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COLOR TV

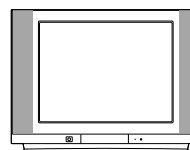
SERVICE MANUAL

CHASSIS : MC-019A

MODEL : CF/CT-21Q21KE/KEX/KX/22KEX
CT-51F82/51F92T
CT-21Q60EX/21Q92EX
CT-21Q61KE/62KE/21Q91KE

CAUTION

BEFORE SERVICING THE CHASSIS,
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



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SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by Δ in the Schematic Diagram and Replacement Parts List.

It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards.

Do not modify the original design without permission of manufacturer.

General Guidance

An **Isolation Transformer should always be used** during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and its components from being damaged by accidental shorts of the circuitry that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this TV receiver is blown, replace it with the specified.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1W), keep the resistor 10mm away from PCB.

Keep wires away from high voltage or high temperature parts.

Due to high vacuum and large surface area of picture tube, extreme care should be used in **handling the Picture Tube**. Do not lift the Picture tube by its Neck.

X-RAY Radiation

Warning:

The source of X-RAY RADIATION in this TV receiver is the High Voltage Section and the Picture Tube. For continued X-RAY RADIATION protection, the replacement tube must be the same type tube as specified in the Replacement Parts List.

To determine the presence of high voltage, use an accurate high impedance HV meter.

Adjust brightness, color, contrast controls to minimum. Measure the high voltage.

The meter reading should indicate

23.5 ; 15KV: 14-19 inch, 26 ; 15KV: 19-21 inch,

29.0 ; 15KV: 25-29 inch, 30.0 ; 15KV: 32 inch

If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure.

Before returning the receiver to the customer,

always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

Leakage Current Cold Check(Antenna Cold Check)

With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on position, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.

If the exposed metallic part has a return path to the chassis, the measured resistance should be between $1M\Omega$ and $5.2M\Omega$.

When the exposed metal has no return path to the chassis the reading must be infinite.

An other abnormality exists that must be corrected before the receiver is returned to the customer.

Leakage Current Hot Check (See below Figure)

Plug the AC cord directly into the AC outlet.

Do not use a line Isolation Transformer during this check.

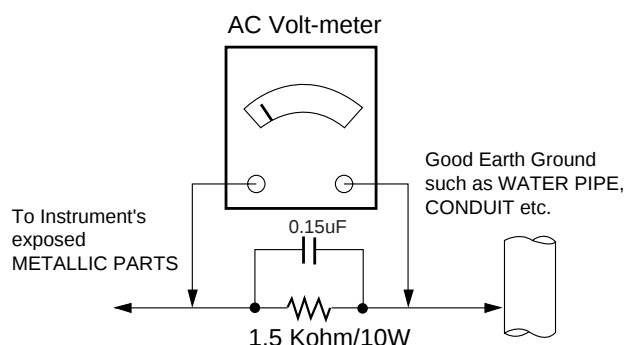
Connect 1.5K/10watt resistor in parallel with a 0.15uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.

Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.

Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which corresponds to 0.5mA.

In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit



SERVICING PRECAUTIONS

CAUTION: Before servicing receivers covered by this service manual and its supplements and addenda, read and follow the **SAFETY PRECAUTIONS** on page 3 of this publication.

NOTE: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. Remember: Safety First.

General Servicing Precautions

1. Always unplug the receiver AC power cord from the AC power source before;
 - a. Removing or reinstalling any component, circuit board module or any other receiver assembly.
 - b. Disconnecting or reconnecting any receiver electrical plug or other electrical connection.
 - c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.

CAUTION: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.

- d. Discharging the picture tube anode.
2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc) equipped with a suitable high voltage probe. Do not test high voltage by "drawing an arc".
 3. Discharge the picture tube anode only by (a) first connecting one end of an insulated clip lead to the degaussing or kine aquadag grounding system shield at the point where the picture tube socket ground lead is connected, and then (b) touch the other end of the insulated clip lead to the picture tube anode button, using an insulating handle to avoid personal contact with high voltage.
 4. Do not spray chemicals on or near this receiver or any of its assemblies.
 5. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable nonabrasive applicator; 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength)

CAUTION: This is a flammable mixture.

Unless specified otherwise in this service manual, lubrication of contacts is not required.

6. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
7. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
8. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.
Always remove the test receiver ground lead last.
9. *Use with this receiver only the test fixtures specified in this service manual.*

CAUTION: Do not connect the test fixture ground strap to any heatsink in this receiver.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called *Electrostatically Sensitive (ES) Devices*. Examples of typical ES devices are integrated circuits and some field-effect

transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed to prevent potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

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

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range of 500°F to 600°F.
 2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
 3. Keep the soldering iron tip clean and well tinned.
 4. Thoroughly clean the surfaces to be soldered. Use a mall wirebrush (0.5 inch, or 1.25cm) brush with a metal handle. Do not use freon-propelled spray-on cleaners.
 5. Use the following unsoldering technique
 - a. Allow the soldering iron tip to reach normal temperature. (500°F to 600°F)
 - b. Heat the component lead until the solder melts.
 - c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.
- CAUTION:** Work quickly to avoid overheating the circuit board printed foil.
6. Use the following soldering technique
 - a. Allow the soldering iron tip to reach a normal temperature (500°F to 600°F)
 - b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.

- c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.

CAUTION: Work quickly to avoid overheating the circuit board printed foil.

- d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

IC Remove/Replacement

Some chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.
2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

Replacement

1. Carefully insert the replacement IC in the circuit board.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to the areas).

"Small-Signal" Discrete Transistor

Removal/Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into a "U" shape the end of each of three leads remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact then solder each connection.

Power Output, Transistor Device

Removal/Replacement

1. Heat and remove all solder from around the transistor leads.
2. Remove the heatsink mounting screw (if so equipped).
3. Carefully remove the transistor from the heat sink of the circuit board.
4. Insert new transistor in the circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heatsink.

Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicular to the circuit board.
3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and if necessary, apply additional solder.

Fuse and Conventional Resistor

Removal/Replacement

1. Clip each fuse or resistor lead at top of the circuit board hollow stake.
2. Securely crimp the leads of replacement component around notch at stake top.
3. Solder the connections.

CAUTION: Maintain original spacing between the replaced component and adjacent components and the circuit board to prevent excessive component temperatures.

Circuit Board Foil Repair

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board causing the foil to separate from or "lift-off" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

At IC Connections

To repair a defective copper pattern at IC connections use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections).

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary).
2. Carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.
3. Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the out-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area and clip off any excess jumper wire.

At Other Connections

Use the following technique to repair the defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side. Carefully crimp and solder the connections.

CAUTION: Be sure the insulated jumper wire is dressed so the it does not touch components or sharp edges.

SPECIFICATIONS

Note : Specification and others are subject to change without notice for improvement.

- o **Video input system:**

PAL-B/G, D/K, I/I
SECAM-B/G, D/K, L/L'
NTSC M
NTSC 4.43

SOUND IF : 33.4MHz (B/G)
32.9MHz (I/I)
32.4MHz (D/K)
34.4MHz (M)

- o **Intermediate Frequency (Unit : MHz)**

VISION IF : 38.9MHz
COLOR IF : 34.47MHz(4.43)
35.32MHz(3.58) : NTSC-M
(VIF-4.25000MHz): SECAM
VIF-4.40625MHz

- o **Power requirement :** 110~240V, 50/60Hz

- o **Power consumption :** 95

- o **STAND-BY :** 3W

- o **Tuning range**

Band	For TV				For CATV
	B/G	D/K	I/I	NTSC	
VHF-Low	Ch2-4	Ch1-5		Ch2-13	S1'-S3', S1
VHF-High	Ch5-12	Ch6-12	Ch4-13		S2-S10, S11-S20
Hyper					S21-S41
UHF	Ch21-69			Ch14-69	

- o **Tuning system :**

FVS
100 Programme memory
200 Programme memory(W/O TXT)

- o **Antenna input impedance :** VHF/UHF 75 ohm, unbalanced

- o **OSD (On Screen Display) :** EASY-MENU

- o **Voice coil impedance :** 8 ohm

- o **Sound output :** 7W ; 2(MAX)
Dual/Stereo : A2/NICAM(Optional)

- o **External connection :** Head Phone Jack
A/V in : 2
PERI Connector(Full Scart) : 1
DVD in

- o **External In/Output**

Audio-In:0.5Vrms!3dB, over 10Kohm
Audio-Out:0.5Vrms!3dBb, below 1Kohm
Video-In/Out:1Vp-p!3dB, 75ohm
DVD In Y: 1Vp-p!3dB
Pb,Pr: 0.7Vp-p!3dB

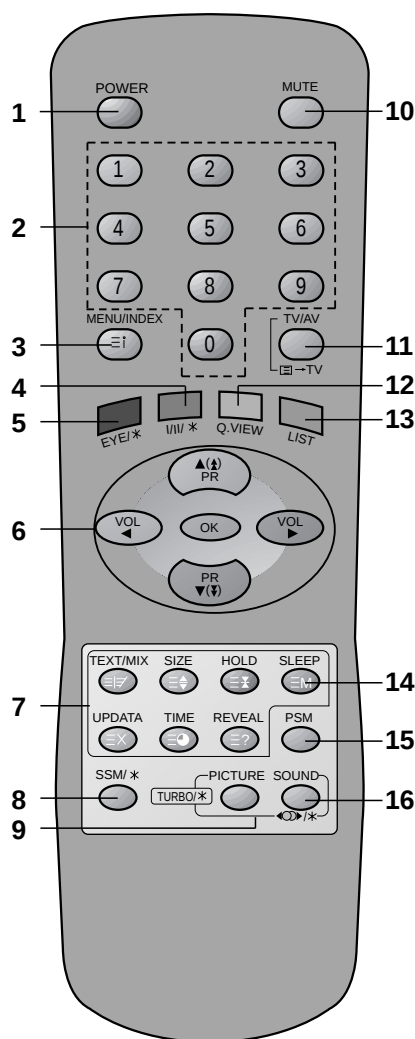
- o **Feature :** Auto programme/Manual programme
CSM (Color Status Memory)
Auto Sleep
Turbo Picture & Sound
Programme Editing
PSM (Picture Status Memory)
Teletext (TOP/FLOF/LIST)
ACMS
Auto Volume Level
Game
SSM(Sound Status Memory)
Favorite Program

DECRPTIONS OF CONTROLS

All the functions can be controlled with the remote control handset. Some functions can also be adjusted with the buttons on the front panel of the set.

Remote control handset

Before you use the remote control handset, please install the batteries. See the next page.



(With TELETEXT)

1. **POWER**
switches the set on from standby or off to standby.
2. **NUMBER BUTTONS**
switches the set on from standby or directly select a number.
3. **MENU (or INDEX)**
selects a menu.
selects an index page in the teletext mode (only TELETEXT models).
4. **I/III/* (option)**
selects the language during dual language broadcast. (option)
5. **EYE/* (option)**
switches the eye function on or off.
6. **PR (Programme Up/Down)**
selects a programme or a menu item.
switches the set on from standby.
scans programmes automatically.
7. **TELETEXT BUTTONS (option)**
These buttons are used for teletext.
For further details, see the 'Teletext' section.
8. **SSM/* (option) (Sound Status Memory)**
recalls your preferred sound setting.
9. **TURBO PICTURE / SOUND BUTTON (option)**
selects Turbo picture and sound.
10. **MUTE**
switches the set on from standby or off to standby.
11. **TV/AV**
selects the sound output.
12. **TV**
selects the sound output.
13. **LIST**
selects the sound output.
14. **TEXT/MIX**
adjusts the volume.
15. **SIZE**
adjusts menu settings.
16. **OK**
accepts your selection or displays the current mode.

10. MUTE

switches the sound on or off.

11. TV/AV

selects TV or AV mode.
clears the menu from the screen.
switches the set on from standby.

12. Q.VIEW

returns to the previously viewed programme.
selects a favorite programme.

13. LIST

displays the programme table.

14. SLEEP

sets the sleep timer.

15. PSM (Picture Status Memory)

recalls your preferred picture setting.

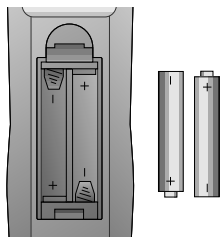
16. SURROUND (◀▶/*) (option)

selects surround sound.

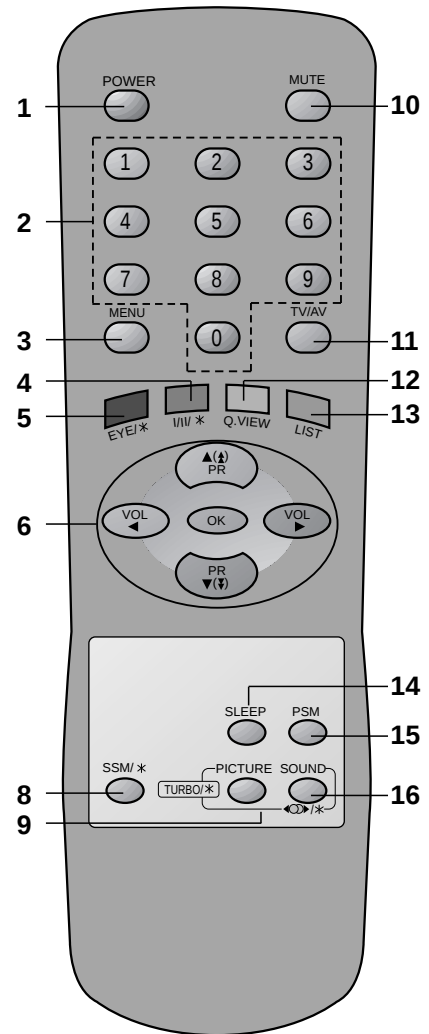
COLOURED BUTTONS : These buttons are used for teletext (only TELETEXT models) or programme edit.

Battery installation

The remote control handset is powered by two AAA type batteries. To load the batteries, turn the remote control handset over and open the battery compartment. Install two batteries as indicated by the polarity symbols (+ and -) marked inside the compartment.

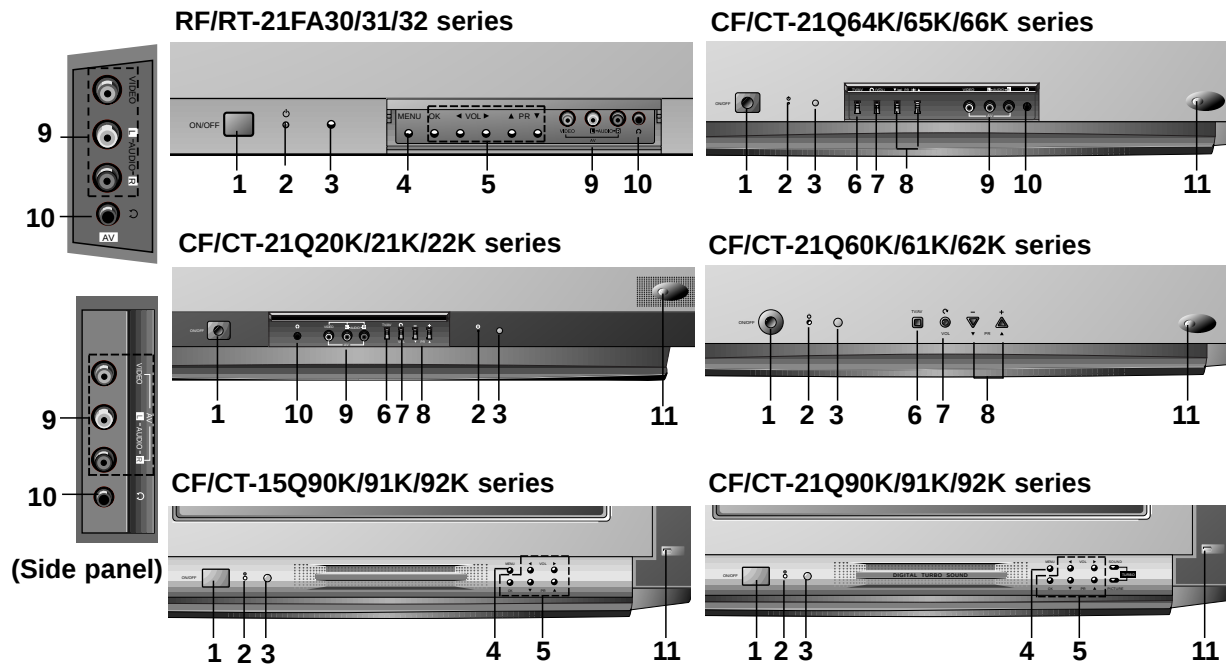


Note : To avoid damage from possible battery leakage, remove the batteries if you do not plan to use the remote control handset for an extended period of time.



(Without TELETEXT)

Front panel



1. **MAIN POWER (ON/OFF)**
switches the set on or off.
2. **POWER/STANDBY INDICATOR**
illuminates brightly when the set is in standby mode.
dims when the set is switched on.
blinks when signal is input from the remote control.
3. **REMOTE CONTROL SENSOR**
4. **MENU**
selects a menu.
5. **OK**
accepts your selection or displays the current mode.
F / G (Volume Up/Down)
adjusts the volume.
adjusts menu settings.
D / E (Programme Up/Down)
selects a programme or a menu item.
switches the set on from standby.
6. **TV/AV**
selects TV or AV mode.
clears the menu from the screen.
switches the set on from standby.
7. **⌚ (Function)**
selects volume, EYE (option), picture items or brief auto programme while the menus not display.
8. **+/- (D / E)**
adjusts the function or selects a programme.
switches the set on from standby.
9. **AUDIO/VIDEO IN SOCKETS (AV) (option)**
Connect the audio/video out sockets of external equipment to these sockets.
Note : If both the input jacks on the front/side panel and back panel have been connected to external equipments simultaneously, only the input jacks on the front/side panel can be received.
10. **HEADPHONE SOCKET (option)**
Connect the headphone plug to this socket.
11. **EYE (option)**
adjusts picture according to the surrounding conditions.

Note : Do not place any heavy objects (over 4Kg) on the RF/RT-21FA30/31/32 series models.

DISASSEMBLY INSTRUCTIONS

Important note

This set is disconnected from the power supply through the converter transformer. An isolating transformer is necessary for service operations on the primary side of the converter transformer.

Back Cabinet Removal

Remove the screws residing on the back cabinet and carefully separate the back cabinet from the front cabinet. (Fig. 2-1).

CPT Removal

1. Pull out the CPT board from the CPT neck.
2. Place the front cabinet on soft material not to mar the front surface or damage control knobs.
3. Remove 5 screws securing the picture tube mounting brackets to the front cabinet.
4. Carefully separate CPT from the front cabinet.

Chassis Assy Removal

Grasp both side of Frame and pull it backward smoothly.

PICTURE TUBE HANDLING CAUTION

Due to high vacuum and large surface area of picture tube, great care must be exercised when handling picture tube. Always lift picture tube by grasping it firmly around faceplate. NEVER LIFT TUBE BY ITS NECK! The picture tube must not be scratched or subjected to excessive pressure as fracture of glass may result in an implosion of considerable violence which can cause personal injury or property damage.

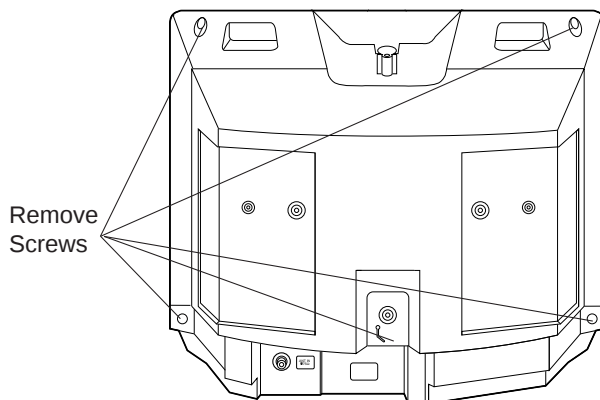


Fig. 2-1

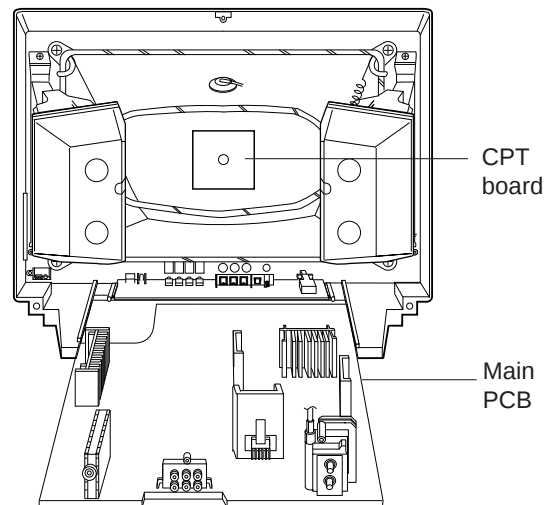


Fig. 2-2

ADJUSTMENT

o Safety Precautions

1. It is safe to adjust after using insulating transformer between the power supply line and chassis input to prevent the risk of electric shock and protect the instrument.
2. Never disconnect leads while the TV receiver is on.
3. Don't short any portion of circuits while power is on.
4. The adjustment must be done by the correct appliances. But this is changeable in view of productivity.
5. Unless otherwise noted, set the line voltage to 110~240Vac ! 10%, 50/60Hz.
6. The adjustment of TV should be performed after warming up for 20 minutes.

o Test Equipment required

1. Multimeter (volt meter)
2. Oscilloscope
3. 10:1 PROBE
4. Color Analyzer

o CDL Data Adjustment(LINE SVC-0)

- 1) Press the SVC button to get into the SVC-0 Mode.
- 2) Press the Channel UP/DOWN button to select CDL12.
- 3) Press the Volume UP/DOWN button until the CDL data is the same as the Table below.

	21" FCD	14,16" CPT	15" CPT	20,21" CPT
CDL Data	12	8	10	12
Remark	FLAT		FLAT	

- 4) Press the OK(✓) button to memorize the data.

o OPTION Data Adjustment(OPTION-1,OPTION-2)

- 1) Press OK buttons on both TV set and Remote Controller at the same time to get into SVC mode.
- 2) Press the Yellow button several times to find OPTION-1 or OPTION-2.
- 3) Input the correspond OPTION data referring to Table below with the numeric buttons.
- 4) Press the OK(✓) button to memorize the data.

Table 1. OPTION 1 Function

Option	Code	Function	Remark
C MUTE	0	ACTIVE	
	1	NOT ACTIVE	
DVD	0	W/O DVD	
	1	DVD(REAR JACK)	
2 IN 1	0	W/O 2 IN 1TUNER	
	1	WITH 2 IN 1TUNER	
TOP	0	FLOF TXT	
	1	TOP TXT	
SCART	0	PHONO JACK	
	1	SCART JACK	

Option	Code	Function	Remark
TBS	0	W/O TBS	
	1	WITH TBS	
EYE	0	W/O EYE	
	1	WITH EYE	
4 KEY	0	W/O 4 KEY	
	1	WITH 4 KEY	
MONO	0		
	1	FORCED MONO	

Table 2. OPTION 2 Function

Option	Code	Function	Remark
BCF	0	Auto Abnormal ON	
	1	Not Used	
GAME	0	W/O GAME PACK	
	1	WITH GAME PACK	
200 PRO	0	100 PRO	
	1	200 PRO	
CHA + AU	0	Except China,Austrailia	
	1	China,Austrailia	
DUAL	0	W/O DUAL	
	1	WITH DUAL	
ACMS	0	Austrailia	
	1	Except Austrailia	
T-SCH	0	W/O TURBO SEARCH	
	1	WITH TURBO SEARCH	
T-P/S	0	W/O TURBO P/S	
	1	WITH TURBO P/S	
CURVE	0	NORMAL VOLUME CURVE	
	1	M-A,India VOLUME CURVE	

Table 3. OPTION 3 Function

Option	Code	Function	Remark
RESERVED	0	***	
	1	***	
HOTEL	0	W/O HOTEL	
	1	W/HOTEL	
SYSTEM	0	BG/L	
	1	BG//DK	
	2	BG//DK/M	
	3	BG//DK DUAL	
	4	BG//DK/M DUAL	
	5	2nd IF BG	
	6	2nd IF I	
	7	2nd IF DK	

Option	Code	Function	Remark
OSD-L (EU)	0	ENG. ONLY	English
	1	EU-7EA	English,Deutsch,Francais,Italiano,Espanol
	2	EU ALL	English,Nederlands,Svenska,Dansk,Suomi,Portugues,Romaneste,Polski,Cesky,Pycknn
	3	EU EAST	English,Romaneste,Polski,Cesky,Pycknn,Magyar
OSD-L (M-ASIA)	0	ENG. ONLY	English
	1	ARABIC	English,Arab,,Urdu,French
	2	PARSI	English,Parsi,Urdu,French
	3	ARAB,FARSI,URDE	English,French,Arab,Urdu,Parsi
OSD-L (E-ASIA)	0	ENG.ONLY	English
	1	ASIA-ALL	English,Malay,Vietnam,Indonesian,Thai
OSD-L (CH+HI)	0	ENG.ONLY	English
	1	E+CHINA	English,Chinese
	2	E+HINDI	English,Hindi
TXT-L (EU)	0	W-EU	
	1	E-EU	
	2	CYRILLIC	
	3	UKRAINIAN	
TXT-L (E-ASIA)	0	WEST-EU	
	1	ARABIC	
TXT-L (FARSI)	0	WEST-EU	
	1	FARSI	

o AGC Adjustment (SERVICE 1)

Test Point : AGC TP (C101)
Adjust : Remote Controller

- 1) Connect RF signal (70dB! 0.2dB) and turn on the TV.
i Standard adjustment Channel
- EU 05 Ch. (fr= 175.25MHz)
- 2) Press the OK buttons on TV set and Remote Controller at the same time to get into SVC-0 mode.
- 3) Press the Channel UP/DOWN button on the Remote Controller several times to find AGC??.
- 4) Press the Volume UP/DOWN button until the AGC Voltage is the same as the Table below.
- 5) Press the OK(v) button to memorize the data.

Tuner P/N	6700VPF009G	6700VPF016A
Marker	LG Innotek(W/S TUNER)	DAEWOO(W/S TUNER)
AGC Voltage	2.7! 0.05V	2.7! 0.05V

Tuner P/N	6700VPF009S	
Marker	LG Innotek(TBS TUNER)	
AGC Voltage	2.5! 0.05V	

o FOCUS Adjustment

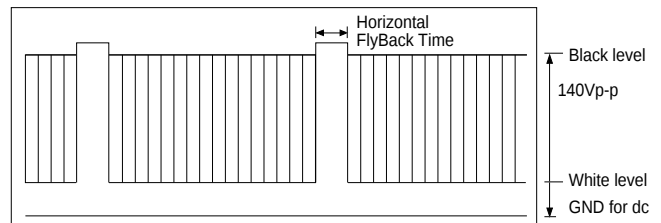
Test Point : RK (Red Cathode of CPT Board)
Adjust : Screen Volume of FBT

- 1) Tune the TV set to receive a PAL 05CH.
- 2) Adjust the Focus Volume of FBT for best focus.

o Screen Voltage Adjustment

Test Point : Observing Display
Adjust : Focus Volume of FBT

- 1) Connect the probe of oscilloscope to the RK (Red Cathode) of CPT Board.
- 2) Set the oscilloscope to 50V/div and 20Us/div and after putting GND line upon the lowest grid line of the scope by pressing GND button,enter into DC mode.
- 3) Tune the TV set to receive a PAL-B/G 05CH.
- 4) Adjust Screen Volume of FBT so that the waveform is the same as below figure (DC 140! 3V).



14"	OTHERS
DC 130V! 3 V	DC 140V! 3 V

o White Balance Adjustment.(LINE SVC-0)

NOTE : This adjustment should be performed after screen voltage adjustment.

- 1) Tune the TV set to receive an 100% white pattern.
- 2) Press OK(v) buttons on TV set and remote controller at the same time to get into SVC mode.
- 3) Press Yellow button on remote controller. (Standard mode)
- 4) Press Channel UP/DOWN button for desirous function adjustment.
- 5) Adjust VOL+ or VOL-button in each status of "RG--"/"BG--" for X=272! 8, Y=288! 8 with color analyzer.(Europe Model: X=288! 8, Y=295! X=272! 8, 11,000K)

Status	Initial Data	Remark
RG	31	
GG	31	
BG	31	
BLO-R	31	
BLO-G	31	

- 7) Press the OK(v) button to memorize the data.

o Deflection Data Adjustment (Line SVC-1)

NOTE: To enter SVC mode, press "OK" buttons on both TV set and the Remote control at the same time.

1. Preparation for Deflection Adjustment

- 1) At SVC mode, press the Yellow colored button.
And then, deflection data adjustment OSD (SVC1 mode) will be displayed.
- 2) Tune the TV set to receive a PAL 05 CH and set the ARC mode is standard.

2. Deflection Initial Setup Data

Status	Default	21" FLAT S/S	21" FLAT LG
VL	31	31	31
VA	31	31	31
VS	31	31	31
HS	31	31	31
SC	25	25	25

3. Deflection Adjustment Procedure

VL (Vertical Linearity)

Adjust so that the boundary line between upper and lower half is in accord with geometric horizontal center of the CPT.

VA (Vertical Amplitude)

Adjust so that the circle of a digital circle pattern may be located within the effective screen of the CPT.

SC (Vertical "S" Correction)

Adjust so that all distance between each horizontal lines are to be the same.

VS (Vertical Shift)

Adjust so that the horizontal center line of a digital circle pattern is in accord with geometric horizontal center of the CPT.

HS (Horizontal Shift)

Adjust so that the vertical center line of a digital circle pattern is in accord with geometric vertical center of the CPT.

Press the OK(v) button to memorize the data.

PURITY & CONVERGENCE ADJUSTMENT

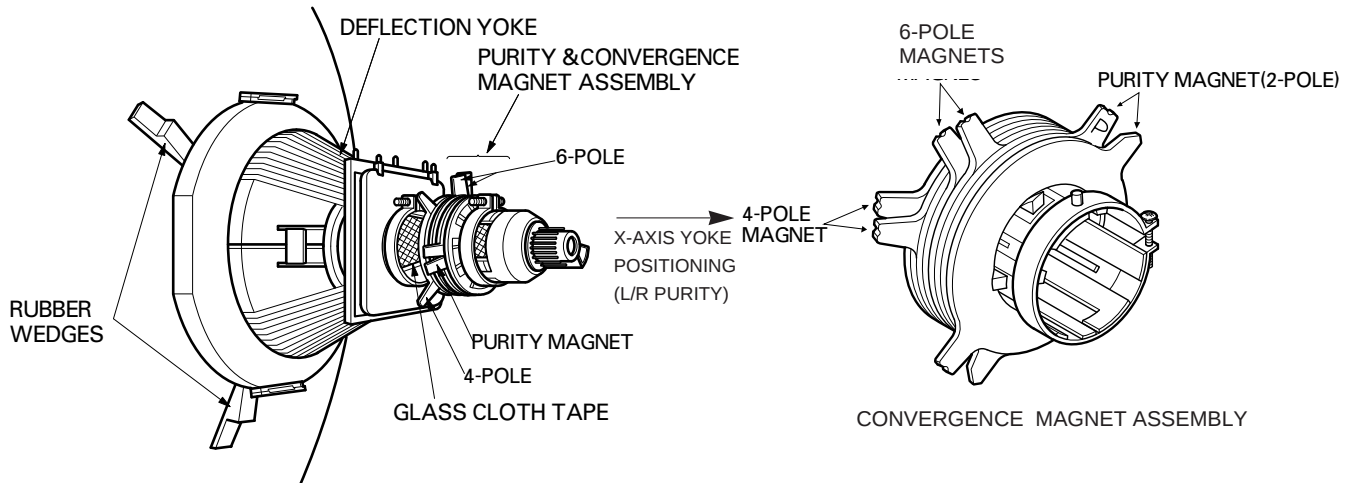
Caution:

Convergence and Purity have been factory aligned. Do not attempt to tamper with these alignments.

However, the effects of adjacent receiver components, or replacement of picture tube or deflection yoke may require the need to readjust purity any convergence.

5. Reconnect the internal degaussing coil.

6. Position the beam bender locking rings at the 9 o'clock position and the other three pairs of tabs (2,4 and 6 pole magnets) at the 12 o'clock position.



i Purity Adjustment

This procedure DOES NOT apply to bonded yoke and picture tube assemblies.

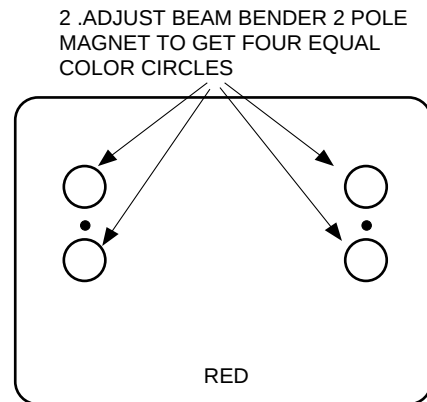
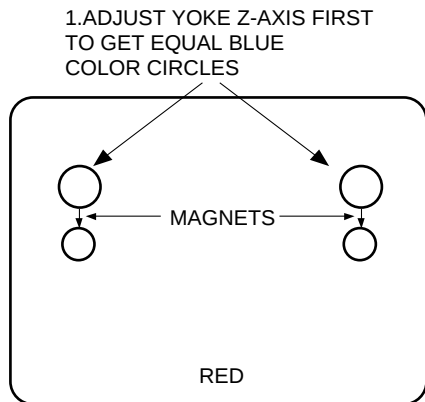
The instrument should be at room temperature (60 degrees F or above) for six (6) hours and be operating at low beam current (dark background) for approximately 20 to 30 minutes before performing purity adjustments.

CAUTION: Do not remove any trim magnets that may be attached to the bell of the picture tube.

1. Remove the AC power and disconnect the internal degaussing coil.
2. Remove the yoke from the neck of the picture tube.
3. If the yoke has the tape version beam bender, remove it and replace it with a adjustable type beam bender (follow the instructions provided with the new beam bender)
4. Replace the yoke on the picture tube neck, temporarily remove the three (3) rubber wedges from the bell of the picture tube and then slide the yoke completely forward.

7. Perform the following steps, in the order given, to prepare the receiver for the purity adjustment procedure.

- a. Face the receiver in the "magnetic north" direction.
- b. Externally degauss the receiver screen with the television power turned off.
- c. Turn the television on for approximately 10 seconds to perform internal degaussing and then turn the TV off.
- d. Unplug the internal degaussing coil. This allows the thermistor to cool down while you are performing the purity adjustment. DO NOT MOVE THE RECEIVER FROM ITS "MAGNETIC NORTH" POSITION.
- e. Turn the receiver on and obtain a red raster by increasing the red bias control (CW) and decreasing the bias controls for the remaining two colors (CCW).
- f. Attach two round magnets on the picture tube screen at 3 o'clock and 9 o'clock positions, approximately one (1) inch from the edge of the mask (use double-sided tape).



8. Referring to above, perform the following two steps:
 - a. Adjust the yoke Z-axis to obtain equal blue circles.
 - b. Adjust the appropriate beam bender tabs to obtain correct purity (four equal circles).
9. After correct purity is set, tighten the yoke clamp screw and remove the two screen magnets.
10. Remove the AC power and rotate the receiver 180 degrees (facing "magnetic south").
11. Reconnect the internal degaussing coil.
12. Turn the receiver on for 10 seconds (make sure the receiver came on) to perform internal degaussing, and then turn the receiver off.
13. Unplug the internal degaussing coil.
14. Turn on the receiver and check the purity by holding one (1) round magnet at the 3 o'clock and a second round magnet at 9 o'clock position. If purity is not satisfactory, repeat steps 8 through 14.
15. Turn off the receiver and reconnect the internal degaussing coil.

i Convergence Adjustment

Caution: This procedure DOES NOT apply to bonded yoke and picture tube assemblies. Do not use screen magnets during this adjustment procedure. Use of screen magnets will cause an incorrect display.

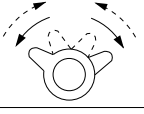
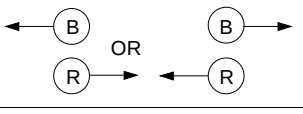
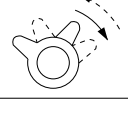
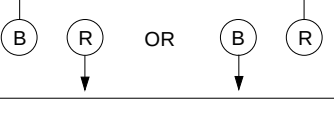
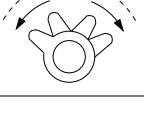
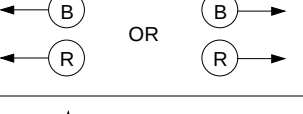
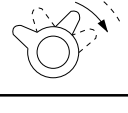
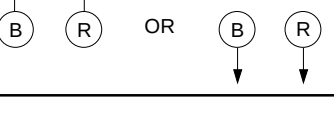
1. Remove AC power and disconnect the internal degaussing coil.
2. Apply AC Power and set the brightness to the Picture Reset condition. Set the Color control to minimum.
3. Make a horizontal line.
4. Adjust the Red, Green and Blue Bias controls to get a dim white line.
5. Restore the screen by removing the horizontal line.

6. Reconnect the internal degaussing coil and apply AC power.
7. Turn the receiver on for 10 seconds to perform internal degaussing and then turn the receiver off again.
8. Unplug the internal degaussing-coil.
9. Turn on the receiver, connect a signal generator to the VHF antenna terminal and apply a crosshatch signal.

Caution: During the convergence adjustment procedure, be very careful not to disturb the purity adjustment tabs are accidentally move, purity should be confirmed before proceeding with the convergence adjustments.

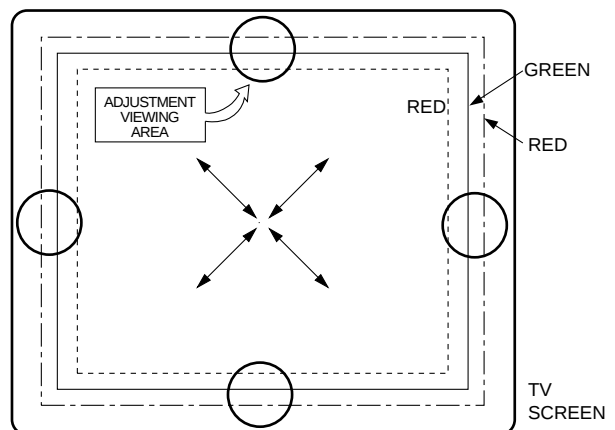
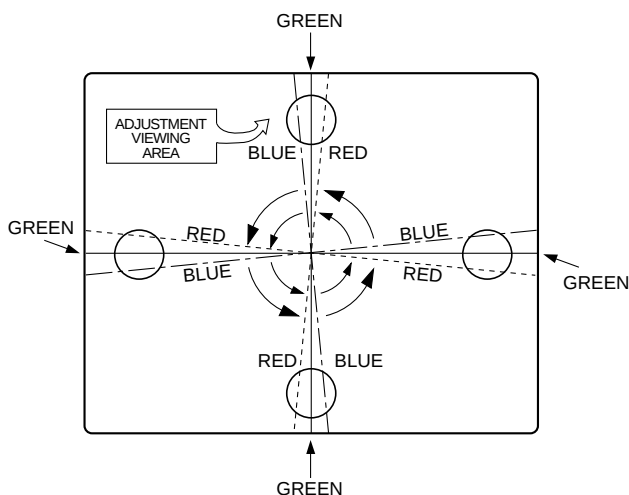
Note: Make sure the focus is set correctly on this instrument before proceeding with the following adjustment.

10. Converge the red and blue vertical lines to the green vertical line at the center of the screen by performing the following steps (below TABLE).
 - a. Carefully rotate both tabs of the 4-pole ring magnet simultaneously in opposite directions from the 12 o'clock position to converge the red and blue vertical lines.
 - b. Carefully rotate both tabs of the 6-pole ring magnet simultaneously in opposite directions from the 12 o'clock position to converge the red and blue (now purple) vertical lines with the green vertical line.
11. Converge the red and blue horizontal with the green line at the center of the screen by performing the following steps. (below TABLE)
 - a. Carefully rotate both tabs of the 4-pole ring magnet simultaneously in the same direction (keep the spacing between the two tabs the same) to converge the red and blue horizontal lines.
 - b. Carefully rotate both tabs of the 6-pole ring magnet simultaneously in same direction (keep the spacing between the two tabs the same) to converge the red and blue (now purple) horizontal lines with the green horizontal line.
 - c. Secure the tabs previously adjusted by locking them in place with the locking tabs on the beam bender.

RING PAIRS	ROTATION DIRECTION OF BOTH TABS	MOVEMENT OF RED AND BLUE BEAMS
4 POLE	 OPPOSITE	
	 SAME	
6 POLE	 OPPOSITE	
	 SAME	

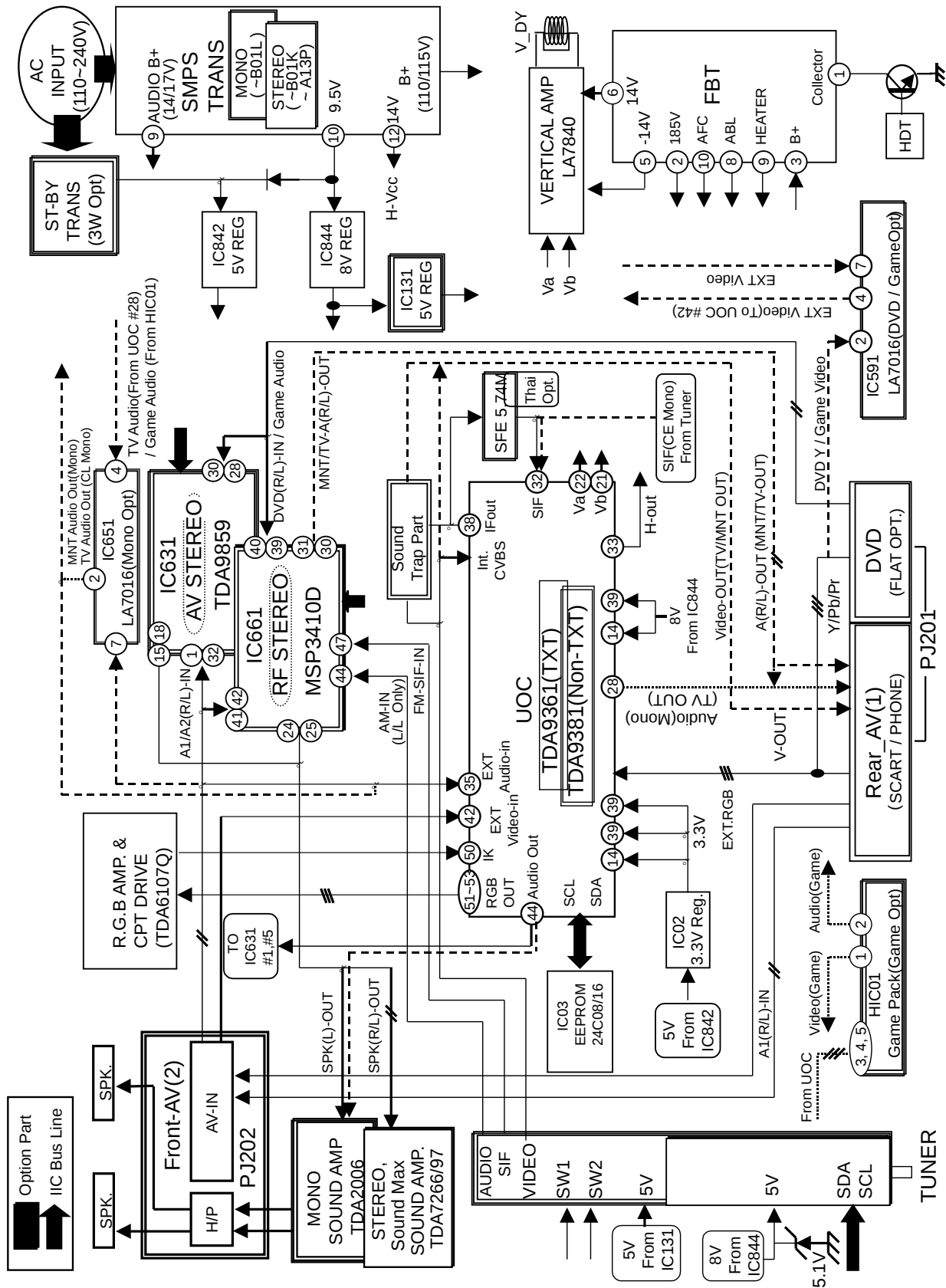
UP/DOWN ROCKING OF THE YOKE CAUSES OPPOSITE ROTATION OF RED AND BLUE RASTERS

LEFT/RIGHT ROCKING OF THE YOKE CAUSES OPPOSITE SIZE CHANGE OF THE RED AND BLUE RASTERS

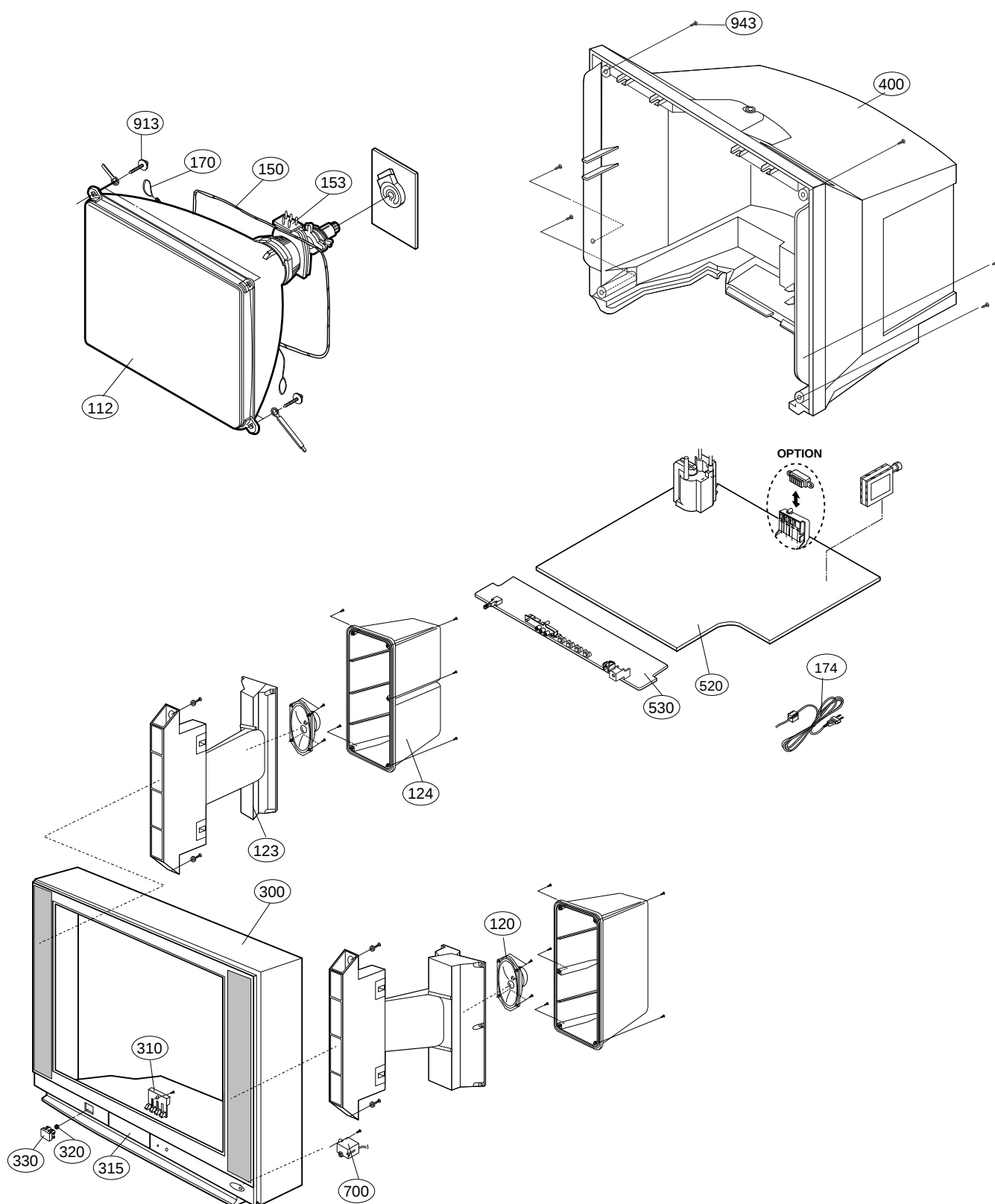


- While watching the 6 o'clock positions on the screen, rock the front of the yoke in a vertical (up/down) direction to converge the red and blue vertical lines. (Fig upper left)
- Temporarily place a rubber wedge at the 12 o'clock position to hold the vertical position of the yoke.
- Check the 3 o'clock and 9 o'clock areas to confirm that the red and blue horizontal lines are converged.
If the lines are not converged, slightly offset the vertical tilt of the yoke (move the rubber wedge if necessary) to equally balance the convergence error of the horizontal lines at 3 o'clock and 9 o'clock and the vertical lines at 6 o'clock and 12 o'clock.
- Place a 1.5 inch piece of glass tape over the rubber foot at the rear of the 12 o'clock wedge.
- While watching the 6 o'clock and 12 o'clock areas of the screen, rock the front of the yoke in the horizontal (left to right) motion to converge the red and blue horizontal lines. (Fig. upper right)
- Temporarily place a rubber wedge at the 5 o'clock and 7 o'clock positions to hold the horizontal position of the yoke.
- Check the 3 o'clock and 9 o'clock areas to confirm that the red and blue vertical lines are converged. If the lines are not converged, slightly offset the horizontal tilt of the yoke (move the temporary rubber wedges if necessary) to equally balance the convergence error of the horizontal lines at 6 o'clock and 12 o'clock and the vertical lines at 3 o'clock and 9 o'clock.
- Using a round magnet confirm purity at the center, right and left sides and corners. See Purity Adjustment Procedure.
- Reconfirm convergence and apply a 1.5 inch piece of glass tape over the rubber foot at the rear of the 5 o'clock and the 7 o'clock wedges.

BLOCK DIAGRAM



EXPLODED VIEW : 21Q21/22

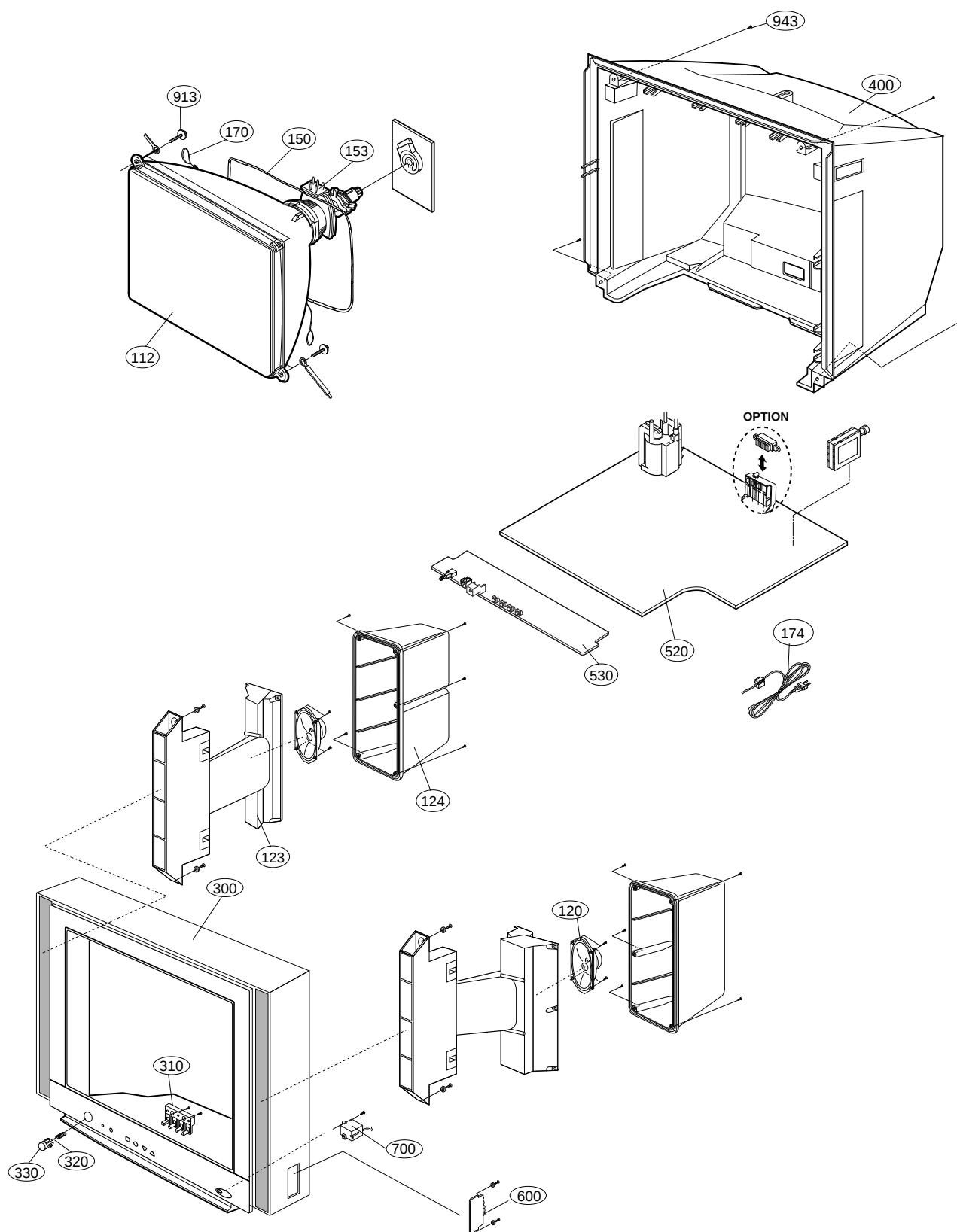


EXPLODED VIEW PARTS LIST

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

LOCA. NO	PART NO	DESCRIPTIONS
Δ 112	6341V21009B	CPT ASSY,A51QDX991X
	6335V21008D	CPT
120	120-D38C	SPEAKER,MID-RANGE 8 OHM 15/25W
123	4810V00123A	BRACKET,CASE
124	4810V00124A	BRACKET,COVER
Δ 150	150-D02X	COIL,DEGAUSSING CU 21" 60TURN 12 OHM
Δ 153	6150V-1014G	DY,DIF-2192AA(NF5)
Δ 170	170-A01N	CPT EARTH 21" 64T 2LUG
Δ 174	174-009Q	CORD,POWER(W/HOLD,HOUSING)L=300,4.0
300	3091V00274K	CABINET ASSY
	3091V00274T	CABINET ASSY (W/O EYE)
310	5020V00340A	BUTTON,CONTROL 4KEY
315	3580V00037A	DOOR,CONRTOL
320	320-070G	SPRING,COIL
330	5020V00337B	BUTTON,POWER
400	3809V00154B	BACK COVER ASSY
	3809V00154U	BACK COVER ASSY(SCART)
	3809V00243L	BACK COVER ASSY(SCART)
520	6871VMM676D	PWB ASSY,MAIN CT-21Q21KE.
	6871VMM676W	PWB ASSY,MAIN CT-21Q21KEX.
	6871VMM676E	PWB ASSY,MAIN CT-21Q22KEX
	6871VMM676J	PWB ASSY,MAIN CT-21Q22KEX
	6871VMM676G	PWB ASSY,MAIN CT-21Q21KE(SCART)
	6871VMM745G	PWB ASSY,MAIN CT-21Q22KEX(X-RAY)
	6871VMM626B	PWB ASSY,MAIN CT-21Q21KE(PH/AV ST)
	6871VMM676A	PWB ASSY,MAIN CF-21Q21KX
530	6871VSM986A	PWB ASSY,CONT(019A) Q22,CTL+AV+POWER(3
700	0IGL120104A	IC,CDS SENSOR MODULE(P1201-04)
913	332-057B	SCREW ASSY,HEXAGON HEAD
943	1PTF0403116	SCREW,TAP TITE(P) D4.0 L16.0

EXPLODED VIEW : 21Q61/62

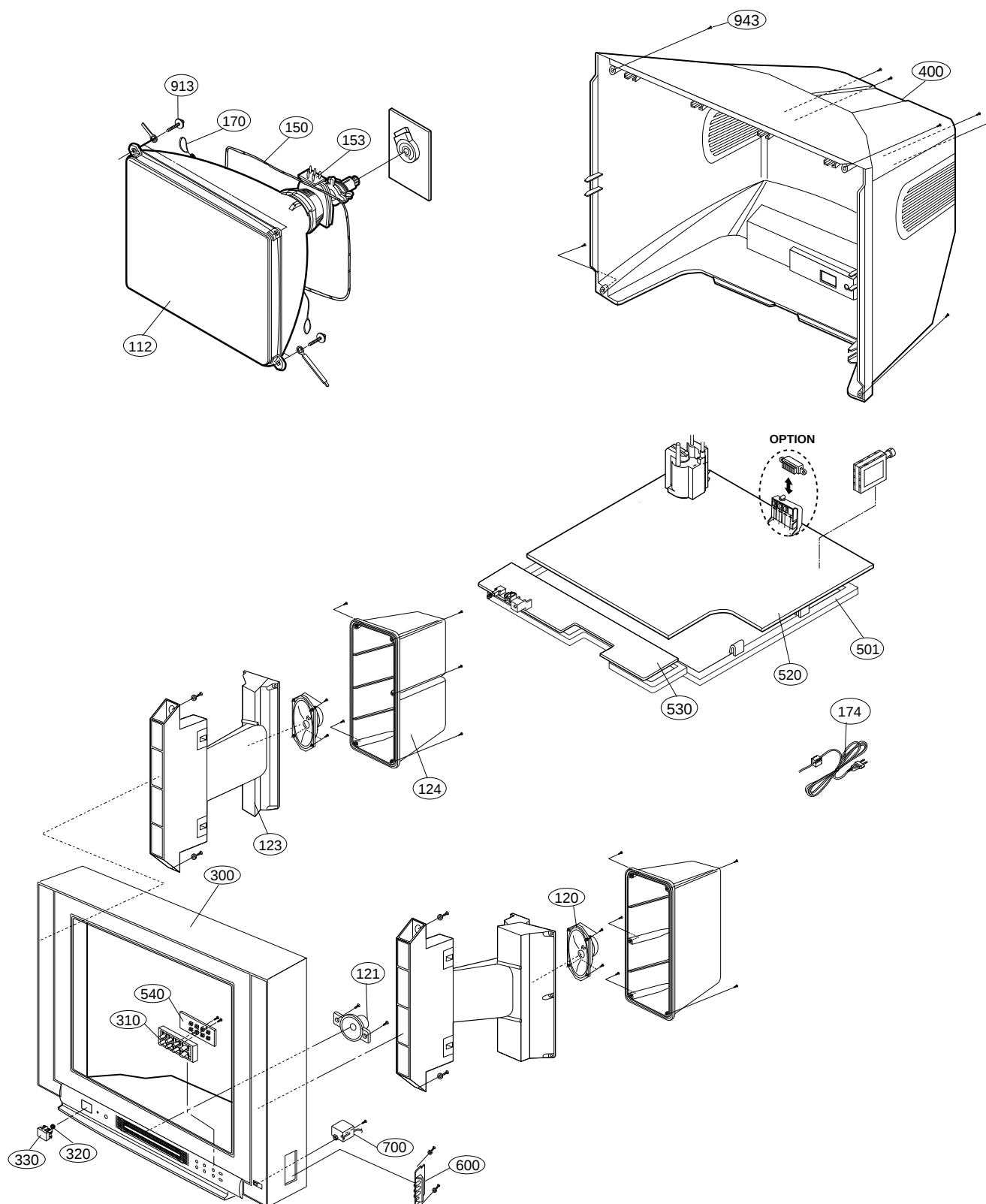


EXPLODED VIEW PARTS LIST

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

LOCA. NO	PART NO	DESCRIPTIONS
Δ 112	6341V21009A	CPT ASSY,A51QDX991X 21" S/S FLAT
120	120-D38C	SPEAKER,MID-RANGE 8 OHM 15/25W 87
123	4810V00123A	BRACKET,CASE
124	4810V00124A	BRACKET,COVER
Δ 150	150-D02X	COIL,DEGAUSSING CU 21" 60TURN 12 OHM
Δ 153	6150V-1019C	DY,DIF-2192AA 21" SAMSUNG .
Δ 170	170-A01N	CPT EARTH21" 64T 2LUG 1P
Δ 174	174-225H	CORD,POWER(L4=350MM)
300	3091V00366C	CABINET ASSY
310	5020V00368B	BUTTON,CONTROL 4KEY
320	320-070S	SPRING,COIL
330	5020V00369A	BUTTON,POWER
400	3809V00173C	BACK COVER ASSY(PHONE JACK)
520	6871VMM676X	PWB ASSY,MAIN 019A
	6871VMM810R	PWB ASSY,MAIN 019A 21Q62KE
530	6871VSM986A	PWB ASSY,CONT (019A) CTL+AV+POWER(3
600	6871VSM963H	PWB ASSY,SIDE A/V
700	0IGL120104A	IC,CDS SENSOR MODULE(P1201-04)
913	332-057B	SCREW ASSY,HEXAGON HEAD
943	1PTF0403116	SCREW,TAP TITE(P) D4.0 L16.0

EXPLODED VIEW : 21Q91/92



EXPLODED VIEW PARTS LIST

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

LOCA. NO	PART NO	DESCRIPTIONS
Δ 112	6341V21009A	CPT ASSY,A51QDX991X 21" S/S FLAT
120	120-D38C	SPEAKER,MID-RANGE 8 OHM 15/25W 87
121	6400VG0002A	SPEAKER,TWEETER T0520101 8 OHM 10
123	4810V00267A	BRACKET,SPK
124	4810V00124A	BRACKET,COVER
Δ 150	150-D02X	COIL,DEGAUSSING CU 21" 60TURN 12 OHM
Δ 153	6150V-1019C	DY,DIF-2192AA 21" SAMSUNG .
Δ 170	170-A01N	CPT EARTH 21" 64T 2LUG 1P HSG
Δ 174	174-009E	CORD,POWER(W/HOLD,HOUSING)
	174-224G	POWER,CORD
300	3091V00282C	CABINET ASSY
310	5020V00431A	BUTTON,CONTROL
320	320-062E	SPRING,KNOB
330	5020V00430A	BUTTON,POWER
400	3809V00208F	BACK COVER ASSY(MC019A,PHONE) .
501	4810V00266A	BRACKET,MAIN
520	6871VMM676R	PWB ASSY,MAIN
	6871VMM814C	PWB ASSY,MAIN 21Q91KEX
	6871VMM814H	PWB ASSY,MAIN 21Q92KE
	6871VMM745K	PWB ASSY,MAIN 21Q92KEX
530	6871VSM962E	PWB ASSY,(019A)21Q90 POWER
540	6871VSM962F	PWB ASSY,(019A)21Q90 CONTROL KEY
600	6871VSM963J	PWB ASSY,(019A)21Q91/92 SIDE A/V
700	0IGL120104A	IC,CDS SENSOR MODULE(P1201-04)
913	332-057B	SCREW ASSY,HEXAGON HEAD
943	1PTF0403116	SCREW,TAP TITE(P)[TRUSS HEAD] + D4.0 L16.0 MSWR3/FZB

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

REPLACEMENT PARTS LIST

LOCA. NO	PART NO	DESCRIPTION
IC		
IC01	0ICTMPH005A	IC,TD9381PS/N2/3,L8011(ARAB) W/O TXT
"	0ICTMPH003A	IC,TD9361PS/N2/4,LG801(ARAB) W/TXT
"	0ICTMPH002A	IC,TDA9361PS/N2/4,LG801
"	0ICTMPH006A	IC,TDA9361PS/N2/4,PHILIPS
IC02	0ISG111733B	IC,LD1117V33C 3SIP ST REGULATOR
IC03	0IAL241600B	IC,AT24C16-10PC 8D EEPROM 16K
IC130	0IKE780500Q	IC,KIA7805API 3P
IC301	0ISA784070A	IC,LA7840 7S VERTICAL
IC602	0ISG729700A	IC,TDA7297 15P,SIP BK 2CH 15W DUA
"	0ISG726600A	IC,TDA7266S 15 SDIP
IC603	0IFA754207A	IC,KA75420ZTA(KA7542ZTA) 3P,TO-92
IC631	0IMCRPH010A	IC,TDA9859 PHILIPS 32P SDIP ST UN
IC661	0IIT341000J	IC,MSP3410D-C5 52P SDIP BK MULTI
IC662	0IFA753307A	IC,KA75330ZTA(KA7533ZTA) 3P,TO-92
Δ IC801	0ILI817000G	IC,LTV817M-VB 4P,DIP BK PHOTO COU
Δ IC802	0ILI817000G	IC,LTV817M-VB 4P,DIP BK PHOTO COU
Δ IC803	0ISK665413C	IC,STR-F6654R(LF1352) 5 SIP BK ST
Δ IC804	0ISK110000A	IC,SE110N(LF12) 3P 110V ERROR AMP
IC842	0IMCRUK002A	IC,S78DL05 3P
IC844	0IMCRKE001A	IC,KIA78R08PI KEC 4PIN,TO220IS-4
IC901	0IPH610700A	IC,TDA6107Q SIP9 BK VIDEO OUT AMP
DIODE		
D101	0DD414809ED	DIODE,1N4148 TA
D102	0DSVH00019A	DIODE,SWITCHING BA282 DO35 35V 100MM
D301	0DD400509AA	DIODE,RECTIFIER 1N4005 GP TA
D401	0DD150009CA	DIODE,RECTIFIER RGP15J,TP(52MM),GI
D441	0DD060009AC	DIODE,TVR06J 0.6A/600V 250NS TP G.I
D442	0DD060009AC	DIODE,TVR06J 0.6A/600V 250NS TP G.I
D443	0DD060009AC	DIODE,TVR06J 0.6A/600V 250NS TP G.I
D501	0DD414809ED	DIODE,1N4148 TA
D571	0DD414809ED	DIODE,1N4148 TA
D802	0DD100009AM	DIODE,RECTIFIER EU1ZV(1) TP
D803	0DD414809ED	DIODE,1N4148 TA
D805	0DD200009AH	DIODE,RU2AMV
D806	0DD100009AM	DIODE,RECTIFIER EU1ZV(1) TP
D807	0DD300009AC	DIODE,RECTIFIER RU3AMV(1) TP
D808	0DD060009AC	DIODE,TVR06J 0.6A/600V 250NS
D815	0DD420000BB	DIODE,D4L20U SHINDENGEN
D824	0DD420000BB	DIODE,D4L20U SHINDENGEN
D901	0DR210009AC	DIODE,RECTIFIER BAV21 TP
D902	0DR210009AC	DIODE,RECTIFIER BAV21 TP
D903	0DR210009AC	DIODE,RECTIFIER BAV21 TP
D904	0DR140049AC	DIODE,RECTIFIER 1N4004A T-81
Δ DB801	0DD260000BB	DIODE,BRIDGE D2SBA60(STK)
LD1101	4930V00183B	HOLDER LED MODULE ASSY.4PIN
ZD01	0DZ910009AJ	DIODE,ZENER MTZJ9.1B TP ROHM-K DO34 0.5W
ZD101	0DZ510009AK	DIODE,ZENER GDZJ5.1B TP GRANDE DO34 0.5W
ZD441	0DZ620009AK	DIODE,ZENER GDZJ6.2B TP GRANDE DO34 0.5W
ZD442	0DZ820009BF	DIODE,ZENER GDZJ8.2B TP GRANDE DO34 0.5W
ZD443	0DZ330009DG	DIODE,ZENER GDZJ33B TP GRANDE DO34 0.5W
ZD447	0DZ240009BH	DIODE,ZENER GDZJ24B
ZD501	0DZ820009BF	DIODE,ZENER GDZJ8.2B TP GRANDE DO34 0.5W

LOCA. NO	PART NO	DESCRIPTION
ZD601	0DZ910009BD	DIODE,ZENER GDZJ9.1B TP GRANDE DO34 0.5W
ZD901	0DZ750009BE	DIODE,ZENER GDZJ7.5B TP GRANDE DO34 0.5W
TRANSISTOR		
Q102	0TR319709AB	TR,KTC3197,TP(KTC388A),KEC
Q103	0TR102009AB	TR,KRC102M,TP(KRC1202),KEC
Q301	0TR198009BA	TR,2SA1980Y TP AUK - -
Q402	0TR570200AA	TR,KSD5702 BK SAMSUNG TO3PF H-OUT
Q442	0TR233109AA	TR,KSC2331-Y TP SAMSUNG TO-92L
Q443	0TR534309AA	TR,2SC5343Y TP AUK - -
Q551	0TR198009BA	TR,2SA1980Y TP AUK - -
Q552	0TR198009BA	TR,2SA1980Y TP AUK - -
Q553	0TR198009BA	TR,2SA1980Y TP AUK - -
Q554	0TR534309AA	TR,2SC5343Y TP AUK - -
Q555	0TR534309AA	TR,2SC5343Y TP AUK - -
Q571	0TR198009BA	TR,2SA1980Y TP AUK - -
Q621	0TR534309AA	TR,2SC5343Y TP AUK - -
Q651	0TR534309AA	TR,2SC5343Y TP AUK - -
Q653	0TR198009BA	TR,2SA1980Y TP AUK - -
Q671	0TR198009BA	TR,2SA1980Y TP AUK - -
Q672	0TR198009BA	TR,2SA1980Y TP AUK - -
Q801	0TR102009AB	TR,KRC102M,TP(KRC1202),KEC
Q802	0TR102009AB	TR,KRC102M,TP(KRC1202),KEC
Q806	0TR102009AB	TR,KRC102M,TP(KRC1202),KEC
Q1101	0TR198009BA	TR,2SA1980Y TP AUK - -
CAPACITOR		
C01	0CN1020K519	1000P 50V K B TA52
C02	0CN1030F679	10000P 16V M Y TA52
C03	0CE107DD618	100UF STD 10V M FL TP5
C04	0CC2200K415	22P 50V J NPO TS
C05	0CC2200K415	22P 50V J NPO TS
C07	0CE107DD618	100UF STD 10V M FL TP5
C51	0CN1030F679	10000P 16V M Y TA52
C101	0CN1030F679	10000P 16V M Y TA52
C102	0CE106DF618	10UF STD 16V M FL TP5
"	0CE105DK618	1UF STD 50V M FL TP5
C107	0CE107DD618	100UF STD 10V M FL TP5
C109	0CE476DK618	47UF STD 50V M FL TP5
C110	0CN1030F679	10000P 16V M Y TA52
C111	0CN1030F679	10000P 16V M Y TA52
C112	0CN1030F679	10000P 16V M Y TA52
C121	0CN1010K519	100P 50V K
C131	0CE107DD618	100UF STD 10V M FL TP5
C201	0CE227DD618	220UF STD 10V M FL TP5
C202	0CN4710K519	470P 50V K B
C204	0CN4710K519	470P 50V K B
C206	0CN4710K519	470P 50V K B
C207	0CN4710K519	470P 50V K B
C208	0CE226DF618	22UF STD 16V M FL TP5
C209	0CE226DF618	22UF STD 16V M FL TP5
C210	0CN1030F679	10000P 16V M Y TA52
C211	0CN1010K519	100P 50V K B
C212	0CN1010K519	100P 50V K B

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LOCA. NO	PART NO	DESCRIPTION
C258	0CN1030F679	10000P 16V M Y TA52
C259	0CN1030F679	10000P 16V M Y TA52
C261	0CN1010K519	100P 50V K
C262	0CN1010K519	100P 50V K
C301	0CQ1041N509	0.1U 100V K POLY
C302	0CQ3931N509	0.0390UF 100V K PE TP
C303	0CK1810W515	180P 500V K B
C304	0CE107DJ618	100UF STD 35V M FL TP5
C307	0CQ6821N509	0.0068U 100V K POLY
C401	181-013Q	MPP 400V 0.36UF J
C402	0CE475DP618	4.7UF STD 160V 20% FL
C403	181-015E	MPP 1600V 0.0068UF H
C404	0CK8210W515	820P 500V K B TS
C405	181-091U	2KV R 221K TP7.5
C441	0CQ1531N509	0.015U 100V K POLY
C443	0CE477DH618	470UF STD 25V M FL TP5
C444	0CE475DR618	4.7UF STD 250V 20% FL TP
C446	0CE477DH618	470UF STD 25V M FL TP5
C447	0CQ3321N509	0.0033U 100V K POLY
C449	181-009V	PP 200V 0.047UF K
C452	0CE106DK618	10UF STD 50V M FL TP5
C501	0CF2241L438	0.22UF D 63V 5% TP 5 M/PE NI
C502	0CN1030F679	10000P 16V M Y TA52
C503	0CE107DD618	100UF STD 10V M FL TP5
C504	0CE225DK618	2.2UF STD 50V 20% FL TP 5
C505	0CQ2221N509	0.0022U 100V K POLY
C506	0CE105DK618	1UF STD 50V M FL TP5
C507	0CQ2221N509	0.0022U 100V K POLY
C509	0CE106DF618	10UF STD 16V M FL TP5
C511	0CE105DK618	1UF STD 50V M FL TP5
C512	0CN1020K519	1000P 50V K B TA52
C513	0CN1020K519	1000P 50V K B TA52
C514	0CQ1041N455	0.1000UF 100V J PP NI FM7.5
C515	0CQ2231N509	0.022U 100V K POLY TP
C516	0CQ3321N509	0.0033U 100V K POLY TP
C517	0CE106DF618	10UF STD 16V M FL TP5
C524	0CN1030F679	10000P 16V M Y TA52
C530	0CQ1041N509	0.1U 100V K POLY TP
C534	0CN1030F679	10000P 16V M Y TA52
C538	0CF4741L438	0.47UF D 63V 5% TP 5 M/PE NI
C540	0CN2230H949	22000P 25V Z
C541	0CN2230H949	22000P 25V Z
C542	0CN2230H949	22000P 25V Z
C548	0CN8210K519	820P 50V K B TA52
C549	0CQ4721N509	0.0047U 100V K POLY TP
C561	0CE107DD618	100UF STD 10V M FL TP5
C573	0CE476DF618	47UF STD 16V M FL TP5
C574	0CQ1021N509	0.001U 100V K POLY TP
C594	0CQ1041N509	0.1U 100V K POLY TP
C601	0CE226DF618	22UF STD 16V M FL TP5
C602	0CF2241L438	0.22UF D 63V 5% TP 5 M/PE NI
C603	0CQ4721N509	0.0047U 100V K POLY TP

LOCA. NO	PART NO	DESCRIPTION
C605	0CQ4721N509	0.0047U 100V K POLY TP
C606	0CF2241L438	0.22UF D 63V 5% TP 5 M/PE NI
C607	0CN1030F679	10000P 16V M Y TA52
C612	0CE477DH618	470UF STD 25V M FL TP5
C631	0CF4741L438	0.47UF D 63V 5% TP 5 M/PE NI
C632	0CF4741L438	0.47UF D 63V 5% TP 5 M/PE NI
C633	0CE107DD618	100UF STD 10V M FL TP5
C634	0CN1030F679	10000P 16V M Y TA52
C635	0CE106DF618	10UF STD 16V M FL TP5
C636	0CQ6821N509	0.0068U 100V K POLY TP
C637	0CF1541L438	0.15UF D 63V 5% TP 5 M/PE NI
C638	0CQ5621N509	0.0056U 100V K POLY TP
C639	0CQ5621N509	0.0056U 100V K POLY TP
C640	0CF1541L438	0.15UF D 63V 5% TP 5 M/PE NI
C641	0CQ6821N509	0.0068U 100V K POLY TP
C642	0CQ5621N509	0.0056U 100V K POLY TP
C644	0CQ4731N509	0.047U 100V K POLY TP
C646	0CF4741L438	0.47UF D 63V 5% TP 5 M/PE NI
C661	0CX4700K409	47P 50V J SL TA52
C662	0CX4700K409	47P 50V J SL TA52
C663	0CE227DD618	220UF STD 10V M FL TP5
C664	0CN1030F679	10000P 16V M Y TA52
C665	0CN1030F679	10000P 16V M Y TA52
C666	0CE335DK618	3.3UF STD 50V 20% FL TP 5
C667	0CN3320F569	3300P 16V K X TA52
C668	0CN3320F569	3300P 16V K X TA52
C669	0CE226DF618	22UF STD 16V M FL TP5
C670	0CE106DF618	10UF STD 16V M FL TP5
C671	0CE107DD618	100UF STD 10V M FL TP5
C672	0CE106DF618	10UF STD 16V M FL TP5
C673	0CN1030F679	10000P 16V M Y TA52
C674	0CN1030F679	10000P 16V M Y TA52
C675	0CE106DF618	10UF STD 16V M FL TP5
C678	0CF3341L438	0.33UF D 63V 5% TP 5 M/PE NI
C679	0CF3341L438	0.33UF D 63V 5% TP 5 M/PE NI
C680	0CN1030F679	10000P 16V M Y TA52
C681	0CE106DF618	10UF STD 16V M FL TP5
C684	0CN1030F679	10000P 16V M Y TA52
C685	0CE106DF618	10UF STD 16V M FL TP5
C686	0CX5600K409	56P 50V J SL TA52
C687	0CX5600K409	56P 50V J SL TA52
C688	0CX5600K409	56P 50V J SL TA52
C689	0CC0200K115	2P 50V D NP0 TS
C690	0CC0200K115	2P 50V D NP0 TS
C695	0CE475DK618	4.7UF STD 50V
C696	0CE475DK618	4.7UF STD 50V
C801	0CE107BJ618	100UF KME 35V M FL TP5
C802	181-091U	2KV R 221K TP7.5
C803	0CK4710W515	470PF 500V K B TR
C804	0CQ1041N509	0.1U 100V K POLY TP
Δ C806	181-001V	CE 450V 220UF M
C807	0CK10201515	1000P 1KV K B TS

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LOCA. NO	PART NO	DESCRIPTION
C808	0CK10201515	1000P 1KV K B TS
Δ C811	181-120K	2200PF 4KV M E FMTW LEAD 4.5
Δ C812	0CE108DH618	1000UF STD 25V M FL TP5
Δ C813	0CK4710W515	470PF 500V K B TR
C815	0CK4710W515	470PF 500V K B TR
C816	0CN1030F679	10000P 16V M Y TA52
C817	0CK4710W515	470PF 500V K B TR
C818	0CE107BH618	100UF KME 25V M FL TP5
C819	181-091Y	2KV R 681K TP7.5
C820	0CE227DP650	220UF STD 160V M FM7.5 BULK
C821	181-120N	1000PF 4KV M E FMTW LEAD4.5
C823	0CK4710K515	470PF 50V K B TR
C825	181-091P	1KV SL 271J TP5
C828	0CE107DF618	100UF STD 16V M FL TP5
C829	0CF1021047A	1000PF D 800V 5% TP 7.5 M/PP N
C830	0CE475DK618	4.7UF STD 50V 20% FL TP 5
C831	0CE108BF618	1000UF KME 16V M FL TP5
C832	181-091P	SL 270PF 1KV 10%
Δ C834	0CE476CP618	47U SHL 160V M FL TP5
C835	0CE107DF618	100UF STD 16V M FL
C841	0CE477DD618	470UF STD 10V M FL TP5
C901	0CE475DR618	4.7UF STD 250V 20% FL TP 5
C902	0CQ1044R539	0.1UF TE 250V K M/PE NI TP5
C903	0CK12202510	1200P 2KV K B S
C904	0CE475DR618	4.7UF STD 250V 20% FL TP 5
C905	0CN5610K519	560P 50V K B TA52
C1111	0CQZVBK002C	A.C 275V 0.22UF K (S=22.5)
C1121	0CE107DD618	100UF STD 10V M FL TP5
C1161	0CE106DK618	10UF STD 50V M FL TP5
C1162	0CE106DK618	10UF STD 50V M FL TP5
C1253	0CN1030F679	10000P 16V M Y TA52
C1255	0CN1030F679	10000P 16V M Y TA52
C1260	0CE226DF618	22UF STD 16V M FL TP5
R655	0CN1030F679	10000P 16V M Y TA52
COIL & TRANSFORMER		
J57	0LA0102K119	INDUCTOR,10UH K
L04	0LA1000K119	INDUCTOR,100UH K
L05	0LA0102K119	INDUCTOR,10UH K
L102	0LA0680K119	INDUCTOR,0.68UH K
L202	0LA0102K119	INDUCTOR,10UH K
L203	0LA0102K119	INDUCTOR,10UH K
L204	0LA0102K119	INDUCTOR,10UH K
L205	0LA0102K119	INDUCTOR,10UH K
L210	0LA0102K119	INDUCTOR,10UH K
L251	0LA0102K119	INDUCTOR,10UH K
L252	0LA0102K119	INDUCTOR,10UH K
L401	6140VE0001V	COIL,LINEARITY 60UH 0.6PHY
Δ L402	6140VB0001F	COIL,CHOKE 130UH 0.45PHY
L501	0LA0102K119	INDUCTOR,10UH K
L502	0LA0102K119	INDUCTOR,10UH K
L503	0LA0102K119	INDUCTOR,10UH K

LOCA. NO	PART NO	DESCRIPTION
L506	0LA0102K119	INDUCTOR,10UH K
L551	0LA0681K119	INDUCTOR,6.8UH K
L552	0LA0561K119	INDUCTOR,5.6UH K
L611	0LA0102K049	INDUCTOR,10UH 10
L661	0LA0102K119	INDUCTOR,10UH K
L662	0LA0102K119	INDUCTOR,10UH K
L663	0LA0102K119	INDUCTOR,10UH K
L801	150-C02F	COIL,CHOKE 82UH R1217
R443	0LA0101K119	INDUCTOR,1.0UH K
R545	0LA0681K119	INDUCTOR,6.8UH K
R546	0LA0681K119	INDUCTOR,6.8UH K
R547	0LA0681K119	INDUCTOR,6.8UH K
Δ T401	6174V-6006E	FBT,BSC23-N0107 20"/21"
Δ T402	6170VC0003A	TRANSFORMER,H-DRIVER DRUM BASE 10MM
Δ T802	151-A13P	TRANSFORMER,SMPS EC4215 265UH
"	6170VMCB01K	TRANSFORMER,EER4215 340UH
CONNECTOR		
P301	366-043K	CONNECTOR PLUG(4P)
P902	387-603E	CONNECTOR ASSY 9PIN (IL-J)
P1107	387-A04B	CONNECTOR ASSY,4P (L=150)
P1205	387-A08C	CONNECTOR ASSY,8P (L=200)
P1206	387-A05C	CONNECTOR ASSY,5P (L=200)
RESISTOR		
C253	0RD4702F609	47K OHM 1/6W 5
C255	0RD4702F609	47K OHM 1/6W 5
C258	0RD4702F609	47K OHM 1/6W 5
C259	0RD4702F609	47K OHM 1/6W 5
D813	0RS0272H609	27OHM 1/2W 5
Δ FR441	0RF0470J607	0.47 OHM 1 W 5.00% TA62
Δ FR442	0RF0151J607	1.5 OHM 1 W 5.00% TA62
Δ FR443	0RF0470J607	0.47 OHM 1 W 5.00% TA62
Δ FR802	0RF0470H609	0.47 OHM 1/2 W 5.00% TA52
FR901	0RF0151J607	1.5 OHM 1 W 5.00% TA62
J30	0RD2200F609	220 OHM 1/6 W 5.00% TA52
J33	0RD2200F609	220 OHM 1/6 W 5.00% TA52
J39	0RD2200F609	220 OHM 1/6 W 5.00% TA52
J149	0RD1001F609	1K OHM 1/6 W 5.00% TA52
J154	0RD6800F609	680 OHM 1/6 W 5.00% TA52
L10	0RD0102F609	10 OHM 1/6 W 5.00% TA52
L1101	0RD1500F609	150 OHM 1/6 W 5.00% TA52
L251	0RD2002F609	20K OHM 1/6 W 5.00% TA52
L252	0RD2002F609	20K OHM 1/6 W 5.00% TA52
R01	0RD1002F609	10K OHM 1/6 W 5.00% TA52
R03	0RD1000F609	100 OHM 1/6 W 5.00% TA52
R04	0RD3301F609	3.3K OHM 1/6 W 5.00% TA52
R05	0RD3301F609	3.3K OHM 1/6 W 5.00% TA52
R06	0RD4701F609	4.7K OHM 1/6 W 5.00% TA52
R07	0RD4701F609	4.7K OHM 1/6 W 5.00% TA52
R09	0RD1000F609	100 OHM 1/6 W 5.00% TA52
R10	0RD1000F609	100 OHM 1/6 W 5.00% TA52

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LOCA. NO	PART NO	DESCRIPTION
R12	ORD1001F609	1K OHM 1/6 W 5.00% TA52
R13	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R14	ORD1603F609	160KOHM 1/6 W 5.00% TA52
R15	ORD1001F609	1K OHM 1/6 W 5.00% TA52
"	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R16	ORD4701F609	4.7K OHM 1/6 W 5.00% TA52
R17	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R18	ORD1203F609	120KOHM 1/6 W 5.00% TA52
R19	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R41	ORD6200F609	620 OHM 1/6 W 5.00% TA52
R51	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R52	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R101	ORD1002F609	10K OHM 1/6 W 5.00% TA52
R102	ORD1202F609	12K OHM 1/6 W 5.00% TA52
R103	ORD1802F609	18K OHM 1/6 W 5.00% TA52
R105	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R106	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R107	ORS0272J607	27 OHM 1 W 5.00% TA62
R108	ORD0392F609	39 OHM 1/6 W 5.00% TA52
R109	ORD0562F609	56 OHM 1/6 W 5.00% TA52
R110	ORD1201F609	1.2K OHM 1/6 W 5.00% TA52
R111	ORD3601F609	3.6K OHM 1/6 W 5.00% TA52
R112	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R113	ORD6800F609	680 OHM 1/6 W 5.00% TA52
R114	ORD0272F609	27 OHM 1/6 W 5.00% TA52
R115	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R116	ORD6801F609	6.8K OHM 1/6 W 5.00% TA52
R117	ORD2201F609	2.2K OHM 1/6 W 5.00% TA52
R118	ORD2201F609	2.2K OHM 1/6 W 5.00% TA52
R201	ORD0912F609	91 OHM 1/6 W 5.00% TA52
"	ORD0512F609	51 OHM 1/6 W 5.00% TA52
R204	ORD0752F609	75 OHM 1/6 W 5.00% TA52
R205	ORD0822F609	82 OHM 1/6 W 5.00% TA52
R206	ORD0822F609	82 OHM 1/6 W 5.00% TA52
R207	ORD0822F609	82 OHM 1/6 W 5.00% TA52
R208	ORD1001F609	1K OHM 1/6 W 5.00% TA52
R251	ORD1300F609	130 OHM 1/6 W 5.00% TA52
"	ORD0752F609	75 OHM 1/6 W 5.00% TA52
R301	ORD0101F609	1 OHM 1/6 W 5.00% TA52
R302	ORN1501F409	1.5K OHM 1/6 W 1.00% TA52
R304	ORD0221H609	2.2 OHM 1/2 W 5.00% TA52
R305	ORD0221H609	2.2 OHM 1/2 W 5.00% TA52
R306	ORS2700K607	270 OHM 2 W 5.00% TA62
R307	ORD1501F609	1.5K OHM 1/6 W 5.00% TA52
R310	ORD1801F609	1.8K OHM 1/6 W 5.00% TA52
R311	ORD4701H609	4.7K OHM 1/2 W 5.00% TA52
R312	ORD2201F609	2.2K OHM 1/6 W 5.00% TA52
R313	ORD1002F609	10K OHM 1/6 W 5.00% TA52
R401	ORD1501H609	1.5K OHM 1/2 W 5.00% TA52
R402	ORS2702K607	27K OHM 2 W 5.00% TA62
R442	ORD5100H609	510 OHM 1/2 W 5.00% TA52
R444	ORD0392H609	39 OHM 1/2 W 5.00% TA52

LOCA. NO	PART NO	DESCRIPTION
R446	ORD1001F609	1K OHM 1/6 W 5.00% TA52
R447	ORD2001F609	2K OHM 1/6 W 5.00% TA52
R450	ORD4701H609	4.7K OHM 1/2 W 5.00% TA52
R451	ORD1200H609	120 OHM 1/2 W 5.00% TA52
R453	ORS5602H609	56K OHM 1/2 W 5.00% TA52
R455	ORS2702K607	27K OHM 2 W 5.00% TA62
R456	ORS2202H609	22K OHM 1/2 W 5.00% TA52
R501	ORD2202F609	22K OHM 1/6 W 5.00% TA52
R502	ORD1002F609	10K OHM 1/6 W 5.00% TA52
R504	ORN3902F409	39K OHM 1/6 W 1.00% TA52
R505	ORD6800F609	680 OHM 1/6 W 5.00% TA52
R506	ORD1001F609	1K OHM 1/6 W 5.00% TA52
R518	ORD3302F609	33K OHM 1/6 W 5.00% TA52
R521	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R522	ORD2702F609	27K OHM 1/6 W 5.00% TA52
R523	ORD1003F609	100K OHM 1/6 W 5.00% TA52
R524	ORD3001F609	3K OHM 1/6 W 5.00% TA52
R525	ORD3900F609	390 OHM 1/6 W 5.00% TA52
R526	ORD2001F609	2K OHM 1/6 W 5.00% TA52
R537	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R538	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R539	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R540	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R542	ORD1002F609	10K OHM 1/6 W 5.00% TA52
R544	ORD2701F609	2.7K OHM 1/6 W 5.00% TA52
R551	ORD1200F609	120 OHM 1/6 W 5.00% TA52
R552	ORD1200F609	120 OHM 1/6 W 5.00% TA52
R553	ORD3300F609	330 OHM 1/6 W 5.00% TA52
R555	ORD1800F609	180 OHM 1/6 W 5.00% TA52
R556	ORD1500F609	150 OHM 1/6 W 5.00% TA52
R557	ORD4701F609	4.7K OHM 1/6 W 5.00% TA52
R558	ORD4701F609	4.7K OHM 1/6 W 5.00% TA52
R559	ORD1800F609	180 OHM 1/6 W 5.00% TA52
R572	ORD5600F609	560 OHM 1/6 W 5.00% TA52
R573	ORD2403F609	240K OHM 1/6 W 5.00% TA52
R601	ORD4701F609	4.7K OHM 1/6 W 5.00% TA52
R602	ORD1002F609	10K OHM 1/6 W 5.00% TA52
R604	ORD3301F609	3.3K OHM 1/6 W 5.00% TA52
"	ORD2401F609	2.4K OHM 1/6 W 5.00% TA52
R606	ORD7501F609	7.5K OHM 1/6 W 5.00% TA52
R608	ORD3301F609	3.3K OHM 1/6 W 5.00% TA52
"	ORD2401F609	2.4K OHM 1/6 W 5.00% TA52
R609	ORD7501F609	7.5K OHM 1/6 W 5.00% TA52
R610	ORD4702F609	47K OHM 1/6 W 5.00% TA52
R611	ORD4702F609	47K OHM 1/6 W 5.00% TA52
R631	ORD1302F609	13K OHM 1/6 W 5.00% TA52
R632	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R633	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R634	ORD1302F609	13K OHM 1/6 W 5.00% TA52
R651	ORD4700F609	470 OHM 1/6 W 5.00% TA52
R652	ORD2200F609	220 OHM 1/6 W 5.00% TA52
R657	ORD4300F609	430 OHM 1/6 W 5.00% TA52

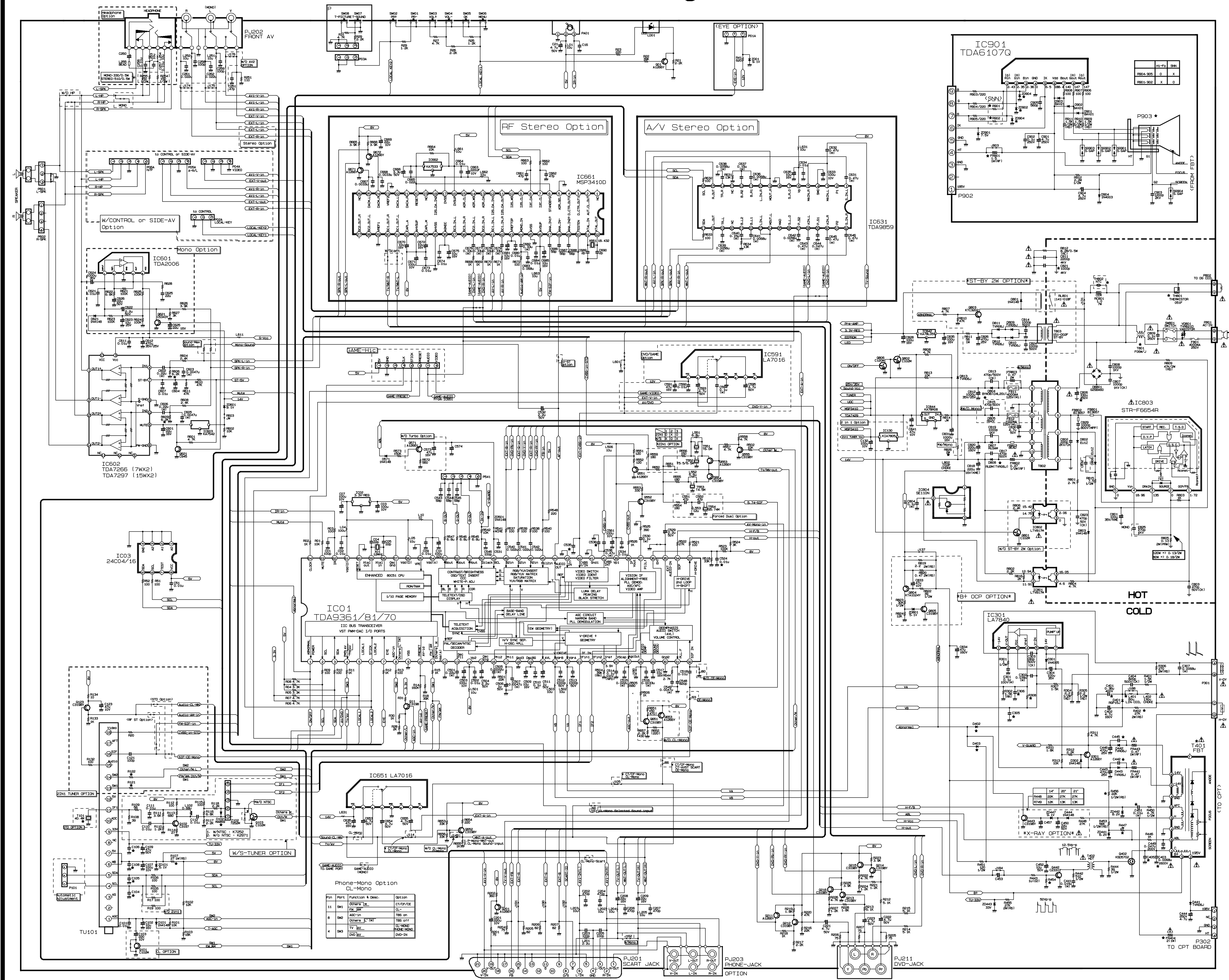
The components identified by mark Δ are critical for safety.
Replace only with part number specified.

For Capacitor & Resistors, the characters at 2nd and 3rd digit in the P/No. means as follows;
 CC, CX, CK, CN : Ceramic
 CQ : Polyester
 CE : Electrolytic
 RD : Carbon Film
 RS : Metal Oxide Film
 RN : Metal Film
 RF : Fusible

LOCA. NO	PART NO	DESCRIPTION
R662	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R663	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R664	ORD1002F609	10K OHM 1/6 W 5.00% TA52
R665	ORD3901F609	3.9K OHM 1/6 W 5.00% TA52
R666	ORD3901F609	3.9K OHM 1/6 W 5.00% TA52
R667	ORD0102F609	10 OHM 1/6 W 5.00% TA52
R670	ORD1001F609	1K OHM 1/6 W 5.00% TA52
R671	ORD1001F609	1K OHM 1/6 W 5.00% TA52
R801	ORD2701F609	2.7K OHM 1/6 W 5.00% TA52
R802	ORD2201F609	2.2K OHM 1/6 W 5.00% TA52
R803	ORD1001F609	1K OHM 1/6 W 5.00% TA52
R804	ORD4701F609	4.7K OHM 1/6 W 5.00% TA52
R805	180-A01P	0.13 OHM 2 W 5% TA62 RWR
R806	ORD2401F609	2.4K OHM 1/6 W 5.00% TA52
R808	ORD4701F609	4.7K OHM 1/6 W 5.00% TA52
R809	ORS4702K607	47K OHM 2 W 5.00% TA62
Δ R812	ORK8204H609	8.2M OHM 1/2 W 5.00% TA52
R813	ORD1002F609	10K OHM 1/6 W 5.00% TA52
R815	ORD0751H609	7.5 OHM 1/2 W 5.00% TA52
R816	ORD2001F609	2K OHM 1/6 W 5.00% TA52
R903	ORD2200F609	220 OHM 1/6 W 5.00% TA52
R904	ORD2200F609	220 OHM 1/6 W 5.00% TA52
R905	ORD2200F609	220 OHM 1/6 W 5.00% TA52
R906	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R907	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R908	ORD1000F609	100 OHM 1/6 W 5.00% TA52
R909	ORS1501H609	1.5K OHM 1/2 W 5.00% TA52
R910	ORS1501H609	1.5K OHM 1/2 W 5.00% TA52
R911	ORS1501H609	1.5K OHM 1/2 W 5.00% TA52
R912	ORD2204H609	2.2M OHM 1/2 W 5.00% TA52
R1101	ORD1201F609	1.2K OHM 1/6 W 5.00% TA52
R1102	ORD4701F609	4.7K OHM 1/6 W 5.00% TA52
R1103	ORD2201F609	2.2K OHM 1/6 W 5.00% TA52
R1104	ORD2201F609	2.2K OHM 1/6 W 5.00% TA52
R1105	ORD1201F609	1.2K OHM 1/6 W 5.00% TA52
R1106	ORD4701F609	4.7K OHM 1/6 W 5.00% TA52
R1121	ORD2201F609	2.2K OHM 1/6 W 5.00% TA52
R1122	ORD3902F609	39K OHM 1/6 W 5.00% TA52
R1123	ORD2200F609	220 OHM 1/6 W 5.00% TA52
R1125	ORD1201F609	1.2K OHM 1/6 W 5.00% TA52
R1126	ORD1601F609	1.6K OHM 1/6 W 5.00% TA52
R1127	ORD3601F609	3.6K OHM 1/6 W 5.00% TA52
R1254	ORD5100H609	510 OHM 1/2 W 5.00% TA52
R1255	ORD5100H609	510 OHM 1/2 W 5.00% TA52
RC801	180-822N	RWR 7W 1.0 OHM J PD
SWITCH		
SW1101	140-315A	SWITCH,TACT SKHV17910B NON 12V
"	140-313B	SWITCH,TACT 2 LEAD(21Q91)
SW1102	140-315A	SWITCH,TACT SKHV17910B NON 12V
"	140-313B	SWITCH,TACT 2 LEAD(21Q91)
SW1103	140-315A	SWITCH,TACT SKHV17910B NON 12V

LOCA. NO	PART NO	DESCRIPTION
"	140-313B	SWITCH,TACT 2 LEAD(21Q91)
SW1104	140-315A	SWITCH,TACT SKHV17910B NON 12V
"	140-313B	SWITCH,TACT 2 LEAD(21Q91)
SW1105	140-313B	SWITCH,TACT 2 LEAD(21Q91)
SW1106	140-313B	SWITCH,TACT 2 LEAD(21Q91)
SW1107	140-313B	SWITCH,TACT 2 LEAD(21Q91)
SW1108	140-313B	SWITCH,TACT 2 LEAD(21Q91)
Δ SW1111	6600VM2002A	SWITCH,PUSH SDKEA3 250V 8A HORIZO
FILTER & CRYSTAL		
FB801	125-022R	FILTER,EMC BI3857 FEELUX 5.7X3.6MM
FB802	125-022R	FILTER,EMC BI3857 FEELUX 5.7X3.6MM
FB803	125-022R	FILTER,EMC BI3857 FEELUX 5.7X3.6MM
T551	6200VST001E	FILTER,BAND PASS XT6.0MB
T552	166-C04C	FILTER,BAND PASS TPWRD5M50B02-A0
T553	6200VST001C	FILTER,BAND PASS XT4.5MB
T1111	150-F06J	FILTER,EMC SQE2930 18MH PHY TURN
"	150-F09C	FILTER,EMC SQE2828 18-35MH
Z102	6200VQS004A	FILTER,SAW 0FWK7252M EPCOS 38.9MHZ 5PIN
"	6200VQS001L	FILTER,SAW 0FWK2971M
Z551	6200VCT001B	FILTER,LT5.5MH
"	6200VCT001D	FILTER,LT6.5MH
ACCESSORIES		
A1	3828VA0262F	MANUAL,OWNERS LG AR/EN
A1	3828VA0262G	MANUAL,OWNERS IN/REG NO.LG IN/EN 070
A2	6710V00070A	REMOTE CONTROLLER W/TXT
A2	6710V00070B	REMOTE CONTROLLER W/O TXT 28KEY
A2	6710V00061D	REMOTE CONTROLLER
A2	6710V00061G	REMOTE CONTROLLER
A3	5010V00005D	ANTENNA,2 POLE 3 SECTION 700MM 750MM
MISCELLANEOUS		
Δ F812	131-096N	FUSE,4000MA 125 V 2.5X7.6 CY/CE UL
Δ F1111	0FS4001B53C	FUSE,4000MA 250 V 5.2X20
Δ FR803	131-096N	FUSE,4000MA 125 V 2.5X7.6 CY/CE UL
PA1101	6726VV0006J	REMOTE CONTROLLER RECEIVER TSOP2238MQ1
PJ201	6612VJH011C	JACK,RCA PPJ109C A/V IN/OUT 6
"	6612VMH001A	JACK,SCART UPJ-R1 018
PJ202	6613V00006E	JACK ASSY,PJ6062E
PJ1202	6613V00004F	JACK ASSY,PPJ107F A/V 3P
PJ1203	380-068B	JACK,EARPHONE WITH SW STEREO 3.5
Δ SK901	6620VBC003A	SOCKET,CPT PCS030A 8PIN 14/360
Δ TH801	163-051F	THERMISTOR,J503P84D140M290Q
TU101	6700VPF009V	TUNER,TAEL-G579D LG MULTI FS
"	6700VPF009R	TUNER,TAFL-Z242D
"	6700VPF016A	TUNER,DT5-BF70D
VD1111	164-003G	VARISTOR,TVR621D14A 620V 10%
X01	156-A02B	RESONATOR,CRYSTAL HC49U 12.000MHZ 30P
X661	156-A02M	RESONATOR,CRYSTAL HC49U

Schematic Diagram of MC-019A



NOTICE

Since this is basic circuit diagram, the value of components and some partial connection are subject to be changed for improvement without notice.

The components marked  conform to VDE or IEC guide-lines and are essential for safe operation of the TV receiver.

while those marked  are required for correct operation.

Use specified parts only when replacing.

Value of resistor,
capacitor and inductor

1. Resistances are shown in ohms.
K=1,000. M=1,000,000.
2. Unless otherwise noted in schematic.
all capacitor values less than 1
are expressed in nfd and the values
more than 1 in pF.
3. Unless otherwise noted in schematic.
all inductor values more than 1
are expressed in uH and the values
less than 1 in Henry(H).

Observation of voltages and waveforms

1. Voltages read with VTVM from point to chassis ground.
line voltage is $230\text{V} \pm 20\%$ volts.
signal pattern is colour-bar.
2. The schematic shown is representative only.
3. All waveforms are taken using a wide band oscilloscope and a low capacity probe.
4. Check FINE TUNING, AGC, CONTRAST, BRIGHTNESS and COLOUR controls for best picture. make sure that COLOUR and BRIGHTNESS are in mid-point and CONTRAST is in 75%.
5. Waveforms are taken using a standard colour signal.

<SYSTEM OPTION>

1 RF STEREC

[illegible]

2 AV STEREO

[illegible]

3 MONO

[illegible]

P/NO:3854VA0083A-S
2001.04.20

This is a detailed photograph of a complex electronic circuit board, likely a radio receiver or amplifier. The board is populated with numerous components including resistors, capacitors, integrated circuits, and transistors. Key features include a large circular component labeled 'C801' in the center, a 'T801' transformer on the left, and a 'CPT SOCKET (SK901)' at the bottom left. The board is marked with various alphanumeric codes and labels such as 'Pang-Pang MC-19A', '6870W0224A(11)', and '01046 K.J.H.'.

COMPONENT LOCATION GUIDE

C01.....B4	C403.....G4	C607.....B3	C811.....G3	F812.....E2	L801.....E4	R05.....B4	R218.....D5	R554.....D4	R820.....F4
C02.....B4	C404.....G4	C611.....B3	C812.....E2	F801A.....G2	L802.....E3	R06.....B3	R219.....D5	R555.....D4	R822.....F4
C03.....B3	C405.....G4	C612.....B3	C813.....D2	F801B.....G1	LD01.....F1	R07.....B3	R220.....D5	R556.....D4	R823.....E4
C04.....B4	C441.....G3	C621.....A2	C814.....D1	FB801.....F2	P102.....B5	R08.....B4	R221.....D5	R557.....D3	R824.....E4
C05.....B4	C442.....E5	C622.....A3	C815.....E3	FB802.....F2	P302.....E5	R09.....B4	R222.....D5	R558.....C4	R901.....B1
C06.....C4	C443.....E5	C623.....A3	C816.....E3	FB803.....E3	P541.....C3	R10.....B4	R223.....D5	R559.....C3	R902.....B1
C07.....B3	C444.....G5	C624.....B2	C817.....E3	FR441.....E5	P601.....B2	R11.....B4	R224.....D5	R560.....D4	R903.....B1
C09.....C4	C445.....E5	C625.....A2	C818.....D3	FR442.....E5	P602.....B2	R12.....B4	R225.....D5	R561.....D4	R904.....B1
C10.....B3	C446.....E5	C626.....A2	C819.....E4	FR443.....E5	P701.....B2	R13.....B4	R226.....E5	R572.....E5	R905.....B1
C11.....B4	C449.....F5	C631.....D1	C820.....E3	FR802.....E3	P901.....A2	R14.....B5	R227.....D5	R573.....E5	R906.....A1
C16.....F1	C450.....G5	C632.....D2	C821.....E2	FR803.....E2	P902.....B1	R15.....B5	R228.....D5	R601.....B3	R907.....A1
C21.....E1	C452.....G3	C633.....D1	C822.....E3	FR901.....B1	P903.....B2	R16.....B4	R251.....C1	R602.....B3	R908.....A1
C51.....B4	C453.....E4	C634.....C1	C823.....G3	HIC01.....D3	P01A.....A4	R17.....B4	R254.....B2	R603.....B3	R909.....A1
C101.....A5	C457.....G5	C635.....D1	C824.....D1	IC01.....B4	P02A.....D1	R18.....B5	R255.....B2	R604.....B2	R910.....A1
C102.....A5	C501.....C4	C636.....C1	C825.....G3	IC02.....B3	P03A.....D1	R19.....B4	R301.....E4	R606.....B2	R911.....A2
C103.....B5	C502.....B5	C637.....C1	C826.....D1	IC03.....B4	P05A.....C1	R20.....A4	R302.....E4	R608.....B2	R912.....B1
C104.....B5	C503.....C5	C638.....C1	C828.....D2	IC130.....A4	P06A.....B2	R21.....E1	R304.....E4	R609.....B2	RC801.....F2
C105.....B5	C504.....C4	C639.....C2	C829.....G2	IC301.....E4	P301A.....F4	R22.....E1	R305.....E4	R610.....C3	RL801.....E2
C106.....A5	C505.....C4	C640.....C2	C830.....E2	IC591.....C3	P301B.....F4	R23.....E1	R306.....F4	R611.....C3	SG901.....A1
C107.....A5	C506.....C5	C641.....C2	C831.....E3	IC601.....D1	P301C.....F4	R25.....E1	R307.....E4	R621.....A3	SG902.....A1
C108.....A5	C507.....C5	C642.....D2	C832.....F3	IC602.....A3	P301D.....G4	R26.....D1	R308.....E4	R622.....A3	SG903.....A2
C109.....A4	C508.....C3	C643.....D2	C833.....F4	IC603.....B3	P801A.....G1	R27.....D1	R310.....D4	R623.....A3	SG904.....A2
C110.....B5	C509.....C4	C644.....D1	C834.....F4	IC621.....A3	P801B.....G1	R28.....B5	R311.....E4	R624.....A3	SW01.....D1
C111.....B5	C510.....C4	C645.....D2	C835.....D1	IC631.....D1	P802A.....F1	R29.....D1	R312.....E4	R625.....A3	SW02.....D1
C112.....B5	C511.....C5	C646.....D1	C841.....D3	IC661.....C2	P802B.....F1	R30.....B5	R313.....E4	R626.....A3	SW03.....D1
C113.....A4	C512.....D4	C653.....D2	C901.....B1	IC662.....C2	PA01.....F1	R31.....B5	R401.....F4	R627.....A3	SW04.....D1
C114.....A4	C513.....D4	C654.....D3	C902.....A1	IC801.....F3	PJ201.....C5	R32.....E1	R402.....F4	R628.....A2	SW05.....E1
C121.....A4	C514.....C4	C655.....C1	C903.....A2	IC802.....F3	PJ202.....C1	R41.....A4	R442.....G3	R631.....C1	SW06.....E1
C123.....A4	C515.....C5	C661.....C3	C904.....B2	IC803.....G2	Q01.....E1	R51.....B4	R443.....F3	R632.....C2	SW801.....G1
C131.....A4	C516.....C5	C662.....C3	C905.....A1	IC804.....F3	Q11.....B5	R52.....B4	R444.....G4	R633.....C2	T101.....B5
C132.....A4	C517.....C4	C663.....C3	C906.....B1	IC842.....D2	Q101.....B5	R101.....B5	R446.....F5	R634.....C2	T401.....F5
C201.....C5	C518.....D4	C664.....C3	D101.....B5	IC844.....E3	Q102.....B5	R102.....B5	R447.....E5	R651.....D5	T402.....G4
C202.....B5	C519.....C4	C665.....D3	D102.....C5	IC901.....A1	Q103.....C5	R103.....B5	R448.....G5	R652.....D4	T551.....D3
C203.....C5	C524.....D4	C666.....D2	D301.....E4	L01.....E1	Q123.....A4	R105.....B5	R450.....E5	R653.....E5	T552.....D3
C204.....B5	C529.....D4	C667.....D3	D302.....E4	L04.....B4	Q211.....D4	R106.....B5	R451.....F3	R654.....D5	T553.....D3
C205.....C5	C530.....C4	C668.....D3	D401.....G4	L05.....B3	Q212.....D4	R107.....A5	R453.....F5	R655.....D5	T801.....F1
C206.....D5	C531.....C4	C669.....D3	D403.....F4	L10.....B3	Q213.....E5	R108.....B5	R454.....G3	R656.....D5	T802.....F3
C207.....D5	C532.....B2	C670.....D2	D441.....G4	L102.....B5	Q214.....D5	R109.....B5	R455.....E5	R657.....D4	T803.....E1
C208.....D5	C534.....C4	C671.....D2	D442.....E5	L201.....C5	Q215.....E4	R110.....B5	R456.....F5	R662.....B2	TH801.....E1
C209.....D5	C535.....C4	C672.....D2	D443.....E5	L202.....B5	Q216.....E5	R111.....B5	R501.....C5	R663.....B2	TH802.....F2
C210.....E5	C536.....C4	C673.....D2	D444.....G5	L203.....C5	Q301.....E4	R112.....B5	R502.....D3	R664.....C3	TU101.....B5
C211.....D5	C538.....C3	C674.....D2	D501.....B3	L204.....D5	Q402.....G4	R113.....B5	R503.....C3	R665.....D3	VD801.....G1
C212.....D5	C540.....C4	C675.....C2	D571.....F5	L205.....D5	Q442.....G3	R114.....B5	R504.....C4	R666.....D3	X01.....B4
C221.....D5	C541.....C4	C676.....D2	D602.....B3	L210.....E5	Q443.....G5	R115.....C5	R505.....C5	R667.....D2	X661.....C2
C222.....D5	C542.....C4	C677.....D2	D621.....A3	L251.....C1	Q551.....C3	R116.....C5	R506.....D5	R668.....D2	Z102.....C5
C223.....D5	C543.....C3	C678.....C2	D801.....E2	L252.....C1	Q552.....D4	R117.....C5	R518.....D4	R669.....D2	Z551.....D4
C224.....E5	C544.....C3	C679.....C2	D802.....F3	L253.....B1	Q553.....D3	R118.....C5	R521.....D4	R670.....C2	ZD01.....A4
C251.....D1	C545.....C3	C680.....C2	D803.....F3	L254.....B1	Q554.....D3	R121.....A4	R522.....D4	R671.....C2	ZD101.....A5
C253.....C1	C546.....C3	C681.....C2	D804.....E2	L255.....C1	Q555.....C3	R122.....A4	R523.....D4	R672.....C3	ZD441.....F4
C255.....C1	C548.....D4	C682.....C2	D805.....E2	L260.....C1	Q571.....E5	R123.....A5	R524.....D4	R801.....F3	ZD442.....E5
C256.....B1	C549.....C4	C683.....C2	D806.....F2	L401.....F4	Q621.....A3	R124.....A5	R525.....D4	R802.....F3	ZD443.....E4
C257.....B1	C551.....D4	C684.....C2	D807.....E4	L402.....F4	Q651.....D5	R132.....A4	R526.....C4	R803.....G2	ZD447.....G5
C258.....C1	C552.....D4	C685.....C2	D808.....E3	L501.....C5	Q652.....D5	R133.....A4	R537.....C3	R804.....G3	ZD501.....C3
C259.....C1	C553.....D3	C686.....C2	D809.....D1	L502.....D4	Q653.....D4	R134.....A4	R538.....C3	R805.....G2	ZD601.....B3
C260.....C1	C561.....C4	C687.....C2	D810.....E1	L503.....D4	Q671.....D3	R201.....C5	R539.....C3	R806.....F3	ZD801.....E4
C261.....C1	C573.....E5	C688.....C2	D811.....D1	L506.....D4	Q672.....D3	R204.....C5	R540.....C3	R807.....D2	ZD901.....B1
C262.....C1	C574.....E5	C689.....C2	D812.....E1	L551.....D3	Q801.....E4	R205.....C5	R541.....C3	R808.....E4	ZD902.....B1
C301.....F4	C593.....C3	C690.....C2	D813.....D2	L552.....D3	Q802.....E4	R206.....C5	R542.....C3	R809.....G2	ZD903.....B1
C302.....E4	C594.....C4	C801.....F2	D814.....E2	L553.....D4	Q803.....E2	R207.....C5	R544.....D4	R810.....E2	ZD904.....B1
C303.....E4	C595.....C1	C802.....F2	D901.....A1	L601.....D2	Q804.....F4	R208.....E5	R545.....C3	R811.....D1	
C304.....E4	C601.....B3	C803.....G2	D902.....A1	L611.....D3	Q805.....E4	R212.....D5	R546.....C3	R812.....G3	
C305.....E4	C602.....B2	C804.....F3	D903.....A1	L621.....D3	Q806.....E4	R213.....D5	R547.....C3	R813.....E3	
C306.....E4	C603.....B2	C806.....F2	D904.....B2	L631.....D2	R01.....B4	R214.....E5	R548.....C3	R814.....E3	
C307.....F4	C604.....B3	C807.....F2	DB801.....G2	L661.....B2	R02.....B4	R215.....E5	R551.....C4	R815.....F3	
C401.....G4	C605.....B2	C808.....G2	F802.....G2	L662.....D3	R03.....B4	R216.....D5	R552.....C4	R816.....F3	
C402.....F3	C606.....A2	C809.....G1	F811.....E2	L663.....C2	R04.....B4	R217.....D5	R553.....C4	R819.....F4	

SVC. SHEET : 3854VA0083A-S