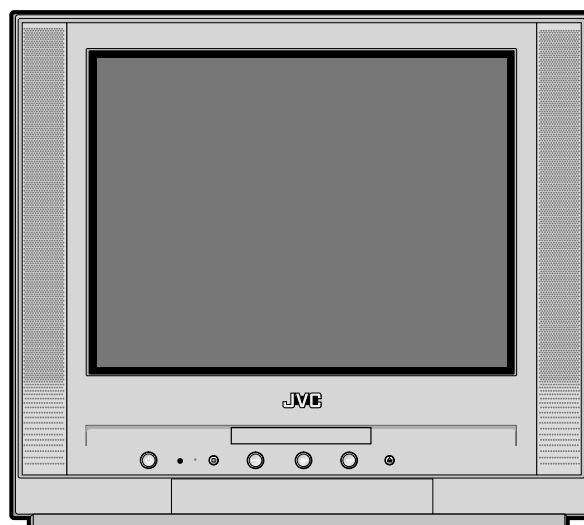
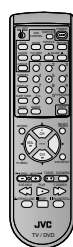


JVC

SERVICE MANUAL

TV/DVD COMBO

AV-20FD23



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SPECIFICATIONS

TELEVISION

Picture Tube:	20" (measured diagonally)
Tuner Type:	Quartz PLL Frequency Synthesized
Receiving Channels:	VHF 2-13 UHF 14-69 CATV 14-36 (A)-(W) 37-59 (AA)-(WW) 60-85 (AAA)-(ZZZ) 86-94 (86)-(94) 95-99 (A-5)-(A-1) 100-125 (100)-(125) 01 (5A)
Antenna Input:	VHF/UHF In 75 ohms coaxial
Speaker:	3", 8 ohms x 2
Audio Output Power:	2.5 + 2.5 W

DVD/CD player

Signal system:	NTSC
Applicable disc:	1. DVD (12cm, 8cm) 2. CD (12cm, 8cm)
Audio characteristics:	DVD: 4Hz - 22KHz
Frequency response:	CD: 4Hz - 20KHz
S/N Ratio:	90dB
Harmonic distortion:	0.06%
Wow and flutter:	Below Measurable Level
Dynamic range:	96dB
Input/Output:	Inputs : Video : (RCA) 1 Vp-p/75ohm Audio : (RCA) -8 dB/50Kohm Outputs : Video : (RCA) 1 Vp-p/75ohm Audio : (RCA) -8 dB/1Kohm

GENERAL

Power Source:	AC 120V 60Hz
Power Consumption:	110 Watts
Dimensions:	W 22-5/8" x D 19-1/8" x H 20-3/8"
Weight:	56.1 lbs/25.5 kg
Inputs:	Video: In (RCA) 1Vp-p 75 ohm Audio: In (RCA) -8 dB/50K ohm
Headphone Jack:	3.5mm mini-jack
Storage Temperature	-20 °C ~ 60 °C
Operating Temperature	5 °C ~ 40 °C

Accessories:

Remote Control X 1
Batteries (AA) X 2

Design & specification are subject to change without notice.

SAFETY PRECAUTIONS

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 external 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
Earphone jack

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.

CAUTION

THIS DIGITAL VIDEO PLAYER EMPLOYS A LASER SYSTEM.

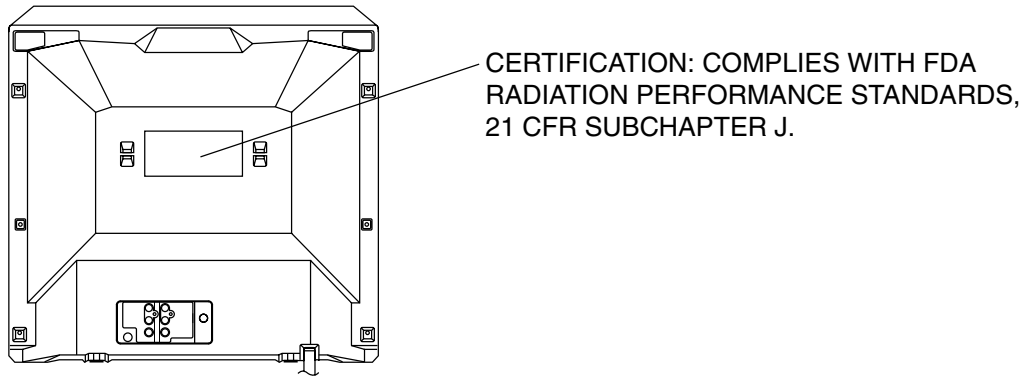
TO ENSURE PROPER USE OF THIS PRODUCT, PLEASE READ THIS SERVICE MANUAL CAREFULLY AND RETAIN FOR FUTURE REFERENCE. SHOULD THE UNIT REQUIRE MAINTENANCE, CONTACT AN AUTHORIZED SERVICE LOCATION-SEE SERVICE PROCEDURE.

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.



IMPORTANT SERVICE SAFETY INFORMATION

Operating the receiver outside of its cabinet or with its back removed involves a shock hazard. Work on these models should only be performed by those who are thoroughly familiar with precautions necessary when working on high voltage equipment.

Exercise care when servicing this chassis with power applied. Many B plus and high voltage RF terminals are exposed which, if carelessly contacted, can cause serious shock or result in damage to the chassis. Maintain interconnecting ground lead connections between chassis, escutcheon, picture tube dag and tuner cluster when operating the chassis.

These receivers have a "polarized" AC line cord. The AC plug is designed to fit into standard AC outlets in one direction only. The wide blade connects to the "ground side" and the narrow blade connects to the "hot side" of the AC line. This assures that the TV receiver is properly grounded to the house wiring. If an extension cord must be used, make sure it is of the "polarized" type.

Since the chassis of this receiver is connected to one side of the AC supply during operation, service should not be attempted by anyone not familiar with the precautions necessary when working on these types of equipment.

When it is necessary to make measurements or tests with AC power applied to the receiver chassis, an Isolation Transformer must be used as a safety precaution and to prevent possible damage to transistors. The Isolation Transformer should be connected between the TV line cord plug and the AC power outlet.

Certain HV failures can increase X-ray radiation. Receivers should not be operated with HV levels exceeding the specified rating for their chassis type. The maximum operating HV specified for the chassis used in these receivers is $32\text{kV} \pm 1.0\text{kV}$ at zero beam current with a line voltage of 120V AC. Higher voltage may also increase the possibility of failure in the HV supply.

It is important to maintain specified values of all components in the horizontal and high voltage circuits and anywhere else in the receiver that could cause a rise in high voltage, or operating supply voltages. No changes should be made to the original design of the receiver.

Components shown in the shaded areas on the schematic diagram and/or identified by \triangle in the replacement parts list should be replaced only with exact factory recommended replacement parts. The use of unauthorized substitute parts may create shock, fire, X-ray radiation, or other hazards.

To determine the presence of high voltage, use an accurate high impedance HV meter connected between the second anode lead and the CRT dag grounding device. When servicing the High Voltage System, remove static charges from it by connecting a 10k ohm resistor in series with an insulated wire (such as a test probe) between the picture tube dag and 2nd anode lead (have AC line cord disconnected from AC supply).

The picture tube used in this receiver employs integral implosion protection. Replace with a tube of the same type number for continued safety. Do not lift picture tube by the neck. Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage completely. Keep others without shatterproof goggles away.

When removing springs or spring mounted parts from the tuner, tuner cluster or chassis, shatterproof goggles must be worn. Keep others without shatterproof goggles away.

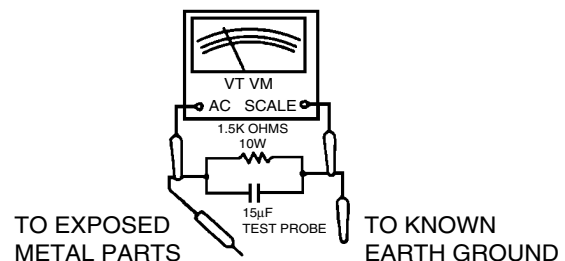
Before returning the receiver to the user, perform the following safety checks:

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Replace all protective devices such as nonmetallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacitor networks, mechanical insulators, etc.
3. To be sure that no shock hazard exists, a check for the presence of leakage current should be made at each exposed metal part having a return path to the chassis (antenna, cabinet metal, screw heads, knobs and/or shafts, escutcheon, etc.) in the following manner.

Plug the AC line cord directly into a 120V AC receptacle. (Do not use an Isolation Transformer during these checks.) All checks must be repeated with the AC line cord plug connection reversed. (If necessary, a nonpolarized adapter plug must be used only for the purpose of completing these checks.)

If available, measure current using an accurate leakage current tester. Any reading of 0.35mA or more is excessive and indicates a potential shock hazard which must be corrected before returning the receiver to the owner.

If a reliable leakage current tester is not available, this alternate method of measurement should be used. Using two clip leads, connect a 1500 ohm, 10 watt resistor paralleled by a 0.15 μF capacitor in series with a known earth ground, such as a water pipe or conduit and the metal part to be checked. Use a VTVM or VOM with 1000 ohms per volt, or higher, sensitivity to measure this AC voltage drop across the resistor. Any reading of 0.35 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the receiver to the owner.



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.

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.

PORTABLE CART WARNING
(symbol provided by RET)



S3126A

IMPORTANT SAFEGUARDS

(CONTINUED)

19. DAMAGE REQUIRING SERVICE

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

- When the power-supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the unit.
- If the unit has been exposed to rain or water.
- 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.
- If the unit has been dropped or the cabinet has been damaged.
- 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.

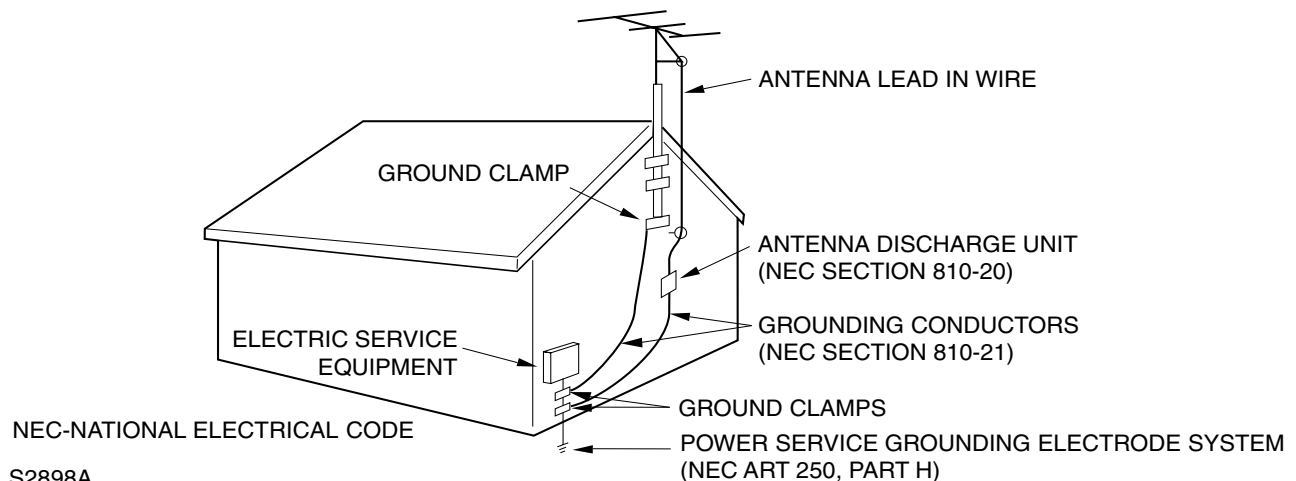
30. DISC

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.

EXAMPLE OF ANTENNA GROUNDING AS PER THE NATIONAL ELECTRICAL CODE



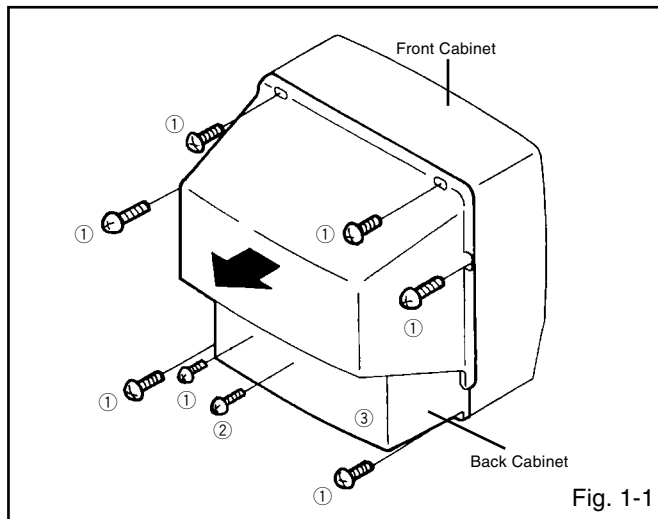
SPECIFIC SERVICE INSTRUCTIONS

DISASSEMBLY INSTRUCTIONS

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

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

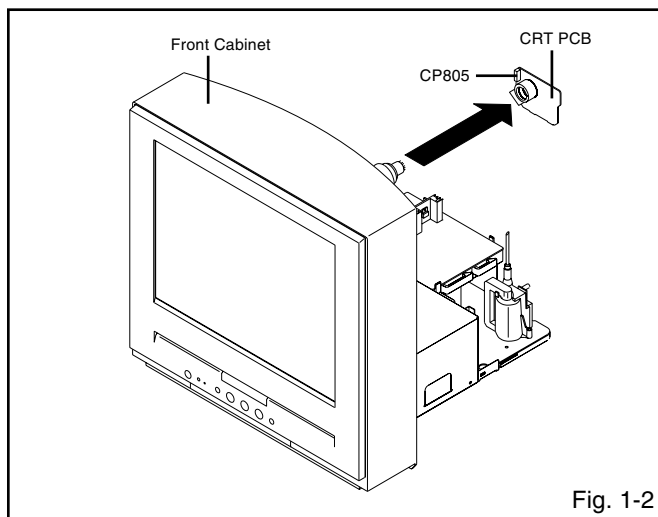
1. Remove the 7 screws ①.
2. Remove the screw ② which are used for holding the Back Cabinet.
3. Remove the AC cord from the AC cord hook ③.
4. Remove the Back Cabinet in the direction of arrow.



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

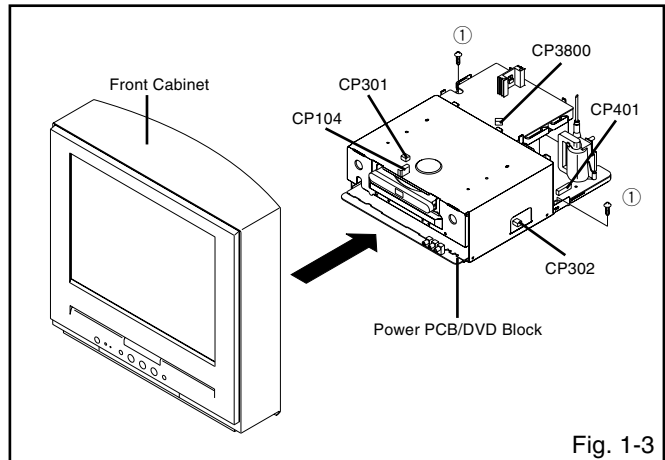
CAUTION: BEFORE REMOVING THE ANODE CAP, DISCHARGE ELECTRICITY BECAUSE IT CONTAINS HIGH VOLTAGE. BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.

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.



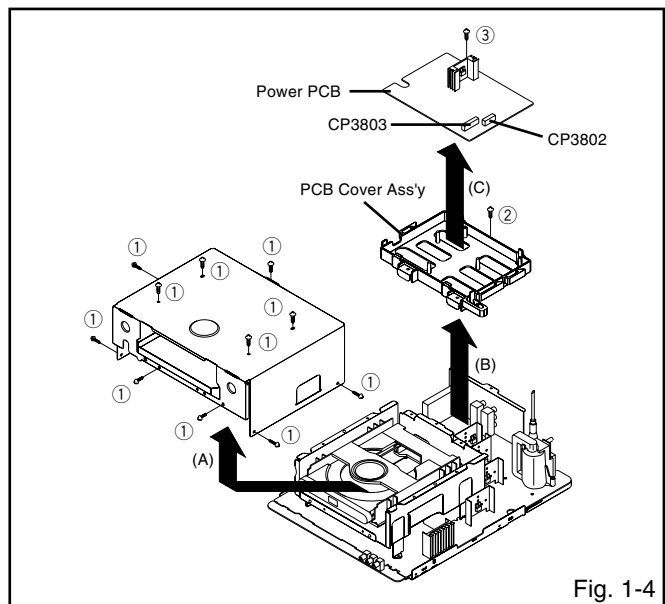
1-3: POWER PCB/DVD BLOCK (Refer to Fig. 1-3)

1. Remove the 2 screws ①.
2. Disconnect the following connectors:
(CP104, CP301, CP302, CP401 and CP3800).
3. Remove the POWER PCB/DVD Block in the direction of arrow.



1-4: POWER PCB (Refer to Fig. 1-4)

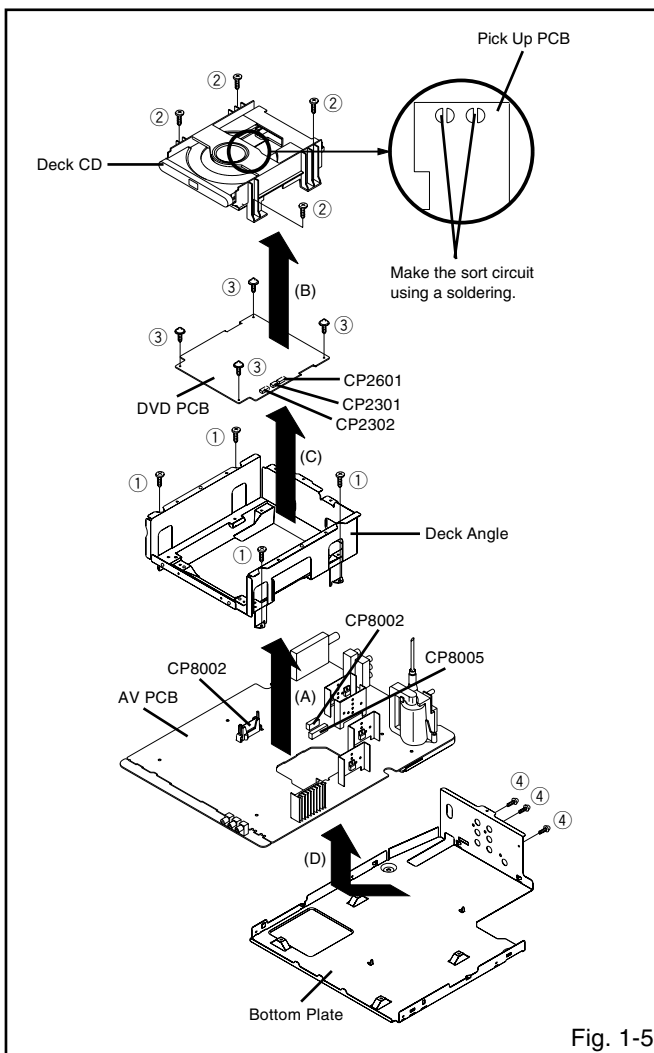
1. Remove the 11 screws ①.
2. Remove the Top Shield in the direction of arrow (A).
3. Disconnect the following connectors:
(CP3802 and CP3803).
4. Remove the screw ②.
5. Remove the PCB Cover Ass'y in the direction of arrow (B).
6. Remove the screw ③.
7. Remove the Power PCB in the direction of arrow (C).



DISASSEMBLY INSTRUCTIONS

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

1. Make the short circuit on the position as shown Fig. 1-5 using a soldering. If you remove the Deck CD with no soldering, the Laser may be damaged.
2. Disconnect the following connectors:
(CP8001, CP8002 and CP8005).
3. Remove the 4 screws ①.
4. Remove the Deck Angle in the direction of arrow (A).
5. Disconnect the following connectors:
(CP2301, CP2302 and CP2601).
6. Remove the 4 screws ②.
7. Remove the Deck CD in the direction of arrow (B).
8. Remove the 4 screws ③.
9. Remove the DVD PCB in the direction of arrow (C).
10. Remove the 3 screws ④.
11. Remove the AV PCB in the direction of arrow (D).



NOTE

When the installation of the Deck CD, 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 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. 2-1.)**

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.

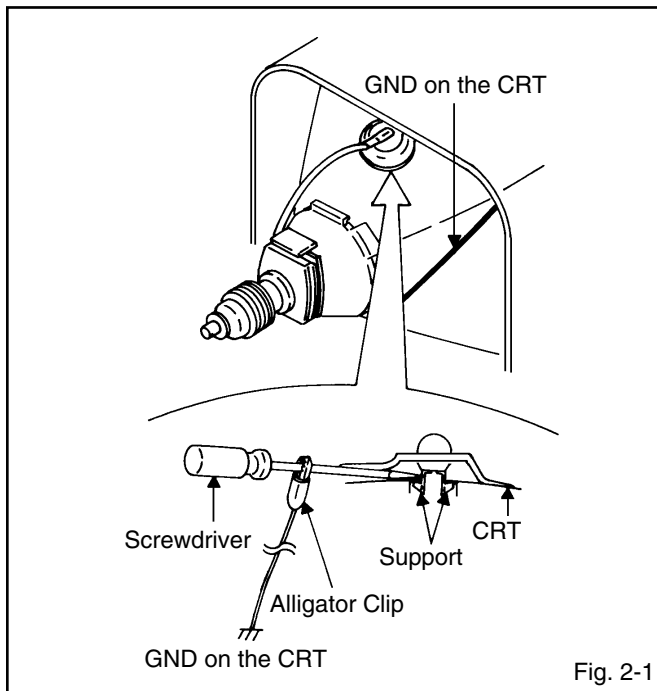


Fig. 2-1

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. 2-2.)**

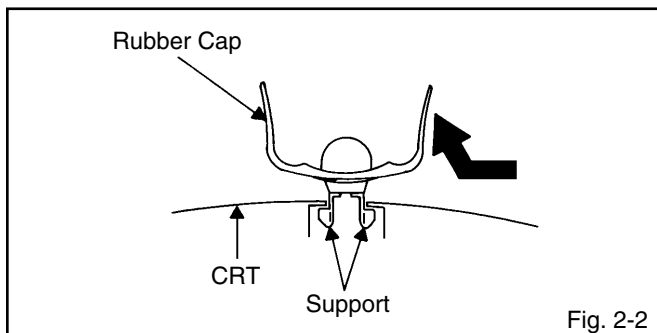


Fig. 2-2

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. 2-3.)**

NOTE

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

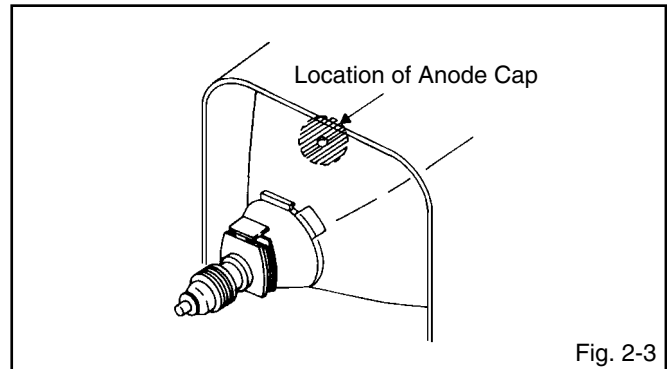


Fig. 2-3

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. 2-4.)**

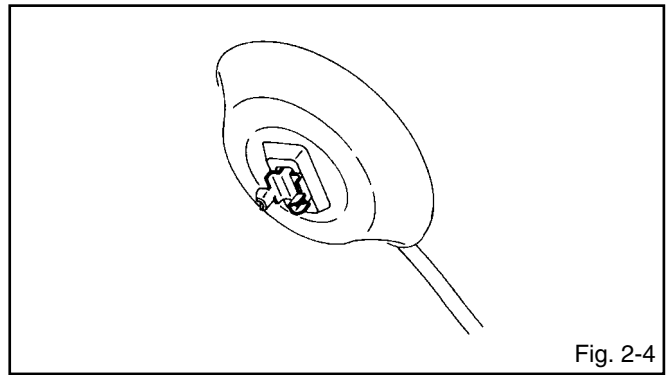


Fig. 2-4

4. Insert one end of the Anode Support into the anode button, then the other as shown in Fig. 2-5.

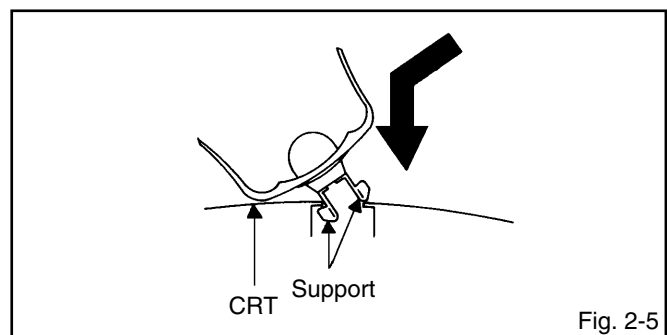


Fig. 2-5

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

DISASSEMBLY INSTRUCTIONS

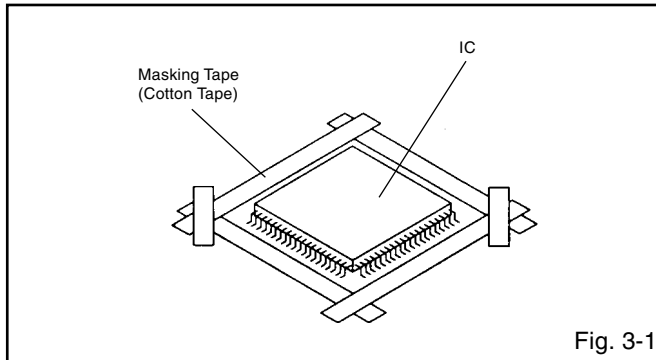
3. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put the Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. (Refer to Fig. 3-1.)

NOTE

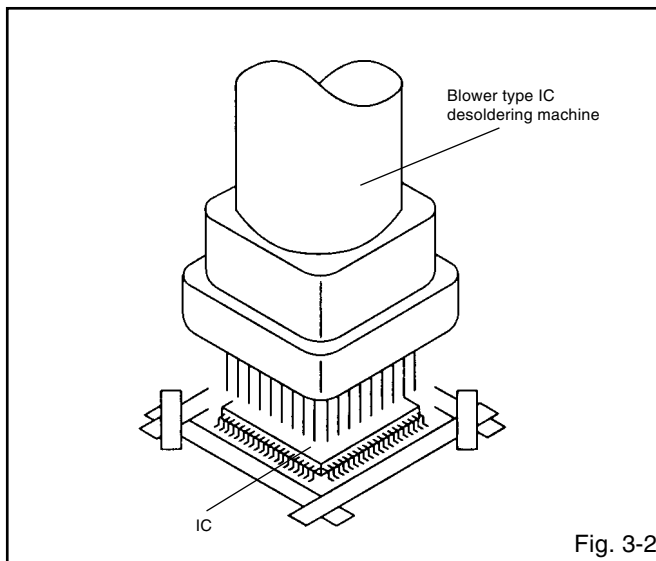
Masking is carried out on all the parts located within 10 mm distance from IC leads.



2. Heat the IC leads using a blower type IC desoldering machine. (Refer to Fig. 3-2.)

NOTE

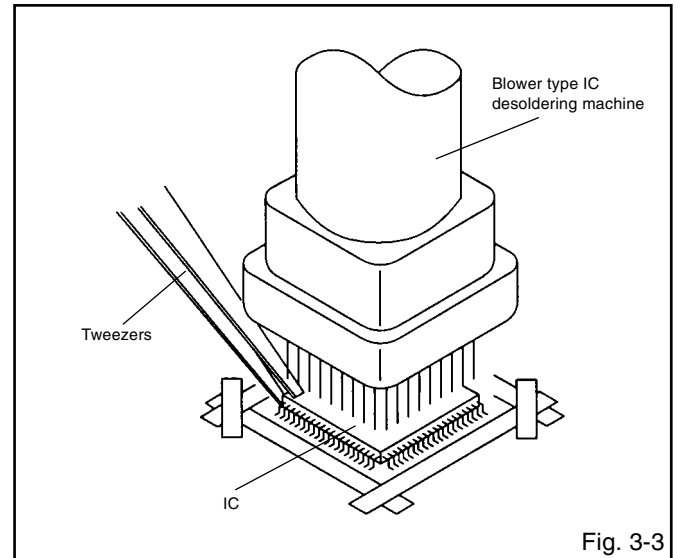
Do not add the rotating and the back and forth directions force on the IC, until IC can move back and forth easily after desoldering the IC leads completely.



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. 3-3.)

NOTE

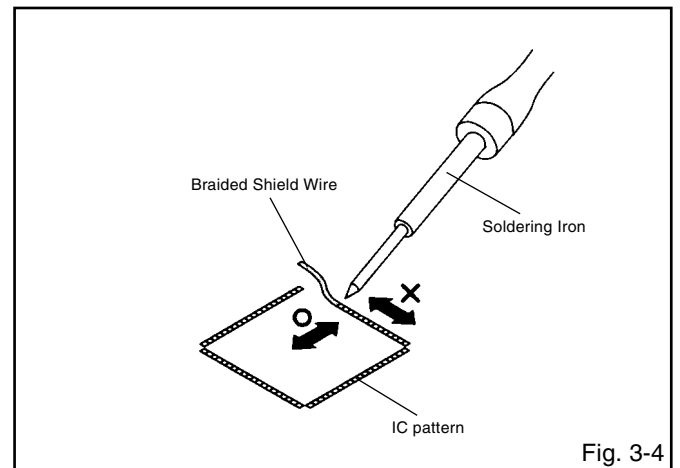
Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.



4. Peel off the Masking Tape.
5. Absorb the solder left on the pattern using the Braided Shield Wire. (Refer to Fig. 3-4.)

NOTE

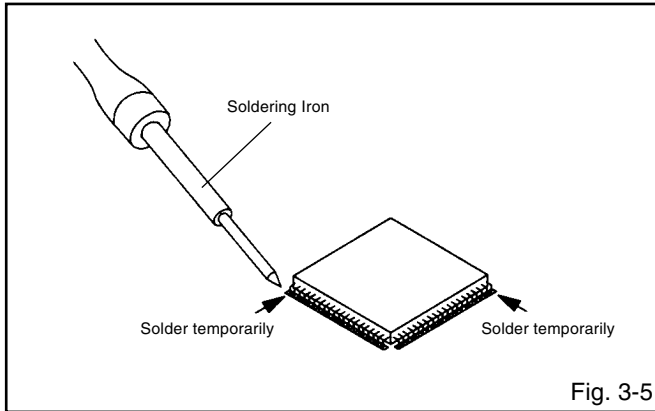
Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.



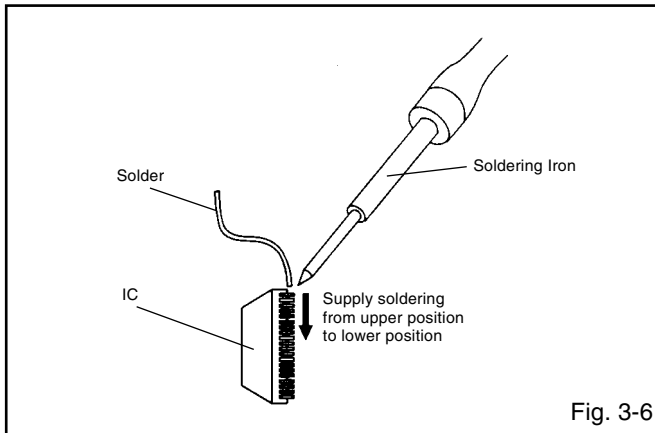
DISASSEMBLY INSTRUCTIONS

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. 3-5.)**



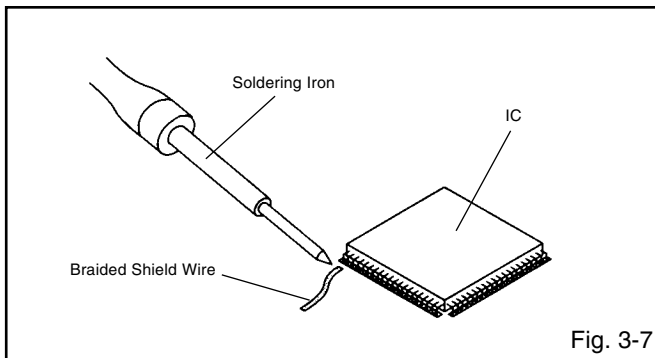
2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. **(Refer to Fig. 3-6.)**



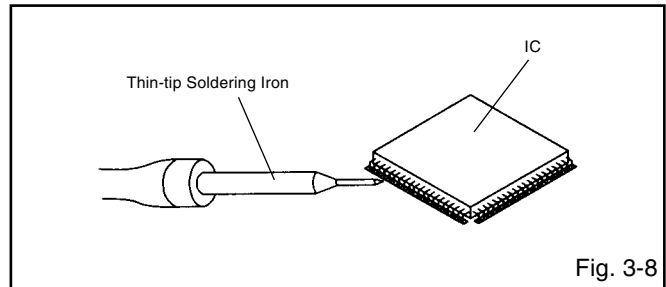
3. Absorb the solder left on the lead using the Braided Shield Wire. **(Refer to Fig. 3-7.)**

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. 3-8.)**



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, be always 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 standard time (second).

Set Key	Remocon Key	Standard Time (seconds)	Operations
VOL. (-) MIN	0	1	Releasing of V-CHIP PASSWORD.
VOL. (-) MIN	1	1	Initialization of the factory on TV. NOTE: Do not use this for the normal servicing. If you set a factory initialization, the memories are reset such as the channel setting, and the POWER ON total hours.
VOL. (-) MIN	4	1	Initialization of the factory on DVD. NOTE: Do not use this for the normal servicing. The function will only work without the setting of DVD disc at DVD mode. While pressing the Remocon Key for more than the Standard Time, press the Set Key simultaneously.
VOL. (-) MIN	5	1	DVD Write mode. Refer to the "RE-WRITE FOR DVD FIRMWARE". NOTE: The function will only work at the DVD stop mode. Do not use this for the normal servicing.
VOL. (-) MIN	6	1	POWER ON total hours and PLAY/REC total hours are displayed on the screen. Refer to the "PREVENTIVE CHECKS AND SERVICE INTERVALS" (CONFIRMATION OF HOURS USED). Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC".
VOL. (-) MIN	8	1	Writing of EEPROM initial data. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	9	1	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).
VOL. (-) MIN	LIGHT	1	Remocon format selection. (JVC format → NEC format) NOTE: Supplied remocon can not be operated at NEC format. (The "N" is always displayed on the monitor.) Do not use this for the normal servicing.
STOP	1	3	Check for the firmware version. Refer to the "RE-WRITE FOR DVD FIRMWARE". NOTE: The function will only work at the DVD stop mode. Do not use this for the normal servicing.
STOP	7	3	Releasing of PARENTAL LOCK. Refer to the "PARENTAL CONTROL - RATING LEVEL". NOTE: The function will only work without the setting of DVD disc at DVD mode.

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. Confirm that no disc on the disc tray.
3. Press and hold the '7' key on the remote control unit.
4. Simultaneously press and hold the 'STOP' key on the front panel.
5. Hold both keys for more than 3 seconds.
6. The On Screen Display message 'PASSWORD CLEAR' will appear.
7. The 4 digit password has now been cleared.

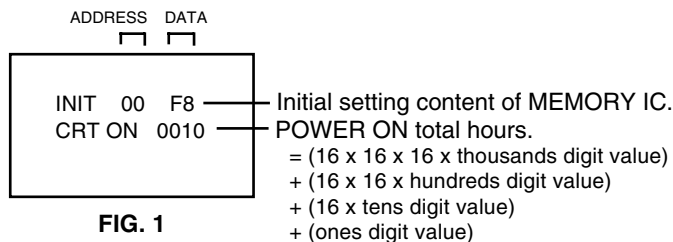
NB: The above procedure will reset ALL of the player's settings to the default factory state.

CONFIRMATION OF HOURS USED

POWER ON total hours 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".

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button (6) on the remote control for more than 1 second.
3. After the confirmation of using hours, turn off the power.



WHEN REPLACING EEPROM (MEMORY) IC

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.

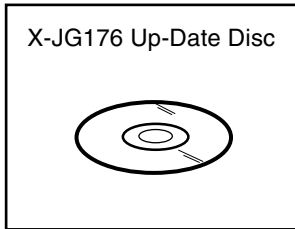
Note: No need setting for the position of the mark @ due to the adjustment value.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	F8	43	25	01	F1	27	27	D3	81	CD	DD	3F	BF	F0	61	63
10	64	26	67	69	2A	6B	6C	6D	6E	6F	70	71	52	72	53	73
20	54	74	55	75	75	56	56	76	76	57	57	77	77	58	58	78
30	78	59	59	79	79	5A	5A	7A	7A	5B	5B	7B	7B	5C	5C	7C
40	7C	5D	5D	7D	7D	5E	5E	7E	7E	5F	5F	7F	7F	7F	@	@
50	@	@	@	@	@	@	@	@	@	@	@	@	@	@	@	@
60	@	@	@	@	@	@	@	@	@	@	@	10	00	52	09	45
70	84	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button (6) on the remote control for more than 1 second. ADDRESS and DATA should appear as FIG 1.
3. ADDRESS is now selected and should "blink". Using the VOL. UP/DOWN button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using VOL. UP/DOWN button until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 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. The unit will now have the correct DATA for the new MEMORY IC.

SERVICING FIXTURES AND TOOLS



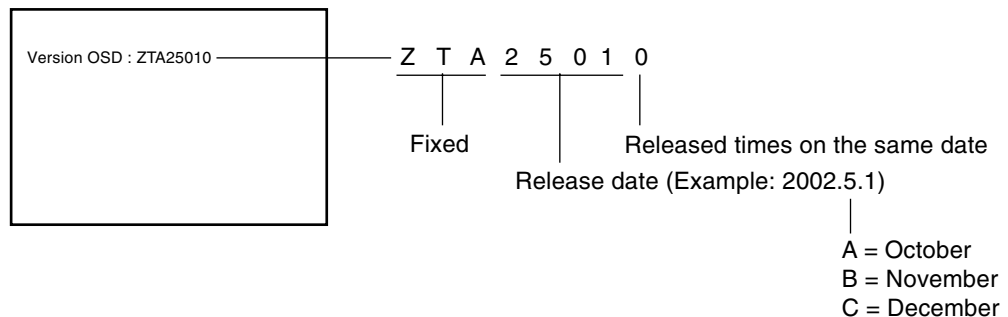
RE-WRITE FOR DVD FIRMWARE

1. Turn on the power, and set the DVD mode.
2. Open the DVD tray.
3. Press both VOL. DOWN button on the set and Channel button (5) on the remote control for more than 1 second.
4. Press OPEN/CLOSE button on the unit to check if all the keys on the unit do not function.

NOTE: To check if DVD Write mode is set.

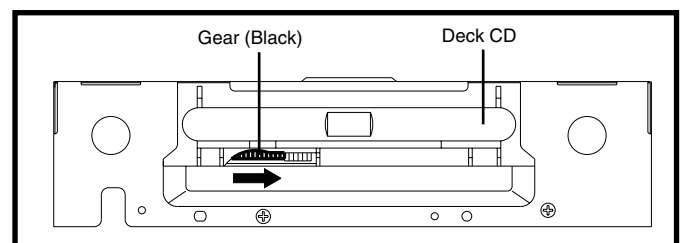
When inserting Up-Date Disc at Non DVD Write mode, the read error will happen.

5. Place the Up-Date Disc and close the tray by hand. (Refer to **SERVICING FIXTURE AND TOOLS**)
 6. Automatic read will start and "CD-R UPDATE PROCESS" will be displayed on the screen.
At this time, the horizontal noise lines may appear. But no problem.
 7. Approx. 20 seconds later, the tray will open automatically. Remove the Up-Date Disc.
 8. Then, Approx. 40 seconds later, the above indication will disappear and the tray will close automatically.
When the "No Disc" appears on the screen, the write will end.
- NOTE: Do not turn off the unit on the way or push the tray by hand to close it.**
- Up-Date error will happen and can not be done with the Up-Date of Up-Date Disc.**
9. Unplug the AC cord, then plug it in.
 10. **After the write, set to the initializing of shipping.**
Set to the DVD mode, press both VOL. DOWN button on the set and Channel button (1) on the remote control for more than 1 second.
 11. The "INITIALIZE 5 ---> COMPLETE" will appear on the screen.
Then unplug the AC cord, and plug it in.
 12. **CHECK FOR THE FIRMWARE VERSION**
Set to the DVD mode, press both Channel button (1) on the remote control and the STOP button on the set for more than 3 seconds.
Firmware version will be displayed on the top left of the screen.
When the changed version displays, the Re-write will be completed.
 13. Turn off the power



DISC REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Back Cabinet and Power PCB/DVD Block.
(Refer to item 1 of the **DISASSEMBLY INSTRUCTIONS**.)
2. Rotate the black gear of Deck CD section in the direction of the arrow by hand, remove the disc from Deck CD.



SERVICE ADJUSTMENTS

ELECTRICAL ADJUSTMENTS

1. BEFORE MAKING ELECTRICAL ADJUSTMENTS

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

CAUTION

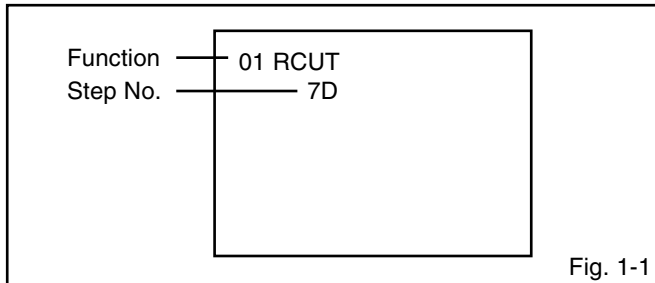
- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
- When you exchange IC and Transistor for a heat sink, apply the silicon grease (**YG6260M**) 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. In the condition of NO indication on the screen. Press the VOL. DOWN button on the set and the Channel button (**9**) on the remote control for more than 1 second to appear the adjustment mode on the screen as shown in **Fig. 1-1**.



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

NO.	FUNCTION	NO.	FUNCTION
01	R CUT OFF	37	BRI. AV(CENT.)
02	G CUT OFF	38	BRI. AV(MAX)
03	B CUT OFF	39	BRI. AV(MIN)
04	G DRIVE	40	COL. AV(CENT.)
05	B DRIVE	41	COL. AV(MAX)
06	BRIGHTNESS(CENT.)	42	COL. AV(MIN)
07	BRIGHTNESS(MAX)	43	TINT AV
08	BRIGHTNESS(MIN)	44	SUB CONTRAST AV
09	COLOR(CENT.)	45	CONT. AV(CENT.)
10	COLOR(MAX)	46	CONT. AV(MAX)
11	COLOR(MIN)	47	CONT. AV(MIN)
12	TINT	48	SHARPNESS AV
13	SUB CONTRAST	49	BRI. DVD(CENT.)
14	CONTRAST(CENT.)	50	BRI. DVD(MAX)
15	CONTRAST(MAX)	51	BRI. DVD(MIN)
16	CONTRAST(MIN)	52	COL. DVD(CENT.)
17	SHARPNESS	53	COL. DVD(MAX)
18	RGB CONTRAST	54	COL. DVD(MIN)
19	H POSITION	55	TINT DVD
20	V POSITION	56	SUB CONTRAST DVD
21	V SIZE	57	CONT. DVD(CENT.)
22	V LINEARITY	58	CONT. DVD(MAX)
23	V S CORRECTION	59	CONT. DVD(MIN)
24	EW PARABOLA CORR.	60	SHARPNESS DVD
25	EW TRAPEZIUM CORR.	61	BRI. GAME(CENT.)
26	H SIZE	62	BRI. GAME(MAX)
27	V EHT	63	BRI. GAME(MIN)
28	H EHT	64	CONT. GAME(CENT.)
29	RF AGC	65	CONT. GAME(MAX)
30	V CENTERING	66	CONT. GAME(MIN)
31	CORNER CORR. TOP	67	TUNING V MUTE
32	CORNER CORR. BTM	68	POWER ON V MUTE
33	OSD H	69	INPUT LEVEL
34	FM LEVEL	70	SEPARATION L
35	TEST PWM	71	SEPARATION H
36	TEST TONE CONTROL	72	CUT OFF

Fig. 1-2

2. BASIC ADJUSTMENTS

2-1: CONSTANT VOLTAGE

1. Set condition is AV MODE without signal.
2. Using the remote control, set the brightness and contrast to normal position.
3. Connect the digital voltmeter to **TP3801**.
4. Adjust the **VR3800** until the digital voltmeter is $114 \pm 0.5V$.

2-2: RF AGC

1. Receive the VHF HIGH (63dB).
2. Place the set with Aging Test for more than 15 minutes.
3. Connect the digital voltmeter between the **pin 5 of CP101** and the **pin 1 of CP101**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**29**) on the remote control to select "AGC".
5. Press the VOL. UP/DOWN button on the remote control until the digital voltmeter is $2.4 \pm 0.05V$.

2-3: FOCUS

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

ELECTRICAL ADJUSTMENTS

2-4: CUT OFF

1. Adjust the unit to the following settings.
R CUT=7F, G CUT=7F, B CUT=7F, G DRV=3F,
B DRV=3F
2. Place the set with 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 (**72**) on the remote control to select "CUT OFF".
6. Adjust the **Screen Volume** until a dim raster is obtained.

2-5: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set with 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 (**04**) on the remote control to select "G DRV".
5. Press the CH. UP/DOWN button on the remote control to select the "R CUT", "G CUT", "B CUT", "G DRV" or "B DRV".
6. Adjust the VOL. UP/DOWN button on the remote control to whiten the R CUT, G CUT, B CUT, G DRV, and B DRV at each step tone sections equally.
7. Perform the above adjustments 5 and 6 until the white color is looked like a white.

2-6: 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 (**19**) on the remote control to select "HPOSI".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

2-7: 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 (**20**) on the remote control to select "VPOSI".
4. Check if the step No. of V. POSITION is "02".
5. Adjust the **VR402** until the horizontal line becomes fit to the notch of the shadow mask.

2-8: 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 (**21**) on the remote control to select "VSIZE".
4. Press the VOL. UP/DOWN button on the remote control until the Up/Down OVER SCAN Quantity becomes equal to the Right/Left OVER SCAN Quantity.

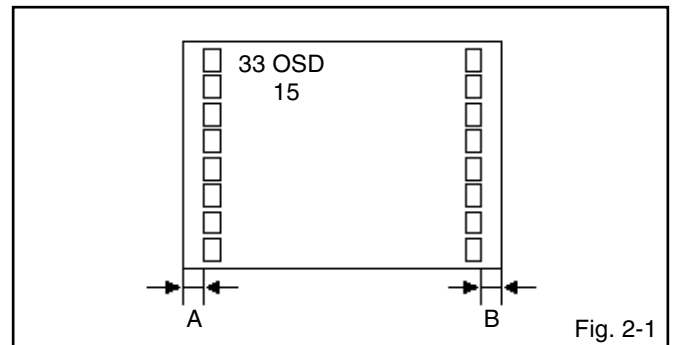
2-9: VERTICAL LINEARITY

NOTE: Adjust after performing adjustments in section 2-8. After the adjustment of Vertical Linearity, reconfirm the Vertical Position and Vertical Size adjustments.

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 (**22**) on the remote control to select "VLIN".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes minimum.

2-10: OSD HORIZONTAL

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**33**) on the remote control to select "OSD".
2. Press the VOL. UP/DOWN button on the remote control until the difference of A and B becomes minimum. (**Refer to Fig. 2-1**)



ELECTRICAL ADJUSTMENTS

2-11: SEPARATION

Please do the method (1) or method (2) adjustment.

Method (1)

1. Set the multi-sound signal generator for each different L-ch and R-ch frequency (Ex. L-ch=2KHz, R-ch=400Hz) and receive the RF signal.
2. Connect the oscilloscope to the **Audio Out Jack**.
3. Press the AUDIO button on the remote control to set to the stereo mode.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**70**) on the remote control to select "SEPAL".
5. Press the VOL. UP/DOWN button on the remote control to adjust it until the audio output wave becomes a fine sine wave.
6. Press the CH UP button 1 time to set to "SEPAH" mode.
7. Press the VOL. UP/DOWN button on the remote control to adjust it until the audio output wave becomes a fine sine wave.

Method (2)

1. Set the multi-sound signal generator L-ch=1KHz, R-ch=Non input and receive the RF signal.
2. Connect the oscilloscope to the **Audio Out Jack (R-ch)**.
3. Press the AUDIO button on the remote control to set to the stereo mode.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**70**) on the remote control to select "SEPAL".
5. Press the VOL. UP/DOWN button on the remote control to adjust it until the R-ch output becomes minimum.
6. Press the CH UP button 1 time to set to "SEPAH" mode.
7. Press the VOL. UP/DOWN button on the remote control to adjust it until the R-ch output becomes minimum.
8. Set the multi-sound signal generator L-ch=Non input, R-ch=1KHz and receive the RF signal.
9. Connect the oscilloscope to the **Audio Out Jack (L-ch)**. Then perform the above adjustments 3~7.

2-12: LEVEL

1. Receive the VHF HIGH (70dB).
2. Connect the AC voltmeter to **pin 6 of CP101**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**69**) on the remote control to select "LVL".
4. Press the VOL. UP/DOWN button on the remote control until the AC voltmeter is $72 \pm 2\text{mV}$.

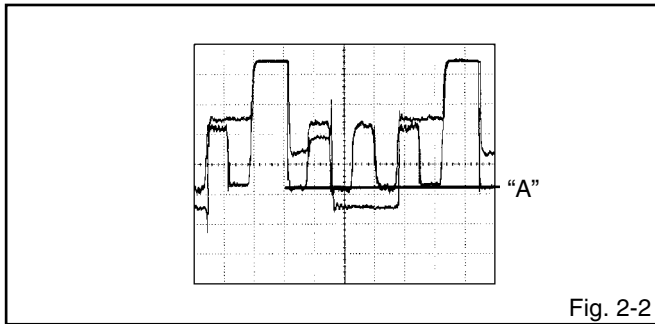
2-13: BRIGHT CENTER

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 (**06**) on the remote control to select "BRTC".
4. Press the VOL. UP/DOWN button on the remote control until the white 15% is starting to be visible.
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 (**37**) on the remote control to select "BRTCA".
9. Press the VOL. UP/DOWN button on the remote control until the white 15% is starting to be visible.
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 (**49**) on the remote control to select "BRTCD".
12. Press the VOL. UP/DOWN button on the remote control to set the same step numbers as the AV.

2-14: SUB TINT CENTER

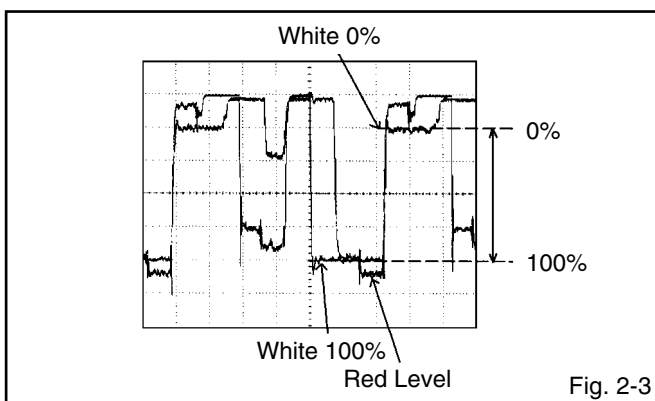
1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the oscilloscope to **TP024**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**12**) on the remote control to select "TNTC".
5. Press the VOL. UP/DOWN button on the remote control until the section "A" becomes a straight line. (**Refer to Fig. 2-2**)
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 (**43**) on the remote control to select "TNTCA".
10. Press the VOL. UP/DOWN button on the remote control until the section "A" becomes a straight line. (**Refer to Fig. 2-2**)
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 (**55**) on the remote control to select "TNTCD".
13. Press the VOL. UP/DOWN button on the remote control until the tint step No. becomes "49"

ELECTRICAL ADJUSTMENTS



2-15: SUB 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 **TP022**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(09)** 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 VOL. UP/DOWN button on the remote control until the red color level is adjusted to $105 \pm 5\%$ of the white level. **(Refer to Fig. 2-3)**
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 **(40)** 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 VOL. UP/DOWN button on the remote control until the red color level is adjusted to $105 \pm 5\%$ of the white level. **(Refer to Fig. 2-3)**
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 **(52)** on the remote control to select "COLCD".
15. Press the VOL. UP/DOWN button on the remote control to set the same step numbers as the AV.



2-16: CONTRAST MAX

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(15)** on the remote control to select "CNTX".
2. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "72"
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 **(46)** on the remote control to select "CNTXA".
6. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "76"
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 **(58)** on the remote control to select "CNTXD".
10. Press the VOL. UP/DOWN button on the remote control to set the same step numbers as the AV mode.

2-17: Confirmation of Fixed Value (step No.)

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

NO.	FUNCTION	DATA	NO.	FUNCTION	DATA
07	BRIGHTNESS(MAX)	60	39	BRI. AV(MIN)	20
08	BRIGHTNESS(MIN)	20	41	COL. AV(MAX)	7F
10	COLOR(MAX)	7F	42	COL. AV(MIN)	00
11	COLOR(MIN)	00	44	SUB CONTRAST AV	0F
13	SUB CONTRAST	0F	45	CONT. AV(CENT.)	40
14	CONTRAST(CENT.)	40	47	CONT. AV(MIN)	10
16	CONTRAST(MIN)	10	48	SHARPNESS AV	1E
17	SHARPNESS	1E	50	BRI. DVD(MAX)	60
18	RGB CONTRAST	14	51	BRI. DVD(MIN)	20
20	V POSITION	02	53	COL. DVD(MAX)	7F
23	V S CORRECTION	09	54	COL. DVD(MIN)	00
24	EW PARABOLA CORR.	00	56	SUB CONTRAST DVD	0F
25	EW TRAPEZIUM CORR.	20	57	CONT. DVD(CENT.)	40
26	H SIZE	00	59	CONT. DVD(MIN)	10
27	V EHT	00	60	SHARPNESS DVD	1E
28	H EHT	00	61	BRI. GAME(CENT.)	=AV
30	V CENTERING	32	62	BRI. GAME(MAX)	60
31	CORNER CORR. TOP	00	63	BRI. GAME(MIN)	20
32	CORNER CORR. BTM	00	64	CONT. GAME(CENT.)	40
34	FM LEVEL	3F	65	CONT. GAME(MAX)	=AV
35	TEST PWM	00	66	CONT. GAME(MIN)	10
36	TEST TONE CONTROL	51	67	TUNING V MUTE	08
38	BRI. AV(MAX)	60	68	POWER ON V MUTE	90

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.

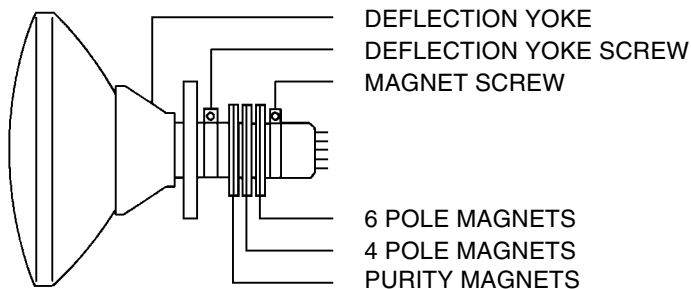


Fig. 3-1

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)**

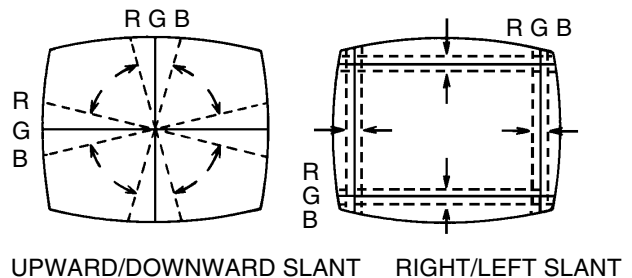


Fig. 3-2-a

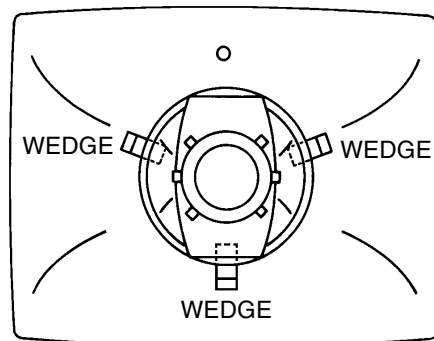
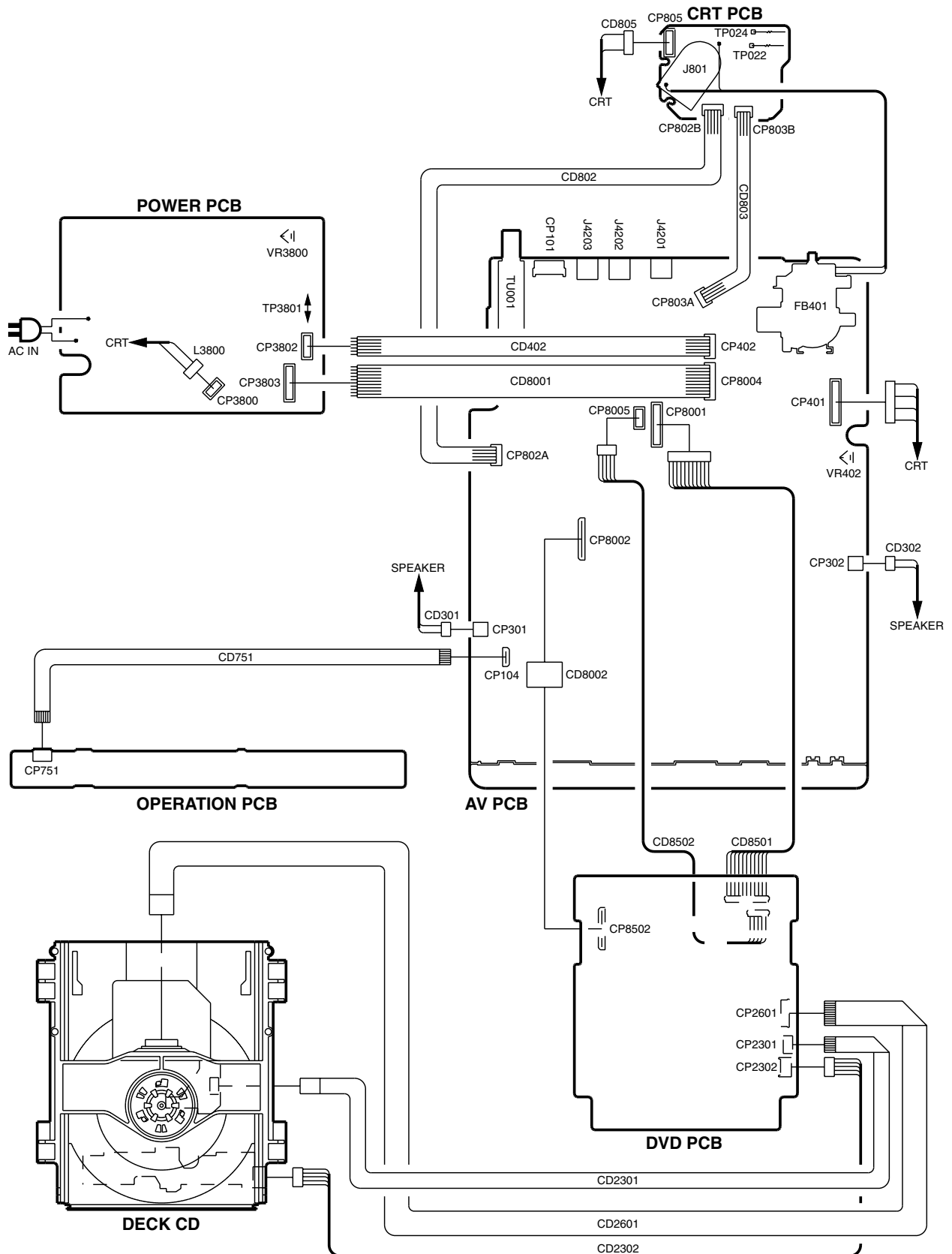


Fig. 3-2-b

ELECTRICAL ADJUSTMENTS

4. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (Connector Connections)



GUIDE FOR REPAIRING

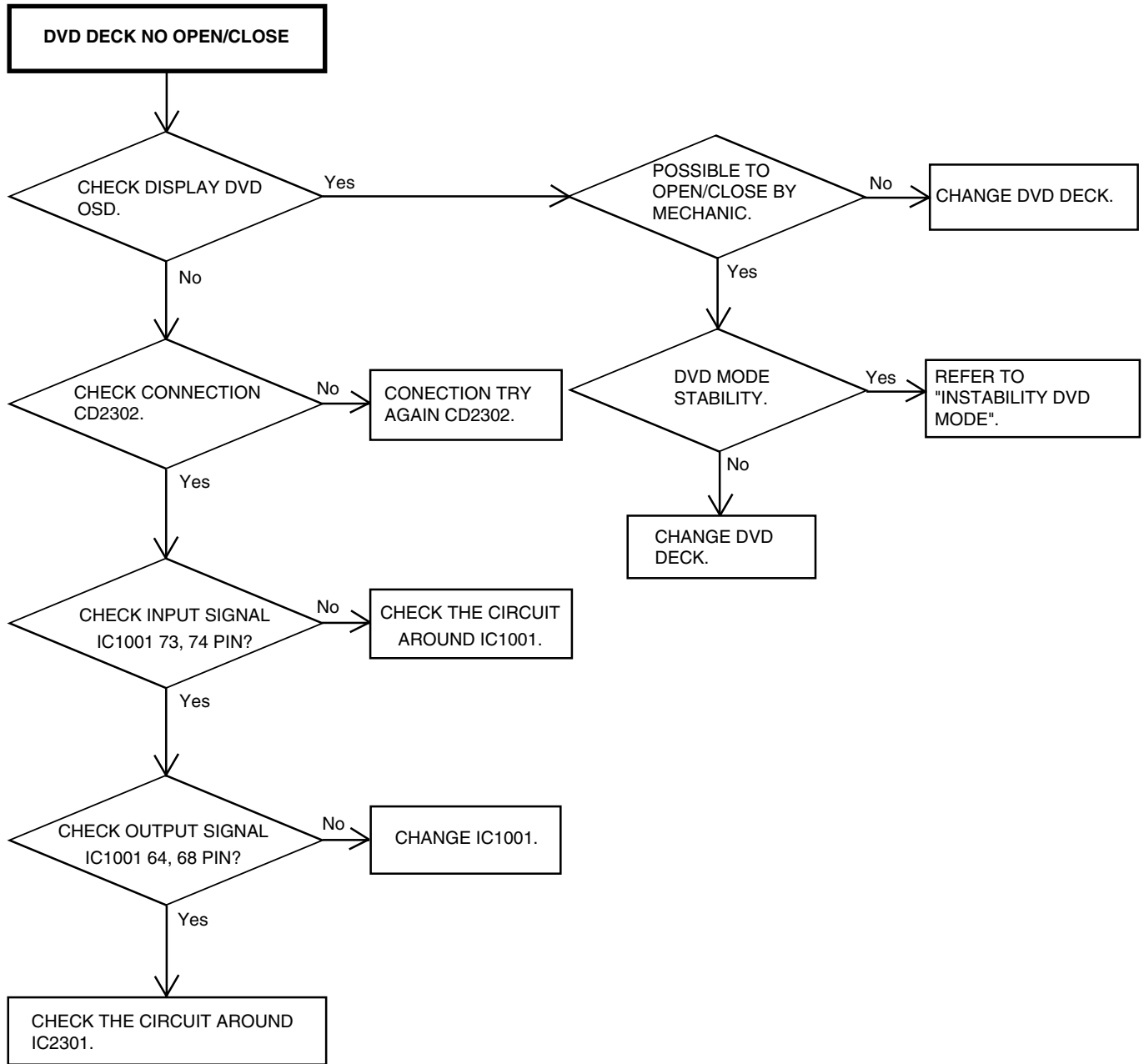
IC DESCRIPTION

AV PCB OEC6070B (IC101)

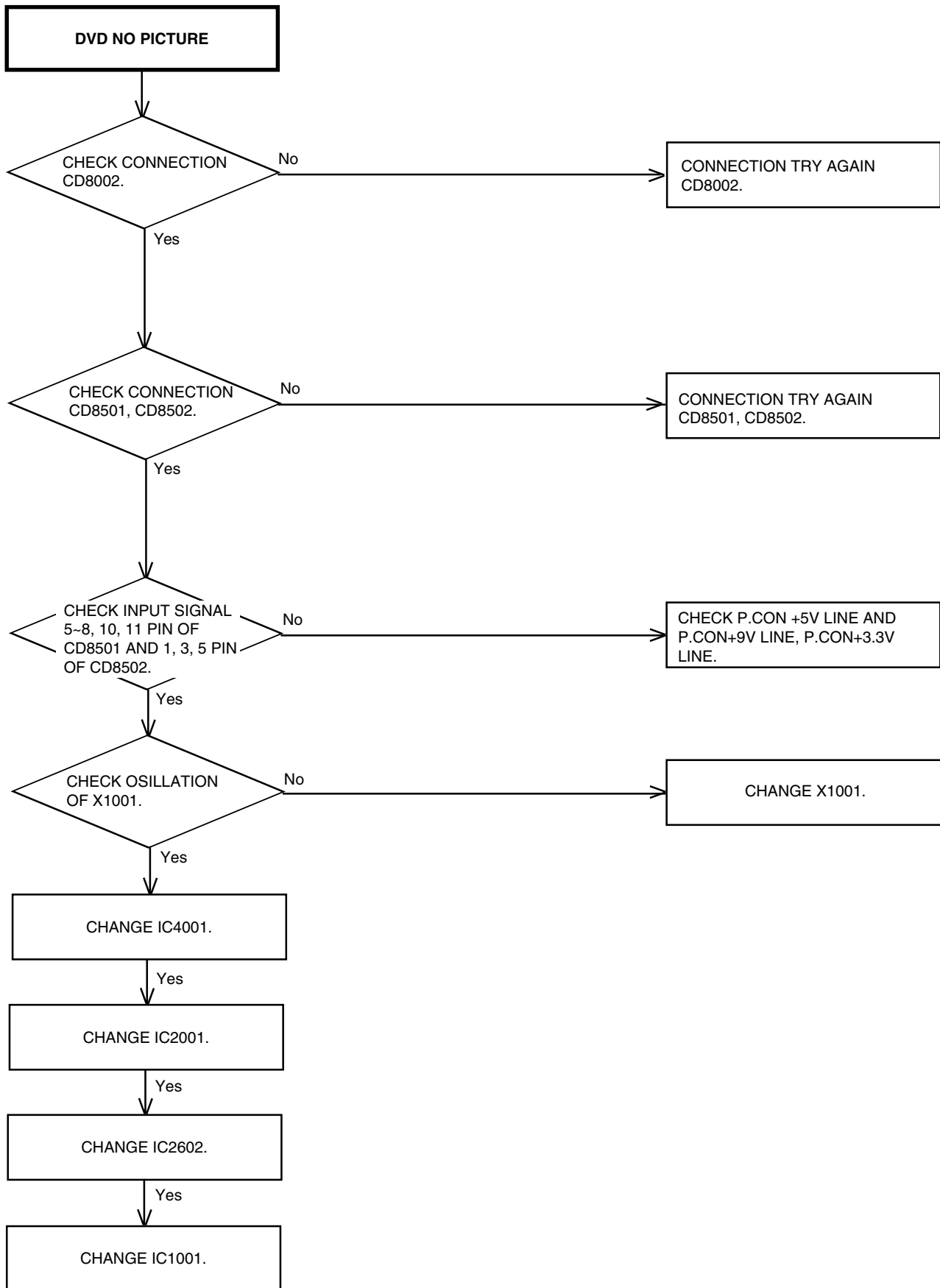
No.	Symbol	I/O	Logic	Function
1	VSS	-	-	Negative power supply (Ground)
2	X-RAY TEST	Output	1	X-RAY test output
3	PROTECT	Output	1	Output terminal for protect from high-voltage remaining
4	TV MUTE	Output	1	Volume muting output
5	EXT MUTE	Output	1	External picture/volume muting output
6	DVD RESET	Output	0	Enforced reset output for DVD
7	TV POWER	Output	1	Power control output
8	VOL.PWM/ STBY-H	Output	1	Puls width modulation output for the volume control / Output High-Z at power off
9	UART CLOCK	Output	1	The asynchronous clock output
10	UART START BIT	Input	1	The entry for the asynchronous Start bit detection
11	RX	Input	-	The communication DATA entry from the side of DVD
12	TX	Output	-	The communication DATA output to the side of DVD
13	UART CLOCK IN	Input	-	The asynchronous clock Input
14	H CONTROL	Output	1	Output terminal for Horizontality Control
15	X-RAY IN	Input	-	X-RAY detection input (nom. 0V)
16	AFT	Input	1	Voltage of tuning input
17	KEY1	Input	0	Voltage of the TV button input
18	KEY2	Input	0	Voltage of the TV button input
19	TV/DVD	Output	1	TV/DVD picture signal changing output
20	DEGAUSS	Output	1	Degauss output
21	IIC BUS OFF	Input	0	Serial clock/data stop input
22	OSD R	Output	1	Red output of RGB image output
23	OSD G	Output	1	Green output of RGB image output
24	OSD B	Output	1	Blue output of RGB image output
25	OSD Y/BLK	Output	1	Fast blanking control signal
26	Hsync	Input	0	Horizontal synchronization input
27	Vsync	Input	0	Vertical synchronization input
28	OVDD	-	-	Positive power supply (+5V nom.)
29	OVCC	-	-	Negative power supply (Ground)
30	TEST	Input	-	Test input (connects with Ground)
31	XIN	Input	-	Connect the main crystal.
32	XOUT	Output	-	Connect the main crystal.
33	RESET	Input	0	System reset voltage input
34	POWER FAIL	Input	0	Power failure detection input
35	REMOCON	Input	0	Remote control input
36	SD	Input	0	Synchronization detector input
37	SCL	Output	-	Serial clock output
38	SDA	In/Output	-	Serial data Input/output
39	VSS	-	-	Negative power supply (Ground)
40	VIDEO IN 1	Input	-	Picture signal input for the Closed Caption (2Vp-p)
41	VIDEO IN 2	Input	-	Picture signal input for the Closed Caption (2Vp-p)
42	VDD	-	-	Positive power supply (+5V nom.)

TROUBLESHOOTING GUIDE

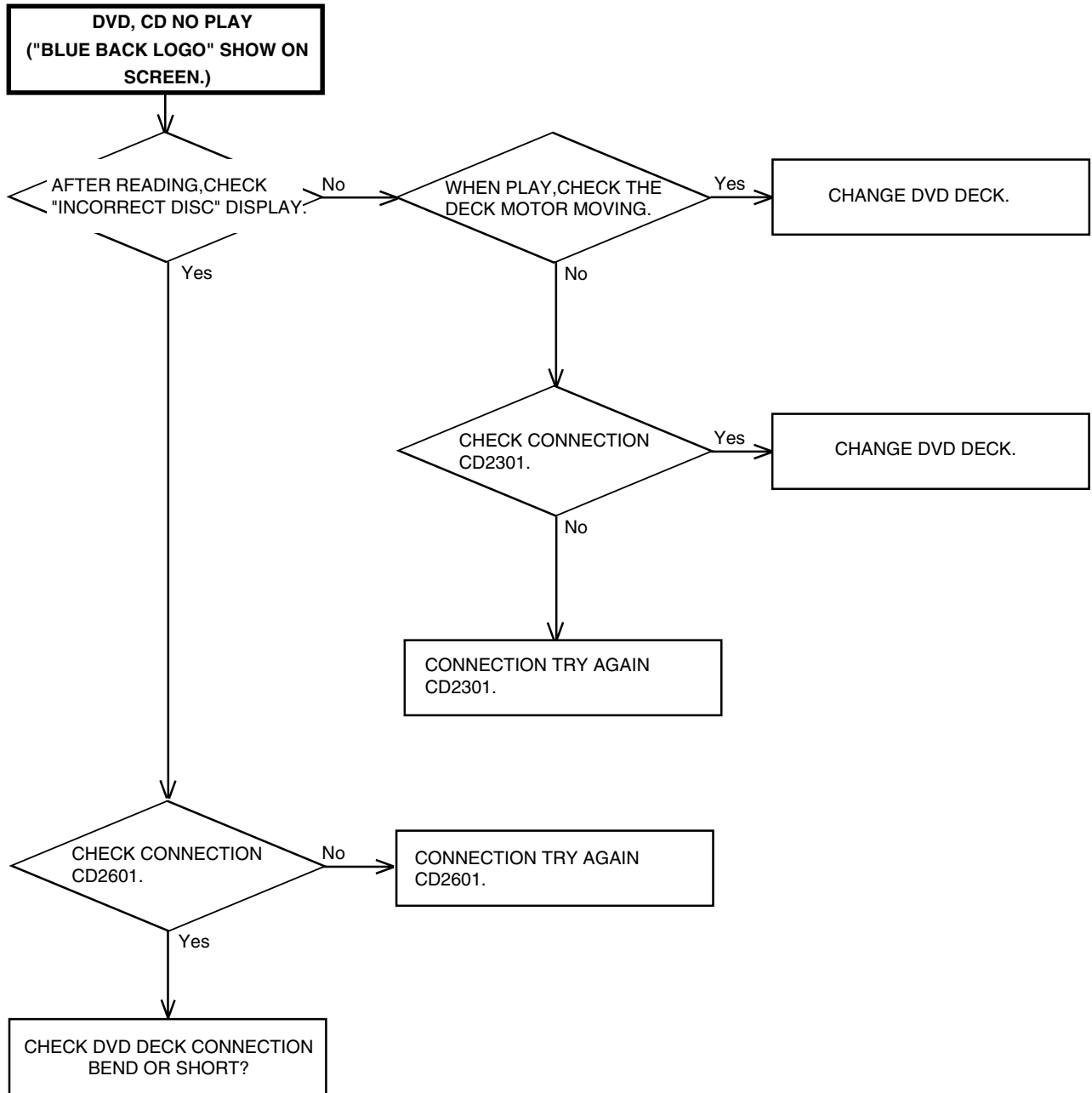
(DVD SECTION)



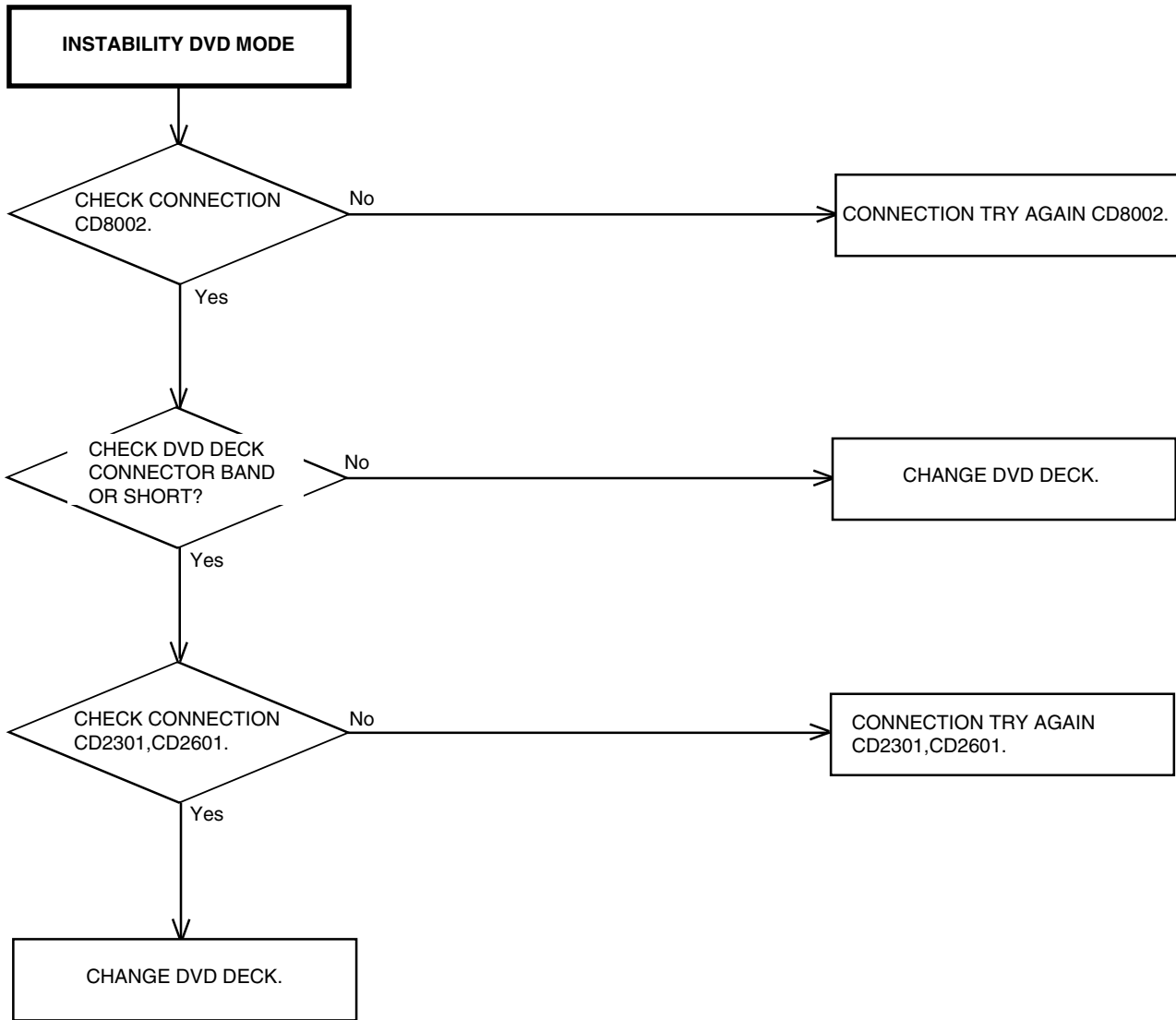
TROUBLESHOOTING GUIDE



TROUBLESHOOTING GUIDE

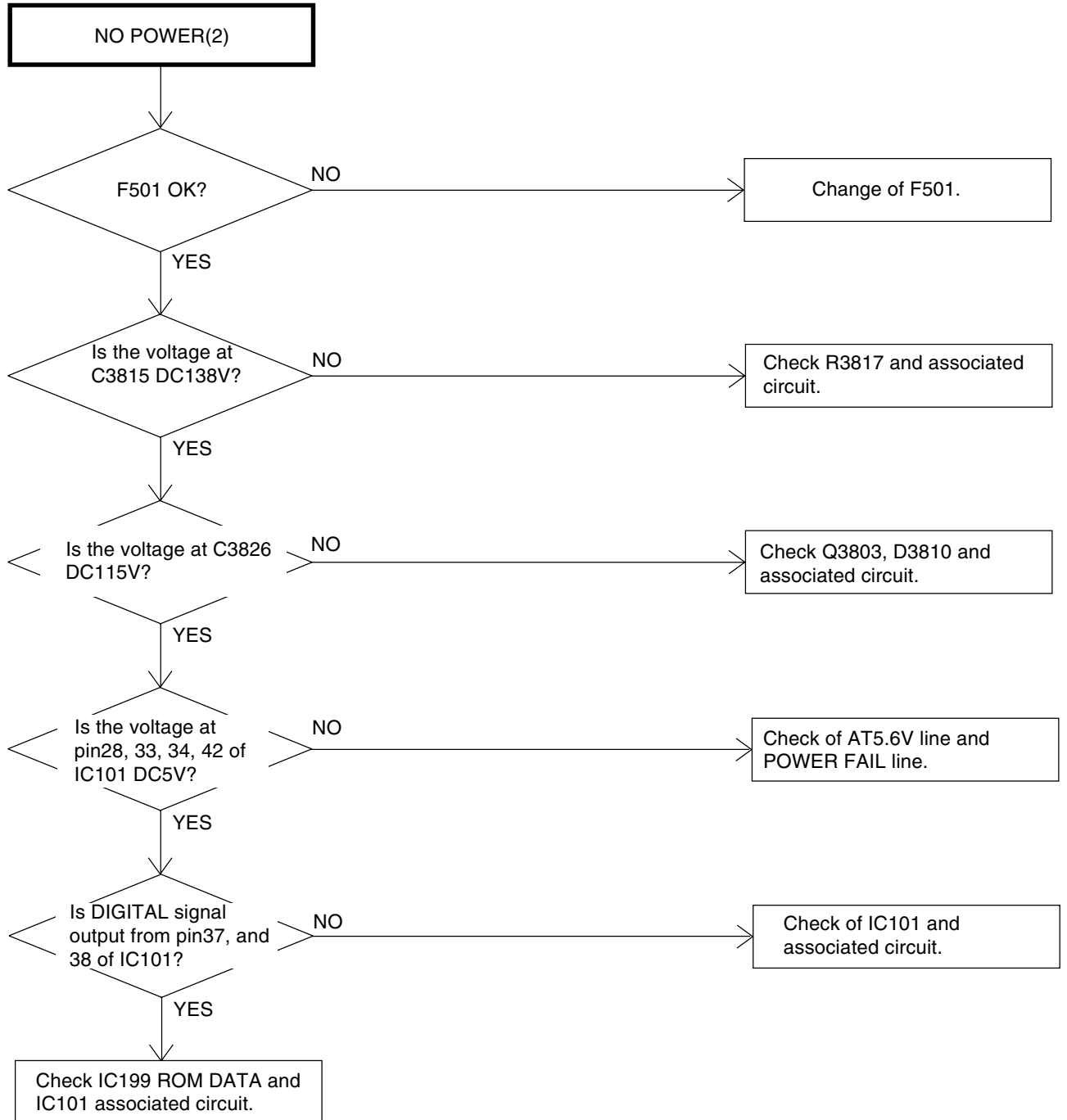


TROUBLESHOOTING GUIDE

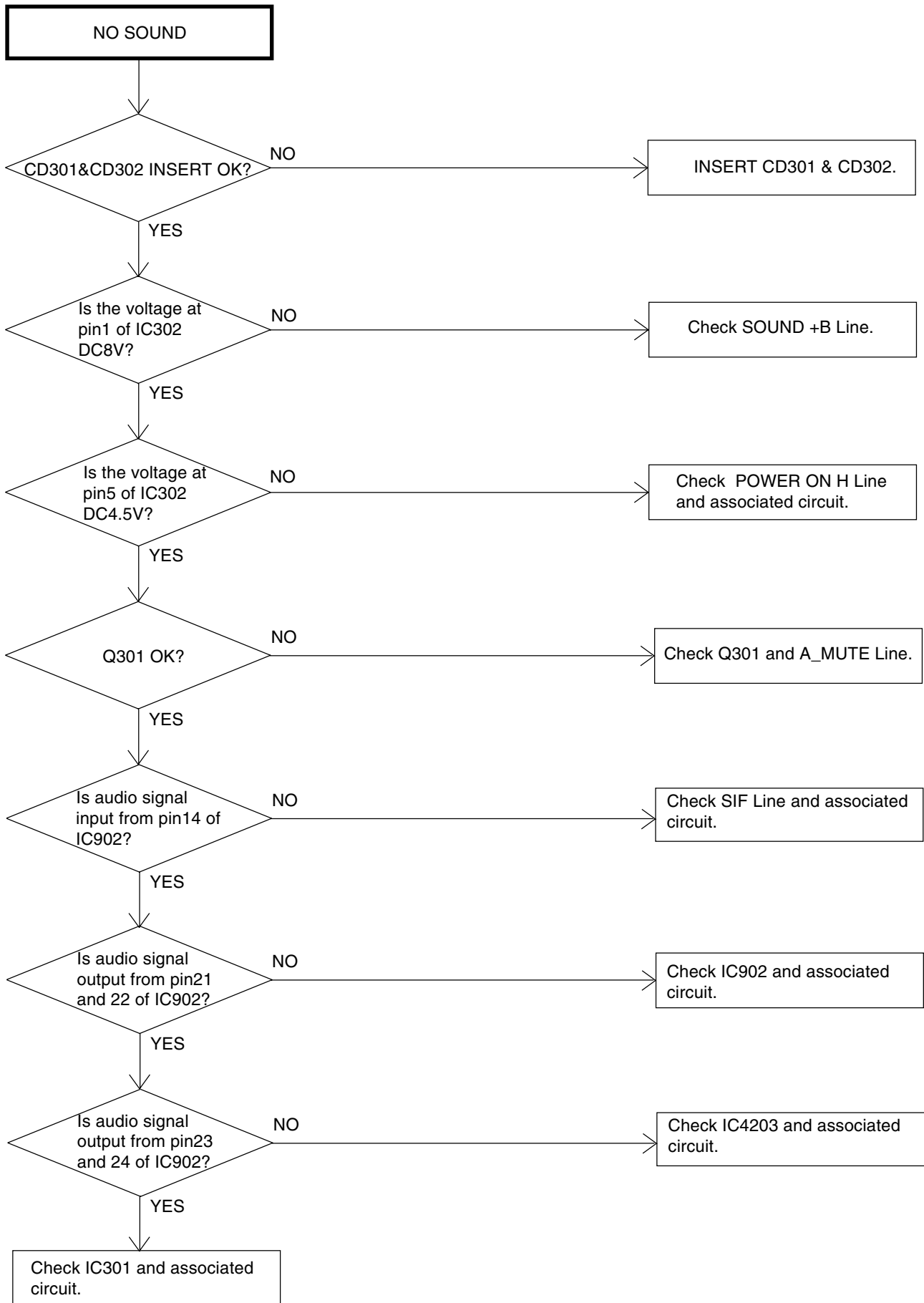


TROUBLESHOOTING GUIDE

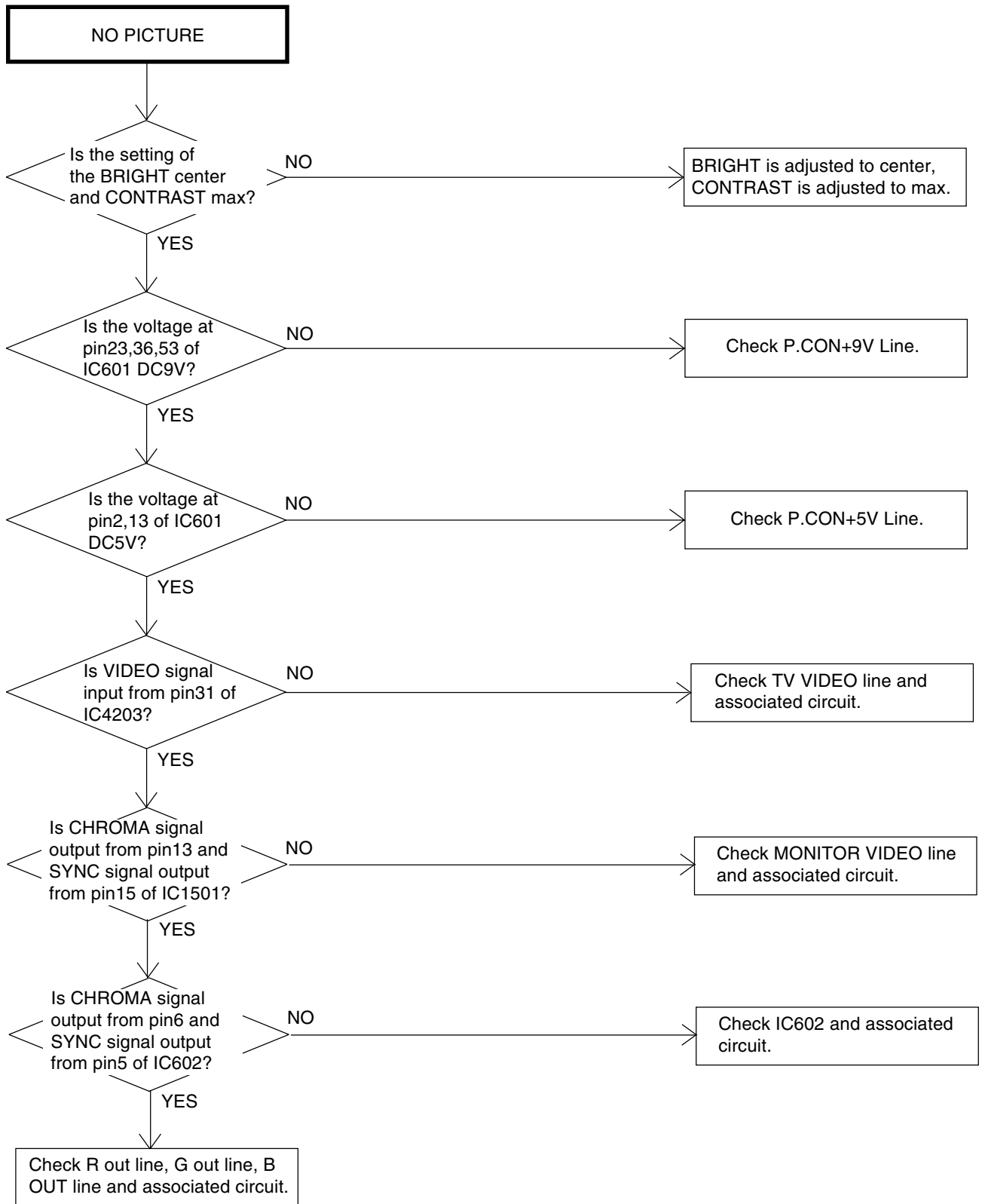
(TV SECTION)



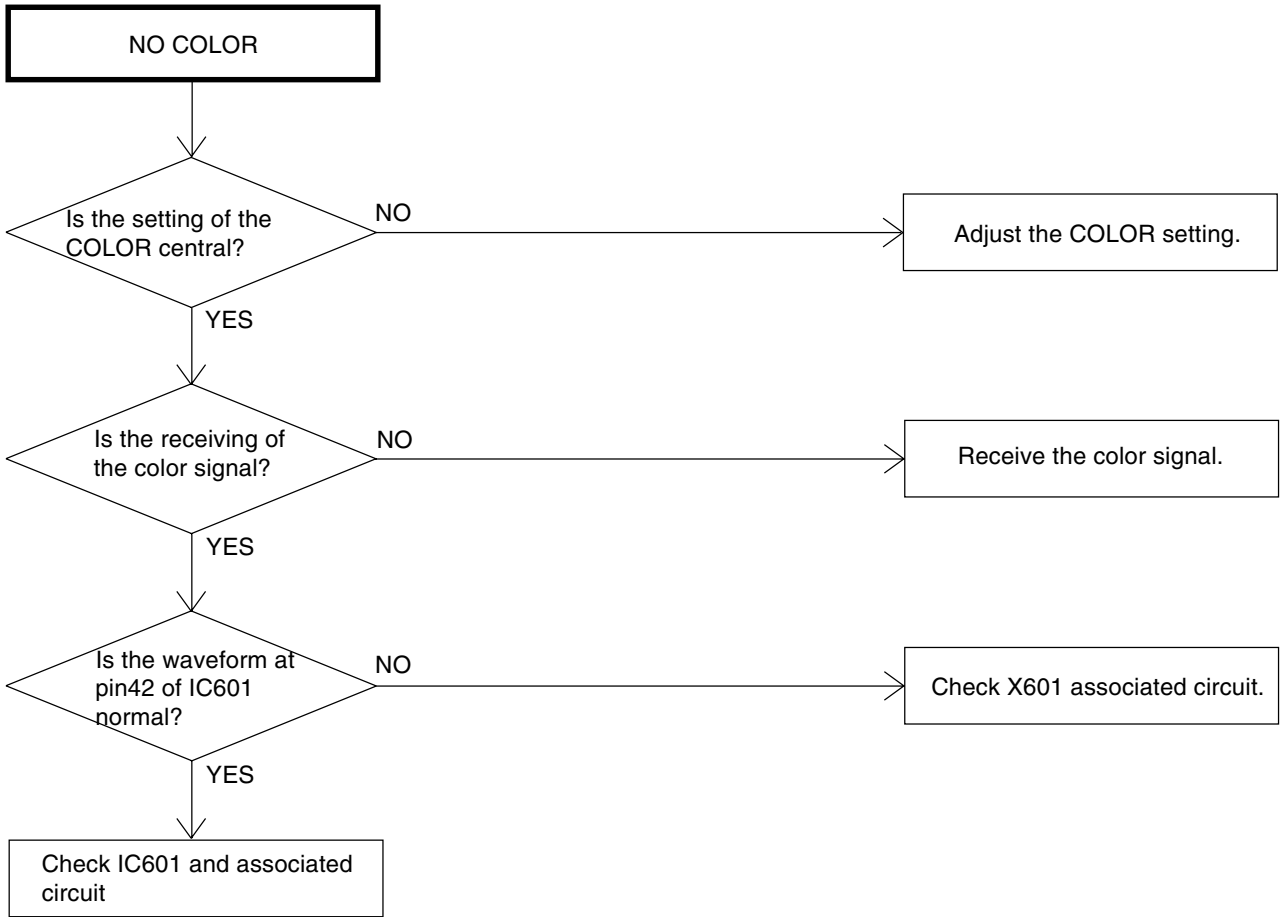
TROUBLESHOOTING GUIDE



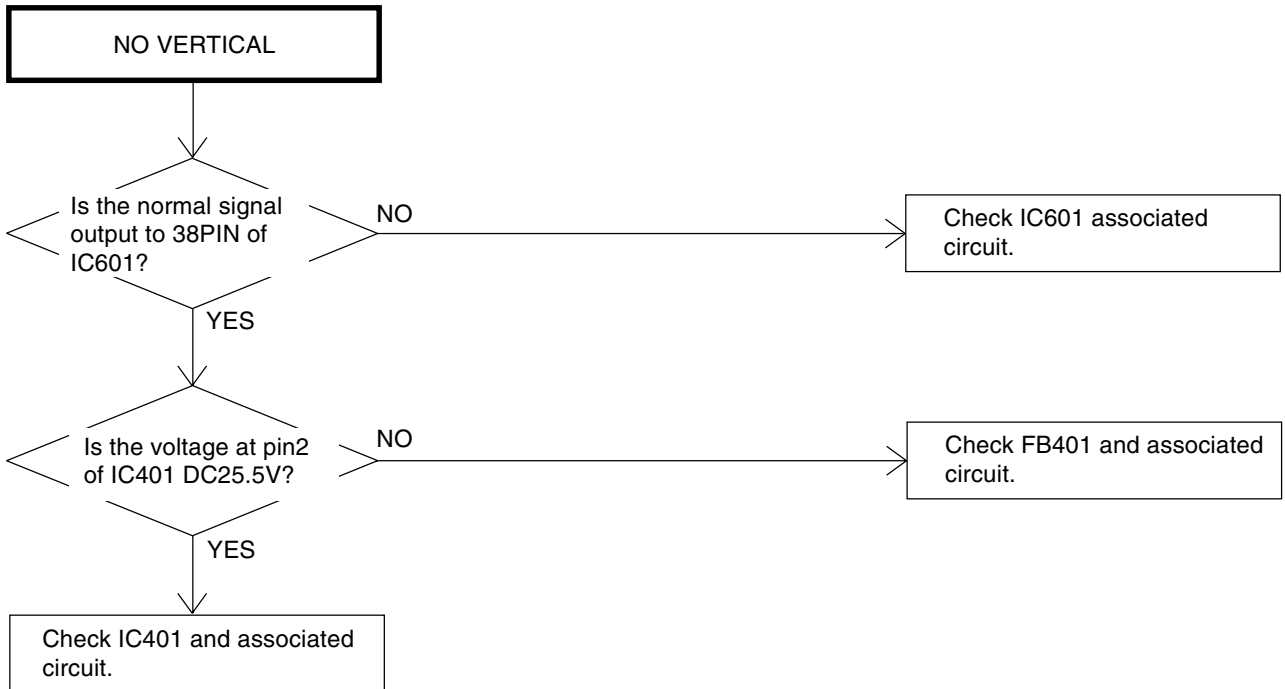
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