press “▶” button to increase volume.
- Press “◀” button to decrease volume.

Or you can directly change the volume settings using “▲ +” (to increase) or “- ▼” (to decrease) button.

## Setting Bass Level

- Using “▲” or “▼” button select **Bass Level**.
- Press “▶” button to increase bass level.
- Press “◀” button to decrease bass level.

## Setting Treble Level

- Using “▲” or “▼” button select **Treble**.
- Press “▶” button to increase treble level.
- Press “◀” button to decrease treble level.

## Setting Balance

It allows adjusting the distribution between the left and right speakers.

- Using “▲” or “▼” button select **Balance**.
- Press “▶” button to change balance rightward.
- Press “◀” button to change balance leftward.

## Hyper Sound

- Using “▲” or “▼” button select **Hyper Sound**.
- Pressing “◀” or “▶” button will turn this feature on or off.

Pseudo/spatial effect can be turned on or off via the Hyper Sound item in the Sound menu or by remote control. In Mono transmission the left and right channels will be added at left channel and dummy stereo effect will be introduced to end-user. In stereo transmission it yields a phase difference between left and right channels.

## To Store The Settings

In the Sound Menu, all settings are stored automatically.

## Feature Menu

By pressing “◀” or “▶” button, select the third icon. Feature menu appears on the screen.



## Sleep Timer

The **Sleep Timer** is used to turn the TV off after a defined period of time after selecting this item. The timer can be programmed between Off and 120 minutes in steps of 10 minutes. (Off, 10, 20, 30, ... , 110, 120)

If the sleep timer is activated, it starts the countdown for 60 seconds before the end of the selected time. Then the TV goes automatically to stand-by mode.

## Child Lock

You can use this feature to prevent children changing programmes or adjustments etc. without remote control.

- Using “▲” or “▼” button select **Child Lock**.
- Press “◀” / “▶” button to select Child Lock On or Off.

When **Off** is selected, there will be no difference in the operation of your TV. When **On** is selected, the TV can only be controlled by the remote control handset. In this case the control panel buttons, except “⏻” button, on the right side of the TV will not work.

## Selecting Menu Language

- Using “▲” or “▼” button select **Language**.
- Press “◀” or “▶” button to select menu language.

## Blue Back

You can set the TV to automatically change to a blue screen if the signal is weak or absent, or when there is no input from an external device.

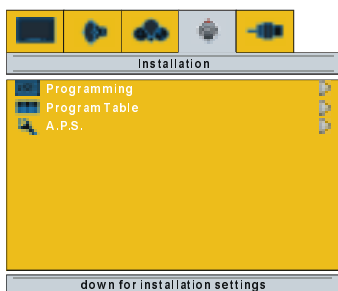
The **Blue Background** feature can be turned on or off by pressing “◀” or “▶” button.

## To Store Settings

In Feature menu all settings are stored automatically.

## Installation Menu

By pressing “◀” or “▶” button, select the fourth icon. Installation menu appears on the screen.

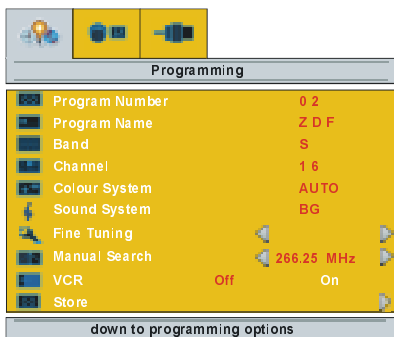


## Programming Menu

By pressing “▲” or “▼” button, select Programming and press “▶” button. Programming menu appears on the screen.

## Selecting Program Number

- Using “▲” or “▼” button select Program Number.
- To select a program number, you can use “◀” / “▶” button or Digit Buttons.



## Setting Program Name

- Using “▲” or “▼” button select Program Name.
- Press “▶” button to select a character and “▲” or “▼” button to change it.
- After the program name is entered, press “◀” button to exit.

## Selecting Band

Band, can be chosen either,

- “C” or “S” by pressing “◀” or “▶” button.

## Selecting Channel

**Channel** can be changed by “◀” or “▶” button or by Digit Buttons.

## Selecting Colour System

Using “◀” or “▶” button on **Colour System**, you can change the colour system to **PAL**, **SECAM** or **AUTO**.

**Note:** In EXT mode, you can choose NTSC 3.58 and NTSC 4.43 as well.

## Selecting Sound System

Using “◀” or “▶” button on **Sound System**, you can change the standard to **BG**, **I**, **DK**, **L/L'**.

## Selecting Fine Tuning

You can use the Fine Tuning process for fine adjustment (after coarse adjustment), if you are not happy about the image on the screen.

Use “◀” or “▶” button on **Fine Tuning** item, until getting the best image on the screen.

## Selecting Manual Search

To start the manual search process, press “▶” button for forward search or “◀” button for backward search. If a signal is found or reaches to end of the band after searching, press “◀” or “▶” buttons to continue search process. To stop the search process when you want, press the **MENU** button at any time.

## Setting VCR (Video Cassette Recorder) Mode

- This item can be seen in **TV**, **EXT-1** and **EXT-2** modes.

- If you want to watch a **VCR** source, then it will be better to set **VCR** mode "on". For this, while the cursor is on this item press the "◀" or "▶" button to set it "On".
- If you want to watch a **DVD**, then you must set this item "off"; because **DVD** is not a source like a **VCR** and to see the picture better, you must set the **VCR** mode "Off".

### To Store Settings

- Press "▶" button on **Store** option to store Programming menu settings.
- You can also store a setting by pressing "OK" button on the selected setting.
- "**STORING**" is displayed on screen during the store process.

### Program Table

By pressing "◀" or "▶" button, select the second icon. Program table appears on the screen.

| Channel | Name | Time    |
|---------|------|---------|
| 1       | ITV  | 13 ---- |
| 2       | ZDF  | 14 ---- |
| 3       | BBC1 | 15 ---- |
| 4       | C 5  | 16 ---- |
| 5       | C 6  | 17 ---- |
| 6       | C 8  | 18 ---- |
| 7       | S 40 | 19 ---- |
| 8       | C 21 | 20 ---- |
| 9       | ---- | 21 ---- |
| 10      | ---- | 22 ---- |
| 11      | ---- | 23 ---- |
| 12      | ---- | 24 ---- |

Program table shows the programme numbers and the names assigned to the programmes.

Here you can adjust the channel order by moving or deleting the channels.

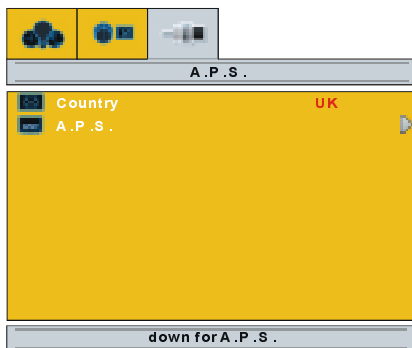
First of all press the "▼" button.

Using the GREEN button you can move a programme into another programme's location. Press the direction buttons to select a programme and press the GREEN button. Then select another programme and press the GREEN button again. The first selected programme moves into the location of the second selected programme.

Using the YELLOW button you can delete any programme you want.

### A.P.S. (Auto Programming System)

By pressing "▶" button, select the third icon. A.P.S. menu appears on the screen.



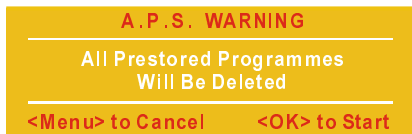
### country

By pressing "▲" or "▼" button, select **country**. Press "◀" or "▶" button to select the country where you are.

### A.P.S.

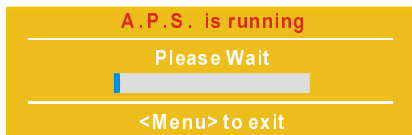
By pressing "▲" or "▼" button, select **A.P.S.**

When "▶" or "OK" button is pressed, the following warning is displayed.



If you want to cancel A.P.S. function, press the "**MENU**" button.

If "OK" button is pressed, A.P.S. starts and the following warning is displayed.

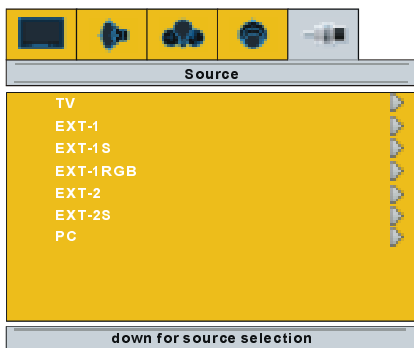


If you press the "**MENU**" button, A.P.S. function stops and Program table appears on the screen.

If you wait till A.P.S. is finalized, Program table is displayed with the programmes found and located.

## Source Menu

By pressing “◀” or “▶” button, select the fifth icon. Source menu appears on the screen.



Use “▲” or “▼” button to select a mode and then press “▶” or “OK” button to switch to that mode. You can also switch your TV to EXT modes by pressing directly to “AV” button.

## Other Features

### TV Status

**Programme Number, Programme Name and Sound Indicator** are displayed on screen after programme change for 3 seconds.

This information is also displayed by pressing the “i” button. Pressing this button again shows the current time. Pressing this button once more removes the on-screen display.



### To Display the Time

While watching a TV programme with teletext transmission, press “i” button twice. The current time information captured from teletext will be displayed on the screen.

If the programme being watched does not have teletext transmission, no time information will be displayed.

The time information will disappear after pressing the “i” button again.

## Sound Indicator

“COI/I” button is used to select Mono or Stereo, or Dual I or Dual II.

**Mono**

In Mono broadcast or in forced-mono (for stereo broadcast).

**Stereo**

In Stereo broadcast.

**Dual I**

If dual broadcast is detected. Dual I is selected in default and also can be selected after Dual II by Remote Control.

**Dual II**

If Dual II is selected by Remote Control.

## Hyper Sound

By selecting Hyper Sound in sound menu or by pressing the “⊞” button on your remote control, Pseudo/Spatial effect can be turned on or off.

In Mono transmission the left and right channels will be added at left channel and dummy stereo effect will be introduced to end-user.

In stereo transmission it yields a phase difference between left and right channels.

## Picture Mode

Picture mode OSD is displayed when BLUE button is pressed. Picture mode can be changed to Manual, Bright, Standard and Soft.

## Sleep Timer

Sleep Timer mode OSD is displayed when YELLOW button is pressed. See [page 15](#) for detailed information.

## Mute Indicator

It is placed in the upper right side of the screen when enabled, and it stays there until it is disabled.



To cancel mute, there are two alternatives; the first one is by pressing the  button, this volume is set to the preceding value, and the second one is increasing or decreasing the volume level.

## Volume Bar

It is displayed in the lower middle of the screen. When a volume command is received (pressing “ +” or “ -” by Remote Control or Control panel at the [right side](#) of the TV) and no menu is active, it stays on the screen for 3 seconds, after the last volume command or until another command is received in between.



## EXT Modes

By pressing the “**AV**” button you can switch your TV to EXT modes (except being in Teletext). Pressing this button consecutively will switch the TV in one of the optional EXT modes: **EXT-1**, **EXT-1S**, **EXT-1RGB**, **EXT-2**, **EXT-2S** and **PC**.

In order to quit the EXT mode press any digit buttons or “**P**” or “**P**”.

## Zoom Modes

Zoom mode can be changed by pressing Red button. You can change the screen size according to the picture aspect ratio. Select the optimum one from the following **ZOOM** modes: **Auto**, **4:3** and **16:9**.

## AUTO

When a **WSS (Wide Screen Signalling)** signal, which shows the aspect ratio of the picture, is included in the broadcast signal or the signal from an external device, the TV automatically changes the **ZOOM** mode to **4:3** or **16:9** according to the **WSS** signal.

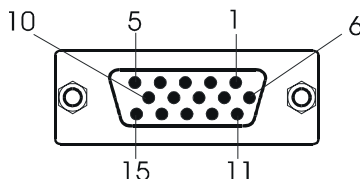
- When the **AUTO** mode does not function correctly due to poor **WSS** signal quality or when you want to change the **ZOOM** mode, change to another **ZOOM** mode manually.

## PC Mode

### Installation

- Power off both Computer and Display before making any connections.
- Set your PC's resolution correctly before connecting to the TV. See the table in [page 26](#) for supported modes.
- Use a D-SUB cable to connect the TV's PC input to the computer's RGB output terminal.

15 Pin Mini D-Sub Connector



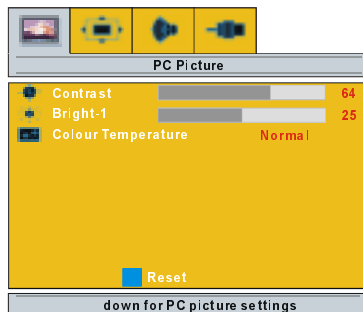
- Tighten the screws of the Display cable until the connectors are fastened securely (finger-tighten only).

### Menu System in PC mode

Press the “**MENU**” button. The menu will be displayed in the middle of the screen.

### PC Picture Menu

By pressing “” or “” button, select the first icon. PC Picture menu appears on the screen.

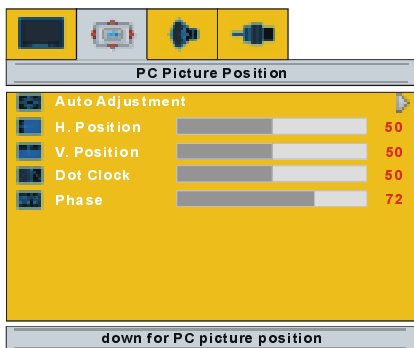


The items in this menu are described at **Picture menu** starting [page 13](#).

Press BLUE button to reset the **Manual** mode to factory default settings.

## PC Picture Position Menu

By pressing “◀” or “▶” button, select the second icon. PC Picture Position menu appears on the screen.



### Auto Adjustment

If you shift the picture horizontally or vertically to an unwanted position, use this item to put the picture into correct place automatically.

- Select **Auto Adjustment** item by using “▲” or “▼” buttons.
- Press “▶” button.
- Press “MENU” button or “BACK” button to store the value.

**Warning:** Auto position adjustment recommended to be done with the full screen image for the proper adjustment.

### Horizontal Position

This item shifts the image horizontally to right hand side or left hand side of the screen.

- Select **H. Position** item by using “▲” or “▼” button.
- Use “◀” or “▶” button to adjust the value.
- Press “MENU” button or “BACK” button to store the value.

### Vertical Position

This item shifts the image vertically towards the top or bottom of the screen.

- Select **V. Position** item by using “▲” or “▼” button.
- Use “◀” or “▶” button to adjust the value.

- Press “MENU” button or “BACK” button to store the value.

### Dot Clock

**Dot Clock** adjustments correct interference that appear as vertical banding in dot intensive presentations like spreadsheets or paragraphs or text in smaller fonts.

- Use “◀” or “▶” button to adjust the value.

### Phase

Depending on the resolution and scan frequency that you input to the TV Set, you may see a muddy or noisy picture on the screen. In such a case you can use this item to get a clear picture by trial and error method.

- Use “◀” or “▶” button to adjust the value.

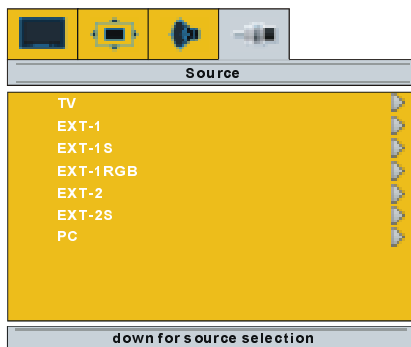
## Sound Menu

By pressing “◀” or “▶” button, select the third icon. Sound menu appears on the screen.

The items in this menu are described at **Sound menu** starting [page 14](#).

### Source Menu

By pressing “◀” or “▶” button, select the fourth icon. Source menu appears on the screen.



Use “▲” or “▼” button to select a mode and then press “▶” or “OK” button to switch to that mode.

### Sound in PC mode

- Connect the PC's Audio output to the TV's **PC Audio In** socket with an audio cable.

## Teletext

Teletext is an information system that displays text on your TV screen. Using the Teletext information system you can view a page of information on a subject that is available in the list of contents (index).

On screen display is not available in text mode.

Contrast, brightness or colour control is not available, but volume control is available in text mode.

### To operate Teletext

- Select a TV station on which Teletext is being transmitted.
- Press (TELETEXT) “” button. Usually the list of contents (index) is displayed on the screen.



### To select a page of Teletext

- Press the appropriate digit buttons for the required Teletext page number.

The selected page number is displayed at the top left corner of the screen. The Teletext page counter searches until the selected page number is located, so that the desired page is displayed on the screen.

- Press “**P**^” button to move the Teletext screen forward one page at a time.
- Press “**P**^” button to move the Teletext screen backward one page at a time.

### To Select Index Page

- To select the page number of the index (generally page 100), press “” button.

### Searching for a teletext page while watching TV

- In the Teletext mode pressing “” button will switch the screen to the TV mode. In the TV mode enter a page number using digit

buttons. The page will be searched and the page number will be displayed on the upper left corner of the screen when the selected page is found. Now you can display this teletext page by pressing “” button.

### To Select Double Height Text

- Press “” button for the top half of the information page to be displayed in double height text.
- Press “” button again for the bottom half of the information page to be displayed in double height text.
- Press “” button once more for the full page of normal height text.

### To Reveal “concealed” Information

- Pressing “” button once will reveal answers on a quiz or games page.
- Pressing “” button again will conceal the revealed answers.

### To Stop Automatic Page Change

The teletext page you have selected may contain more information than what is on the screen; the rest of the information will be displayed after a period of time.

- Press “” button to stop the automatic page change.
- Press “” button again to allow the next page to be displayed.

### To Select a Subcode Page

Subcode pages are subsections of long Teletext pages that can only be displayed on the screen one section at a time.

- Select the required Teletext page.
- Press “” button.
- Select the required subcode page number by pressing four digit buttons (e.g. 0001).
- If the selected subcode page is not displayed in a short time, press “” button. TV programme will be displayed on the screen.
- Teletext page number will be displayed on

the upper left corner of the screen when the selected page is found.

- Press “” button to display the selected Teletext page.

## To exit Teletext

- Press “” button. The screen will switch to TV mode.

## Fastext and Toptext

Your TV supports the 7 page Teletext system. When the page number of any of the 7 pages in memory is entered, the system will not search for the requested page; instead it will display the page automatically.

- Press “**P**” button to move the Teletext screen forward one page at a time.
- Press “**P**” button to move the Teletext screen backward one page at a time.

## For Fastext and Toptext

The subject-heading for the information may have a particular colour.

- Press an appropriate **RED**, **GREEN**, **YELLOW** or **BLUE** button in order to reach the relevant page quickly.

## For TOPTTEXT

If Toptext transmission is present, colour coded buttons will appear in status row.

If Toptext transmission is not present, status row will not appear.

In Toptext mode the “**P**” or “**P**” commands will request the next or previous page respectively. If Toptext transmission is not available, in case of operation of these commands, wraparound occurs. For example page 100 appears to be one greater than page 199.

## Peripheral Equipment Connections

There is a wide range of audio and video equipment that can be connected to your TV.

Connection diagrams at the end of this section show you where the different equipment should be connected at the back side of the TV.

## Via the Euroconnector

Your TV set has one Euroconnector socket. If you want to connect peripherals (e.g. video, decoder, etc.) which have Euroconnectors, to your TV, use **EXT-1** input.

If an external device is connected via Euroconnector socket, TV is switched to AV mode automatically.

## RGB mode

If an equipment can output the **RGB** signals, connect it to the **EXT-1** terminal.

## Via the RCA jacks

If you have an equipment (such as a Camcorder) which has the RCA jacks, connect it to the **EXT-2** terminal with the video and audio cables.

## Via the ANT (aerial) socket

If your equipment does not have an Euroconnector or RCA jacks, connect it to the TV with an aerial cable. For details, see the manual provided with the equipment.

- To store the test signal that comes from the equipment, see “**Installation Menu**” on [page 16](#) and store it to the program number 0. You can watch images from that equipment to select the program number which you stored the test signal.

## Decoder

Cable TV offers you a wide choice of programmes. Most of them are free, others are to be paid for by the viewer. This means that you will need to subscribe to the broadcasting organisation whose programmes you wish to receive. This organisation will supply

you a corresponding decoder unit to allow the programmes to be unscrambled.

For further information ask your dealer. See also the booklet supplied with your decoder.

### **Connect a decoder with an aerial socket to the TV**

- Connect the aerial cable.

### **Connect a decoder without an aerial socket to the TV**

- Connect the decoder to your TV with a eurocable (RCA Jack Cable) to **EXTERNAL** (RCA Jack). When your decoder has a Euroconnector / RCA Jack you can obtain better picture quality if you connect a eurocable (RCA Jack Cable) to **EXTERNAL** (RCA Jack).

## **TV and Video Recorder (VCR)**

- Connect the Video Recorder to the ANT (antenna input) socket of the TV with the aerial cable.
- Connect the Video Recorder to the **EXT-1** terminal with the SCART cable, or connect it to the **EXT-2** terminal with the audio and video cables.

## **NTSC Playback**

Connect a NTSC video recorder to a terminal. Then press "**AV**" button to select the corresponding AV mode.

**NTSC 3.58/4.43** system is detected automatically in AV mode.

## **Camera and Camcorder**

### **To connect to the EXT-2 terminal**

Connect your camera or camcorder at the **rear** side of your TV.

- Connect your equipment to the TV via **VIDEO** (yellow), **AUDIO R** (red) and **AUDIO L** (white) inputs. You should connect the jacks to the input in the same colour.

### **Connect the decoder to the video recorder**

Some video recorders have a special euroconnector for decoder.

- Connect a eurocable to the euroconnector of your decoder and to the special euroconnector of your video recorder. See also the handbook of your video recorder.

- To connect your video recorder to the TV, see TV and Video Recorder section.

If you want to connect more equipment to your TV, consult your dealer.

## **Connecting Headphones**

Use the stereo headphone socket at the **rear** side of your TV, to connect headphones.

## **Connecting the PC**

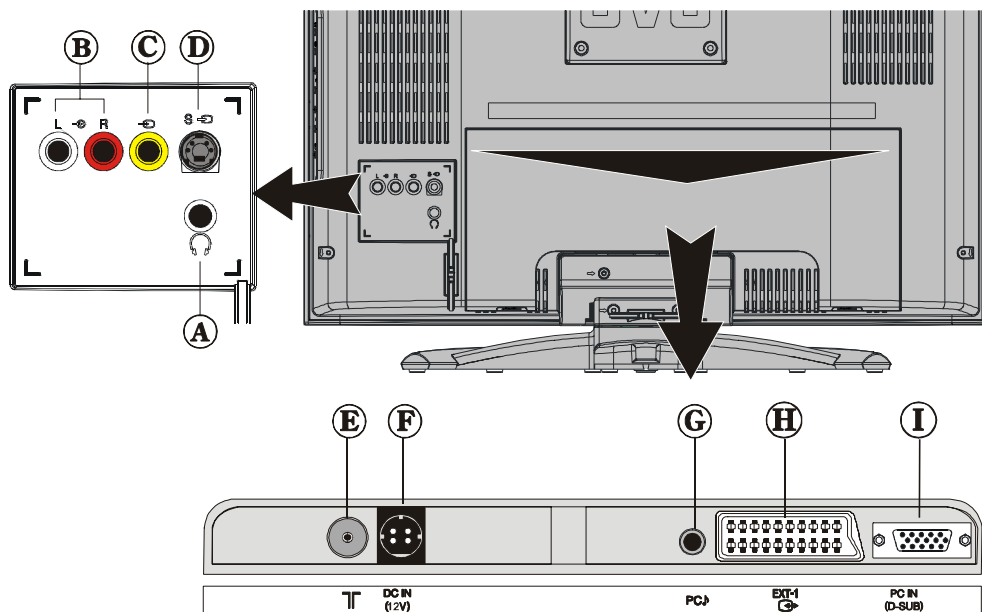
Connect PC monitor with 15-pin PC cable to the 15-pin connector on the rear of the computer. For detail installation procedure see **Installation** in PC mode.

### **To connect to S-Video input**

Connect your camera or camcorder at the **rear** side of your TV.

- Connect your equipment to the TV via S-Video input at the **rear** side by using S-Video cables.

# Peripheral Equipment Connections



- A** HEADPHONE
  - B** AUDIO L/R
  - C** VIDEO IN
  - D** S-VIDEO IN
  - E** ANTENNA
  - F** DC IN (ADAPTOR)
  - G** PC AUDIO IN
  - H** EXT-1
  - I** PC INPUT
- EXT-2

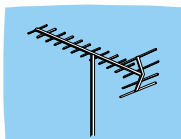


# Antenna Connections

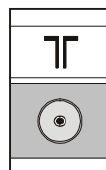
## Outdoor Antenna Connections

VHF antenna

Method 1



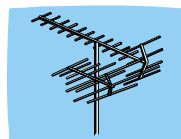
Round 75 ohm coaxial cable



Rear of TV

VHF/UHF antenna

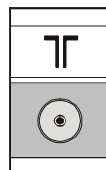
Method 2



Flat 300-ohm twin lead cable



Round 75-ohm coaxial cable



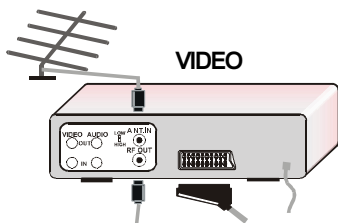
Rear of TV

## Peripheral Equipment Connections

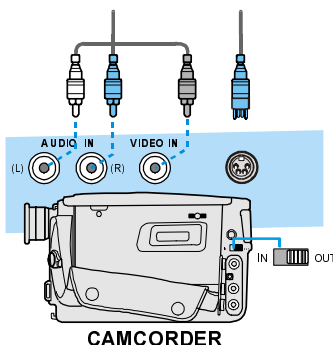
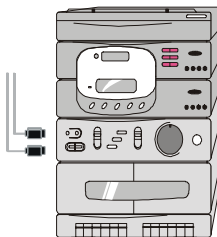
HEADPHONE



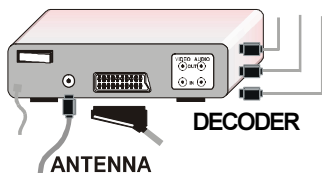
VIDEO



AUDIO



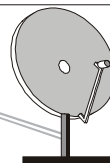
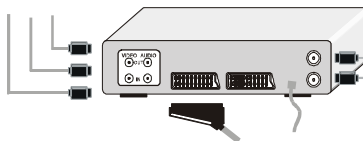
CAMCORDER



ANTENNA

DECODER

FOR SATELLITE RECEIVER



## PC Input Typical Display Modes

The display has a maximum resolution of 1024 x 768, vertical sync. frequency range of 50-70 Hz and a horizontal sync. frequency range of 30-57 KHz.

The following table is an illustration of some of the typical video display modes.

| <i>Mode</i> | <i>Resolution</i> |                 | <i>Frequency</i>  |                  |
|-------------|-------------------|-----------------|-------------------|------------------|
|             | <i>Horizontal</i> | <i>Vertical</i> | <i>Hor. (kHz)</i> | <i>Ver. (Hz)</i> |
| 1           | 640               | 480             | 31.4              | 60               |
| 2           | 800               | 600             | 35.1              | 56               |
| 3           | 800               | 600             | 37.9              | 60               |
| 4           | 1024              | 768             | 48.4              | 60               |

The native resolution of the TFT-LCD Panel is 800 x 600. Therefore using Mode 3 is advised to get the best PC input display quality.

## Tips

### Can not turn the TV on?

Check that TV/VCR/DVD switch is set to TV position.

TV may go to stand-by mode when you turn the TV on soon after you turn the TV off. If you can turn the TV on again, it is not a problem.

### Can not turn the TV off?

Check that TV/VCR/DVD switch is set to TV position.

### Care of the Screen

Clean the screen with a slightly damp, soft cloth. Do not use abrasive solvents as they may damage the TV screen coating layer.

### Colours of image on screen are abnormal

Have you selected the correct TV system? Is your TV set or house aerial located too close to the loudspeakers, non-earthed audio equipment or neon lights, etc. ?

Mountains or high buildings can cause double pictures or ghost images. Sometimes you can improve the picture quality by changing the direction of the aerial.

Is the picture or Teletext unrecognisable? Check if you have entered the correct frequency.

The picture quality may degrade when two peripherals are connected to the TV at the same time. In such a case, disconnect one of the peripherals.

### No Image on Display Screen

Is the aerial connected properly? Are the plugs connected tightly to the aerial socket? Is the aerial cable damaged? Are suitable plugs used to connect the aerial? If you are in doubt, consult your dealer.

**No Image** means that your TV is not receiving any transmission. Have you pressed the correct buttons on the remote control? Try once more.

## PC Picture

If no PC picture appears, check that the D-SUB cable is connected properly. Check that your PC's resolution set correctly. See [page 26](#) for supported modes.

## Sound

You can not hear any sound. Did you perhaps interrupt the sound, by pressing "⏏" button? Are external speakers connected to the TV?

Sound is coming from only one of the speakers. Is the balance set to one direction extreme? See **Sound** menu.

## Remote Control

If your TV no longer responds to the remote control, perhaps the batteries are exhausted. Replace the batteries.

Have you selected the wrong menu? Press "MENU" button to return to normal screen or press "BACK" button to return to the previous menu.

## No solution

Switch your TV set off and on. If this does not work, switch off, remove the mains plug and call the service personnel; never attempt to repair it yourself.

# Specifications

| Item                      | Model | LT-20J50SU                                                                                                                                                                                                 |
|---------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Broadcasting Systems      |       | PAL SECAM BG, DK, I, L, Lp                                                                                                                                                                                 |
| Channels and Frequencies  |       | VHF (VL) : 46,25 MHz - 168,25 MHz<br>VHF (VH) : 175,25 MHz - 463,25 MHz<br>UHF : 471,25 MHz - 863,25 MHz<br>Cable TV : (S1-S20/ S21-S41)                                                                   |
| Input Signal              |       | <b>Video:</b> Analog 0,7 Vp-p 75 ohm positive<br><b>Sync:</b> TTL Level positive or negative, Seperate sync.                                                                                               |
| Horizontal Timing         |       | 30 - 69 kHz                                                                                                                                                                                                |
| Vertical Timing           |       | 50 - 75 kHz                                                                                                                                                                                                |
| Dot Rate                  |       | 78,75 MHz max.                                                                                                                                                                                             |
| Panel Size                |       | 20,01" (509 mm) (measured diagonally)                                                                                                                                                                      |
| Visible Picture Size      |       | 408 mm horizontal x 306 mm vertical                                                                                                                                                                        |
| Display Resolution        |       | 1024 x 768 max.                                                                                                                                                                                            |
| Number of Preset Channels |       | 100                                                                                                                                                                                                        |
| Channel Indicator         |       | On Screen Display (OSD)                                                                                                                                                                                    |
| RF Aerial Output          |       | 75 Ohm (unbalanced)                                                                                                                                                                                        |
| Power Requirements        |       | <b>Adaptor:</b> 100-240 V AC, 50 Hz / <b>TV:</b> 12 V DC                                                                                                                                                   |
| Power Consumption (W)     |       | 60 W (max) / STAND-BY <1.2W                                                                                                                                                                                |
| Sound Systems             |       | Nicam Stereo, A2                                                                                                                                                                                           |
| Audio Output              |       | 2 x 3 W <sub>RMS</sub> (%10 THD)                                                                                                                                                                           |
| EXT-1 Terminal            |       | Euroconnector (21-pin, SCART 1) (back of the cabinet)<br>• Video Input, S-Video (Y/C) input, Audio L/R Inputs and RGB inputs are available.<br>• TV broadcast outputs (Video and Audio L/R) are available. |
| EXT-2 Terminal            |       | RCA connectors x 3 (rear side of the cabinet)<br>S-VIDEO connector x 1 (rear side of the cabinet)<br>• Video input, S-VIDEO (Y/C) input and Audio L/R inputs are available.                                |
| PC IN terminal            |       | Analog RGB D-SUB 15 x 1<br>• PC signal is available (refer to <a href="#">page 26</a> for details of the signals which can be input)                                                                       |
| PC AUDIO IN terminal      |       | Stereo mini-jack (3.5 mm diameter)                                                                                                                                                                         |
| Dimensions (W x H x D)    |       | 530 mm x 477 mm x 213 mm<br>530 mm x 440 mm x 125 mm (TV only)                                                                                                                                             |
| Weight                    |       | 8,2 kg (with stand) / 7,2 kg (TV only)                                                                                                                                                                     |
| Accessories               |       | Remote control unit x 1 (RM-C1861) / AA/R6 dry cell battery x 2<br>AC adaptor x 1<br>Power cord x 1                                                                                                        |
| Headphone jack            |       | Stereo mini-jack (3.5 mm diameter)                                                                                                                                                                         |

# JVC

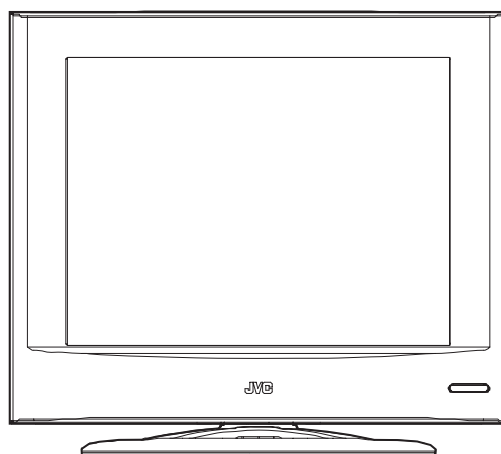
## SCHEMATIC DIAGRAMS

WIDE LCD PANEL TELEVISION

### LT-20J50SJ, LT-20J50SU

InteríArt

CD-ROM No.SML200605



# LT-20J50SJ, LT-20J50SU

## STANDARD CIRCUIT DIAGRAM

### ■ NOTE ON USING CIRCUIT DIAGRAMS

#### 1.SAFETY

The components identified by the  $\triangle$  symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

#### 2.SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

- (1)Input signal : Colour bar signal
- (2)Setting positions of each knob/button and variable resistor : Original setting position when shipped
- (3)Internal resistance of tester : DC 20k $\Omega$ /V
- (4)Oscilloscope sweeping time : H  $\Rightarrow$  20 $\mu$ s / div  
: V  $\Rightarrow$  5ms / div  
: Others  $\Rightarrow$  Sweeping time is specified
- (5)Voltage values : All DC voltage values

\* Since the voltage values of signal circuit vary to some extent according to adjustments, use them as reference values.

#### 3.INDICATION OF PARTS SYMBOL [EXAMPLE]

- In the PW board : R209  $\rightarrow$  R209

#### 4.INDICATIONS ON THE CIRCUIT DIAGRAM

##### (1)Resistors

###### ● Resistance value

- No unit : [ $\Omega$ ]
- K : [k $\Omega$ ]
- M : [M $\Omega$ ]

###### ● Rated allowable power

- No indication : 1/16 [W]
- Others : As specified

###### ● Type

- No indication : Carbon resistor
- OMR : Oxide metal film resistor
- MFR : Metal film resistor
- MPR : Metal plate resistor
- UNFR : Uninflammable resistor
- FR : Fusible resistor

\* Composition resistor 1/2 [W] is specified as 1/2S or Comp.

##### (2)Capacitors

###### ● Capacitance value

- 1 or higher : [pF]
- less than 1 : [ $\mu$ F]

###### ● Withstand voltage

- No indication : DC50[V]
- Others : DC withstand voltage [V]
- AC indicated : AC withstand voltage [V]

\* Electrolytic Capacitors

47/50[Example]: Capacitance value [ $\mu$ F]/withstand voltage[V]

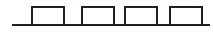
###### ●Type

- No indication : Ceramic capacitor
- MM : Metalized mylar capacitor
- PP : Polypropylene capacitor
- MPP : Metalized polypropylene capacitor
- MF : Metalized film capacitor
- TF : Thin film capacitor
- BP : Bipolar electrolytic capacitor
- TAN : Tantalum capacitor

##### (3)Coils

- No unit : [ $\mu$ H]
- Others : As specified

##### (4)Power Supply

-  : B1
-  : B2 (12V)
-  : 9V
-  : 5V

\* Respective voltage values are indicated

##### (5)Test point

-  : Test point
-  : Only test point display

##### (6)Connecting method

-  : Connector
-  : Wrapping or soldering
-  : Receptacle

##### (7)Ground symbol

-  : LIVE side ground
-  : ISOLATED(NEUTRAL) side ground
-  : EARTH ground
-  : DIGITAL ground

#### 5.NOTE FOR REPAIRING SERVICE

This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : ( $\perp$ ) side GND and the ISOLATED(NEUTRAL) : ( $\perp$ ) side GND. Therefore, care must be taken for the following points.

- (1)Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED(NEUTRAL) side GND simultaneously. If the above caution is not respected, an electric shock may be caused. Therefore, make sure that the power cord is surely removed from the receptacle when, for example, the chassis is pulled out.
- (2)Do not short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or never measure with a measuring apparatus measure with a measuring apparatus ( oscilloscope, etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND at the same time. If the above precaution is not respected, a fuse or any parts will be broken.

◆ Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

##### NOTE

◆ Due improvement in performance, some part numbers show in the circuit diagram may not agree with those indicated in the part list. When ordering parts, please use the numbers that appear in the Parts List.

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USING P.W. BOARD

| P.W.B ASS'Y name        | LT-20J50SJ  | LT-20J50SU |
|-------------------------|-------------|------------|
| MAIN P.W. BOARD         | VE-20255339 | ←          |
| AV JACK P.W. BOARD      | VE-20239086 | ←          |
| SIDE CONTROL P.W. BOARD | VE-20235650 | ←          |
| LED P.W. BOARD          | VE-20247127 | ←          |

SEMICONDUCTOR SHAPES

TRANSISTOR

| BOTTOM VIEW | FRONT VIEW |  |  |  | TOP VIEW    |
|-------------|------------|--|--|--|-------------|
|             |            |  |  |  | CHIP TR<br> |

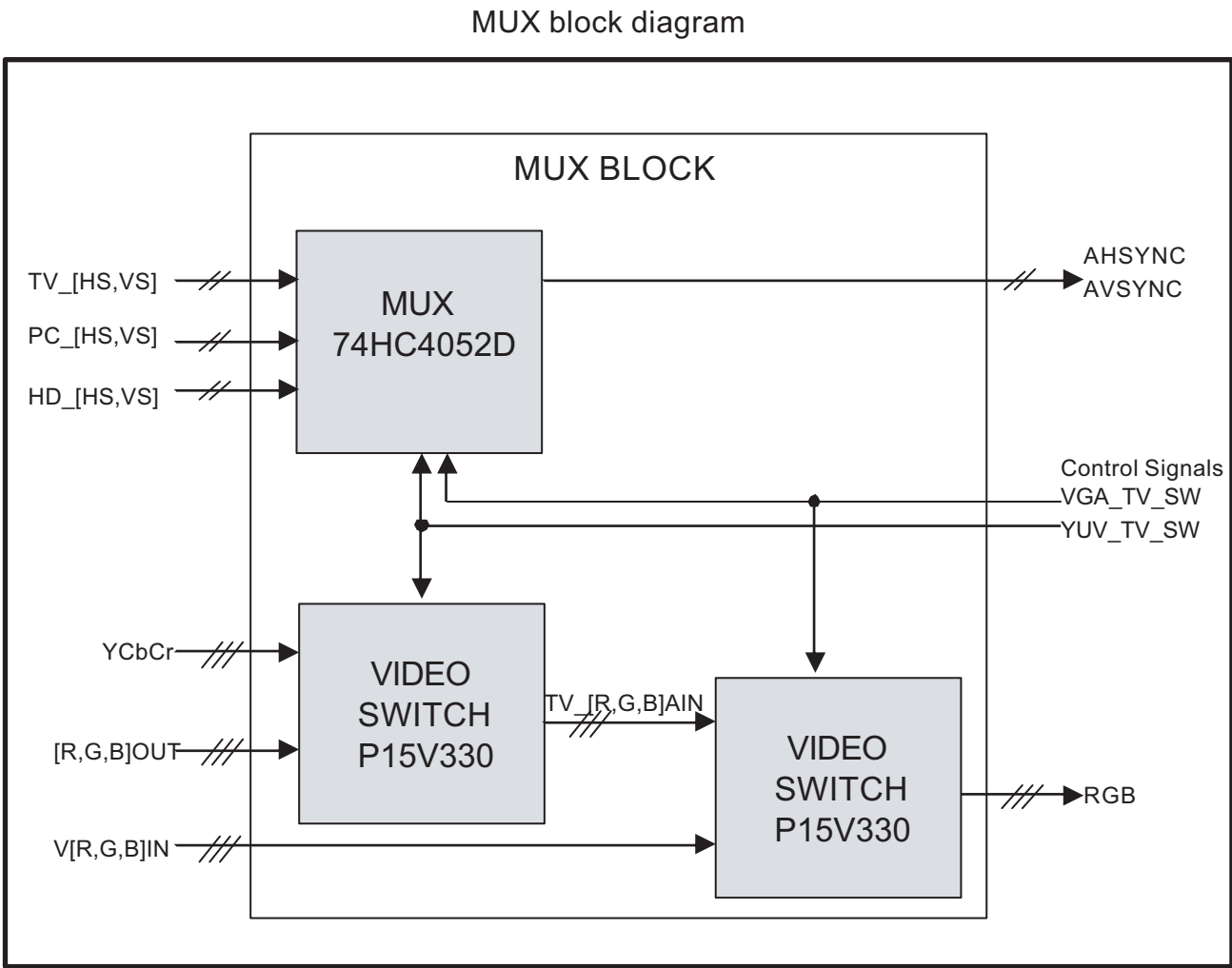
IC

| BOTTOM VIEW | FRONT VIEW |  |  | TOP VIEW |
|-------------|------------|--|--|----------|
|             |            |  |  |          |

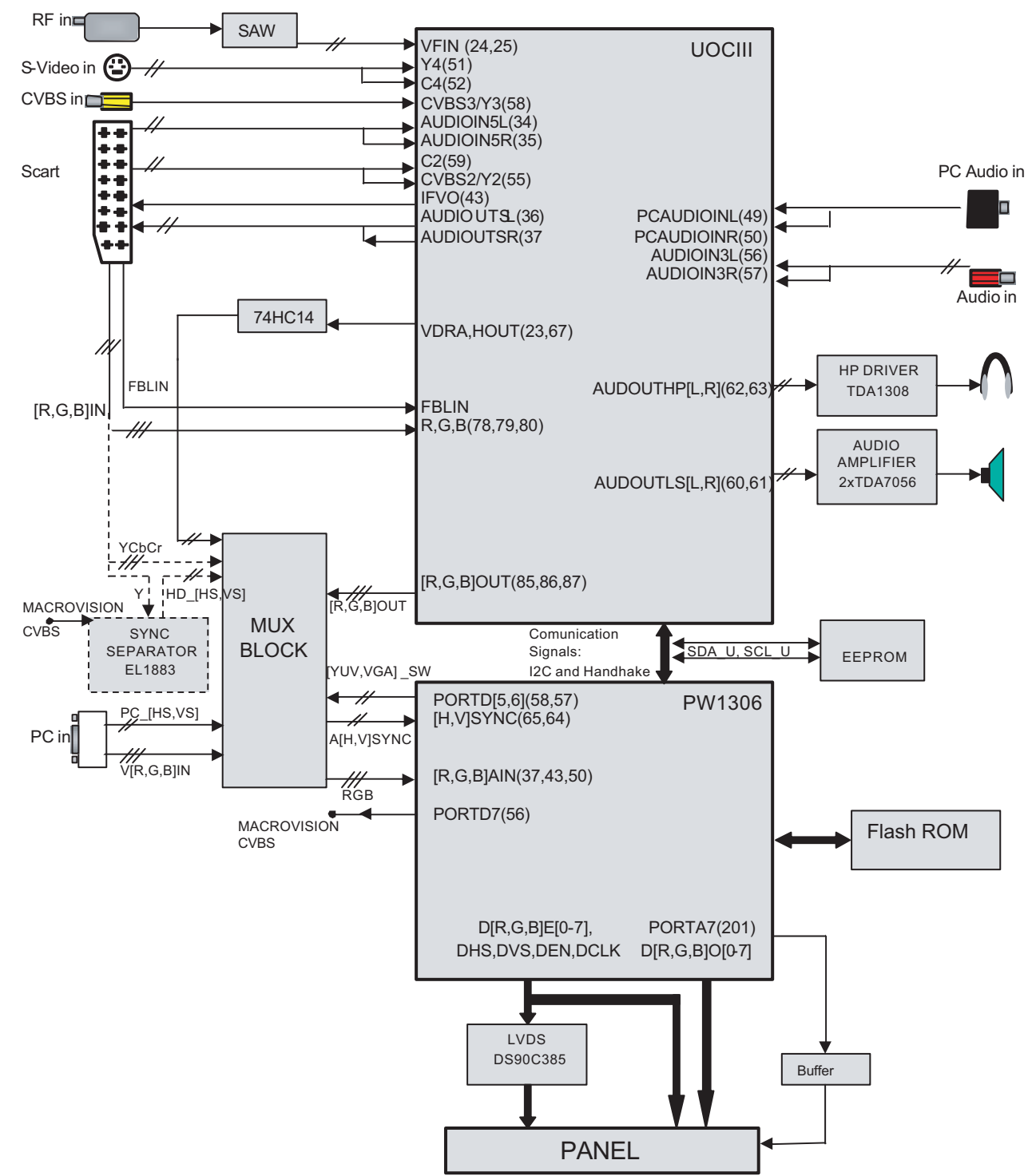
CHIP IC

| TOP VIEW |  |  |
|----------|--|--|
|          |  |  |

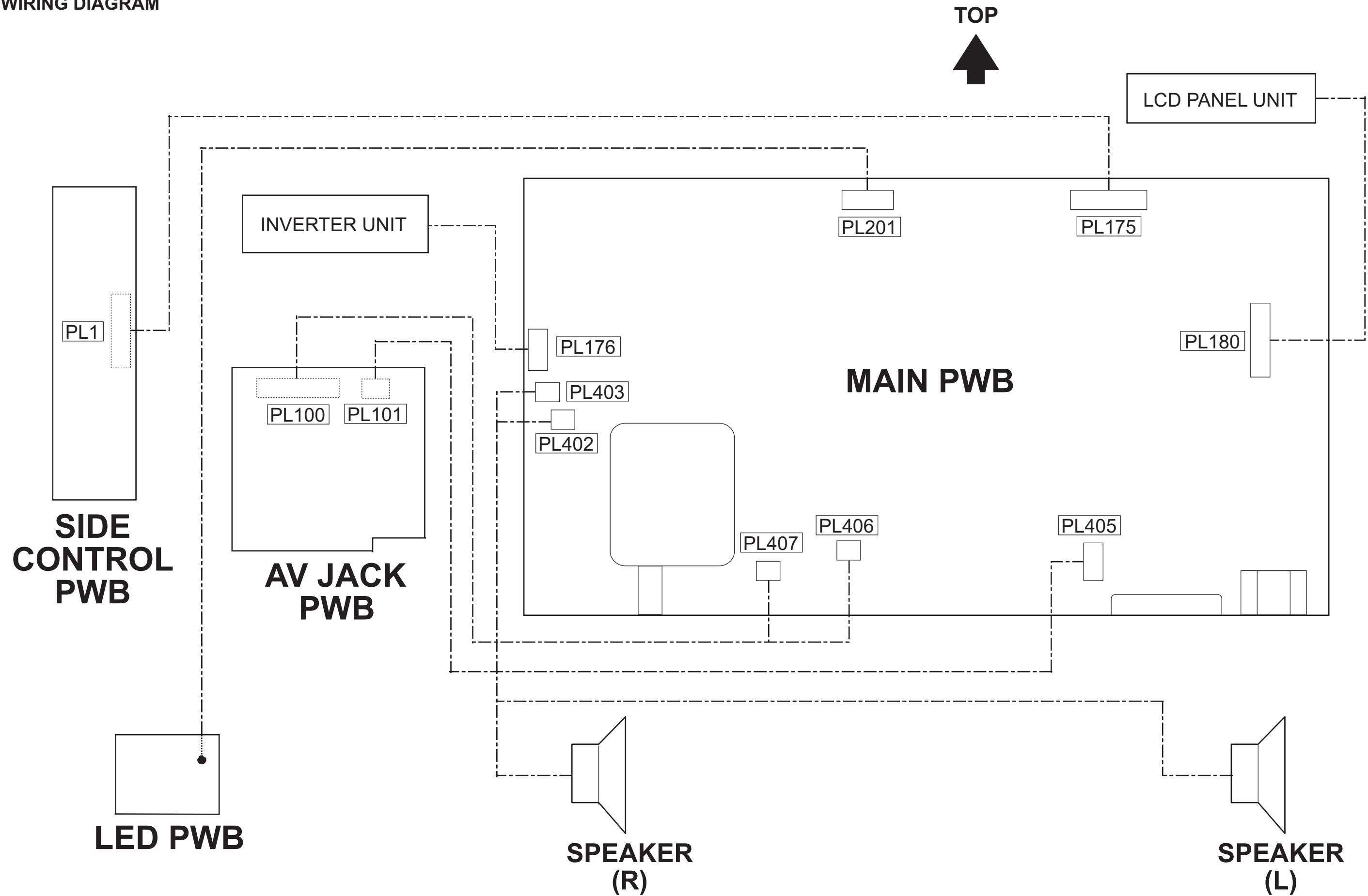
BLOCK DIAGRAM



TV system block diagram



WIRING DIAGRAM

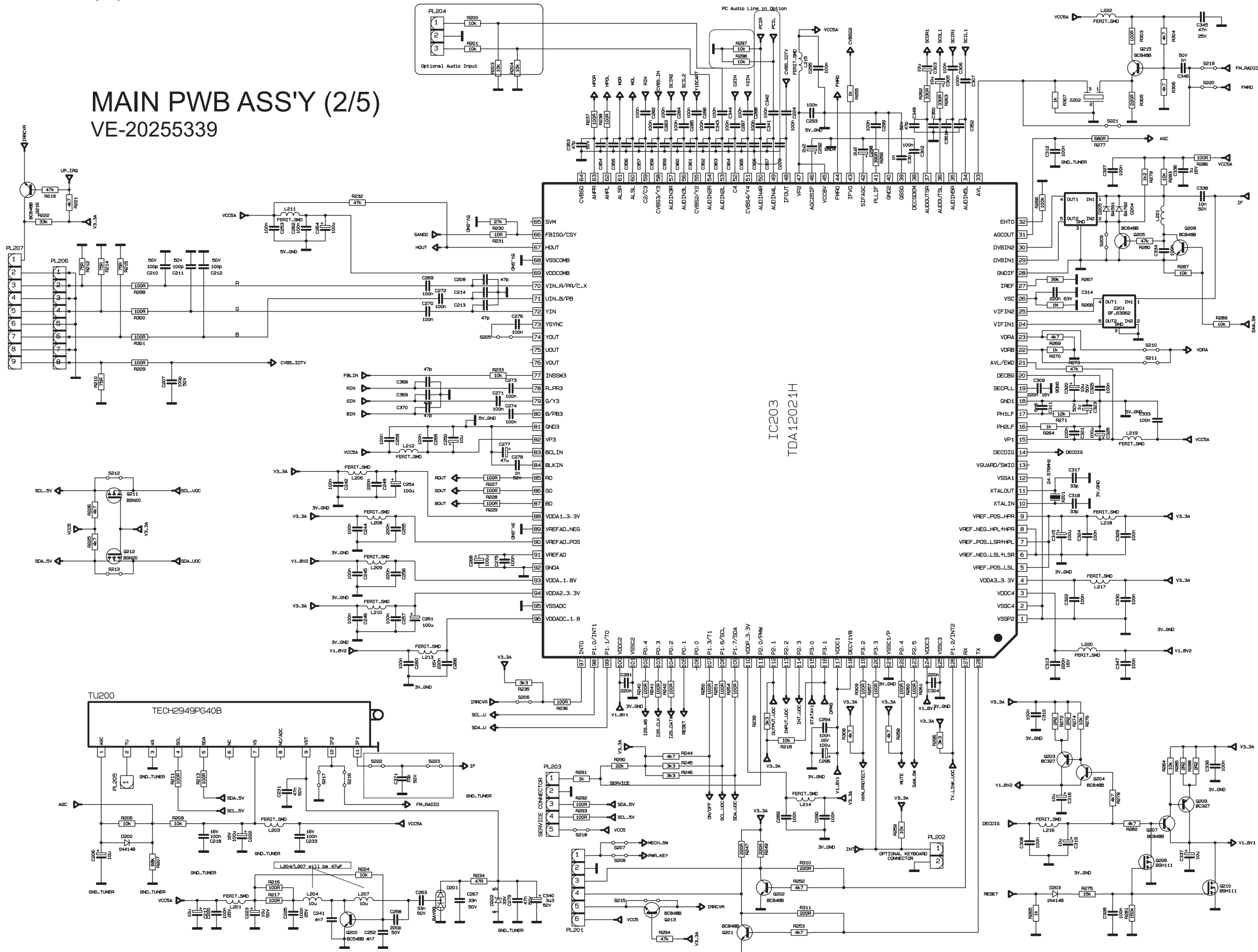


MAIN PWB CIRCUIT DIAGRAM (1/5)

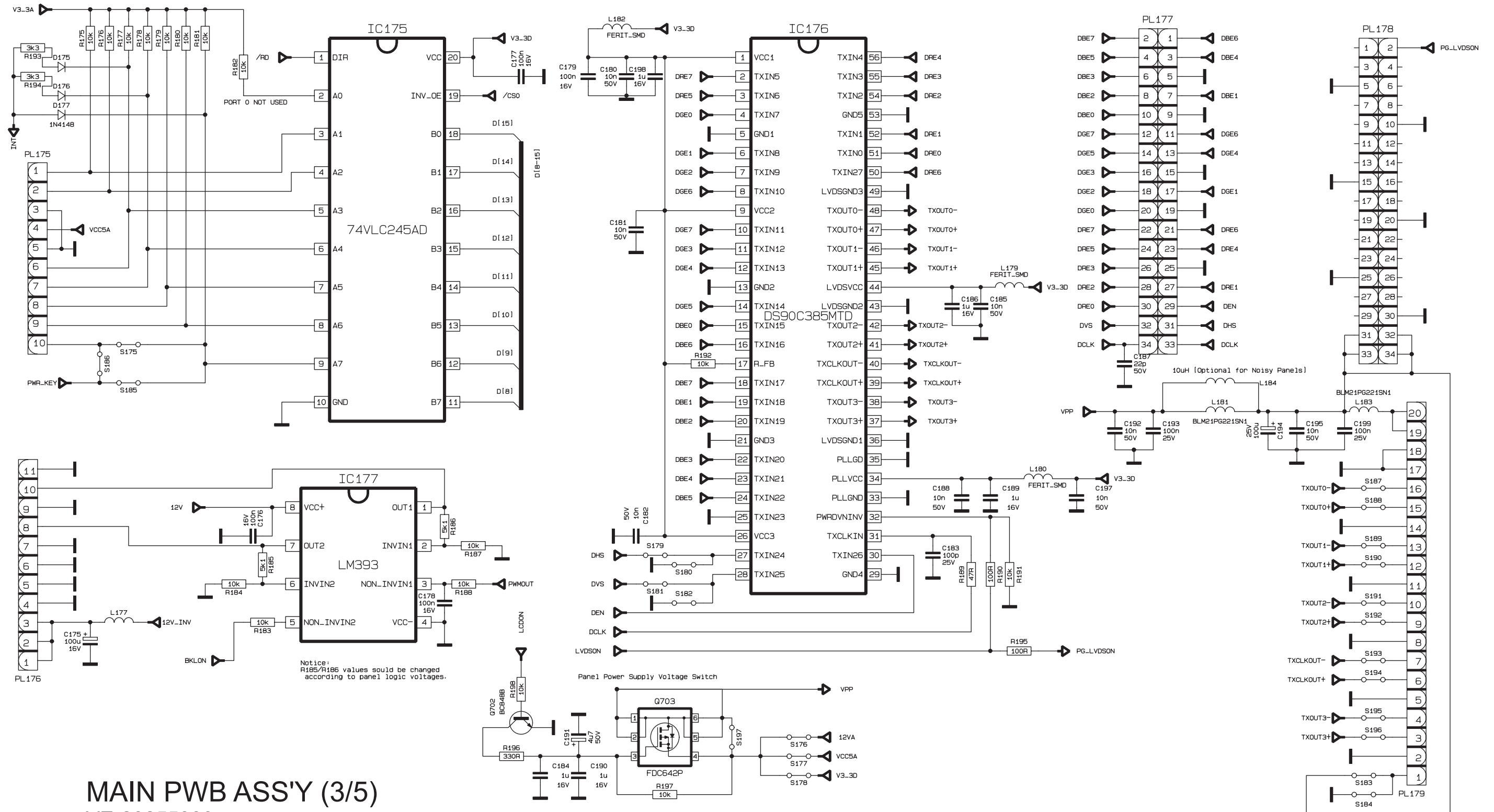


VE-20255339

MAIN PWB ASS'Y (2/5)  
VE-20255339

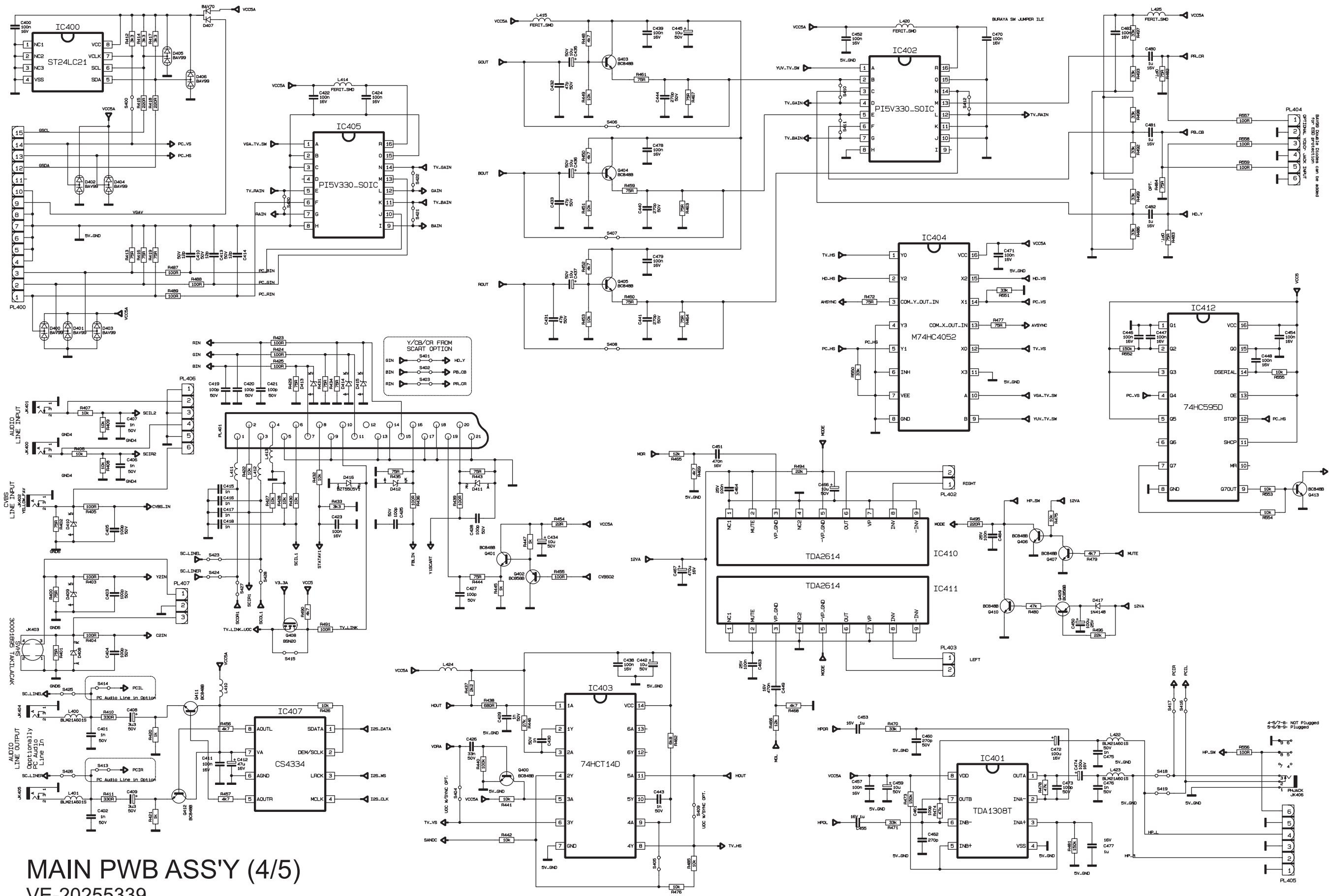


MAIN PWB CIRCUIT DIAGRAM (3/5)



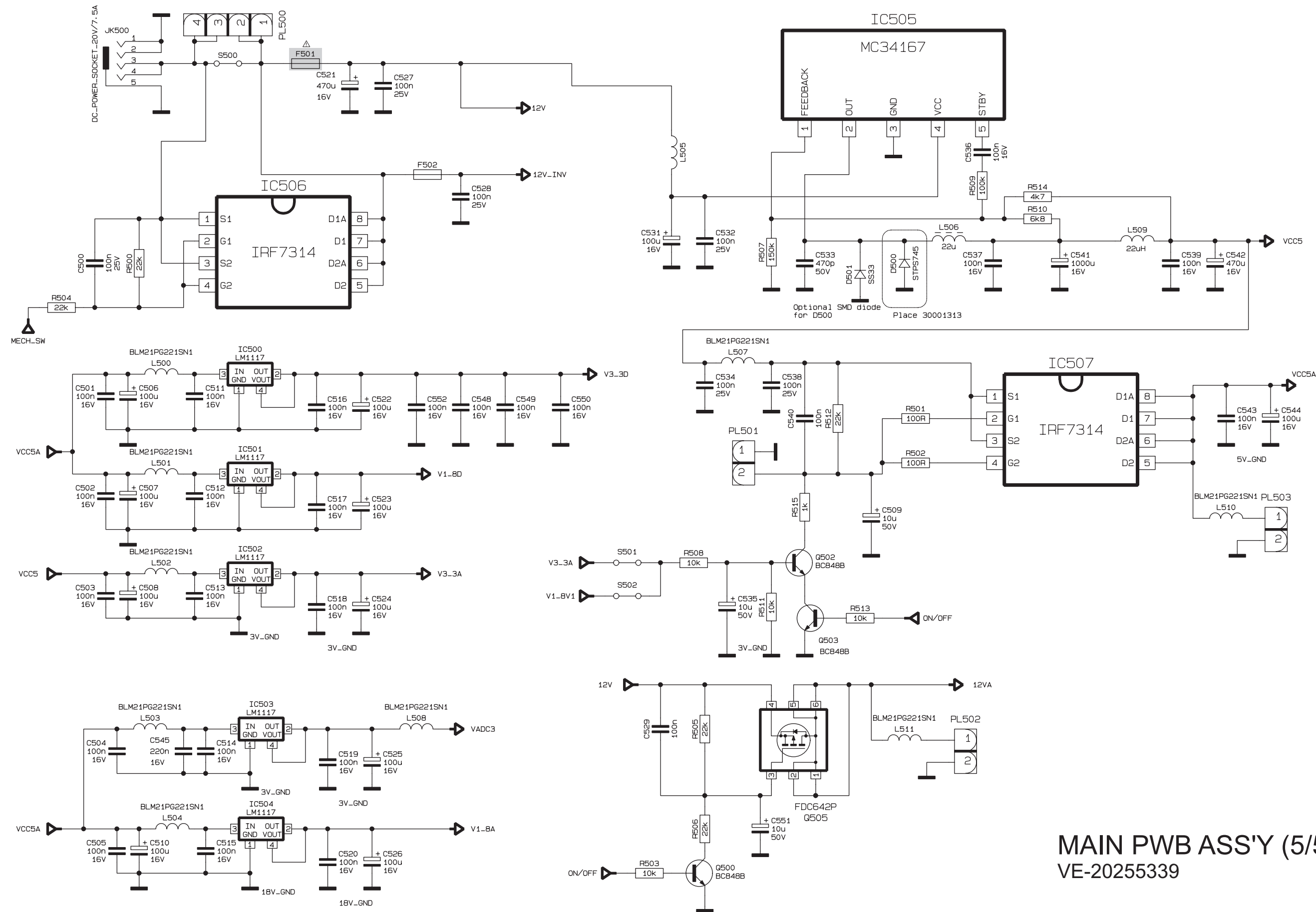
MAIN PWB ASS'Y (3/5)  
VE-20255339

MAIN PWB CIRCUIT DIAGRAM (4/5)



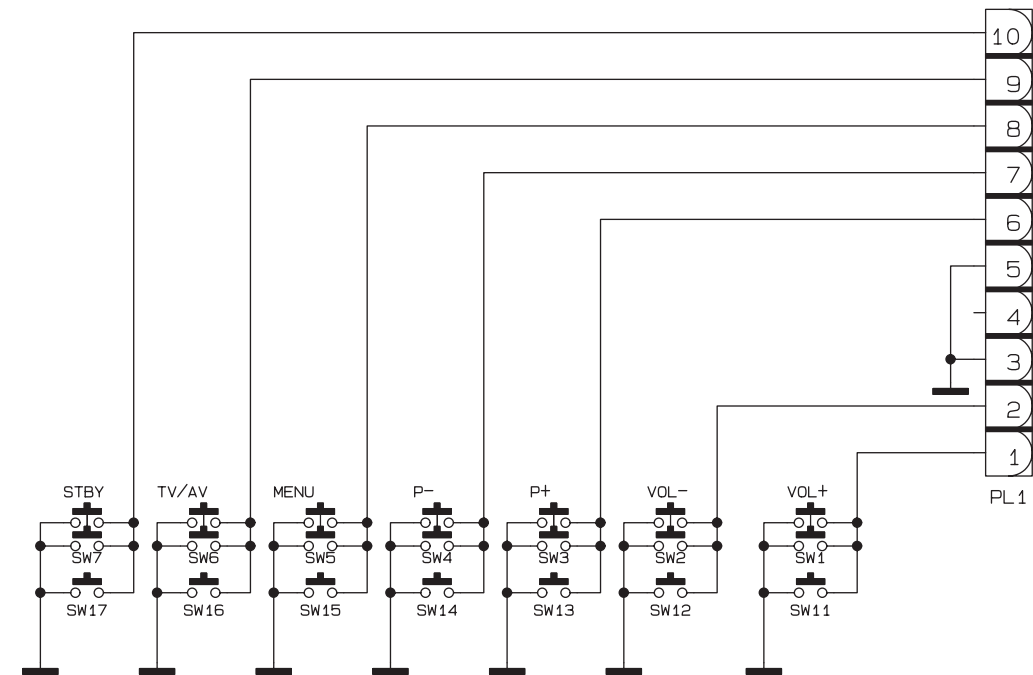
MAIN PWB ASS'Y (4/5)  
VE-20255339

MAIN PWB CIRCUIT DIAGRAM (5/5)



MAIN PWB ASS'Y (5/5)  
VE-20255339

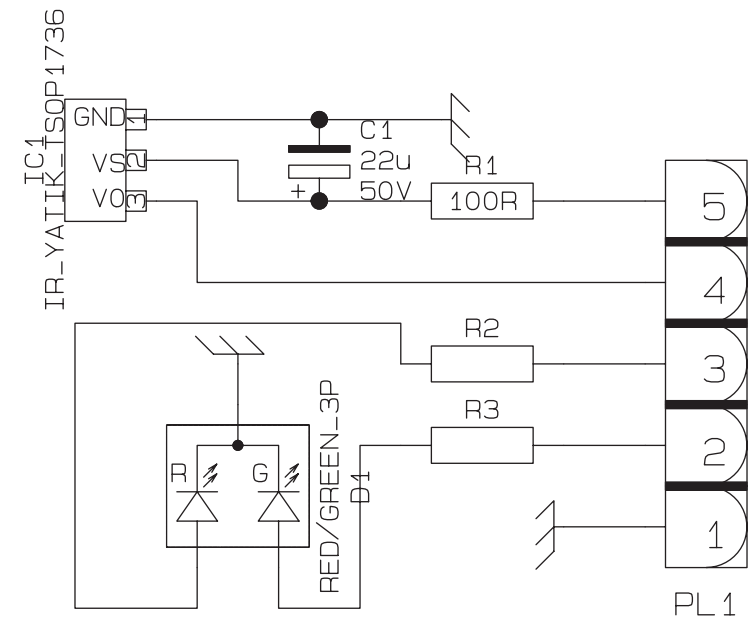
SIDE CONTROL PWB CIRCUIT DIAGRAM



SIDE CONTROL P.W.B ASS'Y  
VE-20235650

c17TK71\_0302\_1/1\_0.0

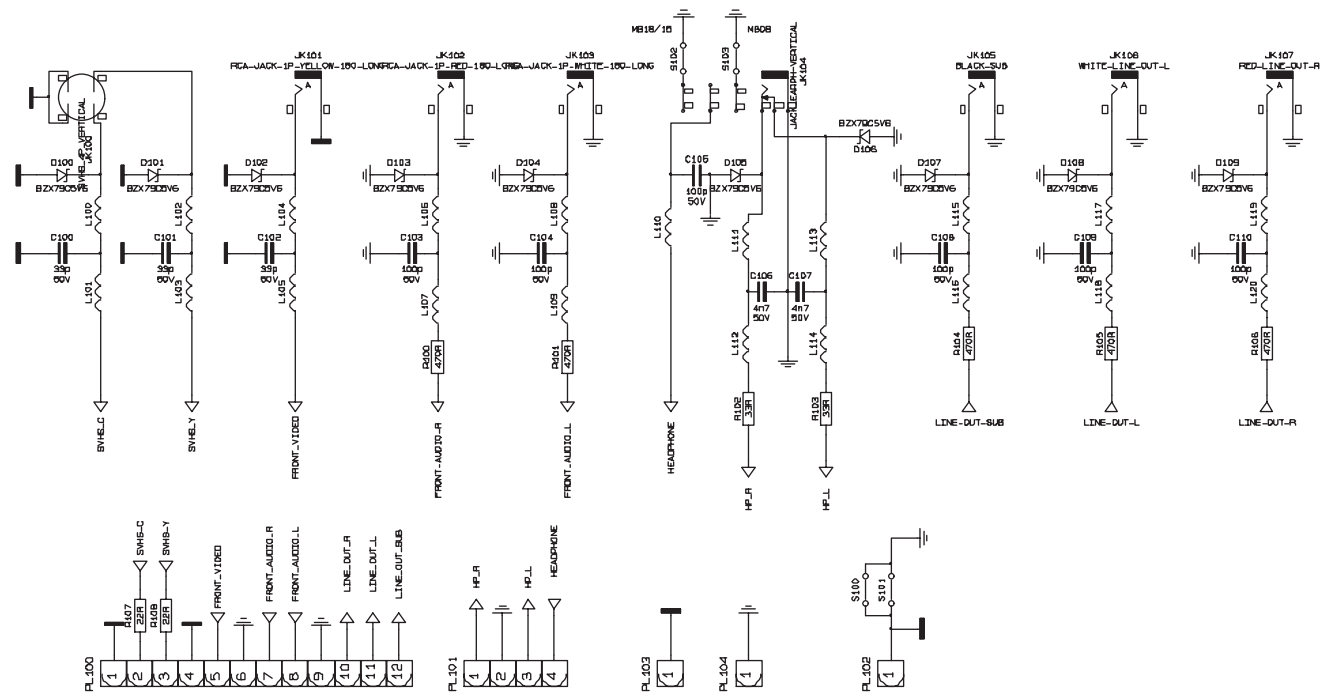
LED PWB CIRCUIT DIAGRAM



LED P.W.B ASS'Y  
VE-20247127

c17LD41\_0302\_1/1\_0.0

AV JACK PWB CIRCUIT DIAGRAM

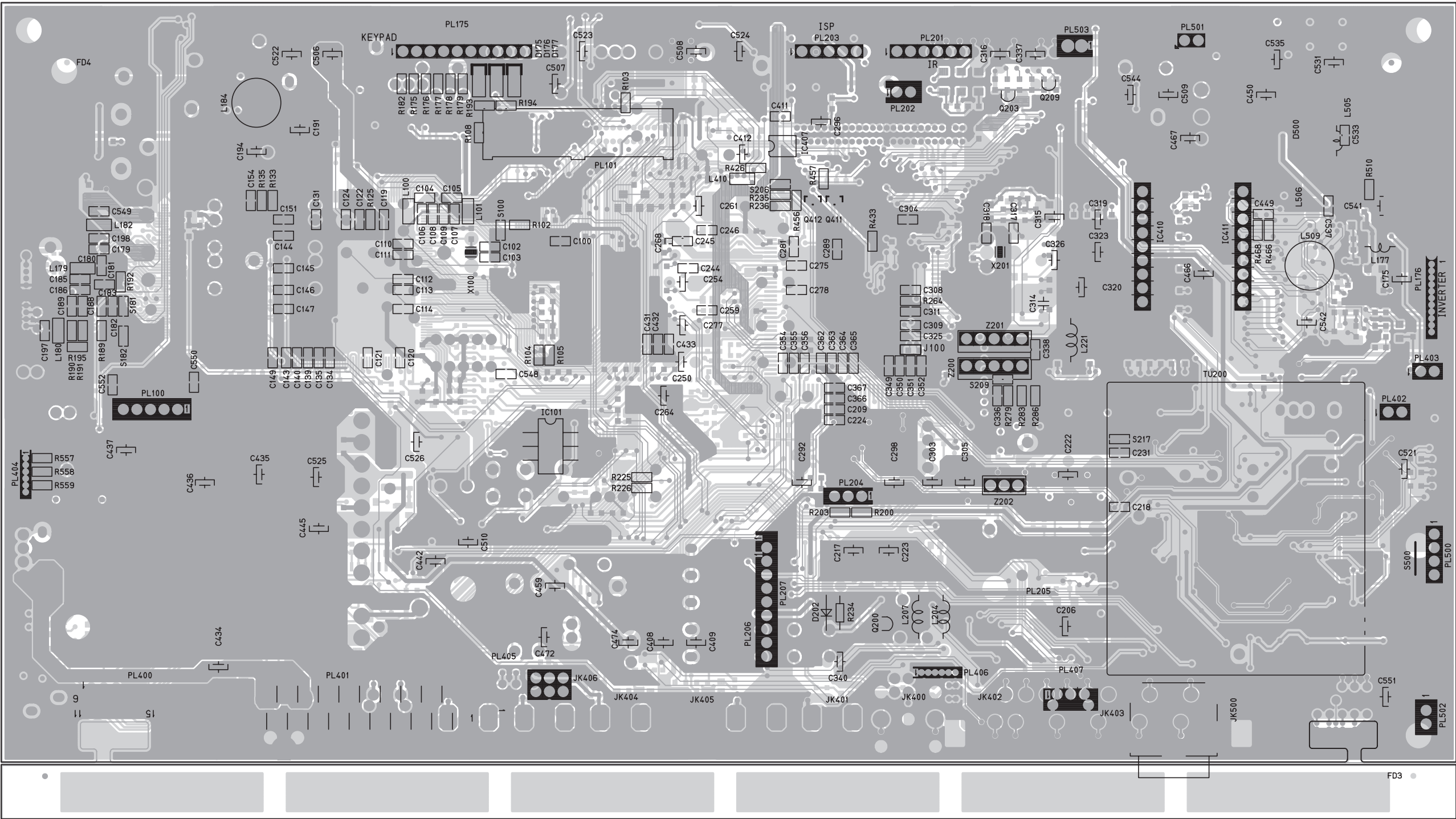


AV JACK P.W.B ASS'Y  
VE-20239086

c17BAV01-2\_0302\_1/1\_0.0

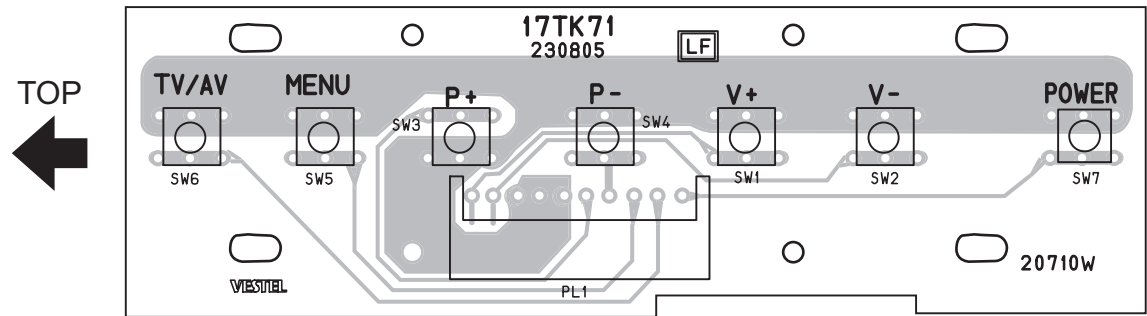
MAIN PWB PATTERN [SOLDER SIDE]



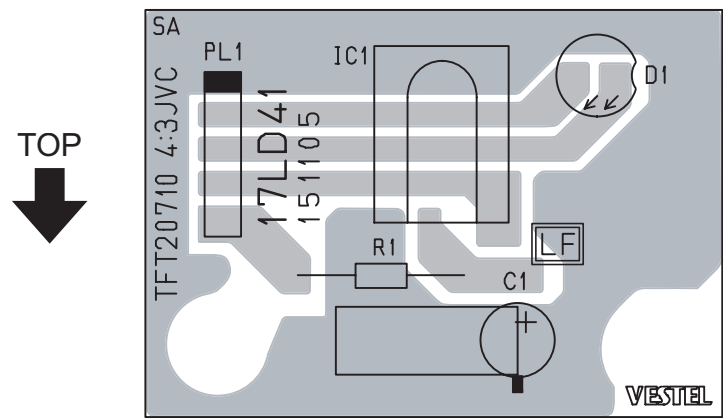


TOP  
↑

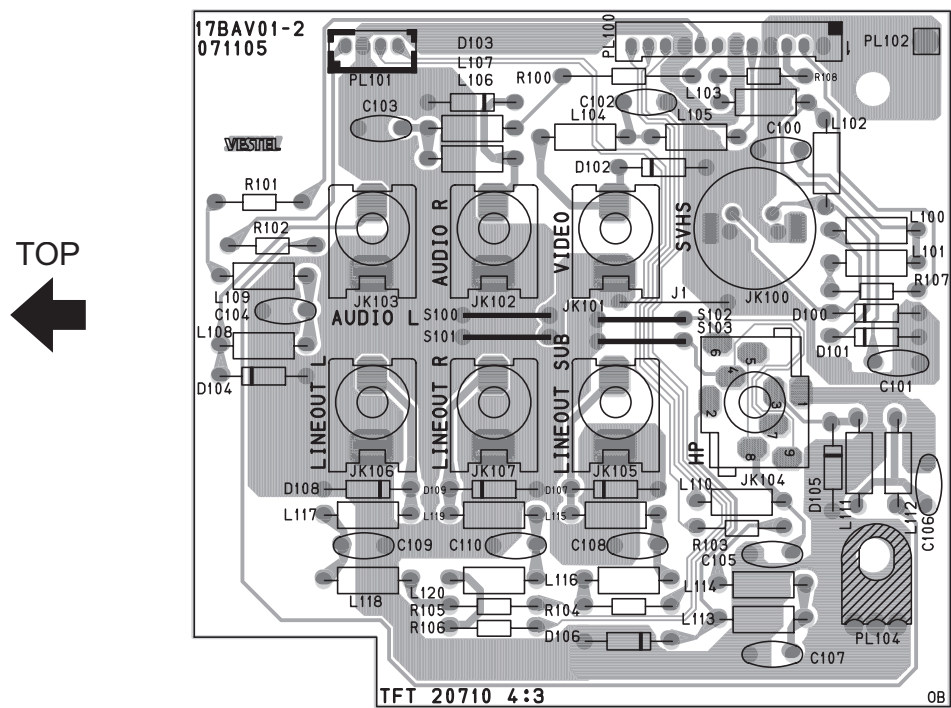
SIDE CONTROL PWB PATTERN



LED PWB PATTERN



AV JACK PWB PATTERN





Victor Company of Japan, Limited  
Flat Panel Display Category 12, 3-chome, Moriya-cho, Kanagawa-ku, Yokohama-city, Kanagawa-prefecture, 221-8528, Japan

(No.YA413)



Printed in Japan  
VPT

# PARTS LIST

## CAUTION

- The parts identified by the  $\Delta$  symbol are important for the safety . Whenever replacing these parts, be sure to use specified ones to secure the safety.
- The parts not indicated in this Parts List and those which are filled with lines --- in the Parts No. columns will not be supplied.
- P.W. BOARD Ass'y will not be supplied, but those which are filled with the Parts No. in the Parts No. columns will be supplied.

### ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

| RESISTORS |                                                  | CAPACITORS      |                                               |
|-----------|--------------------------------------------------|-----------------|-----------------------------------------------|
| CR        | Carbon Resistor                                  | C CAP.          | Ceramic Capacitor                             |
| FR        | Fusible Resistor                                 | E CAP.          | Electrolytic Capacitor                        |
| PR        | Plate Resistor                                   | M CAP.          | Mylar Capacitor                               |
| VR        | Variable Resistor                                | CH CAP.         | Chip Capacitor                                |
| HV R      | High Voltage Resistor                            | HV CAP.         | High Voltage Capacitor                        |
| MF R      | Metal Film Resistor                              | MF CAP.         | Metalized Film Capacitor                      |
| MG R      | Metal Glazed Resistor                            | MM CAP.         | Metalized Mylar Capacitor                     |
| MP R      | Metal Plate Resistor                             | MP CAP.         | Metalized Polystyrol Capacitor                |
| OM R      | Metal Oxide Film Resistor                        | PP CAP.         | Polypropylene Capacitor                       |
| CMF R     | Coating Metal Film Resistor                      | PS CAP.         | Polystyrol Capacitor                          |
| UNF R     | Non-Flammable Resistor                           | TF CAP.         | Thin Film Capacitor                           |
| CH V R    | Chip Variable Resistor                           | MPP CAP.        | Metalized Polypropylene Capacitor             |
| CH MG R   | Chip Metal Glazed Resistor                       | TAN. CAP.       | Tantalum Capacitor                            |
| COMP. R   | Composition Resistor                             | CH C CAP.       | Chip Ceramic Capacitor                        |
| LPTC R    | Linear Positive Temperature Coefficient Resistor | BP E CAP.       | Bi-Polar Electrolytic Capacitor               |
|           |                                                  | CH AL E CAP.    | Chip Aluminum Electrolytic Capacitor          |
|           |                                                  | CH AL BP CAP.   | Chip Aluminum Bi-Polar Capacitor              |
|           |                                                  | CH TAN. E CAP.  | Chip Tantalum Electrolytic Capacitor          |
|           |                                                  | CH AL BP E CAP. | Chip Tantalum Bi-Polar Electrolytic Capacitor |

| RESISTORS |           |           |            |            |            |              |              |              |              |
|-----------|-----------|-----------|------------|------------|------------|--------------|--------------|--------------|--------------|
| F         | G         | J         | K          | M          | N          | R            | H            | Z            | P            |
| $\pm 1\%$ | $\pm 2\%$ | $\pm 5\%$ | $\pm 10\%$ | $\pm 20\%$ | $\pm 30\%$ | +30%<br>-10% | +50%<br>-10% | +80%<br>-20% | +100%<br>-0% |

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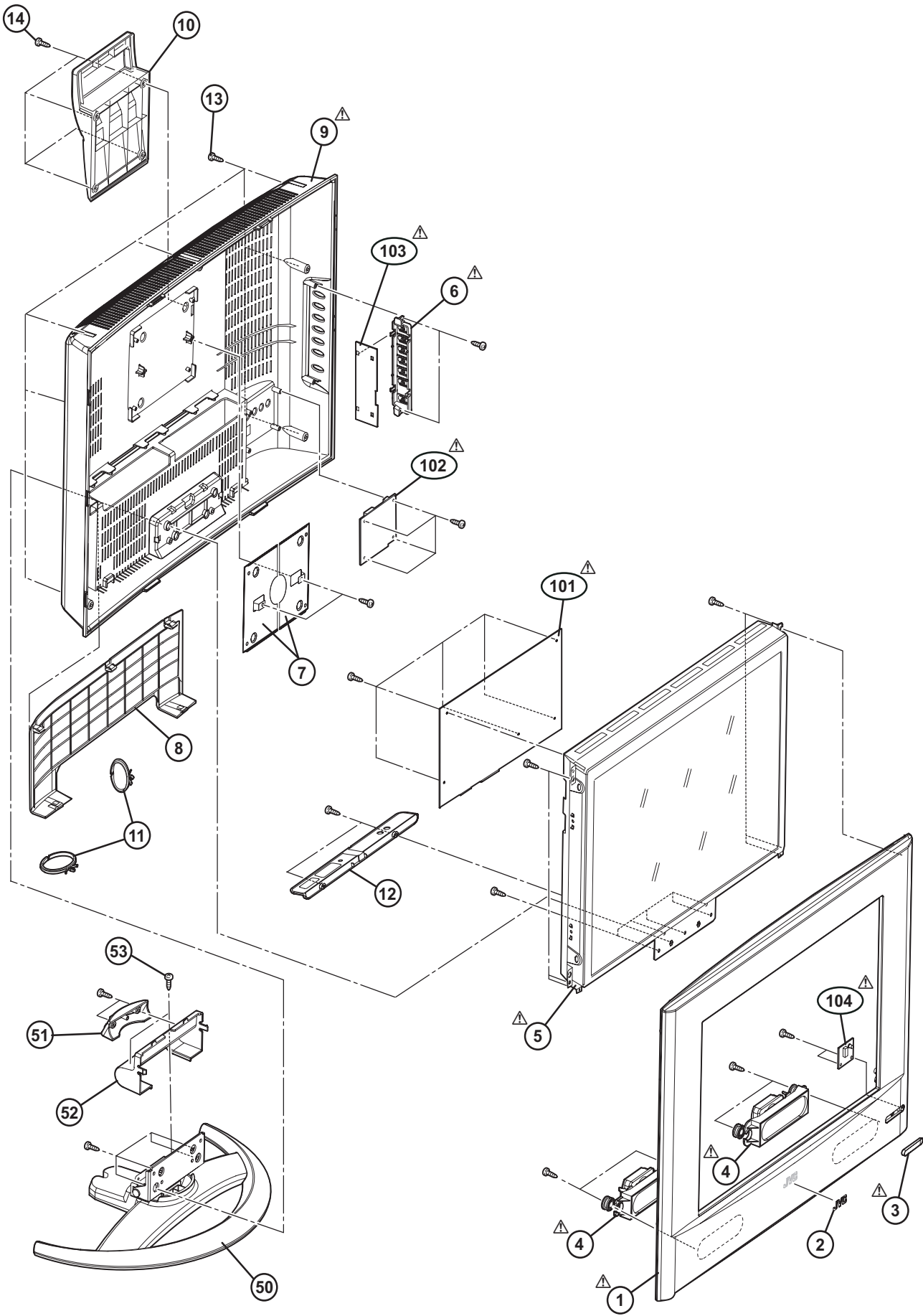
## USING P.W. BOARD & REMOTE CONTROL UNIT

| P.W.B ASS'Y name    | P.W.B ASS'Y No. |            |
|---------------------|-----------------|------------|
|                     | LT-20J50SJ      | LT-20J50SU |
| MAIN P.W.B          | VE-20255339     | ←          |
| AV JACK P.W.B       | VE-20239086     | ←          |
| SIDE CONTROL P.W.B  | VE-20235650     | ←          |
| LED P.W.B           | VE-20247127     | ←          |
| REMOTE CONTROL UNIT | VE-30039453     | ←          |

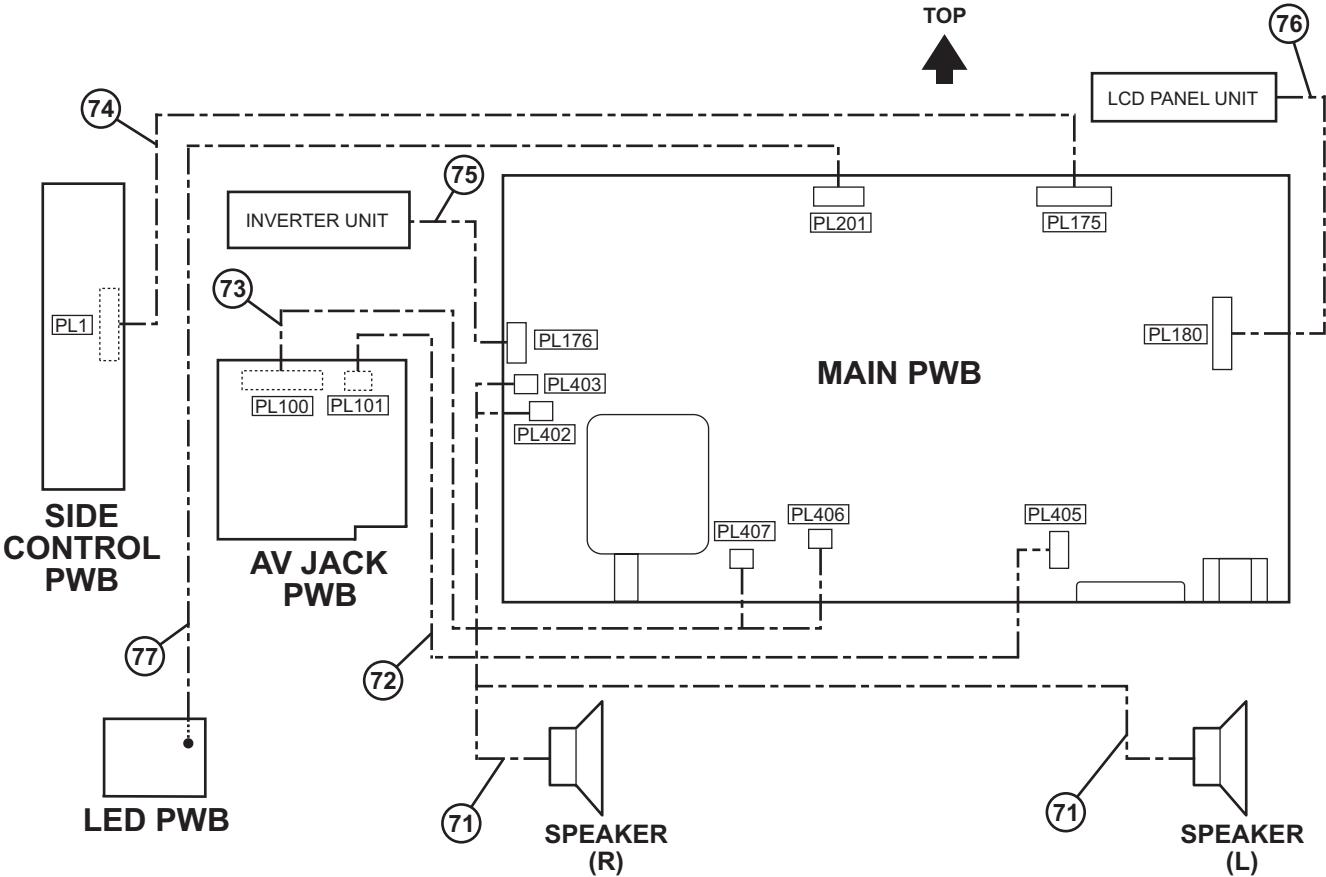
# EXPLODED VIEW-1,2 PARTS LIST

| △ | Ref.No. | Part No.    | Part Name            | Description                      | Local |
|---|---------|-------------|----------------------|----------------------------------|-------|
| △ | 1       | VE-20242970 | FRONT COVER          |                                  |       |
|   | 2       | VE-20181267 | LOGO JVC             |                                  |       |
| △ | 3       | VE-20233912 | LENS                 |                                  |       |
| △ | 4       | VE-30034322 | SPEAKER              | 16ohm 5W 3x10cm(x2)              |       |
| △ | 5       | VE-30036578 | LCD PANEL UNIT       |                                  |       |
| △ | 6       | VE-20224812 | FUNCTION BUTTON      |                                  |       |
|   | 7       | VE-35012930 | METAL HANG           | (x2)                             |       |
|   | 8       | VE-20242976 | BACK DOOR            |                                  |       |
| △ | 9       | VE-20255273 | BACK COVER           |                                  |       |
|   | 10      | VE-20182430 | HANDLE               |                                  |       |
|   | 11      | VE-20176416 | CABLE HOLDER         | (x2)                             |       |
|   | 12      | VE-20246963 | BRACKET SOCKET COVER |                                  |       |
|   | 13      | VE-35008875 | SCREW                | For BACK COVER(M4x16)(x7)        |       |
|   | 14      | VE-35000185 | SCREW                | For HANDLE (M4x8)(x4)            |       |
|   | 50      | VE-20255288 | FOOT ASSEMBLY        |                                  |       |
|   | 51      | VE-20224795 | HINGE COVER          |                                  |       |
|   | 52      | VE-20224794 | FOOT TOP COVER       |                                  |       |
|   | 53      | VE-35008090 | SCREW                | For FOOT TOP COVER (M3.5x12)(x2) |       |
|   | 71      | VE-30037904 | E-HARNESS ASSY       | MAIN PL402/403 - SPEAKER         |       |
|   | 72      | VE-30042272 | E-HARNESS ASSY       | MAIN PL405 - AV JACK PL101       |       |
|   | 73      | VE-30043854 | E-HARNESS ASSY       | MAIN PL406/407 - AV JACK PL100   |       |
|   | 74      | VE-30045765 | E-HARNESS ASSY       | MAIN PL175 - SIDE CONTROL PL1    |       |
|   | 75      | VE-30033316 | E-HARNESS ASSY       | MAIN PL176 - INVERTER            |       |
|   | 76      | VE-30023877 | DIGITAL CABLE        | MAIN PL180 - LCD PANEL UNIT      |       |
|   | 77      | VE-30037373 | E-HARNESS ASSY       | MAIN PL201 - LED                 |       |
| △ | 101     | VE-20255339 | MAIN PWB             |                                  |       |
| △ | 102     | VE-20239086 | AV JACK PWB          |                                  |       |
| △ | 103     | VE-20235650 | SIDE CONTROL PWB     |                                  |       |
| △ | 104     | VE-20247127 | LED PWB              |                                  |       |

EXPLODED VIEW-1



EXPLODED VIEW-2



# PRINTED WIRING BOARD PARTS LIST

## MAIN P.W. BOARD ASS'Y (VE-20255339)

| △Ref No. | Part No.    | Part Name  | Description | Local | △Ref No. | Part No.    | Part Name   | Description | Local |
|----------|-------------|------------|-------------|-------|----------|-------------|-------------|-------------|-------|
| IC100    | VE-30027986 | IC         |             |       | C108     | VE-30012582 | CAPACITOR   | 10nF 50V K  |       |
| IC101    | VE-20230390 | IC         | (SERVICE)   |       | C109     | VE-30012582 | CAPACITOR   | 10nF 50V K  |       |
| IC102    | VE-LT-20J50 | IC         | (SERVICE)   |       | C110     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| IC175    | VE-30029845 | IC         |             |       | C111     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| IC177    | VE-30026744 | IC         |             |       | C112     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| IC203    | VE-30028012 | IC         |             |       | C113     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| IC400    | VE-30018006 | IC         |             |       | C114     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| IC401    | VE-30010024 | IC         |             |       | C116     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| IC403    | VE-30010807 | IC         |             |       | C117     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| IC404    | VE-30010822 | IC         |             |       | C118     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| IC405    | VE-30019372 | IC         |             |       | C119     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| IC410    | VE-30031912 | IC         |             |       | C120     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| IC411    | VE-30031912 | IC         |             |       | C121     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| IC500    | VE-30033064 | IC         |             |       | C122     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| IC501    | VE-30020607 | IC         |             |       | C123     | VE-30012564 | CAPACITOR   | 18pF 50V J  |       |
| IC502    | VE-30033064 | IC         |             |       | C124     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| IC503    | VE-30033064 | IC         |             |       | C125     | VE-30012560 | CAPACITOR   | 100pF 50V J |       |
| IC504    | VE-30020607 | IC         |             |       | C126     | VE-30012610 | CAPACITOR   | 10nF 50V J  |       |
| IC505    | VE-30028675 | IC         |             |       | C127     | VE-30037180 | CAPACITOR   | 3.9nF 50V J |       |
| IC507    | VE-30018029 | TRANSISTOR |             |       | C128     | VE-30037178 | CAPACITOR   | 39nF 25 J   |       |
| Q200     | VE-30001454 | TRANSISTOR |             |       | C130     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| Q203     | VE-30001452 | TRANSISTOR |             |       | C131     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| Q204     | VE-30001457 | TRANSISTOR |             |       | C132     | VE-30012560 | CAPACITOR   | 100pF 50V J |       |
| Q205     | VE-30001457 | TRANSISTOR |             |       | C133     | VE-30012610 | CAPACITOR   | 10nF 50V J  |       |
| Q206     | VE-30024724 | TRANSISTOR |             |       | C134     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| Q207     | VE-30001457 | TRANSISTOR |             |       | C135     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| Q208     | VE-30001457 | TRANSISTOR |             |       | C136     | VE-30012590 | CAPACITOR   | 47nF 50V K  |       |
| Q209     | VE-30001452 | TRANSISTOR |             |       | C138     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| Q210     | VE-30024724 | TRANSISTOR |             |       | C139     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| Q211     | VE-30029775 | TRANSISTOR |             |       | C140     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| Q212     | VE-30029775 | TRANSISTOR |             |       | C141     | VE-30012590 | CAPACITOR   | 47nF 50V K  |       |
| Q213     | VE-30001457 | TRANSISTOR |             |       | C142     | VE-30012581 | CAPACITOR   | 1nF 50V K   |       |
| Q400     | VE-30001457 | TRANSISTOR |             |       | C143     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| Q401     | VE-30001457 | TRANSISTOR |             |       | C144     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| Q402     | VE-30001458 | TRANSISTOR |             |       | C145     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| Q403     | VE-30001457 | TRANSISTOR |             |       | C146     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| Q404     | VE-30001457 | TRANSISTOR |             |       | C147     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| Q405     | VE-30001457 | TRANSISTOR |             |       | C148     | VE-30012590 | CAPACITOR   | 47nF 50V K  |       |
| Q406     | VE-30001457 | TRANSISTOR |             |       | C149     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| Q407     | VE-30001457 | TRANSISTOR |             |       | C151     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| Q409     | VE-30001458 | TRANSISTOR |             |       | C154     | VE-30012573 | CAPACITOR   | 47pF 50V J  |       |
| Q410     | VE-30001457 | TRANSISTOR |             |       | C156     | VE-30031604 | CAPACITOR   | 10pF 50V F  |       |
| Q500     | VE-30001457 | TRANSISTOR |             |       | C157     | VE-30031604 | CAPACITOR   | 10pF 50V F  |       |
| Q502     | VE-30001457 | TRANSISTOR |             |       | C158     | VE-30031604 | CAPACITOR   | 10pF 50V F  |       |
| Q503     | VE-30001457 | TRANSISTOR |             |       | C159     | VE-30031604 | CAPACITOR   | 10pF 50V F  |       |
| Q505     | VE-30018060 | TRANSISTOR |             |       | C160     | VE-30031604 | CAPACITOR   | 10pF 50V F  |       |
| Q702     | VE-30001457 | TRANSISTOR |             |       | C161     | VE-30031604 | CAPACITOR   | 10pF 50V F  |       |
| Q703     | VE-30018060 | TRANSISTOR |             |       | C176     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| D175     | VE-30001285 | DIODE      |             |       | C177     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| D176     | VE-30001285 | DIODE      |             |       | C178     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| D177     | VE-30001285 | DIODE      |             |       | C192     | VE-30012582 | CAPACITOR   | 10nF 50V K  |       |
| D200     | VE-30001285 | DIODE      |             |       | C193     | VE-30012603 | CAPACITOR   | 100nF 25V K |       |
| D201     | VE-30007169 | DIODE      |             |       | C194     | VE-30000353 | E CAPACITOR | 100uF 25V M |       |
| D202     | VE-30001377 | Z DIODE    |             |       | C195     | VE-30012582 | CAPACITOR   | 10nF 50V K  |       |
| D203     | VE-30001285 | DIODE      |             |       | C199     | VE-30012603 | CAPACITOR   | 100nF 25V K |       |
| D204     | VE-30012411 | DIODE      |             |       | C206     | VE-30000400 | E CAPACITOR | 47uF 50V M  |       |
| D400     | VE-30007169 | DIODE      |             |       | C217     | VE-30000345 | E CAPACITOR | 10uF 50V M  |       |
| D401     | VE-30007169 | DIODE      |             |       | C218     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| D402     | VE-30007169 | DIODE      |             |       | C220     | VE-30012603 | CAPACITOR   | 100nF 25V K |       |
| D403     | VE-30007169 | DIODE      |             |       | C222     | VE-30000352 | E CAPACITOR | 100uF 16V M |       |
| D404     | VE-30007169 | DIODE      |             |       | C223     | VE-30000345 | E CAPACITOR | 10uF 50V M  |       |
| D405     | VE-30007169 | DIODE      |             |       | C225     | VE-30012603 | CAPACITOR   | 100nF 25V K |       |
| D406     | VE-30007169 | DIODE      |             |       | C231     | VE-30012590 | CAPACITOR   | 47nF 50V K  |       |
| D407     | VE-30019996 | DIODE      |             |       | C233     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| D408     | VE-30038476 | Z DIODE    |             |       | C241     | VE-30012589 | CAPACITOR   | 4.7nF 50V K |       |
| D409     | VE-30038476 | Z DIODE    |             |       | C242     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| D410     | VE-30038476 | Z DIODE    |             |       | C244     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| D411     | VE-30038476 | Z DIODE    |             |       | C245     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| D412     | VE-30038476 | Z DIODE    |             |       | C246     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| D413     | VE-30038476 | Z DIODE    |             |       | C249     | VE-30016126 | CAPACITOR   | 220nF 16V K |       |
| D414     | VE-30038476 | Z DIODE    |             |       | C250     | VE-30000345 | E CAPACITOR | 10uF 50V M  |       |
| D415     | VE-30038476 | Z DIODE    |             |       | C252     | VE-30012589 | CAPACITOR   | 4.7nF 50V K |       |
| D417     | VE-30001285 | DIODE      |             |       | C253     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| D500     | VE-30001313 | DIODE      |             |       | C254     | VE-30000352 | E CAPACITOR | 100uF 16V M |       |
| C100     | VE-30012603 | CAPACITOR  | 100nF 25V K |       | C255     | VE-30016126 | CAPACITOR   | 220nF 16V K |       |
| C101     | VE-30012603 | CAPACITOR  | 100nF 25V K |       | C256     | VE-30016126 | CAPACITOR   | 220nF 16V K |       |
| C102     | VE-30012608 | CAPACITOR  | 27pF 50V J  |       | C257     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| C103     | VE-30012608 | CAPACITOR  | 27pF 50V J  |       | C258     | VE-30012568 | CAPACITOR   | 270pF 50V J |       |
| C104     | VE-30016654 | CAPACITOR  | 100nF 16V K |       | C259     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| C105     | VE-30016654 | CAPACITOR  | 100nF 16V K |       | C260     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
| C106     | VE-30020694 | CAPACITOR  | 1uF 16V Z   |       | C261     | VE-30000352 | E CAPACITOR | 100uF 16V M |       |
| C107     | VE-30020694 | CAPACITOR  | 1uF 16V Z   |       | C262     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
|          |             |            |             |       | C263     | VE-30012588 | CAPACITOR   | 33nF 50V K  |       |
|          |             |            |             |       | C264     | VE-30000352 | E CAPACITOR | 100uF 16V M |       |
|          |             |            |             |       | C265     | VE-30016654 | CAPACITOR   | 100nF 16V K |       |
|          |             |            |             |       | C266     | VE-30016126 | CAPACITOR   | 220nF 16V K |       |
|          |             |            |             |       | C267     | VE-30012588 | CAPACITOR   | 33nF 50V K  |       |

| △Ref No. | Part No.    | Part Name   | Description Local | △Ref No. | Part No.    | Part Name   | Description Local |
|----------|-------------|-------------|-------------------|----------|-------------|-------------|-------------------|
| C268     | VE-30000352 | E CAPACITOR | 100uF 16V M       | C407     | VE-30012581 | CAPACITOR   | 1nF 50V K         |
| C271     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C410     | VE-30012559 | CAPACITOR   | 10pF 50V D        |
| C273     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C413     | VE-30012559 | CAPACITOR   | 10pF 50V D        |
| C274     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C414     | VE-30012559 | CAPACITOR   | 10pF 50V D        |
| C275     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C415     | VE-30012581 | CAPACITOR   | 1nF 50V K         |
| C276     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C416     | VE-30012581 | CAPACITOR   | 1nF 50V K         |
| C277     | VE-30000400 | E CAPACITOR | 47uF 50V M        | C417     | VE-30012581 | CAPACITOR   | 1nF 50V K         |
| C278     | VE-30012581 | CAPACITOR   | 1nF 50V K         | C418     | VE-30012581 | CAPACITOR   | 1nF 50V K         |
| C279     | VE-30012590 | CAPACITOR   | 47nF 50V K        | C419     | VE-30012560 | CAPACITOR   | 100pF 50V J       |
| C281     | VE-30016126 | CAPACITOR   | 220nF 16V K       | C420     | VE-30012560 | CAPACITOR   | 100pF 50V J       |
| C282     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C421     | VE-30012560 | CAPACITOR   | 100pF 50V J       |
| C283     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C422     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C284     | VE-30016126 | CAPACITOR   | 220nF 16V K       | C423     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C285     | VE-30016126 | CAPACITOR   | 220nF 16V K       | C424     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C286     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C425     | VE-30012560 | CAPACITOR   | 100pF 50V J       |
| C287     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C426     | VE-30012588 | CAPACITOR   | 33nF 50V K        |
| C288     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C427     | VE-30012560 | CAPACITOR   | 100pF 50V J       |
| C289     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C428     | VE-30012560 | CAPACITOR   | 100pF 50V J       |
| C290     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C429     | VE-30012581 | CAPACITOR   | 1nF 50V K         |
| C292     | VE-30000384 | E CAPACITOR | 2.2uF 50V M       | C430     | VE-30012581 | CAPACITOR   | 1nF 50V K         |
| C293     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C431     | VE-30012573 | CAPACITOR   | 47pF 50V J        |
| C294     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C432     | VE-30012573 | CAPACITOR   | 47pF 50V J        |
| C295     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C433     | VE-30012573 | CAPACITOR   | 47pF 50V J        |
| C296     | VE-30000352 | E CAPACITOR | 100uF 16V M       | C434     | VE-30000345 | E CAPACITOR | 10uF 50V M        |
| C298     | VE-30000384 | E CAPACITOR | 2.2uF 50V M       | C435     | VE-30000345 | E CAPACITOR | 10uF 50V M        |
| C299     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C436     | VE-30000345 | E CAPACITOR | 10uF 50V M        |
| C301     | VE-30012581 | CAPACITOR   | 1nF 50V K         | C437     | VE-30000345 | E CAPACITOR | 10uF 50V M        |
| C302     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C438     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C303     | VE-30000345 | E CAPACITOR | 10uF 50V M        | C439     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C304     | VE-30016126 | CAPACITOR   | 220nF 16V K       | C440     | VE-30012568 | CAPACITOR   | 270pF 50V J       |
| C305     | VE-30000345 | E CAPACITOR | 10uF 50V M        | C441     | VE-30012568 | CAPACITOR   | 270pF 50V J       |
| C306     | VE-30016126 | CAPACITOR   | 220nF 16V K       | C442     | VE-30000345 | E CAPACITOR | 10uF 50V M        |
| C307     | VE-30016126 | CAPACITOR   | 220nF 16V K       | C443     | VE-30012581 | CAPACITOR   | 1nF 50V K         |
| C308     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C444     | VE-30012568 | CAPACITOR   | 270pF 50V J       |
| C309     | VE-30016126 | CAPACITOR   | 220nF 16V K       | C445     | VE-30000352 | E CAPACITOR | 100uF 16V M       |
| C310     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C449     | VE-30024768 | CAPACITOR   | 470nF 16V Z       |
| C311     | VE-30012592 | CAPACITOR   | 6.8nF 50V K       | C450     | VE-30034074 | E CAPACITOR | 100uF 25V M       |
| C312     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C451     | VE-30024768 | CAPACITOR   | 470nF 16V Z       |
| C313     | VE-30016126 | CAPACITOR   | 220nF 16V K       | C453     | VE-30020694 | CAPACITOR   | 1uF 16V Z         |
| C314     | VE-30000092 | CAPACITOR   | 220nF 63V J       | C455     | VE-30020694 | CAPACITOR   | 1uF 16V Z         |
| C315     | VE-30000352 | E CAPACITOR | 100uF 16V M       | C457     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C316     | VE-30000345 | E CAPACITOR | 10uF 50V M        | C459     | VE-30000345 | E CAPACITOR | 10uF 50V M        |
| C317     | VE-30016127 | CAPACITOR   | 6.8pF 50V D       | C460     | VE-30012568 | CAPACITOR   | 270pF 50V J       |
| C318     | VE-30016127 | CAPACITOR   | 6.8pF 50V D       | C461     | VE-30012560 | CAPACITOR   | 100pF 50V J       |
| C320     | VE-30000345 | E CAPACITOR | 10uF 50V M        | C462     | VE-30012568 | CAPACITOR   | 270pF 50V J       |
| C321     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C463     | VE-30012603 | CAPACITOR   | 100nF 25V K       |
| C322     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C464     | VE-30012603 | CAPACITOR   | 100nF 25V K       |
| C323     | VE-30000362 | E CAPACITOR | 1uF 50V M         | C466     | VE-30016085 | E CAPACITOR | 10uF 63V          |
| C324     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C467     | VE-30000407 | E CAPACITOR | 470uF 16V M       |
| C325     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C471     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C326     | VE-30000352 | E CAPACITOR | 100uF 16V M       | C472     | VE-30000352 | E CAPACITOR | 100uF 16V M       |
| C327     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C473     | VE-30012560 | CAPACITOR   | 100pF 50V J       |
| C328     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C474     | VE-30000352 | E CAPACITOR | 100uF 16V M       |
| C329     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C475     | VE-30012589 | CAPACITOR   | 4.7nF 50V K       |
| C330     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C476     | VE-30012589 | CAPACITOR   | 4.7nF 50V K       |
| C333     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C477     | VE-30020694 | CAPACITOR   | 1uF 16V Z         |
| C334     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C478     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C336     | VE-30020694 | CAPACITOR   | 1uF 16V Z         | C479     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C337     | VE-30000345 | E CAPACITOR | 10uF 50V M        | C484     | VE-30012509 | RESISTOR    | 1/16W 100K J      |
| C338     | VE-30012582 | CAPACITOR   | 10nF 50V K        | C501     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C339     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C502     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C340     | VE-30000393 | E CAPACITOR | 3.3uF 50V M       | C503     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C341     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C504     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C342     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C505     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C347     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C506     | VE-30000352 | E CAPACITOR | 100uF 16V M       |
| C349     | VE-30012573 | CAPACITOR   | 47pF 50V J        | C507     | VE-30000352 | E CAPACITOR | 100uF 16V M       |
| C350     | VE-30012573 | CAPACITOR   | 47pF 50V J        | C508     | VE-30000352 | E CAPACITOR | 100uF 16V M       |
| C351     | VE-30012573 | CAPACITOR   | 47pF 50V J        | C510     | VE-30000352 | E CAPACITOR | 100uF 16V M       |
| C352     | VE-30012573 | CAPACITOR   | 47pF 50V J        | C511     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C353     | VE-30012573 | CAPACITOR   | 47pF 50V J        | C512     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C354     | VE-30012573 | CAPACITOR   | 47pF 50V J        | C513     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C355     | VE-30012573 | CAPACITOR   | 47pF 50V J        | C514     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C356     | VE-30012573 | CAPACITOR   | 47pF 50V J        | C515     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C357     | VE-30012573 | CAPACITOR   | 47pF 50V J        | C516     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C358     | VE-30012573 | CAPACITOR   | 47pF 50V J        | C517     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C359     | VE-30012573 | CAPACITOR   | 47pF 50V J        | C518     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C360     | VE-30012573 | CAPACITOR   | 47pF 50V J        | C519     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C361     | VE-30012573 | CAPACITOR   | 47pF 50V J        | C520     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C364     | VE-30012573 | CAPACITOR   | 47pF 50V J        | C521     | VE-30000407 | E CAPACITOR | 470uF 16V M       |
| C365     | VE-30012573 | CAPACITOR   | 47pF 50V J        | C522     | VE-30000352 | E CAPACITOR | 100uF 16V M       |
| C366     | VE-30012573 | CAPACITOR   | 47pF 50V J        | C523     | VE-30000352 | E CAPACITOR | 100uF 16V M       |
| C367     | VE-30012573 | CAPACITOR   | 47pF 50V J        | C524     | VE-30000352 | E CAPACITOR | 100uF 16V M       |
| C368     | VE-30012573 | CAPACITOR   | 47pF 50V J        | C525     | VE-30000352 | E CAPACITOR | 100uF 16V M       |
| C369     | VE-30012573 | CAPACITOR   | 47pF 50V J        | C526     | VE-30000352 | E CAPACITOR | 100uF 16V M       |
| C370     | VE-30012573 | CAPACITOR   | 47pF 50V J        | C527     | VE-30012603 | CAPACITOR   | 100nF 25V K       |
| C400     | VE-30016654 | CAPACITOR   | 100nF 16V K       | C529     | VE-30016654 | CAPACITOR   | 100nF 16V K       |
| C403     | VE-30012560 | CAPACITOR   | 100pF 50V J       | C531     | VE-30018901 | E CAPACITOR | 100uF 50V M       |
| C404     | VE-30012560 | CAPACITOR   | 100pF 50V J       | C532     | VE-30012603 | CAPACITOR   | 100nF 25V K       |
| C405     | VE-30012560 | CAPACITOR   | 100pF 50V J       | C533     | VE-30012574 | CAPACITOR   | 470pF 50V J       |
| C406     | VE-30012581 | CAPACITOR   | 1nF 50V K         | C534     | VE-30012603 | CAPACITOR   | 100nF 25V K       |

| △Ref No. | Part No.    | Part Name   | Description Local | △Ref No. | Part No.    | Part Name | Description Local |
|----------|-------------|-------------|-------------------|----------|-------------|-----------|-------------------|
| C535     | VE-30016085 | E CAPACITOR | 10uF 63V          | R237     | VE-30012510 | RESISTOR  | 1/16W 100R J      |
| C536     | VE-30016654 | CAPACITOR   | 100nF 16V K       | R238     | VE-30012510 | RESISTOR  | 1/16W 100R J      |
| C537     | VE-30016654 | CAPACITOR   | 100nF 16V K       | R239     | VE-30012677 | RESISTOR  | 1/16W 3.3K J      |
| C538     | VE-30012603 | CAPACITOR   | 100nF 25V K       | R244     | VE-30012692 | RESISTOR  | 1/16W 4.7K J      |
| C539     | VE-30016654 | CAPACITOR   | 100nF 16V K       | R245     | VE-30012677 | RESISTOR  | 1/16W 3.3K J      |
| C540     | VE-30016654 | CAPACITOR   | 100nF 16V K       | R246     | VE-30012677 | RESISTOR  | 1/16W 3.3K J      |
| C541     | VE-30005819 | E CAPACITOR | 1000uF 16V M      | R250     | VE-30012510 | RESISTOR  | 1/16W 100R J      |
| C542     | VE-30031594 | E CAPACITOR | 2200uF 10V M      | R251     | VE-30012510 | RESISTOR  | 1/16W 100R J      |
| C543     | VE-30016654 | CAPACITOR   | 100nF 16V K       | R254     | VE-30012510 | RESISTOR  | 1/16W 100R J      |
| C544     | VE-30000352 | E CAPACITOR | 100uF 16V M       | R255     | VE-30012684 | RESISTOR  | 1/16W 330R J      |
| C545     | VE-30016126 | CAPACITOR   | 220nF 16V K       | R256     | VE-30012688 | RESISTOR  | 1/16W 390R J      |
| R100     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R257     | VE-30012510 | RESISTOR  | 1/16W 100R J      |
| R101     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R258     | VE-30012692 | RESISTOR  | 1/16W 4.7K J      |
| R102     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R259     | VE-30012641 | RESISTOR  | 1/16W 10K J       |
| R103     | VE-30012677 | RESISTOR    | 1/16W 3.3K J      | R260     | VE-30012510 | RESISTOR  | 1/16W 100R J      |
| R104     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R261     | VE-30012510 | RESISTOR  | 1/16W 100R J      |
| R105     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R262     | VE-30012684 | RESISTOR  | 1/16W 330R J      |
| R106     | VE-30012677 | RESISTOR    | 1/16W 3.3K J      | R263     | VE-30012684 | RESISTOR  | 1/16W 330R J      |
| R107     | VE-30012677 | RESISTOR    | 1/16W 3.3K J      | R264     | VE-30012657 | RESISTOR  | 1/16W 1K J        |
| R108     | VE-30012677 | RESISTOR    | 1/16W 3.3K J      | R265     | VE-30012657 | RESISTOR  | 1/16W 1K J        |
| R109     | VE-30012507 | RESISTOR    | 1/16W 1.5M J      | R266     | VE-30012509 | RESISTOR  | 1/16W 100K J      |
| R110     | VE-30012677 | RESISTOR    | 1/16W 3.3K J      | R267     | VE-30012689 | RESISTOR  | 1/16W 39K J       |
| R111     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R268     | VE-30012507 | RESISTOR  | 1/16W 1.5M J      |
| R112     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R269     | VE-30012692 | RESISTOR  | 1/16W 4.7K J      |
| R113     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R270     | VE-30012657 | RESISTOR  | 1/16W 1K J        |
| R114     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R271     | VE-30012644 | RESISTOR  | 1/16W 12K J       |
| R115     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R272     | VE-30015578 | RESISTOR  | 1/16W 2.2R J      |
| R116     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R273     | VE-30012696 | RESISTOR  | 1/16W 4.7K J      |
| R117     | VE-30012677 | RESISTOR    | 1/16W 3.3K J      | R274     | VE-30015578 | RESISTOR  | 1/16W 2.2R J      |
| R118     | VE-30012677 | RESISTOR    | 1/16W 3.3K J      | R275     | VE-30012644 | RESISTOR  | 1/16W 12K J       |
| R123     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R276     | VE-30012641 | RESISTOR  | 1/16W 10K J       |
| R124     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R277     | VE-30012707 | RESISTOR  | 1/16W 680R J      |
| R125     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R278     | VE-30012692 | RESISTOR  | 1/16W 4.7K J      |
| R126     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R279     | VE-30012657 | RESISTOR  | 1/16W 1K J        |
| R127     | VE-30012677 | RESISTOR    | 1/16W 3.3K J      | R280     | VE-30012696 | RESISTOR  | 1/16W 47K J       |
| R135     | VE-30020529 | FERRITE     |                   | R281     | VE-30012648 | RESISTOR  | 1/16W 150K J      |
| R136     | VE-30012677 | RESISTOR    | 1/16W 3.3K J      | R282     | VE-30012692 | RESISTOR  | 1/16W 4.7K J      |
| R137     | VE-30012677 | RESISTOR    | 1/16W 3.3K J      | R283     | VE-30012641 | RESISTOR  | 1/16W 10K J       |
| R138     | VE-30012677 | RESISTOR    | 1/16W 3.3K J      | R284     | VE-30012641 | RESISTOR  | 1/16W 10K J       |
| R142     | VE-30030692 | FERRITE NET |                   | R285     | VE-30015578 | RESISTOR  | 1/16W 2.2R J      |
| R143     | VE-30030692 | FERRITE NET |                   | R286     | VE-30012510 | RESISTOR  | 1/16W 100R J      |
| R144     | VE-30030692 | FERRITE NET |                   | R287     | VE-30012641 | RESISTOR  | 1/16W 10K J       |
| R145     | VE-30030692 | FERRITE NET |                   | R288     | VE-30015578 | RESISTOR  | 1/16W 2.2R J      |
| R146     | VE-30030692 | FERRITE NET |                   | R289     | VE-30012641 | RESISTOR  | 1/16W 10K J       |
| R147     | VE-30030692 | FERRITE NET |                   | R290     | VE-30012669 | RESISTOR  | 1/16W 22K J       |
| R149     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R291     | VE-30012657 | RESISTOR  | 1/16W 1K J        |
| R152     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R292     | VE-30012510 | RESISTOR  | 1/16W 100R J      |
| R153     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R293     | VE-30012510 | RESISTOR  | 1/16W 100R J      |
| R154     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R294     | VE-30012696 | RESISTOR  | 1/16W 47K J       |
| R155     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R310     | VE-30012668 | RESISTOR  | 1/16W 220R J      |
| R156     | VE-30012692 | RESISTOR    | 1/16W 4.7K J      | R311     | VE-30012668 | RESISTOR  | 1/16W 220R J      |
| R175     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R400     | VE-30000797 | RESISTOR  | 1/10W 75R J       |
| R176     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R401     | VE-30000797 | RESISTOR  | 1/10W 75R J       |
| R177     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R402     | VE-30000797 | RESISTOR  | 1/10W 75R J       |
| R178     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R403     | VE-30012510 | RESISTOR  | 1/16W 100R J      |
| R179     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R404     | VE-30012510 | RESISTOR  | 1/16W 100R J      |
| R180     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R405     | VE-30012510 | RESISTOR  | 1/16W 100R J      |
| R181     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R406     | VE-30000469 | RESISTOR  | 1/10W 1K J        |
| R182     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R407     | VE-30000469 | RESISTOR  | 1/10W 1K J        |
| R183     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R413     | VE-30000797 | RESISTOR  | 1/10W 75R J       |
| R184     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R414     | VE-30012677 | RESISTOR  | 1/16W 3.3K J      |
| R185     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R415     | VE-30012668 | RESISTOR  | 1/16W 220R J      |
| R186     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R416     | VE-30000797 | RESISTOR  | 1/10W 75R J       |
| R187     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R417     | VE-30012677 | RESISTOR  | 1/16W 3.3K J      |
| R188     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R418     | VE-30012668 | RESISTOR  | 1/16W 220R J      |
| R192     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R419     | VE-30000797 | RESISTOR  | 1/10W 75R J       |
| R196     | VE-30012677 | RESISTOR    | 1/16W 3.3K J      | R422     | VE-30000469 | RESISTOR  | 1/10W 1K J        |
| R197     | VE-30012669 | RESISTOR    | 1/16W 22K J       | R423     | VE-30012510 | RESISTOR  | 1/16W 100R J      |
| R198     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R424     | VE-30012510 | RESISTOR  | 1/16W 100R J      |
| R206     | VE-30012669 | RESISTOR    | 1/16W 22K J       | R425     | VE-30012510 | RESISTOR  | 1/16W 100R J      |
| R207     | VE-30012708 | RESISTOR    | 1/16W 68K J       | R429     | VE-30000797 | RESISTOR  | 1/10W 75R J       |
| R208     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R430     | VE-30000469 | RESISTOR  | 1/10W 1K J        |
| R211     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R431     | VE-30000797 | RESISTOR  | 1/10W 75R J       |
| R213     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R432     | VE-30000475 | RESISTOR  | 1/10W 10K J       |
| R216     | VE-30000464 | RESISTOR    | 1/10W 100R J      | R433     | VE-30012677 | RESISTOR  | 1/16W 3.3K J      |
| R217     | VE-30000464 | RESISTOR    | 1/10W 100R J      | R434     | VE-30000797 | RESISTOR  | 1/10W 75R J       |
| R224     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R435     | VE-30000797 | RESISTOR  | 1/10W 75R J       |
| R225     | VE-30012692 | RESISTOR    | 1/16W 4.7K J      | R436     | VE-30012510 | RESISTOR  | 1/16W 100R J      |
| R226     | VE-30012692 | RESISTOR    | 1/16W 4.7K J      | R437     | VE-30012659 | RESISTOR  | 1/16W 2.2K J      |
| R227     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R438     | VE-30012707 | RESISTOR  | 1/16W 680R J      |
| R228     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R439     | VE-30012510 | RESISTOR  | 1/16W 100R J      |
| R229     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R440     | VE-30012648 | RESISTOR  | 1/16W 150K J      |
| R230     | VE-30012674 | RESISTOR    | 1/16W 27K J       | R441     | VE-30012641 | RESISTOR  | 1/16W 10K J       |
| R231     | VE-30012982 | RESISTOR    | 1/16W 10R J       | R442     | VE-30012641 | RESISTOR  | 1/16W 10K J       |
| R232     | VE-30012696 | RESISTOR    | 1/16W 47K J       | R443     | VE-30000797 | RESISTOR  | 1/10W 75R J       |
| R233     | VE-30012641 | RESISTOR    | 1/16W 10K J       | R444     | VE-30000797 | RESISTOR  | 1/10W 75R J       |
| R234     | VE-30000706 | RESISTOR    | 1/4W 47R J        | R445     | VE-30012657 | RESISTOR  | 1/16W 1K J        |
| R235     | VE-30012677 | RESISTOR    | 1/16W 3.3K J      | R446     | VE-30012674 | RESISTOR  | 1/16W 27K J       |
| R236     | VE-30012510 | RESISTOR    | 1/16W 100R J      | R447     | VE-30012657 | RESISTOR  | 1/16W 1K J        |
|          |             |             |                   | R448     | VE-30012692 | RESISTOR  | 1/16W 4.7K J      |

| △Ref No. | Part No.    | Part Name    | Description  | Local | △Ref No. | Part No.    | Part Name    | Description   | Local |
|----------|-------------|--------------|--------------|-------|----------|-------------|--------------|---------------|-------|
| R449     | VE-30012641 | RESISTOR     | 1/16W 10K J  |       | L504     | VE-30020531 | FERRITE      |               |       |
| R450     | VE-30012692 | RESISTOR     | 1/16W 4.7K J |       | L505     | VE-30006712 | FERRITE BEAD |               |       |
| R451     | VE-30012641 | RESISTOR     | 1/16W 10K J  |       | L506     | VE-30019475 | FIXED COIL   | 47uH          |       |
| R452     | VE-30012692 | RESISTOR     | 1/16W 4.7K J |       | L507     | VE-30020531 | FERRITE      |               |       |
| R453     | VE-30012641 | RESISTOR     | 1/16W 10K J  |       | L508     | VE-30020531 | FERRITE      |               |       |
| R454     | VE-30012982 | RESISTOR     | 1/16W 10R J  |       | L509     | VE-30011450 | FIXED COIL   | 22uH          |       |
| R455     | VE-30012510 | RESISTOR     | 1/16W 100R J |       | L512     | VE-30020531 | FERRITE      |               |       |
| R459     | VE-30012713 | RESISTOR     | 1/16W 75R J  |       |          |             |              |               |       |
| R460     | VE-30012713 | RESISTOR     | 1/16W 75R J  |       | △F501    | VE-30035282 | FUSE         | 5A/32VDC      |       |
| R461     | VE-30012713 | RESISTOR     | 1/16W 75R J  |       | JK406    | VE-30032641 | JACK         | PC AUDIO IN   |       |
| R462     | VE-30012705 | RESISTOR     | 1/16W 6.8K J |       | JK500    | VE-30027932 | SOCKET       | DC IN         |       |
| R463     | VE-30012713 | RESISTOR     | 1/16W 75R J  |       | PL400    | VE-30033117 | D SOCKET     | PC INPUT      |       |
| R464     | VE-30012713 | RESISTOR     | 1/16W 75R J  |       | PL401    | VE-30018089 | SCART SOCET  | EXT-1         |       |
| R465     | VE-30012644 | RESISTOR     | 1/16W 12K J  |       | S416     | VE-30012657 | RESISTOR     | 1/16W 1K J    |       |
| R466     | VE-30012644 | RESISTOR     | 1/16W 12K J  |       | S417     | VE-30012657 | RESISTOR     | 1/16W 1K J    |       |
| R467     | VE-30012713 | RESISTOR     | 1/16W 75R J  |       | TU200    | VE-30029452 | TUNER        |               |       |
| R468     | VE-30012705 | RESISTOR     | 1/16W 6.8K J |       | X100     | VE-30017946 | CLYSTAT      | 14.318MHZ     |       |
| R469     | VE-30012705 | RESISTOR     | 1/16W 6.8K J |       | X201     | VE-30001741 | CLYSTAT      | 24.576MHZ     |       |
| R470     | VE-30012685 | RESISTOR     | 1/16W 33K J  |       | Z200     | VE-30012545 | SAW FILTER   |               |       |
| R471     | VE-30012685 | RESISTOR     | 1/16W 33K J  |       | Z201     | VE-30001692 | SAW FILTER   |               |       |
| R472     | VE-30012713 | RESISTOR     | 1/16W 75R J  |       |          |             |              |               |       |
| R473     | VE-30012648 | RESISTOR     | 1/16W 150K J |       |          |             |              |               |       |
| R474     | VE-30012689 | RESISTOR     | 1/16W 39K J  |       |          |             |              |               |       |
| R475     | VE-30012641 | RESISTOR     | 1/16W 10K J  |       |          |             |              |               |       |
| R476     | VE-30012641 | RESISTOR     | 1/16W 10K J  |       |          |             |              |               |       |
| R477     | VE-30012713 | RESISTOR     | 1/16W 75R J  |       |          |             |              |               |       |
| R478     | VE-30012689 | RESISTOR     | 1/16W 39K J  |       |          |             |              |               |       |
| R479     | VE-30012692 | RESISTOR     | 1/16W 4.7K J |       |          |             |              |               |       |
| R480     | VE-30012696 | RESISTOR     | 1/16W 47K J  |       |          |             |              |               |       |
| R481     | VE-30012648 | RESISTOR     | 1/16W 150K J |       | D100     | VE-30001343 | DIODE        |               |       |
| R485     | VE-30012641 | RESISTOR     | 1/16W 10K J  |       | D101     | VE-30001343 | DIODE        |               |       |
| R487     | VE-30000464 | RESISTOR     | 1/10W 100R J |       | D102     | VE-30001343 | DIODE        |               |       |
| R488     | VE-30000464 | RESISTOR     | 1/10W 100R J |       | D103     | VE-30001343 | DIODE        |               |       |
| R489     | VE-30000464 | RESISTOR     | 1/10W 100R J |       | D104     | VE-30001343 | DIODE        |               |       |
| R495     | VE-30012668 | RESISTOR     | 1/16W 220R J |       | D105     | VE-30001350 | DIODE        |               |       |
| R496     | VE-30012669 | RESISTOR     | 1/16W 22K J  |       | D106     | VE-30001350 | DIODE        |               |       |
| R501     | VE-30012510 | RESISTOR     | 1/16W 100R J |       |          |             |              |               |       |
| R502     | VE-30012510 | RESISTOR     | 1/16W 100R J |       | C100     | VE-30000239 | C CAPACITOR  | 33pF 50V J SL |       |
| R503     | VE-30012641 | RESISTOR     | 1/16W 10K J  |       | C101     | VE-30000239 | C CAPACITOR  | 33pF 50V J SL |       |
| R505     | VE-30012669 | RESISTOR     | 1/16W 22K J  |       | C102     | VE-30000239 | C CAPACITOR  | 33pF 50V J SL |       |
| R506     | VE-30012669 | RESISTOR     | 1/16W 22K J  |       | C103     | VE-30000191 | C CAPACITOR  | 100pF 50V J   |       |
| R507     | VE-30012648 | RESISTOR     | 1/16W 150K J |       | C104     | VE-30000191 | C CAPACITOR  | 100pF 50V J   |       |
| R508     | VE-30012641 | RESISTOR     | 1/16W 10K J  |       | C105     | VE-30000191 | C CAPACITOR  | 100pF 50V J   |       |
| R509     | VE-30012509 | RESISTOR     | 1/16W 100K J |       | C106     | VE-30000330 | C CAPACITOR  | 4.7nF 50V K   |       |
| R510     | VE-30012705 | RESISTOR     | 1/16W 6.8K J |       | C107     | VE-30000330 | C CAPACITOR  | 4.7nF 50V K   |       |
| R511     | VE-30012641 | RESISTOR     | 1/16W 10K J  |       |          |             |              |               |       |
| R512     | VE-30012669 | RESISTOR     | 1/16W 22K J  |       | R100     | VE-30000712 | RESISTOR     | 1/4W 470R J   |       |
| R513     | VE-30012641 | RESISTOR     | 1/16W 10K J  |       | R101     | VE-30000712 | RESISTOR     | 1/4W 470R J   |       |
| R514     | VE-30012692 | RESISTOR     | 1/16W 4.7K J |       | R102     | VE-30000650 | RESISTOR     | 1/4W 33R J    |       |
| R550     | VE-30012685 | RESISTOR     | 1/16W 33K J  |       | R103     | VE-30000650 | RESISTOR     | 1/4W 33R J    |       |
| R551     | VE-30012685 | RESISTOR     | 1/16W 33K J  |       | R107     | VE-30000580 | RESISTOR     | 1/4W 22R J    |       |
| R700     | VE-30014022 | RESISTOR     | 1/16W 47R J  |       | R108     | VE-30000580 | RESISTOR     | 1/4W 22R J    |       |
|          |             |              |              |       |          |             |              |               |       |
| L100     | VE-30001971 | FERRITE      |              |       | L100     | VE-30006712 | FERRITE BEAD |               |       |
| L101     | VE-30001971 | FERRITE      |              |       | L101     | VE-30006712 | FERRITE BEAD |               |       |
| L102     | VE-30001971 | FERRITE      |              |       | L102     | VE-30006712 | FERRITE BEAD |               |       |
| L103     | VE-30001971 | FERRITE      |              |       | L103     | VE-30006712 | FERRITE BEAD |               |       |
| L104     | VE-30001971 | FERRITE      |              |       | L104     | VE-30006712 | FERRITE BEAD |               |       |
| L104     | VE-30001971 | FERRITE      |              |       | L105     | VE-30006712 | FERRITE BEAD |               |       |
| L177     | VE-30006712 | FERRITE BEAD |              |       | L106     | VE-30006712 | FERRITE BEAD |               |       |
| L184     | VE-30032610 | FIXED COIL   |              |       | L107     | VE-30006712 | FERRITE BEAD |               |       |
| L201     | VE-30001971 | FERRITE      |              |       | L108     | VE-30006712 | FERRITE BEAD |               |       |
| L203     | VE-30001971 | FERRITE      |              |       | L109     | VE-30006712 | FERRITE BEAD |               |       |
| L204     | VE-30002002 | FIXED COIL   | 47uH K       |       | L110     | VE-30006712 | FERRITE BEAD |               |       |
| L206     | VE-30001971 | FERRITE      |              |       | L111     | VE-30006712 | FERRITE BEAD |               |       |
| L207     | VE-30002002 | FIXED COIL   | 47uH K       |       | L112     | VE-30006712 | FERRITE BEAD |               |       |
| L208     | VE-30001971 | FERRITE      |              |       | L113     | VE-30006712 | FERRITE BEAD |               |       |
| L209     | VE-30001971 | FERRITE      |              |       | L114     | VE-30006712 | FERRITE BEAD |               |       |
| L210     | VE-30001971 | FERRITE      |              |       |          |             |              |               |       |
| L211     | VE-30001971 | FERRITE      |              |       | JK100    | VE-30015112 | JACK         | S-VIDEO IN    |       |
| L212     | VE-30001971 | FERRITE      |              |       | JK101    | VE-30015338 | JACK         | VIDEO IN      |       |
| L213     | VE-30001971 | FERRITE      |              |       | JK102    | VE-30015337 | JACK         | AUDIO R IN    |       |
| L214     | VE-30001971 | FERRITE      |              |       | JK103    | VE-30015339 | JACK         | AUDIO L IN    |       |
| L215     | VE-30001971 | FERRITE      |              |       | JK104    | VE-30020016 | JACK         | HEADPHONE     |       |
| L216     | VE-30001971 | FERRITE      |              |       |          |             |              |               |       |
| L217     | VE-30001971 | FERRITE      |              |       |          |             |              |               |       |
| L218     | VE-30001971 | FERRITE      |              |       |          |             |              |               |       |
| L219     | VE-30000735 | RESISTOR     | 1/10W 4.7R J |       |          |             |              |               |       |
| L220     | VE-30001971 | FERRITE      |              |       |          |             |              |               |       |
| L221     | VE-30029701 | FIXED COIL   |              |       |          |             |              |               |       |
| L411     | VE-30001971 | FERRITE      |              |       |          |             |              |               |       |
| L412     | VE-30001971 | FERRITE      |              |       |          |             |              |               |       |
| L413     | VE-30001971 | FERRITE      |              |       |          |             |              |               |       |
| L414     | VE-30001971 | FERRITE      |              |       |          |             |              |               |       |
| L415     | VE-30001971 | FERRITE      |              |       |          |             |              |               |       |
| L422     | VE-30016162 | FERRITE      |              |       |          |             |              |               |       |
| L423     | VE-30016162 | FERRITE      |              |       |          |             |              |               |       |
| L424     | VE-30001971 | FERRITE      |              |       |          |             |              |               |       |
| L500     | VE-30020531 | FERRITE      |              |       |          |             |              |               |       |
| L502     | VE-30020531 | FERRITE      |              |       |          |             |              |               |       |
| L503     | VE-30020531 | FERRITE      |              |       |          |             |              |               |       |

### AV JACK P.W. BOARD ASS'Y (VE-20239086)

| △Ref No. | Part No.    | Part Name    | Description   | Local |
|----------|-------------|--------------|---------------|-------|
| D100     | VE-30001343 | DIODE        |               |       |
| D101     | VE-30001343 | DIODE        |               |       |
| D102     | VE-30001343 | DIODE        |               |       |
| D103     | VE-30001343 | DIODE        |               |       |
| D104     | VE-30001343 | DIODE        |               |       |
| D105     | VE-30001350 | DIODE        |               |       |
| D106     | VE-30001350 | DIODE        |               |       |
| C100     | VE-30000239 | C CAPACITOR  | 33pF 50V J SL |       |
| C101     | VE-30000239 | C CAPACITOR  | 33pF 50V J SL |       |
| C102     | VE-30000239 | C CAPACITOR  | 33pF 50V J SL |       |
| C103     | VE-30000191 | C CAPACITOR  | 100pF 50V J   |       |
| C104     | VE-30000191 | C CAPACITOR  | 100pF 50V J   |       |
| C105     | VE-30000191 | C CAPACITOR  | 100pF 50V J   |       |
| C106     | VE-30000330 | C CAPACITOR  | 4.7nF 50V K   |       |
| C107     | VE-30000330 | C CAPACITOR  | 4.7nF 50V K   |       |
| R100     | VE-30000712 | RESISTOR     | 1/4W 470R J   |       |
| R101     | VE-30000712 | RESISTOR     | 1/4W 470R J   |       |
| R102     | VE-30000650 | RESISTOR     | 1/4W 33R J    |       |
| R103     | VE-30000650 | RESISTOR     | 1/4W 33R J    |       |
| R107     | VE-30000580 | RESISTOR     | 1/4W 22R J    |       |
| R108     | VE-30000580 | RESISTOR     | 1/4W 22R J    |       |
| L100     | VE-30006712 | FERRITE BEAD |               |       |
| L101     | VE-30006712 | FERRITE BEAD |               |       |
| L102     | VE-30006712 | FERRITE BEAD |               |       |
| L103     | VE-30006712 | FERRITE BEAD |               |       |
| L104     | VE-30006712 | FERRITE BEAD |               |       |
| L105     | VE-30006712 | FERRITE BEAD |               |       |
| L106     | VE-30006712 | FERRITE BEAD |               |       |
| L107     | VE-30006712 | FERRITE BEAD |               |       |
| L108     | VE-30006712 | FERRITE BEAD |               |       |
| L109     | VE-30006712 | FERRITE BEAD |               |       |
| L110     | VE-30006712 | FERRITE BEAD |               |       |
| L111     | VE-30006712 | FERRITE BEAD |               |       |
| L112     | VE-30006712 | FERRITE BEAD |               |       |
| L113     | VE-30006712 | FERRITE BEAD |               |       |
| L114     | VE-30006712 | FERRITE BEAD |               |       |
| JK100    | VE-30015112 | JACK         | S-VIDEO IN    |       |
| JK101    | VE-30015338 | JACK         | VIDEO IN      |       |
| JK102    | VE-30015337 | JACK         | AUDIO R IN    |       |
| JK103    | VE-30015339 | JACK         | AUDIO L IN    |       |
| JK104    | VE-30020016 | JACK         | HEADPHONE     |       |

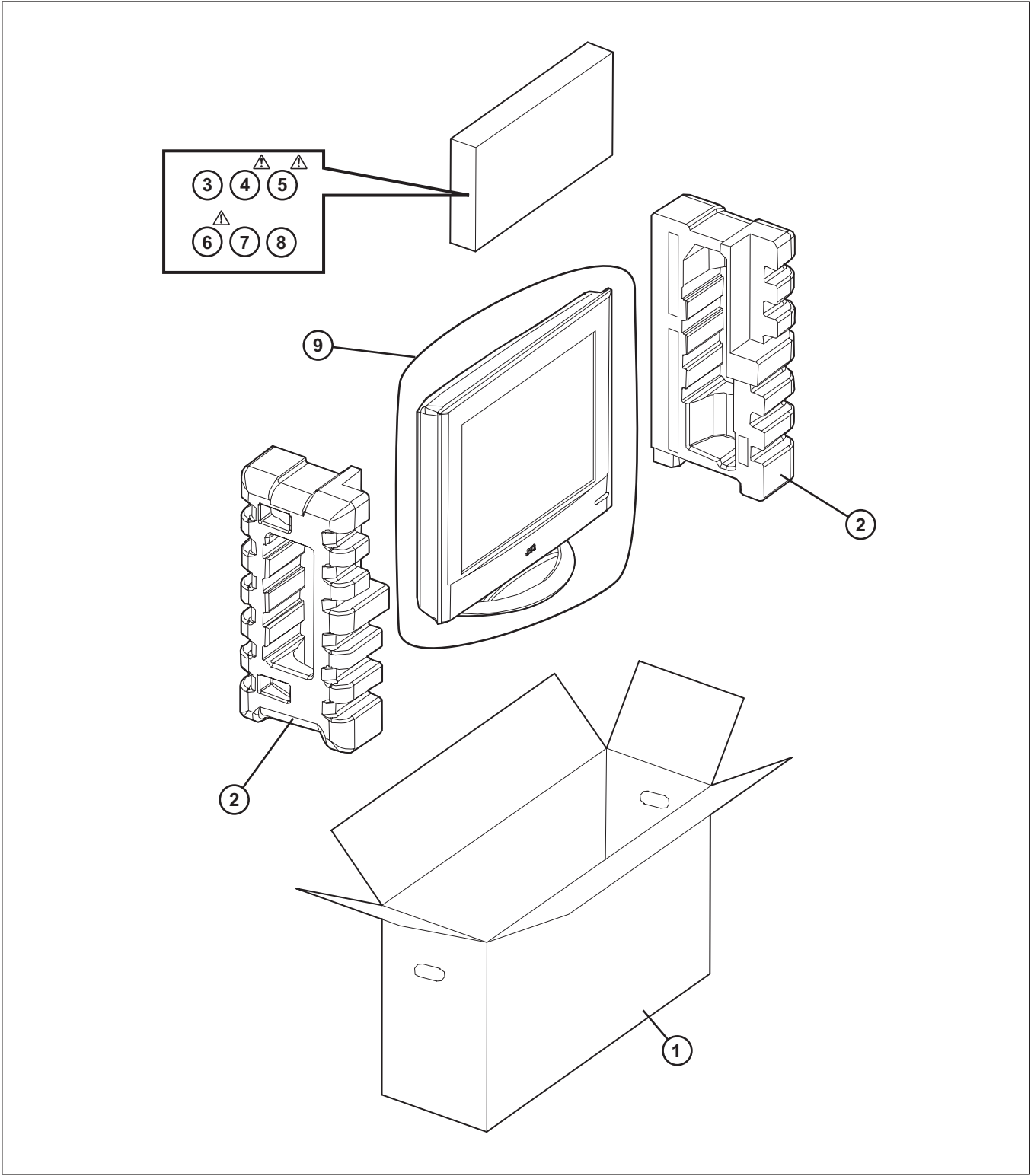
### SIDE CONTROL P.W. BOARD ASS'Y (VE-20235650)

| △Ref No. | Part No.    | Part Name   | Description | Local |
|----------|-------------|-------------|-------------|-------|
| SW1      | VE-30032684 | TACT SWITCH | VOLUME +    |       |
| SW2      | VE-30032684 | TACT SWITCH | VOLUME -    |       |
| SW3      | VE-30032684 | TACT SWITCH | PROGRAM +   |       |
| SW4      | VE-30032684 | TACT SWITCH | PROGRAM -   |       |
| SW5      | VE-30032684 | TACT SWITCH | MENU        |       |
| SW6      | VE-30032684 | TACT SWITCH | TV/AV/OK    |       |
| SW7      | VE-30032684 | TACT SWITCH | STAND-BY    |       |

LED P.W. BOARD ASS'Y (VE-20247127)

| △Ref No. | Part No.    | Part Name    | Description | Local |
|----------|-------------|--------------|-------------|-------|
| IC1      | VE-30031033 | PREAMPLIFIER |             |       |
| D2       | VE-30040560 | LED          | RED/GREEN   |       |
| C1       | VE-30000371 | E CAPACITOR  | 22uF 50V M  |       |
| R1       | VE-30000459 | RESISTOR     | 1/4W 100R J |       |

**PACKING**



# PACKING PARTS LIST

| △ | Ref.No. | Part No.    | Part Name           | Description                             | Local      |
|---|---------|-------------|---------------------|-----------------------------------------|------------|
|   | 1       | VE-50084611 | CARTON BOX          |                                         | LT-20J50SJ |
|   | 1       | VE-50083541 | CARTON BOX          |                                         | LT-20J50SU |
|   | 2       | VE-20235217 | CUSHION ASSEMBLY    | 2pcs in 1set                            |            |
|   | 3       | VE-30039453 | REMOTE CONTROL UNIT | RM-C1861                                |            |
| △ | 4       | VE-50084612 | INST BOOK           | (ENGLISH)                               | LT-20J50SJ |
| △ | 4       | VE-50083724 | INST BOOK           | (ENGLISH/GERMANY/FRENCH/ITALIAN/SPANISH | LT-20J50SU |
| △ | 5       | VE-30002375 | POWER CORD          | For AC ADAPTOR                          | LT-20J50SJ |
| △ | 5       | VE-30002376 | POWER CORD          | For AC ADAPTOR                          | LT-20J50SU |
| △ | 6       | VE-30041644 | AC ADAPTOR          | DC 12V                                  |            |
|   | 7       | -----       | BATTERY             | AA/R6 type(x2)                          |            |
|   | 8       | -----       | WARRANTY CARD       | VE-50084613                             | LT-20J50SJ |
|   | 8       | -----       | WARRANTY CARD       | VE-50083725                             | LT-20J50SU |
|   | 9       | VE-50000007 | POLY BAG            |                                         |            |