

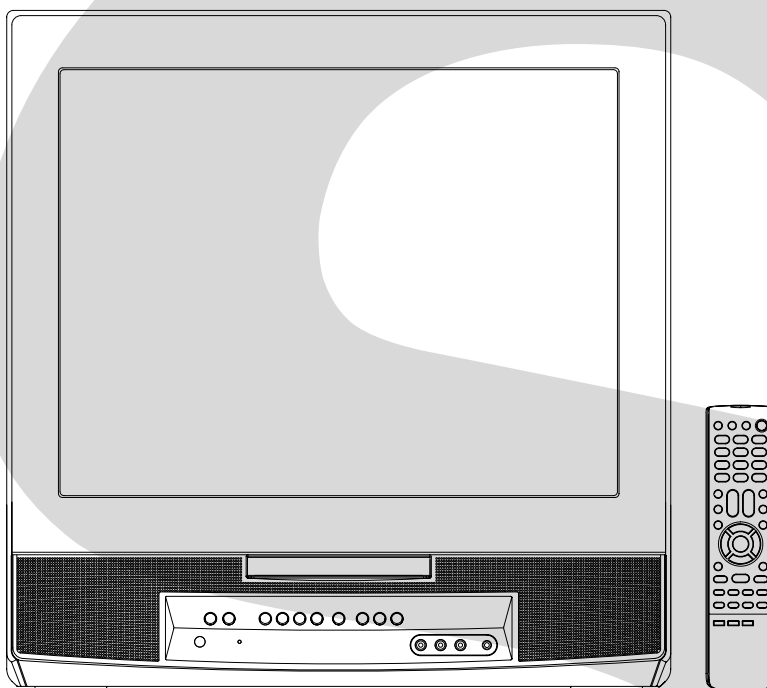
TOSHIBA

FILE NO. 140-200601GR
(MFR'S VERSION A)

SERVICE MANUAL

COLOR TELEVISION/ DVD VIDEO PLAYER

MD20Q42



The above model is classified as a green product (*1), as indicated by the underlined serial number. This Service Manual describes replacement parts for the green product. When repairing this green product, use the part(s) described in this manual and lead-free solder (*2).

For (*1) and (*2), see the next page.

(*1)

GREEN PRODUCT PROCUREMENT

The EC is actively promoting the WEEE & RoHS Directives that define standards for recycling and reuse of Waste Electrical and Electronic Equipment and for the Restriction of the use of certain Hazardous Substances. From July 1, 2006, the RoHS Directive will prohibit any marketing of new products containing the restricted substances.

Increasing attention is given to issues related to the global environmental. Toshiba Corporation recognizes environmental protection as a key management tasks, and is doing its utmost to enhance and improve the quality and scope of its environmental activities. In line with this, Toshiba proactively promotes Green Procurement, and seeks to purchase and use products, parts and materials that have low environmental impacts.

Green procurement of parts is not only confined to manufacture. The same green parts used in manufacture must also be used as replacement parts.

(*2)

LEAD-FREE SOLDER

This product is manufactured using lead-free solder as a part of a movement within the consumer products industry at large to be environmentally responsible. Lead-free solder must be used in the servicing and repair of this product.

WARNING

This product is manufactured using lead free solder.

DO NOT USE LEAD BASED SOLDER TO REPAIR THIS PRODUCT !

The melting temperature of lead-free solder is higher than that of leaded solder by 86°F to 104°F (30°C to 40°C). Use of a soldering iron designed for lead-based solders to repair product made with lead-free solder may result in damage to the component and or PCB being soldered. Great care should be made to ensure high-quality soldering when servicing this product — especially when soldering large components, through-hole pins, and on PCBs — as the level of heat required to melt lead-free solder is high.

CAUTION

THIS DIGITAL VIDEO PLAYER EMPLOYS A LASER SYSTEM.

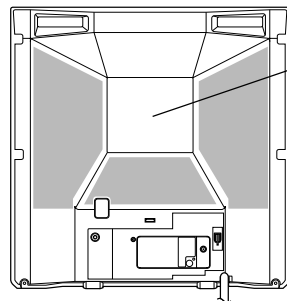
TO ENSURE PROPER USE OF THIS PRODUCT, PLEASE READ THIS SERVICE MANUAL CAREFULLY AND RETAIN FOR FUTURE REFERENCE. SHOULD THE UNIT REQUIRE MAINTENANCE, CONTACT AN AUTHORIZED SERVICE LOCATION-SEE SERVICE PROCEDURE.

USE OF CONTROLS, ADJUSTMENTS OR THE PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

TO PREVENT DIRECT EXPOSURE TO LASER BEAM, DO NOT TRY TO OPEN THE ENCLOSURE. VISIBLE LASER RADIATION MAY BE PRESENT WHEN THE ENCLOSURE IS OPENED. DO NOT STARE INTO BEAM.

Location of the required Marking

The rating sheet and the safety caution are on the rear of the unit.



CERTIFICATION: COMPLIES WITH FDA
RADIATION PERFORMANCE STANDARDS,
21 CFR SUBCHAPTER J.

PREPARATION OF SERVICING

The laser diode used for a pickup head may be destroyed with external static electricity.

Moreover, even if it is operating normally after repair, when static electricity discharge is received at the time of repair, the life of the product may be shortened.

Please perform the following measure against static electricity, be careful of destruction of a laser diode at the time of repair.

- Place the unit on a workstation equipped to protect against static electricity, such as conductive mat.
- Soldering iron with ground wire or ceramic type is used.
- A worker needs to use a ground conductive wrist strap for body.

SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES


As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.

Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a  mark, the designated parts must be used.

4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.

Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not modify the circuit.

Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

(INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the eternal exposure metal **[Note 2]** should be more than 1M ohm by using the 500V insulation resistance meter **[Note 1]**.
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

[Note 1]

If you have not the 500V insulation resistance meter, use a Tester.

[Note 2]

External exposure metal: Antenna terminal

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the VERSION LETTER.)

1. MODEL NUMBER and VERSION LETTER

The MODEL NUMBER can be found on the back of each product and the VERSION LETTER can be found at the end of the SERIAL NUMBER.

2. PART NO. and DESCRIPTION

You can find it in your SERVICE MANUAL.

IMPORTANT SAFEGUARDS

1. READ INSTRUCTIONS

All the safety and operating instructions should be read before the unit is operated.

2. RETAIN INSTRUCTIONS

The safety and operating instructions should be retained for future reference.

3. HEED WARNINGS

All warnings on the unit and in the operating instructions should be adhered to.

4. FOLLOW INSTRUCTIONS

All operating and use instructions should be followed.

5. CLEANING

Unplug this unit from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

6. ATTACHMENTS

Do not use attachments not recommended by the unit's manufacturer as they may cause hazards.

7. WATER AND MOISTURE

Do not use this unit near water. For example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool.

8. ACCESSORIES

Do not place this unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious injury, and serious damage to the unit. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer.

- 8A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

9. VENTILATION

Slots and openings in the cabinet and in the back or bottom are provided for ventilation, to ensure reliable operation of the unit, and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the unit on a bed, sofa, rug, or other similar surface. This unit should never be placed near or over a radiator or heat source. This unit should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

10. POWER SOURCES

This unit should be operated only from the type of power source indicated on the rating plate. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company. For units intended to operate from battery power, or other sources, refer to the operating instructions.

11. GROUNDING OR POLARIZATION

This unit is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug. If your unit is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin, this plug will only fit into a grounding-type power outlet. This too, is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.

12. POWER-CORD PROTECTION

Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

13. LIGHTNING

To protect your unit from a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the unit due to lightning and power line surges.

14. POWER LINES

An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits, as contact with them might be fatal.

15. OVERLOADING

Do not overload wall outlets and extension cords, as this can result in a risk of fire or electric shock.

16. OBJECT AND LIQUID ENTRY

Do not push objects through any openings in this unit, as they may touch dangerous voltage points or short out parts that could result in fire or electric shock. Never spill or spray any type of liquid into the unit.

PORTABLE CART WARNING
(symbol provided by RETAC)



S3126A

17. OUTDOOR ANTENNA GROUNDING

If an outside antenna or cable system is connected to the unit, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA 70, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

18. SERVICING

Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

19. DAMAGE REQUIRING SERVICE

Unplug this unit from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- a. When the power-supply cord or plug is damaged.
- b. If liquid has been spilled, or objects have fallen into the unit.
- c. If the unit has been exposed to rain or water.
- d. If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
- e. If the unit has been dropped or the cabinet has been damaged.
- f. When the unit exhibits a distinct change in performance, this indicates a need for service.

20. REPLACEMENT PARTS

When replacement parts are required, be sure the service technician uses replacement parts specified by the manufacturer or those that have the same characteristics as the original parts.

Unauthorized substitutions may result in fire, electric shock or other hazards.

21. SAFETY CHECK

Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.

22. WALL OR CEILING MOUNTING

The product should be mounted to a wall or ceiling only as recommended by the manufacturer.

23. HEAT

The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

24. DISC TRAY

Keep your fingers well clear of the disc tray as it is closing. It may cause serious personal injury.

25. CONNECTING

When you connect the product to other equipment, turn off the power and unplug all of the equipment from the wall outlet. Failure to do so may cause an electric shock and serious personal injury. Read the owner's manual of the other equipment carefully and follow the instructions when making any connections.

26. SOUND VOLUME

Reduce the volume to the minimum level before you turn on the product. Otherwise, sudden high volume sound may cause hearing or speaker damage.

27. SOUND DISTORTION

Do not allow the product output distorted sound for a longtime. It may cause speaker overheating and fire.

28. HEADPHONES

When you use the headphones, keep the volume at a moderate level. If you use the headphones continuously with high volume sound, it may cause hearing damage.

29. LASER BEAM

Do not look into the opening of the disc tray or ventilation opening of the product to see the source of the laser beam. It may cause sight damage.

30. DISC

Do not use a cracked, deformed, or repaired disc. These discs are easily broken and may cause serious personal injury and product malfunction.

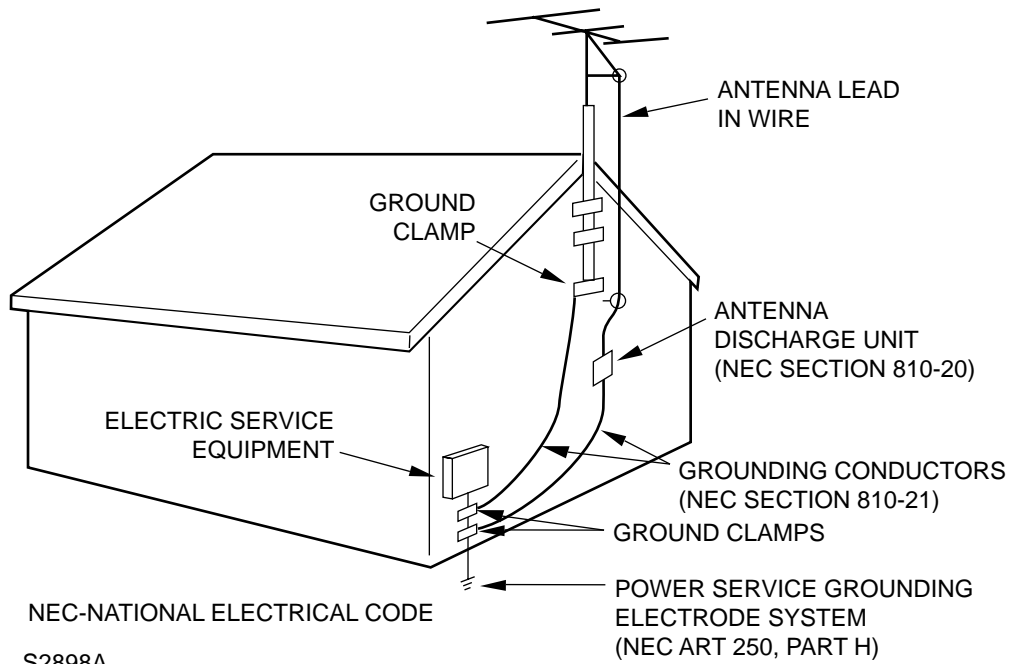
31. NOTE TO CATV SYSTEM INSTALLER

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

IMPORTANT SAFEGUARDS

(CONTINUED)

EXAMPLE OF ANTENNA GROUNDING AS PER THE NATIONAL ELECTRICAL CODE



WHEN REPLACING DVD DECK

[When removing the DVD Deck]

Before removing Pick Up PCB and DVD PCB connector, the short circuit the position shown in **Fig. 1** using a soldering iron. If you remove the DVD Deck with no soldering, the Laser may be damaged.

[When installing the DVD Deck]

Remove all the soldering on the short circuit position after the connection of Pick Up PCB and DVD PCB connector.

NOTE

- Before your operation, please read "PREPARATION OF SERVICING".
- Use the Lead Free solder.
- Manual soldering conditions
 - Soldering temperature: $350 \pm 5^{\circ}\text{C}$
 - Soldering time: Within 2 seconds
 - Soldering combination: Sn-3.0Ag-0.5Cu
- When Soldering/Removing of solder, use the draw in equipment over the Pick Up Unit to keep the Flux smoke away from it.

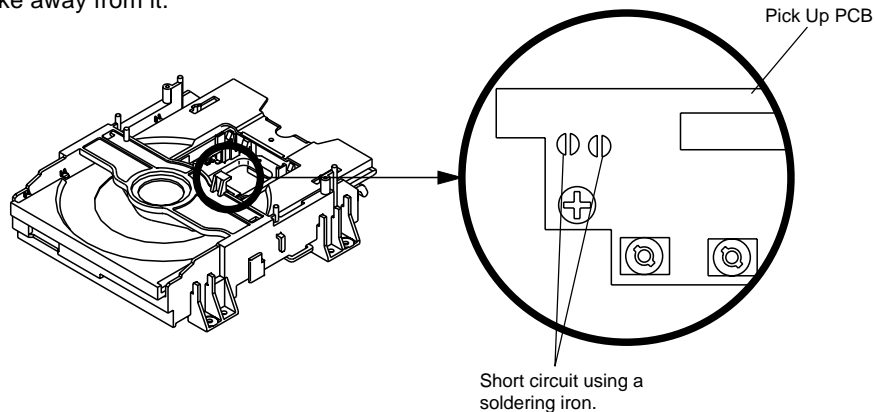


Fig. 1

DISC REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Back Cabinet and AV PCB/DVD Block. (Refer to item 1 of the **DISASSEMBLY INSTRUCTIONS.**)
2. Rotate the Main Gear in the direction of the arrow by hand. (Refer to Fig. 1)
3. Manually open the Tray.

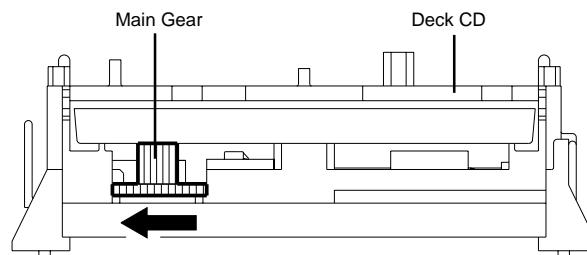


Fig. 1

PARENTAL CONTROL - RATING LEVEL


4 DIGIT PASSWORD CANCELLATION

If the stored 4 digit password in the Rating Level menu needs to be cancelled, please follow the steps below.

1. Turn Unit ON.
2. Set the DVD Mode.
3. Confirm that the 'No Disc' will be appeared on the screen.
4. Press and hold the '7' key on the remote control unit.
5. Simultaneously press and hold the 'STOP' key on the front panel.
6. Hold both keys for more than 3 seconds.
7. The On Screen Display message 'PASSWORD CLEAR' will appear.
8. The 4 digit password has now been cleared


TRAY LOCK

Tray cannot be opened by setting the Tray Lock, please follow the steps below.

1. Turn Unit ON.
2. Set the DVD to the Stop Mode.
3. Press and hold the 'STOP' key on the front panel.
4. Simultaneously press and hold the '9' key on the remote control unit.
5. Hold both keys for more than 3 seconds.
6. The On Screen Display message '  ' will appear.
7. The Tray Lock has now been set up.

NOTE: No indications on the screen when the Tray Lock is setting.

To unlock the Tray Lock, please follow the steps below.


1. Turn Unit ON.
2. Set the DVD to the Stop Mode.
3. Press and hold the 'STOP' key on the front panel.
4. Simultaneously press and hold the '9' key on the remote control unit.
5. Hold both keys for more than 3 seconds.
6. The On Screen Display message '  ' will appear.
7. The Tray Lock has now been cleared.

NOTE: No indications on the screen when the Tray Lock is setting.

It is likely to be going to be changed to the following steps without a previous notice in the future.


If the above is not effective measures, please follow the steps below.

Tray cannot be opened by setting the Tray Lock, please follow the steps below.

1. Turn Unit ON.
2. Set the DVD to the Stop Mode.
3. Press it in order of 'SETUP', 'SUBTITLE', '3', 'AUDIO SELECT' and '0' key of a remote control unit.
4. The On Screen Display message '  ' will appear.
5. The Tray Lock has now been set up.

NOTE: No indications on the screen when the Tray Lock is setting.

To unlock the Tray Lock, please follow the steps below.

1. Turn Unit ON.
2. Set the DVD to the Stop Mode.
3. Press it in order of 'SETUP', 'SUBTITLE', '3', 'AUDIO SELECT' and '0' key of a remote control unit.
4. The On Screen Display message '  ' will appear.
5. The Tray Lock has now been cleared.

NOTE: No indications on the screen when the Tray Lock is setting.

TABLE OF CONTENTS

| | |
|---|------------|
| GREEN PRODUCT PROCUREMENT | A1-1 |
| LEAD-FREE SOLDER | A1-1 |
| CAUTION | A1-2 |
| SERVICING NOTICES ON CHECKING | A1-3 |
| HOW TO ORDER PARTS | A1-3 |
| IMPORTANT SAFEGUARDS | A1-4~A1-6 |
| WHEN REPLACING DVD DECK | A1-7 |
| DISC REMOVAL METHOD AT NO POWER SUPPLY | A1-7 |
| PARENTAL CONTROL-RATING LEVEL | A1-8 |
| TRAY LOCK | A1-8 |
| TABLE OF CONTENTS | A2-1 |
| GENERAL SPECIFICATIONS | A3-1~A3-6 |
| DISASSEMBLY INSTRUCTIONS | |
| 1. REMOVAL OF MECHANICAL PARTS AND P. C. BOARDS | B1-1, B1-2 |
| 2. REMOVAL OF DVD DECK PARTS | B2-1~B2-4 |
| 3. REMOVAL OF ANODE CAP | B3-1 |
| 4. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC | B4-1, B4-2 |
| SERVICE MODE LIST | C-1 |
| WHEN REPLACING EEPROM (MEMORY) IC | C-1, C-2 |
| ELECTRICAL ADJUSTMENTS | D-1~D-6 |
| BLOCK DIAGRAMS | |
| DVD | E-1, E-2 |
| TV | E-3, E-4 |
| POWER | E-5, E-6 |
| PRINTED CIRCUIT BOARDS | |
| DVD | F-1, F-2 |
| AV/CRT | F-3~F-6 |
| LOADING MOTOR/SW | F-7, F-8 |
| SCHEMATIC DIAGRAMS | |
| MPEG/MICON/DSP | G-1, G-2 |
| MEMORY | G-3, G-4 |
| MOTOR DRIVE | G-5, G-6 |
| AUDIO/VIDEO | G-7, G-8 |
| REGULATOR | G-9, G-10 |
| MICON/TUNER | G-11, G-12 |
| SOUND AMP | G-13, G-14 |
| IN/OUT | G-15, G-16 |
| DEFLECTION | G-17, G-18 |
| CRT | G-19, G-20 |
| POWER | G-21, G-22 |
| CHROMA | G-23, G-24 |
| COMB/FILTER | G-25, G-26 |
| LOADING MOTOR/SW | G-27, G-28 |
| INTERCONNECTION DIAGRAM | G-29, G-30 |
| WAVEFORMS | H-1~H-3 |
| MECHANICAL EXPLODED VIEWS | I1-1~I1-3 |
| DVD DECK EXPLODED VIEW | I2-1 |
| MECHANICAL REPLACEMENT PARTS LIST | J1-1 |
| DVD DECK REPLACEMENT PARTS LIST | J2-1 |
| ELECTRICAL REPLACEMENT PARTS LIST | J3-1~J3-4 |

GENERAL SPECIFICATIONS

| | | | | |
|-----|--------------------|------------------------|-----------------------------------|---|
| G-1 | TV System | CRT | CRT Size / Visual Size | 20 inch / 508.0 mmV |
| | | | CRT Type | Normal |
| | | | Magnetic Field BV/BH | +0.45G / 0.18G |
| | | Color System | | NTSC |
| | | Speaker | Position Size Impedance | 2 Speaker Front 3 inch 8 ohm |
| G-2 | DVD System | Sound Output | Max 10%(Typical) | 1.0W + 1.0W |
| | | Color System | | NTSC |
| | | Disc | | DVD, CD-DA, CD-R/RW, Video CD DVD-R/RW (Video Format Only) |
| | | Disc Diameter | | 120 mm , 80 mm |
| | | Drive | | DM3SA |
| | | Search speed | Fwd | 4 step |
| | | | Actual | 2-120 times(DVD, VIDEO CD) 4-40 times (CD) |
| | | | Rev | 4 step |
| | | | Actual | 2-120 times(DVD, VIDEO CD) 4-40 times (CD) |
| | | Slow speed | | Fwd 1/7 - 1/2 times |
| G-3 | Tuning System | | | Actual |
| | | Broadcasting System | | US System M |
| | | Tuner and Receive CH | System | 1Tuner |
| | | | Destination | US(w/CABLE) |
| | | | CH Coverage | 2-69, 4A, A-5-A-1, A-I, J-W, W+1-W+84 |
| | | Intermediate Frequency | Picture(FP) | 45.75MHz |
| | | | Sound(FS) | 41.25MHz |
| | | | FP-FS | 4.50MHz |
| | | Preset CH | | No |
| | | Stereo/Dual TV Sound | | No |
| G-4 | Signal | Tuner Sound Muting | | Yes |
| | | Video Signal | Input Level | 1 V p-p/75 ohm |
| | | | Output Level | -- |
| | | | S/N Ratio (Weighted) | -- |
| | | | Horizontal Resolution at DVD Mode | -- |
| | | | | -- |
| | | RGB Signal | Output Level | -- |
| | | Audio Signal | Input Level | -8.0dBm/50k ohm |
| | | | Output Level | -- |
| | | | Digital Output Level | 0.5 V p-p/75 ohm |
| | | | S/N Ratio at DVD (Weighted) | -- |
| | | | Harmonic Distortion | -- |
| | | | Frequency Response : | -- |
| | | | at DVD | -- |
| | | | at Video CD | -- |
| | | | at SVCD | -- |
| | | | at CD | -- |
| G-5 | Power | Power Source | AC | 120V, 60Hz |
| | | | DC | -- |
| | | Power Consumption | at AC | 90W at 120V 60Hz |
| | | | at DC | -- |
| | | | Stand by (at AC) | 5W at 120V 60Hz |
| | | | Per Year | -- kWh/Year |
| | | Protector | Power Fuse | Yes |
| | | | Safety Circuit | Yes |
| G-6 | Regulation | | IC Protector(Micro Fuse) | No |
| | | | Dew Sensor | No |
| | | Safety | | UL |
| | | Radiation | | FCC |
| | | X-Radiation | | DHHS |
| G-7 | Temperature | Laser | | DHHS |
| | | Operation | | +5oC ~ +40oC |
| G-8 | Operating Humidity | Storage | | -20oC ~ +60oC |
| | | | | Less than 80% RH |

GENERAL SPECIFICATIONS

| | | | |
|-----|-------------------|----------------------|---|
| G-9 | On Screen Display | Menu(TV) | Yes |
| | | Menu Type | Icon |
| | | TV Setup | Yes |
| | | Picture | Yes |
| | | Audio | No |
| | | Picture Preference | Yes |
| | | Channel Setup | Yes |
| | | TV/CABLE | Yes |
| | | Auto CH Memory | Yes |
| | | Add/ Delete | Yes |
| | | V-chip Setup | Yes |
| | | Language | Yes |
| | | Sleep Timer | Yes |
| | | CH / AV(LINE) / DVD | Yes |
| | | Stereo/Audio Output | No |
| | | Bilingual | No |
| | | SAP | No |
| | | Control | Volume |
| | | Level | Brightness / Contrast / Sharpness / Color |
| | | | Tint |
| | | | Bass/Treble/Balance |
| | | Caption / Text | Yes |
| | | Auto Search/Position | No |
| | | Game | Yes |
| | | Mute | Yes |

GENERAL SPECIFICATIONS

| | | | | | |
|------|-------------------|--------------------------------------|-------------------------------|---------------------------|-----|
| G-10 | On Screen Display | Menu (DVD) | | Yes | |
| | | Menu Type | | Icon | |
| | | Language | | Yes | |
| | | Menu | | Yes | |
| | | Subtitle | | Yes | |
| | | Audio | | Yes | |
| | | OSD Language(Set up Language) | | No | |
| | | Video | | Yes | |
| | | E.B.L. (Enhanced Black Level) | | No | |
| | | TV Screen Size(4:3) | | Yes | |
| | | OSD Display On/Off | | Yes | |
| | | Picture Mode (Video/Film/Auto) | | Yes | |
| | | JPEG Interval | | Yes | |
| | | Screen Saver | | No | |
| | | Audio | | Yes | |
| | | DRC (Dynamic Range Control) | | Yes | |
| | | Dialogue (On DRC[TV] / Off DRC[Std]) | | No | |
| | | Surround | | No | |
| | | System | | Yes | |
| | | Disc/Card Slot | | No | |
| | | Password Lock/ Un Lock | | Yes | |
| | | Parental | | Yes | |
| | | Select Files | | No | |
| | | HDMI (480p/1080i/720p) | | No | |
| | | Output | | No | |
| | | Open | | Yes | |
| | | Close | | Yes | |
| | | No disc | | Yes | |
| | | Reading | | Yes | |
| | | Play | | Yes | |
| | | Still/Pause | | Yes | |
| | | Stop | | Yes | |
| | | Prohibit Mark | | Yes | |
| | | PBC | | Yes | |
| | | Step | | Yes | |
| | | Skip(>>) | | Yes | |
| | | Skip(<<) | | Yes | |
| | | Random | | Yes (CD, VIDEO CD, JPEG) | |
| | | Repeat | | Yes | |
| | | Slow+ | | Yes | |
| | | Slow- | | No | |
| | | Search+ | | Yes | |
| | | Search- | | Yes | |
| | | Jump | | Yes | |
| | | Resume | | Yes | |
| | | Title No. | | Yes | |
| | | Chapter No. | | Yes | |
| | | Track No. | | Yes | |
| | | Time | | Yes | |
| | | Sub Title No. | | Yes | |
| | | Angle No. | | Yes | |
| | | Vocal On/Off | | No | |
| | | Audio No. | | Yes | |
| | | Audio Stereo L/R | | Yes (Video CD) | |
| | | Zoom | | Yes | |
| | | Marker No. | | Yes | |
| | | Program Play Back | | Yes (CD, VIDEO CD, JPEG) | |
| | | Surround On/Off | | No | |
| | | Screen Saver | | No | |
| | | JPEG | | Folder Name | Yes |
| | | | | File Name | Yes |
| | | | | File No | Yes |
| | | | | Time | No |
| | | | | Track No | Yes |
| G-11 | OSD Language | | English, French, Spanish | | |
| G-12 | Clock and Timer | Sleep Timer | Max Time | 120 Min | |
| | | | Step | 10 Min | |
| | | On/Off Timer | Program(On Timer / Off Timer) | No | |
| | | Wake Up Timer | | No | |
| | | Timer Back-up (at Power Off Mode) | more than | -- Min Sec | |

GENERAL SPECIFICATIONS

| | | | |
|------|----------------|--------------------------|------------------------------------|
| G-13 | Remote Control | Unit | RC-MG |
| | | Glow in Dark Remocon | No |
| | | Remocon Format | TOSHIBA |
| | | Format | TOSHIBA |
| | | Custom Code | 40-BF H, 44-BB H, 45-BA H, 45-BC H |
| | | Power Source | 3V |
| | | Voltage(D.C) | UM-4 x 2 pcs |
| | | UM size x pcs | |
| | | Total Keys | 47 Key |
| | | Keys | |
| | | Power | Yes |
| | | 1 | Yes |
| | | 2 | Yes |
| | | 3 | Yes |
| | | 4 | Yes |
| | | 5 | Yes |
| | | 6 | Yes |
| | | 7 | Yes |
| | | 8 | Yes |
| | | 9 | Yes |
| | | 0 | Yes |
| | | Play | Yes |
| | | Stop | Yes |
| | | Search+ | Yes |
| | | Search- | Yes |
| | | Closed Caption/Skip+ | Yes |
| | | Quick View(CH RTN)/Skip- | Yes |
| | | Slow+ | Yes |
| | | Slow- | No |
| | | Pause/Still/Step | Yes |
| | | DISPLAY | Yes |
| | | TV/DVD | Yes |
| | | Cancel | Yes |
| | | Audio Select | Yes |
| | | Angle | Yes |
| | | Subtitle | Yes |
| | | Top Menu | Yes |
| | | Menu | Yes |
| | | DVD Menu | Yes |
| | | Return | Yes |
| | | CH Up | Yes |
| | | CH Down | Yes |
| | | Vol Down | Yes |
| | | Vol Up | Yes |
| | | Up/ Set+ | Yes |
| | | Down/ Set- | Yes |
| | | Left/Select- | Yes |
| | | Right/Select+ | Yes |
| | | Enter | Yes |
| | | Play Mode | Yes |
| | | Input Select/Zoom | Yes |
| | | Repeat A-B | Yes |
| | | Mute | Yes |
| | | Open/Close | Yes |
| | | Sleep | Yes |
| | | Marker | Yes |
| | | Jump | Yes |
| | | Game | Yes |

GENERAL SPECIFICATIONS

| | | | | | | |
|-----------------------------------|-------------------|-----------------------------|-----------------|----------------|------------------|---------|
| G-14 | Features (TV) | CABLE | | Yes | | |
| | | Auto Shut Off | | Yes | | |
| | | Auto Setup | | Yes | | |
| | | Auto CH Memory | | Yes | | |
| | | V-Chip | USA V-chip | Yes | | |
| | | | CANADA V-chip | No | | |
| | | Auto Search | | No | | |
| | | SAP | | No | | |
| | | Game Position | | Yes | | |
| | | FM Transmitter | | No | | |
| | | Energy Star | | No | | |
| | | Closed Caption | | Yes | | |
| | | Comb Filter | | No | | |
| | | Protect of FBT Leak Circuit | | Yes | | |
| | | Picture Preference | | Yes | | |
| | | Choke Coil | | No | | |
| | | Power On Memory | | No | | |
| | | Features (DVD) | Tray Lock | | Yes | |
| | Video CD Playback | | | Yes | | |
| | SVCD Playback | | | No | | |
| | MP3 Playback | | | No | | |
| | WMA Playback | | | No | | |
| | JPEG Playback | | | Yes | | |
| | Digital Out | | (Dolby Digital) | Yes | | |
| | | | (MPEG) | Yes | | |
| | | | (PCM) | Yes | | |
| | | | (DTS) | Yes | | |
| | Down Mix Out | | (Dolby Digital) | Yes | | |
| | | | (DTS) | No | | |
| | 3D Surround | | | No | | |
| | Screen Saver | | | No | | |
| | Closed Caption | | | Yes | | |
| | Audio DAC | | | 192kHz / 24bit | | |
| | G-15 | | Accessories | Owner's Manual | Language | English |
| | | | | | w/Guarantee Card | Yes |
| | | Remote Control Unit | | | Yes | |
| Battery | | | | Yes | | |
| | | UM size x pcs | | UM-4 x 2 pcs | | |
| | | OEM Brand | | No | | |
| Rod Antenna | | | | No | | |
| | | Poles | | No | | |
| | | Terminal | | -- | | |
| Loop Antenna | | | | No | | |
| | | Terminal | | -- | | |
| U/V Mixer | | | | No | | |
| 300 ohm to 75 ohm Antenna Adapter | | | | Yes | | |
| Antenna Change Plug | | | | No | | |
| Guarantee Card | | | | No | | |
| Registration Card | | | | Yes | | |
| Warranty Card | | | | No | | |
| ESP Card | | | | No | | |
| Service Station List | | | | No | | |
| DC Car Cord (Center+) | | | | No | | |
| Columbia Offer Sheet | | | | No | | |
| Information Sheet (Return) | | | | Yes | | |
| Netflix Card | | | | NO | | |

GENERAL SPECIFICATIONS

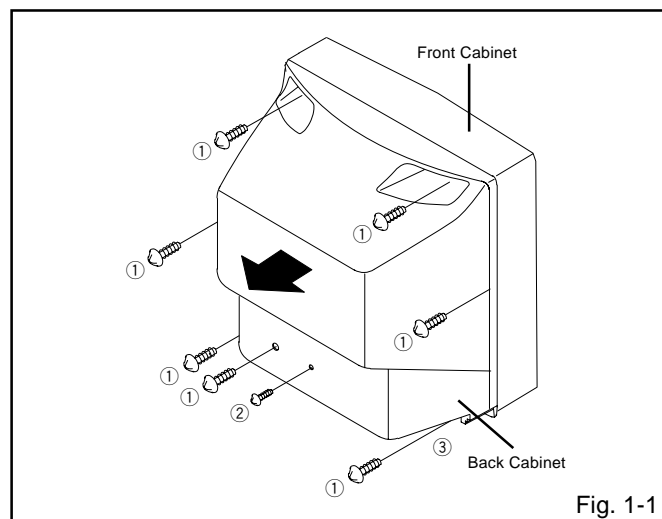
| | | | | | | |
|------|-------------|------------------------------------|------------------------------------|------------------------------|---------------------------------|------------------|
| G-16 | Interface | Switch | Front | Power (Tact) | Yes | |
| | | | | Channel Up | Yes | |
| | | | | Channel Down | Yes | |
| | | | | Volume Up | Yes | |
| | | | | Volume Down | Yes | |
| | | | | Play | Yes | |
| | | | | Open/Close | Yes | |
| | | | | Skip+ /Search+ | Yes | |
| | | | | Skip- /Search- | Yes | |
| | | | | Still/Pause | No | |
| | | | | Stop | Yes | |
| | | | | Main Power SW | No | |
| | | Indicator | Rear | Main Power SW | No | |
| | | | | Power | Yes (Red) | |
| | | | | Stand-by | No | |
| | | Terminals | Front | On Timer | No | |
| | | | | Video Input | RCA x 1 | |
| | | | | Audio Input | RCA x 2(L/MONO, R) | |
| | | | Rear | Other Terminal | Head Phone | |
| | | | | Video Input | No | |
| | | | | Audio Input | No | |
| | | | | Video Output | No | |
| | | | | Audio Output | No | |
| | | | | Digital Audio Output | Coaxial (DVD Only) | |
| | | | | Diversity | No | |
| | | | | DC Jack 12V(Center +) | No | |
| | | | | VHF/UHF Antenna Input | F Type | |
| G-17 | Set Size | | | Approx. W x D x H (mm) | | 502x488.7x513 |
| G-18 | Weight | | | Net (Approx.) | | 22.0kg (48.5lbs) |
| | | Gross (Approx.) | | 24.0kg (52.9lbs) | | |
| G-19 | Carton | Master Carton | | | No | |
| | | | Content | | --- Sets | |
| | | | Material | | --- / --- | |
| | | | Dimensions W x D x H(mm) | | --- | |
| | | | Description of Origin | | --- | |
| | | Gift Box | Material | | Double/Brown | |
| | | | W/Color Photo Label | | No | |
| | | | Dimensions W x D x H(mm) | | 594x569x620 | |
| | | | Description of Origin | | Yes | |
| | | Drop Test | Natural Dropping At | | 1 Corner / 3 Edges / 6 Surfaces | |
| | | | Height (cm) | | 46 | |
| | | | Container Stuffing (40' container) | | 240 Sets | |
| G-20 | Material | Cabinet | Front | PS 94V0 DECABROM | | |
| | | | Rear | PS 94V0 DECABROM | | |
| | | | Jack Panel | - | | |
| | | PCB | Non-Halogen Demand | No | | |
| | | | Eyelet Demand | Yes | | |
| G-21 | Environment | Environmental standard requirement | | Green procurement of TOSHIBA | | |
| | | Pb-free | | Yes | | |

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: BACK CABINET (Refer to Fig. 1-1)

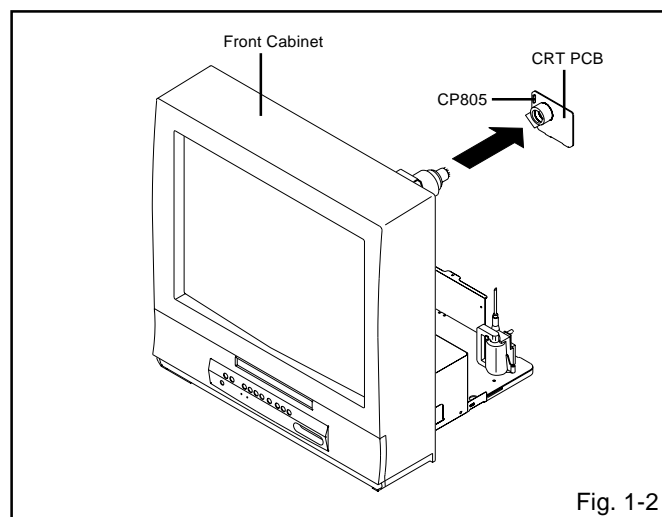
1. Remove the 7 screws ①.
2. Remove the screw ② which are used for holding the Back Cabinet.
3. Remove the AC cord from the AC cord hook ③.
4. Remove the Back Cabinet in the direction of arrow.



1-2: CRT PCB (Refer to Fig. 1-2)

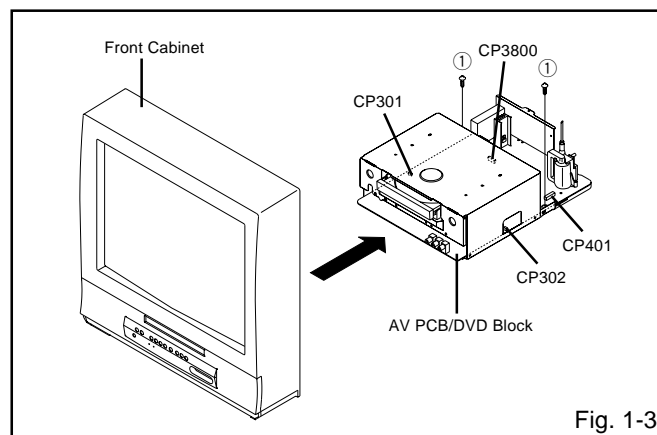
CAUTION: BEFORE REMOVING THE ANODE CAP, DISCHARGE ELECTRICITY BECAUSE IT CONTAINS HIGH VOLTAGE. BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.

1. Remove the Anode Cap.
(Refer to REMOVAL OF ANODE CAP)
2. Disconnect the following connector:
(CP805).
3. Remove the CRT PCB in the direction of arrow.



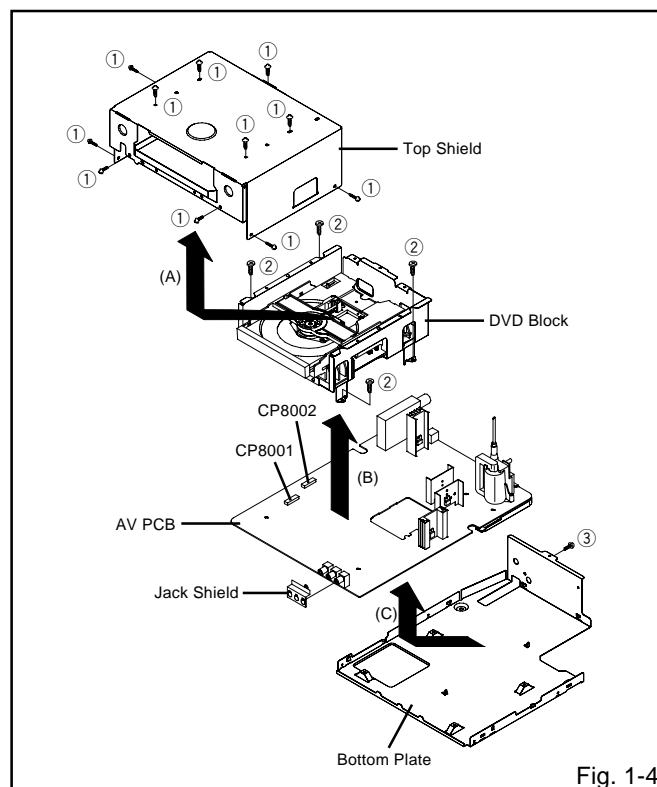
1-3: AV PCB/DVD BLOCK (Refer to Fig. 1-3)

1. Remove the 2 screws ①.
2. Disconnect the following connectors:
(CP301, CP302, CP401 and CP3800).
3. Remove the AV PCB/DVD Block in the direction of arrow.



1-4: DVD BLOCK (Refer to Fig. 1-4)

1. Remove the 11 screws ①.
2. Remove the Top Shield in the direction of arrow (A).
3. Disconnect the following connectors:
(CP8001 and CP8002).
4. Remove the 4 screws ②.
5. Remove the DVD Block in the direction of arrow (B).
6. Remove the screw ③.
7. Remove the Jack Shield.
8. Remove the AV PCB in the direction of arrow (C).



DISASSEMBLY INSTRUCTIONS

1-5: DVD PCB/DVD DECK (Refer to Fig. 1-5)

1. Short circuit the position shown in **Fig. 1-5** using a soldering iron. If you remove the DVD Deck with no soldering, the Laser may be damaged.
2. Remove the 4 screws ①.
3. Remove the DVD Deck in the direction of arrow (A).
4. Disconnect the following connectors:
(CP2301, CP2302 and CP2303).
5. Remove the 2 screws ②.
6. Remove the DVD PCB in the direction of arrow (B).
7. Remove the 4 screws ③.
8. Remove the Deck Shield in the direction of arrow (C).

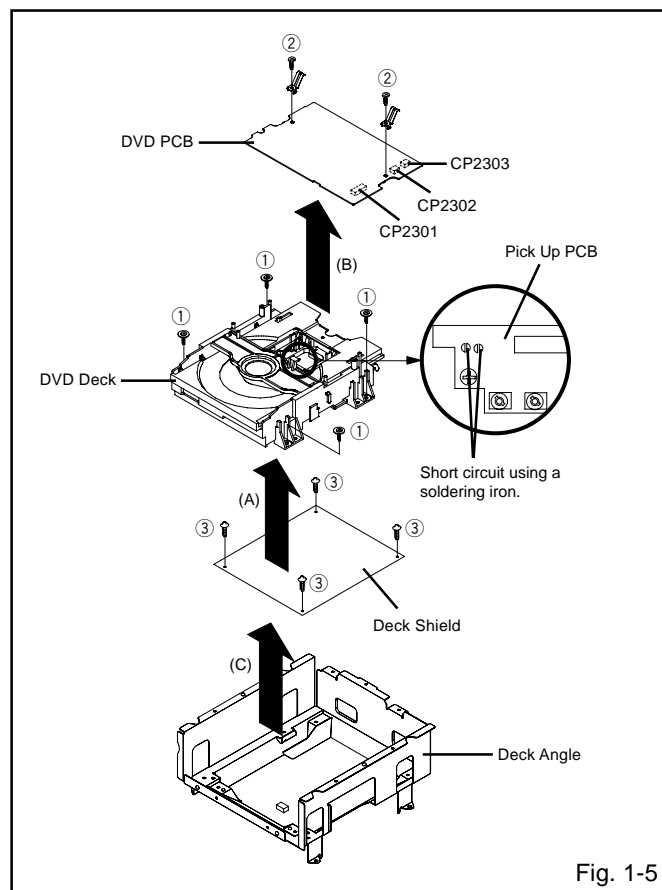


Fig. 1-5

NOTE

1. Before your operation, please read "PREPARATION OF SERVICING".
2. Use the Lead Free solder.
3. Manual soldering conditions
 - Soldering temperature: $350 \pm 5^{\circ}\text{C}$
 - Soldering time: Within 2 seconds
 - Soldering combination: Sn-3.0Ag-0.5Cu
4. When Soldering/Removing of solder, use the drawing equipment over the Pick Up Unit to keep the Flux smoke away from it.
5. When installing the DVD Deck, remove all the soldering on the short circuit position after the connection of Pick Up PCB and DVD PCB connector.

DISASSEMBLY INSTRUCTIONS

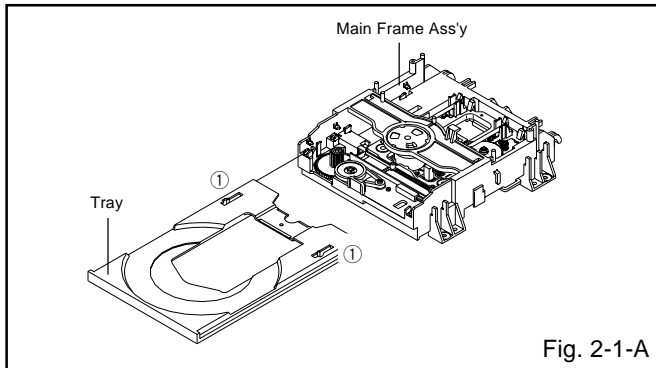
2. REMOVAL OF DVD DECK PARTS

NOTE

1. Do not disassemble the DVD DECK PARTS except listed parts here. Minute adjustments are needed if the disassemble is done. If the repair is needed except listed parts, replace the DVD MECHA ASS'Y.

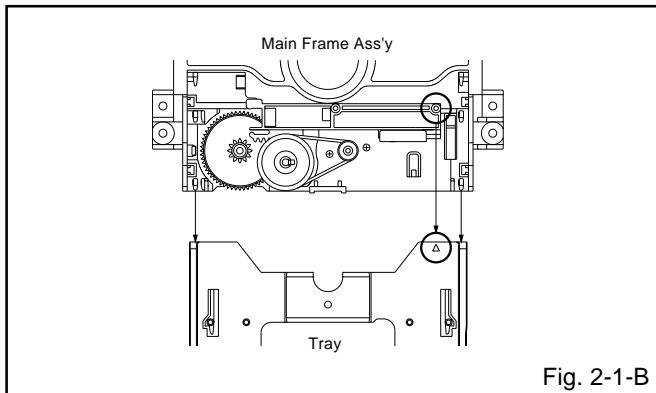
2-1: TRAY (Refer to Fig. 2-1-A)

1. Set the Tray opened. (Refer to the DISC REMOVAL METHOD AT NO POWER SUPPLY)
2. Unlock the 2 supports ① and remove the Tray.



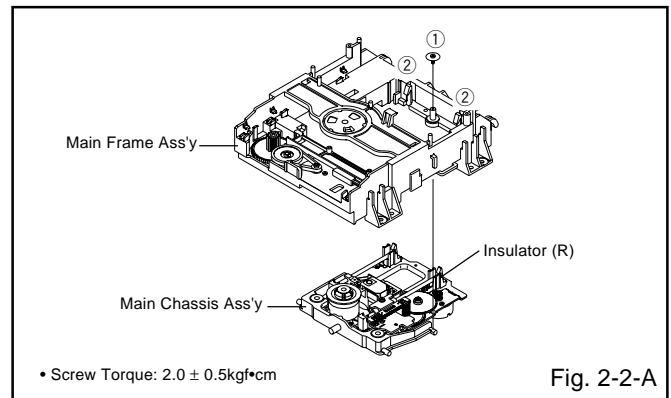
NOTE

1. In case of the Tray installation, install them as the circled section of Fig. 2-1-B so that the each markers are met.



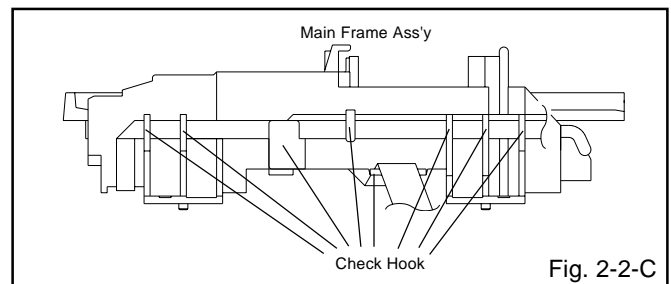
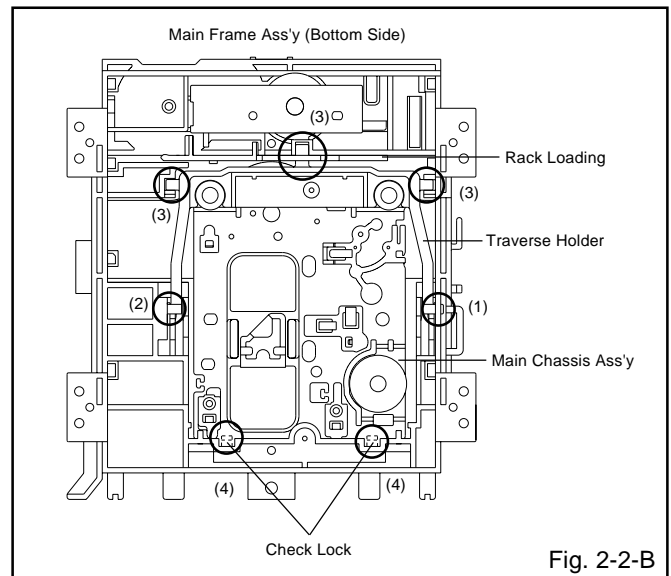
2-2: MAIN CHASSIS ASS'Y (Refer to Fig. 2-2-A)

1. Remove the screw ①.
2. Unlock the 2 supports ②.
3. Remove the Insulator (R) from the Main Frame Ass'y.
4. Remove the Main Chassis Ass'y.



NOTE

1. In case of the Main Chassis Ass'y, install it from (1) to (4) in order. (Refer to Fig. 2-2-B)
2. In case of the Main Chassis Ass'y installation, hook the wire on the Main Frame Ass'y as shown Fig. 2-2-C.



DISASSEMBLY INSTRUCTIONS

2-3: LOADING MOTOR PCB ASS'Y/ LOADING BELT (Refer to Fig. 2-3-A)

1. Remove the Loading Belt.
2. Remove the screw ①.
3. Remove the 2 screws ②.
4. Remove the Loading Motor PCB Ass'y.
5. Remove the Pulley Gear.

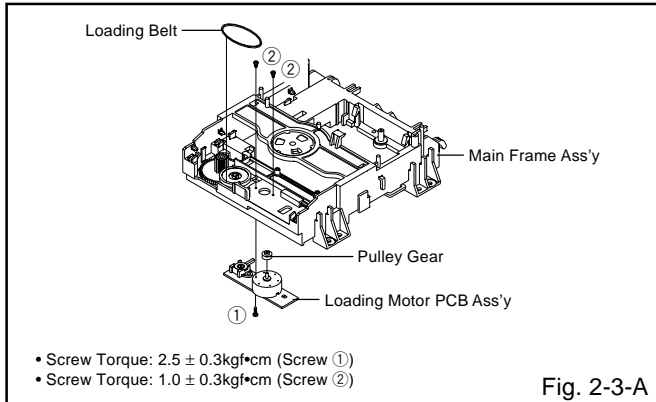


Fig. 2-3-A

NOTE

1. In case of the Pulley Motor installation, check if the value of the Fig. 2-3-B is correct.
2. When installing the Loading Motor PCB Ass'y, install it correctly as Fig. 2-3-C.
3. In case of the Loading Motor PCB Ass'y installation, hook the wire on the Main Frame Ass'y as shown Fig. 2-3-C.

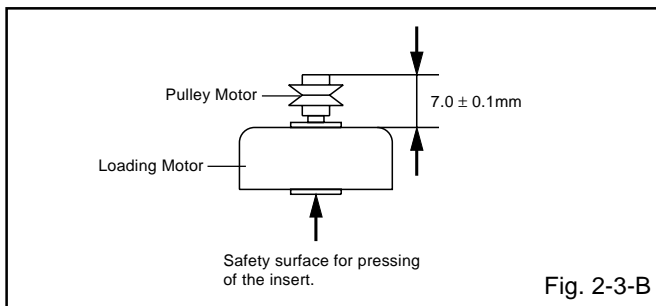


Fig. 2-3-B

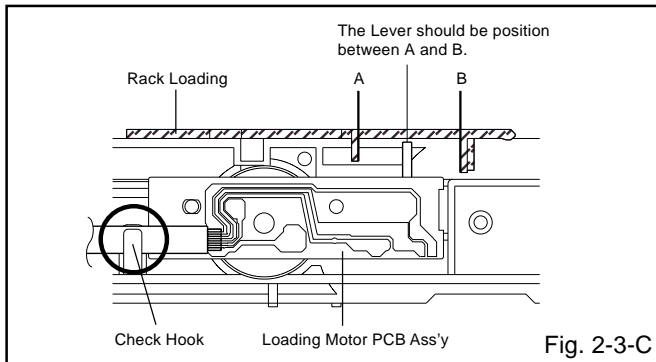


Fig. 2-3-C

2-4: RACK LOADING/MAIN GEAR/PULLEY GEAR (Refer to Fig. 2-4-A)

1. Press down the catcher ① and slide the Rack Loading.
2. Unlock the support ② and remove the Pulley Gear.
3. Remove the Main Gear.

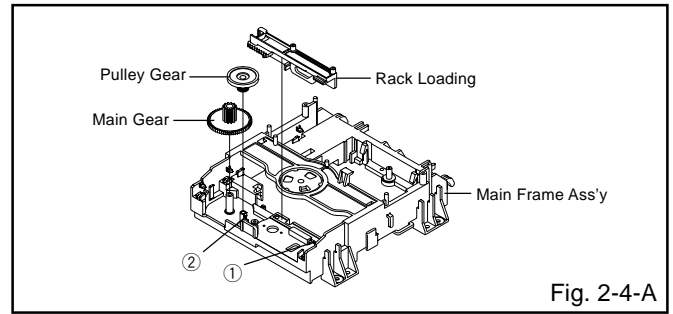


Fig. 2-4-A

NOTE

1. In case of the Rack Loading installation, do not mesh it to the Main Gear as shown the Fig. 2-4-B.

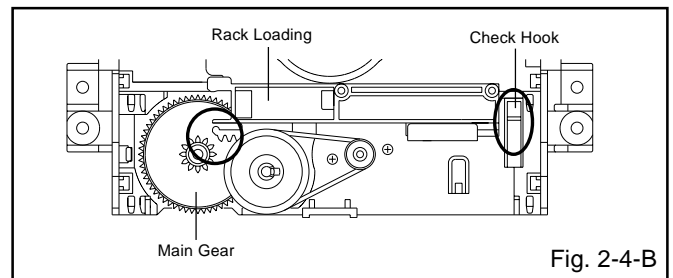


Fig. 2-4-B

2-5: CLAMPER ASS'Y (Refer to Fig. 2-5-A)

1. Press the Clamper and rotate the Clamper Plate clockwise, then unlock the 3 supports ①.
2. Remove the Clamper Plate, Clamper Magnet and Clamper.

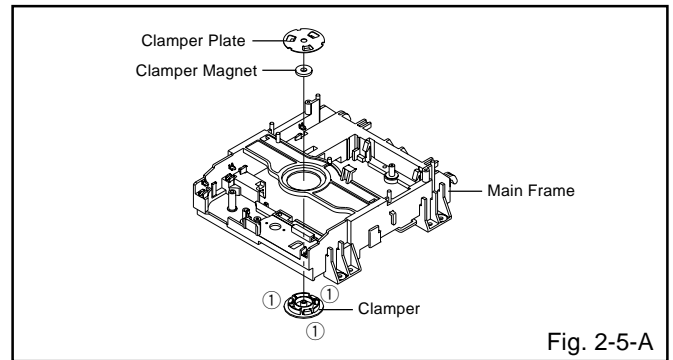


Fig. 2-5-A

NOTE

1. In case of the Clamper Ass'y installation, install correctly as Fig. 2-5-B.

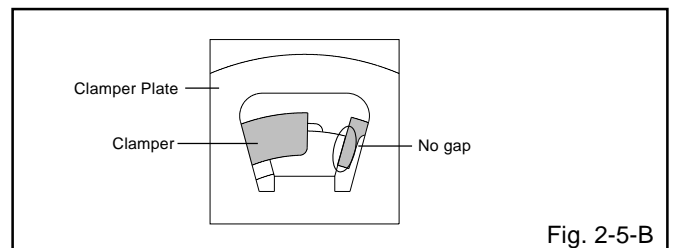


Fig. 2-5-B

DISASSEMBLY INSTRUCTIONS

2-6: TRAVERSE HOLDER/INSULATOR (F)/INSULATOR (R) (Refer to Fig. 2-6-A)

1. Remove the Traverse Holder.
2. Remove the 2 Insulator (F).
3. Remove the Insulator (R).

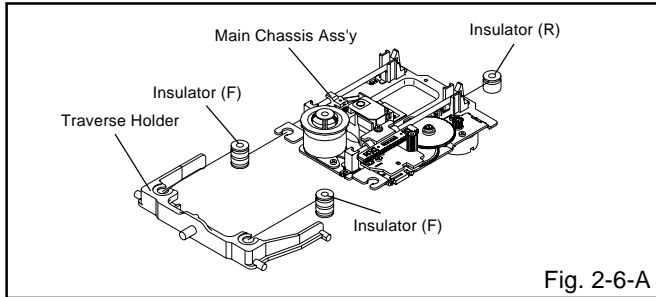


Fig. 2-6-A

NOTE

1. In case of the Insulator (F) installation, install correctly as Fig. 2-6-B.
2. In case of the Insulator (R) installation, install correctly as Fig. 2-6-C.

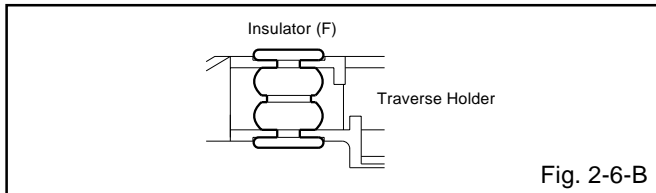


Fig. 2-6-B

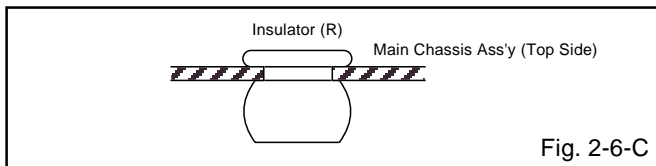


Fig. 2-6-C

2-7: RACK FEED ASS'Y/SWITCH PCB ASS'Y/FEED MOTOR (Refer to Fig. 2-7-A)

1. Remove the screw ①.
2. Remove the Rack Feed Ass'y.
3. Remove the screw ②.
4. Remove the Switch PCB Ass'y.
5. Remove the 2 screw ③.
6. Remove the Feed Motor.
7. Remove the Motor Gear.

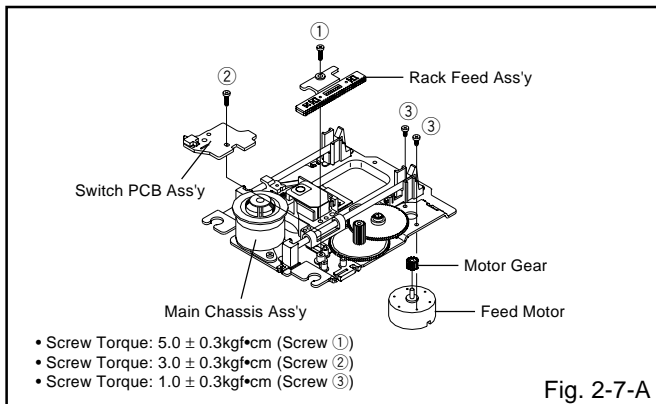


Fig. 2-7-A

NOTE

1. When pushing the Rack Feed in the direction of the arrow, it should be restored to the original position by the spring force. (Refer to Fig. 2-7-B)
2. In case of the Motor Gear installation, check if the value of the Fig. 2-7-C is correct.
3. When installing the wire of the Switch PCB Ass'y, install it correctly as Fig. 2-7-D.
4. After the assembly of the Main Chassis Ass'y, hook the wire on the Main Chassis Ass'y as shown Fig. 2-7-E.

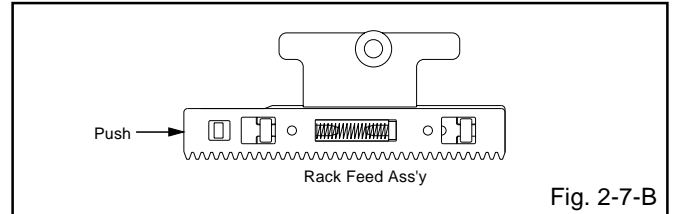


Fig. 2-7-B

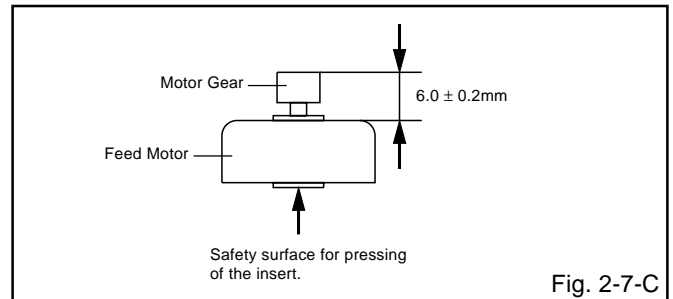


Fig. 2-7-C

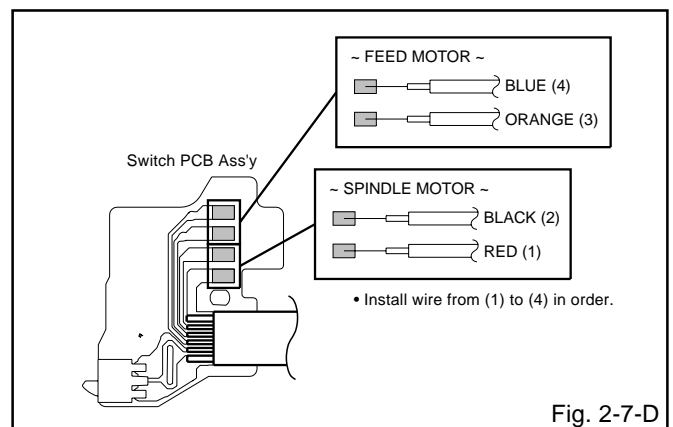


Fig. 2-7-D

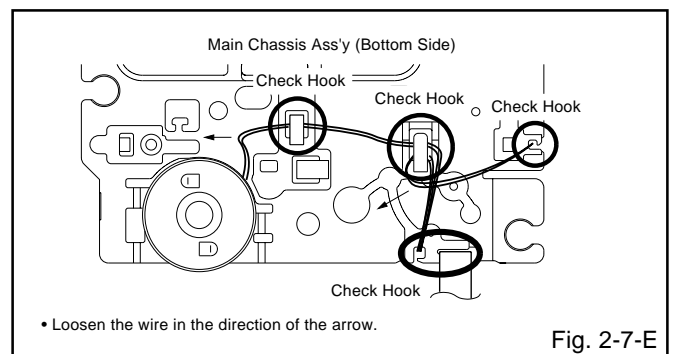


Fig. 2-7-E

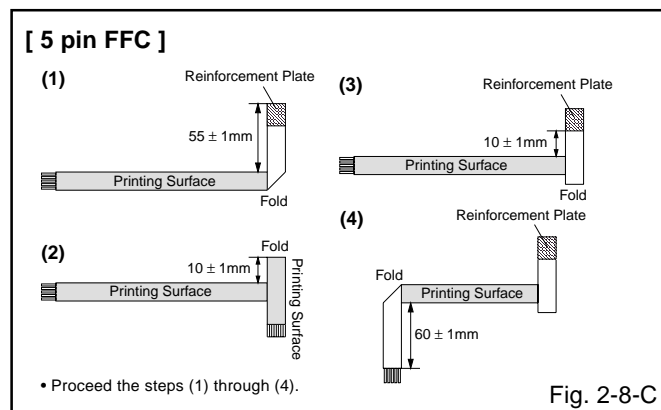
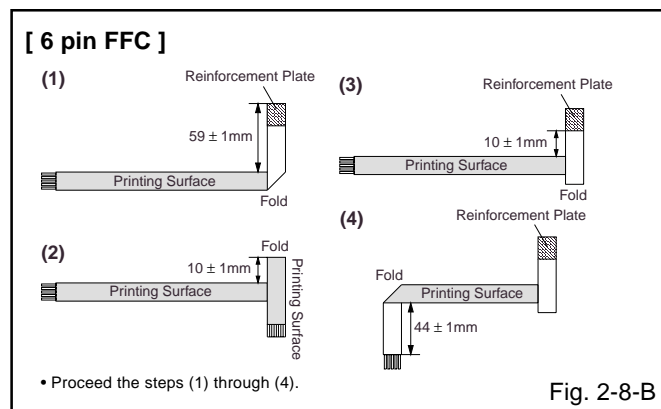
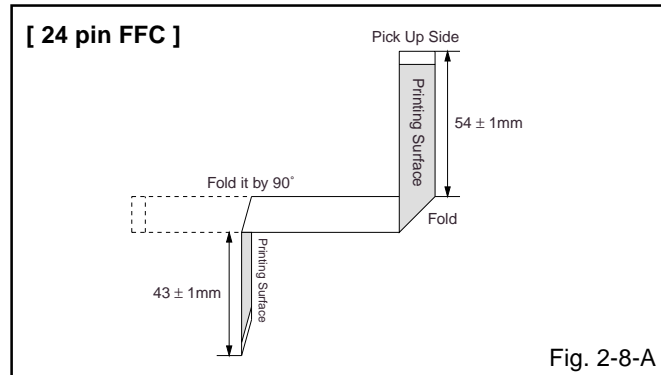
DISASSEMBLY INSTRUCTIONS

2-8: FFC WIRE HANDLING

1. When installing the FFC, fold it correctly and install it as shown from Fig. 2-8-A to Fig. 2-8-C.

NOTE

1. Do not make the folding lines except the specified positions for the FFC.



DISASSEMBLY INSTRUCTIONS

3. REMOVAL OF ANODE CAP

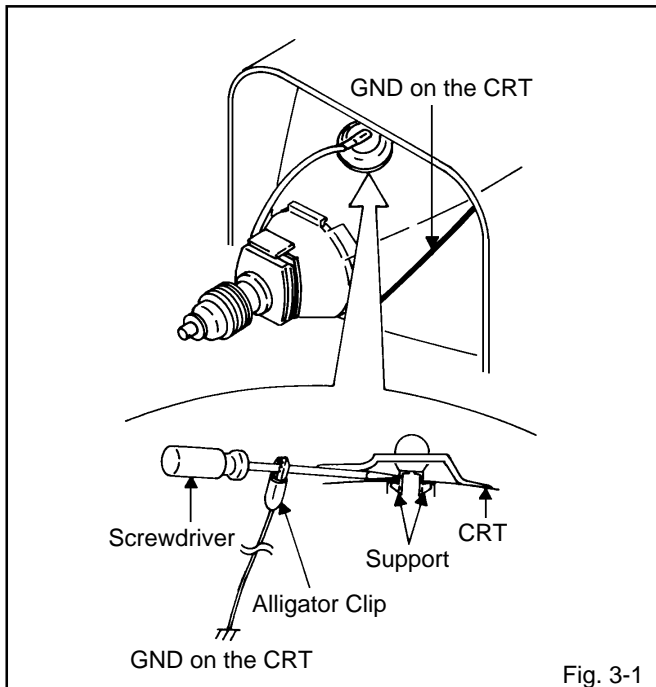
Read the following **NOTED** items before starting work.

- * After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
- * Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

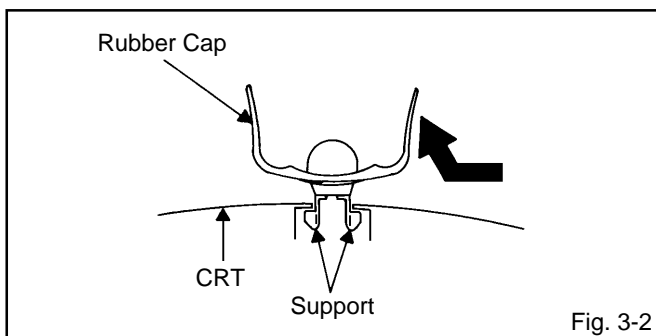
REMOVAL

1. Follow the steps as follows to discharge the Anode Cap.
(Refer to Fig. 3-1.)

Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground. While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver. A cracking noise will be heard as the voltage is discharged.



2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support.
(Refer to Fig. 3-2.)



3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

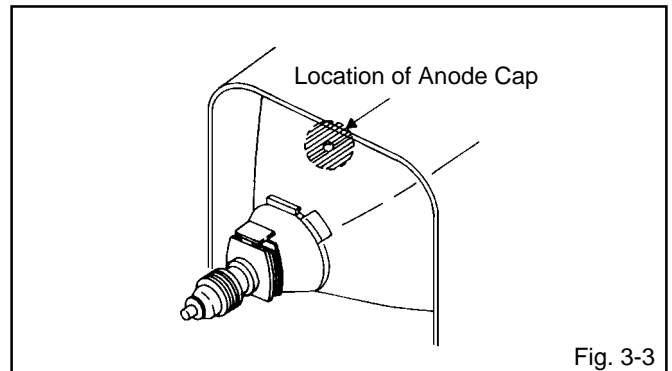
Take care not to damage the Rubber Cap.

INSTALLATION

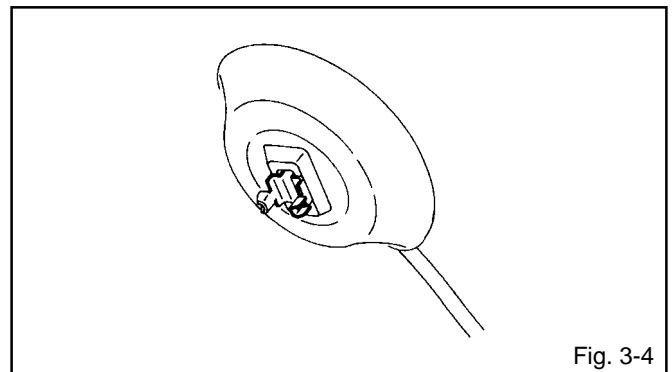
1. Clean the spot where the cap was located with a small amount of alcohol. (Refer to Fig. 3-3.)

NOTE

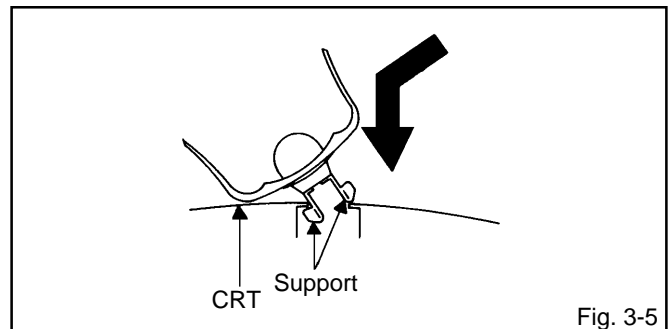
Confirm that there is no dirt, dust, etc. at the spot where the cap was located.



2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. (Refer to Fig. 3-4.)



4. Insert one end of the Anode Support into the anode button, then the other as shown in Fig. 3-5.



5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

DISASSEMBLY INSTRUCTIONS

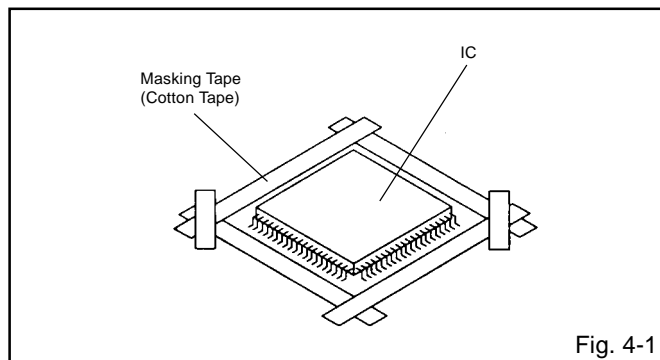
4. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. (Refer to Fig. 4-1.)

NOTE

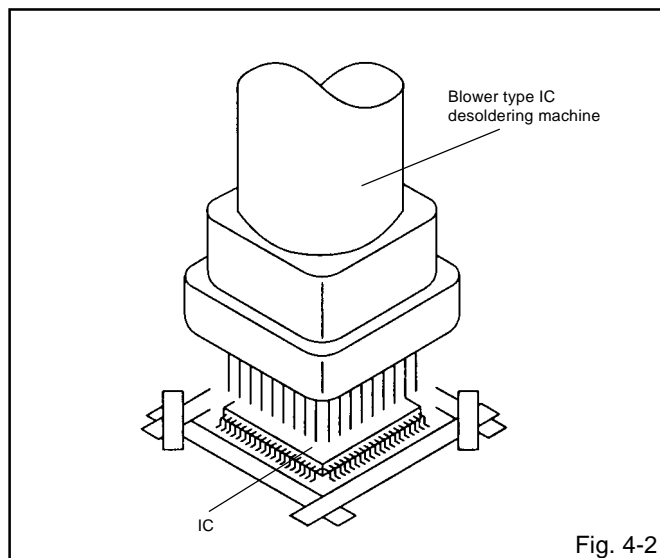
Masking is carried out on all the parts located within 10 mm distance from IC leads.



2. Heat the IC leads using a blower type IC desoldering machine. (Refer to Fig. 4-2.)

NOTE

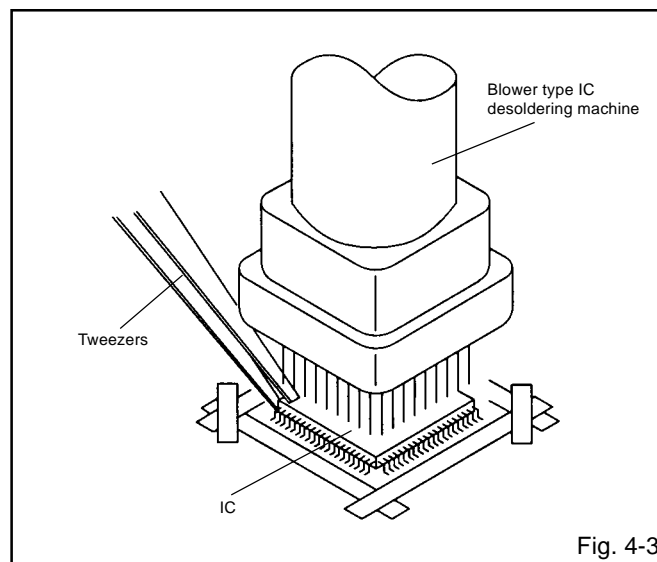
Do not rotate or move the IC back and forth, until IC can move back and forth easily after desoldering the leads completely.



3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. (Refer to Fig. 4-3.)

NOTE

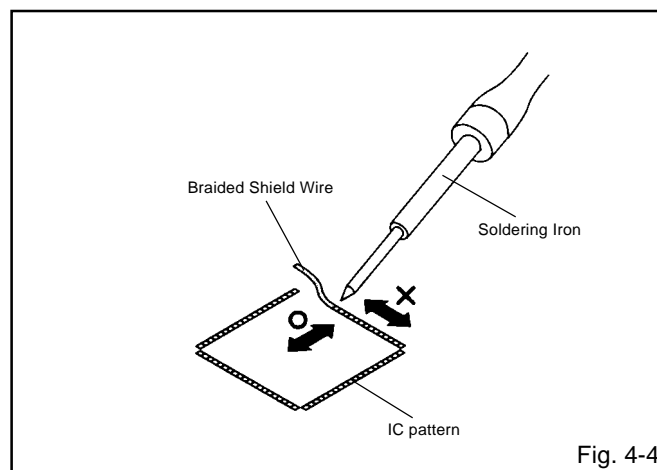
Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.



4. Peel off the Masking Tape.
5. Absorb the solder left on the pattern using the Braided Shield Wire. (Refer to Fig. 4-4.)

NOTE

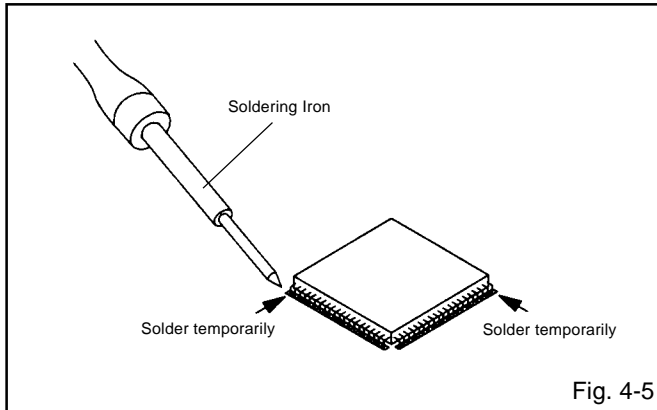
Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.



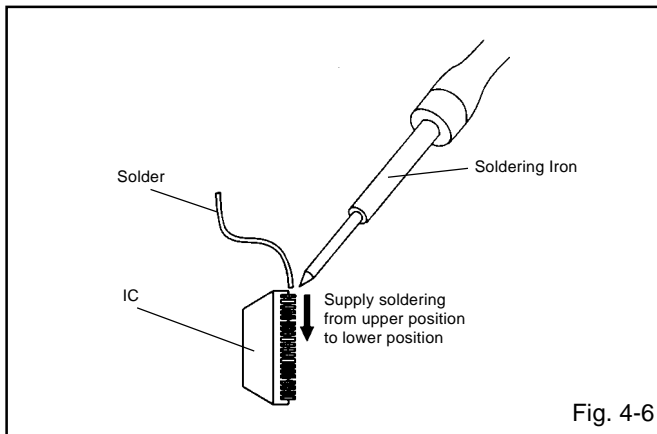
DISASSEMBLY INSTRUCTIONS

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. **(Refer to Fig. 4-5.)**



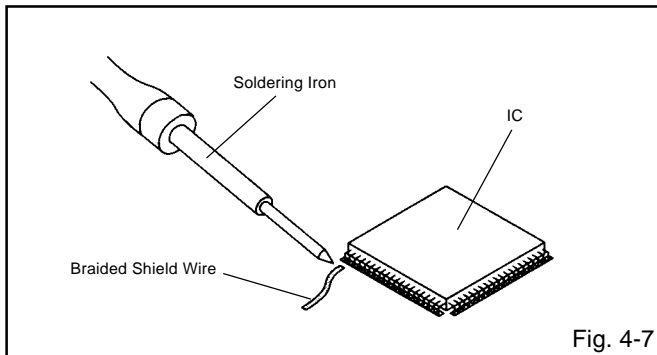
2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. **(Refer to Fig. 4-6.)**



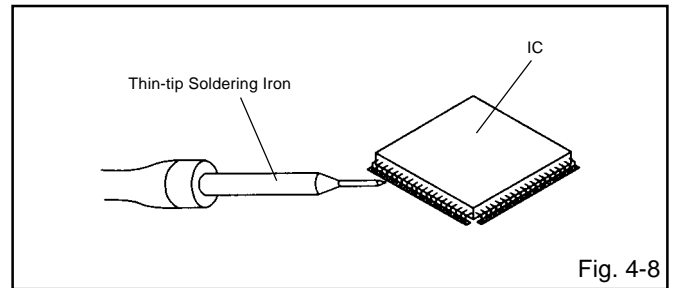
3. Absorb the solder left on the lead using the Braided Shield Wire. **(Refer to Fig. 4-7.)**

NOTE

Do not absorb the solder to excess.



4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. **(Refer to Fig. 4-8.)**



5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass. Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

NOTE

When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, always be sure to replace the IC in this case.

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.

To enter to the SERVICE MODE function, press and hold both buttons simultaneously on the main unit and on the remote control for more than a the standard time in the appropriate condition. (See below chart.)

| Set Condition | Set Key | Remocon Key | Standard Time | Operations |
|--------------------|---------------------|-------------|---------------|---|
| TV mode | VOL. DOWN (Minimum) | 0 | 2 sec. | Releasing of V-CHIP PASSWORD. |
| TV mode | VOL. DOWN (Minimum) | 1 | 2 sec. | Initialization of factory TV data. NOTE: Do not use this for normal servicing. If you set factory initialization, the memories are reset such as the channel setting, and the POWER ON total hours. |
| DVD mode (No disc) | VOL. DOWN (Minimum) | 4 | 2 sec. | Initialization of factory DVD data. NOTE: Do not use this for normal servicing. |
| TV mode | VOL. DOWN (Minimum) | 6 | 2 sec. | Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC". |
| TV mode | VOL. DOWN (Minimum) | 8 | 2 sec. | Check of the SUM DATA, POWER ON total hours and MICON VERSION on the screen. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC". |
| ALL mode | VOL. DOWN (Minimum) | 9 | 2 sec. | Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment). |
| DVD mode (No disc) | STOP | 7 | 3 sec. | Releasing of PARENTAL LOCK. Refer to the "PARENTAL CONTROL - RATING LEVEL". |
| DVD mode (STOP) | STOP | 9 | 3 sec. | The disk cannot be taken out. Refer to the "TRAY LOCK". |

WHEN REPLACING EEPROM (MEMORY) IC

CONFIRMATION OF CHECK SUM, POWER ON TOTAL HOURS AND MICON VERSION

Initial total of MEMORY IC, POWER ON total hours and MICON VERSION can be checked on the screen. Total hours are displayed in 16 system of notation.

NOTE: If you set a factory initialization, the total hours is reset to "0".

Please refer to "CONFIRMATION OF INITIAL DATA" when SUM DATA is not corresponding.

1. Turn on the POWER, and set to the TV mode.
2. Set the VOLUME to minimum.
3. Press both VOL. DOWN button on the set and Channel button **(8)** on the remote control for more than 2 seconds.
4. After the confirmation of each check sum, POWER ON total hours and MICON VERSION, turn off the power.

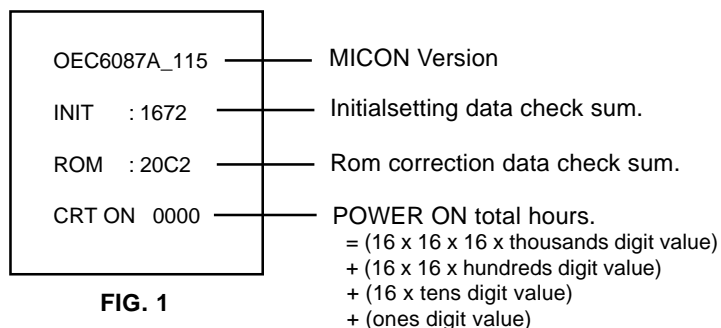


FIG. 1

WHEN REPLACING EEPROM (MEMORY) IC

CONFIRMATION OF INITIAL DATA

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

| INI | +0 | +1 | +2 | +3 | +4 | +5 | +6 | +7 | +8 | +9 | +A | +B | +C | +D | +E | +F |
|-----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| 00 | 80 | 04 | E2 | 4C | 4F | 12 | 33 | 55 | 35 | 94 | 23 | 00 | 89 | 70 | 70 | 00 |
| 10 | 0C | 00 | 00 | 00 | 05 | 7B | A0 | 50 | 21 | 74 | 50 | 00 | 00 | 10 | 55 | 35 |
| 20 | 80 | 88 | 83 | 88 | 89 | 88 | 00 | 00 | 0A | 0C | 0E | 10 | 12 | 14 | 16 | 18 |
| 30 | 1A | 1B | 1C | 1D | 1E | 1F | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 28 |
| 40 | 29 | 29 | 2A | 2A | 2B | 2B | 2C | 2C | 2D | 2D | 2E | 2E | 2F | 2F | 30 | 30 |
| 50 | 31 | 31 | 32 | 32 | 33 | 33 | 34 | 34 | 35 | 36 | 37 | 38 | 3B | 3E | 41 | 44 |
| 60 | 47 | 4A | 4D | 50 | 53 | 56 | 5A | 5F | --- | --- | --- | --- | --- | --- | --- | --- |

Table 1

1. Turn on the POWER, and set to the TV mode.
2. Set the VOLUME to minimum.
3. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 2 seconds. ADDRESS and DATA should appear as FIG 1.

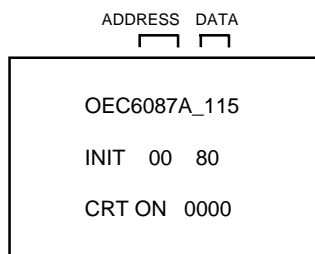


FIG. 1

4. ADDRESS is now selected and should "blink". Using the UP/DOWN button on the remote, step through the ADDRESS until Press RIGHT/LEFT button to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using UP/DOWN button until required DATA value has been selected.
6. Pressing RIGHT/LEFT button will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 4 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

After the data input, set to the initializing of shipping.

9. Turn POWER on.
 10. Press both VOL. DOWN button on the set and Channel button **(1)** on the remote control for more than 2 seconds.
 11. After the finishing of the initializing of shipping, the unit will turn off automatically.
- The unit will now have the correct DATA for the new MEMORY IC.

ELECTRICAL ADJUSTMENTS

1. BEFORE MAKING ELECTRICAL ADJUSTMENTS

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
- When you exchange IC and Transistor with a heat sink, apply silicon grease on the contact section of the heat sink. Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor).

Prepare the following measurement tools for electrical adjustments.

1. Oscilloscope
2. Digital Voltmeter
3. AC Voltmeter
4. Pattern Generator
5. Multi-Sound Signal Generator

On-Screen Display Adjustment

1. Set the VOLUME to minimum.
2. Press the VOL. DOWN button on the set and the Channel button **(9)** on the remote control for more than 2 seconds to appear the adjustment mode on the screen as shown in **Fig. 1-1**.

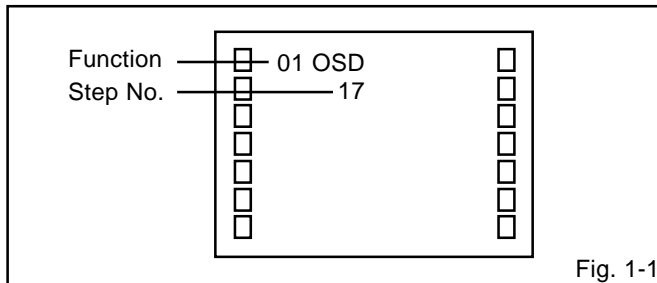


Fig. 1-1

3. Use the Channel UP/DOWN button or Channel button **(1-0)** on the remote control to select the options shown in **Fig. 1-2**.
4. Press the MENU button on the remote control to end the adjustments.

| NO. | FUNCTION | NO. | FUNCTION |
|-----|-------------------|-----|------------------|
| 01 | OSD H | 28 | CONT. AV(MIN) |
| 02 | CUT OFF | 29 | COL. AV(CENT.) |
| 03 | H VCO | 30 | COL. AV(MAX) |
| 04 | H PHASE | 31 | COL. AV(MIN) |
| 05 | V SIZE | 32 | TINT AV |
| 06 | V POSITION | 33 | SHARPNESS AV |
| 07 | R DRIVE | 34 | BRI. DVD(CENT.) |
| 08 | B DRIVE | 35 | BRI. DVD(MAX) |
| 09 | R CUT OFF | 36 | BRI. DVD(MIN) |
| 10 | G CUT OFF | 37 | CONT. DVD(CENT.) |
| 11 | B CUT OFF | 38 | CONT. DVD(MAX) |
| 12 | BRIGHTNESS(CENT.) | 39 | CONT. DVD(MIN) |
| 13 | BRIGHTNESS(MAX) | 40 | COL. DVD(CENT.) |
| 14 | BRIGHTNESS(MIN) | 41 | COL. DVD(MAX) |
| 15 | CONTRAST(CENT.) | 42 | COL. DVD(MIN) |
| 16 | CONTRAST(MAX) | 43 | TINT DVD |
| 17 | CONTRAST(MIN) | 44 | SHARPNESS DVD |
| 18 | COLOR(CENT.) | 45 | BRI. GAME(CENT) |
| 19 | COLOR(MAX) | 46 | BRI. GAME(MAX) |
| 20 | COLOR(MIN) | 47 | BRI. GAME(MIN) |
| 21 | TINT | 48 | CONT. GAME(CENT) |
| 22 | SHARPNESS | 49 | CONT. GAME(MAX) |
| 23 | BRI. AV(CENT.) | 50 | CONT. GAME(MIN) |
| 24 | BRI. AV(MAX) | 51 | TUNING V MUTE |
| 25 | BRI. AV(MIN) | 52 | POWER ON V MUTE |
| 26 | CONT. AV(CENT.) | 53 | INPUT LEVEL |
| 27 | CONT. AV(MAX) | 54 | SEPARATION L |
| | | 55 | SEPARATION H |

Fig. 1-2

2. BASIC ADJUSTMENTS

2-1: CONSTANT VOLTAGE

1. Place the set in AV MODE without signal.
2. Using the remote control, set the brightness and contrast to normal position.
3. Connect the digital voltmeter to **TP401**.
4. Adjust the **VR3800** until the digital voltmeter is $132 \pm 0.5V$.

2-2: FOCUS

1. Receive the monoscope pattern.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the **Focus Volume** until picture is distinct.

2-3: CUT OFF

1. Adjust the unit to the following settings.
R CUT OFF=7F, G CUT OFF=7F, B CUT OFF=7F,
R DRIVE=3F, B DRIVE=3F
2. Set condition is Aging Test for more than 15 minutes.
3. Set condition is AV MODE without signal.
4. Using the remote control, set the brightness and contrast to normal position.
5. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(02)** on the remote control to select "CUT OFF".
6. Adjust the **Screen Volume** until a dim raster is obtained.

ELECTRICAL ADJUSTMENTS

2-4: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

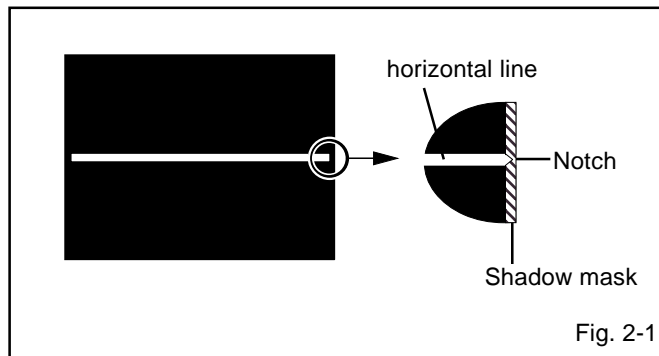
1. Place the set in Aging Test for more than 15 minutes.
2. Receive the gray scale pattern from the Pattern Generator.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(07)** on the remote control to select "R DRIVE".
5. Press the CH. UP/DOWN button on the remote control to select the "B DRIVE", "R CUT OFF", "G CUT OFF" or "B CUT OFF".
6. Adjust the VOL. UP/DOWN button on the remote control to whiten the B DRIVE, R CUT OFF, G CUT OFF and B CUT OFF at each step tone sections equally.
7. Perform the above adjustments 5 and 6 until the white achieved.

2-5: HORIZONTAL POSITION

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(04)** on the remote control to select "HPOSI".
4. Press the RIGHT/LEFT button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

2-6: VERTICAL POSITION

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(06)** on the remote control to select "VPOSI".
4. Check if the step No. V POSI is "02".
5. Adjust the **VR402** until the horizontal line becomes fit to notch of the shadow mask. (**Refer to Fig. 2-1**)



2-7: VERTICAL SIZE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(05)** on the remote control to select "VSIZE".
4. Press the RIGHT/LEFT button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes $10 \pm 2\%$.
5. Receive a broadcast and check if the picture is normal.

2-8: BRIGHT CENTER

1. Receive the monoscope pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(12)** on the remote control to select "BRTC".
4. Press the RIGHT/LEFT button on the remote control until the white 0% is begin to shine.
5. Receive the monoscope pattern. (Audio Video Input)
6. Press the INPUT button on the remote control to set to the AV mode.
7. Using the remote control, set the brightness and contrast to normal position.
8. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(23)** on the remote control to select "BRTCA".
9. Press the RIGHT/LEFT button on the remote control until the white 0% is begin to shine.
10. Press the TV/DVD button on the remote control to set to the DVD mode.
11. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(34)** on the remote control to select "BRTCD".
12. Press the RIGHT/LEFT button on the remote control to set the same step numbers as the AV.
13. Press the INPUT button on the remote control to set to the GAME mode.
14. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(45)** on the remote control to select "BRTCG".
15. Press the RIGHT/LEFT button on the remote control to set the same the same step numbers as the AV.

ELECTRICAL ADJUSTMENTS

2-9: OSD POSITION

1. Activate the adjustment mode display of **Fig. 1-1**.
2. Press the RIGHT/LEFT button on the remote control until the difference of A and B becomes minimum.
(Refer to Fig. 2-2)

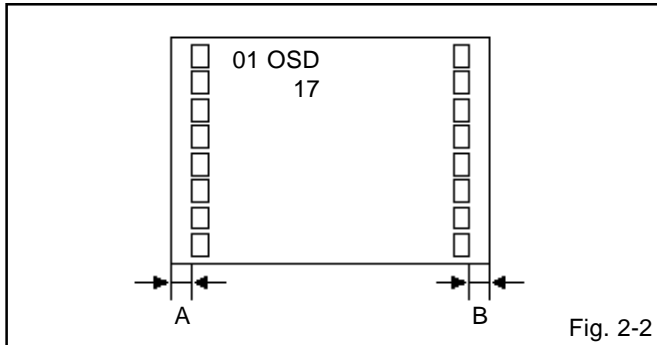


Fig. 2-2

2-10: TINT

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the oscilloscope to **TP022**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(21)** on the remote control to select "TNTC".
5. Press the RIGHT/LEFT button on the remote control until the section "A" becomes a straight line.
(Refer to Fig. 2-3)
6. Receive the color bar pattern. (Audio Video Input)
7. Press the INPUT button on the remote control to set to the AV mode.
8. Using the remote control, set the brightness, contrast, color and tint to normal position.
9. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(32)** on the remote control to select "TNTCA".
10. Press the RIGHT/LEFT button on the remote control until the section "A" becomes a straight line.
(Refer to Fig. 2-3)
11. Press the TV/DVD button on the remote control to set to the DVD mode.
12. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(43)** on the remote control to select "TNTCD".
13. Press the RIGHT/LEFT button on the remote control to set the same the same step numbers as the AV.

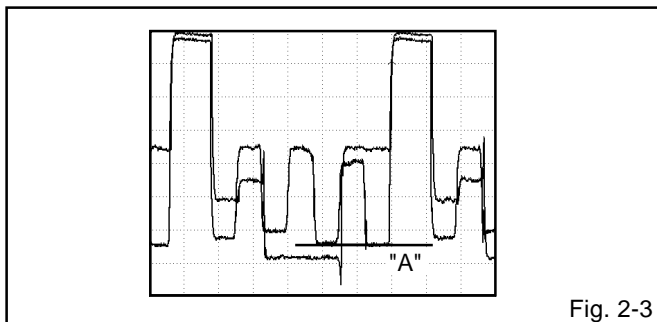


Fig. 2-3

2-11: COLOR CENTER

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the oscilloscope to **TP024**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(18)** on the remote control to select "COLC".
5. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
6. Press the RIGHT/LEFT button on the remote control until the red color level is adjusted to $110 \pm 10\%$ of the white level. (Refer to Fig. 2-4)
7. Receive the color bar pattern. (Audio Video Input)
8. Press the INPUT button on the remote control to set to the AV mode.
9. Using the remote control, set the brightness, contrast, color and tint to normal position.
10. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(29)** on the remote control to select "COLCA".
11. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
12. Press the RIGHT/LEFT button on the remote control until the red color level is adjusted to $110 \pm 10\%$ of the white level. (Refer to Fig. 2-4)
13. Press the TV/DVD button on the remote control to set to the DVD mode.
14. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(40)** on the remote control to select "COLCD".
15. Press the RIGHT/LEFT button on the remote control to set the same the same step numbers as the AV.

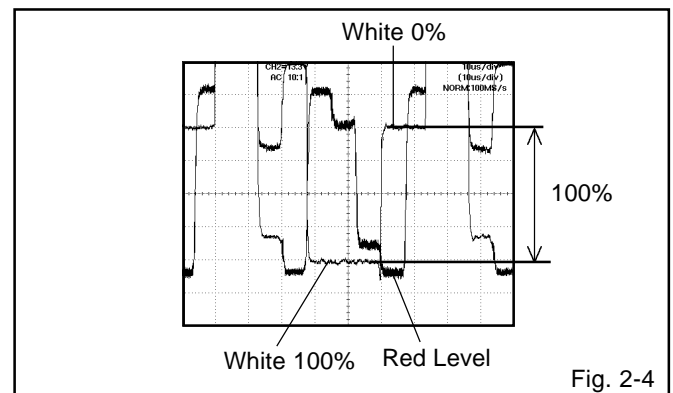


Fig. 2-4

ELECTRICAL ADJUSTMENTS

2-12: CONTRAST MAX

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(16)** on the remote control to select "CNTX".
2. Press the RIGHT/LEFT button on the remote control until the contrast step No. becomes "40"
3. Receive a broadcast and check if the picture is normal.
4. Press the INPUT button on the remote control to set to the AV mode.
5. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(27)** on the remote control to select "CNTXA".
6. Press the RIGHT/LEFT button on the remote control until the contrast step No. becomes "40"
7. Receive a broadcast and check if the picture is normal.
8. Press the TV/DVD button on the remote control to set to the DVD mode.
9. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(38)** on the remote control to select "CNTXD".
10. Press the RIGHT/LEFT button on the remote control to set the same step numbers as the AV.
11. Press the INPUT button on the remote control to set to the GAME mode.
12. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(49)** on the remote control to select "CNTXG".
13. Press the RIGHT/LEFT button on the remote control to set the same the same step numbers as the AV.

2-13: Confirmation of Fixed Value (Step No.)

Please check if the fixed values of the each of the adjustment items are set correctly referring below.

| NO. | FUNCTION | STEP NO. |
|-----|------------------|----------|
| 03 | H VCO | 04 |
| 13 | BRIGHTNESS(MAX) | 7F |
| 14 | BRIGHTNESS(MIN) | 15 |
| 15 | CONTRAST(CENT.) | 30 |
| 17 | CONTRAST(MIN) | 10 |
| 19 | COLOR(MAX) | 50 |
| 20 | COLOR(MIN) | 00 |
| 22 | SHARPNESS | 29 |
| 24 | BRI. AV(MAX) | 7F |
| 25 | BRI. AV(MIN) | 15 |
| 26 | CONT. AV(CENT.) | 30 |
| 28 | CONT. AV(MIN) | 10 |
| 30 | COL. AV(MAX) | 50 |
| 31 | COL. AV(MIN) | 00 |
| 33 | SHARPNESS AV | 29 |
| 35 | BRI. DVD(MAX) | 7F |
| 36 | BRI. DVD(MIN) | 15 |
| 37 | CONT. DVD(CENT.) | 30 |
| 39 | CONT. DVD(MIN) | 10 |
| 41 | COL. DVD(MAX) | 50 |
| 42 | COL. DVD(MIN) | 00 |
| 44 | SHARPNESS DVD | 29 |
| 46 | BRI. GAME(MAX) | 7F |
| 47 | BRI. GAME(MIN) | 15 |
| 48 | CONT. GAME(CENT) | 30 |
| 50 | CONT. GAME(MIN) | 10 |
| 51 | TUNING V MUTE | 00 |
| 52 | POWER ON V MUTE | 40 |

ELECTRICAL ADJUSTMENTS

3. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 3-1)**
If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

3-2: PURITY

NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

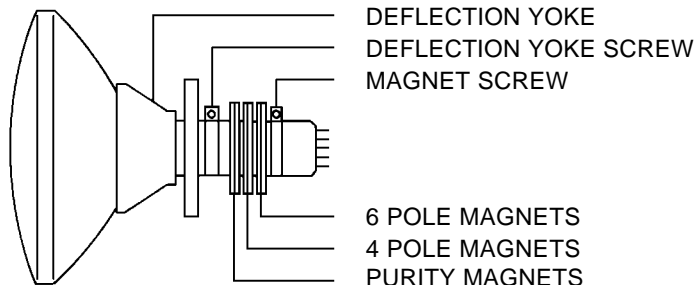


Fig. 3-1

3-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-2.

1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

3-4: DYNAMIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 3-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 3-2-b)**

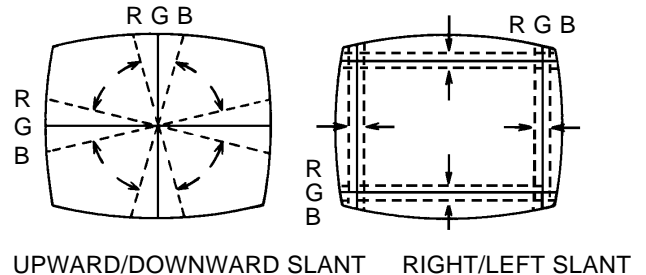


Fig. 3-2-a

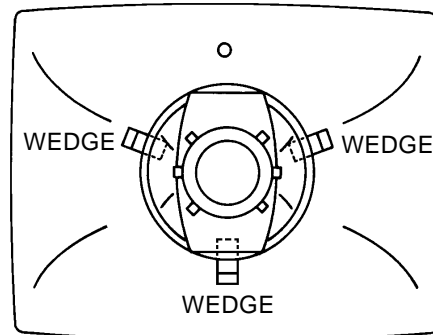
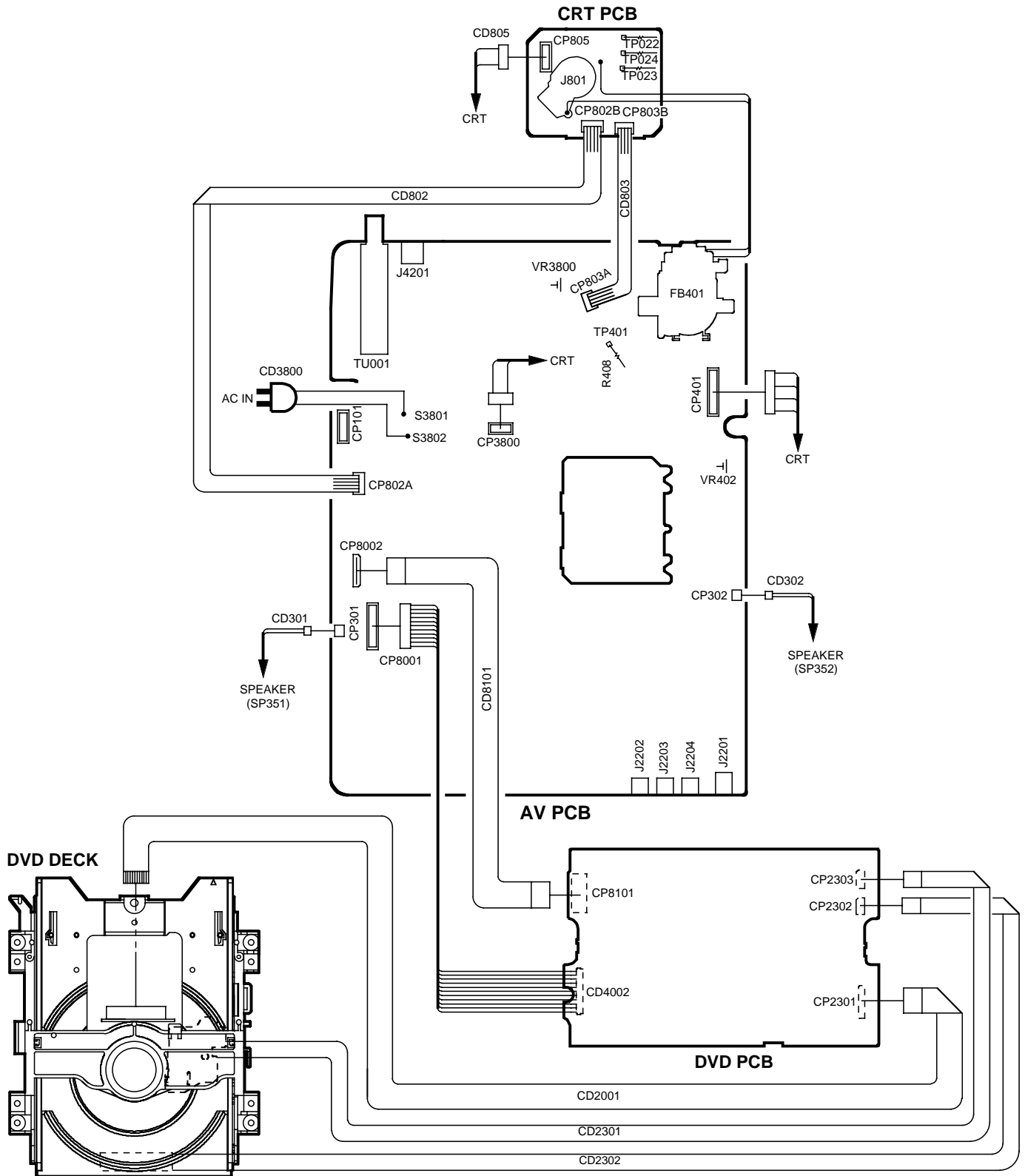


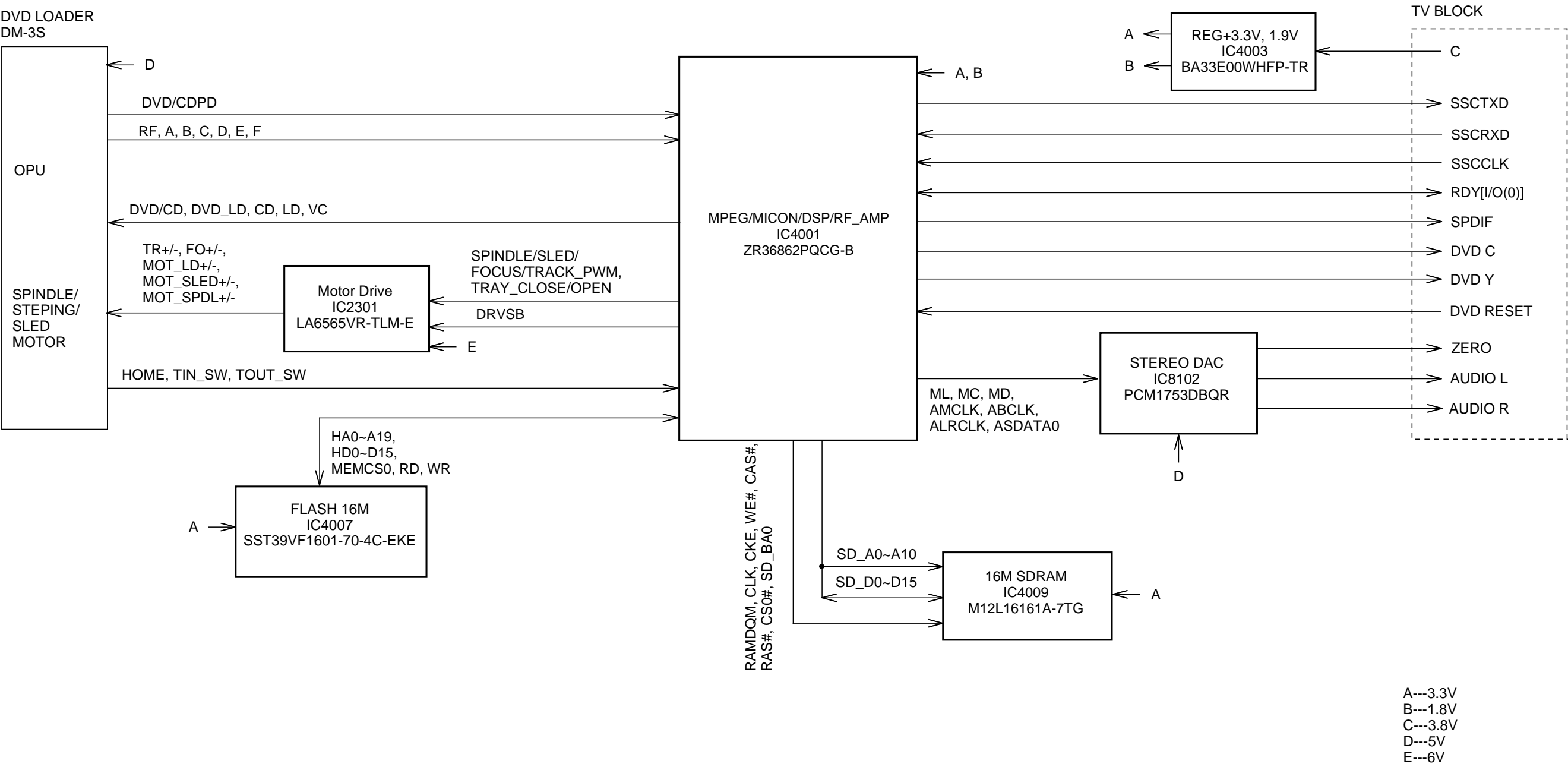
Fig. 3-2-b

ELECTRICAL ADJUSTMENTS

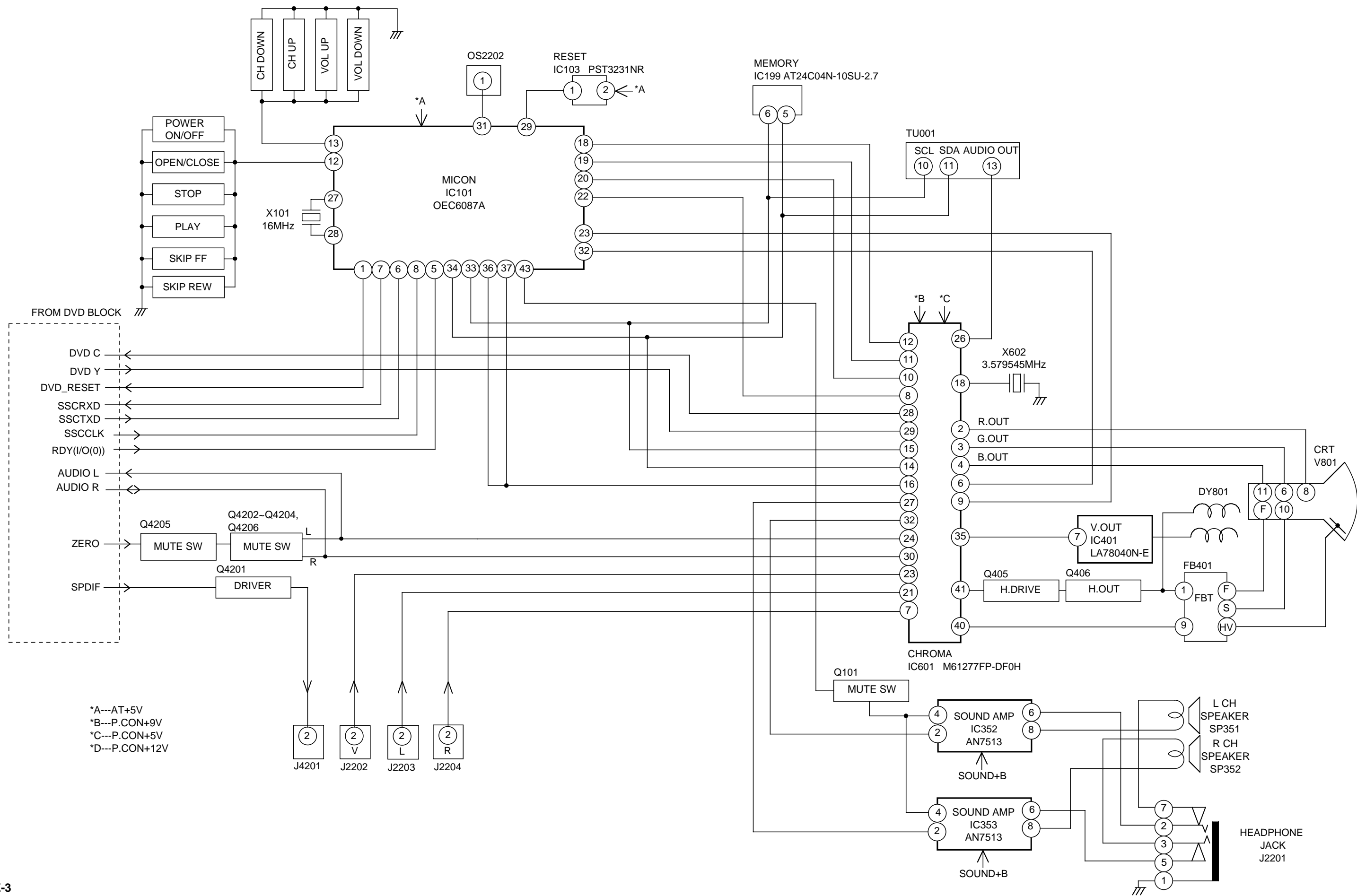
4. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)



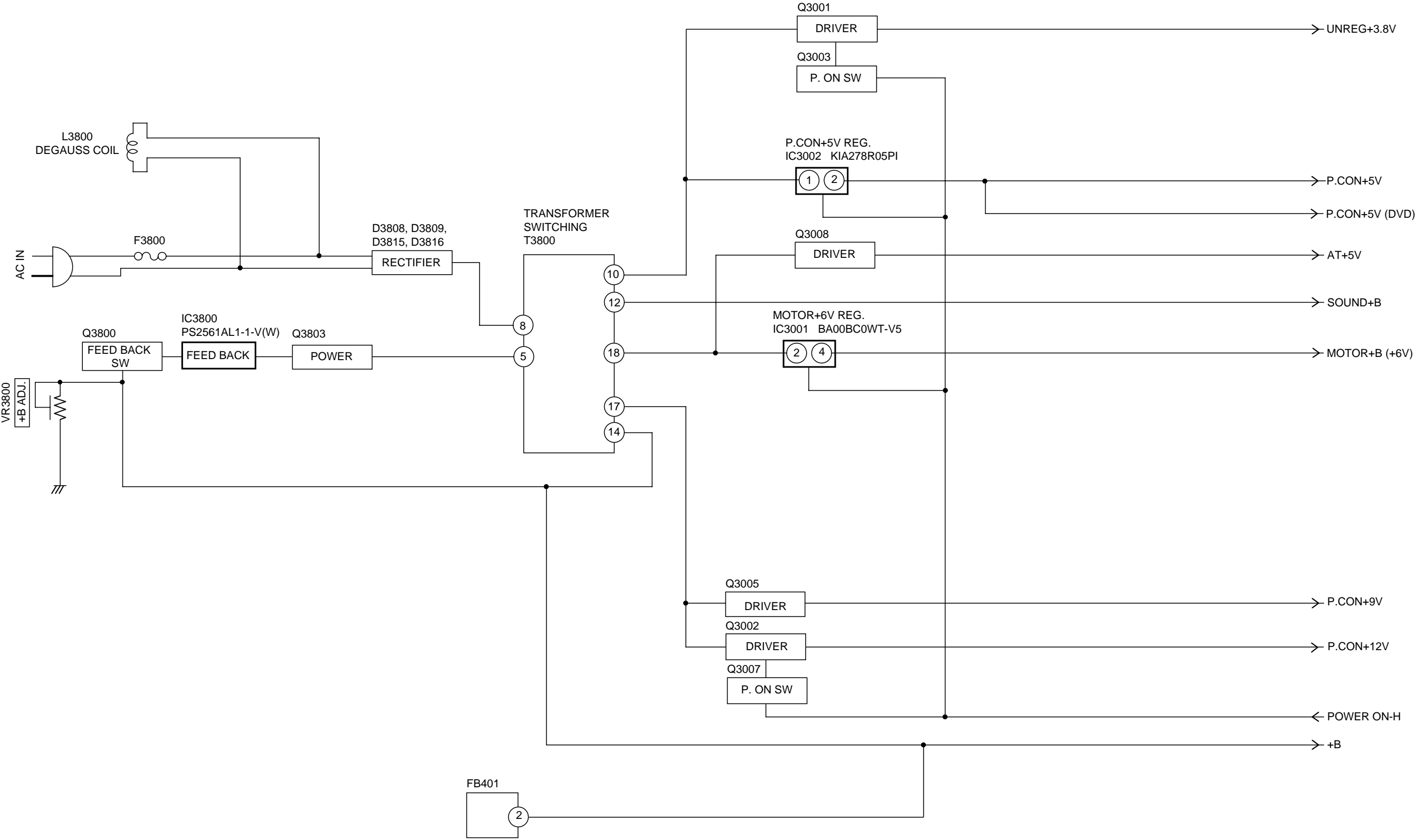
DVD BLOCK DIAGRAM



TV BLOCK DIAGRAM

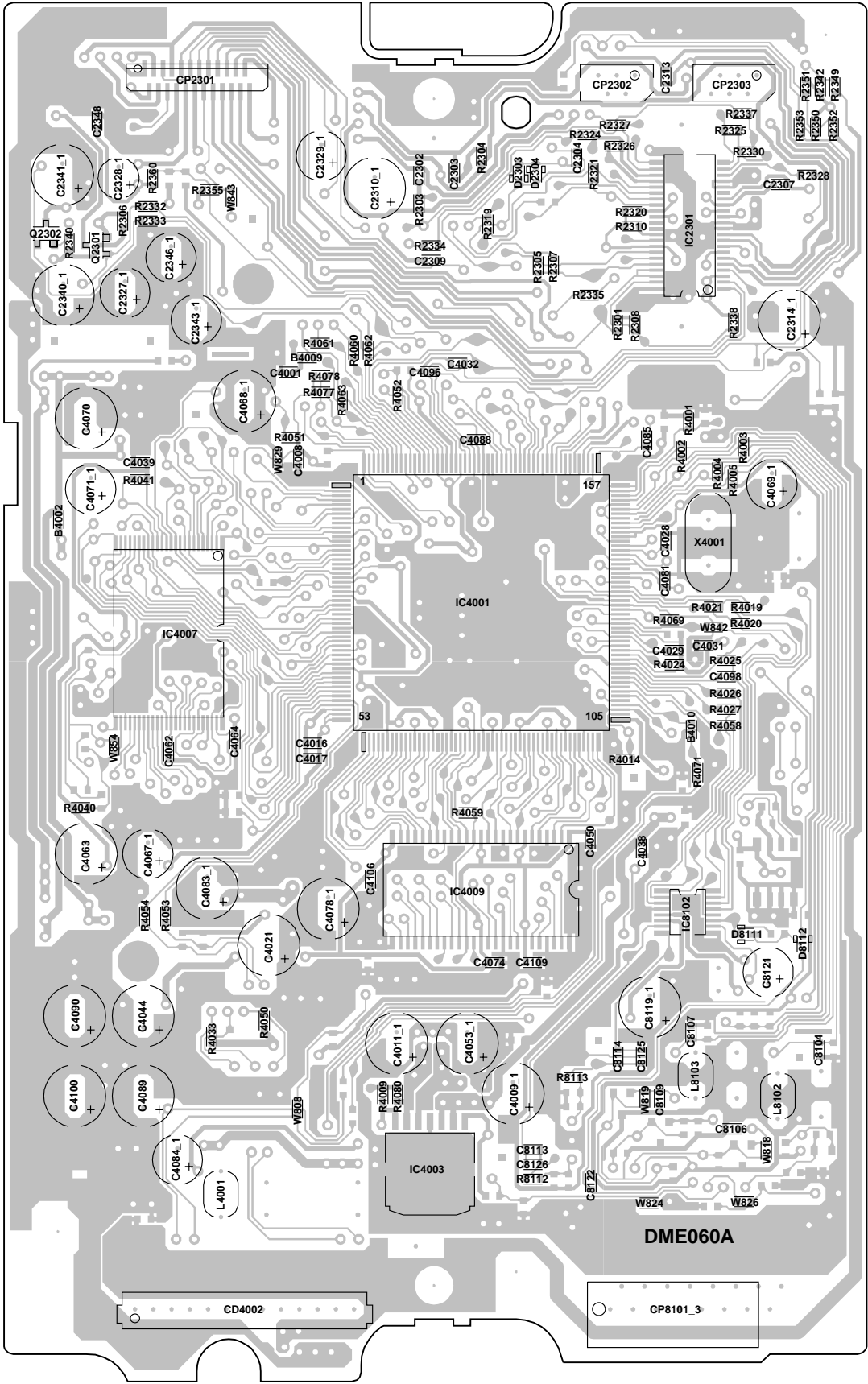


POWER BLOCK DIAGRAM

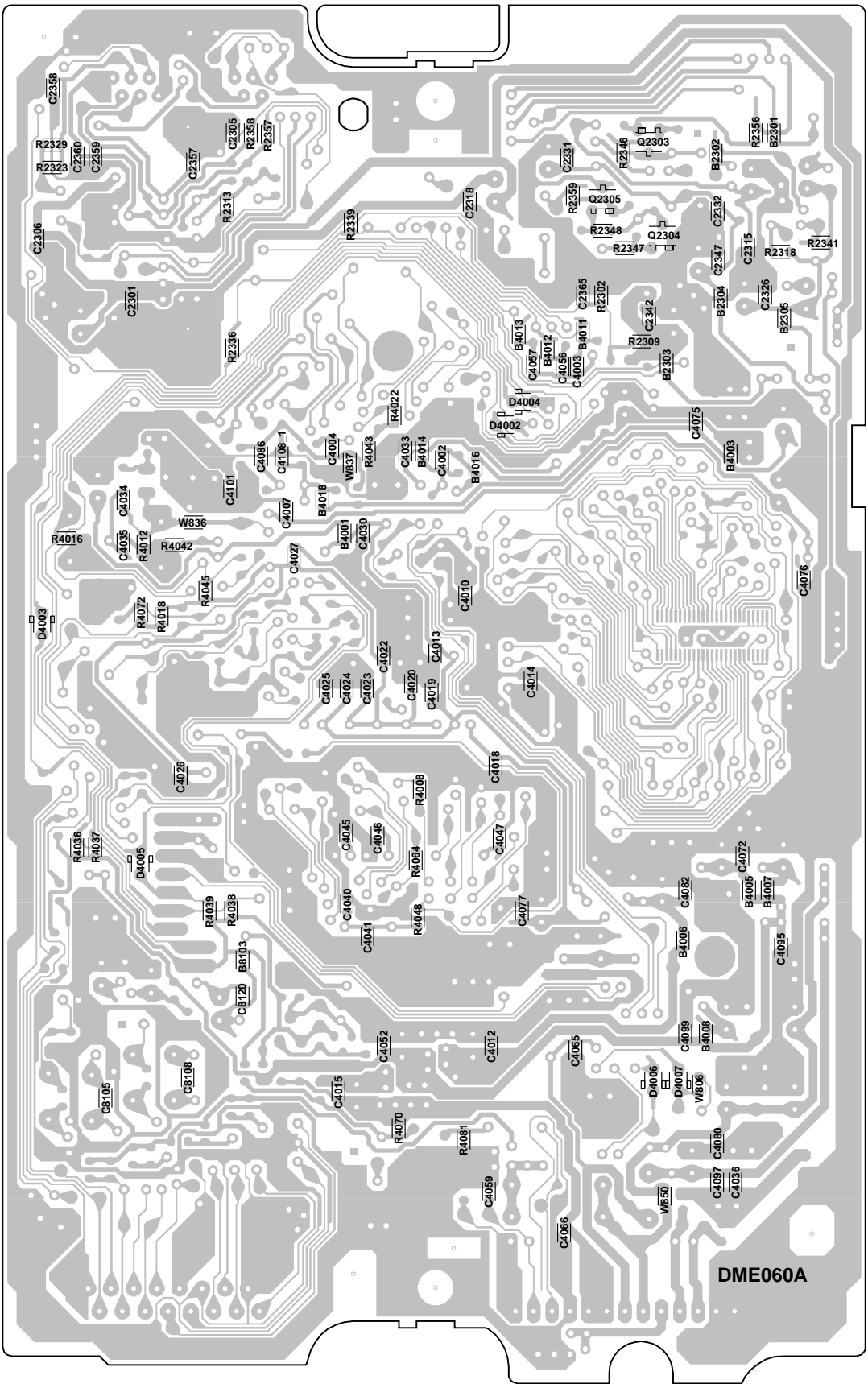


PRINTED CIRCUIT BOARDS

DVD (TOP SIDE)



DVD (BOTTOM SIDE)



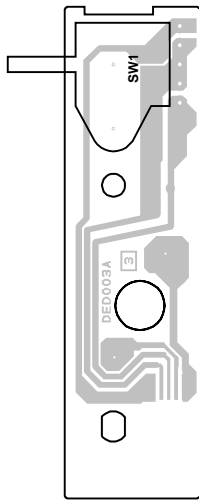
ATTENTION
INFORMATION POUR SERVICE DES
PIECE CRITIQUE, VOIR AU VERSO.

RISK OF FIRE
- REPLACE AS MARKED.

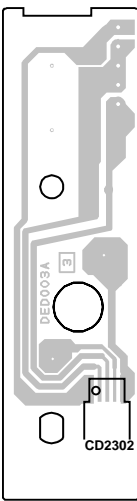
CAUTION
FOR SERVICE INFORMATION ABOUT CRITICAL
COMPONENTS, SEE INSIDE BACK COVER.

PRINTED CIRCUIT BOARDS

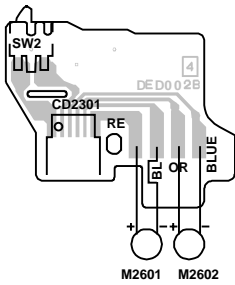
LOADING MOTOR (INSERTED PARTS)
SOLDER SIDE



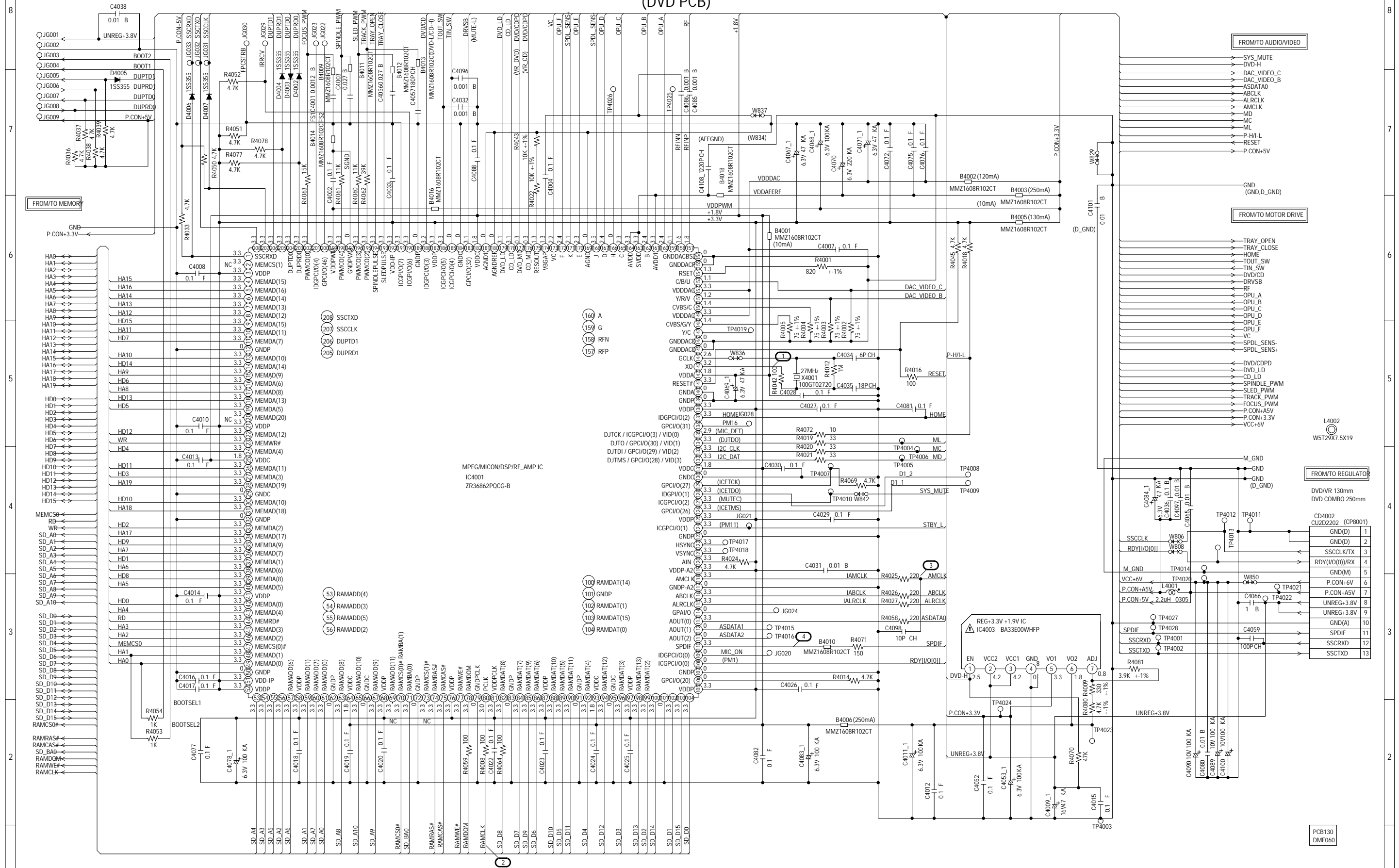
LOADING MOTOR (CHIP MOUNTED PARTS)
SOLDER SIDE



SW
SOLDER SIDE




MPEG/MICON/DSP SCHEMATIC DIAGRAM



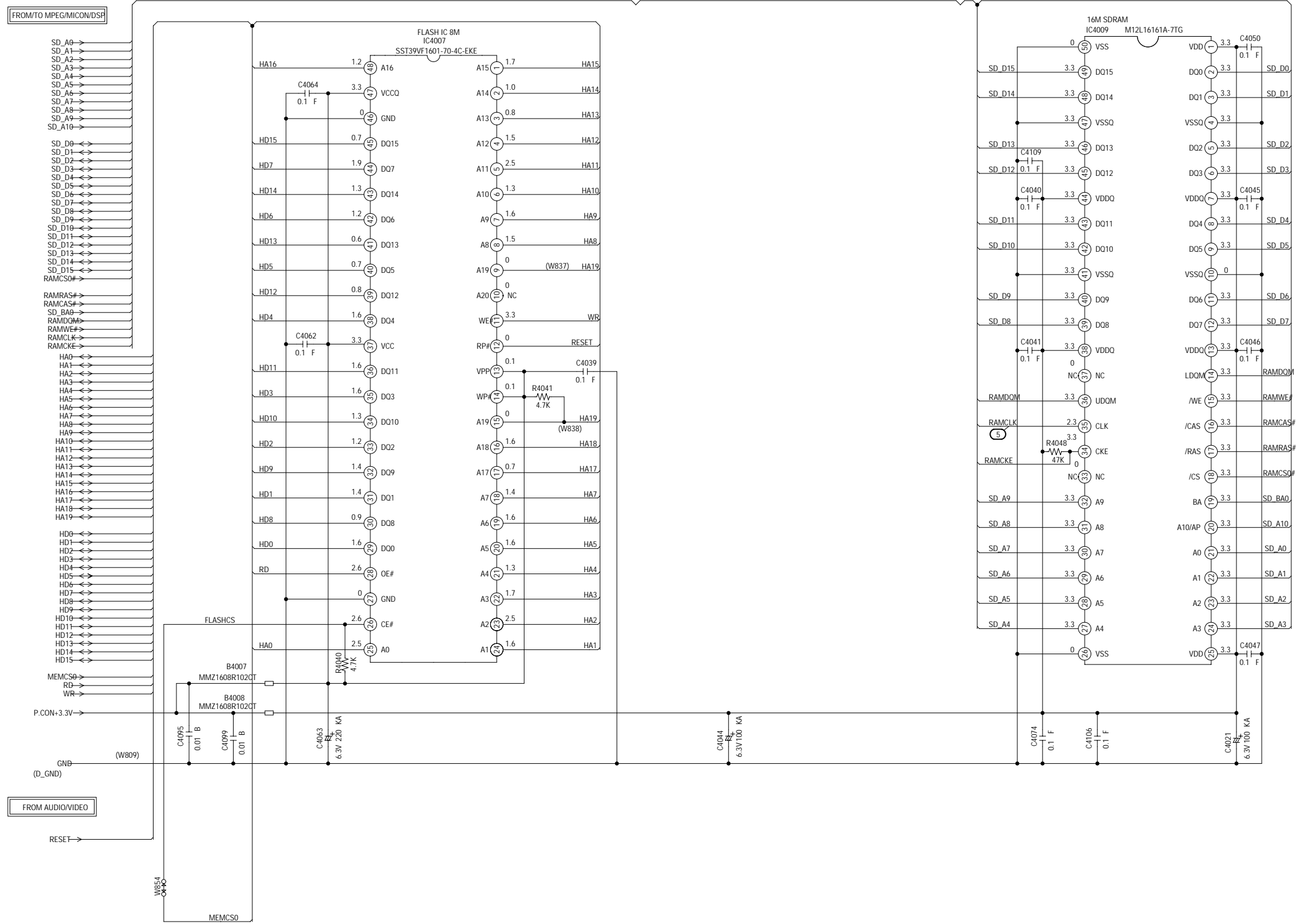
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN  ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

CAUTION SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY .

MEMORY SCHEMATIC DIAGRAM
(DVD PCB)

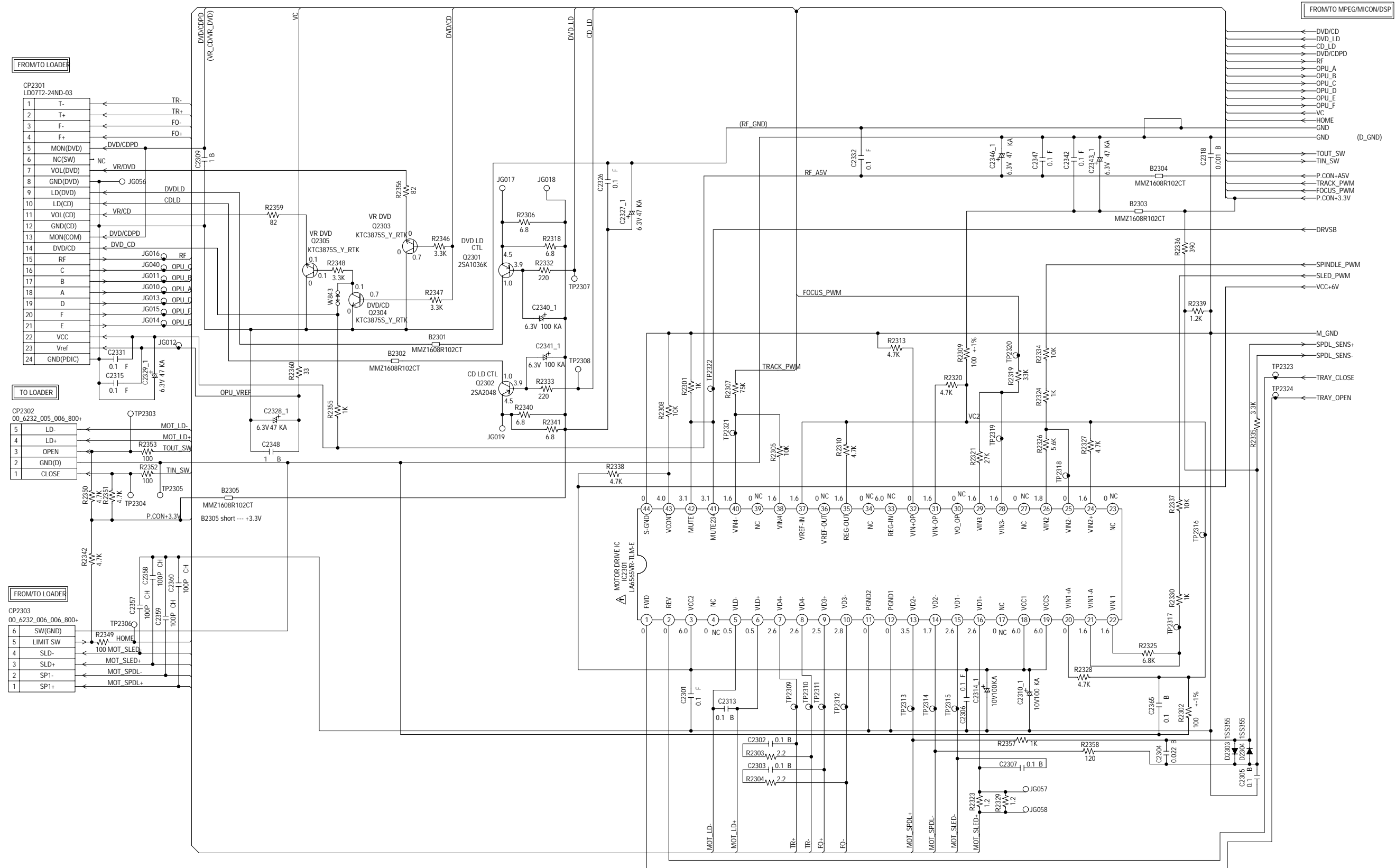


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE EACH PART WAS
MEASURED WITH THE DIGITAL TESTER
DURING PLAYBACK.


PCB130
DME060

MOTOR DRIVE SCHEMATIC DIAGRAM (DVD PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

CAUTION SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ, N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

PCB130
DME060

AUDIO/VIDEO SCHEMATIC DIAGRAM
(DVD PCB)

FROM/TO MPEG/MICON/DSP

DAC_VIDEO_C
DAC_VIDEO_B

P.CON+5V

RESET
MG
MB
ML
AMCLK
ABCLK
ALRCLK
ASDATA0
P-H/I-L
SYS_MUTE

GND

(D_GND)

TO MEMORY

RESET

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE EACH PART WAS
MEASURED WITH THE DIGITAL TESTER
DURING PLAYBACK.

PCB130
DME060

FROM/TO REGULATOR

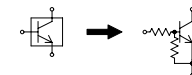
FFC(1.0mm pitch)

CD8101
2FOC1602

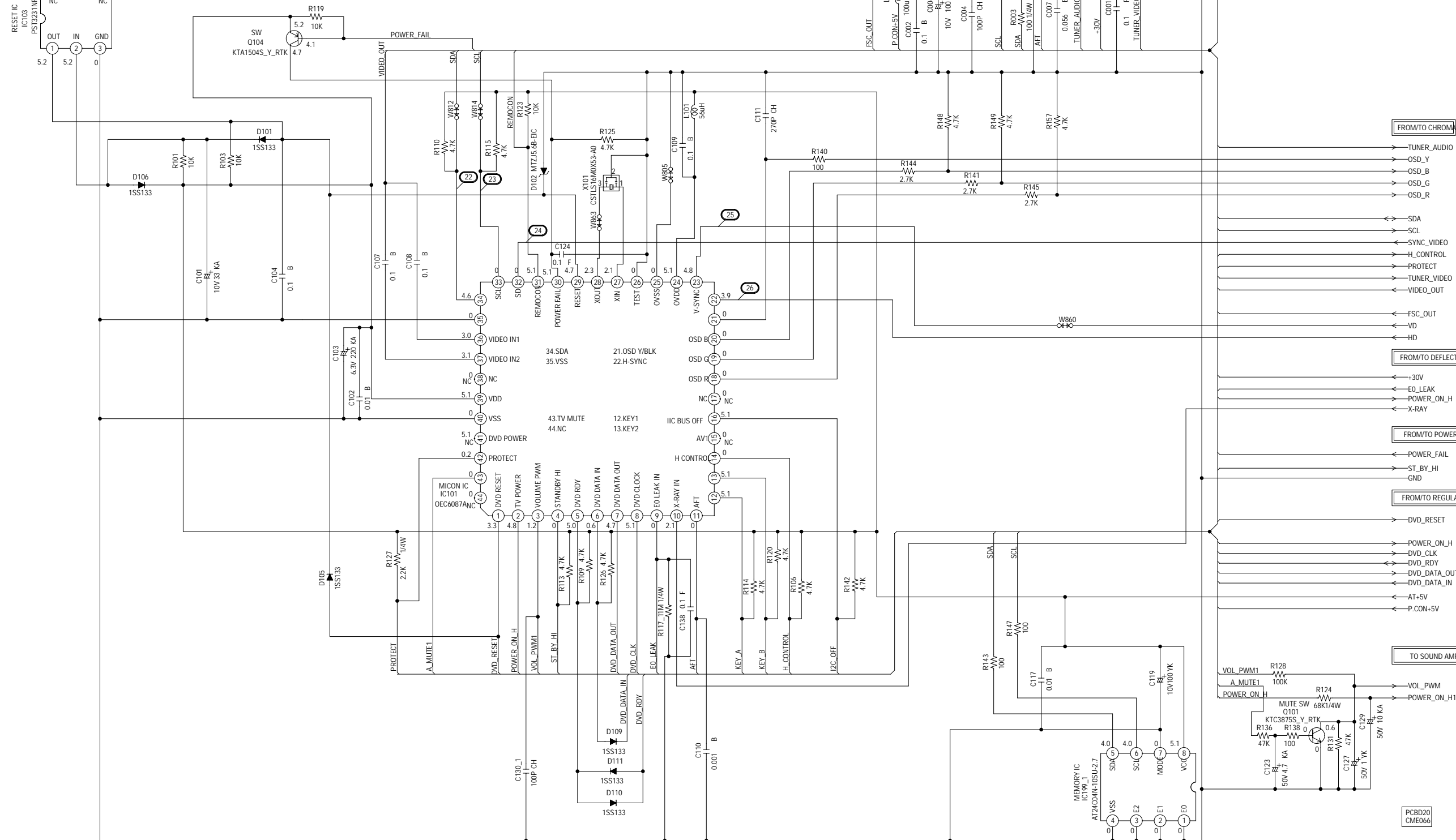
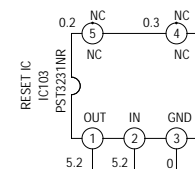
CP8101_3
IMSA-9604S-12F

| | |
|-----------|----|
| EXT_MUTE | 12 |
| DVD RESET | 11 |
| ZERO | 10 |
| AUDIO-R | 9 |
| GND | 8 |
| AUDIO-L | 7 |
| GND | 6 |
| Y | 5 |
| GND | 4 |
| C | 3 |
| GND | 2 |
| CVBS | 1 |

(AV PCB)




(AV PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ, N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

CAUTION SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

SOUND AMP SCHEMATIC DIAGRAM
(AV PCB)

FROM MICON/TUNER

VOL_PWM
POWER_ON_H1

FROM POWER

SOUND+B
SOUND_GND
GND

FROM CHROMA

SW_A_OUT_L
SW_A_OUT_R

R310
2.2 3W

C338 0.1 B
C357 25V Z200 YK

S1

S0

R312
18K 1/4W

R313
18K 1/4W

C340 50V 1 KA
C335 330P CH

R305 10K

W852

R308 10K

C341 50V 1 KA
C348 330P CH

0.6 4
0 3
1.3 2
3.8 1

7.6 5
4.0 6
0 7
4.0 8

SOUND AMP IC
IC352
AN7513

0.6 4
0 3
1.3 2
3.8 1

7.6 5
4.0 6
0 7
4.0 8

SOUND AMP IC
IC353
AN7513

TO SPEAKER

CP302 213213102W1
SP OUT R+ 1
SOUND GND 2

CD302 CU12414A
1 1
2 2

R CH SPEAKER
SP352
S08F52
8 OHM

CP301 213213102W1
SP OUT L+ 1
SOUND GND 2

CD301 CU12414A
1 1
2 2

L CH SPEAKER
SP351
S08F52
8 OHM


FROM/TO IN/OUT


SP_OUT_L
SP_OUT_R
SP_OUT_R2
SP_OUT_L2
SOUND_GND

PCBD20
CME066

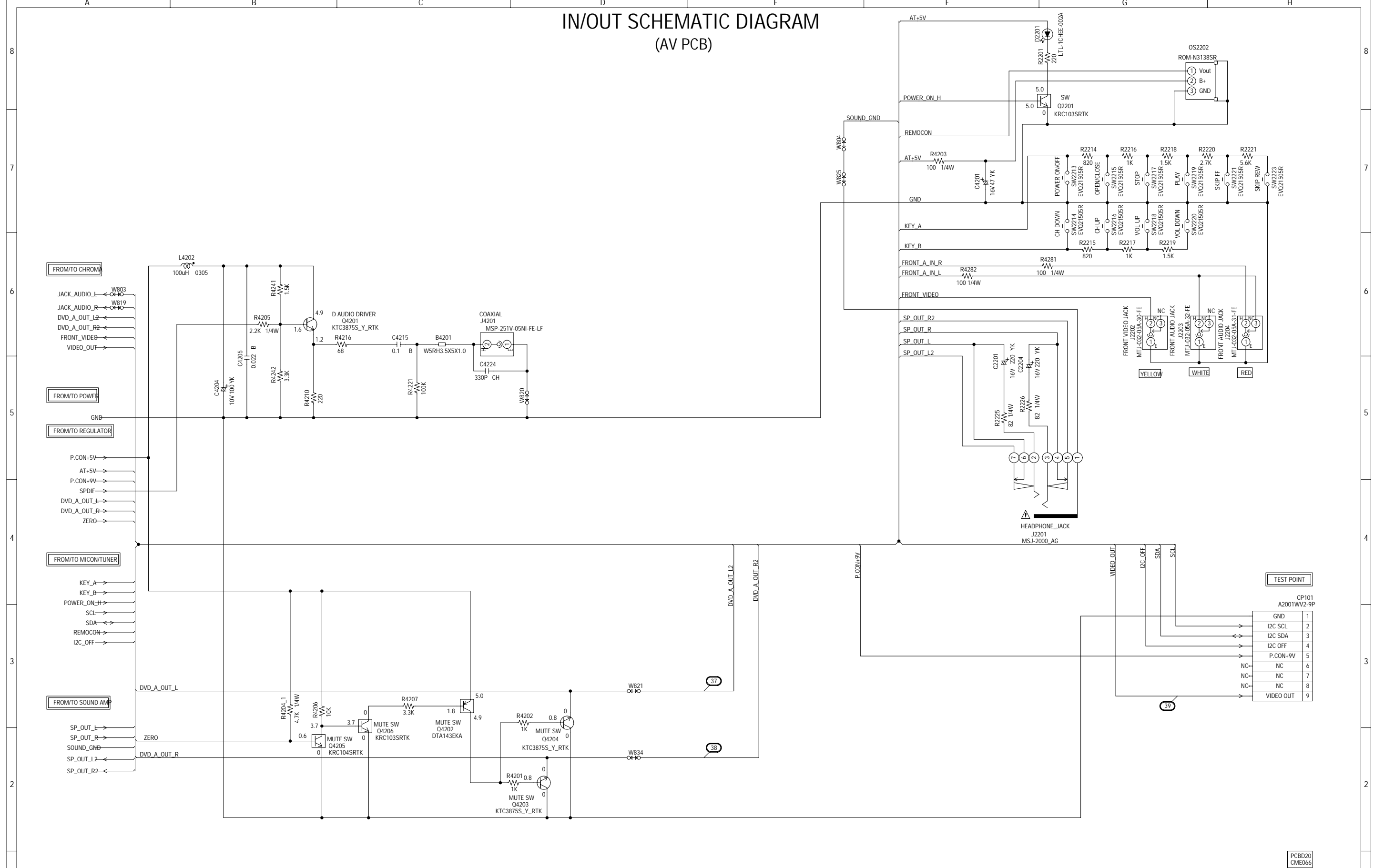
NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED
WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST
WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

ATTENTION LES PIECES REPARÉES PAR UN  ETANT
DANGEREUSES AN POINT DE VUE SECURITE
N'UTILISER QUE CELLS DECRITES
DANS LA NOMENCLATURE DES PIECES

CAUTION SINCE THESE PARTS MARKED BY  ARE
CRITICAL FOR SAFETY,USE ONES
DESCRIBED IN PARTS LIST ONLY .


IN/OUT SCHEMATIC DIAGRAM



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

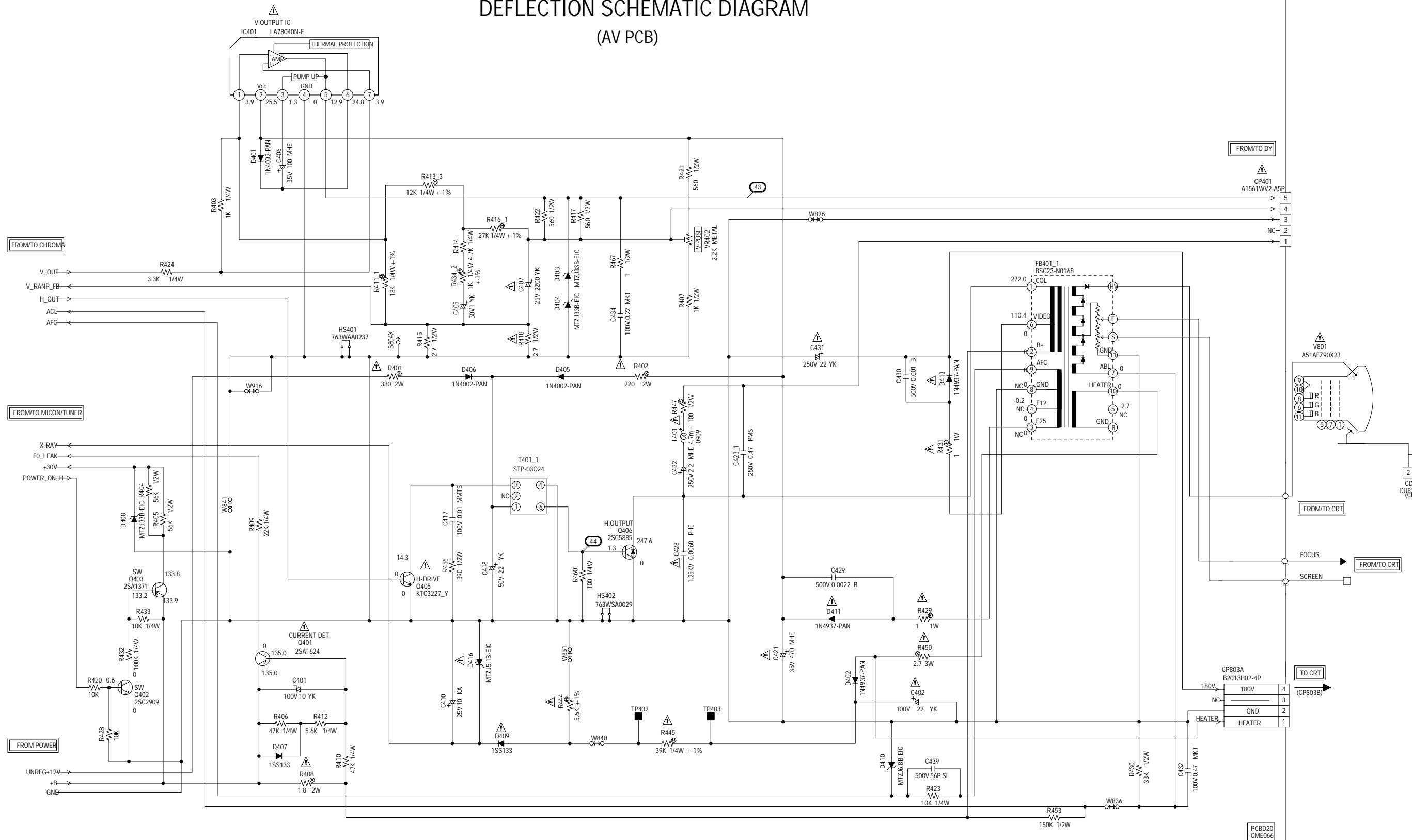
ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

CAUTION SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY .

CAUTION: DIGITAL TRANSISTOR

CAUTION: DIGITAL TRANSISTOR

DEFLECTION SCHEMATIC DIAGRAM (AV PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

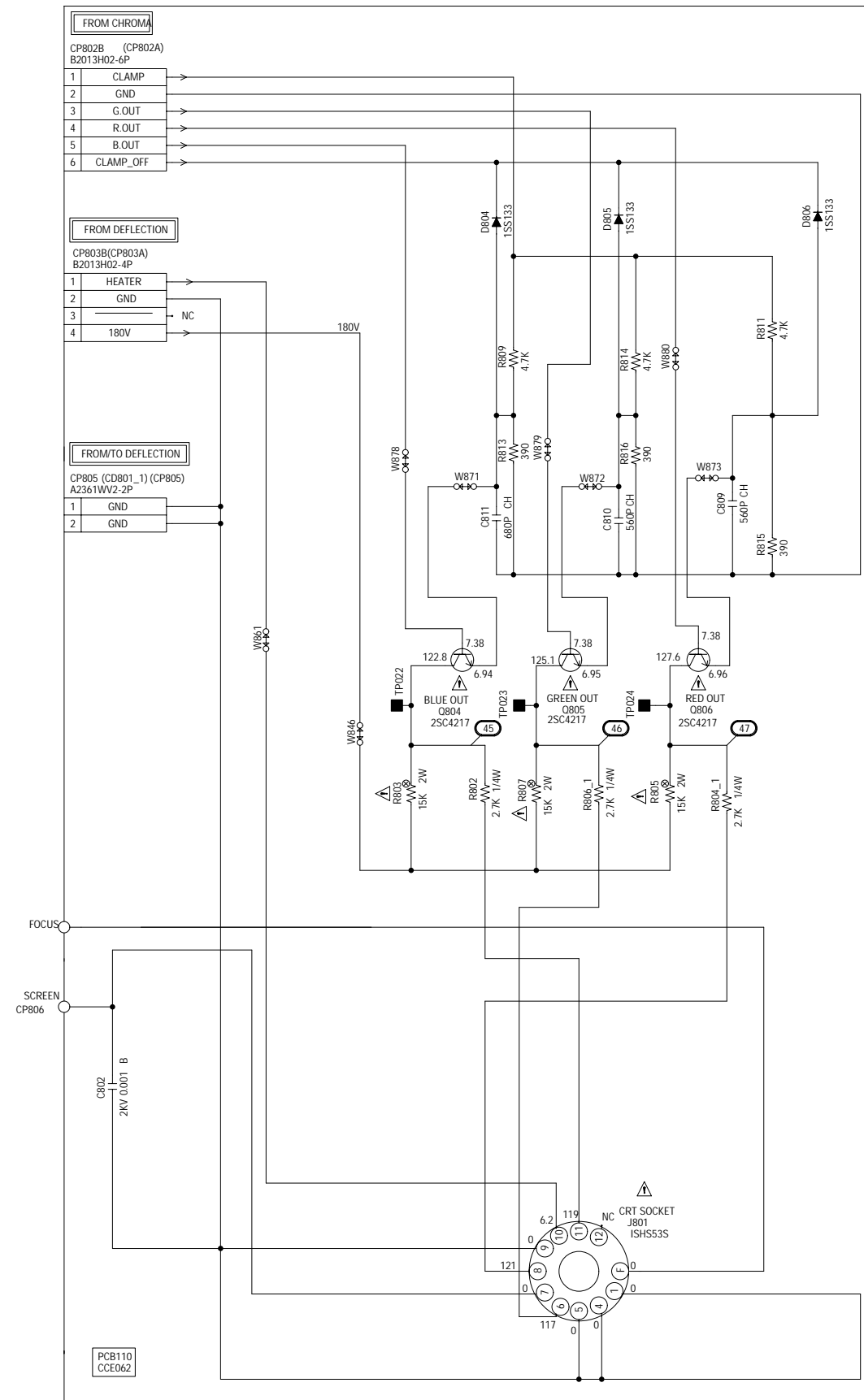
NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

ATTENTION: LES PIECES REPARÉES PAR UN ÉTANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.


CRT SCHEMATIC DIAGRAM


(CRT PCB)

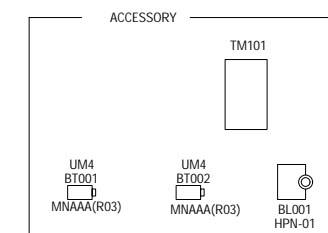


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

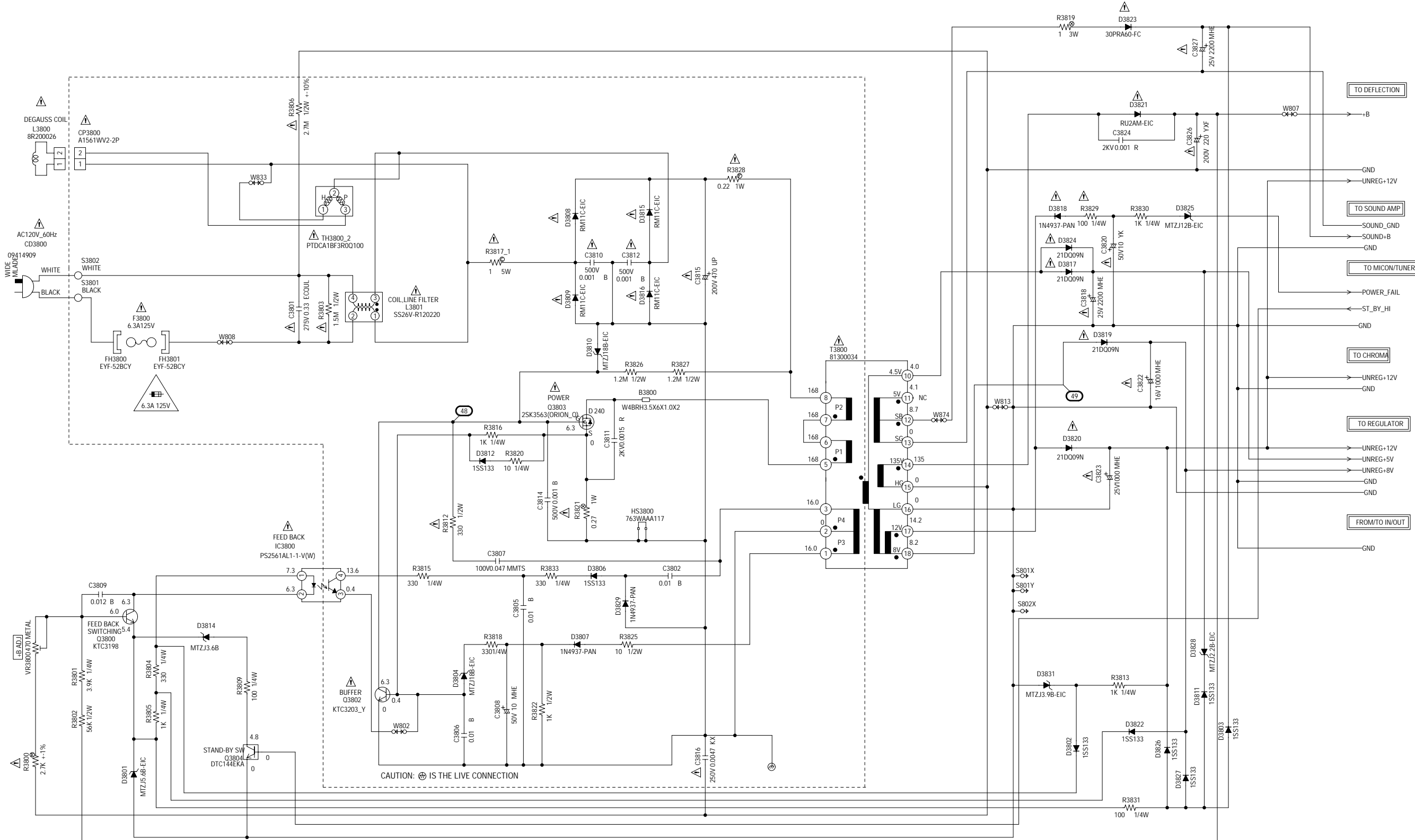
ATTENTION: LES PIÈCES RÉPARÉES PAR UN  ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

CAUTION SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.



PCBD20
CME066

POWER SCHEMATIC DIAGRAM
(AV PCB)



ATTENTION :POUR UNE PROTECTION CONTINUE LES RISQUES D'INCEIE
N'UTILISER QUE DES FUSIBLE DE MEME TYPE 6.3A 125V(F3800).

CAUTION :FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE6.3A 125V(F3800).

NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED
WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST
WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

ATTENTION LES PIECES REPARÉES PAR UN ETANT
DANGEREUSES AN POINT DE VUE SECURITE
N'UTILISER QUE CELLS DECRITES
DANS LA NOMENCLATURE DES PIECES.

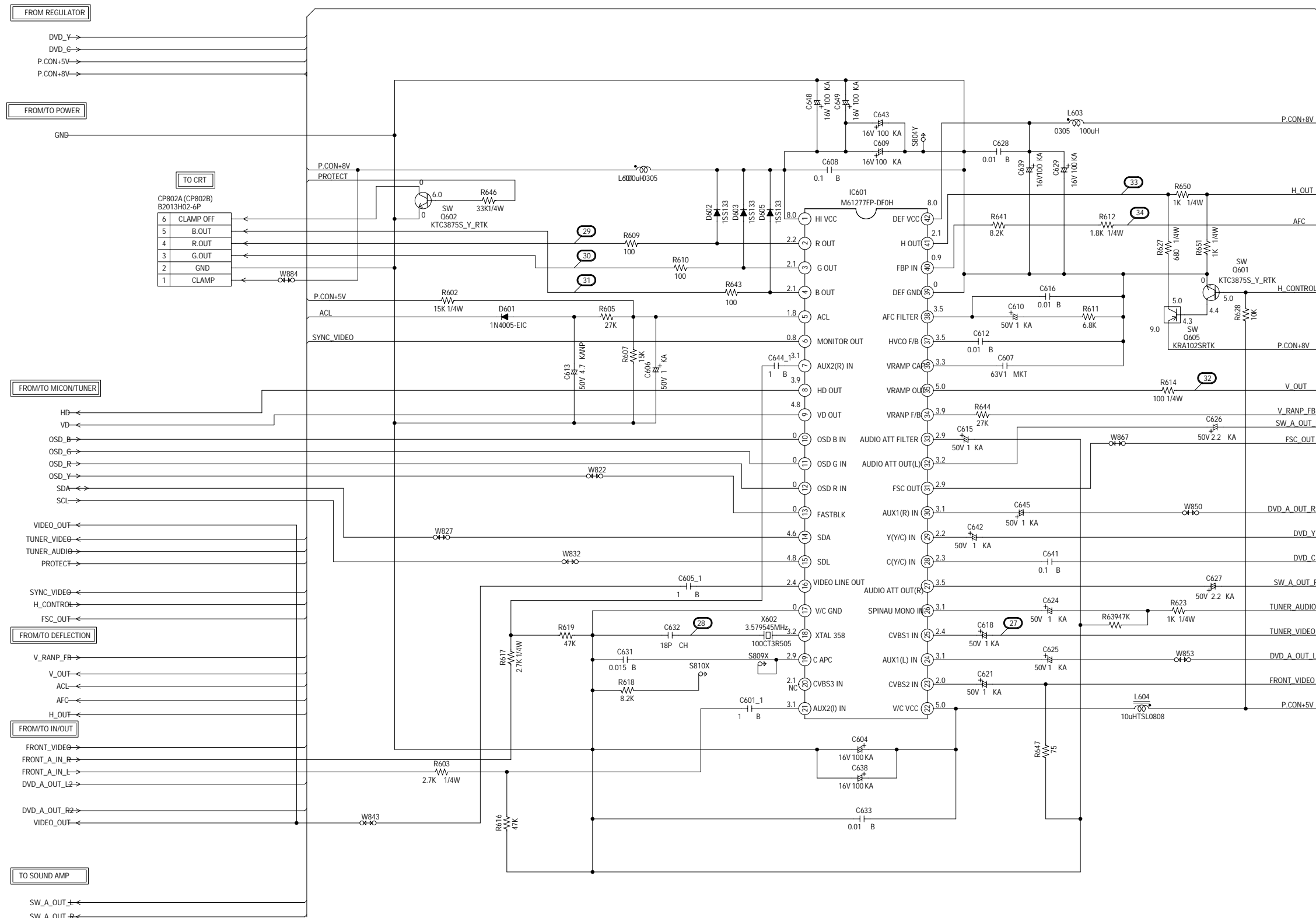
CAUTION SINCE THESE PARTS MARKED BY ARE
CRITICAL FOR SAFETY,USE ONES
DESCRIBED IN PARTS LIST ONLY .

PCBD20
CME066

CAUTION: DIGITAL TRANSISTOR

CHROMA SCHEMATIC DIAGRAM

(AV PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

CAUTION: DIGITAL TRANSISTOR



COMB/FILTER SCHEMATIC DIAGRAM
(AV PCB)



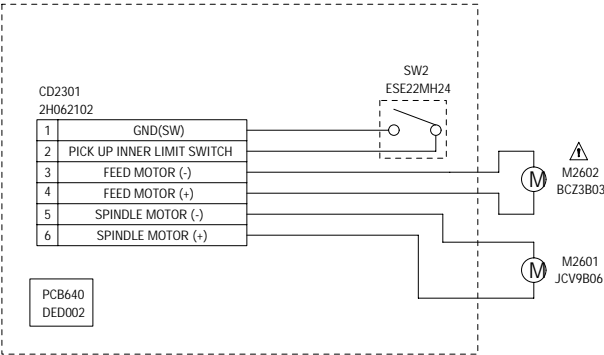
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED
WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST
WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

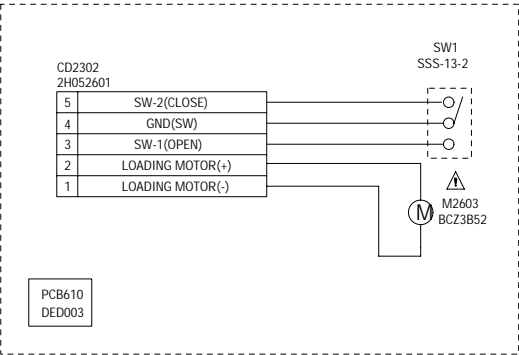
PCBD20
CME066

LOADING MOTOR/SW SCHEMATIC DIAGRAM

(SW PCB)

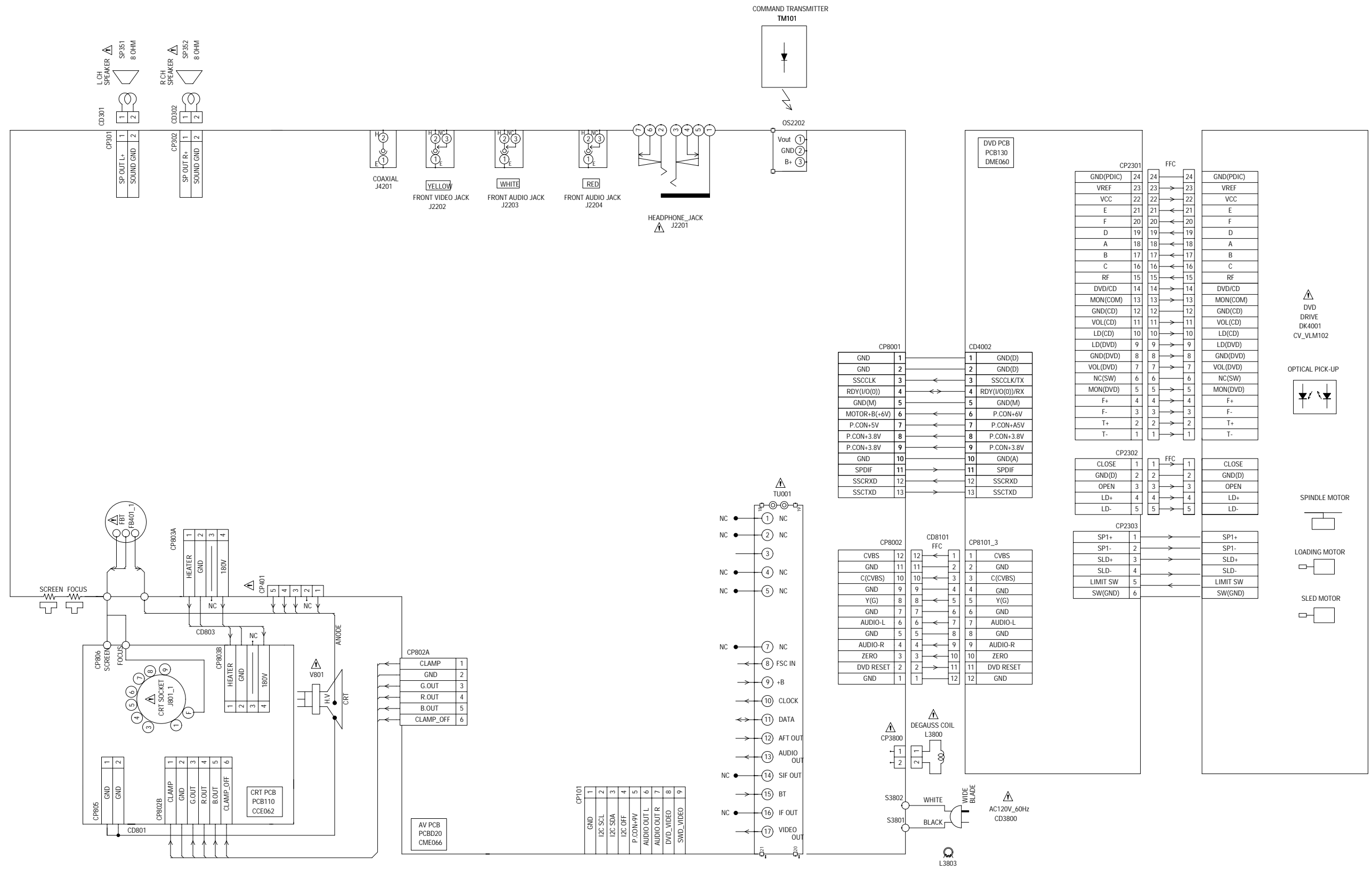


(LOADING MOTOR PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

INTERCONNECTION DIAGRAM



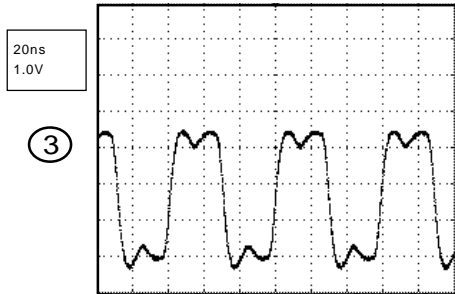
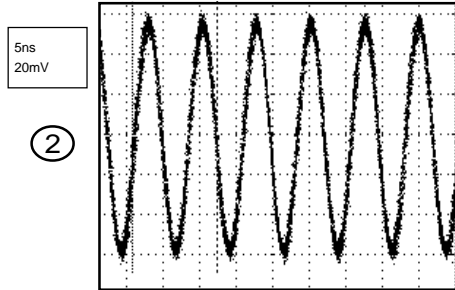
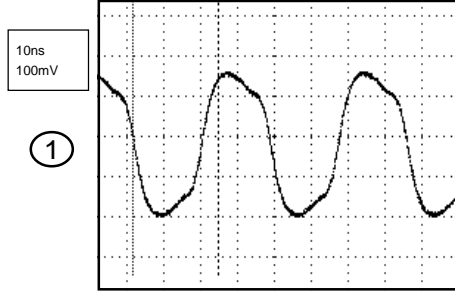
NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

ATTENTION - LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ, N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

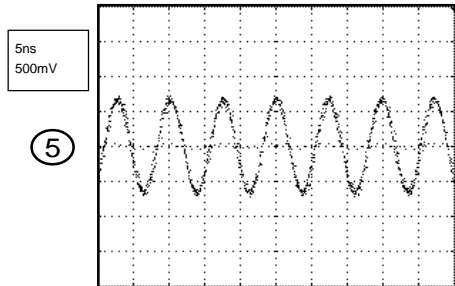
CAUTION - SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

WAVEFORMS

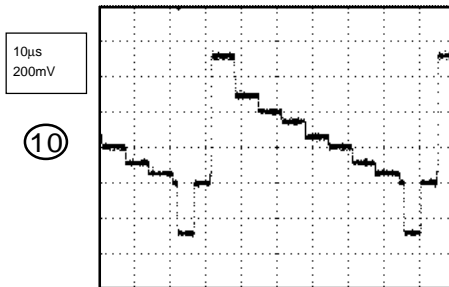
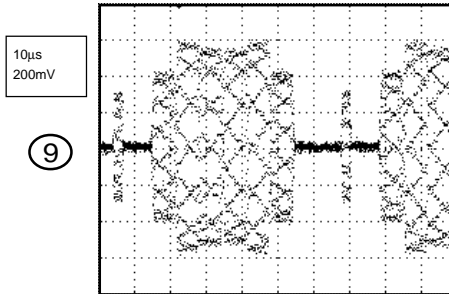
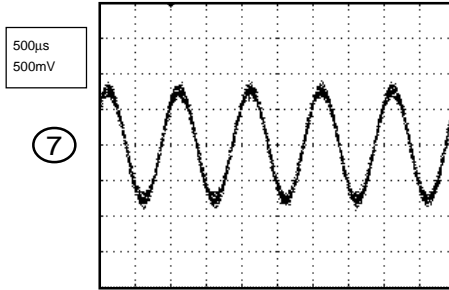
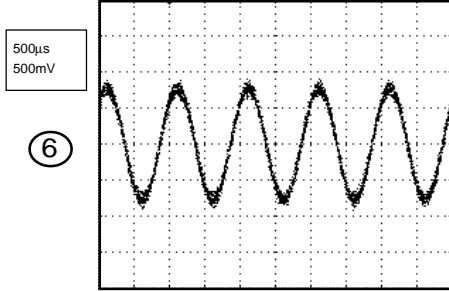
MPEG/MICON/DSP



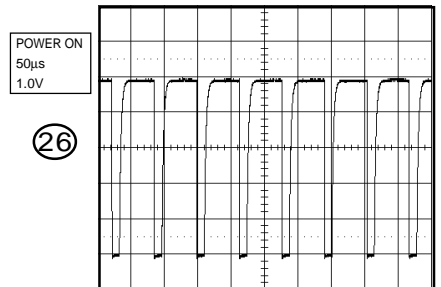
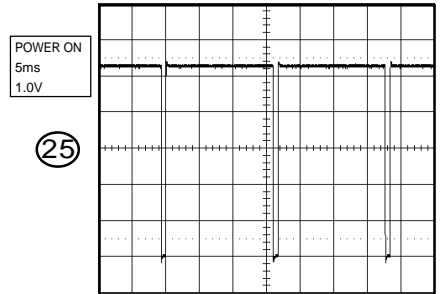
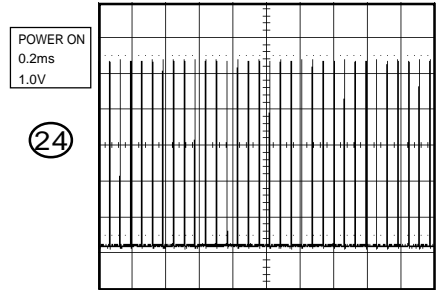
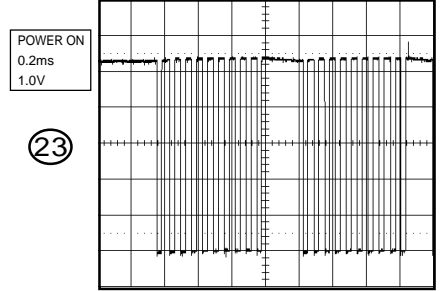
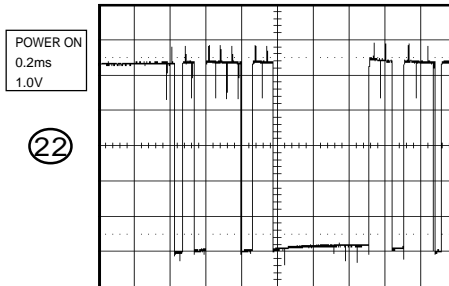
MEMORY



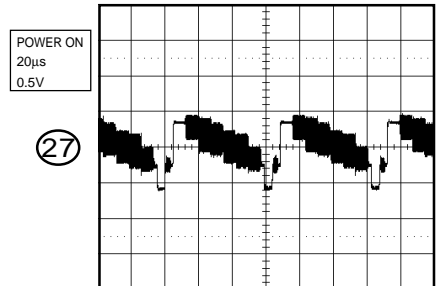
AUDIO/VIDEO



MICON/TUNER



CHROMA

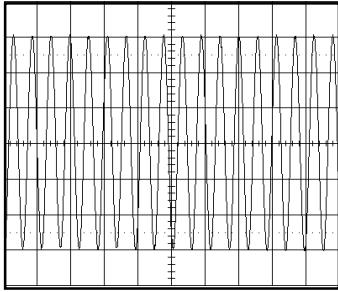


NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

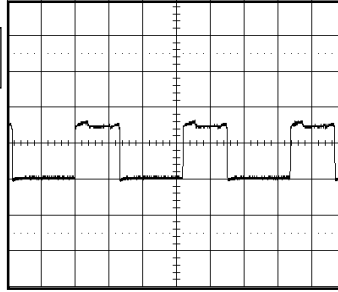
STANDBY
0.5μs
100mV

28



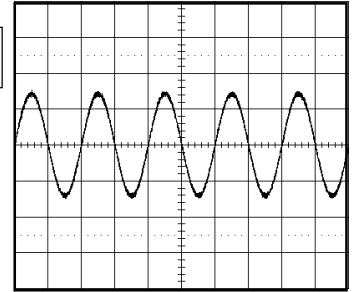
POWER ON
20μs
0.5V

33



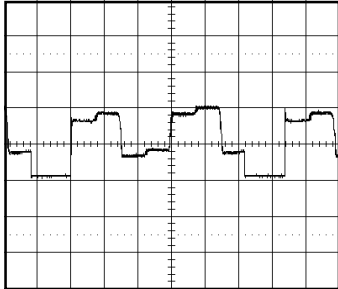
DVD PLAY
0.5ms
200mV

38



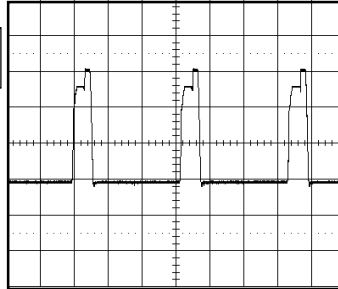
POWER ON
10μs
2.0V

29



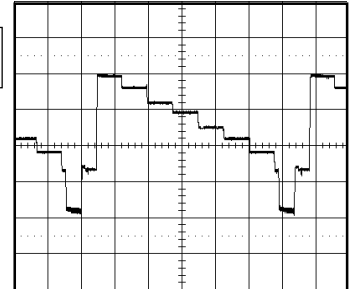
POWER ON
20μs
2.0V

34



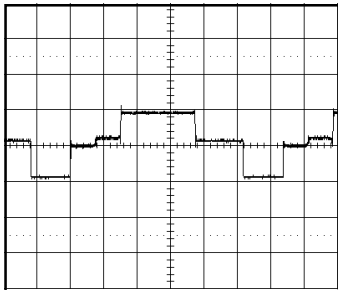
DVD PLAY
10μs
0.5V

39



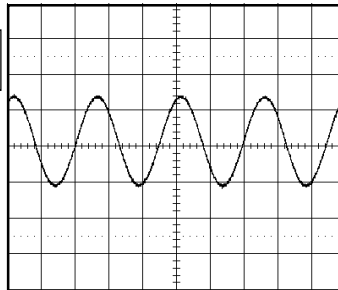
POWER ON
10μs
2.0V

30



POWER ON
1ms
100mV

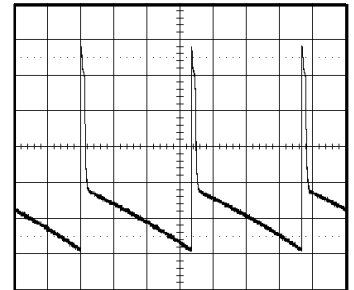
35



DEFLECTION

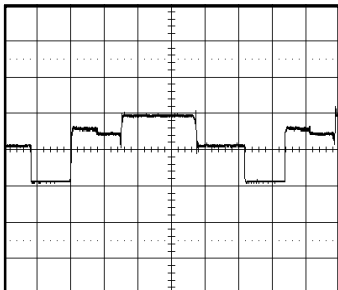
POWER ON
5ms
10.0V

43



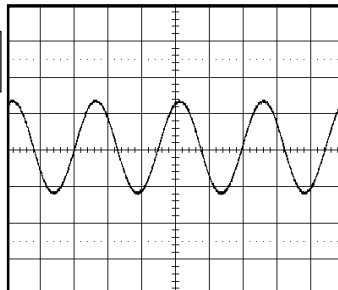
POWER ON
10μs
2.0V

31



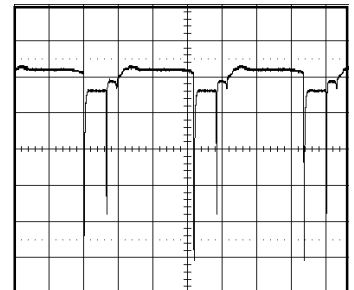
POWER ON
1ms
100mV

36



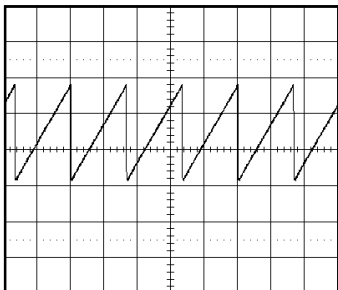
POWER ON
20μs
5.0V

44



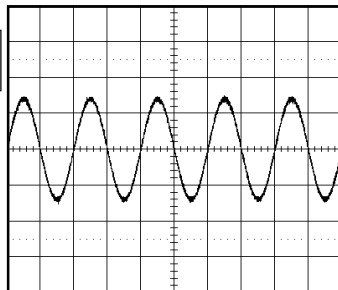
POWER ON
10ms
0.5V

32



DVD PLAY
0.5ms
200mV

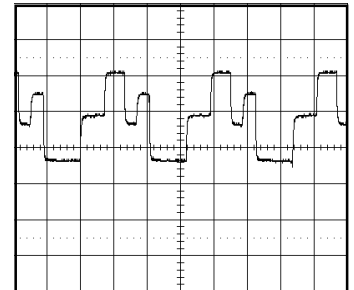
37



CRT

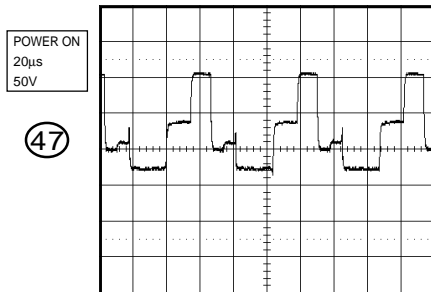
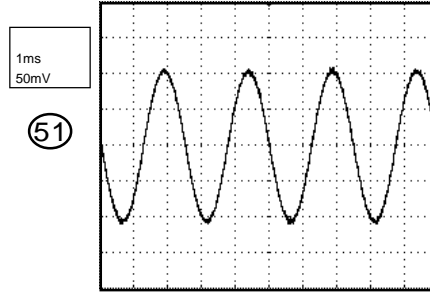
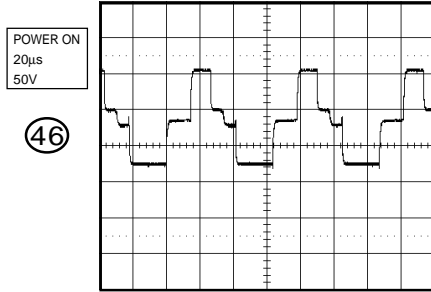
POWER ON
20μs
5.0V

45

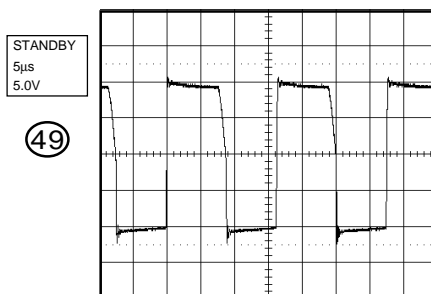
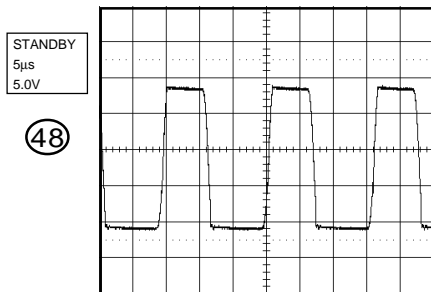


NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

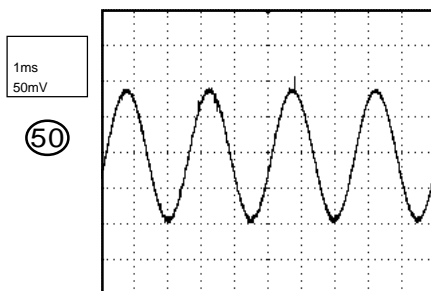
WAVEFORMS



POWER

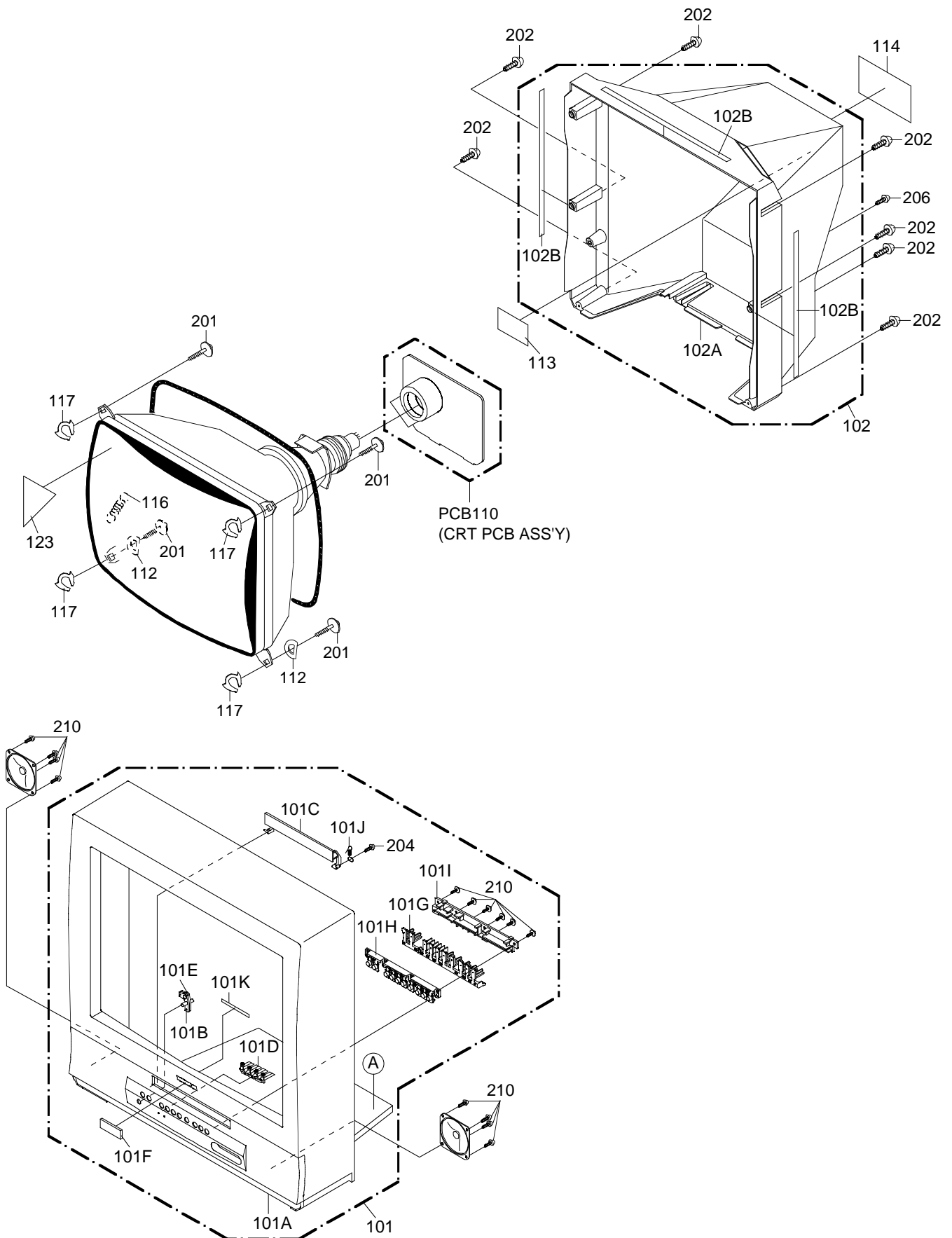


SOUND AMP

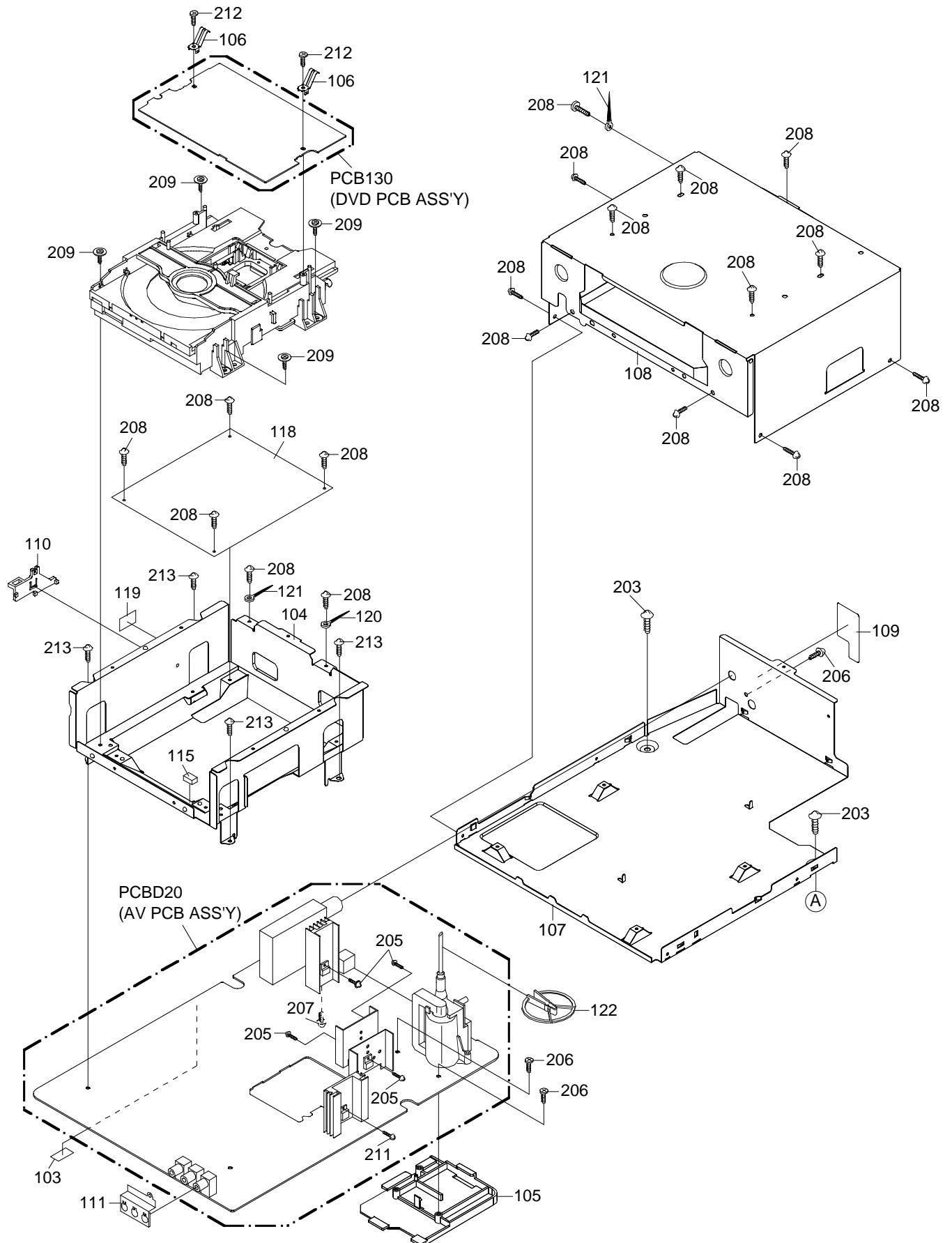


NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

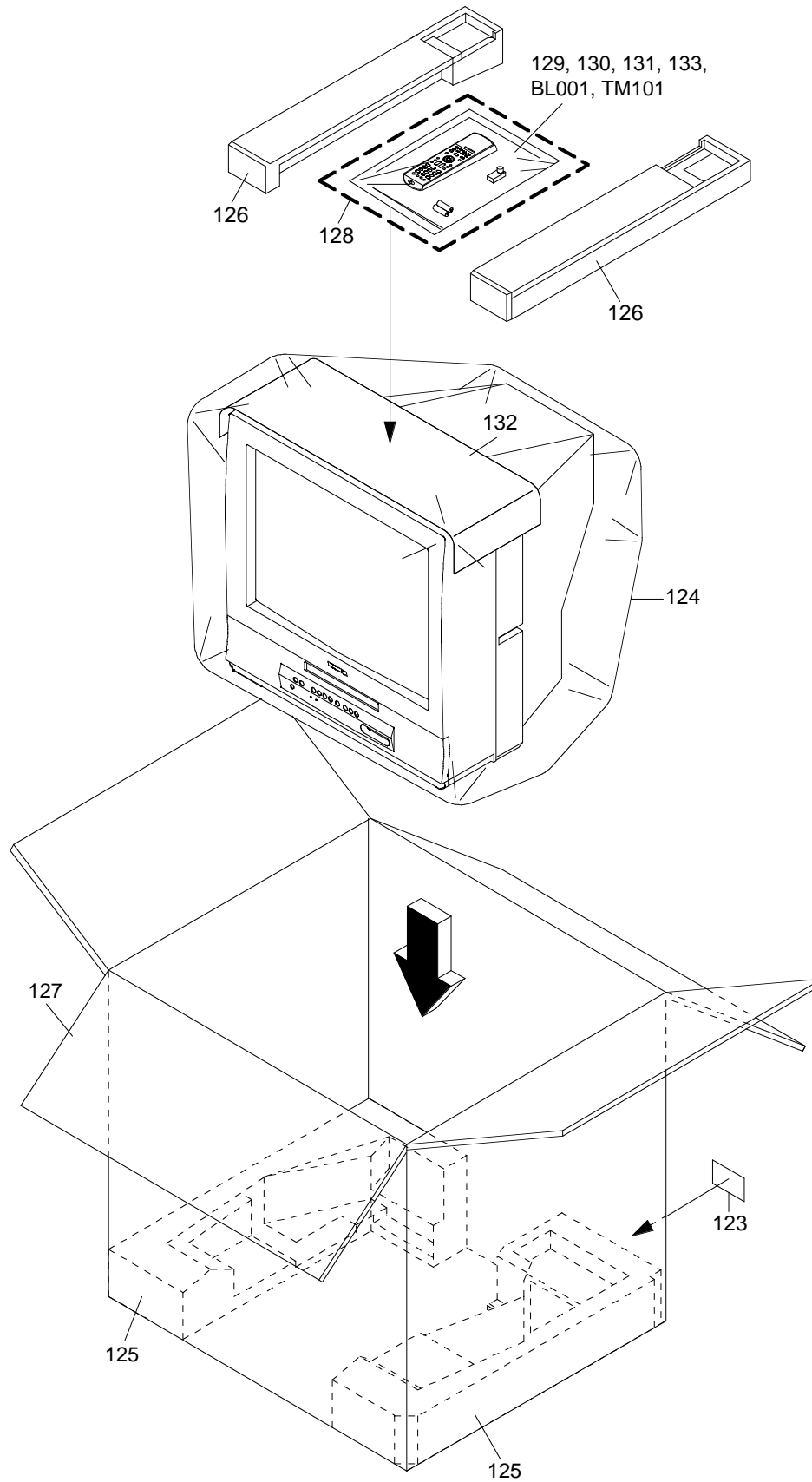
MECHANICAL EXPLODED VIEW



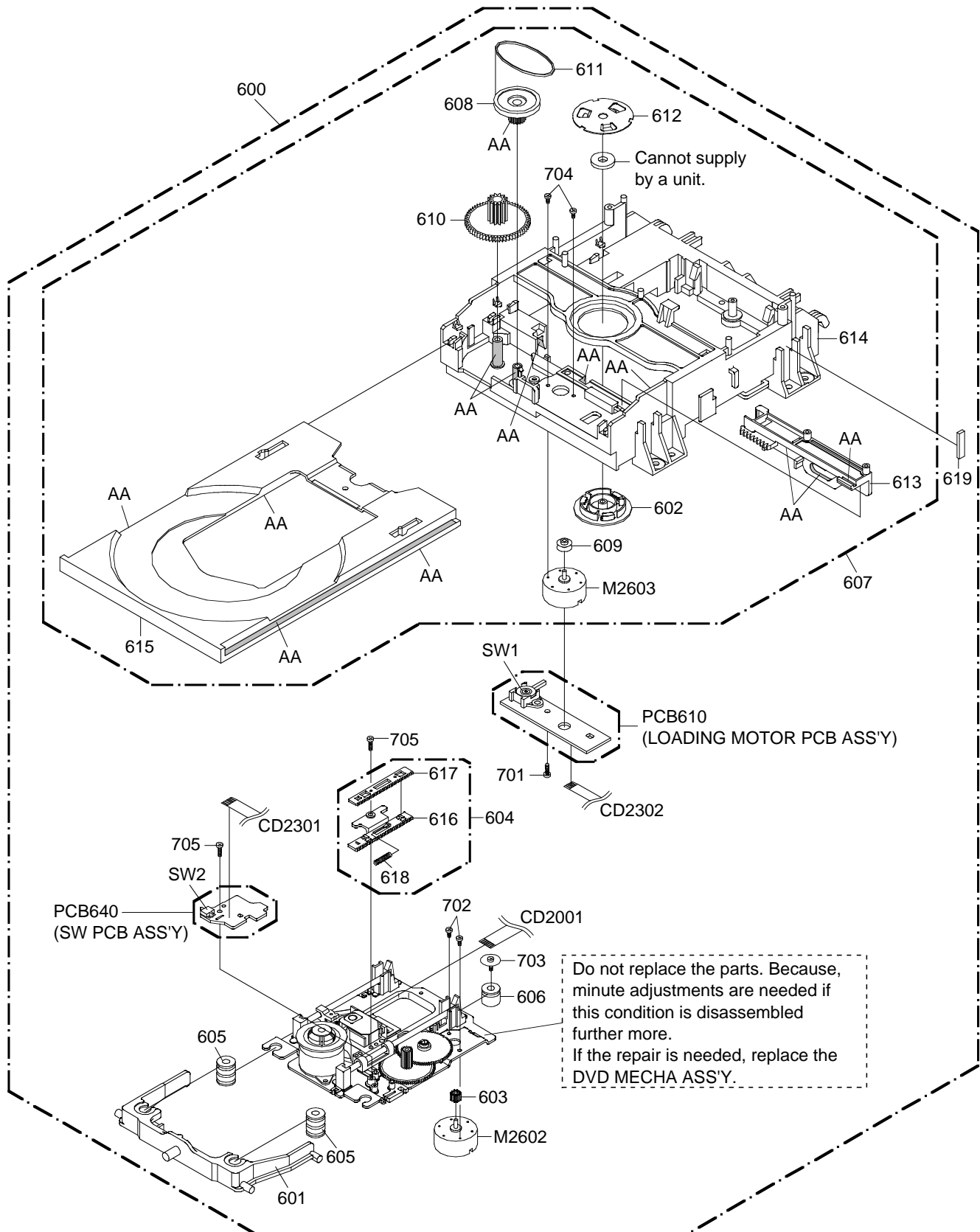
MECHANICAL EXPLODED VIEW



MECHANICAL EXPLODED VIEW (PACKING DIAGRAM)



DVD DECK EXPLODED VIEW



| | |
|--------|------|
| CLASS | MARK |
| GREASE | AA |

NOTE: Applying positions AA for the grease are displayed for this section. Check if the correct grease is applied for each position.

MECHANICAL REPLACEMENT PARTS LIST

| Location No. | TSB P/N | Reference No. | Description |
|--------------|----------|---------------|---|
| 101 | 72783199 | 7A701A597A | FRONT CABI ASS'Y |
| 101A | 72783184 | 701WPJD184 | CABINET FRONT |
| 101B | 72783186 | 711WPAA134 | PLATE FRONT |
| 101C | 72783187 | 712WPJC200 | FLAP DVD |
| 101D | 72783188 | 713WPAA235 | GLASS LED |
| 101E | 72783189 | 713WPAA236 | GUIDE REMOCOM |
| 101F | 72783192 | 723549A054 | BADGE BRAND |
| 101G | 72783195 | 735WPBB479 | BUTTON PUSH |
| 101H | 72783194 | 735WPAA994 | BUTTON FRAME |
| 101I | 72783196 | 738WPAA071 | STOPPER BUTTON |
| 101J | 72798625 | 742WKA0001 | SPRING DVD-FLAP |
| 101K | 72796103 | 800WQQA052 | FELT SHEET |
| 102 | 72783200 | 7A702A192A | BACK CABI ASS'Y |
| 102A | 72783185 | 702WPAA948 | CABINET BACK |
| 102B | 72798775 | 800WQQA046 | FELT SHEET |
| 103 | 72799702 | 7250000595 | SHEET PC |
| 104 | 72799936 | 761WSA0155 | ANGLE DECK |
| 105 | 72798668 | 761WPA0249 | HOLDER FBT |
| 106 | 72798655 | 753WUA0069 | SPRING EARTH |
| 107 | 72799384 | 702WSAA128 | PLATE BOTTOM |
| 108 | 72799373 | 702WSA0213 | SHIELD TOP |
| 109 | 72798550 | 7230007593 | SHEET JACK |
| 110 | 72798688 | 774WPA0006 | HOLDER WIRE |
| 111 | 72798640 | 752WSA0333 | SHIELD JACK |
| 112 | 72796255 | 800WROA011 | SHEET CRT SUPPORT (D) |
| 113 | 72783193 | 726000A133 | SHEET CRT SERVICEMAN |
| 114 | 72783190 | 722549A558 | SHEET RATING |
| 115 | 72781978 | 8965TS1017 | CUSHION 65TS10-10(17.5*20*14) |
| 116 | 72795687 | 741WUA0021 | SPRING EARTH |
| 117 | 72799965 | 769WSAA011 | WASHER CRT T=1 |
| 118 | 72799853 | 752WSA0488 | SHIELD DECK |
| 119 | 72783197 | 753WEA0033 | SHEET CU |
| 120 | 72795699 | 899EFBA002 | WIRING-CLIP |
| 121 | 72795680 | 8995034000 | CORD CLIP UL CO. |
| 122 | 72794734 | 899HV3T000 | HOLDER ANODE WIRE |
| 123 | 72783191 | 723000D219 | SHEET BAR CODE |
| 124 | 72795702 | 791WHAA114 | FILM BAG |
| 125 | 72798718 | 792WHA0525 | PACKAGE BOTTOM |
| 126 | 72798717 | 792WHA0524 | PACKAGE TOP |
| 127 | 72783198 | 793WCDD046 | GIFT BOX |
| 128 | 72783208 | A5X304V975 | INSTRUCTION BOOK KIT |
| 129 | 72781635 | JB5ND300 | POLYBAG INSTRUCTION(RED CAUTION) |
| 130 | 72781569 | J3N51617A | REGISTRATION CARD |
| 131 | 72781605 | J5S10229A | INFORMATION SHEET(USA) |
| 132 | 72795703 | 791WHAA134 | LIGHTRON SHEET |
| 133 | 72783222 | J5X30401A | INSTRUCTION BOOK |
| 201 | 72781287 | 8141J50C5U | SCREW TAP TITE(P) GW22 5*35 CH HEXAGON |
| 202 | 72781279 | 8117540A6U | SCREW TAP TITE(B0) TRUSS 4*16 CH |
| 203 | 72798794 | 811754080U | SCREW TAP TITE(B0) TRUSS 4*8 CH |
| 204 | 72798793 | 8110E3080U | SCREW TAP TITE(P) WH10 3*8 CH |
| 205 | 72781255 | 8109I3080U | SCREW TAP TITE(B) WH7 3*8 CH |
| 206 | 72798787 | 810923080U | SCREW TAP TITE(B) BIND 3*8 CH |
| 207 | 72781251 | 810963080Q | SCREW TAP TITE(B) BRAZIER 3*8 STAINLESS |
| 208 | 72781247 | 810923060U | SCREW TAP TITE(B) BIND 3*6 CH |
| 209 | 72781263 | 810F13080U | SEMS(F) 3*8 CH |
| 210 | 72798791 | 8110630A0U | SCREW TAP TITE(P) BRAZIER 3*10 CH |
| 211 | 72798786 | 810763080U | SCREW TAP TITE(S) BRAZIER 3*8 CH |
| 212 | 72795782 | 811022680U | SCREW TAP TITE(P) BIND 2.6*8 CH |
| 213 | 72781248 | 810923070U | SCREW TAP TITE(B) R BIND 3*7 CH |

DVD DECK REPLACEMENT PARTS LIST

| Location No. | TSB P/N | Reference No. | Description |
|--------------|----------|---------------|----------------------------------|
| △600 | 72783201 | A2I301H650 | DVD MECHA ASS'Y A2I301H650 |
| 601 | 72795767 | 92P100109A | HOLDER, TRAVERSE |
| 602 | 72795768 | 92P100094A | CLAMPER |
| 603 | 72795769 | 92P100088A | GEAR, MOTOR |
| 604 | 72798813 | 92AAA0013A | FEED RACK ASS'Y |
| 605 | 72795771 | 92P200013A | INSULATOR(F) |
| 606 | 72795772 | 92P200014A | INSULATOR(R) |
| 607 | 72781331 | 92SBB0029A | LOADER SUB ASS'Y |
| 608 | 72795774 | 92P100095A | GEAR, PULLEY |
| 609 | 72795775 | 92P100097A | PULLEY, MOTOR |
| 610 | 72795776 | 92P100096A | GEAR, MAIN |
| 611 | 72795777 | 92P200012A | BELT, LOADING |
| 612 | 72795778 | 92P000014A | PLATE, CLAMPER |
| 613 | 72795779 | 92P100093A | RACK, LOADING |
| 614 | 72795780 | 92P100091A | FRAME, MAIN |
| 615 | 72798838 | 92P100092A | TRAY |
| 616 | 72798836 | 92P100089A | RACK, FEED 1 |
| 617 | 72798837 | 92P100090A | RACK, FEED 2 |
| 618 | 72798849 | 92P300020A | SPRING, RACK FEED |
| 619 | 72795888 | 800WFAA008 | CUSHION C |
| 701 | 72795782 | 811022680U | SCREW TAP TITE(P) BIND 2.6*8 CH |
| 702 | 72795783 | 814011723U | SCREW, PAN M1.7*2.3 P3 CH |
| 703 | 72795784 | 816112080U | SEMS. TAP TITE(P) PAN W10 2*8 CH |
| 704 | 72795785 | 814011730U | SCREW, PAN M1.7*3 P3 CH |
| 705 | 72796070 | 811022080U | SCREW, TAP TITE(P) BIND 2*8 CH |
| CD2001 | 72783183 | 122J4O1903 | CORD JUMPER 127000-2928 |
| CD2301 | 72795869 | 122H062102 | CORD JUMPER 2H062102 |
| CD2302 | 72795870 | 122H052601 | CORD JUMPER 2H052601 |
| SW1 | 72796050 | 0515S32002 | SWITCH SSS-13-2 |
| △M2602 | 72795947 | 1515S98003 | FEED MOTOR BCZ3B03B |
| △M2603 | 72795948 | 1596S18003 | MOTOR, LOADING BCZ3B52B |
| PCB610 | 72783202 | A5M4016610 | PCB ASS'Y DED003A |
| PCB640 | 72783203 | A5N813W640 | PCB ASS'Y DED002B |
| SW2 | 72796052 | 0500101037 | PUSH SWITCH ESE22MH24 |

ELECTRICAL REPLACEMENT PARTS LIST

| Location No. | TSB P/N | Reference No. | Description | |
|-------------------|----------|---------------|---------------------|---------------------|
| RESISTORS | | | | |
| R117 | 72796038 | R002T4105J | RC | 1M OHM 1/4W |
| △R310 | 72797922 | R3X28B2R2J | R,METAL OXIDE | 2.2 OHM 3W |
| △R401 | 72781694 | R3K58A331J | R,METAL OXIDE | 330 OHM 2W |
| △R402 | 72781693 | R3K58A221J | R,METAL OXIDE | 220 OHM 2W |
| △R408 | 72781714 | R3X28A1R8J | R,METAL OXIDE | 1.8 OHM 2W |
| △R418 | 72794682 | R002T22R7J | RC | 2.7 OHM 1/2W |
| △R429 | 72795519 | R65581010J | R,FUSE | 1 OHM 1W |
| △R431 | 72795519 | R65581010J | R,FUSE | 1 OHM 1W |
| △R444 | 72795514 | R4X5T6562F | R,METAL | 5.6K OHM 1/6W |
| △R445 | 72783223 | R4K1T4393F | R,METAL | 39K OHM 1/4W |
| △R447 | 72798046 | R655U2101J | R,FUSE | 100 OHM 1/2W |
| △R450 | 72797923 | R3X28B2R7J | R,METAL OXIDE | 2.7 OHM 3W |
| △R803 | 72796459 | R3X18A153J | R,METAL OXIDE | 15K OHM 2W |
| △R805 | 72796459 | R3X18A153J | R,METAL OXIDE | 15K OHM 2W |
| △R807 | 72796459 | R3X18A153J | R,METAL OXIDE | 15K OHM 2W |
| △R3005 | 72797916 | R3X28B1R2J | R,METAL OXIDE | 1.2 OHM 3W |
| △R3800 | 72795997 | R4X5T6272F | R,METAL | 2.7K OHM 1/6W |
| △R3803 | 72795500 | R002T2155J | RC | 1.5M OHM 1/2W |
| △R3806 | 72794631 | R0G3K2275K | RC | 2.7M OHM 1/2W |
| △R3812 | 72795109 | R002T2331J | RC | 330 OHM 1/2W |
| △R3817 | 72797971 | R5X2CD010J | R,CEMENT | 1 OHM 5W |
| △R3819 | 72794621 | R3X28B010J | R,METAL OXIDE | 1 OHM 3W |
| △R3821 | 72795995 | R3X181R27J | R,METAL OXIDE | 0.27 OHM 1W |
| △R3828 | 72794633 | R63881R22J | R,FUSE | 0.22 OHM 1W |
| △R3829 | 72794684 | R002T4101J | RC | 100 OHM 1/4W |
| CAPACITORS | | | | |
| △C357 | 72795574 | E02LF3222M | CE | 2200 UF 25V |
| △C402 | 72794396 | E02LU8220M | CE | 22 UF 100V |
| △C407 | 72795574 | E02LF3222M | CE | 2200 UF 25V |
| △C421 | 72797489 | E5EZT4471M | CE | 470 UF 35V |
| C423 | 72795104 | P4J7F3474J | CMPP | 0.47 UF 250V PMS |
| △C428 | 72781648 | P4G8FJ682H | CMPP | 0.0068UF 1.25KV PHE |
| △C431 | 72795570 | E0ELFD220M | CE | 22 UF 250V |
| C802 | 72795578 | C0JBB0713K | CC | 0.001 UF 2KV B |
| C3002 | 72797374 | E02LF1222M | CE | 2200 UF 10V |
| C3010 | 72797374 | E02LF1222M | CE | 2200 UF 10V |
| C3011 | 72797374 | E02LF1222M | CE | 2200 UF 10V |
| △C3801 | 72794401 | P2122B334M | CMP | 0.33 UF 275V ECQUL |
| △C3810 | 72795629 | C0JTB0513K | CC | 0.001 UF 500V B |
| C3811 | 72795581 | C0PLRR7E3K | CC | 0.0015 UF 2KV R |
| △C3812 | 72795629 | C0JTB0513K | CC | 0.001 UF 500V B |
| △C3815 | 72795573 | E51CGC471M | CE | 470 UF 200V |
| △C3816 | 72795579 | CD39E0MQ3M | CC | 0.0047UF 250V |
| △C3818 | 72794381 | E5EZF3222M | CE | 2200 UF 25V |
| △C3820 | 72794400 | E02LU5100M | CE | 10 UF 50V |
| △C3822 | 72797483 | E5EZT2102M | CE | 1000 UF 16V |
| △C3823 | 72794410 | E5EZF3102M | CE | 1000 UF 25V |
| C3824 | 72794399 | C0PLRR713K | CC | 0.001 UF 2KV R |
| △C3826 | 72794411 | E62NFC221M | CE | 220 UF 200V |
| △C3827 | 72794381 | E5EZF3222M | CE | 2200 UF 25V |
| DIODES | | | | |
| D101 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| D102 | 72783214 | D9WU05R62B | DIODE,ZENER | MTZJ5.6B-EIC |
| D105 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| D106 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| D109 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| D110 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| D111 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| D401 | 72783209 | D2MXN40020 | DIODE,FAST RECOVERY | 1N4002-PAN |
| △D402 | 72795543 | D2MXN49370 | DIODE,FAST RECOVERY | 1N4937-PAN |
| D403 | 72781366 | D9WU03302B | DIODE,ZENER | MTZJ33B-EIC |
| D404 | 72781366 | D9WU03302B | DIODE,ZENER | MTZJ33B-EIC |
| D405 | 72783209 | D2MXN40020 | DIODE,FAST RECOVERY | 1N4002-PAN |
| D406 | 72783209 | D2MXN40020 | DIODE,FAST RECOVERY | 1N4002-PAN |
| D407 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| D408 | 72781366 | D9WU03302B | DIODE,ZENER | MTZJ33B-EIC |
| △D409 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| D410 | 72781369 | D9WU06R82B | DIODE,ZENER | MTZJ6.8B-EIC |
| △D411 | 72795543 | D2MXN49370 | DIODE,FAST RECOVERY | 1N4937-PAN |
| △D413 | 72795543 | D2MXN49370 | DIODE,FAST RECOVERY | 1N4937-PAN |
| △D416 | 72781368 | D9WU05R12B | DIODE,ZENER | MTZJ5.1B-EIC |
| D601 | 72795626 | D2WXN40050 | DIODE,SILICON | 1N4005-EIC |
| D602 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| D603 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| D605 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |

ELECTRICAL REPLACEMENT PARTS LIST

| Location No. | TSB P/N | Reference No. | Description | |
|--------------------|----------|---------------|---------------------|-----------------------|
| DIODES | | | | |
| D804 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| D805 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| D806 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| D2201 | 72796482 | 0021E2Q140 | LED | LTL-1CHEE-002A |
| D2303 | 72795897 | DD7R0S3550 | DIODE,SILICON | 1SS355 TE-17 |
| D2304 | 72795897 | DD7R0S3550 | DIODE,SILICON | 1SS355 TE-17 |
| D3001 | 72783209 | D2MXN40020 | DIODE,FAST RECOVERY | 1N4002-PAN |
| D3002 | 72783210 | D9WU01002B | DIODE,ZENER | MTZJ10B-EIC |
| D3003 | 72783214 | D9WU05R62B | DIODE,ZENER | MTZJ5.6B-EIC |
| D3004 | 72783209 | D2MXN40020 | DIODE,FAST RECOVERY | 1N4002-PAN |
| D3005 | 72794480 | D28T21DQN9 | DIODE,SCHOTTKY | 21DQ09N-TA2B1 |
| D3006 | 72794488 | D2WT011E10 | DIODE,SILICON | 11E1-EIC |
| D3801 | 72783214 | D9WU05R62B | DIODE,ZENER | MTZJ5.6B-EIC |
| D3802 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| D3803 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| D3804 | 72783211 | D9WU01802B | DIODE,ZENER | MTZJ18B-EIC |
| D3806 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| D3807 | 72795543 | D2MXN49370 | DIODE,FAST RECOVERY | 1N4937-PAN |
| △D3808 | 72794473 | D2WTRM11C0 | DIODE,SILICON | RM11C-EIC |
| △D3809 | 72794473 | D2WTRM11C0 | DIODE,SILICON | RM11C-EIC |
| △D3810 | 72783211 | D9WU01802B | DIODE,ZENER | MTZJ18B-EIC |
| D3811 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| D3812 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| D3814 | 72797336 | D9U03R61B | DIODE,ZENER | MTZJ3.6B T-77 |
| △D3815 | 72794473 | D2WTRM11C0 | DIODE,SILICON | RM11C-EIC |
| △D3816 | 72794473 | D2WTRM11C0 | DIODE,SILICON | RM11C-EIC |
| △D3817 | 72794480 | D28T21DQN9 | DIODE,SCHOTTKY | 21DQ09N-TA2B1 |
| △D3818 | 72795543 | D2MXN49370 | DIODE,FAST RECOVERY | 1N4937-PAN |
| △D3819 | 72794480 | D28T21DQN9 | DIODE,SCHOTTKY | 21DQ09N-TA2B1 |
| △D3820 | 72794480 | D28T21DQN9 | DIODE,SCHOTTKY | 21DQ09N-TA2B1 |
| △D3821 | 72795545 | D2WXRU2AM0 | DIODE,SILICON | RU2AM-EIC |
| D3822 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| △D3823 | 72794474 | D28F0PRA60 | DIODE,RECTIFIER | 30PRA60-FC |
| △D3824 | 72794480 | D28T21DQN9 | DIODE,SCHOTTKY | 21DQ09N-TA2B1 |
| D3825 | 72781364 | D9WU01202B | DIODE,ZENER | MTZJ12B-EIC |
| D3826 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| D3827 | 72794491 | D1VT001330 | DIODE,SILICON | 1SS133T-77 |
| D3828 | 72783212 | D9WU02R22B | DIODE,ZENER | MTZJ2.2B-EIC |
| D3829 | 72795543 | D2MXN49370 | DIODE,FAST RECOVERY | 1N4937-PAN |
| D3831 | 72783213 | D9WU03R92B | DIODE,ZENER | MTZJ3.9B-EIC |
| D4002 | 72795897 | DD7R0S3550 | DIODE,SILICON | 1SS355 TE-17 |
| D4003 | 72795897 | DD7R0S3550 | DIODE,SILICON | 1SS355 TE-17 |
| D4004 | 72795897 | DD7R0S3550 | DIODE,SILICON | 1SS355 TE-17 |
| D4005 | 72795897 | DD7R0S3550 | DIODE,SILICON | 1SS355 TE-17 |
| D4006 | 72795897 | DD7R0S3550 | DIODE,SILICON | 1SS355 TE-17 |
| D4007 | 72795897 | DD7R0S3550 | DIODE,SILICON | 1SS355 TE-17 |
| D8111 | 72795897 | DD7R0S3550 | DIODE,SILICON | 1SS355 TE-17 |
| D8112 | 72795897 | DD7R0S3550 | DIODE,SILICON | 1SS355 TE-17 |
| ICS | | | | |
| IC101 | 72783219 | I55F06087A | IC | OEC6087A |
| IC103 | 72796084 | I9UF032310 | IC | PST3231NR |
| IC199 | 72783207 | A5W1014D25 | INIT DATA | AT24C04N-10SU-2.7 |
| △IC352 | 72783215 | I01DP75130 | IC | AN7513 |
| △IC353 | 72783215 | I01DP75130 | IC | AN7513 |
| △IC401 | 72795534 | I03TD804N0 | IC | LA78040N-E |
| IC601 | 72783217 | I06FC12770 | IC | M61277FP-DF0H |
| △IC2301 | 72783216 | I03FV65650 | IC | LA6565VR-TLM-E |
| △IC3001 | 72783218 | I07F90WTP0 | IC | BA00BC0WT-V5 |
| △IC3002 | 72795906 | I1KA78R050 | IC | KIA278R05PI |
| △IC3800 | 72794512 | 000220002W | PHOTO COUPLER | PS2561AL1-1-V(W) |
| IC4001 | 72783220 | ICQK068621 | IC | ZR36862PQCG-B |
| △IC4003 | 72795912 | I07F9E00W0 | IC | BA33E00WHFP-TR |
| IC4007 | 72783224 | S5W1013F01 | MEMORY DATA | SST39VF1601-70-4C-EKE |
| IC4009 | 72783221 | IF9J0161A7 | IC | M12L16161A-7TG |
| IC8102 | 72795922 | I17F017530 | IC | PCM1753DBQR |
| TRANSISTORS | | | | |
| Q101 | 72794571 | TCAA3875SY | TRANSISTOR,SILICON | KTC3875S_Y_RTK |
| Q104 | 72794566 | TAAA1504SY | TRANSISTOR,SILICON | KTA1504S_Y_RTK |
| △Q401 | 72794569 | TA3T016240 | TRANSISTOR,SILICON | 2SA1624-AA |
| Q402 | 72795474 | TC3T020900 | TRANSISTOR,SILICON | 2SC2909(S,T)-AA |
| △Q403 | 72795475 | TA3T1371A0 | TRANSISTOR,SILICON | 2SA1371(D,E)-AE |
| △Q405 | 72794561 | TCAT03227Y | TRANSISTOR,SILICON | KTC3227_Y-AT |
| △Q406 | 72782813 | TC1G058850 | TRANSISTOR,SILICON | 2SC5885 |
| Q601 | 72794571 | TCAA3875SY | TRANSISTOR,SILICON | KTC3875S_Y_RTK |
| Q602 | 72794571 | TCAA3875SY | TRANSISTOR,SILICON | KTC3875S_Y_RTK |

ELECTRICAL REPLACEMENT PARTS LIST

| Location No. | TSB P/N | Reference No. | Description | |
|---------------------------------|----------|---------------|-------------------------|---------------------|
| TRANSISTORS | | | | |
| Q605 | 72795963 | TPAAB05001 | COMPOUND TRANSISTOR | KRA102SRTK |
| △Q804 | 72795971 | TC3F042170 | TRANSISTOR,SILICON | 2SC4217(D,E)-RAC |
| △Q805 | 72795971 | TC3F042170 | TRANSISTOR,SILICON | 2SC4217(D,E)-RAC |
| △Q806 | 72795971 | TC3F042170 | TRANSISTOR,SILICON | 2SC4217(D,E)-RAC |
| Q2201 | 72794567 | TNAAC05002 | COMPOUND TRANSISTOR | KRC103SRTK |
| Q2301 | 72795964 | T67J1036K0 | TRANSISTOR,SILICON | 2SA1036KT146 |
| Q2302 | 72795965 | T67J048TL0 | TRANSISTOR,SILICON | 2SA2048TL |
| Q2303 | 72794571 | TCAA3875SY | TRANSISTOR,SILICON | KTC3875S_Y_RTK |
| Q2304 | 72794571 | TCAA3875SY | TRANSISTOR,SILICON | KTC3875S_Y_RTK |
| Q2305 | 72794571 | TCAA3875SY | TRANSISTOR,SILICON | KTC3875S_Y_RTK |
| △Q3001 | 72796092 | TAAT01281Y | TRANSISTOR,SILICON | KTA1281_Y |
| △Q3002 | 72796092 | TAAT01281Y | TRANSISTOR,SILICON | KTA1281_Y |
| Q3003 | 72795962 | TNAAB05003 | COMPOUND TRANSISTOR | KRC102SRTK |
| △Q3005 | 72794570 | TCAT03209Y | TRANSISTOR,SILICON | KTC3209_Y-AT |
| Q3007 | 72795962 | TNAAB05003 | COMPOUND TRANSISTOR | KRC102SRTK |
| △Q3008 | 72795476 | TCAT032034 | TRANSISTOR,SILICON | KTC3203_Y-AT |
| Q3800 | 72794577 | TCATC31980 | TRANSISTOR,SILICON | KTC3198-AT(Y,GR) |
| △Q3802 | 72795476 | TCAT032034 | TRANSISTOR,SILICON | KTC3203_Y-AT |
| △Q3803 | 72795539 | T25F035630 | FET | 2SK3563(ORION_Q) |
| Q3804 | 72794559 | TNYJD05001 | COMPOUND TRANSISTOR | DTC144EKAT146 |
| Q4201 | 72794571 | TCAA3875SY | TRANSISTOR,SILICON | KTC3875S_Y_RTK |
| Q4202 | 72795966 | TPYJA05001 | COMPOUND TRANSISTOR | DTA143EKAT146 |
| Q4203 | 72794571 | TCAA3875SY | TRANSISTOR,SILICON | KTC3875S_Y_RTK |
| Q4204 | 72794571 | TCAA3875SY | TRANSISTOR,SILICON | KTC3875S_Y_RTK |
| Q4205 | 72794558 | TNAAD05001 | COMPOUND TRANSISTOR | KRC104SRTK |
| Q4206 | 72794567 | TNAAC05002 | COMPOUND TRANSISTOR | KRC103SRTK |
| COILS & TRANSFORMERS | | | | |
| L001 | 72796407 | 02167D101K | COIL | 100 UH |
| L101 | 72796582 | 021LA6560K | COIL | 56 UH |
| L401 | 72794527 | 021679472K | COIL | 4.7 MH |
| L601 | 72794540 | 02167F101J | COIL | 100 UH |
| L603 | 72794540 | 02167F101J | COIL | 100 UH |
| L604 | 72796087 | 02167E100K | COIL | 10 UH |
| △L3800 | 72796616 | 028R200026 | COIL,DEGAUSS | 8R200026 |
| L3801 | 72798947 | 029X000126 | COIL,LINE FILTER | SS26V-R120220 |
| L4001 | 72795936 | 02167F2R2J | COIL | 2.2 UH |
| L4002 | 72796088 | 02AHB9A972 | CORE,FERRITE | W5T29X7.5X19 |
| L4202 | 72794540 | 02167F101J | COIL | 100 UH |
| L8102 | 72795943 | 02167F1R0K | COIL | 1 UH |
| L8103 | 72795943 | 02167F1R0K | COIL | 1 UH |
| T401 | 72796466 | 045011001L | TRANS,HORIZONTAL DRIVE | STP-03Q24 |
| △T3800 | 72796693 | 0481300034 | TRANSFORMER,SWITCHING | 81300034 |
| JACKS | | | | |
| △J801 | 72795490 | 066F130020 | SOCKET,CATHODE RAY,TUBE | ISHS53S |
| △J2201 | 72794516 | 060J131016 | HEADPHONE JACK | MSJ-2000_AG |
| J2202 | 72795924 | 060J421036 | RCA JACK | MTJ-032-05A-30-FE |
| J2203 | 72795925 | 060J421037 | RCA JACK | MTJ-032-05A-32-FE |
| J2204 | 72795926 | 060J421030 | RCA JACK | MTJ-032-05A-31-FE |
| J4201 | 72796734 | 060J401102 | RCA JACK | MSP-251V-05NI-FE-LF |
| SWITCHES | | | | |
| SW2213 | 72794688 | 0504101T34 | SWITCH,TACT | EVQ21505R |
| SW2214 | 72794688 | 0504101T34 | SWITCH,TACT | EVQ21505R |
| SW2215 | 72794688 | 0504101T34 | SWITCH,TACT | EVQ21505R |
| SW2216 | 72794688 | 0504101T34 | SWITCH,TACT | EVQ21505R |
| SW2217 | 72794688 | 0504101T34 | SWITCH,TACT | EVQ21505R |
| SW2218 | 72794688 | 0504101T34 | SWITCH,TACT | EVQ21505R |
| SW2219 | 72794688 | 0504101T34 | SWITCH,TACT | EVQ21505R |
| SW2220 | 72794688 | 0504101T34 | SWITCH,TACT | EVQ21505R |
| SW2221 | 72794688 | 0504101T34 | SWITCH,TACT | EVQ21505R |
| SW2223 | 72794688 | 0504101T34 | SWITCH,TACT | EVQ21505R |
| VARIABLE RESISTORS | | | | |
| VR402 | 72795471 | V1K63H3BTE | VOLUME,SEMI FIXED | NVG6TLTAB222 |
| VR3800 | 72796061 | V1K63Q2BTE | VOLUME,SEMI FIXED | NVG6TLTAB471 |
| P.C.BOARD ASSEMBLIES | | | | |
| PCB110 | 72783204 | A5W1014110L | PCB ASS'Y | CCE062A |
| PCB130 | 72783205 | A5W1014130L | PCB ASS'Y | DME060A |
| PCBD20 | 72783206 | A5W1014D20L | PCB ASS'Y | CME066A |
| MISCELLANEOUS | | | | |
| B2301 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |
| B2302 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |
| B2303 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |
| B2304 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |
| B2305 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |
| B3800 | 72794355 | 024HT03563 | CORE,BEADS | W4BRH3.5X6X1.0X2 |
| B4001 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |

ELECTRICAL REPLACEMENT PARTS LIST

| Location No. | TSB P/N | Reference No. | Description | |
|--------------|----------|---------------|----------------------|------------------------------|
| | | | MISCELLANEOUS | |
| B4002 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |
| B4003 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |
| B4005 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |
| B4006 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |
| B4007 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |
| B4008 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |
| B4009 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |
| B4010 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |
| B4011 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |
| B4012 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |
| B4013 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |
| B4014 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |
| B4016 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |
| B4018 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |
| B4201 | 72794357 | 024HT03553 | CORE,BEADS | W5RH3.5X5X1.0 |
| B8103 | 72795787 | 0246C51024 | CORE,BEADS | MMZ1608R102CT |
| BL001 | 72782870 | 023C00022A | COIL,BALUN | HPN-01 |
| BT001 | 72783174 | 141U004016 | BATTERY,MANGAN | MNAAA(R03) |
| BT002 | 72783174 | 141U004016 | BATTERY,MANGAN | MNAAA(R03) |
| CD301 | 72796874 | 06CU12414A | CORD,CONNECTOR | CU12414A |
| CD302 | 72796874 | 06CU12414A | CORD,CONNECTOR | CU12414A |
| CD801 | 72796912 | 06CU823001 | CORD,CONNECTOR | CU823001 |
| CD802 | 72798419 | WDL6042038 | FLAT CABLE | AWM2468 AWG26 6C BLACK 420MM |
| CD803 | 72798397 | WBL6034038 | FLAT CABLE | AWM2468 AWG26 4C BLACK 340MM |
| CP101 | 72796804 | 069S290629 | CONNECTOR PCB SIDE | A2001WV2-9P |
| CP301 | 72799049 | 069W120459 | CONNECTOR PCB SIDE | 213213102W1 |
| CP302 | 72799049 | 069W120459 | CONNECTOR PCB SIDE | 213213102W1 |
| △CP401 | 72796822 | 069S450089 | CONNECTOR PCB SIDE | A1561WV2-A5P |
| CP805 | 72796816 | 069S320010 | CONNECTOR PCB SIDE | A2361WV2-2P |
| △CD3800 | 72795554 | 1209414909 | CORD,AC BUSH | 9414909 |
| CD4002 | 72783178 | 06CU2D2202 | CORD,CONNECTOR | CU2D2202 |
| CD8101 | 72797046 | 122F0C1602 | CORD,JUMPER | 2F0C1602 |
| CP2301 | 72783177 | 069KYOT159 | CONNECTOR PCB SIDE | LD07T2-24ND-03 |
| CP2302 | 72799012 | 069EV53030 | CONNECTOR PCB SIDE | 00_6232_005_006_800+ |
| CP2303 | 72799013 | 069EV63030 | CONNECTOR PCB SIDE | 00_6232_006_006_800+ |
| △CP3800 | 72796821 | 069S420110 | CONNECTOR PCB SIDE | A1561WV2-2P |
| CP8001 | 72796810 | 069S2D0629 | CONNECTOR PCB SIDE | A2001WV2-13P |
| CP8002 | 72796776 | 069J7C0599 | CONNECTOR PCB SIDE | IMSA-9604S-12C |
| CP802A | 72796752 | 067U006049 | WIRE HOLDER | B2013H02-6P |
| CP802B | 72796752 | 067U006049 | WIRE HOLDER | B2013H02-6P |
| CP803A | 72796750 | 067U004029 | WIRE HOLDER | B2013H02-4P |
| CP803B | 72796750 | 067U004029 | WIRE HOLDER | B2013H02-4P |
| CP8101 | 72799040 | 069J7C0589 | CONNECTOR PCB SIDE | IMSA-9604S-12F |
| ELD201 | 72797069 | 124116281A | EYE LET | XRY16X28BD |
| ELD202 | 72797070 | 124120301A | EYE LET | XRY20X30BD |
| △F3800 | 72794493 | 081PC6R305 | FUSE | 51MS063L |
| △FB401 | 72783176 | 043219024Y | TRANSFORMER,FLYBACK | BSC23-N0168 |
| FH3800 | 72794496 | 06710T0009 | HOLDER,FUSE | EYF-52BCY |
| FH3801 | 72794496 | 06710T0009 | HOLDER,FUSE | EYF-52BCY |
| OS2202 | 72783180 | 077A031002 | REMOTE RECEIVER | ROM-N3138SR |
| △SP351 | 72799171 | 070Y033004 | SPEAKER | S08F52 |
| △SP352 | 72799171 | 070Y033004 | SPEAKER | S08F52 |
| TM101 | 72783179 | 076D0MG010 | TRANSMITTER | ORT204N7405860-Z |
| △TU001 | 72783175 | 0163300020 | RF UNIT | 115-V-KA35ARE |
| △TH3800 | 72797351 | DF20C3R0Q0 | DEGAUSS ELEMENT | PTDCA1BF3R0Q100 |
| △V801 | 72783181 | 098Q210447 | CRT W/DY | A51AEZ90X23 |
| X101 | 72796990 | 1002T01606 | CERAMIC OSCILLATOR | CSTLS16M0X53-A0 |
| X602 | 72794704 | 100DT3R531 | CRYSTAL | HC-49/U |
| X4001 | 72783182 | 100GT02720 | CRYSTAL | B27000C005 |

RESISTOR

RC..... CARBON RESISTOR

CAPACITORS

CC..... CERAMIC CAPACITOR
CE..... ALUMI ELECTROLYTIC CAPACITOR
CP..... POLYESTER CAPACITOR
CPP..... POLYPROPYLENE CAPACITOR
CPL..... PLASTIC CAPACITOR
CMP..... METAL POLYESTER CAPACITOR
CMPL..... METAL PLASTIC CAPACITOR
CMPP..... METAL POLYPROPYLENE CAPACITOR

TOSHIBA CORPORATION

1-1, SHIBAURA 1-CHOME, MINATO-KU, TOKYO 105-8001, JAPAN