



LG Electronics Inc.

P/N : 3829RDT033C

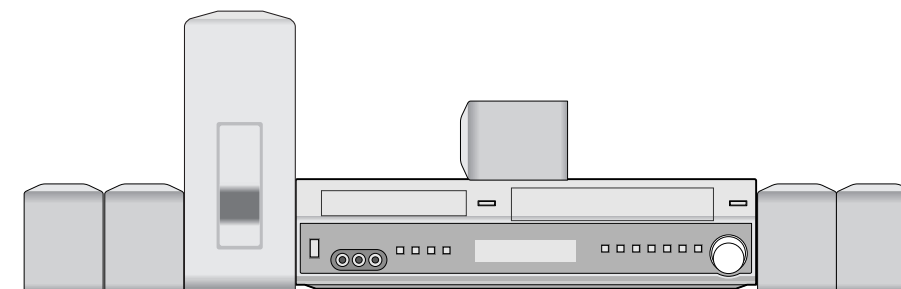
JULY, 2003

LG Electronics Inc.

SERVICE MANUAL MODELS : LH-C6230P/C6231P/LH-C6230S/LH-C6230W/LH-C6231W/LH-C6230X/LH-C6230Y/C6231Y



DVD/CD/VCR RECEIVER Home Cinema System SERVICE MANUAL



MODELS: LH-C6230P/C6231P (LGEDG/LGEES/LGEPT/LGEIS)
LH-C6230S (LGEFS/STUH) LH-C6230W (LGESA/LGEGF)
LH-C6231W (LGEAP) LH-C6230X (MOSCOW)
LH-C6230Y/C6231Y (LGEPL/LGEMK)

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SECTION 1. GENERAL PART

PRODUCT SAFETY SERVICING GUIDELINES FOR VIDEO PRODUCTS

CAUTION : DO NOT ATTEMPT TO MODIFY THIS PRODUCT IN ANY WAY, NEVER PERFORM CUSTOMIZED INSTALLATIONS WITHOUT MANUFACTURER'S APPROVAL. UNAUTHORIZED MODIFICATIONS WILL NOT ONLY VOID THE WARRANTY, BUT MAY LEAD TO YOUR BEING LIABLE FOR ANY RESULTING PROPERTY DAMAGE OR USER INJURY.

SERVICE WORK SHOULD BE PERFORMED ONLY AFTER YOU ARE THOROUGHLY FAMILIAR WITH ALL OF THE FOLLOWING SAFETY CHECKS AND SERVICING GUIDELINES. TO DO OTHERWISE, INCREASES THE RISK OF POTENTIAL HAZARDS AND INJURY TO THE USER.

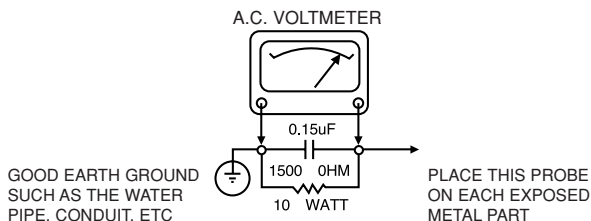
WHILE SERVICING, USE AN ISOLATION TRANSFORMER FOR PROTECTION FROM A.C. LINE SHOCK.

SAFETY CHECKS

AFTER THE ORIGINAL SERVICE PROBLEM HAS BEEN CORRECTED, A CHECK SHOULD BE MADE OF THE FOLLOWING.

SUBJECT : FIRE & SHOCK HAZARD

1. BE SURE THAT ALL COMPONENTS ARE POSITIONED IN SUCH A WAY AS TO AVOID POSSIBILITY OF ADJACENT COMPONENT SHORTS. THIS IS ESPECIALLY IMPORTANT ON THOSE MODULES WHICH ARE TRANSPORTED TO AND FROM THE REPAIR SHOP.
2. NEVER RELEASE A REPAIR UNLESS ALL PROTECTIVE DEVICES SUCH AS INSULATORS, BARRIERS, COVERS, SHIELDS, STRAIN RELIEFS, POWER SUPPLY CORDS, AND OTHER HARDWARE HAVE BEEN REINSTALLED PER ORIGINAL DESIGN. BE SURE THAT THE SAFETY PURPOSE OF THE POLARIZED LINE PLUG HAS NOT BEEN DEFEATED.
3. SOLDERING MUST BE INSPECTED TO DISCOVER POSSIBLE COLD SOLDER JOINTS, SOLDER SPLASHES OR SHARP SOLDER POINTS. BE CERTAIN TO REMOVE ALL LOOSE FOREIGN PARTICLES.
4. CHECK FOR PHYSICAL EVIDENCE OF DAMAGE OR DETERIORATION TO PARTS AND COMPONENTS. FOR FRAYED LEADS, DAMAGED INSULATION (INCLUDING A.C. CORD), AND REPLACE IF NECESSARY FOLLOW ORIGINAL LAYOUT, LEAD LENGTH AND DRESS.
5. NO LEAD OR COMPONENT SHOULD TOUCH A RECEIVING TUBE OR A RESISTOR RATED AT 1 WATT OR MORE. LEAD TENSION AROUND PROTRUDING METAL SURFACES MUST BE AVOIDED.
6. ALL CRITICAL COMPONENTS SUCH AS FUSES, FLAMEPROOF RESISTORS, CAPACITORS, ETC. MUST BE REPLACED WITH EXACT FACTORY TYPES. DO NOT USE REPLACEMENT COMPONENTS OTHER THAN THOSE SPECIFIED OR MAKE UNRECOMMENDED CIRCUIT MODIFICATIONS.
7. AFTER RE-ASSEMBLY OF THE SET ALWAYS PERFORM AN A.C. LEAKAGE TEST ON ALL EXPOSED METALLIC PARTS OF THE CABINET, (THE CHANNEL SELECTOR KNOB, ANTENNA TERMINALS, HANDLE AND SCREWS) TO BE SURE THE SET IS SAFE TO OPERATE WITHOUT DANGER OF ELECTRICAL SHOCK. DO NOT USE A LINE ISOLATION TRANSFORMER DURING THIS TEST USE AN A.C. VOLTMETER, HAVING 5000 OHMS PER VOLT OR MORE SENSITIVITY, IN THE FOLLOWING MANNER: CONNECT A 1500 OHM 10 WATT RESISTOR, PARALLELED BY A .15 MFD. 150.V A.C TYPE CAPACITOR BETWEEN A KNOWN GOOD EARTH GROUND (WATER PIPE, CONDUIT, ETC.) AND THE EXPOSED METALLIC PARTS, ONE AT A TIME. MEASURE THE A.C. VOLTAGE ACROSS THE COMBINATION OF 1500 OHM RESISTOR AND .15 MFD CAPACITOR. REVERSE THE A.C. PLUG AND REPEAT A.C. VOLTAGE MEASUREMENTS FOR EACH EXPOSED METALLIC PART. VOLTAGE MEASURED MUST NOT EXCEED 75 VOLTS R.M.S. THIS CORRESPONDS TO 0.5 MILLIAMPS A.C ANY VALUE EXCEEDING THIS LIMIT CONSTITUTES A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED IMMEDIATELY.



SUBJECT: GRAPHIC SYMBOLS



THE LIGHTNING FLASH WITH APROWHEAD SYMBOL, WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF UNINSULATED DANGEROUS VOLTAGE THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK.



THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF IMPORTANT SAFETY INFORMATION IN SERVICE LITERATURE.

SUBJECT : X-RADIATION

1. BE SURE PROCEDURES AND INSTRUCTIONS TO ALL SERVICE PERSONNEL COVER THE SUBJECT OF X-RADIATION. THE ONLY POTENTIAL SOURCE OF X-RAYS IN CURRENT T.V. RECEIVERS IS THE PICTURE TUBE. HOWEVER, THIS TUBE DOES NOT EMIT X-RAYS WHEN THE HIGH VOLTAGE IS AT THE FACTORY SPECIFIED LEVEL. THE PROPER VALUE IS GIVEN IN THE APPLICABLE SCHEMATIC. OPERATION AT HIGHER VOLTAGES MAY CAUSE A FAILURE OF THE PICTURE TUBE OR HIGH VOLTAGE SUPPLY AND, UNDER CERTAIN CIRCUMSTANCES, MAY PRODUCE RADIATION IN EXCESS OF DESIRABLE LEVELS.
2. ONLY FACTORY SPECIFIED C.R.T. ANODE CONNECTORS MUST BE USED. DEGAUSSING SHIELDS ALSO SERVE AS X-RAY SHIELD IN COLOR SETS, ALWAYS RE-INSTALL THEM.
3. IT IS ESSENTIAL THAT SERVICE PERSONNEL HAVE AVAILABLE AN ACCURATE AND RELIABLE HIGH VOLTAGE METER. THE CALIBRATION OF THE METER SHOULD BE CHECKED PERIODICALLY AGAINST A REFERENCE STANDARD, SUCH AS THE ONE AVAILABLE AT YOUR DISTRIBUTOR.
4. WHEN THE HIGH VOLTAGE CIRCUITRY IS OPERATING PROPERLY THERE IS NO POSSIBILITY OF AN X-RADIATION PROBLEM. EVERY TIME A COLOR CHASSIS IS SERVICED, THE BRIGHTNESS SHOULD BE RUN UP AND DOWN WHILE MONITORING THE HIGH VOLTAGE WITH A METER TO BE CERTAIN THAT THE HIGH VOLTAGE DOES NOT EXCEED THE SPECIFIED VALUE AND THAT IT IS REGULATING CORRECTLY, WE SUGGEST THAT YOU AND YOUR SERVICE ORGANIZATION REVIEW TEST PROCEDURES SO THAT VOLTAGE REGULATION IS ALWAYS CHECKED AS A STANDARD SERVICING PROCEDURE, AND THAT THE HIGH VOLTAGE READING BE RECORDED ON EACH CUSTOMER'S INVOICE.
5. WHEN TROUBLESHOOTING AND MAKING TEST MEASUREMENTS IN A PRODUCT WITH A PROBLEM OF EXCESSIVE HIGH VOLTAGE, AVOID BEING UNNECESSARILY CLOSE TO THE PICTURE TUBE AND THE HIGH VOLTAGE SUPPLY. DO NOT OPERATE THE PRODUCT LONGER THAN IS NECESSARY TO LOCATE THE CAUSE OF EXCESSIVE VOLTAGE.
6. REFER TO HV. B+ AND SHUTDOWN ADJUSTMENT PROCEDURES DESCRIBED IN THE APPROPRIATE SCHEMATIC AND DIAGRAMS (WHERE USED).

SUBJECT: IMPLOSION

1. ALL DIRECT VIEWED PICTURE TUBES ARE EQUIPPED WITH AN INTEGRAL IMPLOSION PROTECTION SYSTEM, BUT CARE SHOULD BE TAKEN TO AVOID DAMAGE DURING INSTALLATION, AVOID SCRATCHING THE TUBE. IF SCRATCHED REPLACE IT.
2. USE ONLY RECOMMENDED FACTORY REPLACEMENT TUBES.

SUBJECT : TIPS ON PROPER INSTALLATION

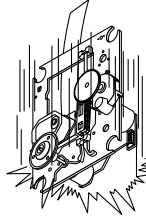
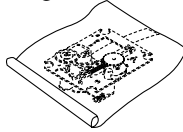
1. NEVER INSTALL ANY PRODUCT IN A CLOSED-IN RECESS, CUBBYHOLE OR CLOSELY FITTING SHELF SPACE, OVER OR CLOSE TO HEAT DUCT, OR IN THE PATH OF HEATED AIR FLOW.
2. AVOID CONDITIONS OF HIGH HUMIDITY SUCH AS: OUTDOOR PATIO INSTALLATIONS WHERE DEW IS A FACTOR, NEAR STEAM RADIATORS WHERE STEAM LEAKAGE IS A FACTOR, ETC.
3. AVOID PLACEMENT WHERE DRAPERIES MAY OBSTRUCT REAR VENTING. THE CUSTOMER SHOULD ALSO AVOID THE USE OF DECORATIVE SCARVES OR OTHER COVERINGS WHICH MIGHT OBSTRUCT VENTILATION.
4. WALL AND SHELF MOUNTED INSTALLATIONS USING A COMMERCIAL MOUNTING KIT, MUST FOLLOW THE FACTORY APPROVED MOUNTING INSTRUCTIONS A PRODUCT MOUNTED TO A SHELF OR PLATFORM MUST RETAIN ITS ORIGINAL FEET (OR THE EQUIVALENT THICKNESS IN SPACERS) TO PROVIDE ADEQUATE AIR FLOW ACROSS THE BOTTOM, BOLTS OR SCREWS USED FOR FASTENERS MUST NOT TOUCH ANY PARTS OR WIRING. PERFORM LEAKAGE TEST ON CUSTOMIZED INSTALLATIONS.
5. CAUTION CUSTOMERS AGAINST THE MOUNTING OF A PRODUCT ON SLOPING SHELF OR A TILTED POSITION, UNLESS THE PRODUCT IS PROPERLY SECURED.
6. A PRODUCT ON A ROLL-ABOUT CART SHOULD BE STABLE ON ITS MOUNTING TO THE CART. CAUTION THE CUSTOMER ON THE HAZARDS OF TRYING TO ROLL A CART WITH SMALL CASTERS ACROSS THRESHOLDS OR DEEP PILE CARPETS.
7. CAUTION CUSTOMERS AGAINST THE USE OF A CART OR STAND WHICH HAS NOT BEEN LISTED BY UNDERWRITERS LABORATORIES, INC. FOR USE WITH THEIR SPECIFIC MODEL OF TELEVISION RECEIVER OR GENERICALLY APPROVED FOR USE WITH T.V.'S OF THE SAME OR LARGER SCREEN SIZE.
8. CAUTION CUSTOMERS AGAINST THE USE OF EXTENSION CORDS, EXPLAIN THAT A FOREST OF EXTENSIONS SPROUTING FROM A SINGLE OUTLET CAN LEAD TO DISASTROUS CONSEQUENCES TO HOME AND FAMILY.

NOTES REGARDING HANDLING OF THE PICK-UP

1. Notes for transport and storage

- 1) The pick-up should always be left in its conductive bag until immediately prior to use.
- 2) The pick-up should never be subjected to external pressure or impact.

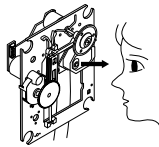
Storage in conductive bag



Drop impact

2. Repair notes

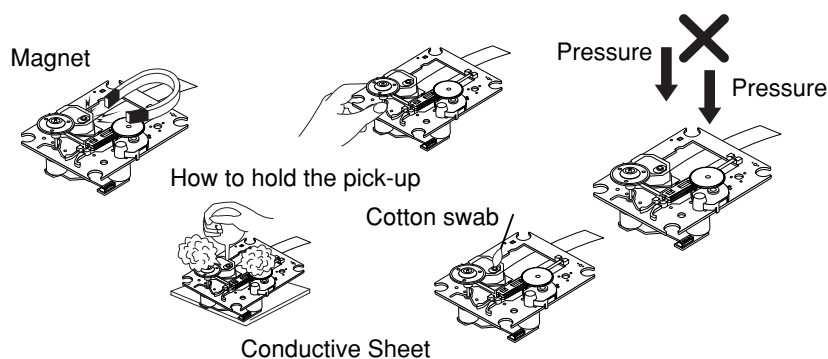
- 1) The pick-up incorporates a strong magnet, and so should never be brought close to magnetic materials.
- 2) The pick-up should always be handled correctly and carefully, taking care to avoid external pressure and impact. If it is subjected to strong pressure or impact, the result may be an operational malfunction and/or damage to the printed-circuit board.
- 3) Each and every pick-up is already individually adjusted to a high degree of precision, and for that reason the adjustment point and installation screws should absolutely never be touched.
- 4) Laser beams may damage the eyes!
Absolutely never permit laser beams to enter the eyes!
Also NEVER switch ON the power to the laser output part (lens, etc.) of the pick-up if it is damaged.



NEVER look directly at the laser beam, and don't let contact fingers or other exposed skin.

5) Cleaning the lens surface

If there is dust on the lens surface, the dust should be cleaned away by using an air bush (such as used for camera lens). The lens is held by a delicate spring. When cleaning the lens surface, therefore, a cotton swab should be used, taking care not to distort this.



6) Never attempt to disassemble the pick-up.

Spring by excess pressure. If the lens is extremely dirty, apply isopropyl alcohol to the cotton swab. (Do not use any other liquid cleaners, because they will damage the lens.) Take care not to use too much of this alcohol on the swab, and do not allow the alcohol to get inside the pick-up.

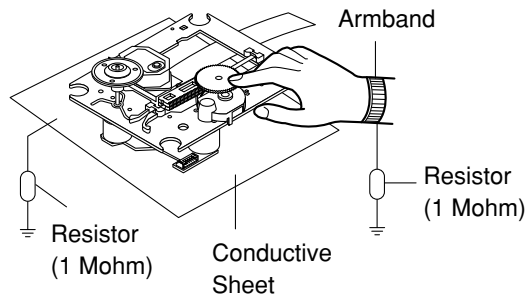
NOTES REGARDING COMPACT DISC PLAYER REPAIRS

1. Preparations

- 1) Compact disc players incorporate a great many ICs as well as the pick-up (laser diode). These components are sensitive to, and easily affected by, static electricity. If such static electricity is high voltage, components can be damaged, and for that reason components should be handled with care.
- 2) The pick-up is composed of many optical components and other high-precision components. Care must be taken, therefore, to avoid repair or storage where the temperature of humidity is high, where strong magnetism is present, or where there is excessive dust.

2. Notes for repair

- 1) Before replacing a component part, first disconnect the power supply lead wire from the unit
- 2) All equipment, measuring instruments and tools must be grounded.
- 3) The workbench should be covered with a conductive sheet and grounded.
When removing the laser pick-up from its conductive bag, do not place the pick-up on the bag. (This is because there is the possibility of damage by static electricity.)
- 4) To prevent AC leakage, the metal part of the soldering iron should be grounded.
- 5) Workers should be grounded by an armband (1M Ω)
- 6) Care should be taken not to permit the laser pick-up to come in contact with clothing, in order to prevent static electricity changes in the clothing to escape from the armband.
- 7) The laser beam from the pick-up should NEVER be directly facing the eyes or bare skin.



SERVICING PRECAUTIONS

CAUTION : Before servicing the COMBI HOME THEATER SYSTEM covered by this service data and its supplements and addends, read and follow the *SAFETY PRECAUTIONS*. **NOTE :** if unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions in this publications, always follow the safety precautions.

Remembers Safety First:

General Servicing Precautions

1. Always unplug the COMBI HOME THEATER SYSTEM AC power cord from the AC power source before:
 - (1) Removing or reinstalling any component, circuit board, module, or any other assembly.
 - (2) Disconnection or reconnecting any internal electrical plug or other electrical connection.
 - (3) Connecting a test substitute in parallel with an electrolytic capacitor.
Caution : A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
2. Do not spray chemicals on or near this COMBI HOME THEATER SYSTEM or any of its assemblies.
3. Unless specified otherwise in this service data, clean electrical contacts by applying an appropriate contact cleaning solution to the contacts with a pipe cleaner, cotton-tipped swab, or comparable soft applicator. Unless specified otherwise in this service data, lubrication of contacts is not required.
4. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service manual might be equipped.
5. Do not apply AC power to this COMBI HOME THEATER SYSTEM and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
6. Always connect test instrument ground lead to the appropriate ground before connection the test instrument positive lead. Always remove the test instrument ground lead last.

Insulation Checking Procedure

Disconnect the attachment plug from the AC outlet and turn the power on. Connect an insulation resistance meter(500V) to the blades of the attachment plug. The insulation resistance between each blade of the attachment plug and accessible conductive parts (Note 1) should be more than 1M-ohm.

Note 1 : Accessible Conductive Parts including Metal panels, Input terminals, Earphone jacks, etc.

Electrostatically Sensitive (ES) Devices

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

The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

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

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

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

ESD PRECAUTIONS

Electrostatically Sensitive Devices (ESD)



Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive Devices (ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

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

CAUTION : BE SURE NO POWER IS APPLIED TO THE CHASSIS OR CIRCUIT, AND OBSERVE ALL OTHER SAFETY PRECAUTIONS.

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

CAUTION. GRAPHIC SYMBOLS

	THE LIGHTNING FLASH WITH APROWHEAD SYMBOL. WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF UNINSULATED "DANGEROUS VOLTAGE" THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK.
	THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF IMPORTANT SAFETY INFORMATION IN SERVICE LITERATURE.

SPECIFICATIONS

General

Power requirements	AC230V ~ , 50 Hz
Power consumption	130 W
Dimensions (approx.)	430 X 90 X 350 mm (w x h x d)
Mass (approx.)	8 kg (17.6 lbs)
Operating temperature	5°C to 40°C (41°F to 104°F)
Timer	24-hour display type
Operating humidity	5 % to 90 %

DVD Section

Laser	Semiconductor laser, wavelength 650 nm
Signal system	PAL/NTSC
Frequency response	DVD (PCM 96 kHz): 8 Hz to 44 kHz DVD (PCM 48 kHz): 8 Hz to 20 kHz CD: 8 Hz to 20 kHz
Signal-to-noise ratio	More than 65 dB (ANALOG OUT connectors only)
Harmonic distortion	Less than 1.0%
Dynamic range	More than 60 dB (DVD) More than 60 dB (CD)

Outputs

S-VIDEO OUT	(Y) 1.0 V (p-p), 75 ohms, negative sync, Mini DIN 4-pin x 1 (C) 0.3 V (p-p) 75 ohms
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VCR Section

Head system	4 heads helical scan azimuth system
Maximum recording time	SP: 4 h (E-240 tape), LP: 8 h (E-240 tape)
Rewind time	About 180 min (E-180 tape)
Input level	VIDEO: 1.0 V(p-p), 75 ohms, unbalanced AUDIO: -6.0 dBm, more than 10 kohms (SCART) -6.0 dBm, more than 47 kohms (RCA)
Output level	VIDEO: 1.0 V(p-p), 75 ohms, unbalanced
Signal-to-noise ratio	VIDEO: More than 43 dB AUDIO: More than 72 dB (Hi-Fi) More than 42 dB (Mono)
Dynamic range	AUDIO: More than 85 dB

Tuner Section

Tuning range	FM: 87.5 - 108.0 MHz AM: 522 - 1611 kHz
Intermediate frequency	FM: 10.7 MHz AM: 450 kHz

Amplifier Section

Stereo mode	20W + 20W (4 ohm at 1 kHz, THD 10%)
Surround mode	Front: 20W + 20W (THD 10%) Centre: 20W Surround: 20W + 20W (4 ohm at 1 kHz, THD 10%) Subwoofer: 40W (8 ohm at 30 Hz, THD 10%)

Speakers

Satellite (LHS-C6230T)

Type	1 Way 1 Speaker
Impedance	4%
Frequency Response	130 - 20,000 Hz
Sound Pressure Level	83 dB/W (1m)
Rated Input Power	20W
Max Input Power	40W
Net Dimensions (W x H x D)	88 x 100 x 95 mm
Net Weight	0.54 kg

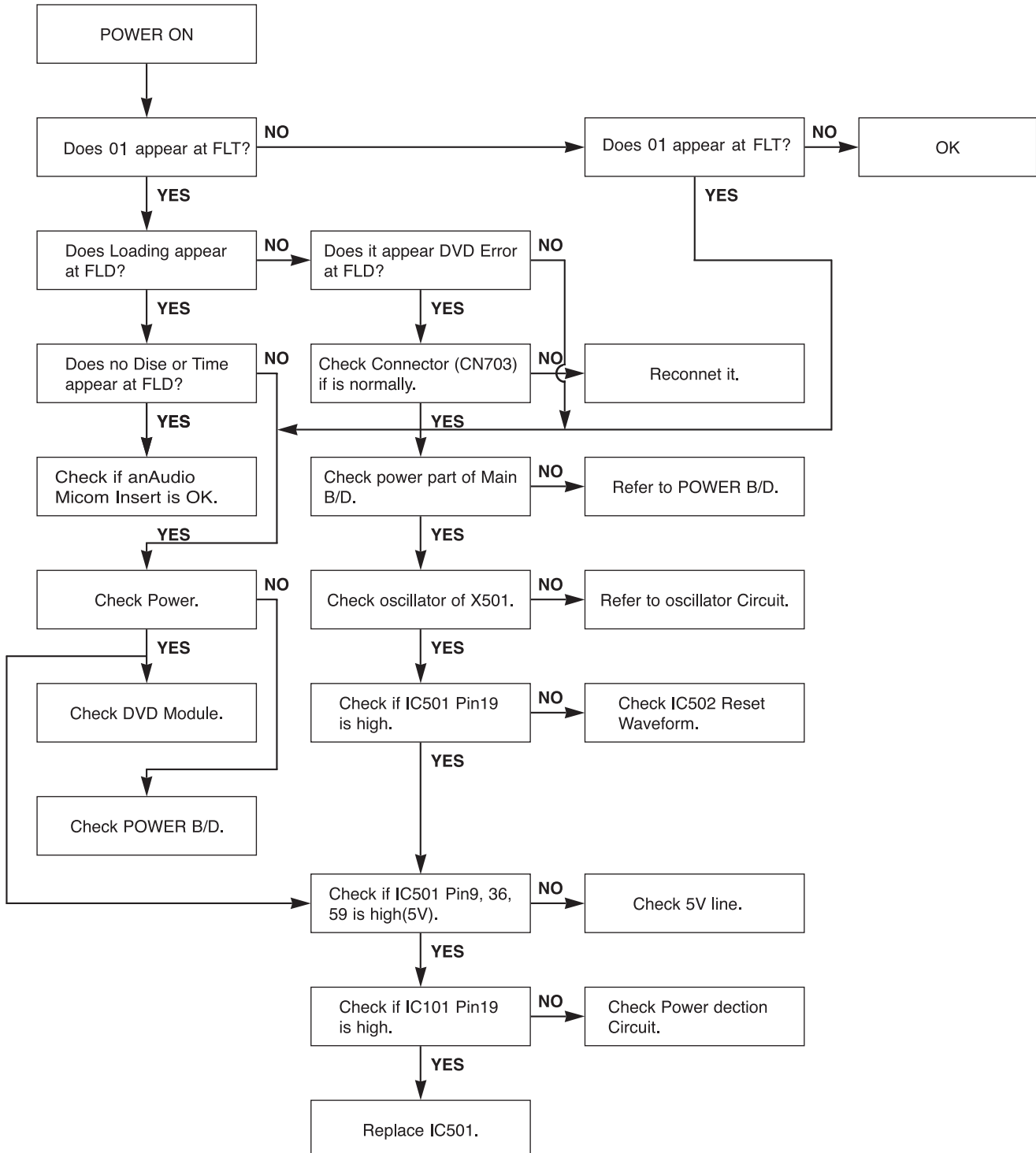
Passive Subwoofer (LHS-C6230W)

Type	1 Way 1 Speaker
Impedance	8%
Frequency Response	50 - 1,500 Hz
Sound Pressure Level	82 dB/W (1m)
Rated Input Power	40W
Max Input Power	80W
Net Dimensions (W x H x D)	160 x 350 x 325 mm
Net Weight	4.12 kg

SECTION 2. AUDIO PART

AMP PART ELECTRICAL TROUBLESHOOTING GUIDE

AUDIO μ -COM Circuit



SECTION 3. VCR PART

ELECTRICAL ADJUSTMENT PROCEDURES

1. Servo Adjustment

- 1) PG Adjustment
 - Test Equipment

a) OSCILLOSCOPE	C) PAL MODEL : PAL SP TEST TAPE
b) NTSC MODEL : NTSC SP TEST TAPE	

- Adjustment And Specification

MODE	MEASUREMENT POINT	ADJUSTMENT POINT	SPECIFICATION
PLAY	V.Out H/SW(W373, W374)	R/C TRK JIG KEY	6.5 – 0.5H

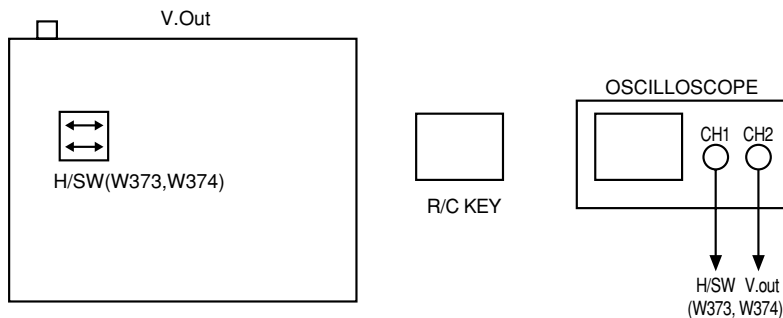
• Adjustment Procedure

- a) Insert the SP Test Tape and play.
 Note - Adjust the distance of X, pressing the Tracking(+) or Tracking(-) when the ATR is blink after the SP Test Tape is inserted.
- b) Connect the CH1 of the oscilloscope to the H/SW(W373, W374) and CH2 to the Video Out for the VCR.
- c) Trigger the mixed Combo Video Signal of CH2 to the CH1 H/SW(W373, W374), and then check the distance (time difference), which is from the selected A(B) Head point of the H/SW(W373, W374) signal to the starting point of the vertical synchronized signal, to 6.5H – 0.5H (416 s, 1H=64 s).

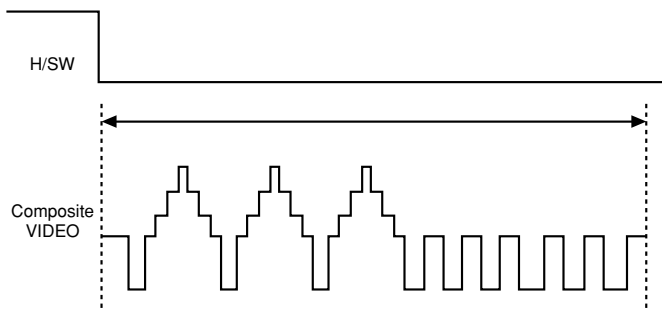
• PG Adjustment Method

- a-1) Payback the SP standard tape
- b-2) Press the 1 key on the Remote controller and the PLAY key on the Front Panel the same time, then it goes in to Tracking initial mode. (Note : PAL Model 1 key on Remote controller)
- c-3) Repeat the above step(No.b-2), then it finishes the PG adjusting automatically.
- d-4) Stop the playback, then it goes out to PG adjusting mode after many the PG data.

• CONNECTION



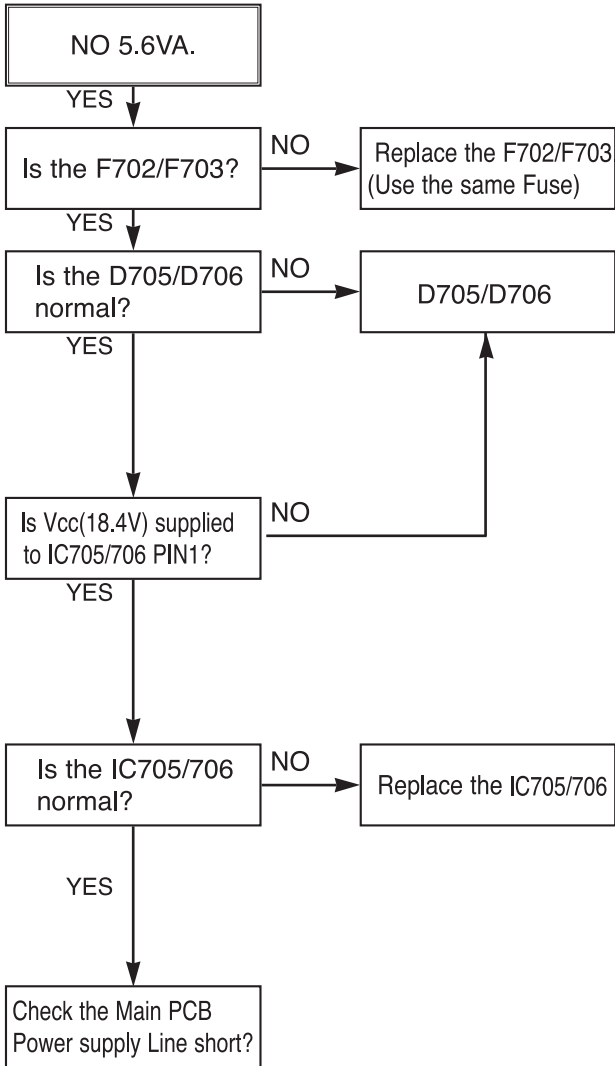
• WAVEFORM



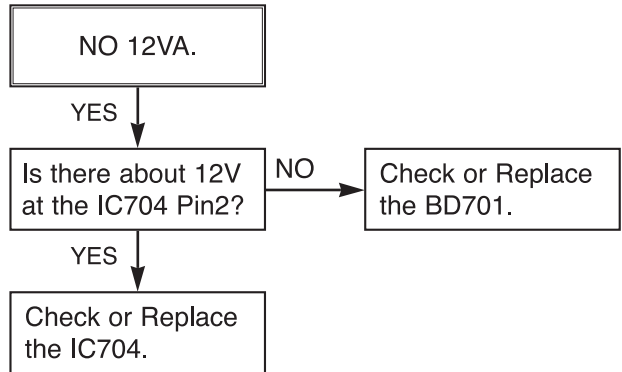
VCR ELECTRICAL TROUBLESHOOTING

1. Power B/D

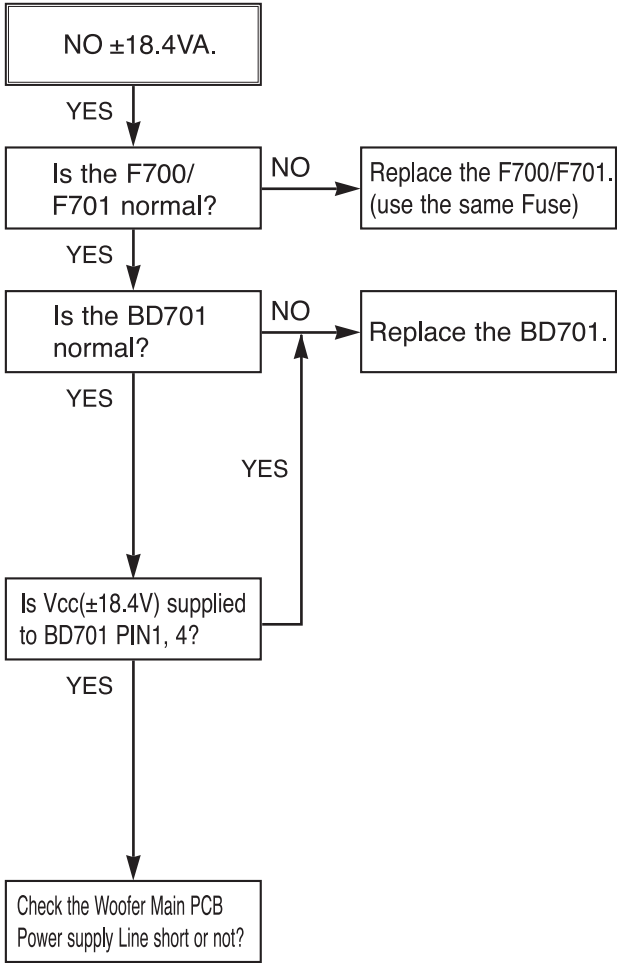
(1) No 5.6VA (SYS/Hi-Fi/TUNER)



(2) No 12VA

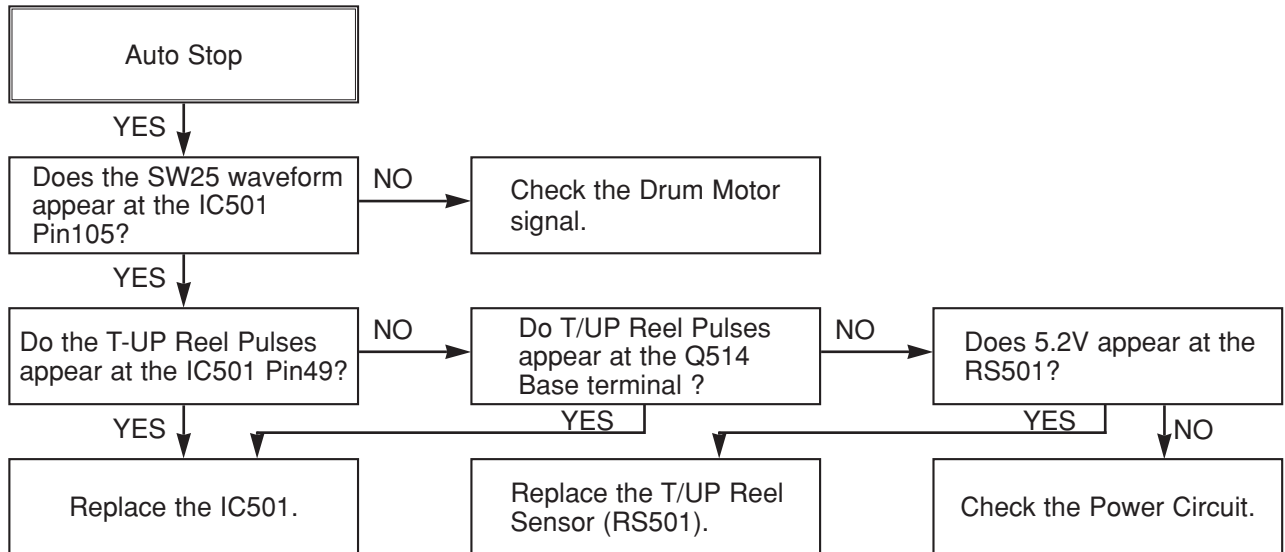


(3) No $\pm 18.4V$

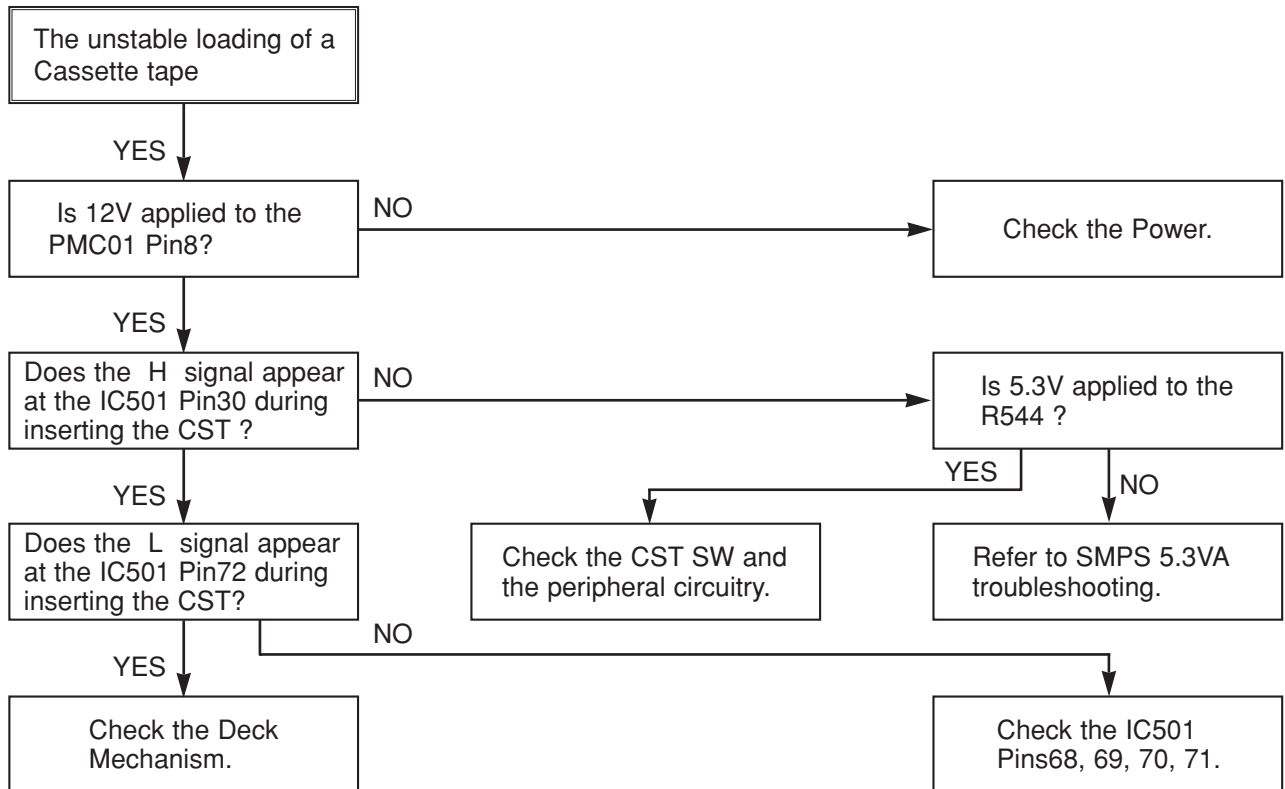


2. SYSTEM/KEY CIRCUIT

(1) AUTO STOP



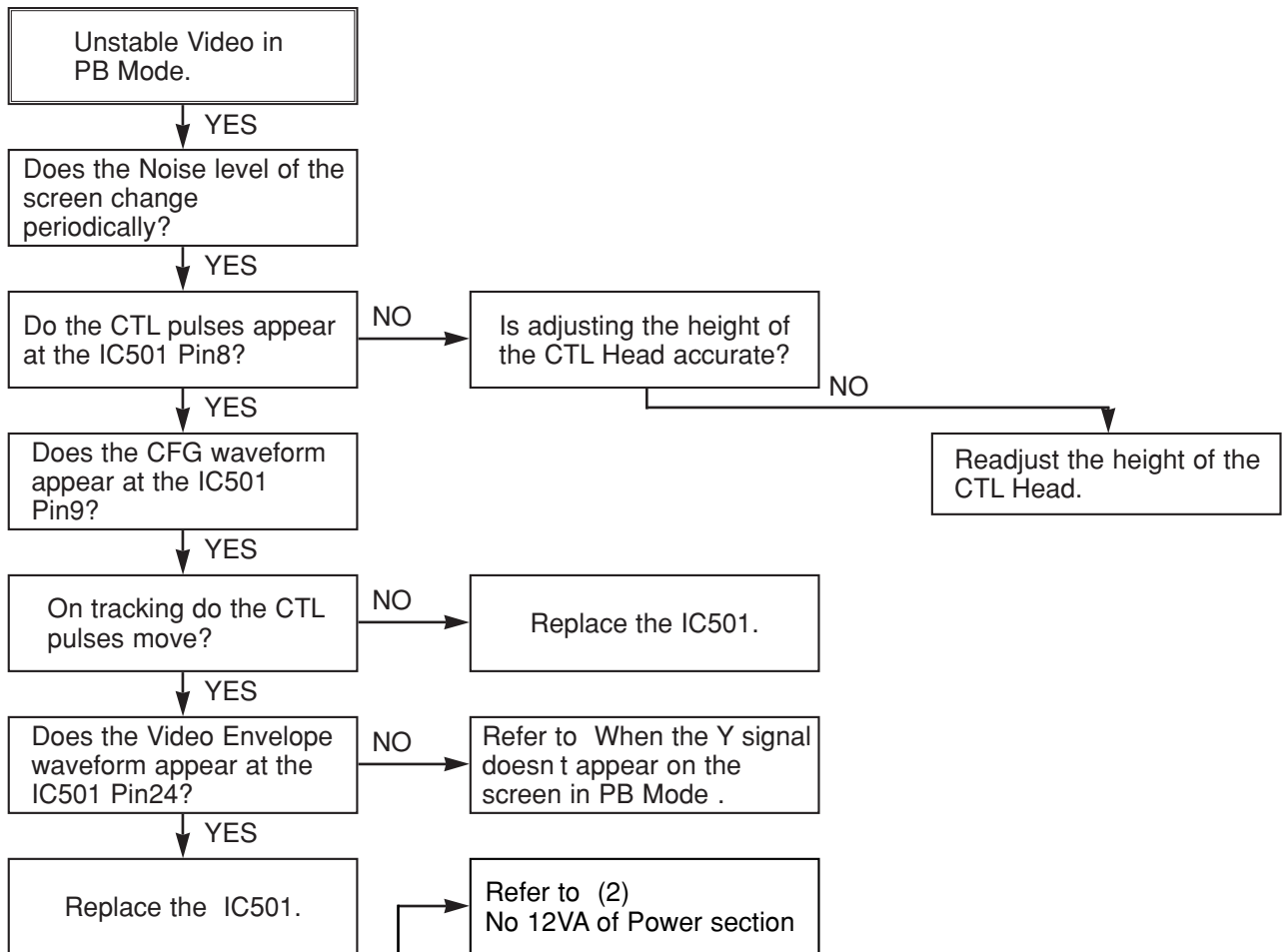
(2) The unstable loading of a Cassette tape



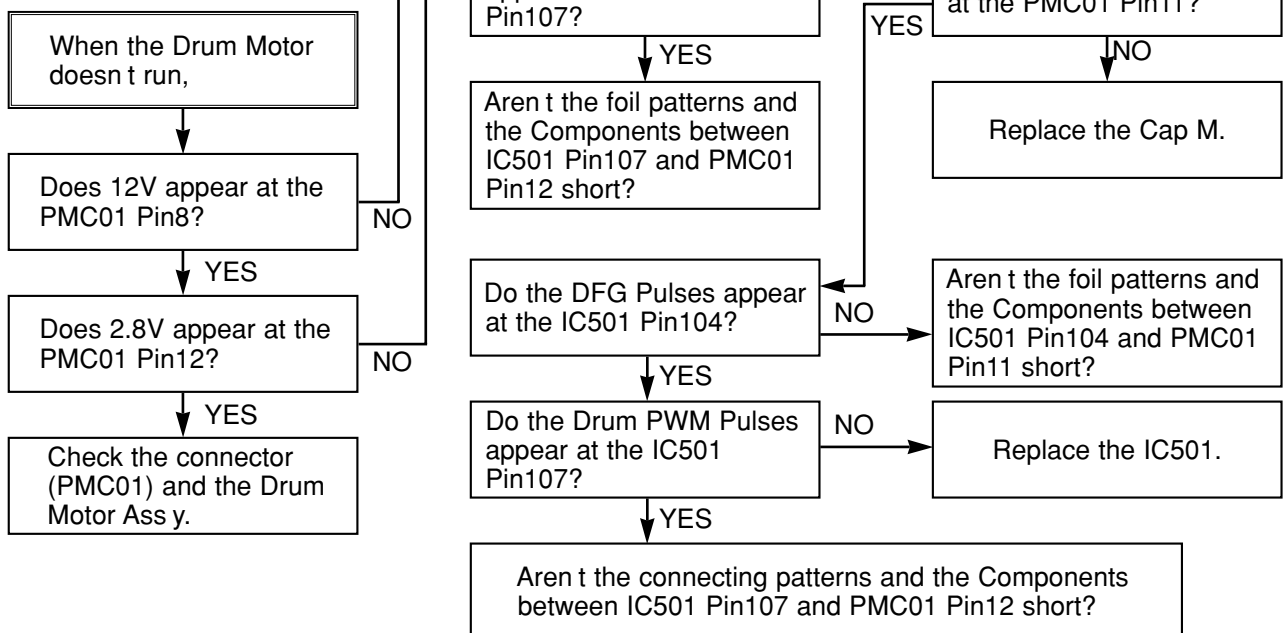
Caution : Auto stop can occur because Grease or Oil is dried up

3. SERVO CIRCUIT

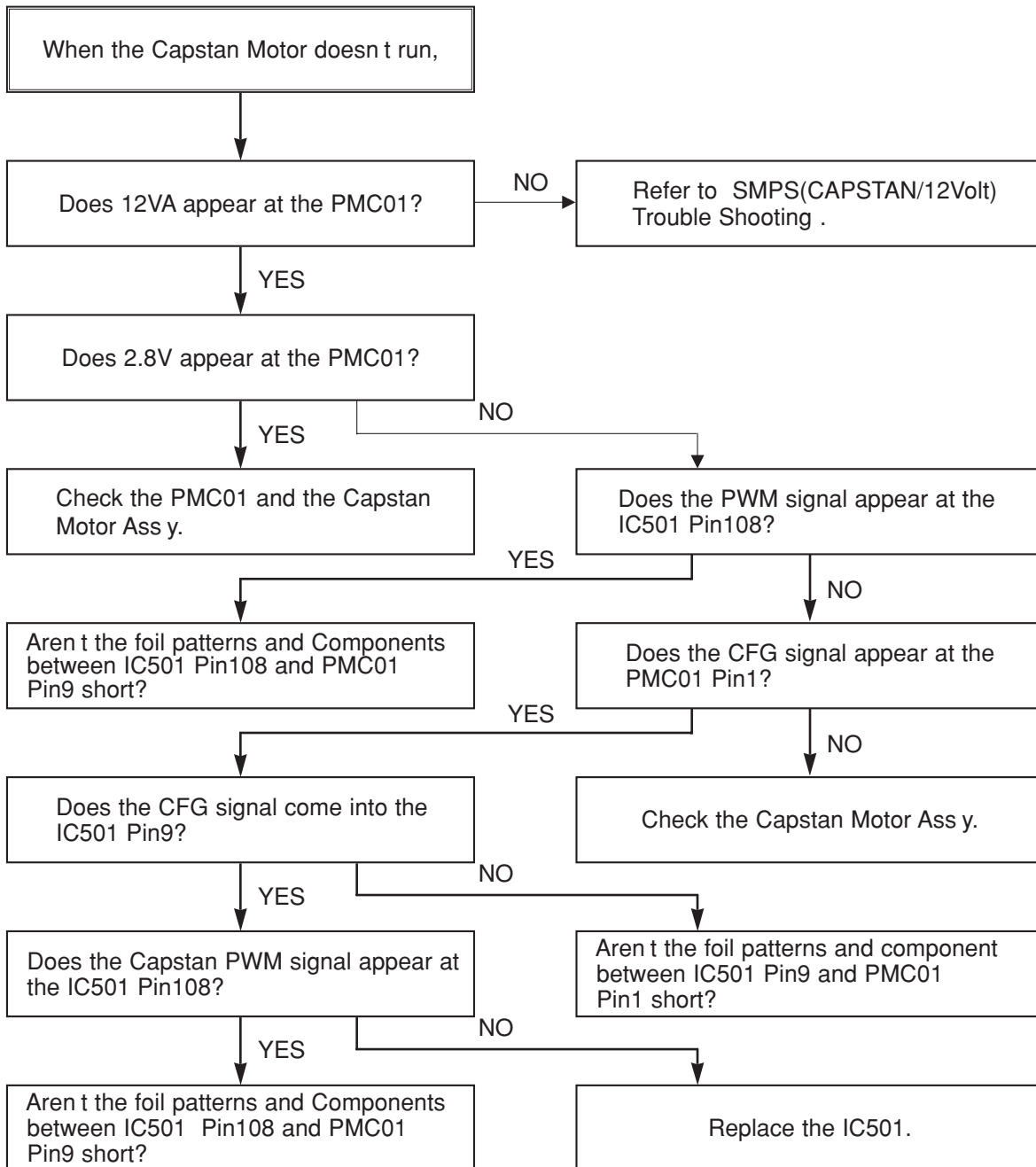
(1) Unstable Video in PB MODE



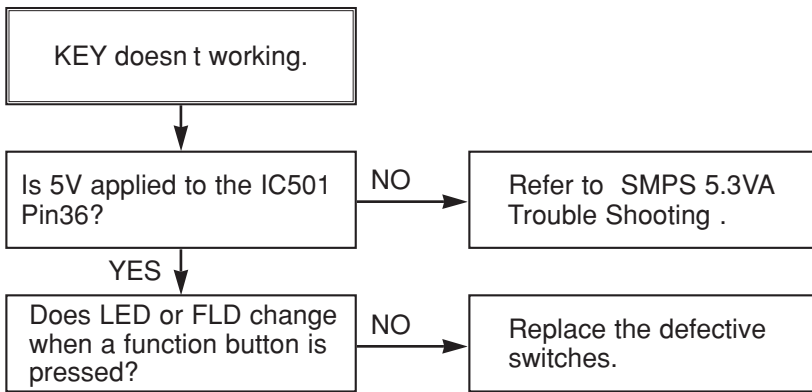
(2) When the Drum Motor doesn't run.



(3) When the Capstan Motor doesn't run,

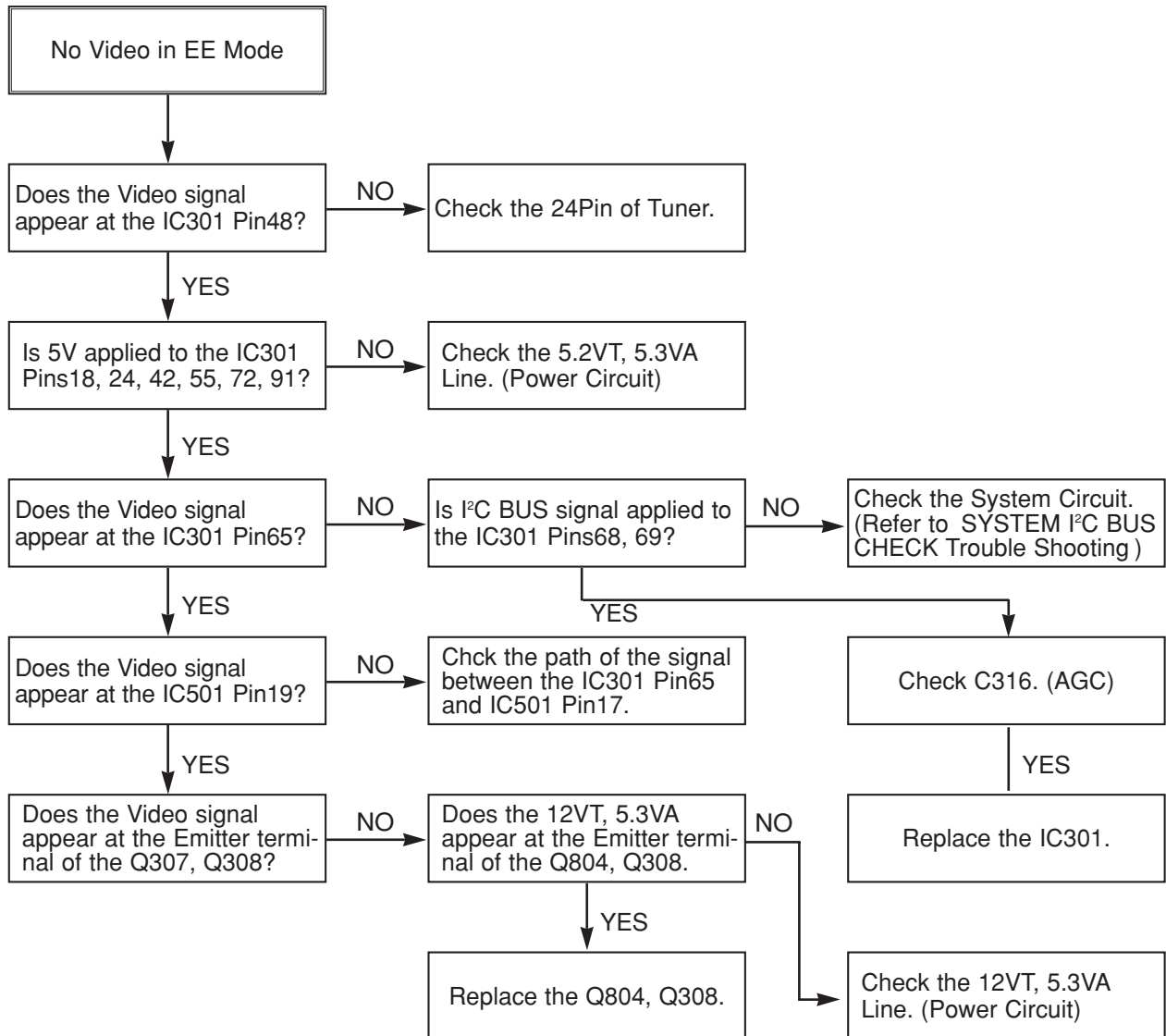


(4) KEY doesn't working

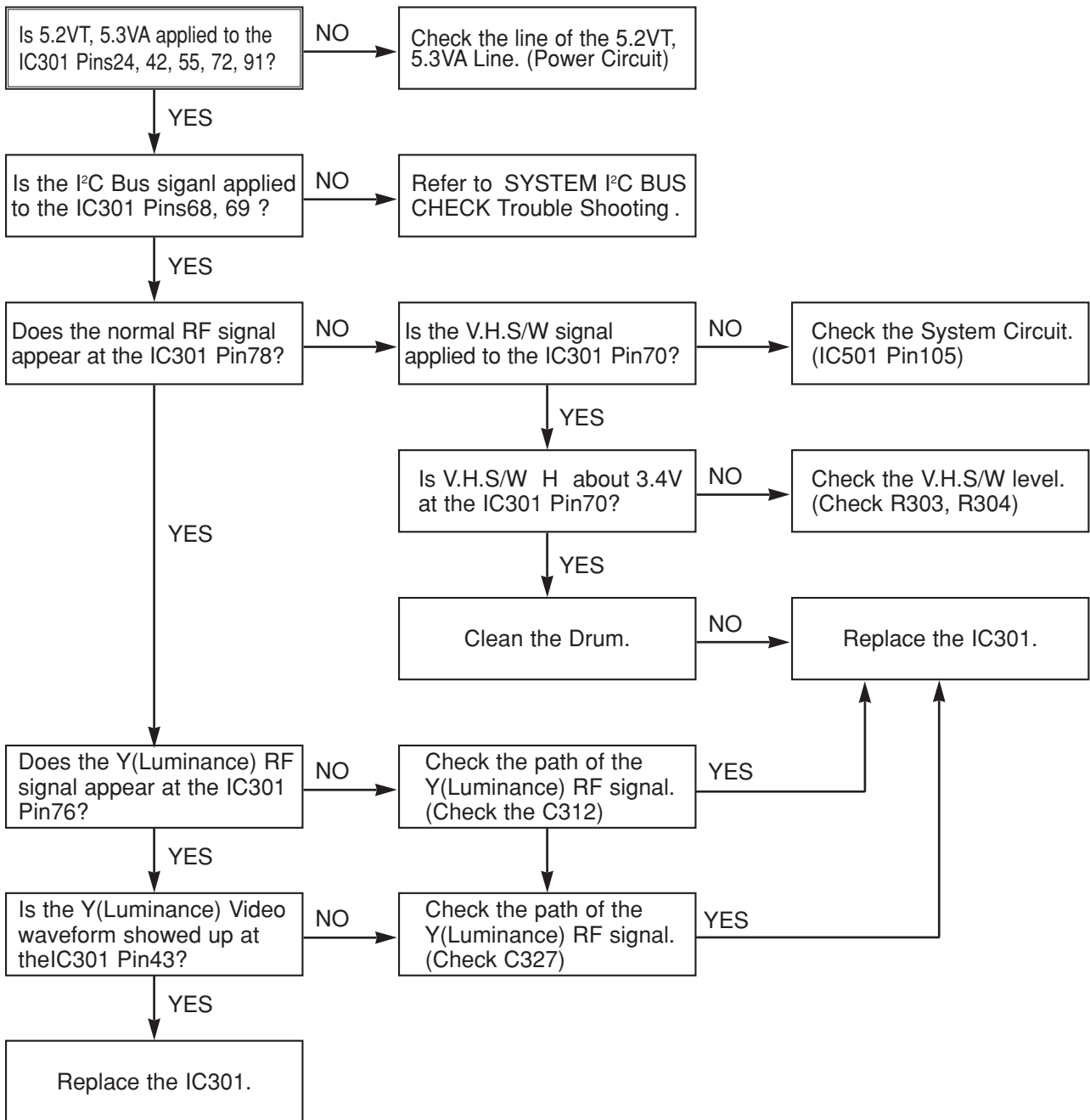


4. Y/C CIRCUIT

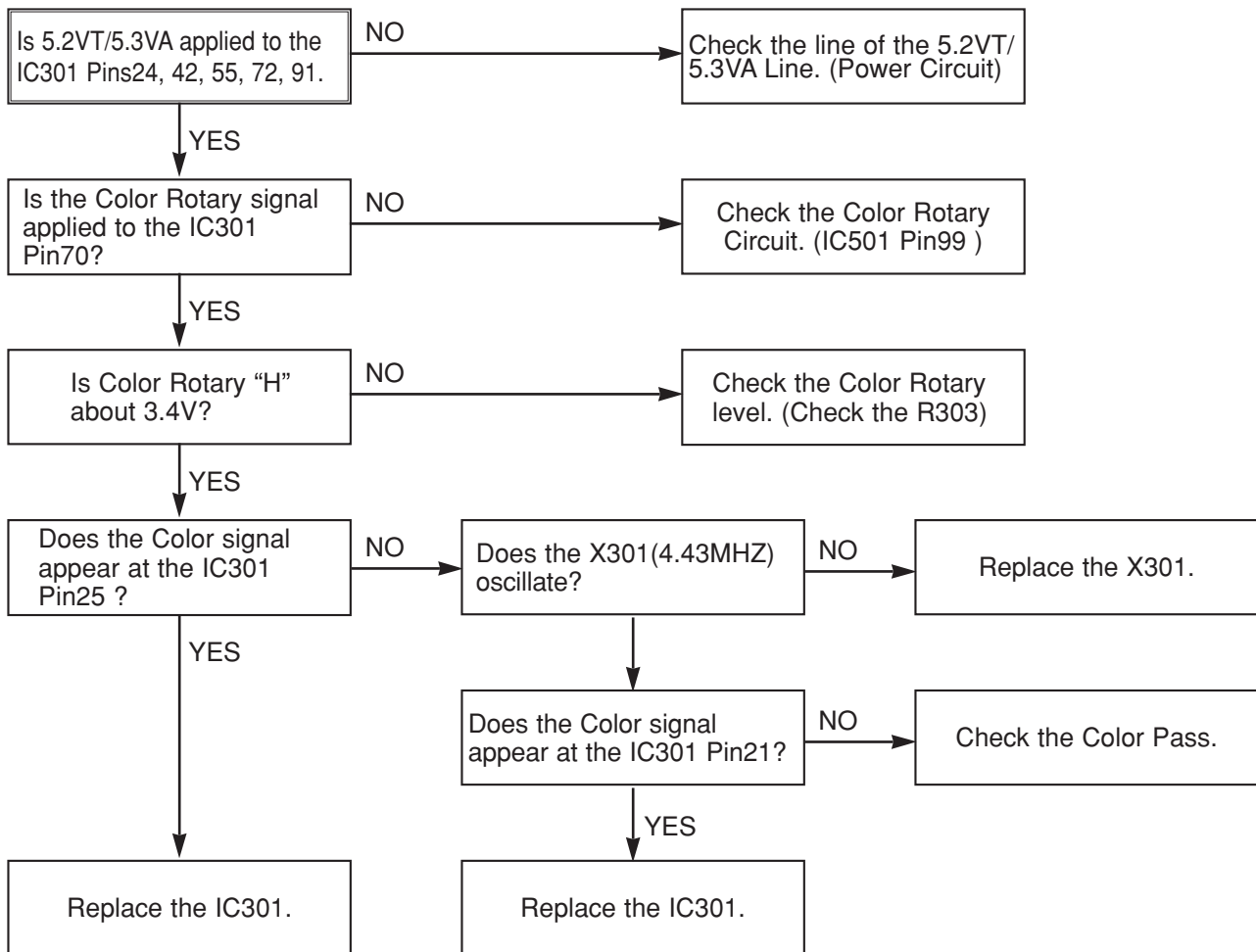
(1) No Video in EE Mode,



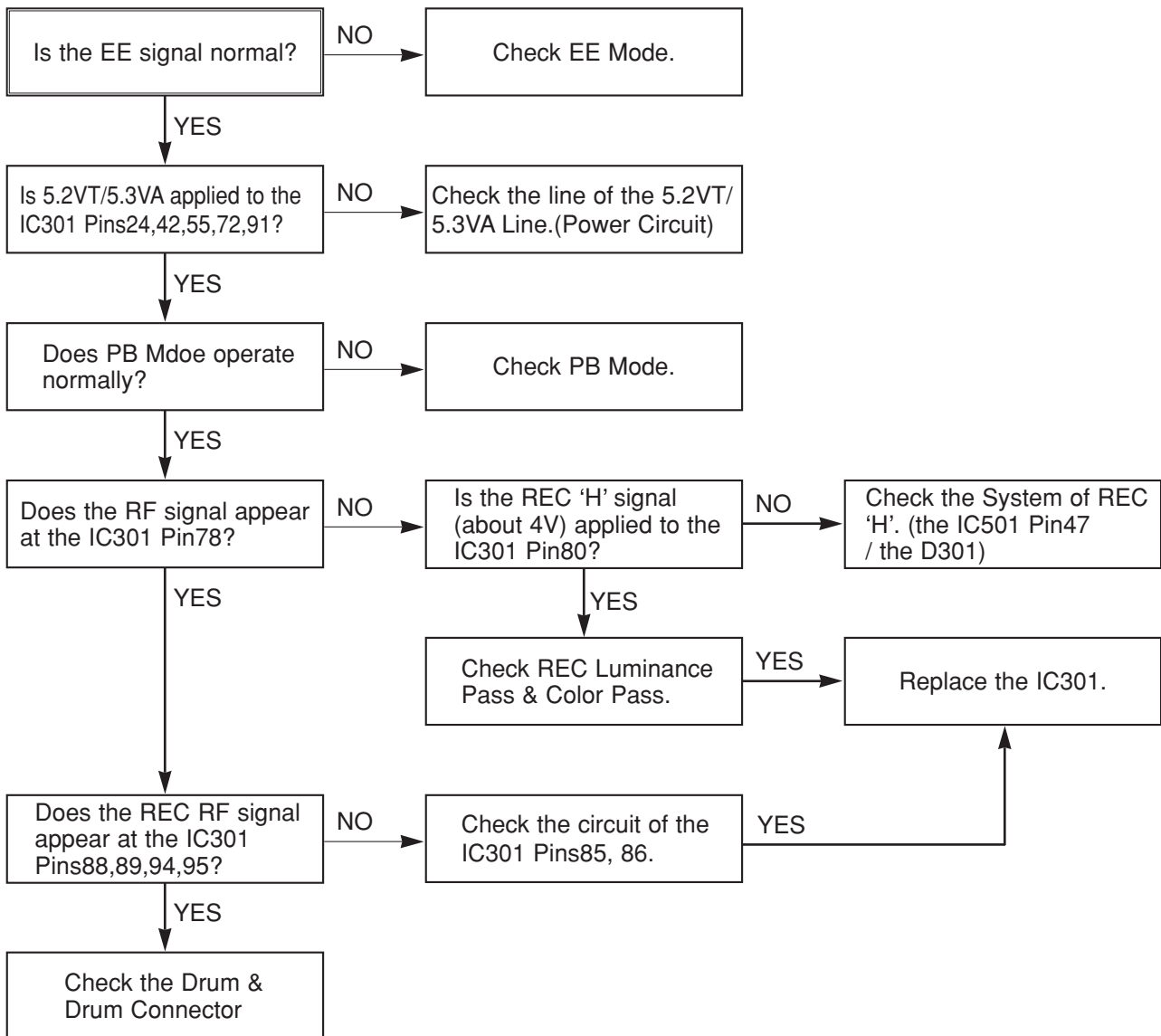
(2) When the Y(Luminance) signal doesn't appear on the screen in PB Mode,



(3) When the C(Color) signal doesn't appear on the screen in PB Mode,

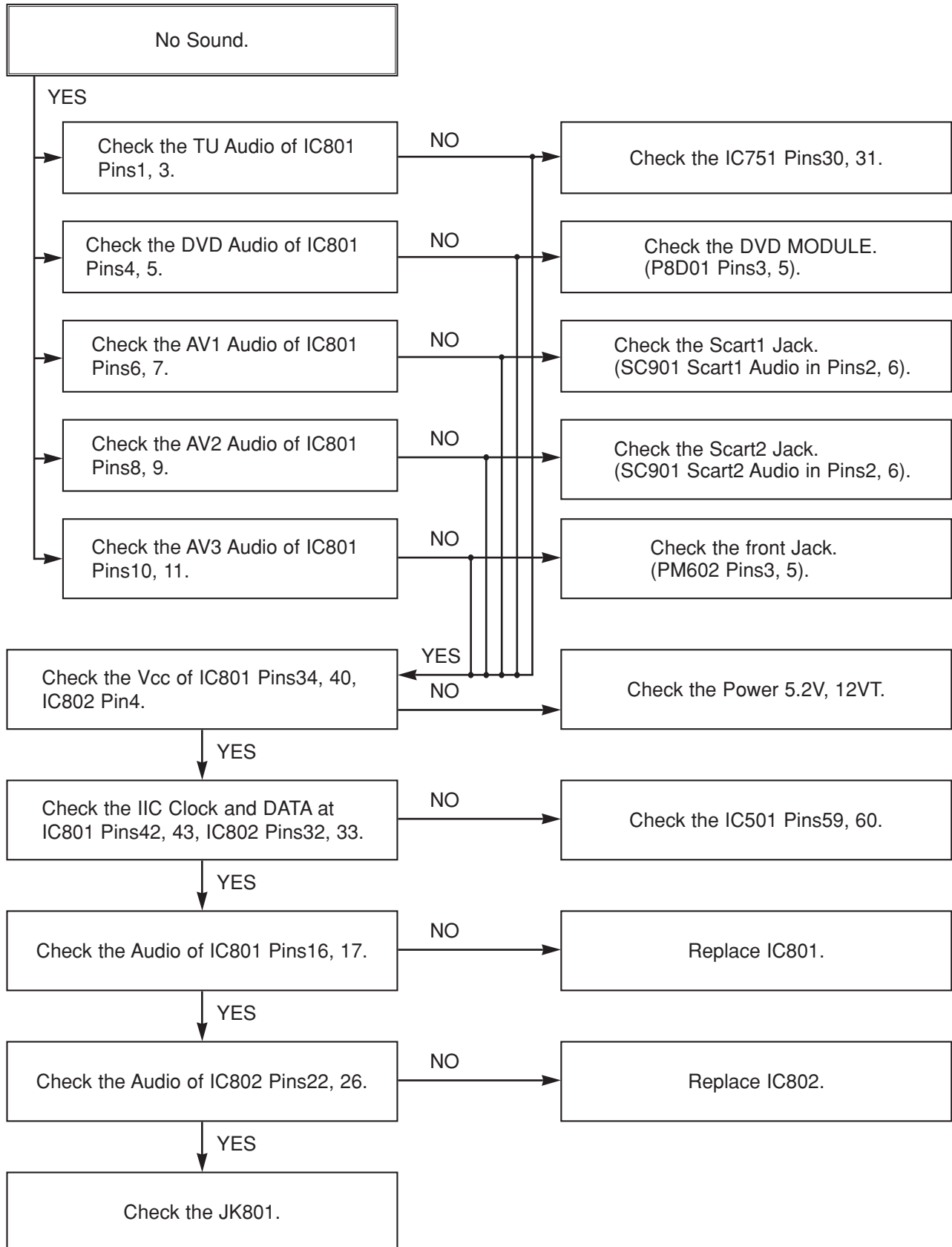


(4) When the Video signal doesn't appear on the screen in REC Mode,

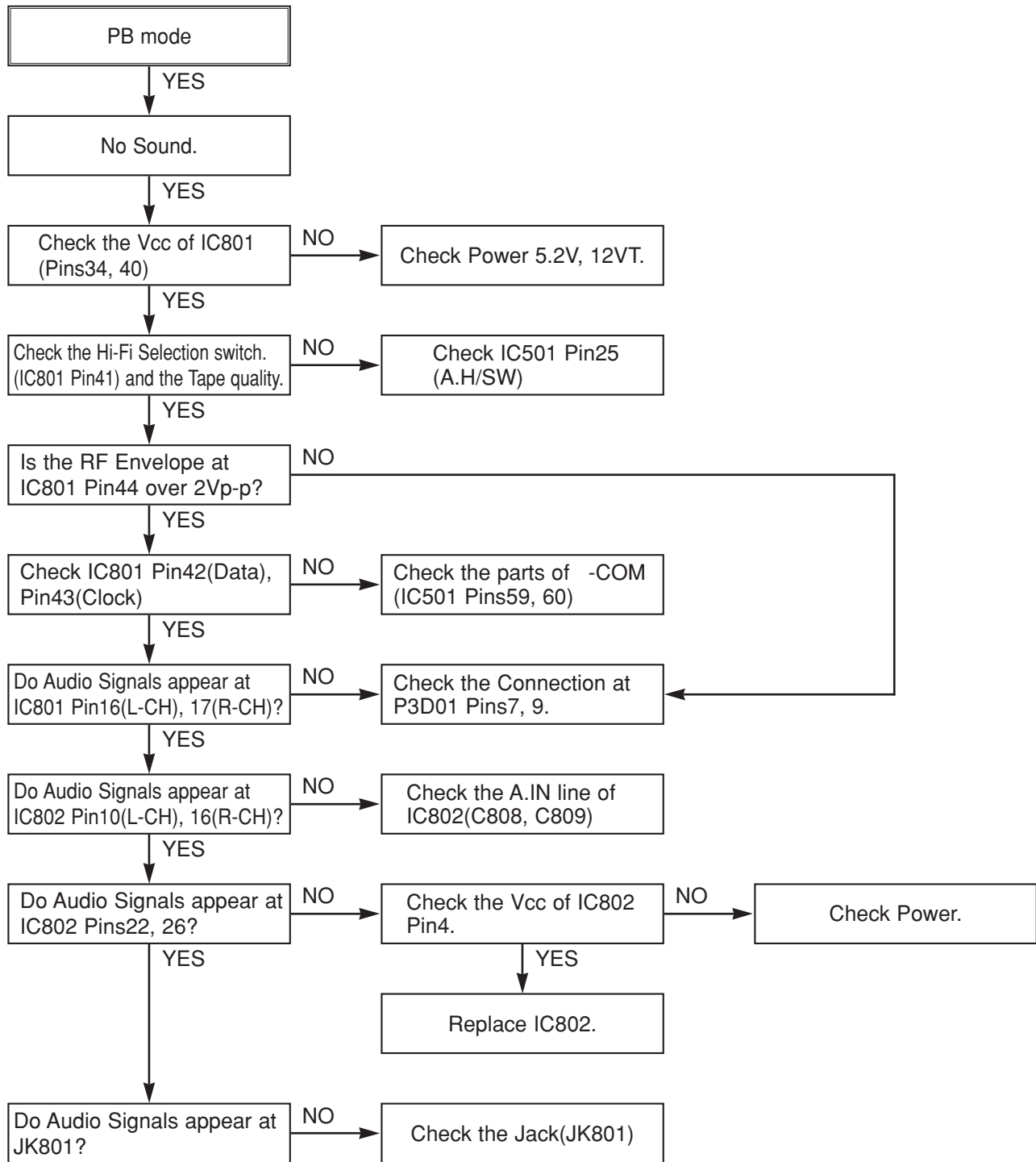


5. Hi-Fi CIRCUIT

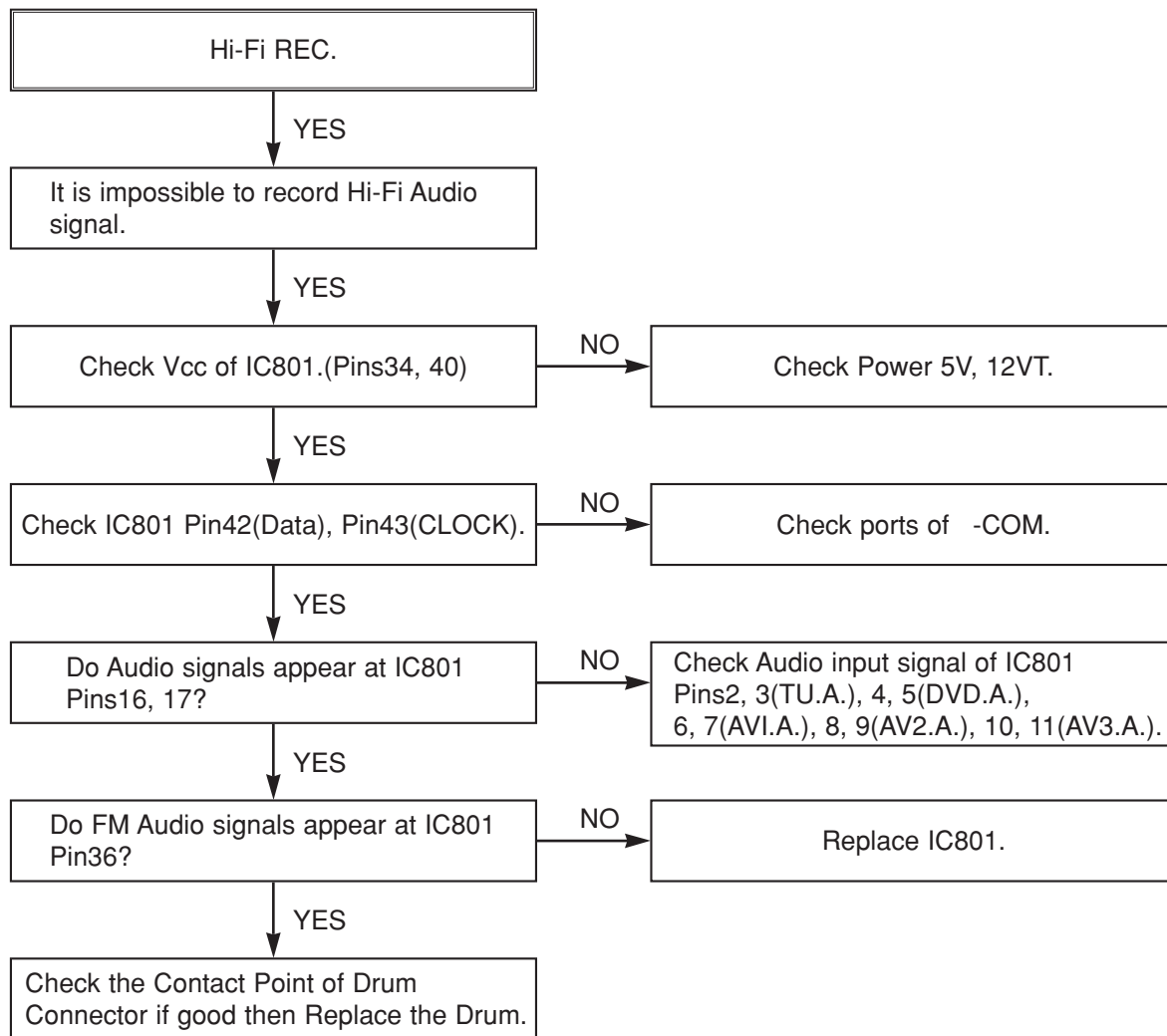
(A) No Sound(EE Mode)



(B) Hi-Fi Playback

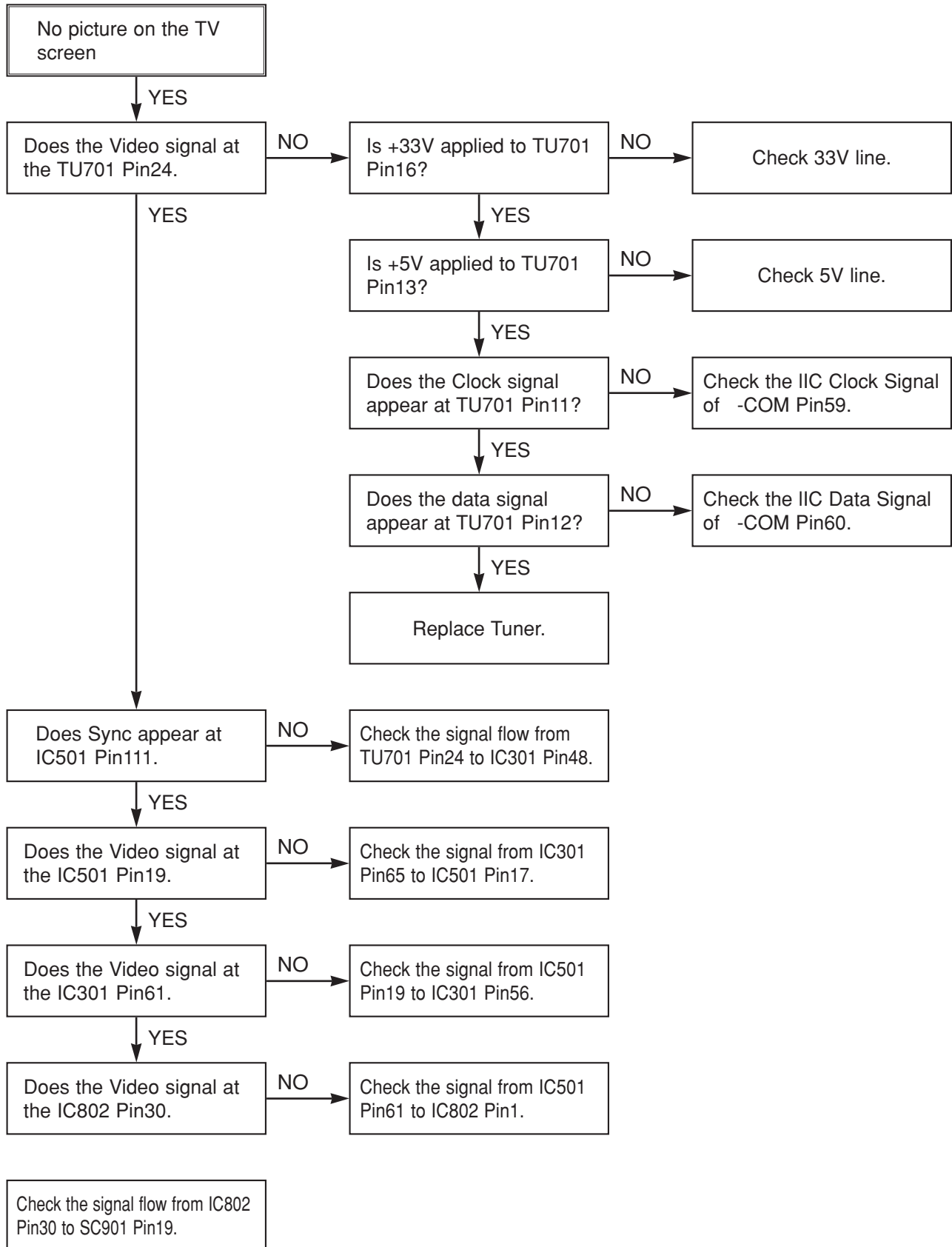


(C)

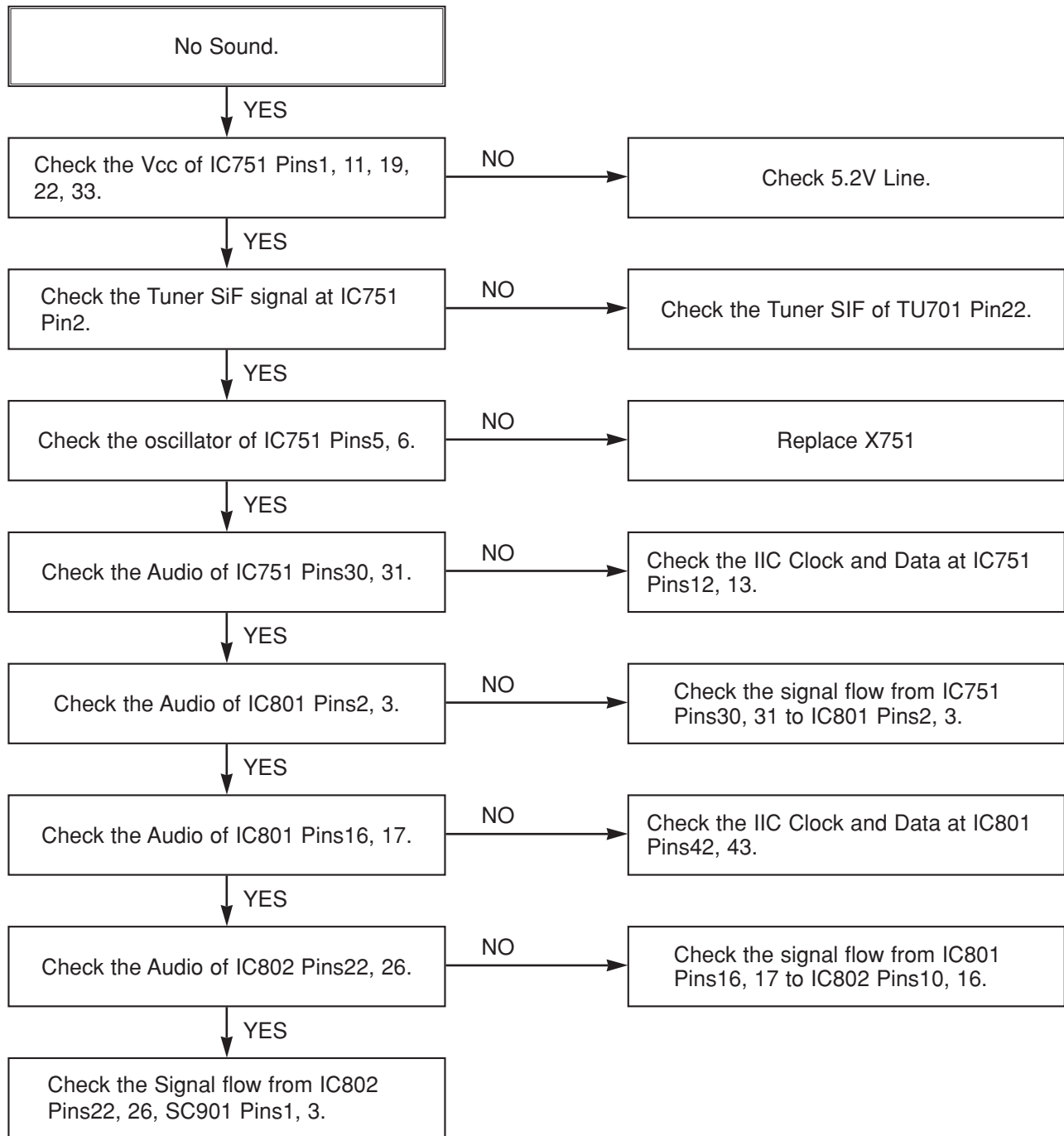


6. Tuner/IF CIRCUIT

(A) No Picture on the TV screen



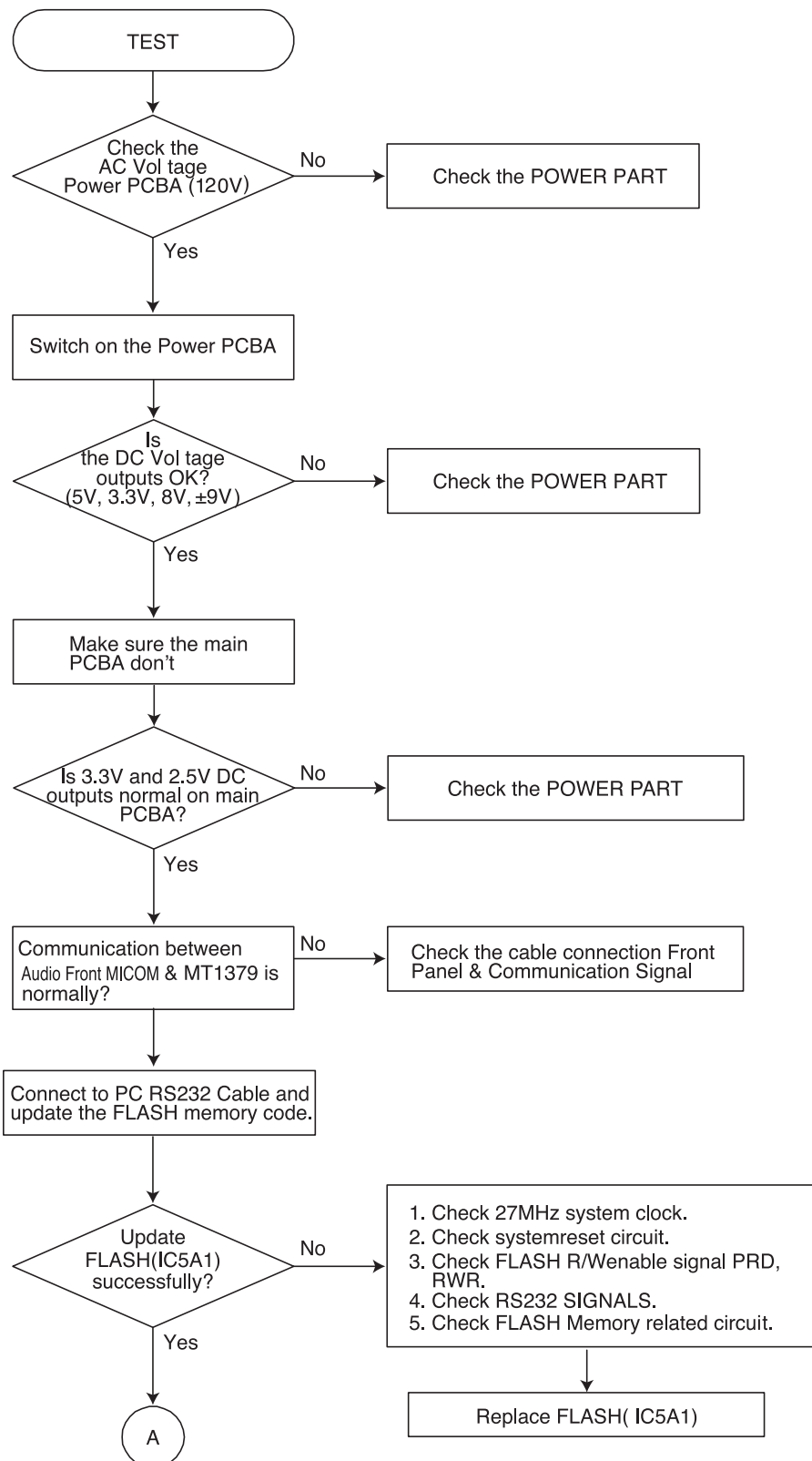
(B) No Sound

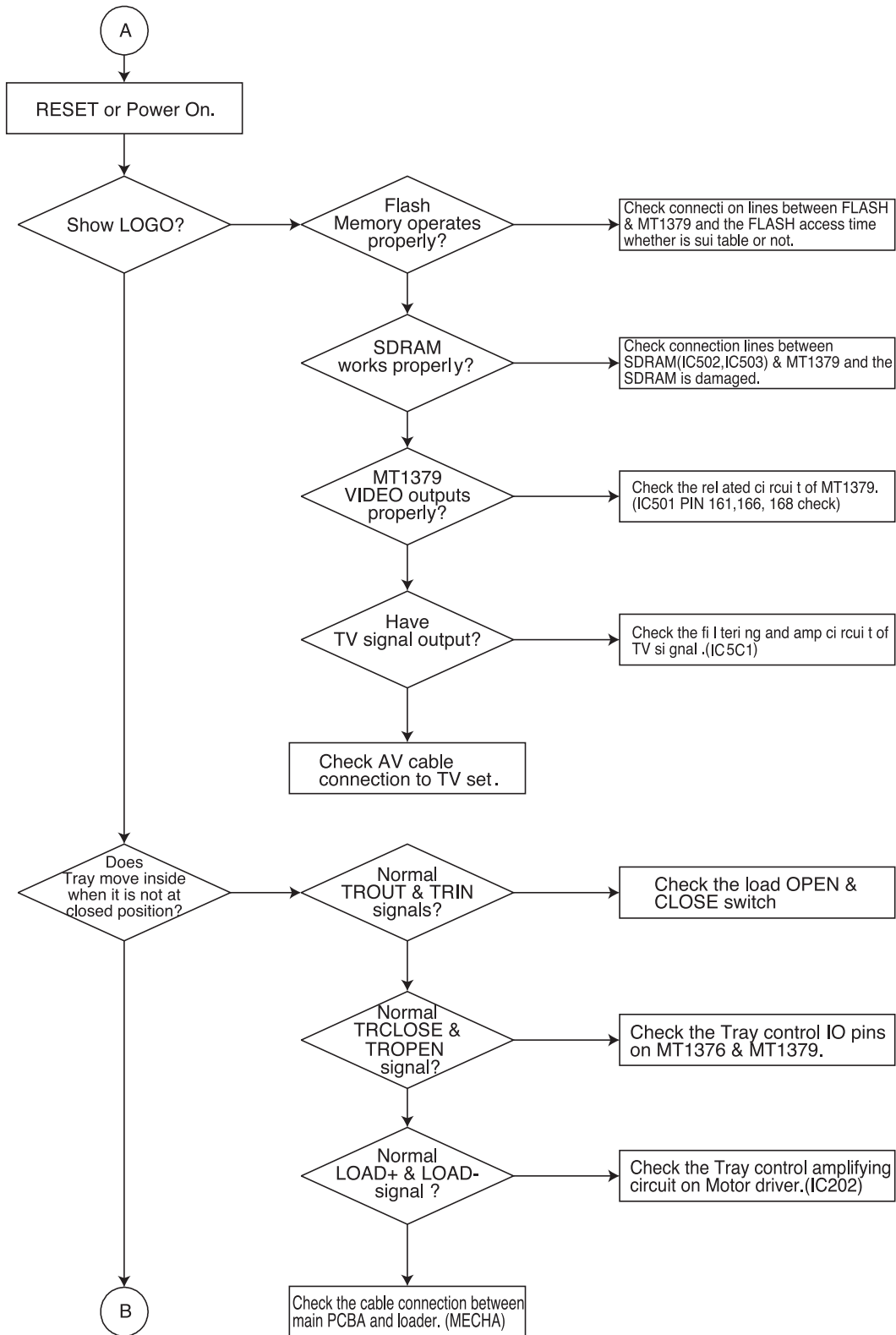


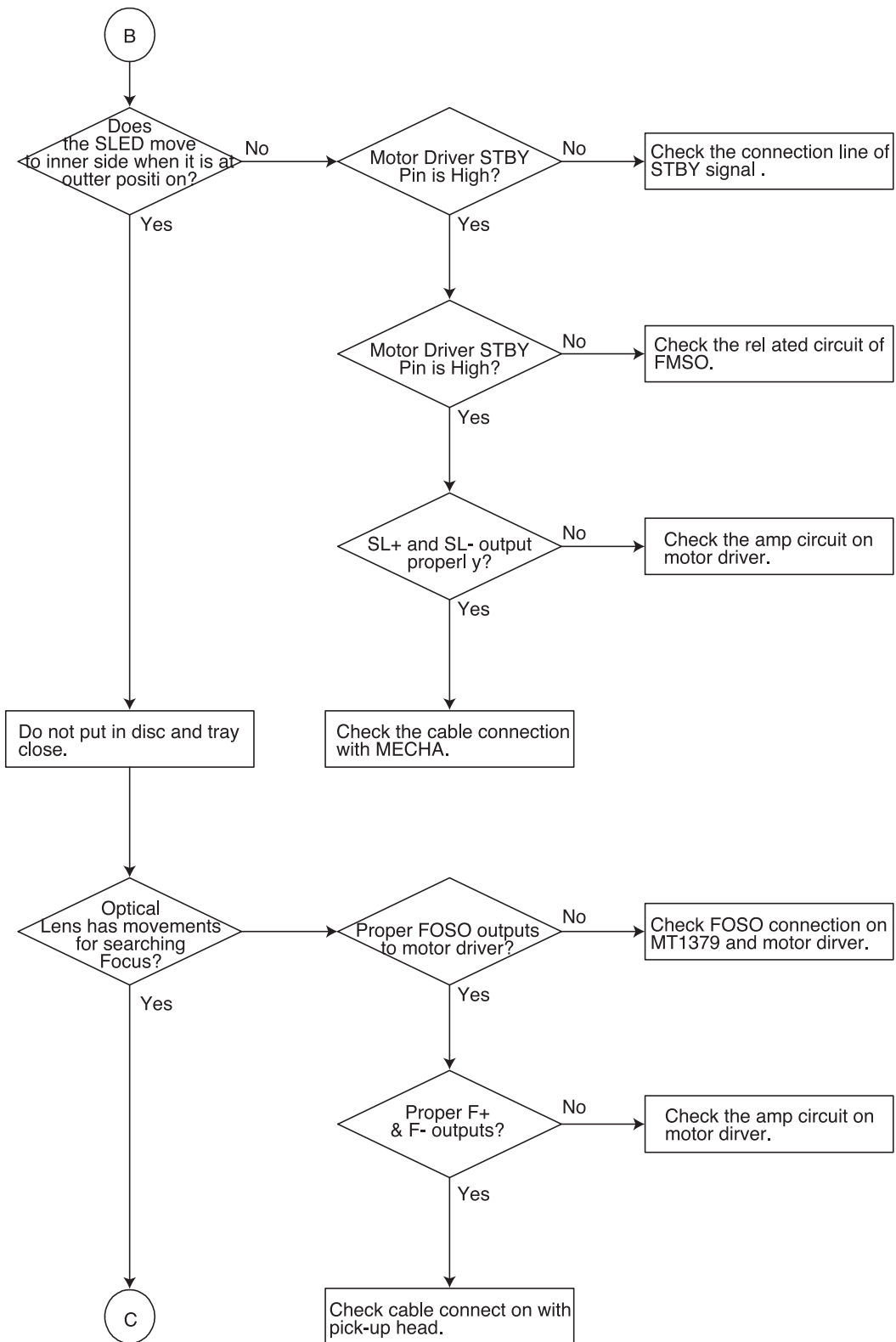
SECTION 5. DVD PART

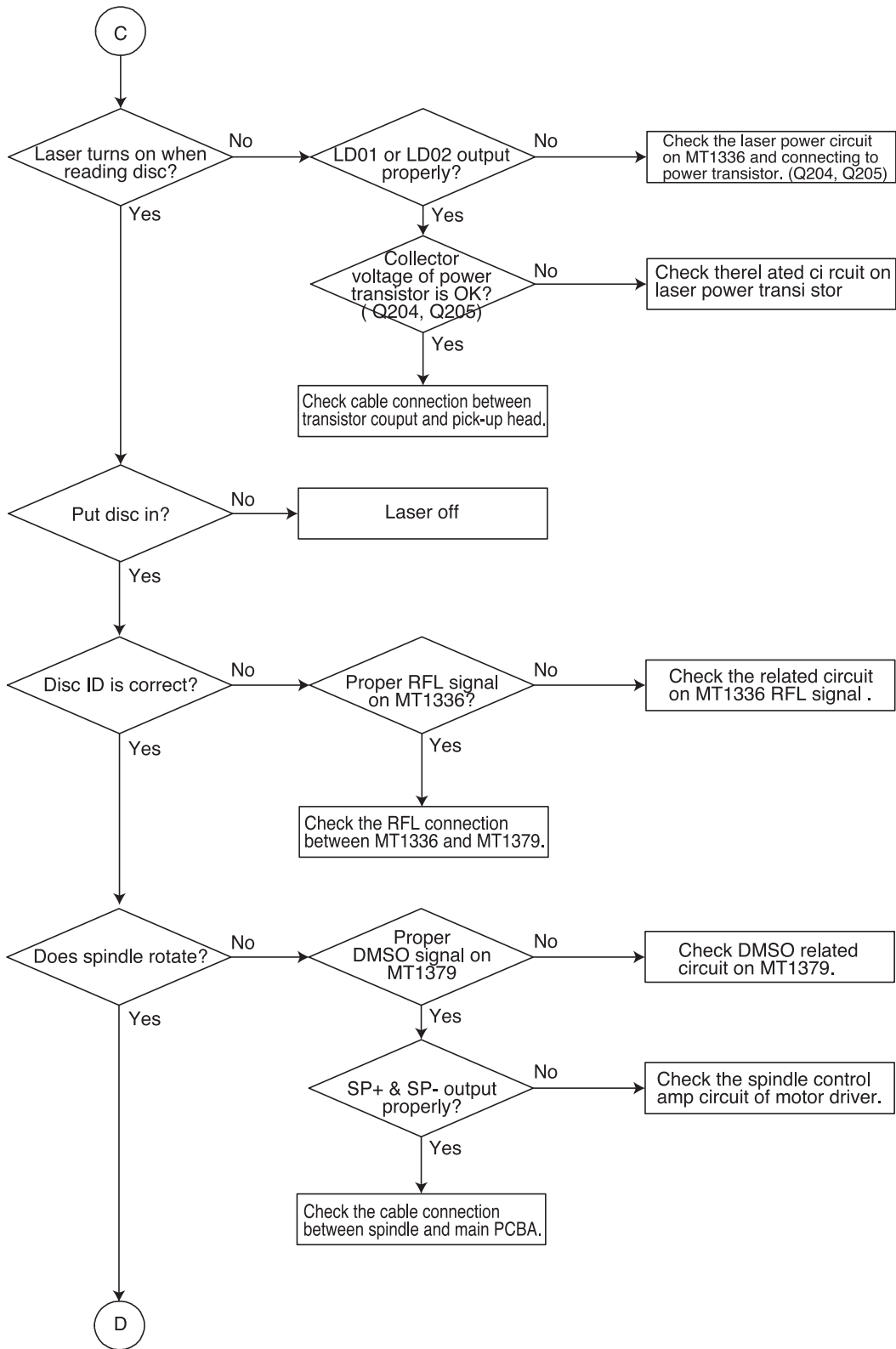
DVD ELECTRICAL TROUBLESHOOTING

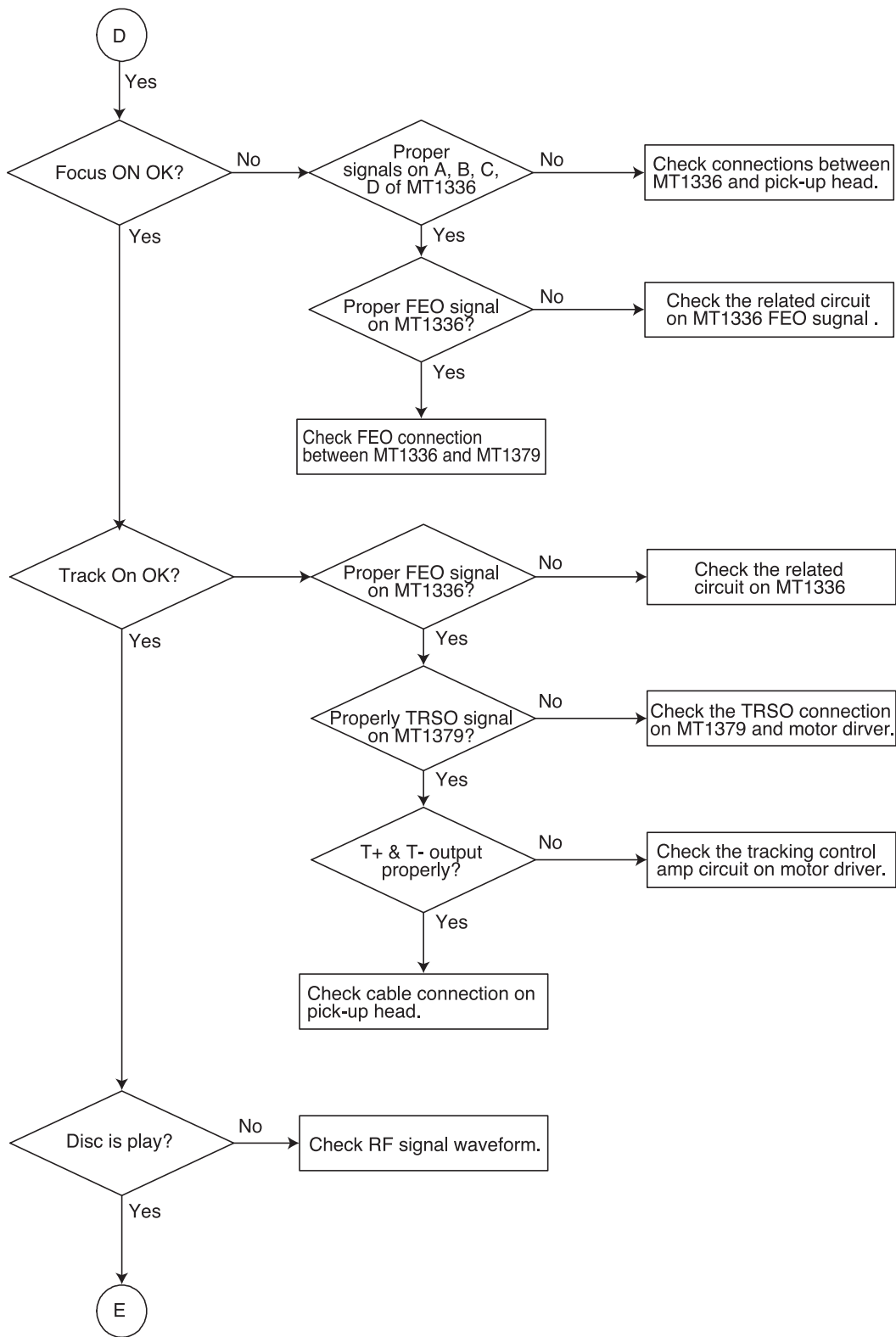
1. Test & debug flow

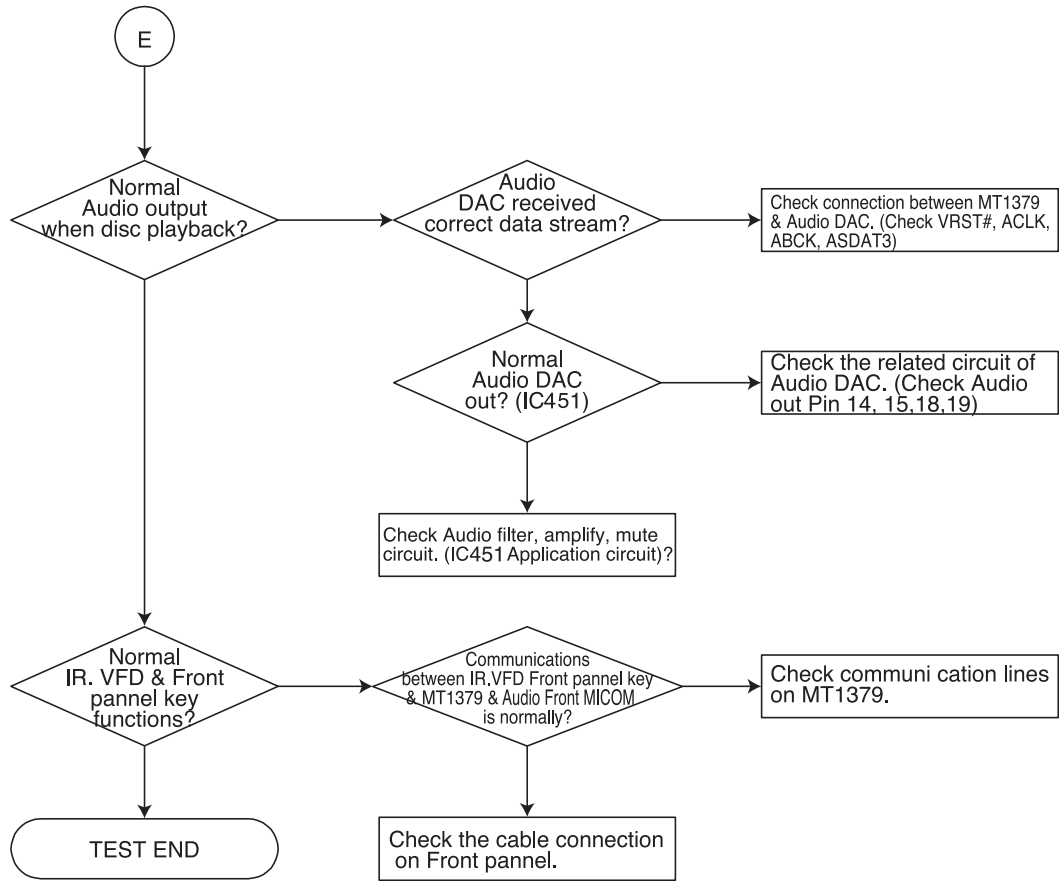












DETAILS AND WAVEFORMS ON SYSTEM TEST AND DEBUGGING

1. SYSTEM 27MHz CLOCK,RESET,FLASH R/W SIGNAL

1) MT1379 main clock is at 27MHz(X501)

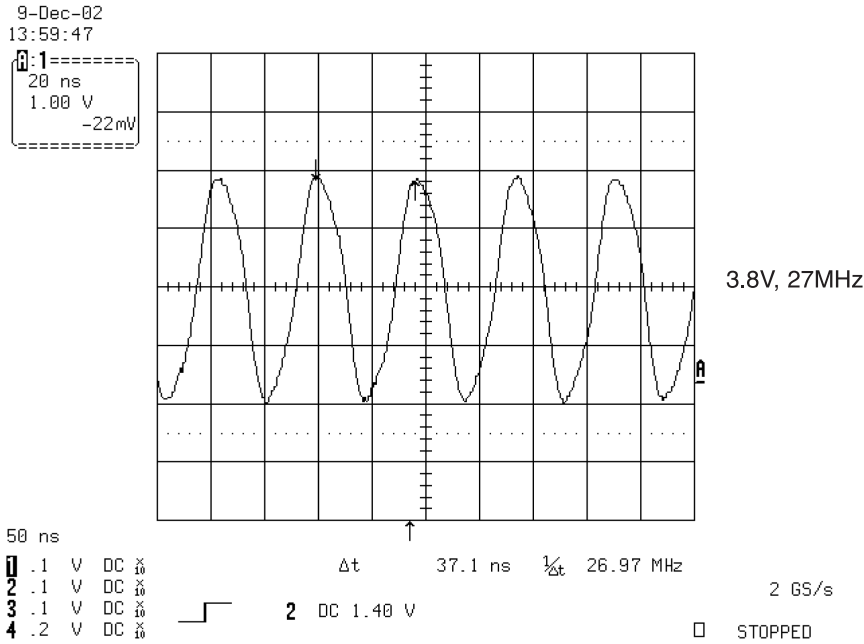


FIG 1-1

2) MT1336 reset is high active

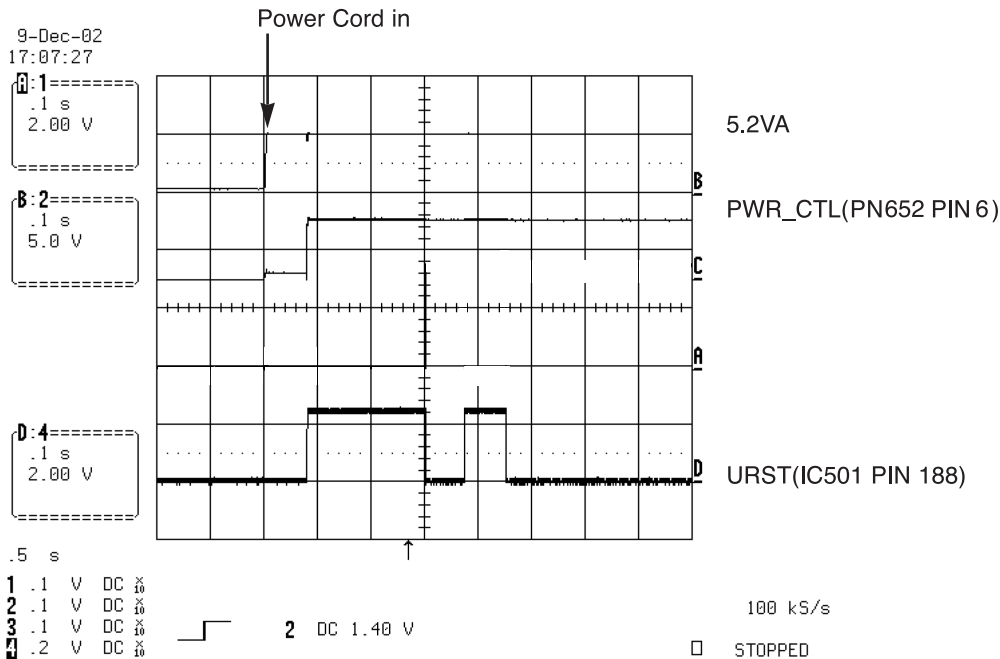


FIG 1-2

3) RS232 waveform during procedure(Downloading)

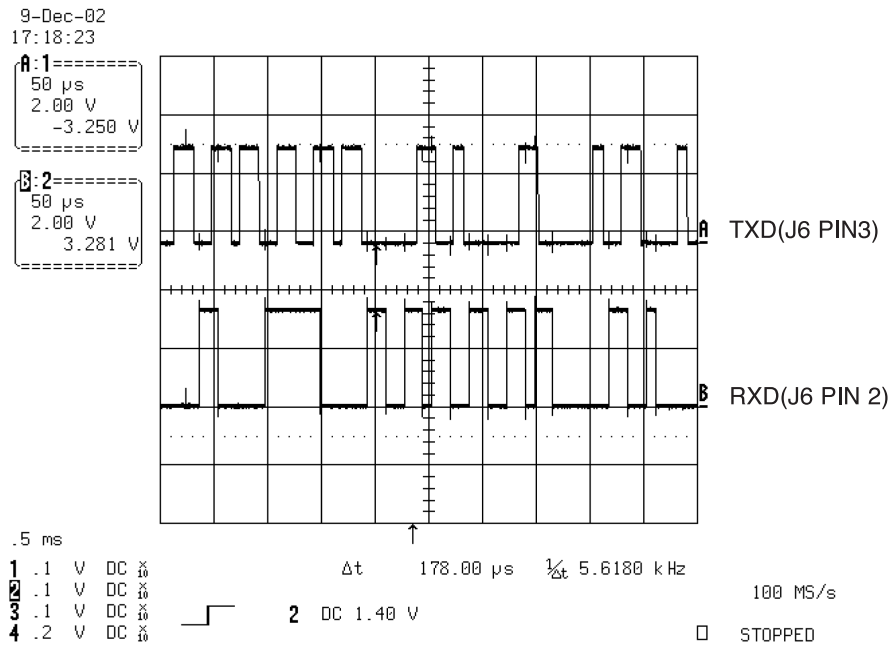


FIG 1-3

4) Flash R/W enable signal during download(Downloading)

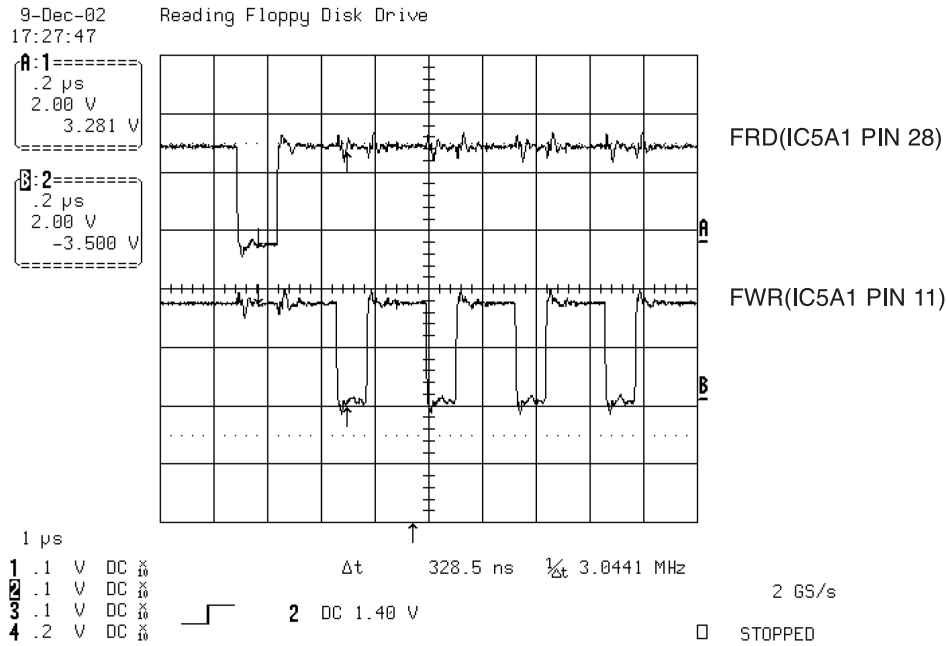


FIG 1-4

2. SDRAM CLOCK

1) MT1379 main clock is at 27MHz(X501)

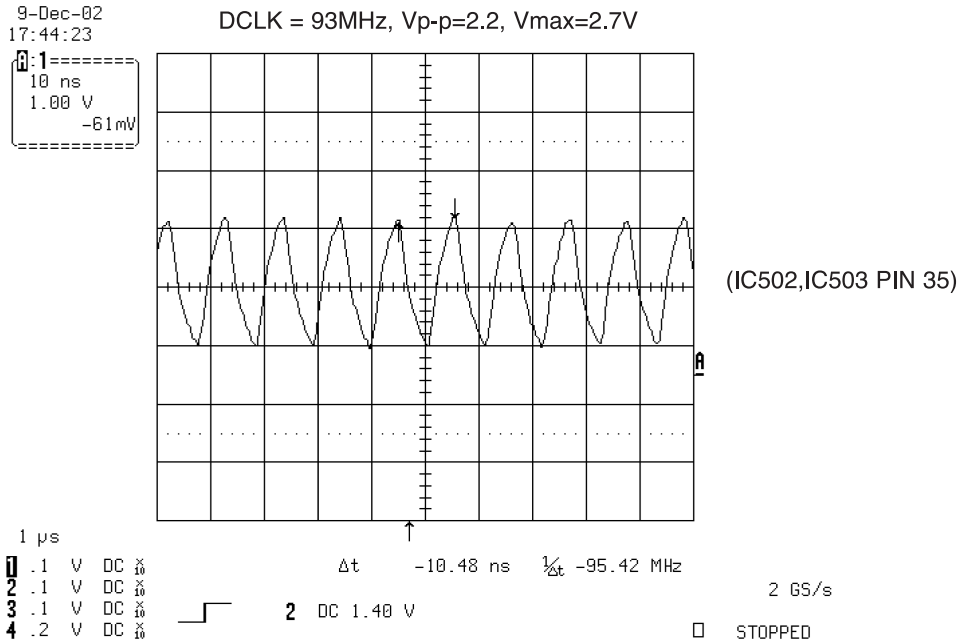


FIG 2-1

3. TRAY OPEN/CLOSE SIGNAL

1) Tray open/close waveform

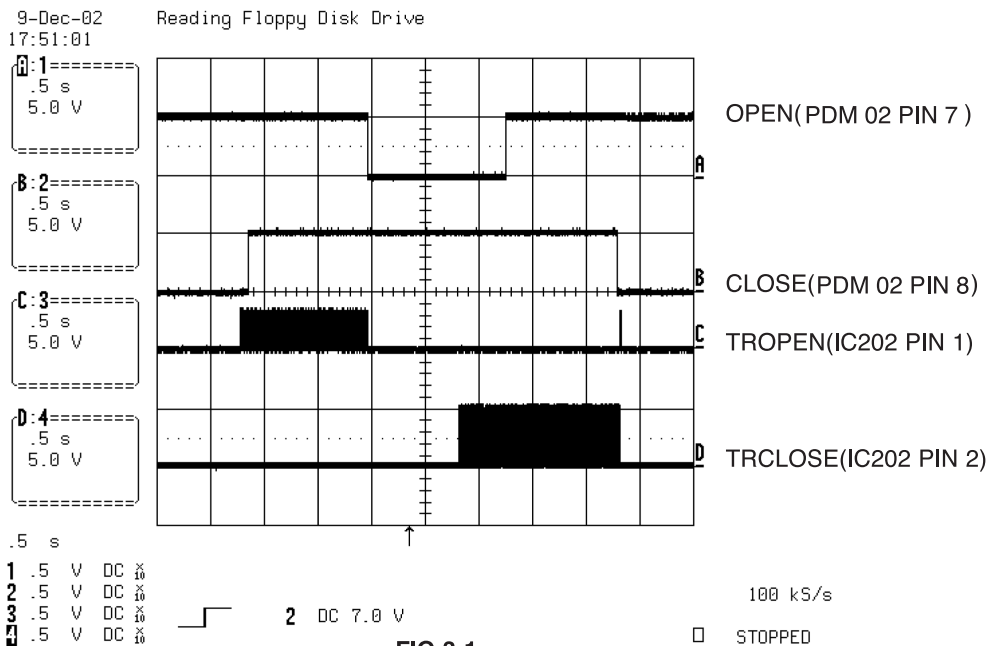


FIG 3-1

2) Tray close waveform

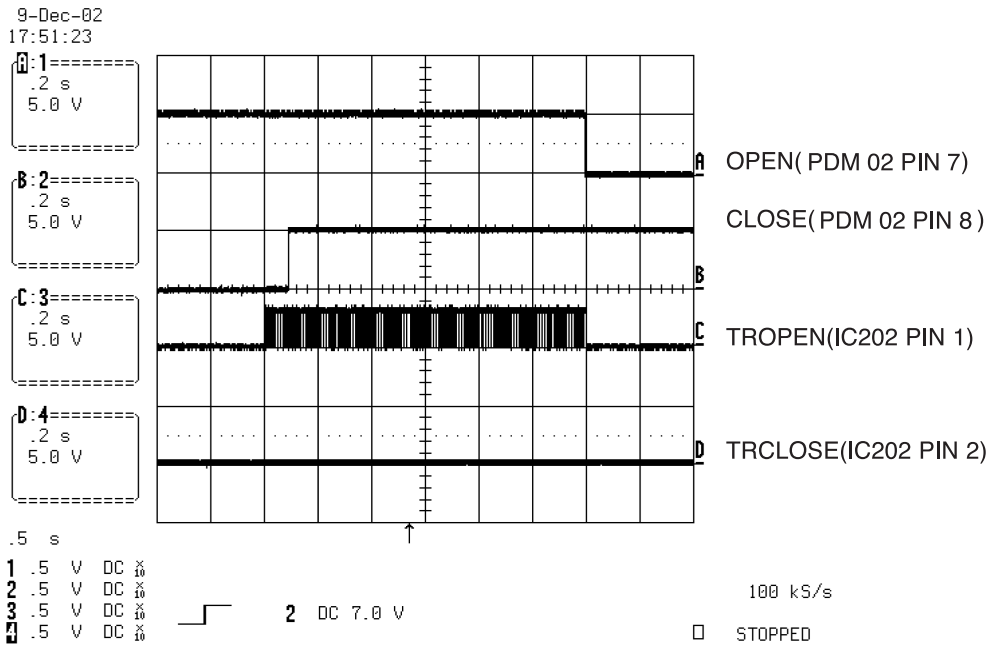


FIG 3-2

3) Tray open waveform

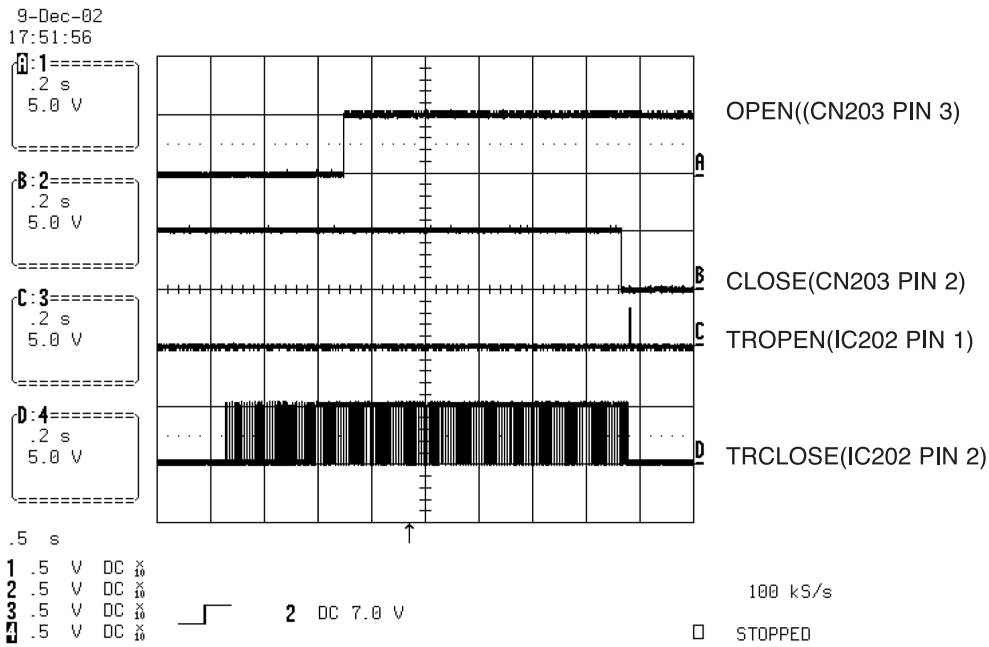


FIG 3-3

4. SLED CONTROL RELATED SIGNAL (NO DISC CONDITION)

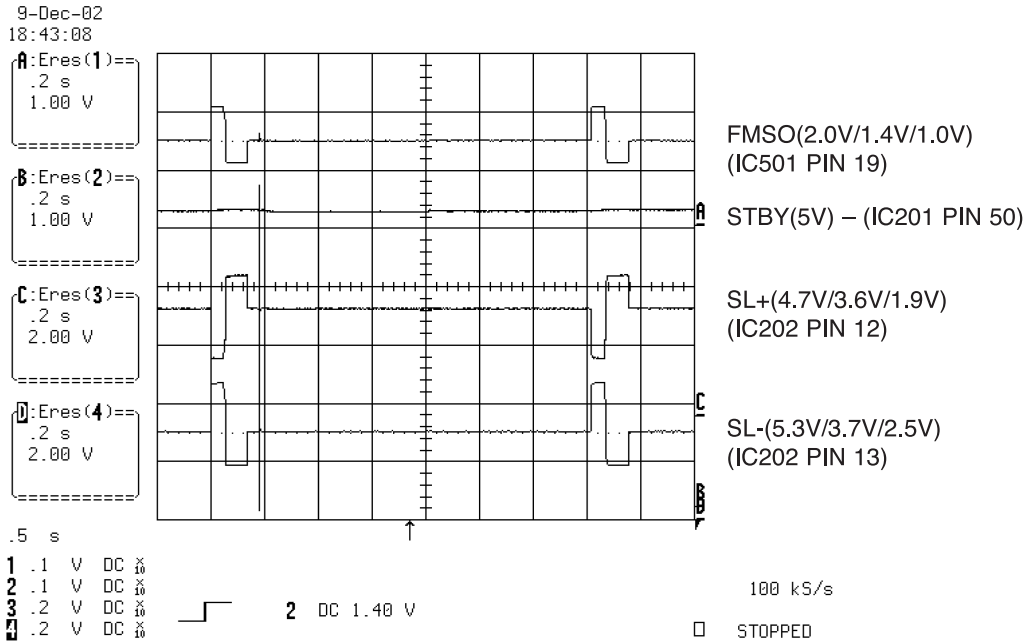


FIG 4-1

5. LENS CONTROL RELATED SIGNAL(NO DISC CONDITION)

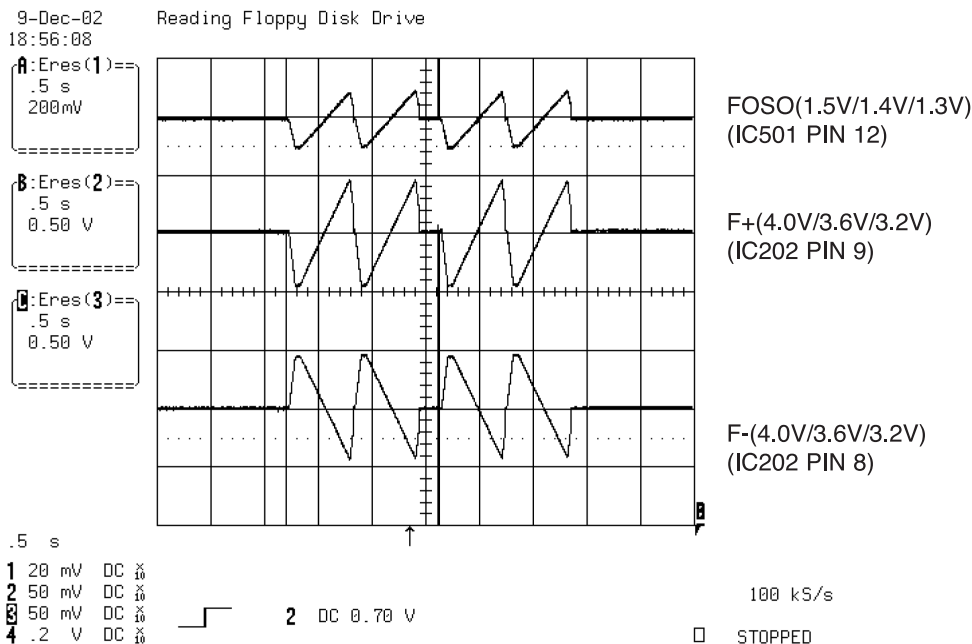


FIG 5-1

6. LASER POWER CONTROL RELATED SIGNAL (NO DISC CONDITION)

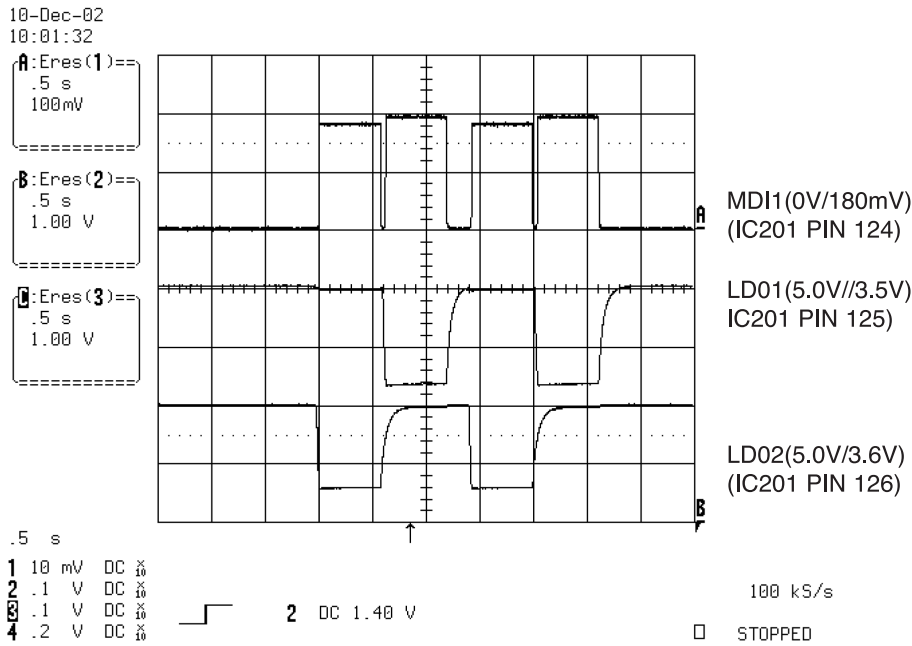


FIG 6-1

7. DISC TYPE JUDGEMENT WAVEFORM

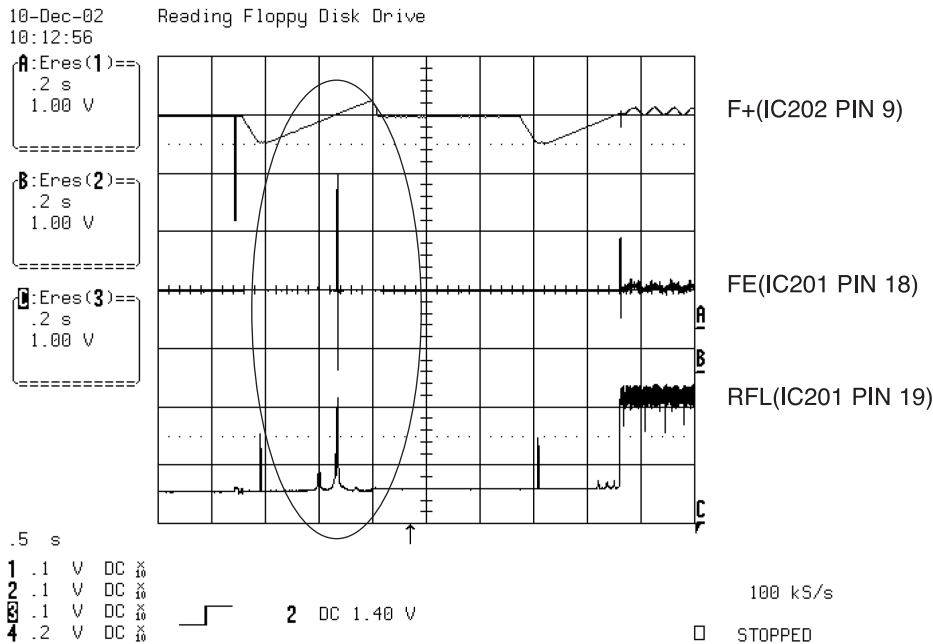


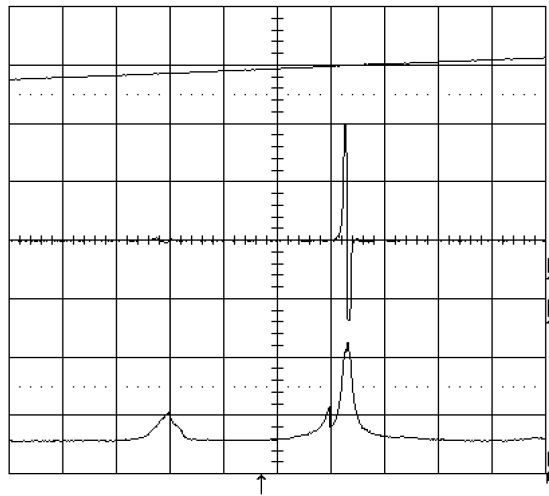
FIG 7-1 (DVD)

10-Dec-02
10:08:54

A:Eres(1)=
20 ms
1.00 V

B:Eres(2)=
20 ms
1.00 V

C:Eres(3)=
20 ms
1.00 V



F+(IC202 PIN 9)

FE(IC201 PIN 18)

RFL(IC201 PIN 19)

.5 s

1 .1 V DC $\times \frac{10}{10}$
2 .1 V DC $\times \frac{10}{10}$
3 .1 V DC $\times \frac{10}{10}$
4 .2 V DC $\times \frac{10}{10}$



2 DC 1.40 V

100 kS/s

STOPPED

FIG 7-2 (DVD)

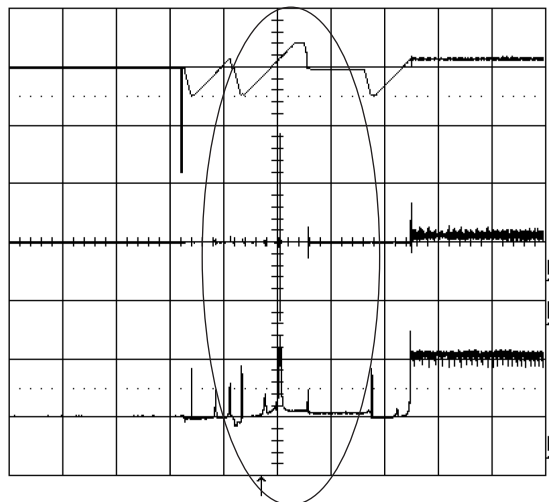
10-Dec-02
10:15:41

Reading Floppy Disk Drive

A:Eres(1)=
.5 s
1.00 V

B:Eres(2)=
.5 s
1.00 V

C:Eres(3)=
.5 s
1.00 V



F+(IC202 PIN 9)

FE(IC201 PIN 18)

RFL(IC201 PIN 19)

.5 s

1 .1 V DC $\times \frac{10}{10}$
2 .1 V DC $\times \frac{10}{10}$
3 .1 V DC $\times \frac{10}{10}$
4 .2 V DC $\times \frac{10}{10}$



2 DC 1.40 V

100 kS/s

STOPPED

FIG 7-3 (CD)

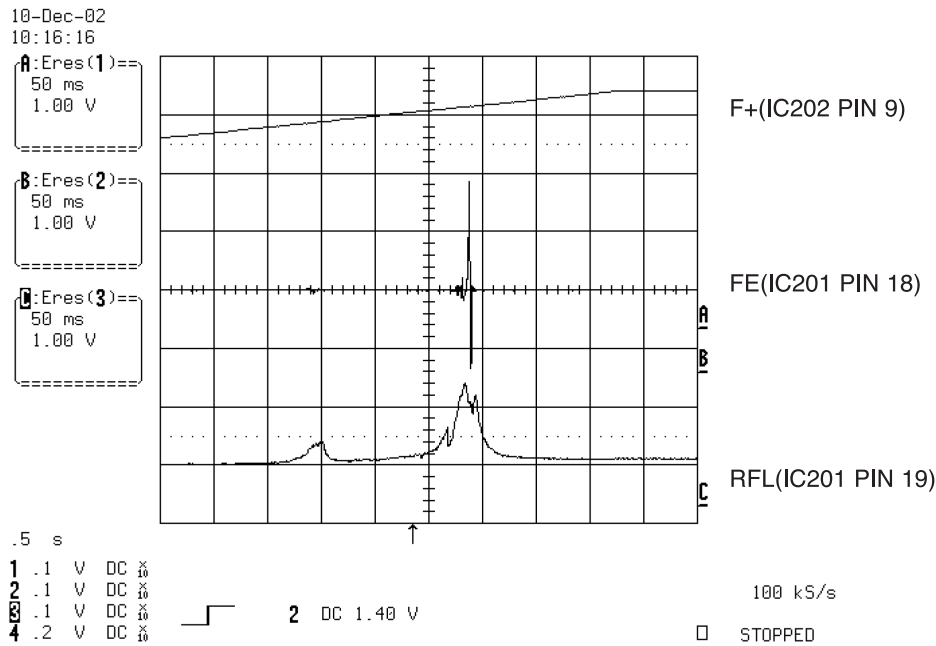


FIG 7-4 (CD)

8. FOCUS ON WAVEFORM

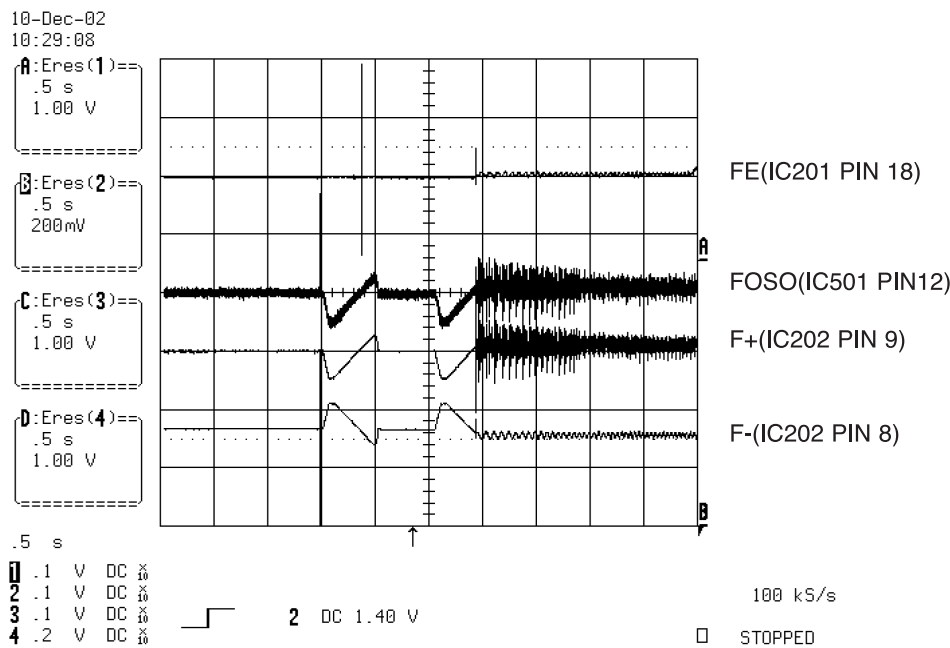


FIG 8-1 (DVD)

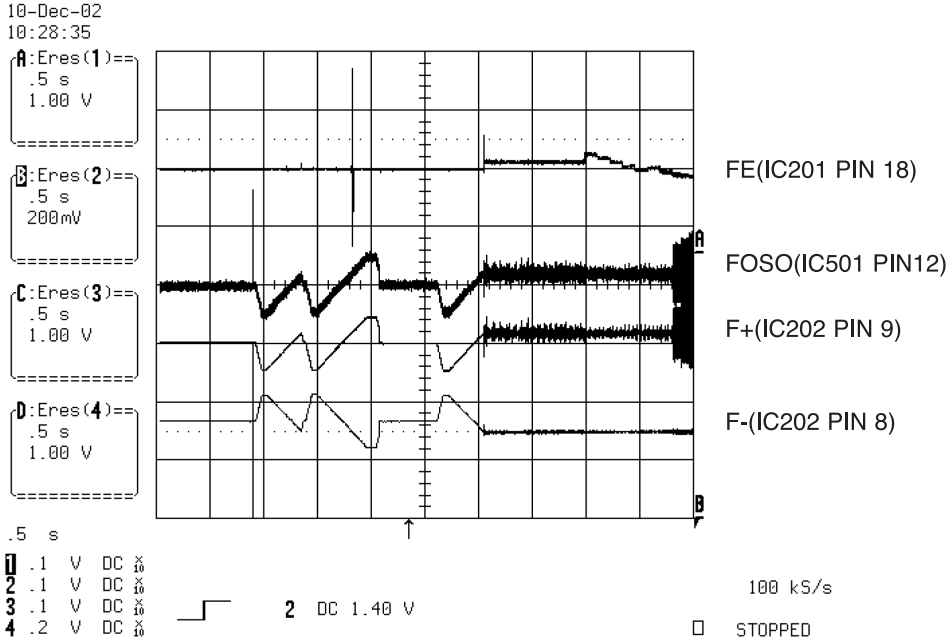


FIG 8-2 (CD)

9. SPINDLE CONTROL WAVEFORM (NO DISC CONDITION)

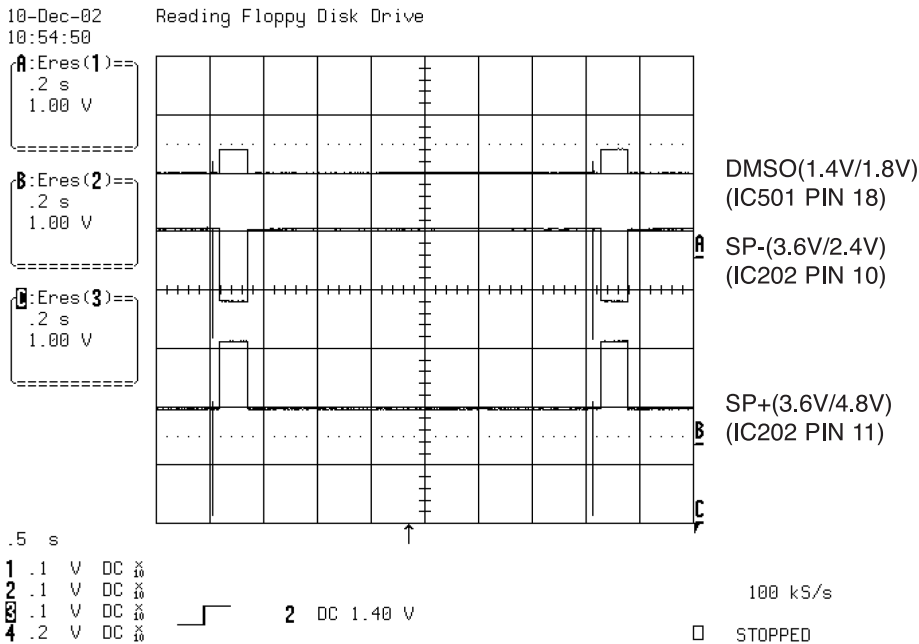


FIG 9-1

10. TRACKING CONTROL RELATED SIGNAL(System checking)

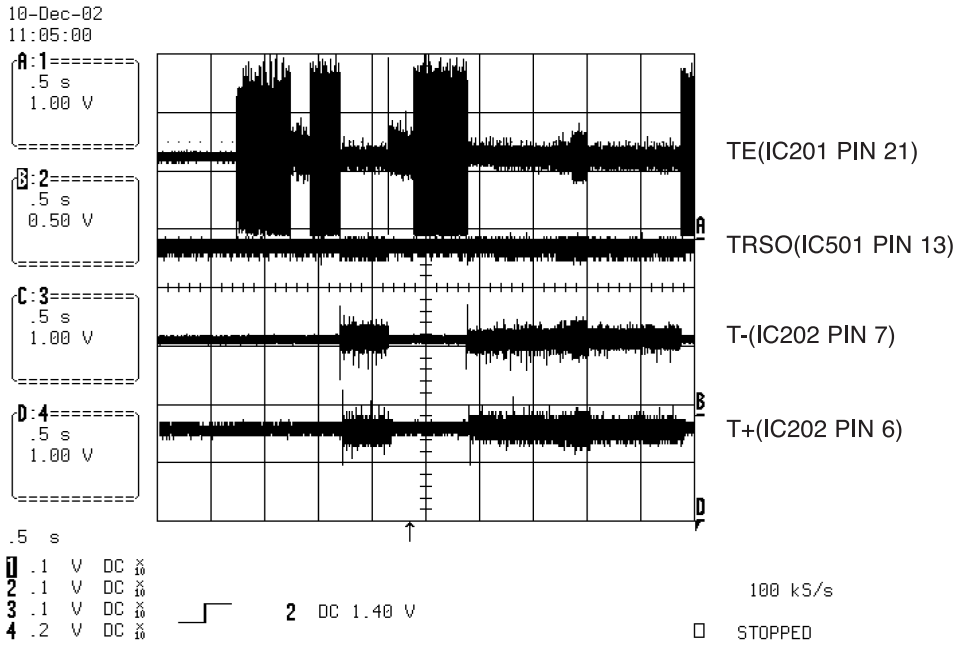


FIG 10-1(DVD)

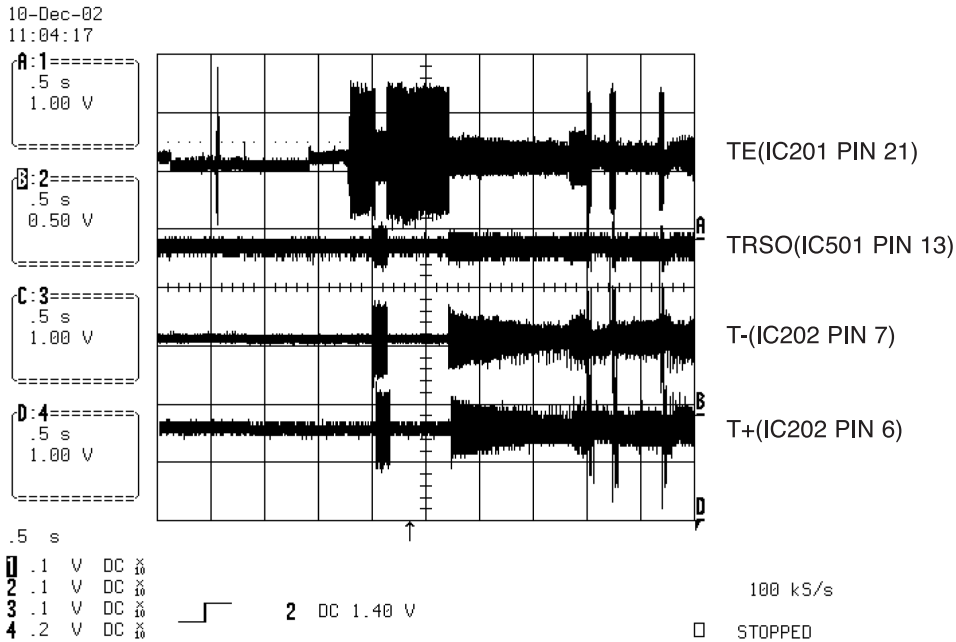


FIG 10-2(CD)

11. RF WAVEFORM

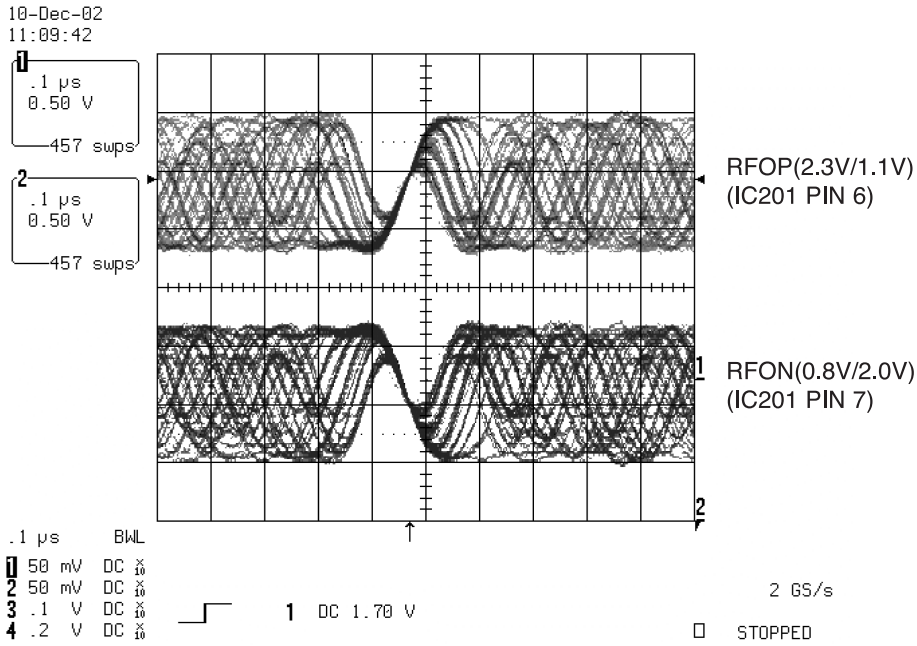


FIG 11-1

12. MT1379 AUDIO OPTICAL AND COAXIAL OUTPUT (ASPDIF)

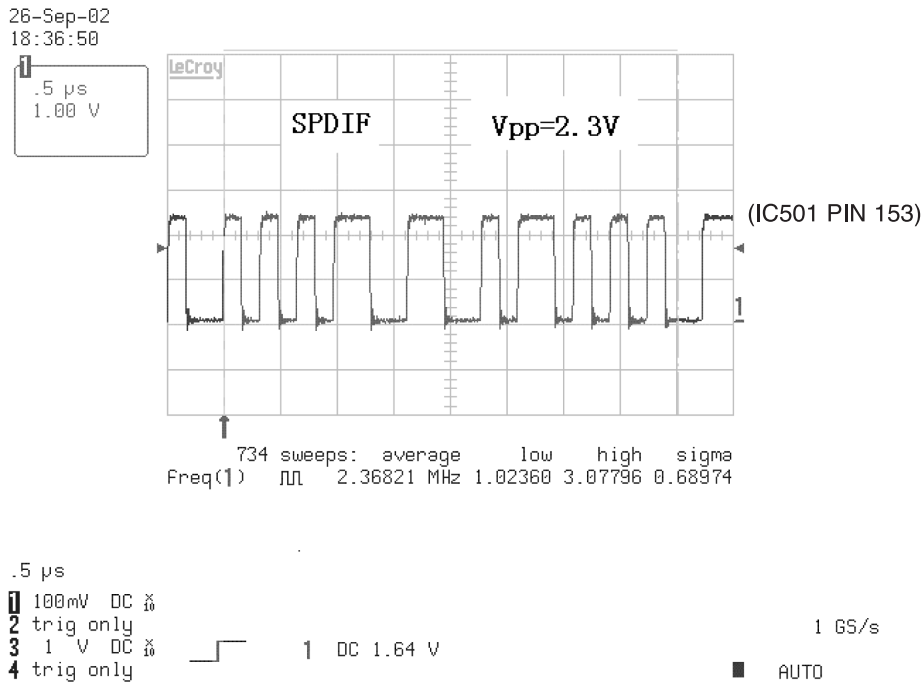


FIG 12-1

13. MT1379 VIDEO OUTPUT WAVEFORM

1) Full colorbar signal(CVBS)

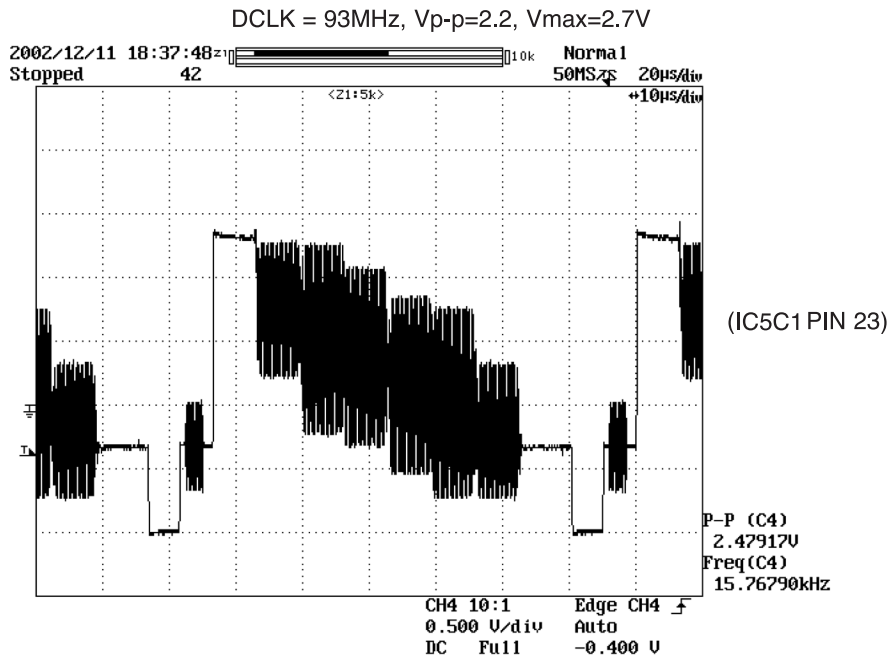


FIG 13-1

2) Y

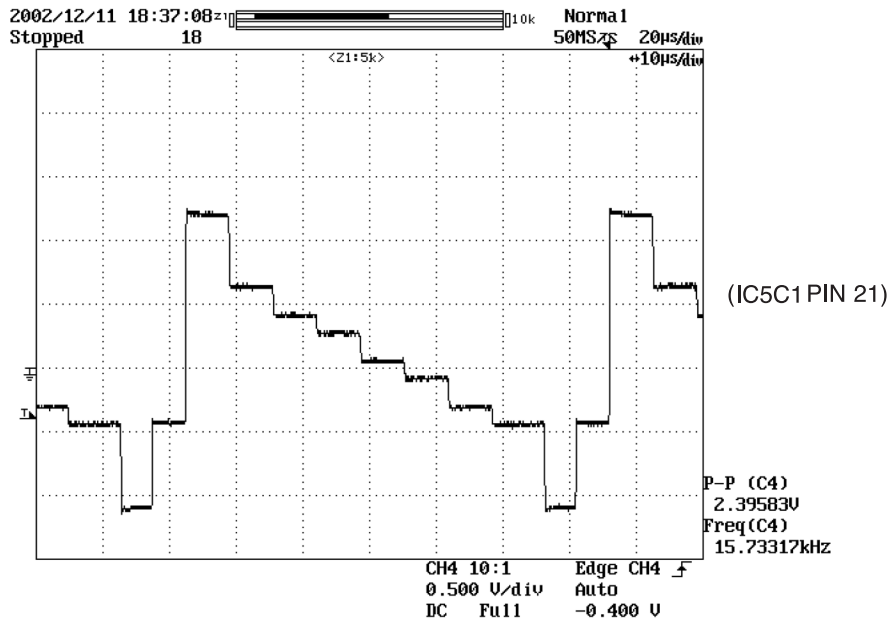


FIG 13-2

3) C

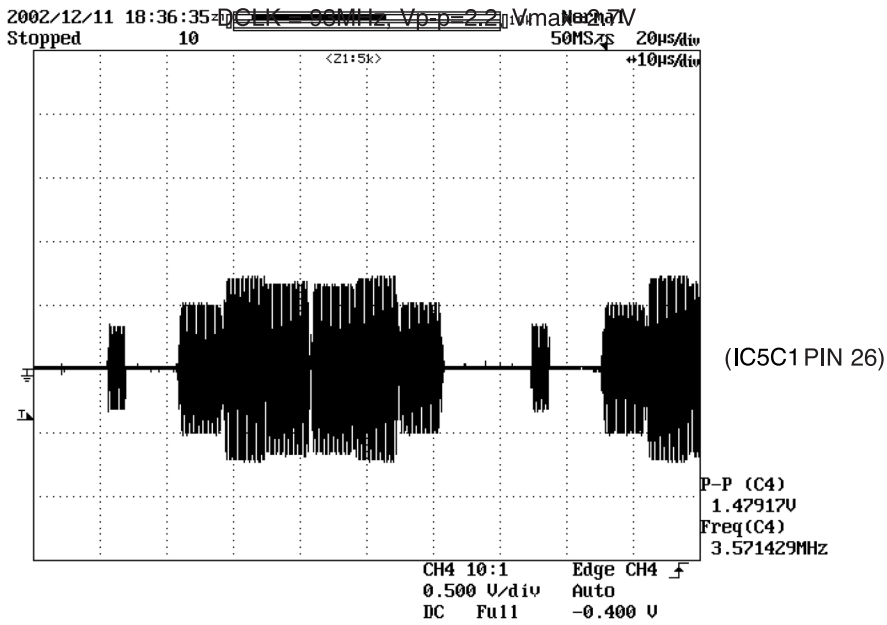


FIG 13-3

14. AUDIO OUTPUT FORM AUDIO DAC

1) Audio related Signal

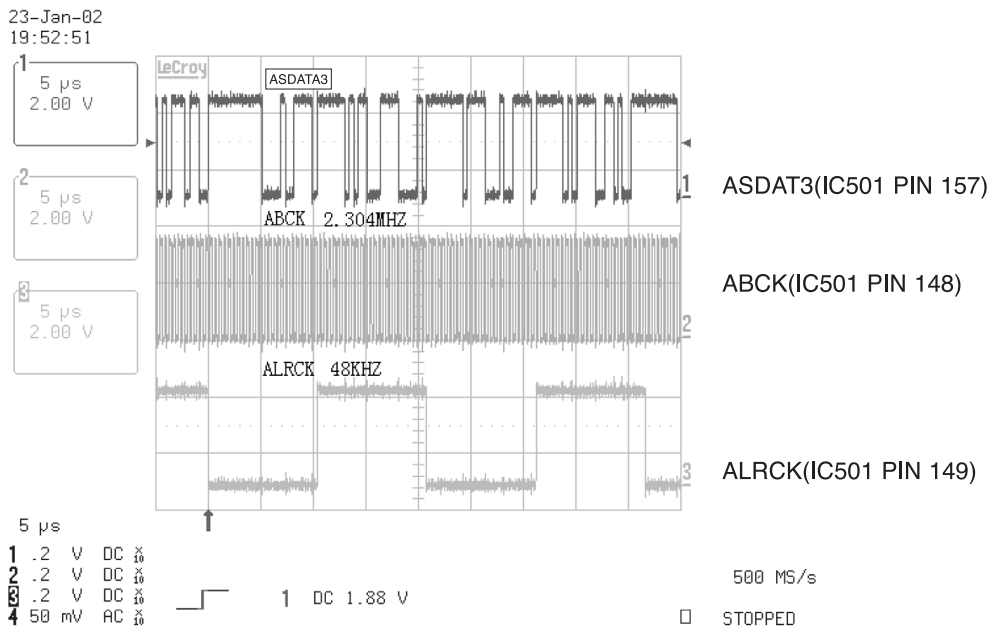


FIG 14-1

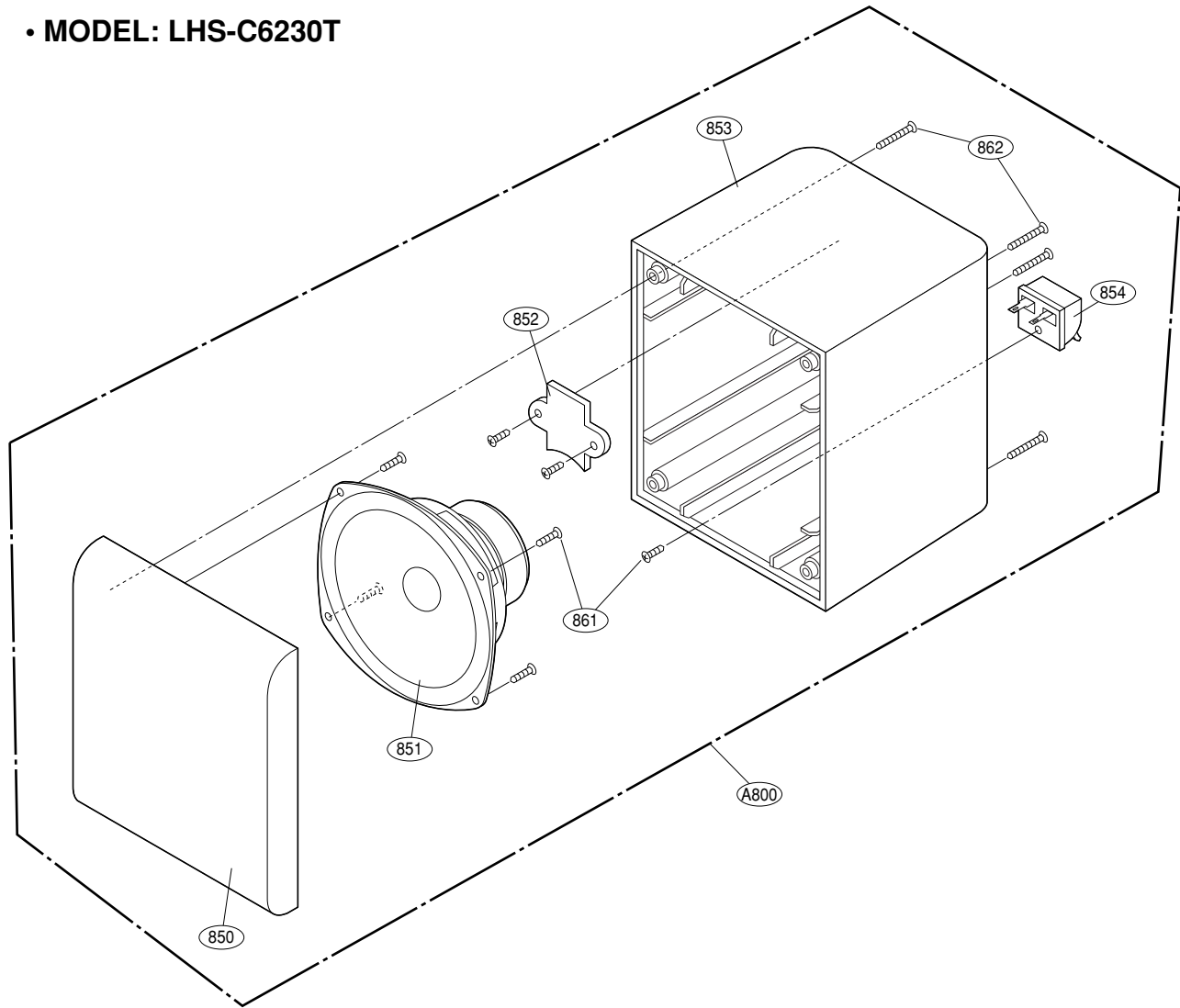
MEMO

A series of horizontal dashed lines for writing.

• **SPEAKER**

Satellite speaker

• **MODEL: LHS-C6230T**

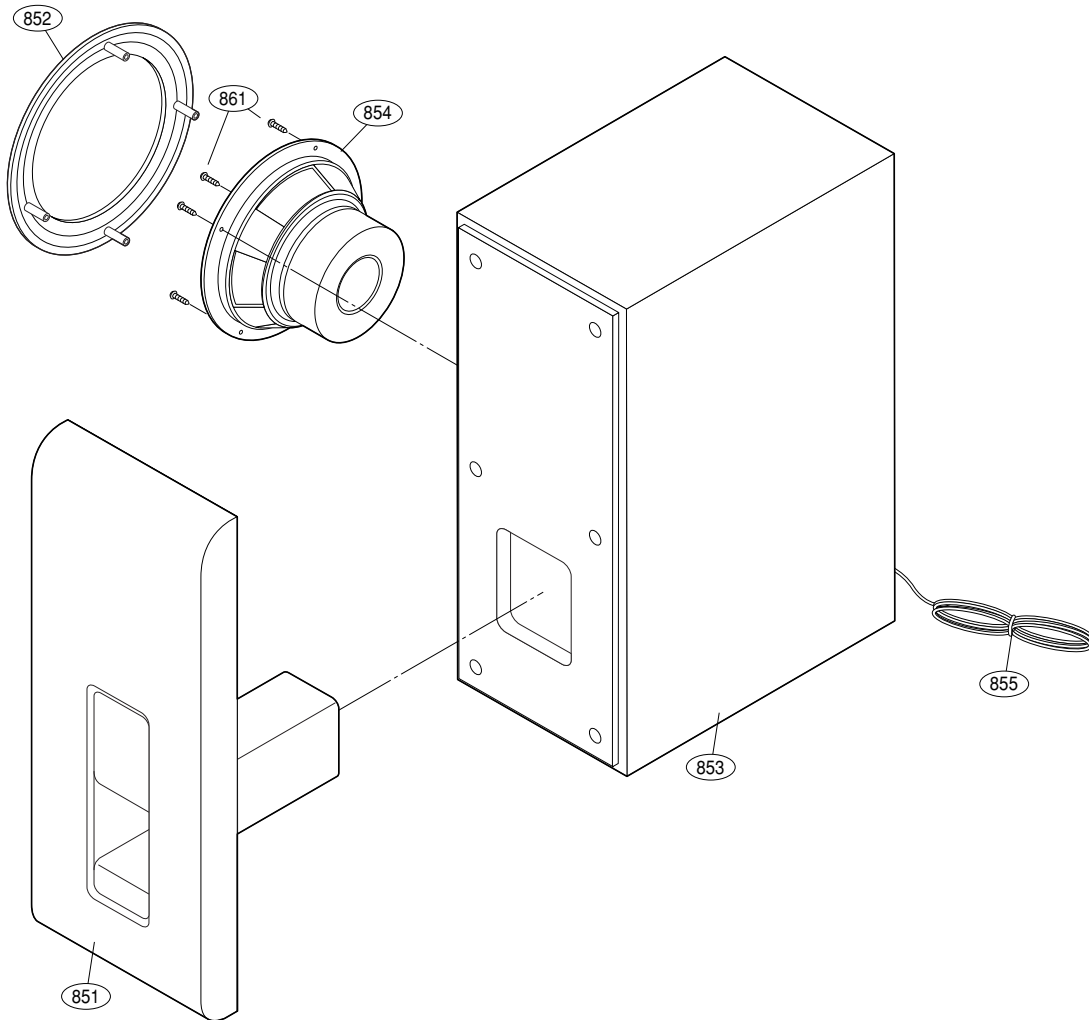


RUN DATE : 05.JUNE.2003

LOCA.NO	PART NO	DESCRIPTION	SPECIFICATION	REMARKS
850	3701RM0042A	NET ASSEMBLY	SPK LHS-D6230T L.SILVER	
851	6400FTTC02A	SPEAKER,FULLRANGE	F30C-D366 TOPTONE FULL-RANGE(H	
853	3110RMP009A	CASE	REAR LH-6230TE MOLD STANDARD	
854	6871RU4116B	PWB(PCB) ASSEMBLY,SUBSET(AUDIO	FE-3620TE 2P NEW TERMINAL 150M	
855	6871RU9271A	PWB(PCB) ASSEMBLY,SUBSET(AUDIO	LHS-D6230T FRONT WIRE(5M) R CH	
856	6871RU9271B	PWB(PCB) ASSEMBLY,SUBSET(AUDIO	LHS-D6230T FRONT WIRE(5M)/ L C	
857	6871RU9271C	PWB(PCB) ASSEMBLY,SUBSET(AUDIO	LHS-D6230T CENTER WIRE(5M)/ (G	
858	6871RU9271D	PWB(PCB) ASSEMBLY,SUBSET(AUDIO	LHS-D6230T REAR WIRE(10M) R/CH	
859	6871RU9271E	PWB(PCB) ASSEMBLY,SUBSET(AUDIO	LHS-D6230T REAR WIRE(10M)/ L/C	
861	353M025V	SCREW,DRAWING	+ 2 D3.0 L6.0 MSWR3/FZB	
862	353M025W	SCREW,DRAWING	+ 2 D3.0 L14.0 MSWR3/FZB	
A800	6401RM0045A	SPEAKER ASSEMBLY	F30C-D384-2 SHIN POONG LHS-D62	

Passive(Sub) Woofer

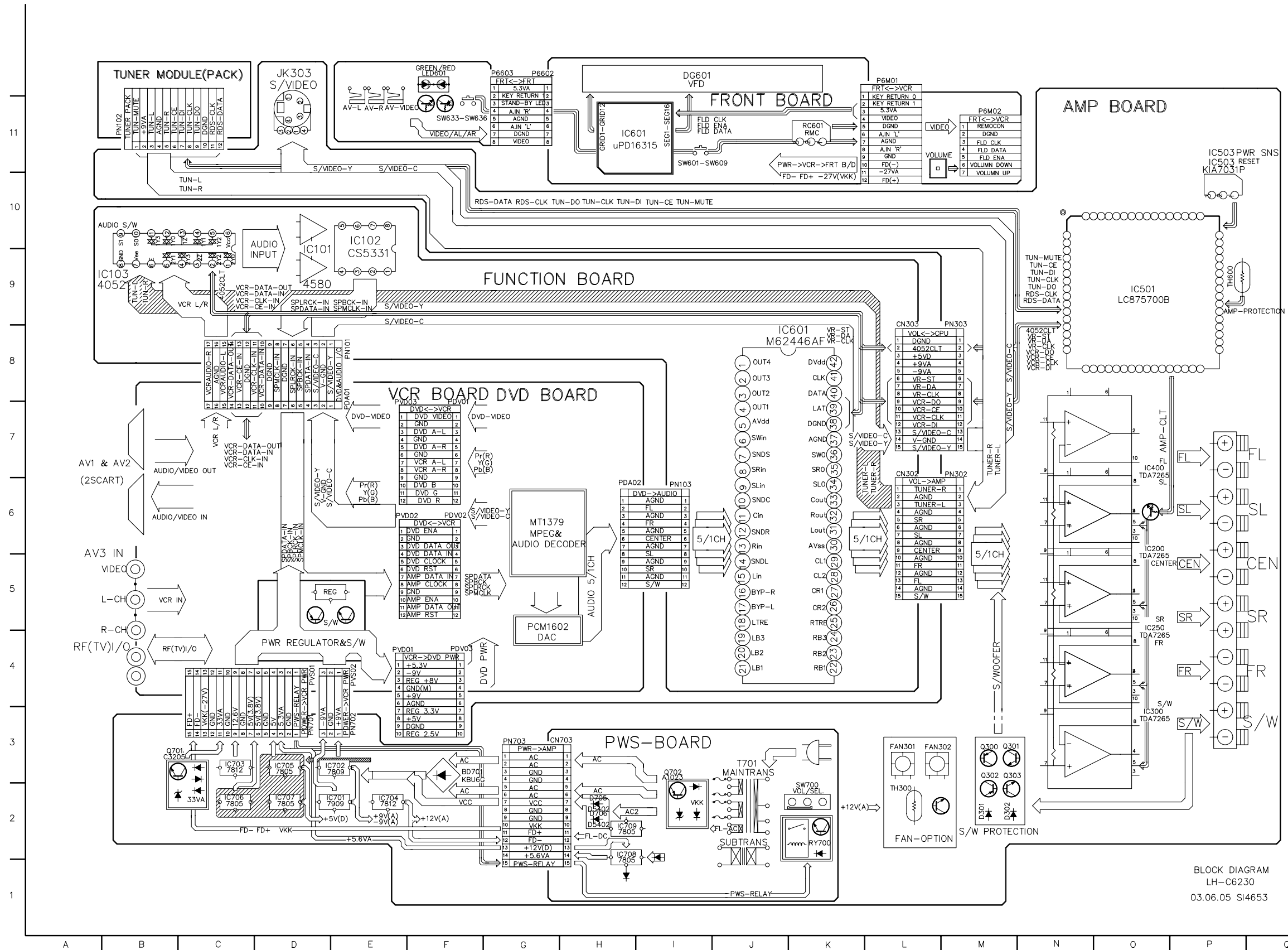
• MODEL: LHS-C6230W



RUN DATE : 05.JUNE.2003

LOCA.NO	PART NO	DESCRIPTION	SPECIFICATION	REMARKS
851	3720RMF045A	PANEL,FRONT	FRONT LH-6230WE STANDARD	
852	3701RM0043A	NET ASSEMBLY	SPK LHS-D6230W SILVER STANDARD	
853	3091RMW050A	CABINET ASSEMBLY	ASSY LH-6230WE ALL PB 9T	
854	6400WTTJ03A	SPEAKER,WOOFER	F65C-D365 TOPTONE WOOFER LHS-6	
855	6871RU9271F	PWB(PCB) ASSEMBLY,SUBSET(AUDIO	LHS-D6230W SUB WOOFER 2.5M, OR	
861	353M050C	SCREW	BH 3.5X16 FBK	

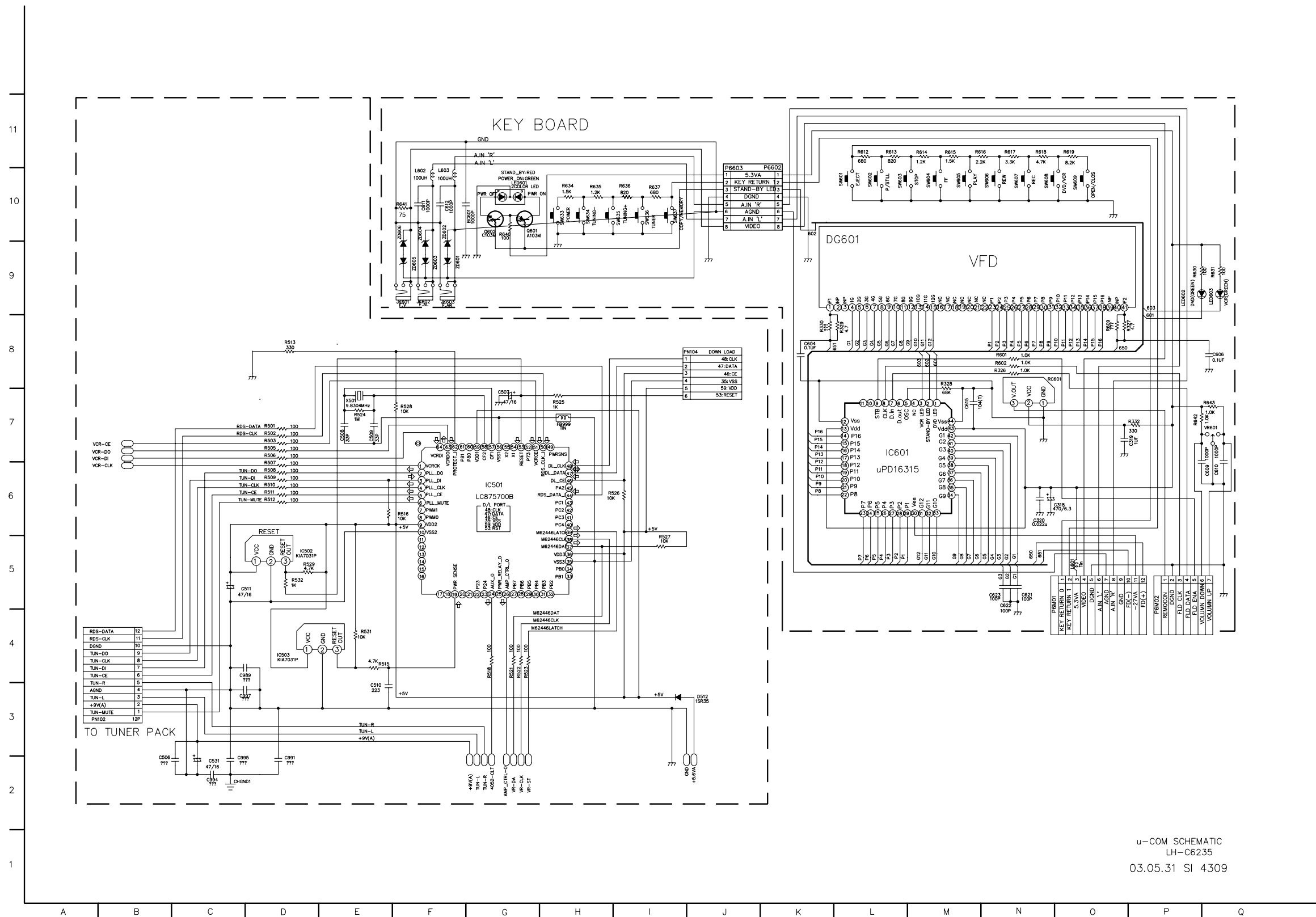
BLOCK DIAGRAM



BLOCK DIAGRAM
LH-C6230
03.06.05 SI4653

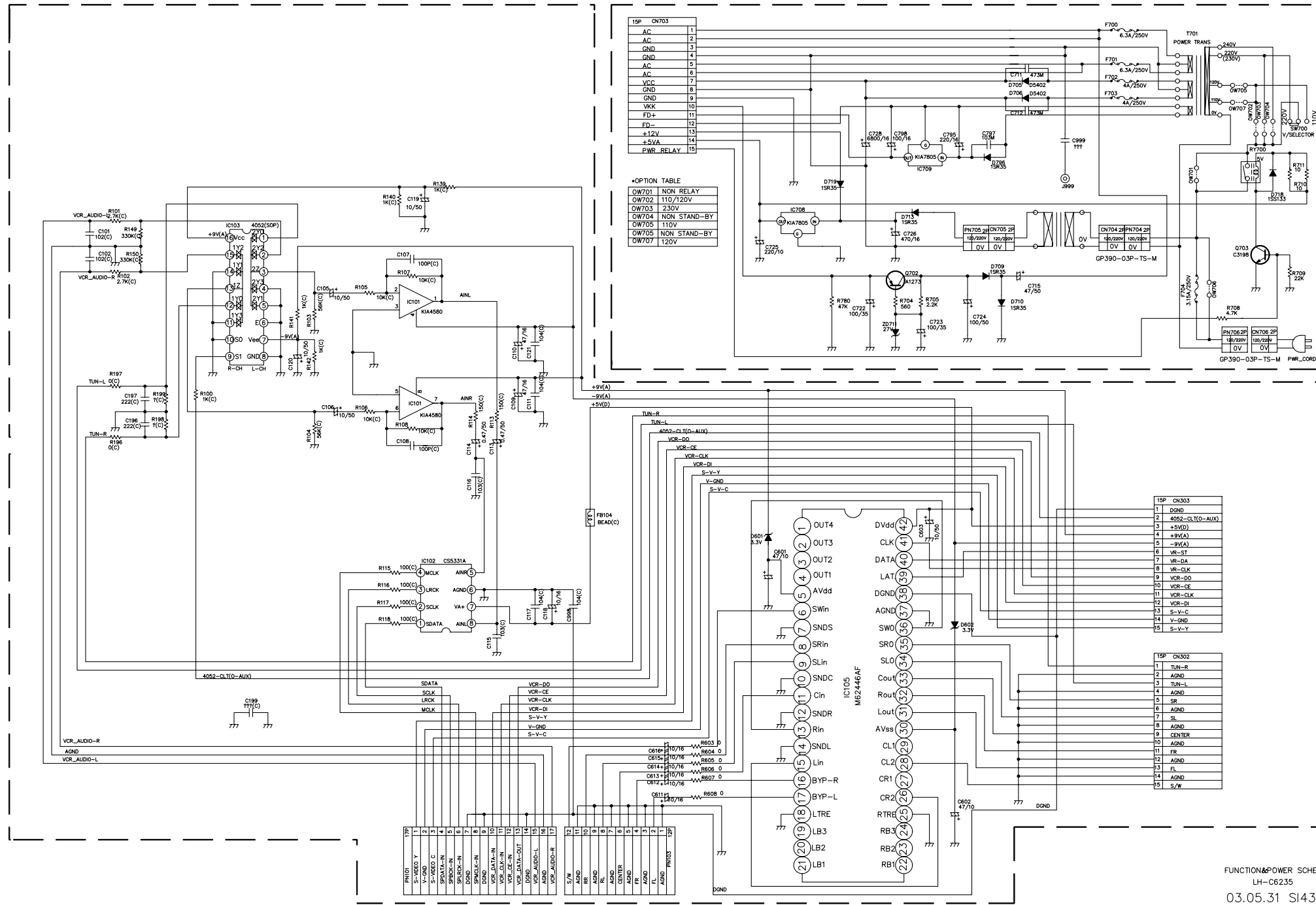
AUDIO SCHEMATIC DIAGRAMS

• U-COM SCHEMATIC DIAGRAM



u-COM SCHEMATIC
LH-C6235
03.05.31 SI 4309

• FUNCTION & POWER SCHEMATIC DIAGRAM

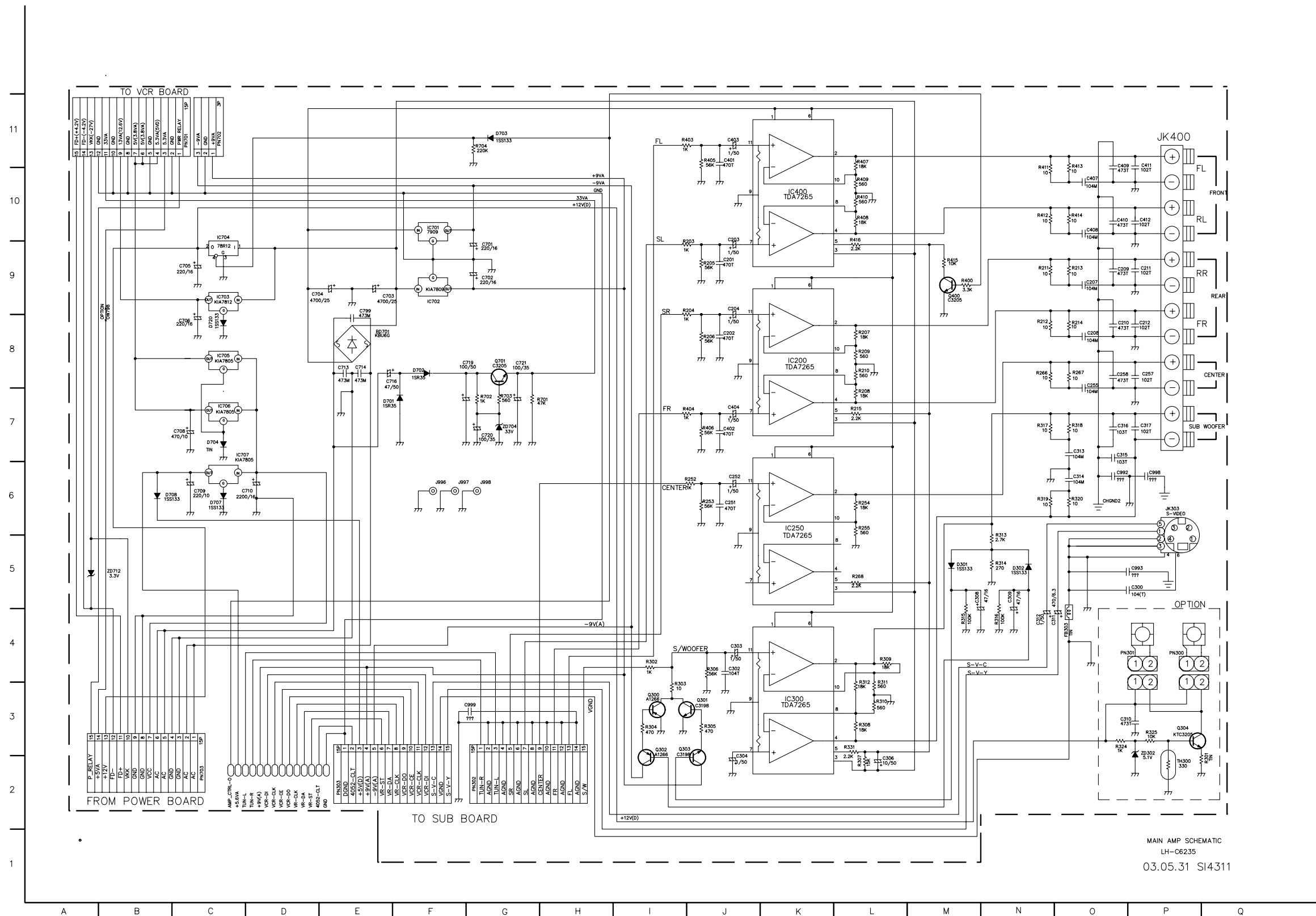


LOCATION GUIDE

C101	B9	R199	C7
C102	B9	R603	I3
C105	EB	R604	I3
C106	E7	R605	I3
C107	F9	R606	I3
C108	F6	R607	I2
C109	G7	R608	I2
C110	G7	R704	L8
C111	G7	R705	L8
C113	G6	R708	P8
C114	G6	R709	P8
C115	G4	R710	P9
C116	G6	R711	P10
C117	G4	R780	K8
C118	H4	RY700	P10
C119	F9	SW700	P10
C120	E7	U701	O11
C121	G7	ZD711	L8
C196	C7		
C197	C7		
C199	D3		
C601	J5		
C602	L2		
C603	L5		
C611	I2		
C612	I2		
C613	I2		
C614	I3		
C615	I3		
C616	I3		
C711	M11		
C712	M10		
C715	M8		
C722	K8		
C723	L8		
C724	M8		
C725	J9		
C726	L9		
C728	K10		
C795	L10		
C797	M10		
C798	L10		
C998	H4		
C999	N10		
CN302	O4		
CN303	O6		
CN703	I11		
CN704	N9		
CN705	M9		
CN706	P8		
D601	J5		
D602	L4		
D705	M11		
D706	M8		
D709	M8		
D710	M8		
D713	L9		
D718	P9		
D719	K9		
D796	M10		
F700	N11		
F701	N11		
F702	N11		
F703	N10		
F704	O8		
FB104	H6		
IC101	F8		
IC102	F5		
IC103	D9		
IC105	K3		
IC708	J9		
IC709	L10		
J999	N9		
OW701	O9		
OW702	P10		
OW703	P10		
OW704	P10		
OW705	P11		
OW706	O8		
OW707	P10		
PN101	F1		
PN103	I1		
PN704	N9		
PN705	M9		
PN706	P8		
Q702	L8		
Q703	P9		
R100	D7		
R101	B8		
R102	C8		
R103	E8		
R104	E6		
R105	E8		
R106	E7		
R107	F8		
R108	F7		
R113	G7		
R114	G7		
R115	F5		
R116	F5		
R117	F4		
R118	F4		
R139	F9		
R140	F9		
R141	E8		
R142	E7		
R149	C9		
R150	C9		
R196	B6		
R197	B7		
R198	C7		

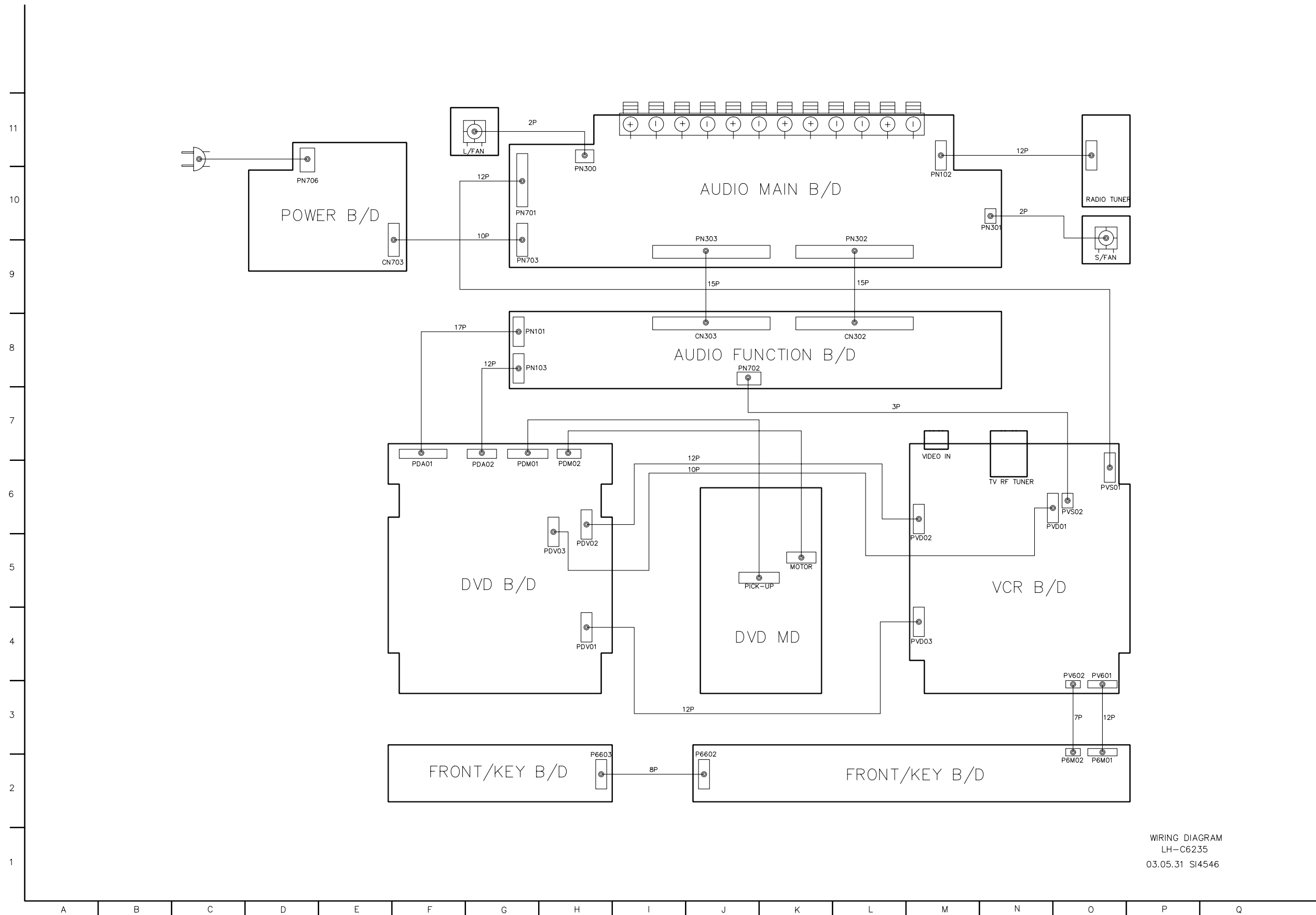
FUNCTION & POWER SCHEMATIC
LH-C6235
03.05.31 SI4310

• MAIN AMP SCHEMATIC DIAGRAM



MAIN AMP SCHEMATIC
LH-C6235
03.05.31 SI4311

WIRING DIAGRAM



WIRING DIAGRAM
LH-C6235
03.05.31 SI4546

AUDIO VOLTAGE SHEET (IC&TR)

[FRONT]

LOC.	PART	PIN NUM.	STOP	DVD PLAY
IC501	LC87F57C	1	4.2	4.2
		2	5	5
		3	0	0
		4	0	0
		5	0	0
		6	0	0
		7	0	0
		8	0	0
		9	5	5
		10	0	0
		11	0	0
		12	0	0
		13	0	0
		14	0	0
		15	0	0
		16	0	0
		17	0	0
		18	0	0
		19	5	5
		20	2.5	2.5
		21	2.5	2.5
		22	2.5	2.5
		23	2.5	2.5
		24	5	5
		25	2.5	2.5
		26	4.6	4.6
		27	2.5	4.6
		28	2.5	2.3
		29	2.5	2.5
		30	2	2.5
		31	5	5
		32	0	0
		33	5	0
		34	0	0
		35	0	0
		36	5	5
		37	0	0
		38	0	0
		39	0	0
		40	0	0
		41	0	0
		42	0	2.3
		43	0	0
		44	0	2.3
		45	0	2.3
		46	5	5
		47	0.3	2.3
		48	0.3	2.3
		49	2.5	2.3
		50	0	2.3
		51	4.4	4.4
		52	0.3	0
		53	5	5
		54	0.3	0.5
		55	0.3	0
		56	0	0

[MAIN]

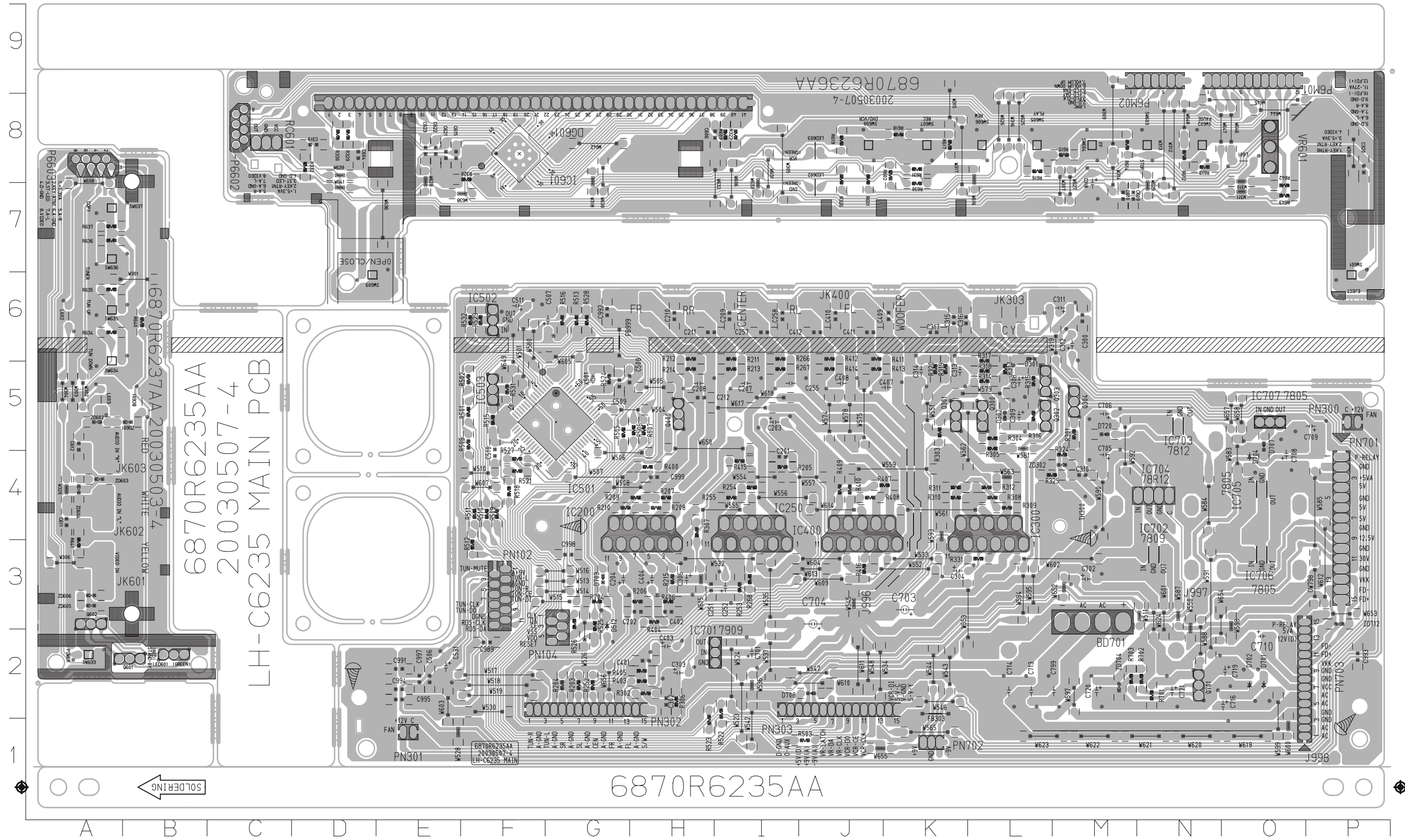
LOC.	PART	PIN NUM.	STOP	DVD PLAY
		57	2.3	2.3
		58	2.3	2.3
		59	4.9	5
		60	0	0
		61	0	0
		62	0	0
		63	0	0
		64	4	4

LOC.	PART	PIN NUM.	STOP	DVD PLAY
IC707	KIA7805	1	11.9	11.9
		2	0	0
		3	5	5
IC703	KIA7812	1	18.4	18.4
		2	0	0
		3	11.9	11.9
IC701	KIA7909	1	0	0
		2	-18.6	-18.6
	3	-9	-9	
IC702	KA7809	1	18.4	18.4
		2	0	0
		3	9	9
IC704	KA78R12	1	18.4	18.4
		2	12	12
		3	0	0
		4	5	5
IC706	KIA7805	1	11	11
		2	0	0
		3	5	5
IC705	KIA7805	1	11	11
		2	0	0
		3	5	5
D507	D5402	ANODE	-0.2	-0.2
		CATHODE	11	11
D511	D5402	ANODE	-0.2	-0.2
		CATHODE	11	11
BD501	KBU6G	1	-18.6	-18.6
		2	0	0
		3	0	0
		4	18.4	18.4
IC101	KIA4580	1	4.5	4.5
		2	4.5	4.5
		3	4.5	4.5
		4	0	0
		5	4.5	4.5
		6	4.5	4.5
		7	4.5	4.5
		8	9	9
IC102	CS5331A	1	1.4	1.4
		2	1.6	1.6
		3	1.6	1.6
		4	1.5	1.5
		5	2.2	2.2
		6	0	0
		7	5	5
		8	2.2	2.2
IC103	4052	1	0	0
		2	0	0
		3	0	0
		4	0	0
		5	0	0
		6	0	0
		7	-4.5	-4.5
		8	0	0
		9	0	0
		10	0	0

LOC.	PART	PIN NUM.	STOP	DVD PLAY
		11	0	0
		12	0	0
		13	0	0
		14	0	0
		15	0	0
		16	4.5	4.5
IC105	M60446AFP	5	5.2	5.2
		30	-5.3	-5.3
		42	5	5
IC200	TDA7265	1	-18.7	-18.7
		2	0	0
		3	18.6	18.6
		4	0	0
		5	9.3	9.3
		6	-18.6	-18.6
		7	0	0
		8	0	0
		9	0	0
		10	0	0
		11	0	0
IC250	TDA7265	1	-18.7	-18.7
		2	0	0
		3	18.6	18.6
		4	0	0
		5	9.3	9.3
		6	-18.6	-18.6
		7	0	0
		8	0	0
		9	0	0
		10	0	0
		11	0	0
IC300	TDA7265	1	-18.7	-18.7
		2	0	0
		3	18.6	18.6
		4	0	0
		5	9.3	9.3
		6	-18.6	-18.6
		7	0	0
		8	0	0
		9	0	0
		10	0	0
		11	0	0
IC400	TDA7265	1	-18.7	-18.7
		2	0	0
		3	18.6	18.6
		4	0	0
		5	9.3	9.3
		6	-18.6	-18.6
		7	0	0
		8	0	0
		9	0	0
		10	0	0
		11	0	0

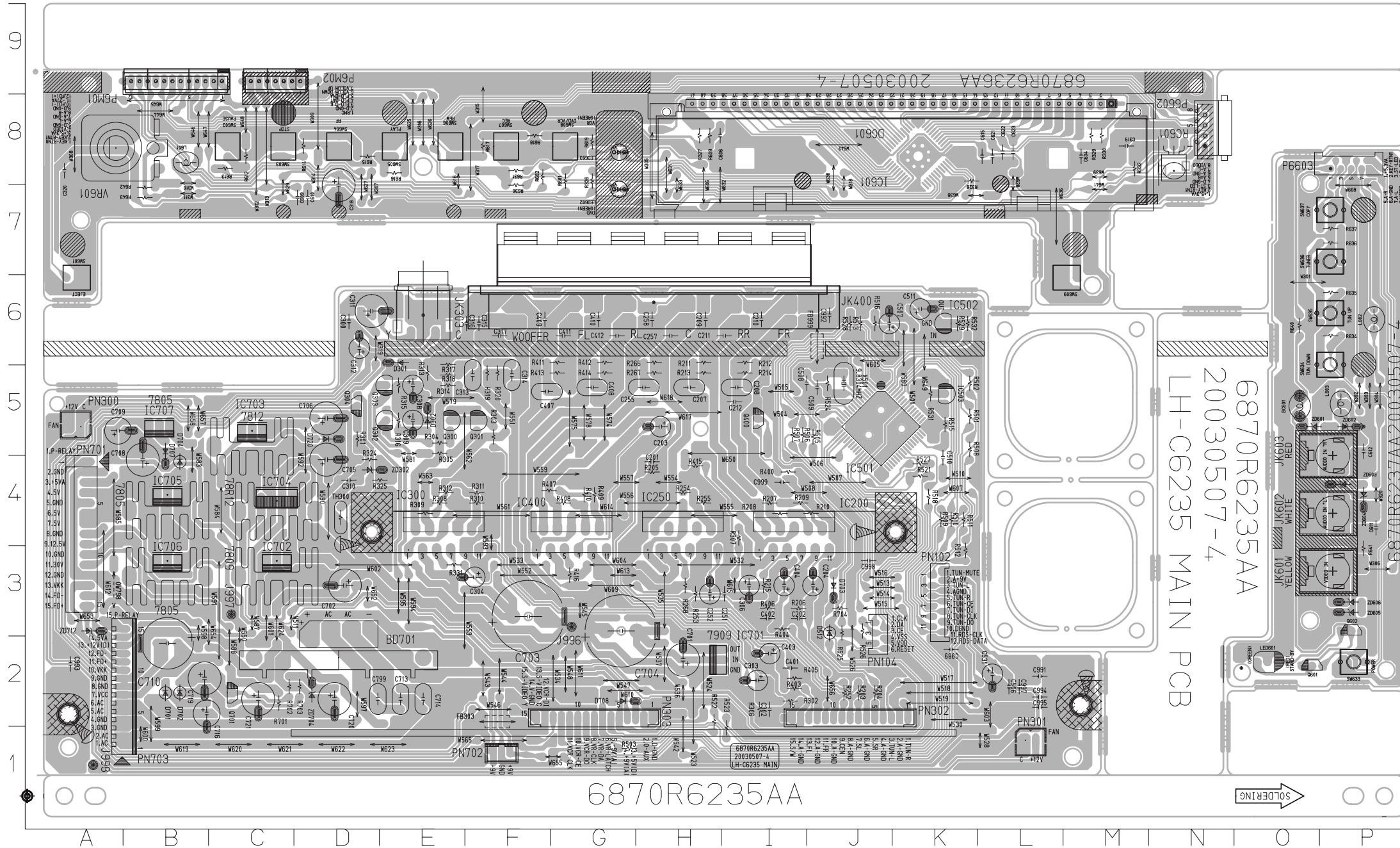
PRINTED CIRCUIT DIAGRAM

• MAINAMP & FRONT P.C. BOARD (SOLDER SIDE)



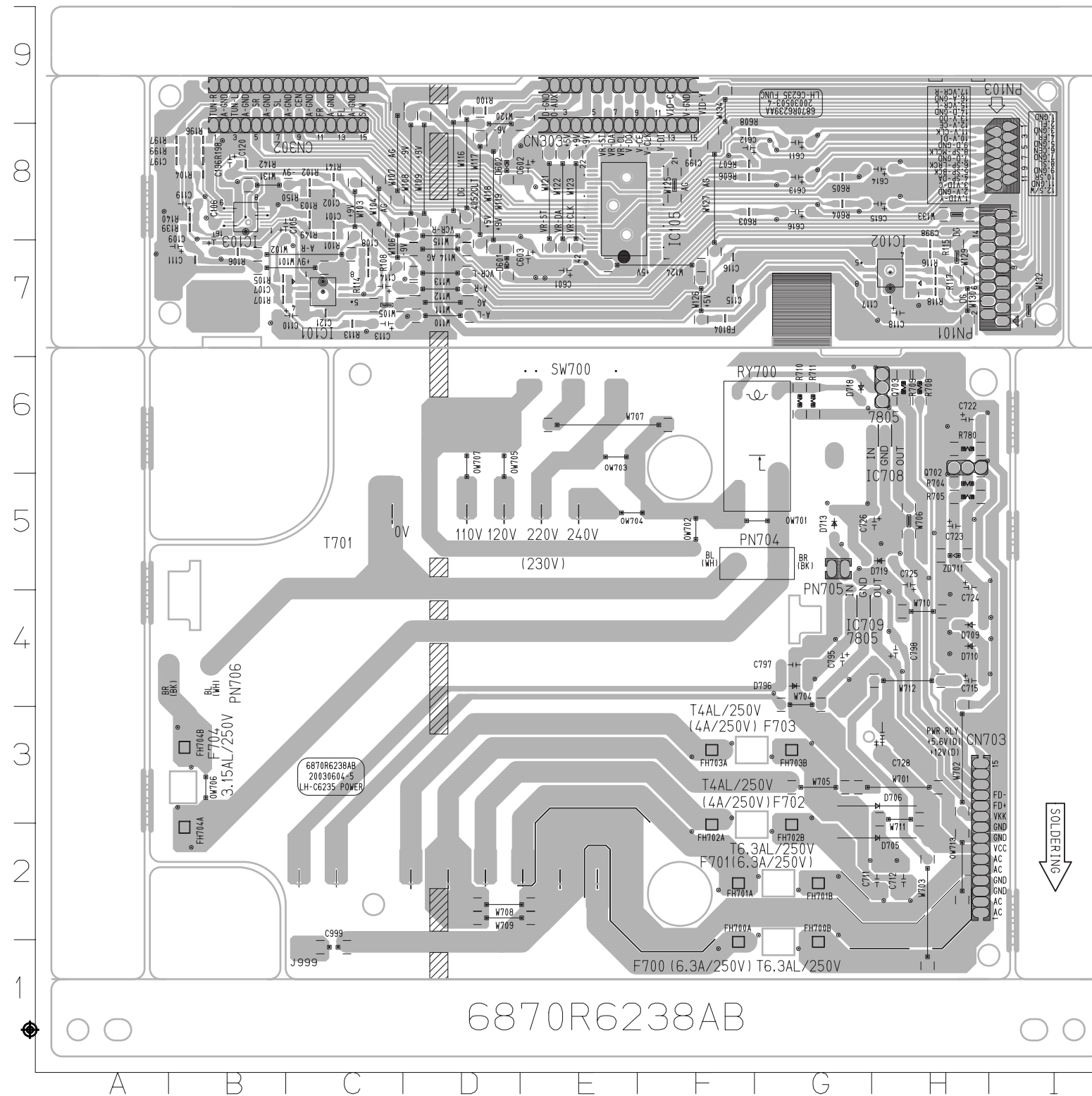
IC501	G5
IC601	F8

• MAINAMP & FRONT P.C. BOARD (COMPONENT SIDE)



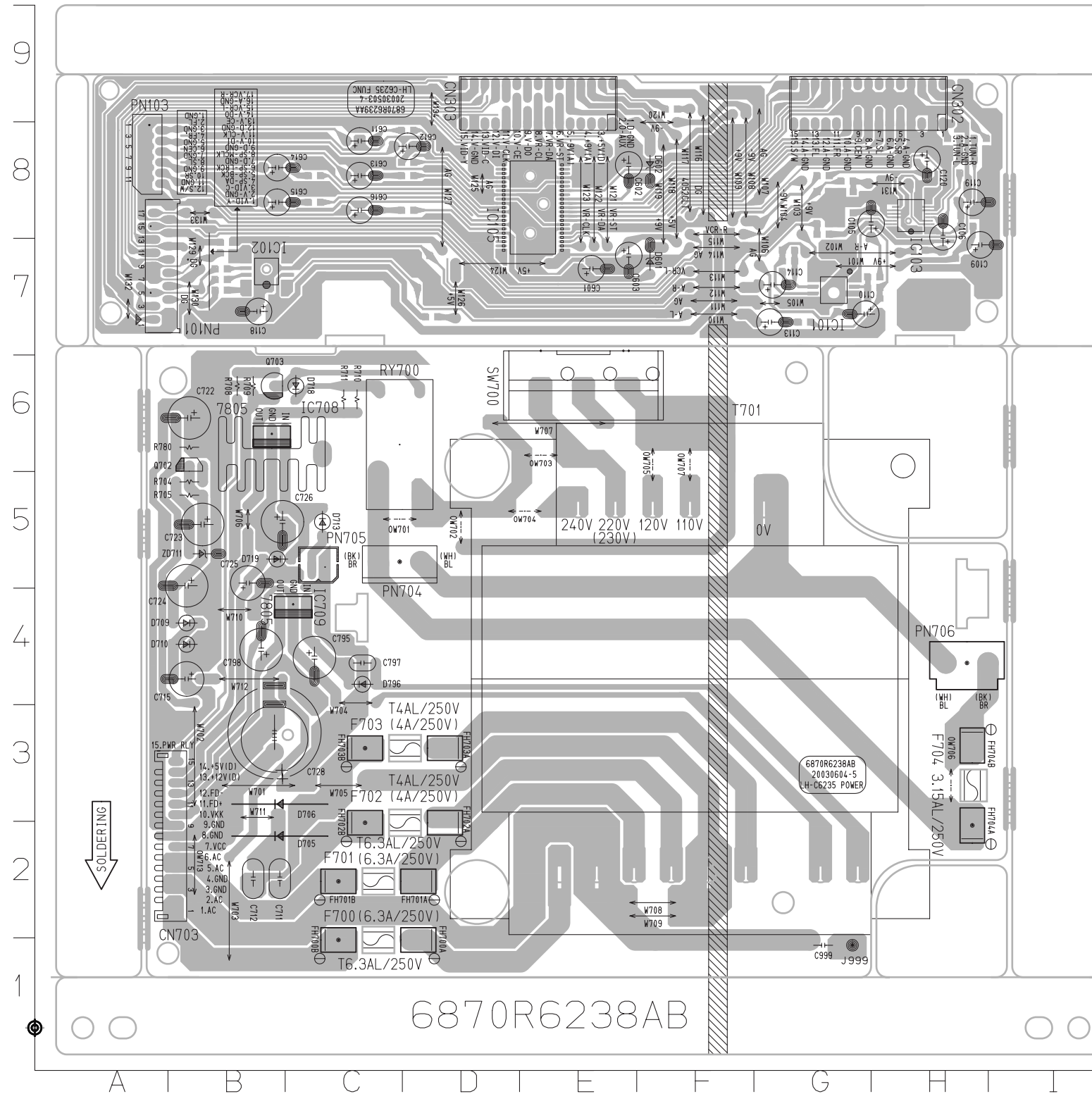
BC601	05	C621	L8	JK601	P3	R308	E4	R528	J6
BD701	D2	C622	L8	JK602	P4	R309	E4	R529	K6
C201	H4	C623	L8	JK603	P4	R310	F4	R531	K5
C202	I3	C701	H2	L601	B8	R311	F4	R532	K6
C203	H5	C702	D3	L602	P6	R312	E4	R601	G8
C204	J3	C703	F3	L603	P5	R313	E5	R602	F8
C207	H5	C704	G3	LED601	02	R314	E5	R609	H8
C208	I5	C705	D4	LED602	G7	R315	E5	R612	C8
C209	H6	C706	D5	LED603	G8	R316	E5	R613	C8
C210	I6	C708	B4	OW798	A3	R317	E5	R614	D8
C211	I6	C709	A5	P6602	N8	R318	E5	R615	D8
C212	I5	C710	B2	P6603	P8	R319	F5	R616	E8
C251	I3	C713	E2	P6M01	C9	R320	F5	R617	F8
C252	H3	C714	E2	P6M02	D9	R324	D4	R618	F8
C255	H5	C716	B2	PN102	K3	R325	E4	R619	G8
C257	H6	C719	B2	PN104	J3	R326	G8	R630	F7
C258	H6	C720	D2	PN300	A5	R327	H8	R631	F8
C300	D6	C721	C2	PN301	L1	R328	K8	R634	P6
C302	I2	C799	D2	PN302	K2	R329	M8	R635	P6
C303	I2	C989	K2	PN303	H2	R330	M8	R636	P7
C304	F3	C991	L2	PN701	A4	R331	E8	R637	P7
C306	I3	C992	J6	PN702	F1	R332	M8	R640	O6
C308	E5	C993	A2	PN703	B1	R400	I4	R641	P3
C309	E5	C994	L2	Q300	E5	R403	I2	R642	B7
C310	D4	C995	L2	Q301	F5	R404	I3	R643	B7
C311	D6	C997	L2	Q302	E5	R405	I2	R701	C2
C312	D6	C998	J3	Q303	E5	R406	I3	R702	C2
C313	F5	C999	I4	Q304	D5	R407	F4	R703	D2
C314	F5	D301	E6	Q400	I5	R408	G4	R704	J3
C315	F6	D302	E5	Q601	O2	R409	G4	RC601	N8
C316	F6	D512	J3	Q602	P3	R410	G4	SW601	A6
C317	F6	D701	B2	Q701	C2	R411	G6	SW602	C8
C318	D7	D702	B2	R203	J2	R412	G6	SW603	C8
C319	M8	D703	J3	R204	J2	R413	G5	SW604	D8
C320	A8	D704	B4	R205	H4	R414	G5	SW605	E8
C401	I2	D707	B5	R206	I3	R415	H4	SW606	E8
C402	I3	D708	G2	R207	I4	R416	G3	SW607	F8
C403	I2	D720	D5	R208	I4	R501	K5	SW608	G8
C404	I3	D6601	H8	R209	I4	R502	K5	SW609	M6
C407	F5	FB303	F2	R210	J4	R503	G1	SW633	P2
C408	G5	FB999	J6	R211	H6	R505	J5	SW634	P5
C409	F6	IC200	I3	R212	I6	R506	I5	SW635	P6
C410	G6	IC250	H3	R213	H5	R507	I5	SW636	P7
C411	G6	IC300	E3	R214	I5	R508	K5	SW637	P7
C412	G6	IC400	F3	R215	I3	R509	K4	TH300	D4
C506	L2	IC502	K6	R252	J2	R510	K4	VR601	A8
C507	J6	IC503	K5	R253	H3	R511	K4	X501	J5
C508	J5	IC701	H2	R254	H4	R512	K3	ZD302	D4
C509	J5	IC702	C3	R255	H4	R513	J6	ZD601	O5
C510	K4	IC703	C5	R266	H6	R515	K5	ZD602	P5
C511	K6	IC704	C4	R267	H5	R516	J6	ZD603	P4
C531	L2	IC705	B4	R268	H3	R518	K4	ZD604	P4
C604	M8	IC706	B3	R301	D5	R521	K4	ZD605	P3
C606	H8	IC707	B5	R302	I2	R522	H2	ZD606	P3
C609	D7	J996	G3	R303	F5	R523	I1	ZD704	D2
C610	D7	J997	C3	R304	E5	R524	J5	ZD712	A3
C611	P4	J998	A1	R305	E5	R525	J3		
C612	P5	JK303	E6	R306	I2	R526	J3		
C615	L8	JK400	H6	R307	I4	R527	K4		

• FUNCTION & POWER P.C. BOARD (SOLDER SIDE)



C101	C8
C102	C8
C107	B7
C108	C7
C111	B7
C115	F7
C116	F7
C117	H7
C121	C7
C196	B8
C197	B8
C199	F8
C998	H7
FB104	F7
IC101	C7
IC102	H7
IC103	B8
IC105	E8
R100	D9
R101	C8
R102	C8
R103	C8
R104	B8
R105	B7
R106	B7
R107	B7
R108	C7
R113	C7
R114	C7
R115	H7
R116	H7
R117	H7
R118	H7
R139	B8
R140	B8
R141	C8
R142	B8
R149	C8
R150	C8
R196	B8
R197	B8
R198	B8
R199	B8
R603	F8
R604	G8
R605	G8
R606	F8
R607	F8
R608	F8

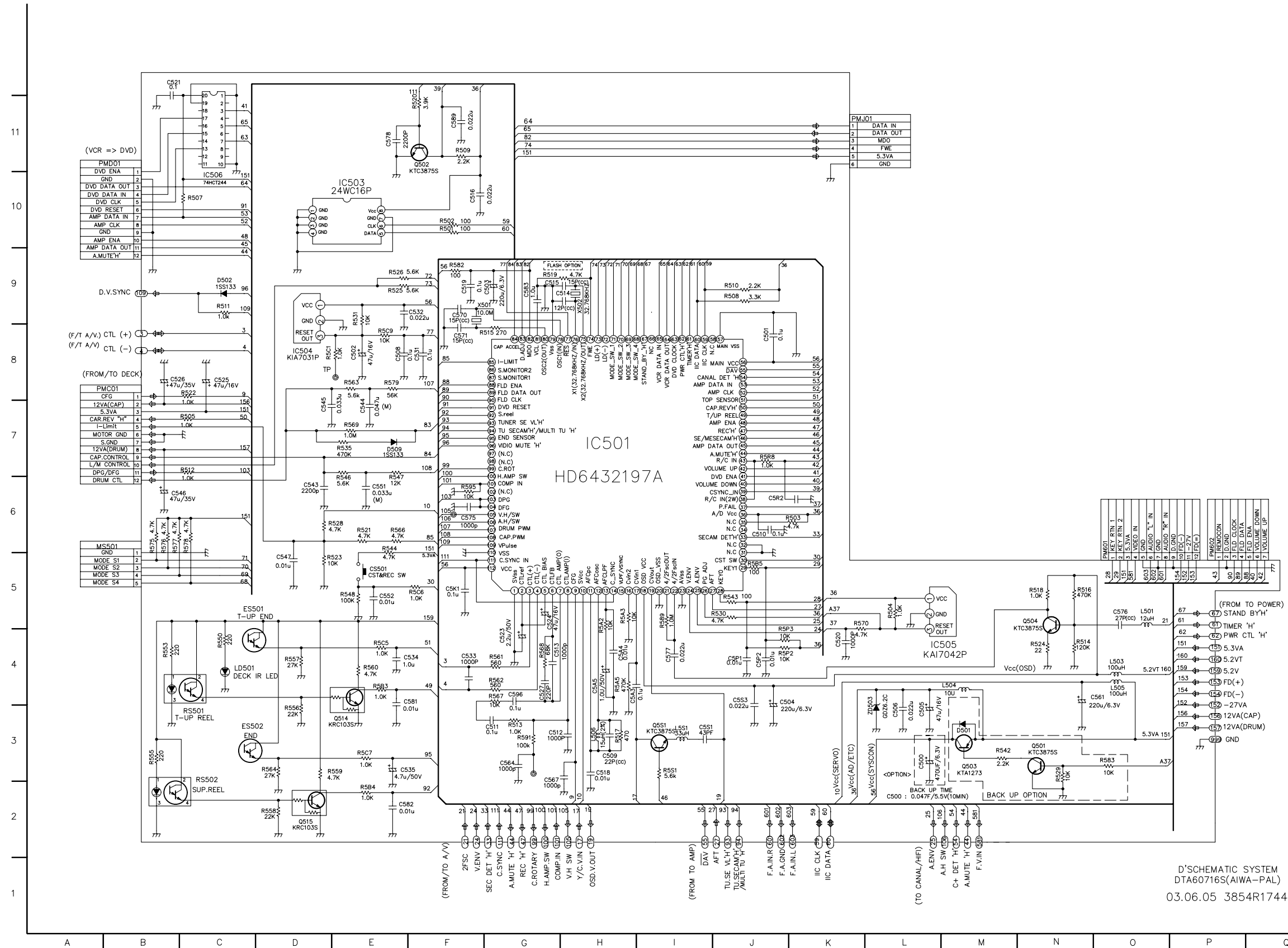
• FUNCTION & POWER P.C. BOARD (COMPONENT SIDE)



C105	H8	D718	C6
C106	H8	D719	B5
C109	H7	D796	C4
C110	G7	FH700A	D1
C113	G7	FH700B	C1
C114	G7	FH701A	D2
C118	B7	FH701B	C2
C119	H8	FH702A	D2
C120	H8	FH702B	C2
C601	E7	FH703A	D3
C602	E8	FH703B	C3
C603	E7	FH704A	H2
C611	C8	FH704B	H3
C612	D8	IC708	B6
C613	C8	IC709	C4
C614	B8	J999	G1
C615	B8	OW701	C5
C616	C8	OW702	D5
C711	B2	OW703	E6
C712	B2	OW704	E5
C715	B4	OW705	F6
C722	B6	OW706	H3
C723	B5	OW707	F6
C724	B5	OW713	B2
C725	B5	PN101	B7
C726	B5	PN103	A8
C728	B3	PN704	C5
C795	C4	PN705	C5
C797	C4	PN706	H4
C798	B4	Q702	B6
C999	G1	Q703	B6
CN302	G9	R704	B5
CN303	E9	R705	B5
CN703	B2	R708	B6
D601	F7	R709	B6
D602	F8	R710	C6
D705	B2	R711	C6
D706	B3	R780	B6
D709	B4	RY700	C6
D710	B4	SW700	E6
D713	C5	ZD711	B5

VCR SHEMATIC DIAGRAMS

• SYSTEM SCHEMATIC DIAGRAM

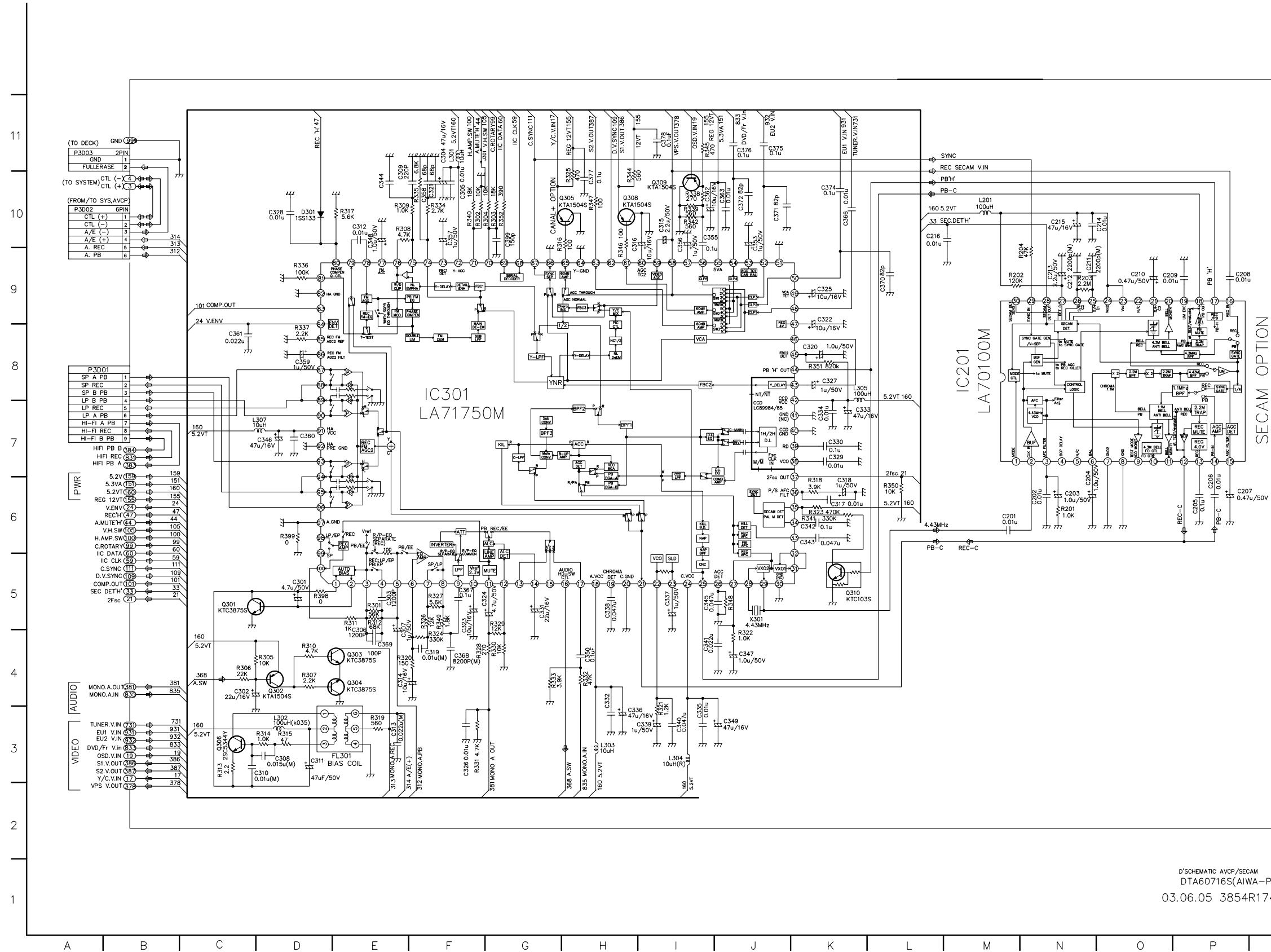


LOCATION GUIDE

C500	L3	R521	E6
C501	J8	R522	C8
C502	E8	R523	D5
C503	G9	R524	N4
C504	J4	R525	E9
C505	L3	R526	E9
C506	L3	R528	D6
C508	E8	R529	N3
C509	H3	R530	I5
C510	J6	R531	E8
C511	G3	R535	E7
C512	G3	R542	M3
C513	G4	R543	J5
C514	G9	R544	E6
C515	G9	R546	E6
C516	F10	R547	E6
C518	H3	R548	E5
C519	F9	R550	C4
C520	K4	R553	B4
C521	B12	R555	B3
C523	G4	R556	D3
C524	G4	R557	D4
C525	C8	R558	D2
C526	B8	R559	D3
C527	G4	R560	E4
C531	F8	R561	G4
C532	F9	R562	G4
C533	F4	R563	E8
C534	E4	R564	D3
C535	E3	R566	E6
C543	D6	R567	G4
C544	E7	R568	G4
C545	D7	R569	E7
C546	B6	R570	K5
C547	D5	R575	B6
C551	E6	R576	B6
C552	E5	R577	B6
C561	N4	R578	C6
C564	C3	R579	E8
C567	C2	R582	F9
C570	F9	R583	O3
C571	F8	R589	I5
C575	F6	R591	G3
C576	O5	R595	F6
C577	I4	R5A2	H4
C578	E11	R5A3	H5
C581	E4	R5A4	H4
C582	E2	R5B3	E4
C583	G9	R5B4	E2
C589	F11	R5B5	J5
C596	G4	R5C1	D8
C5A3	H4	R5C5	F4
C5A4	H4	R5C6	F5
C5A5	H4	R5C7	E3
C5K1	F5	R5C9	E8
C5P1	J4	R5P2	J4
C5P2	J4	R5P3	J4
C5R2	J6	R5R8	J7
C5S1	I3	R5S1	I3
C5S3	J4	R5S01	C3
C5S01	E5	R5S02	C2
D501	M3	X501	F9
D502	C9	X502	H9
D509	E7	ZD503	L3
ES501	C5		
ES502	C3		
IC501	H7		
IC503	E10		
IC504	D8		
IC505	L4		
IC506	C10		
L501	O5		
L503	O4		
L504	M4		
L505	O4		
L506	H3		
LS1	I3		
LD501	C4		
MS501	A6		
PM601	O5		
PM602	P5		
PMCO1	A8		
PMJ01	A11		
PMJ01	K11		
Q501	N3		
Q502	F11		
Q503	M3		
Q504	N5		
Q514	E3		
Q515	D2		
Q5S1	I3		
R501	F10		
R502	F10		
R503	J6		
R504	L5		
R505	C7		
R507	C10		
R508	J9		
R509	F11		
R510	J9		
R511	C9		
R512	C7		
R513	G3		
R514	N4		
R515	F8		
R516	N5		
R517	H3		
R518	N5		
R519	G9		
R520	F11		

D'SCHEMATIC SYSTEM
DTA60716S(AIWA-PAL)
03.06.05 3854R17448A

A(AUDIO)/V(VIDEO) SCHEMATIC DIAGRAM



LOCATION GUIDE

C201	M6	Q309	I10
C202	N6	Q310	K5
C203	N6	R201	N6
C204	N6	R202	M9
C205	P6	R203	N9
C206	P6	R204	N9
C207	P6	R301	E5
C208	P9	R302	F10
C209	O9	R303	G10
C210	O9	R304	G10
C211	N9	R305	D4
C212	N9	R306	C4
C213	N9	R307	D4
C214	O10	R308	E10
C215	N10	R309	I10
C216	L10	R310	D4
C201	D5	R311	E5
C302	C4	R312	E5
C303	E5	R313	C3
C304	F11	R314	D3
C305	F10	R315	D3
C306	E4	R316	H9
C307	E4	R317	E10
C308	D3	R318	K6
C309	E10	R319	E3
C310	C3	R320	E4
C311	D3	R321	I3
C312	E10	R322	J4
C313	E3	R323	K6
C314	E4	R324	F4
C315	I10	R325	H10
C316	H9	R326	F5
C317	K6	R327	F5
C318	K6	R328	F4
C319	F4	R329	G5
C320	K8	R330	G4
C321	F10	R331	F3
C322	K9	R332	H4
C323	F4	R333	G4
C324	G5	R334	F10
C325	K9	R335	F10
C326	F3	R336	D9
C327	K8	R337	D8
C328	D10	R338	I10
C329	K7	R339	I10
C330	K7	R340	F10
C331	G5	R341	K6
C332	H3	R342	I10
C333	K7	R343	H10
C334	K7	R344	H10
C335	I3	R345	H9
C336	H3	R346	H10
C337	I5	R347	J5
C338	H5	R348	F5
C339	H3	R349	L6
C340	I3	R350	L6
C341	I4	R351	K8
C342	K6	R352	G10
C343	K6	R353	D5
C344	E10	R354	D6
C345	I5	X301	J5
C346	I5		
C347	J4		
C348	E9		
C349	J3		
C350	H4		
C351	J9		
C352	I10		
C353	I9		
C354	F10		
C355	D8		
C356	D7		
C357	F10		
C358	F10		
C359	D8		
C360	D7		
C361	C8		
C362	I10		
C363	J10		
C364	K10		
C365	F5		
C366	F4		
C367	E4		
C368	E4		
C369	E4		
C370	L9		
C371	J10		
C372	J10		
C373	K10		
C374	J11		
C375	J11		
C376	H10		
C377	H10		
C378	I11		
C379	G10		
D301	D10		
FL301	E3		
IC201	M8		
IC301	F8		
J301	G11		
L201	M10		
L301	F11		
L302	D3		
L303	H3		
L304	I3		
L305	K8		
L307	C7		
P301	A8		
P302	A10		
P303	A11		
Q301	C5		
Q302	D4		
Q303	E4		
Q304	E4		
Q305	G10		
Q306	C3		
Q308	H10		

D'SCHEMATIC AVCP/SECAM
DTA60716S(AIWA-PAL)
03.06.05 3854R17449A

POWER SCHEMATIC DIAGRAM

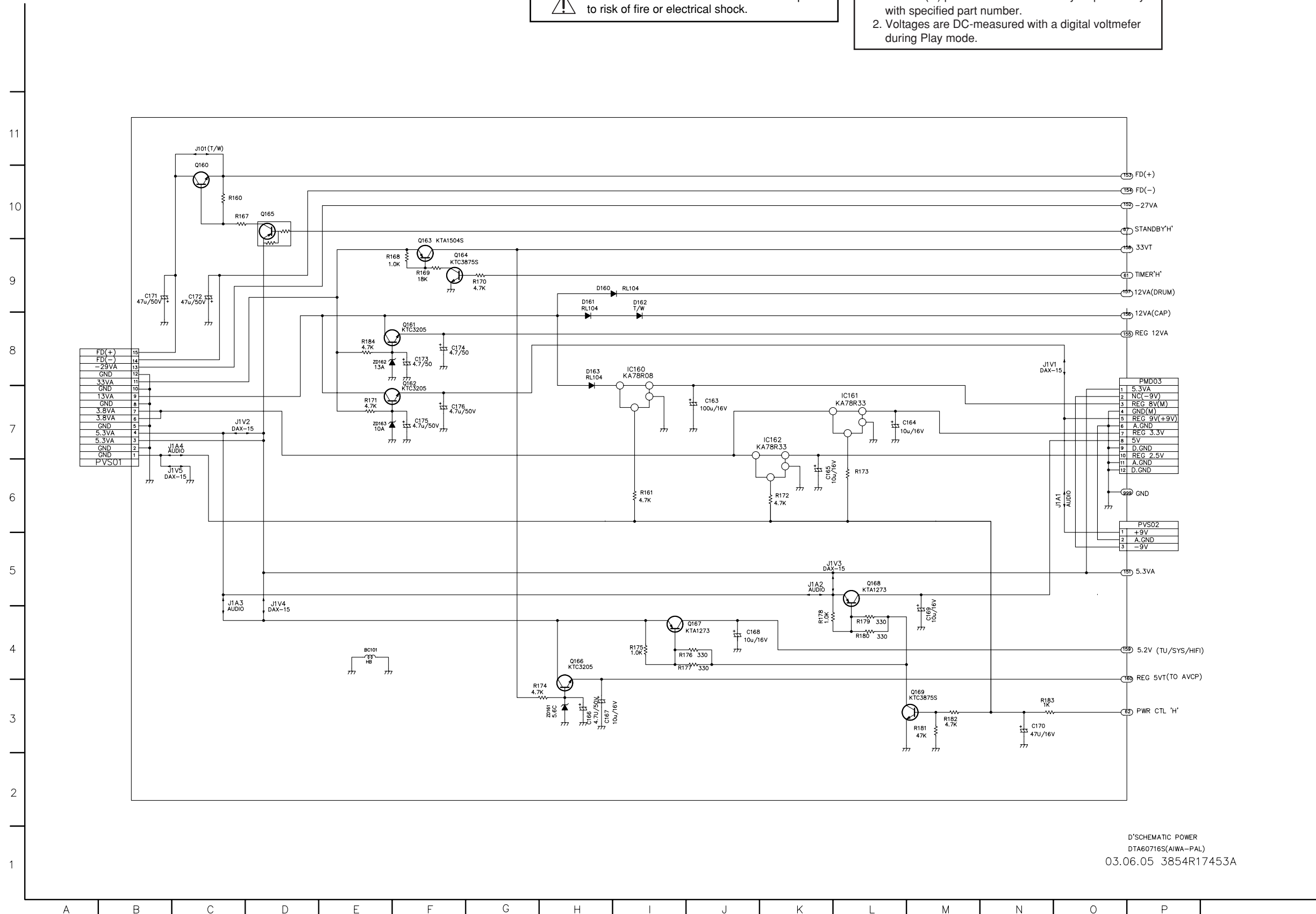
NOTE: Warning



Parts that are shaded are critical With respect to risk of fire or electrical shock.

NOTE:

1. Shaded(■) parts are critical for safety. Replace only with specified part number.
2. Voltages are DC-measured with a digital voltmeter during Play mode.

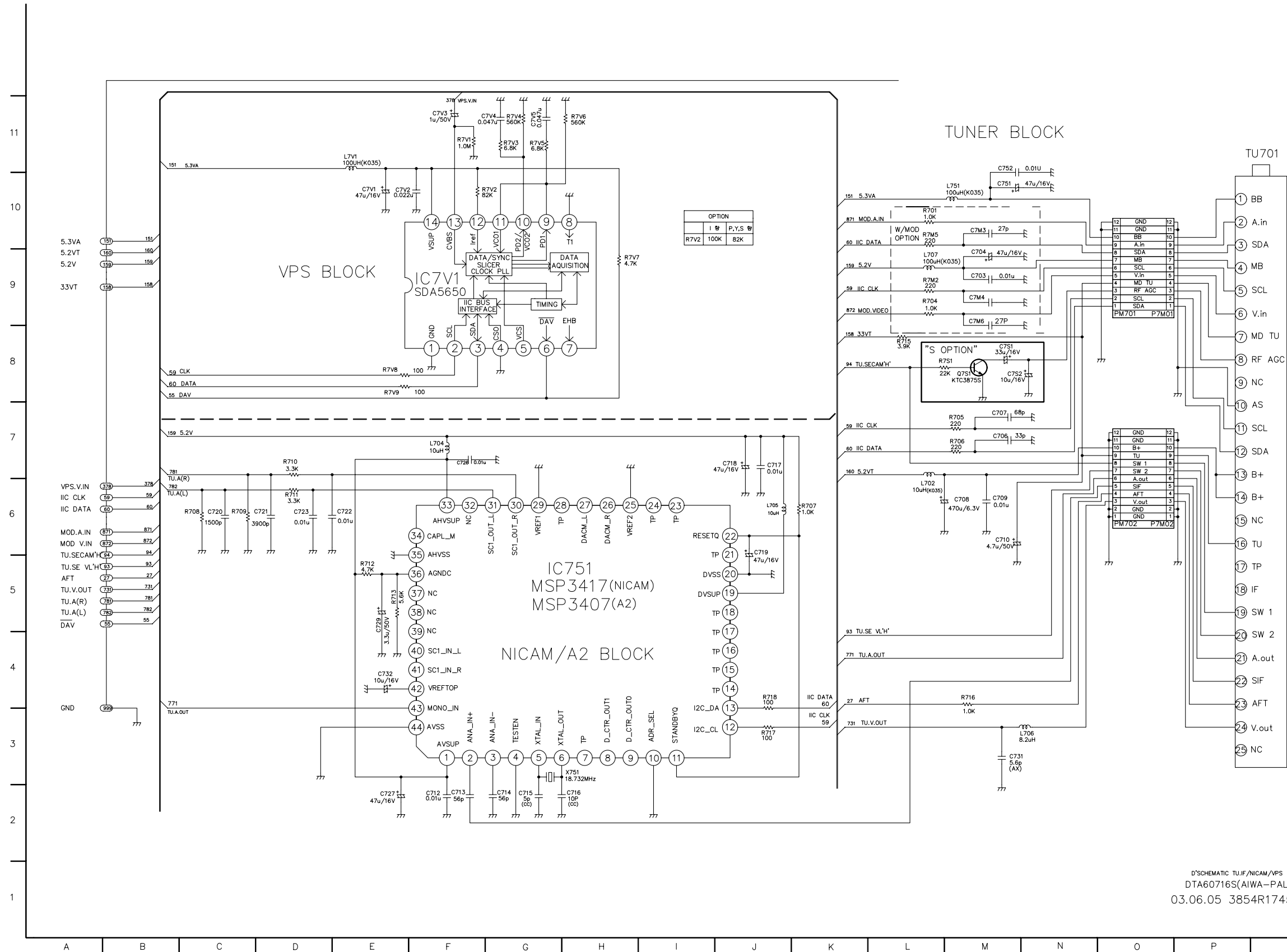


D'SCHEMATIC POWER
DTA60716S(AIWA-PAL)
03.06.05 3854R17453A

• TU/IF. ACSS SCHEMATIC DIAGRAM

LOCAION GUIDE

C703	M9
C704	M9
C706	M7
C707	M7
C708	M6
C709	M6
C710	M6
C712	F2
C713	F2
C714	G2
C715	G2
C716	G2
C717	J7
C718	J7
C719	J6
C720	E4
C721	C6
C722	F7
C723	D6
C726	F7
C727	E2
C729	E4
C731	M3
C732	E4
C751	M10
C752	M11
C7M3	M10
C7M4	M9
C7M6	M9
C7S1	M8
C7S2	M8
C7V1	E10
C7V2	E10
C7V3	F11
C7V4	F11
C7V5	G11
IC751	G5
IC7V1	F9
L702	L6
L704	F7
L705	J6
L706	M3
L707	L9
L751	L10
L7V1	E11
P7M01	O9
P7M02	O6
PM701	O9
PM702	O6
Q7S1	M8
R701	L10
R704	L9
R705	L7
R706	L7
R707	K6
R708	B6
R709	C6
R710	D7
R711	D6
R712	E5
R713	E5
R715	L8
R716	M4
R717	J3
R718	J4
R7M2	L9
R7M5	L10
R7S1	L8
R7V1	F11
R7V2	F10
R7V3	G11
R7V4	G11
R7V5	G11
R7V6	H11
R7V7	H9
R7V8	E8
R7V9	E8
TU701	F11
X751	G3

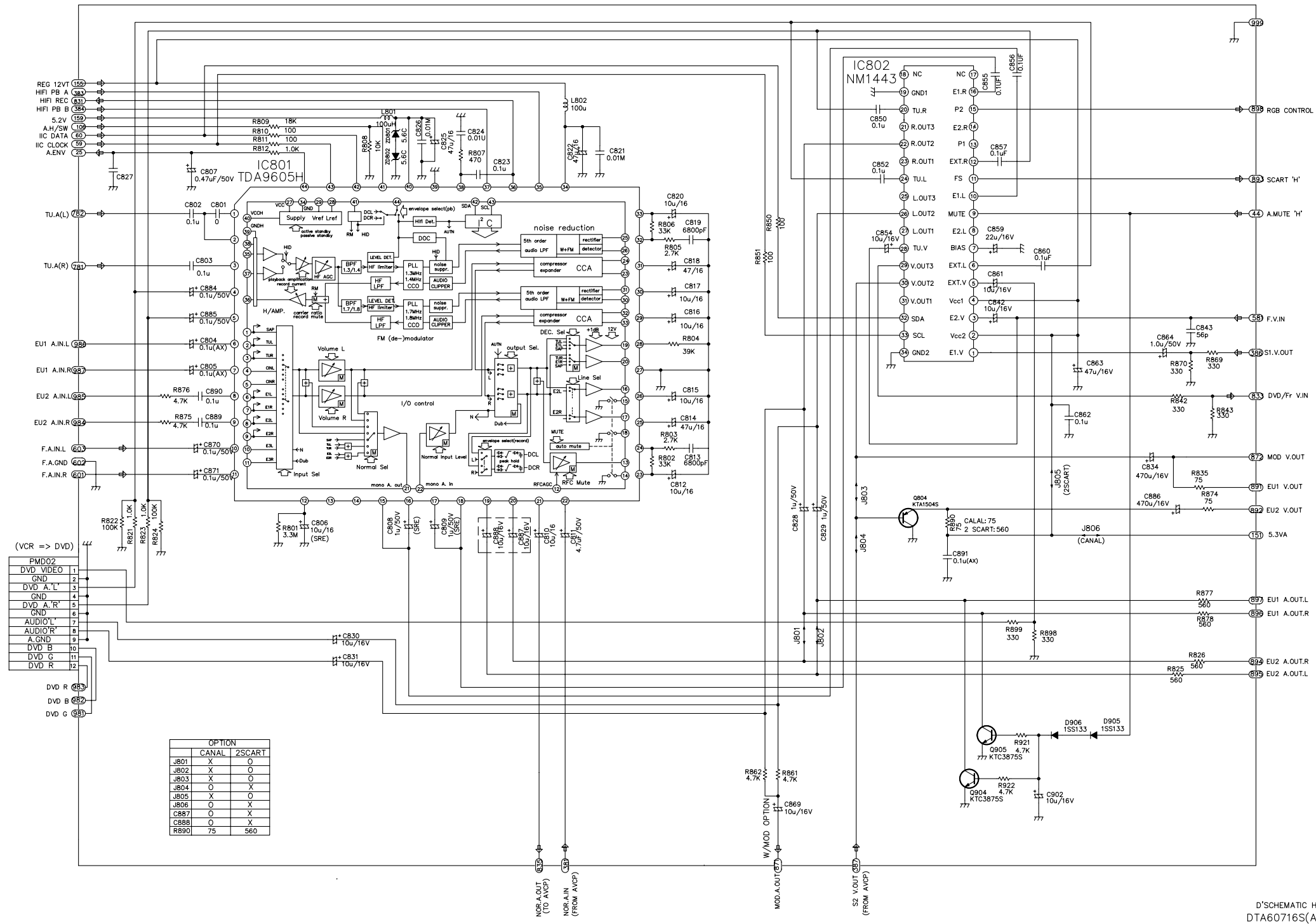


D'SCHEMATIC TU/IF/NICAM/VPS
DTA60716S(AIWA-PAL)
03.06.05 3854R17451A

HIFI/TUNER SCHEMATIC DIAGRAM

LOCATION GUIDE

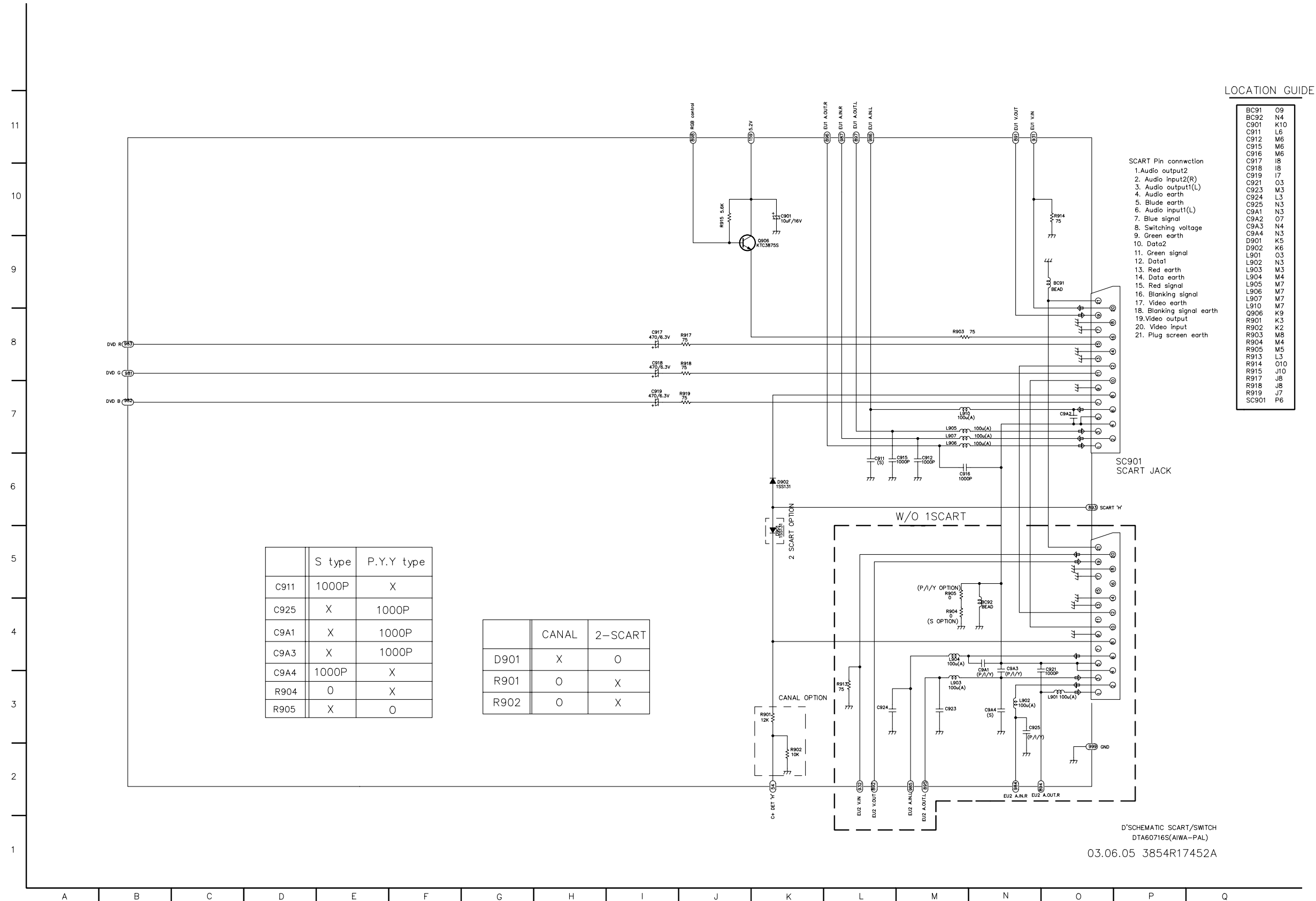
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C802	C9
C803	C9
C804	D8
C805	D8
C806	E6
C807	D10
C808	F6
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C810	H6
C811	H6
C812	I6
C813	I6
C814	I7
C815	I7
C816	IB
C817	IB
C818	I8
C819	I8
C820	I9
C821	H10
C822	H10
C823	G10
C824	G10
C825	F10
C826	F10
C827	G10
C828	J6
C829	K6
C830	E4
C831	E4
C832	M8
C833	M8
C834	N6
C835	N6
C836	M11
C837	M10
C838	M9
C839	M9
C840	M9
C841	N7
C842	N7
C843	O8
C844	O8
C845	J2
C846	J2
C847	J2
C848	J2
C849	J2
C850	K10
C851	K10
C852	K10
C853	K9
C854	K9
C855	M11
C856	M11
C857	M10
C858	M9
C859	M9
C860	M9
C861	M9
C862	N7
C863	N8
C864	O8
C865	J2
C866	J2
C867	J2
C868	J2
C869	J2
C870	D7
C871	D6
C872	D8
C873	D8
C874	D8
C875	D8
C876	N6
C877	G5
C878	G6
C879	G6
C880	D7
C881	D7
C882	L5
C883	M3
C884	N3
C885	N3
C886	M3
C887	M3
C888	M3
C889	D10
C890	J4
C891	J4
C892	K4
C893	K6
C894	K6
C895	K5
C896	M6
C897	M6
C898	N6
C899	N6
C900	F10
C901	H11
C902	B5
C903	L6
C904	L3
C905	M3
C906	M3
C907	M3
C908	D6
C909	M6
C910	M6
C911	I6
C912	I7
C913	I7
C914	I8
C915	I8
C916	I9
C917	I9
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C991	I9
C992	I9
C993	I9
C994	I9
C995	I9
C996	I9
C997	I9
C998	I9
C999	I9
C1000	I9



	CANAL	ZSCART
J801	X	O
J802	X	O
J803	X	O
J804	O	X
J805	X	O
J806	O	X
C887	O	X
C888	O	X
R890	75	560

D'SCHEMATIC HIFI/SWITCH
 DTA60716S(AIWA-PAL)
 03.06.05 3854R17450A

• A/V JACK, SCART SCHEMATIC DIAGRAM



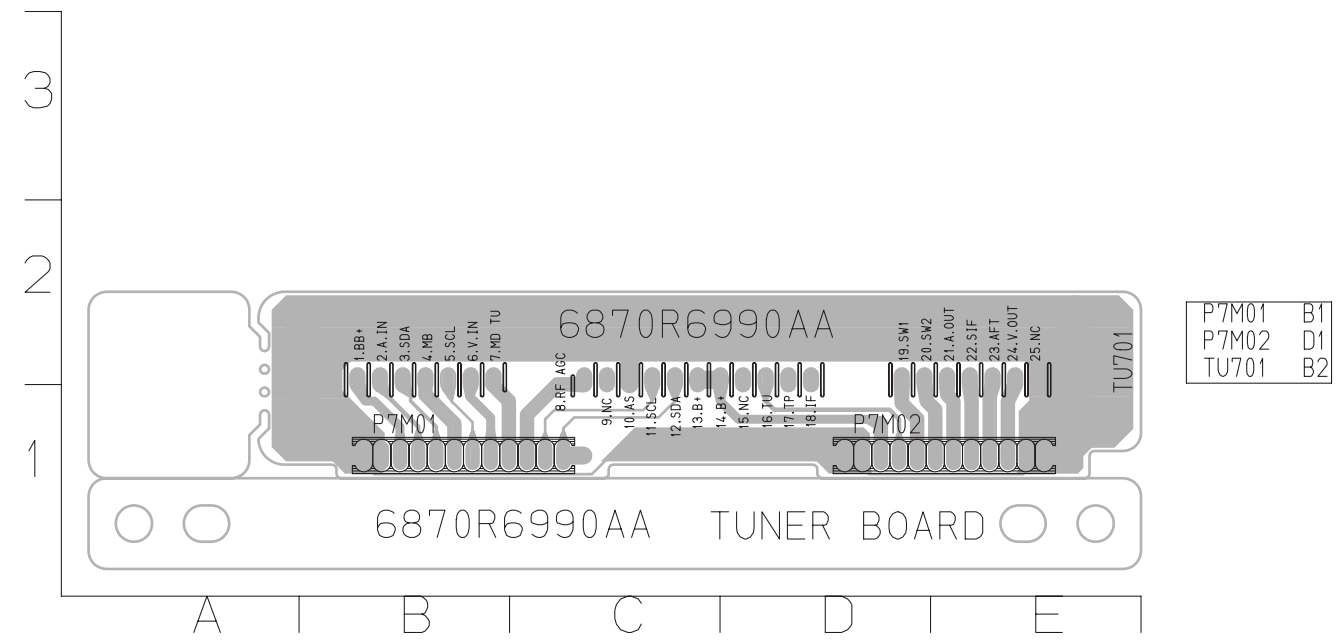
VCR VOLTAGE SHEET (IC&TR)

MODE	IC501		IC301		IC801		IC302	
	STOP	PLAY	STOP	PLAY	STOP	PLAY	STOP	PLAY
PIN NO.								
1	0.9	0	2.2	2.17	0	0	1.78	2.78
2	4.85	4.85	2.2	2.17	0	2.53	0	0
3	0	0	2.2	2.17	9.12	9.06	2.85	2.84
4	0.1	0.1	2.2	2.17	2.48	2.48	0	0
5	0.1	0.1	2.2	2.19	4.8	4.79	2.8	2.83
6	0	0	2.2	2.2	0	2.08	4.73	4.71
7	0.1	0	2.2	0	1.76	0	2	2.02
8	0.1	0	2.2	2.2	0	2.2	0	0
9	0.3	0.9	2.2	2.2	0	0		
10	0.68	0.85	2.2	2.2	0	0		
11	0.02	3.19	4.7	4.67	0	2.5		
12	0.02	0	0.99	0.98	2.5	2.66		
13	0.02	0	0.99	0.96	1.72	2.5		
14	3.8	3.8	1.85	1.76	2.5	4.74		
15	0	2.3	1.54	0.36	4.76	2.52		
16	4.47	0	0	0	2.52	0		
17	0.15	0	2	2.44	0	0.39		
18	4.77	2.38	2.4	2.47	0.56	2.66		
19	4.77	2.38	0	0	2.52	2.66		
20	4.06	0	2.4	3.33	2.52	2.66		
21	4.05	0.1	1.7	2.55	2.52	2.66		
22	0	4.85	2.8	3.09	2.52	0		
23	0	4.82	4.7	4.7	0.17	2.07		
24	0	0	0	0	2.02	0		
25	4.84	0	4.03	0	0	2.07		
26	4.77	2.5	2.15	2.2	2.02	2.07		
27	0	0	1.46	1.8	2.02	0		
28	0	0	2.13	2.1	0	0		
29	0	0	1.7	2.24	3.33	2.84		
30	0	0	2.13	2.13	0	2.84		
31	2.5	2.6	4	4	2.52	3.56		
32	4.19	4.17	2.13	2.13	4.72	4.71		
33	4.23	4.17	2.35	2.35	2.35	2.33		
34	0	0	2.8	3.1	2.35	0		
35	1.48	1.5	2.77	2.82	0	0		
36	1.48	1.4	2.1	2.1	4.76	4.74		
37	4.29	4.7	2.17	2.66	4.76	4.74		
38	2	2	0	0	4.76	4.74		
39	2.11	2	1.72	1.23	4.76	2.33		
40	0	0	0	0	4.6	0		
41	0	0.1	0.84	0.83	2.52	2.64		
42	0	0	2.15	2.15	2.52	2.61		
43	0	0	0	0	2.54	2.65		
44	2.1	2.2	4.69	4.67	2.54	2.65		
45	2.2	2.2	4.72	4.7	0.57	0.41		
46	0	0	2.11	2.94	4.76	4.74		
47	1.3	1.2	2.84	3.65	2.5	0		
48	0	0	2.8	4.23	1.75	2.62		
49	0	0	3.79	3.77	3.78	0		
50	0.9	2.3	0	2.29	0	0		
51	0	0.2	2.11	2.1	1.79	0		
52	1.5	2.3	0	4.7	1.22	0		
53	4.7	4.7	4.18	4	3.81	0		
54	0	1.9	4.18	4.8	9.12	9.06		
55	2.17	2.7	0.68	0.8	6.22	0.22		

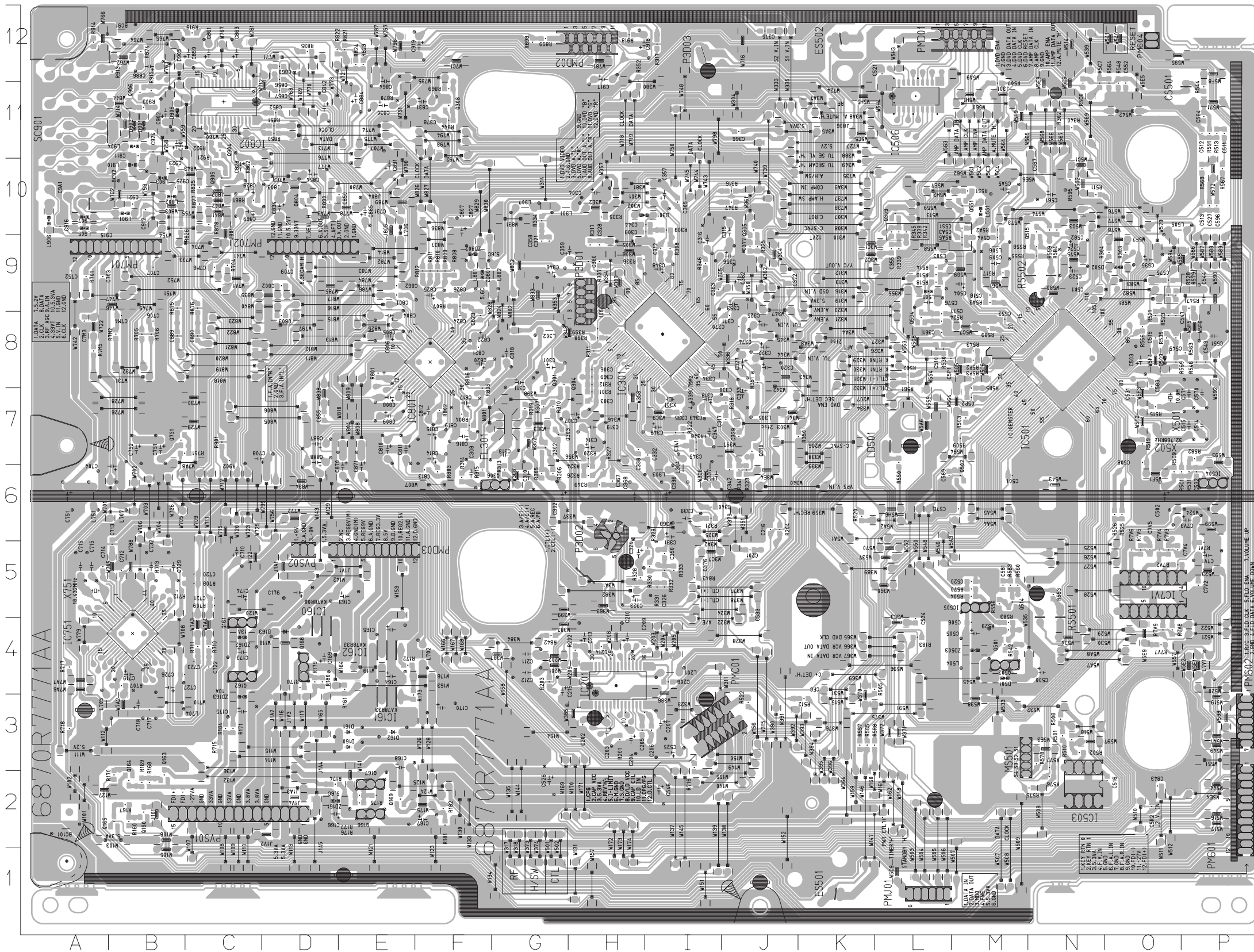
MODE	IC501		IC301		IC801		IC302	
	STOP	PLAY	STOP	PLAY	STOP	PLAY	STOP	PLAY
PIN NO.								
56	0.9	2.2	0	0	2.96	0.23		
57	0	0	3.07	2.36	2.16	2.1		
58	0	0	4.43	0	4.53	0		
59	0	0	0.35	0.29	2.54	2.53		
60	2.5	2.3	0.65	0.19	3.81	0		
61	4.6	4.5	1.07	2.23	3.13	0.22		
62	4.3	4.3	0	0	3.86	0		
63	4.4	0.1	3.72	3.7	3.8	0		
64	0	0.1	0.97	1.23	2.45	0		
65	1.1	0.8	1.66	0.72	3.84	0.29		
66	4.7	4.75	1.66	0.72	4.03	0.3		
67	4.7	4.75	1.66	0.72	3.85	0.3		
68	4.7	3.8	1.66	4.62	3.85	0.3		
69	4.7	4.7	4.7	4.68	0	0		
70	4.2	4.1	0	0	0	0		
71	4.8	4.76	0	0	0	0		
72	4.8	4.76	1.65	1.65	3.85	0.3		
73	4.4	4.4	1.65	1.65	3.85	0		
74	0	0	1.65	1.65	0	2.49		
75	4.7	0	0	0	3.85	0.2		
76	0	2.4	2.19	0	3.15	0.2		
77	0	2.4	4.72	4.7	0	0		
78	4.5	4.4	2.19	2.18	4.45	4.33		
79	4.6	4.6	0	0	0	0		
80	0	3.2	2.19	2.18	4.45	4.32		
81	0	0						
82	3.3	3.3						
83	4.4	0						
84	0	0						
85	1.3	1.2						
86	0	1.2						
87	3.5	2.18						
88	0	0						
89	0	0.19						
90	0	1.25						
91	2.3	2.35						
92	0	2.35						
93	0	0						
94	2.3	2.32						
95	2.3	2.32						
96	0	2.34						
97	0.6	0						
98	4.7	4.69						
99	0	4.77						
100	0.6	0.8						

PRINTED CIRCUIT DIAGRAMS

• TUNER P.C BOARD

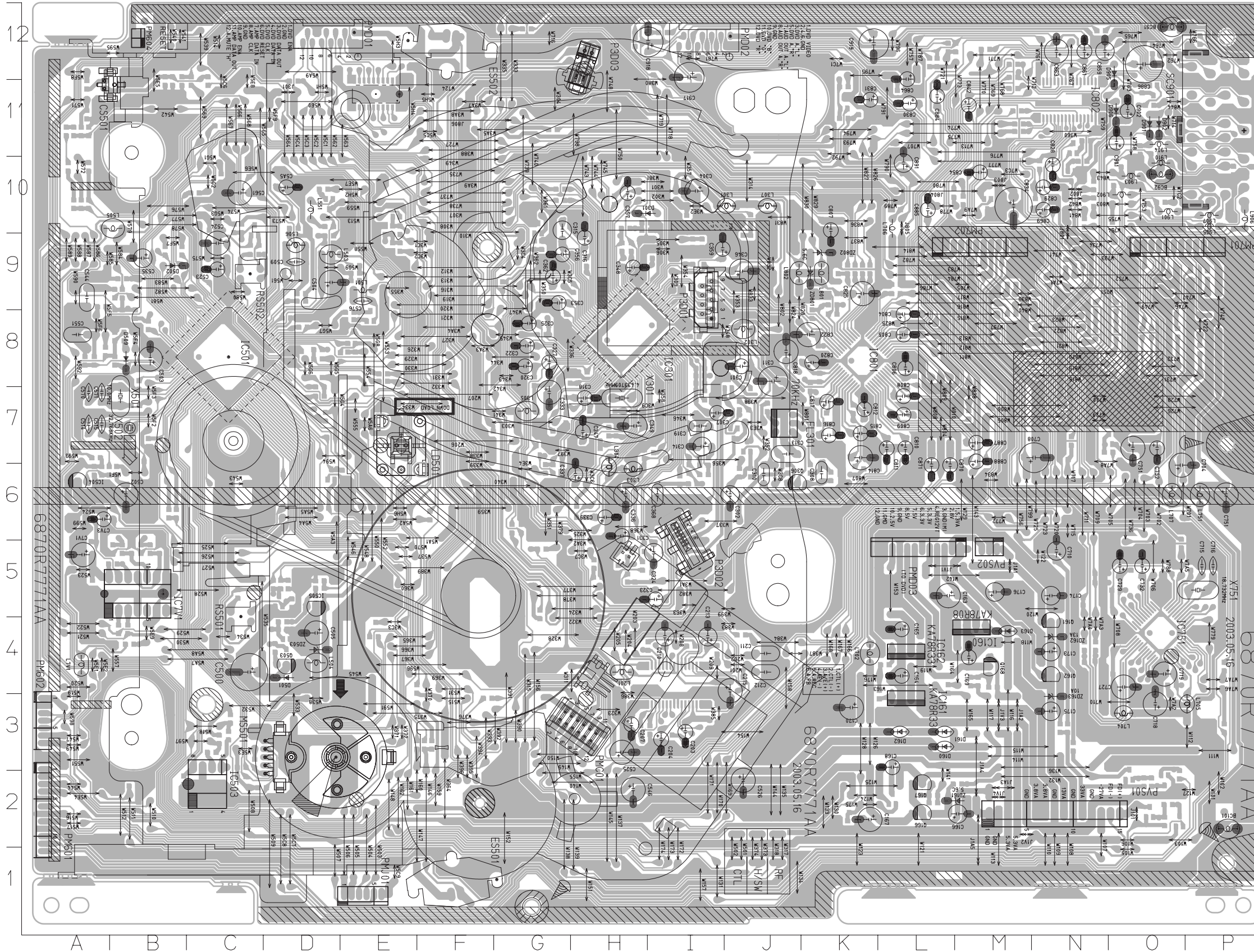


• VCR P.C BOARD



C201	J5	C5K1	N9	Q515	N10	R350	K7	R5P2	M8
C202	H3	C5P1	L8	Q551	M10	R351	J8	R5P3	M8
C205	H3	C5P2	M7	Q751	B7	R352	H1	R5R8	K3
C206	I3	C5R2	O2	Q804	D10	R398	H8	R551	M10
C208	I4	C5S1	M10	Q904	C11	R399	H8	R701	A9
C209	H4	C5S3	M8	Q905	C10	R501	N3	R704	C9
C214	H4	C703	A9	Q906	B11	R502	N3	R705	B8
C216	J6	C706	B8	R160	B2	R503	M7	R706	B8
C303	H7	C707	B9	R161	E4	R504	M5	R707	B4
C305	I10	C709	D9	R167	B2	R505	K4	R708	C5
C306	H8	C712	B5	R168	B2	R507	M1	R709	C5
C309	I10	C713	B5	R169	B2	R508	N3	R710	C4
C312	I9	C714	A5	R170	B2	R509	M7	R711	C4
C317	J7	C717	B3	R171	C3	R510	N3	R712	B5
C321	G9	C720	C5	R172	E4	R511	N10	R713	B5
C326	I5	C721	C5	R173	E3	R512	K3	R715	C3
C328	H9	C722	C4	R174	D2	R513	P1	R716	I3
C329	J7	C723	C4	R175	E2	R514	L9	R717	A4
C330	J8	C726	B4	R176	E2	R515	O7	R718	A3
C332	I7	C731	E10	R177	E2	R516	L9	R7M2	B8
C334	I8	C752	A9	R178	E4	R517	M9	R7M5	A8
C335	I7	C7M3	A8	R179	D4	R518	L9	R7S1	B7
C338	H7	C7M4	B8	R180	D4	R519	O7	R7V1	P5
C340	I6	C7M6	C9	R181	F2	R520	K6	R7V2	O5
C341	I7	C7V2	P5	R182	F2	R521	O8	R7V3	O5
C342	J6	C7V4	O5	R183	L4	R522	J3	R7V4	O5
C343	I7	C7V5	O5	R184	C3	R523	O8	R7V5	O5
C344	I10	C801	E9	R201	H3	R524	L8	R7V6	O5
C345	I7	C802	D9	R202	H4	R525	O6	R7V7	O4
C350	I5	C803	D8	R203	G4	R526	O6	R7V8	O4
C355	L9	C813	F6	R204	J6	R528	O9	R7V9	O4
C358	G9	C819	F7	R301	H7	R529	M4	R801	E8
C360	H9	C821	F8	R302	N1	R530	L8	R802	F7
C361	L8	C823	F8	R303	O9	R531	P6	R803	F6
C363	I9	C824	F8	R304	O9	R535	O8	R804	F7
C366	J11	C826	F9	R305	G6	R542	M4	R805	F7
C367	H6	C827	F10	R306	G6	R543	M8	R806	F8
C369	H8	C843	O2	R307	G7	R544	P1	R807	F9
C370	J8	C850	E10	R308	I9	R546	P8	R808	F9
C371	J8	C852	D11	R309	I10	R547	P9	R809	F9
C372	J9	C855	D7	R310	G7	R548	O1	R810	F9
C374	J8	C856	D12	R311	H8	R550	L7	R811	F9
C375	J12	C857	D11	R312	H8	R553	N5	R812	F9
C376	I5	C860	D12	R313	G6	R555	N9	R821	E12
C377	J9	C862	E9	R314	F6	R556	M5	R822	D12
C378	F11	C889	B8	R315	F6	R557	K3	R823	E12
C501	M6	C890	C8	R316	J11	R558	N9	R824	E12
C506	M4	C911	B11	R317	H9	R559	N10	R825	C10
C508	O7	C912	B10	R318	J7	R560	M5	R826	B10
C510	L8	C915	A10	R319	G7	R561	L8	R835	D12
C511	P11	C916	A10	R320	H7	R562	L8	R842	G4
C512	P10	C921	B10	R321	I6	R563	P8	R843	I5
C513	P11	C923	B10	R322	I7	R564	O1	R850	D11
C516	O2	C924	B11	R323	J6	R566	O8	R851	D11
C518	M9	C925	B10	R324	H6	R567	P10	R861	C10
C519	O8	C9A1	A10	R325	J9	R568	P10	R862	C10
C520	M5	IC201	H4	R326	H6	R569	O8	R869	F11
C521	L12	IC301	I8	R327	H6	R570	M5	R870	E11
C522	P10	IC506	L1	R328	H5	R575	N2	R874	B12
C531	O7	IC751	B4	R329	I5	R576	N2	R875	B9
C532	P6	IC801	F8	R330	I5	R577	N3	R876	C9
C533	J5	IC802	C1	R331	I5	R578	N3	R877	C10
C534	L4	Q160	B2	R332	I5	R579	O9	R878	C10
C543	P8	Q163	B2	R333	I5	R582	P7	R890	D10
C545	O8	Q164	B2	R334	G10	R583	M4	R898	G12
C547	O8	Q165	B2	R335	H10	R589	M8	R899	G12
C552	O11	Q169	E2	R336	H9	R591	P11	R901	C7
C564	P11	Q301	G8	R337	H9	R595	N10	R902	C7
C567	N10	Q302	G7	R338	L10	R5A2	M10	R903	B11
C575	O9	Q303	G7	R339	L9	R5A3	M9	R913	B12
C577	L8	Q304	G8	R340	N11	R5A5	M9	R914	A12
C578	M6	Q305	J11	R341	J6	R5B3	M5	R915	B11
C581	M5	Q308	F10	R342	L10	R5B4	N10	R917	I12
C582	N10	Q309	L10	R344	F11	R5B5	M7	R918	H12
C583	O8	Q310	J7	R345	L10	R5C1	P6	R919	C12
C589	L6	Q501	M4	R346	I9	R5C5	K3	R921	C10
C596	P10	Q502	M6	R347	J10	R5C6	N1	R922	C11
C5A3	M9	Q504	L8	R348	I7	R5C7	N11		
C5A4	M9	Q514	M5	R349	H6	R5C9	O6		

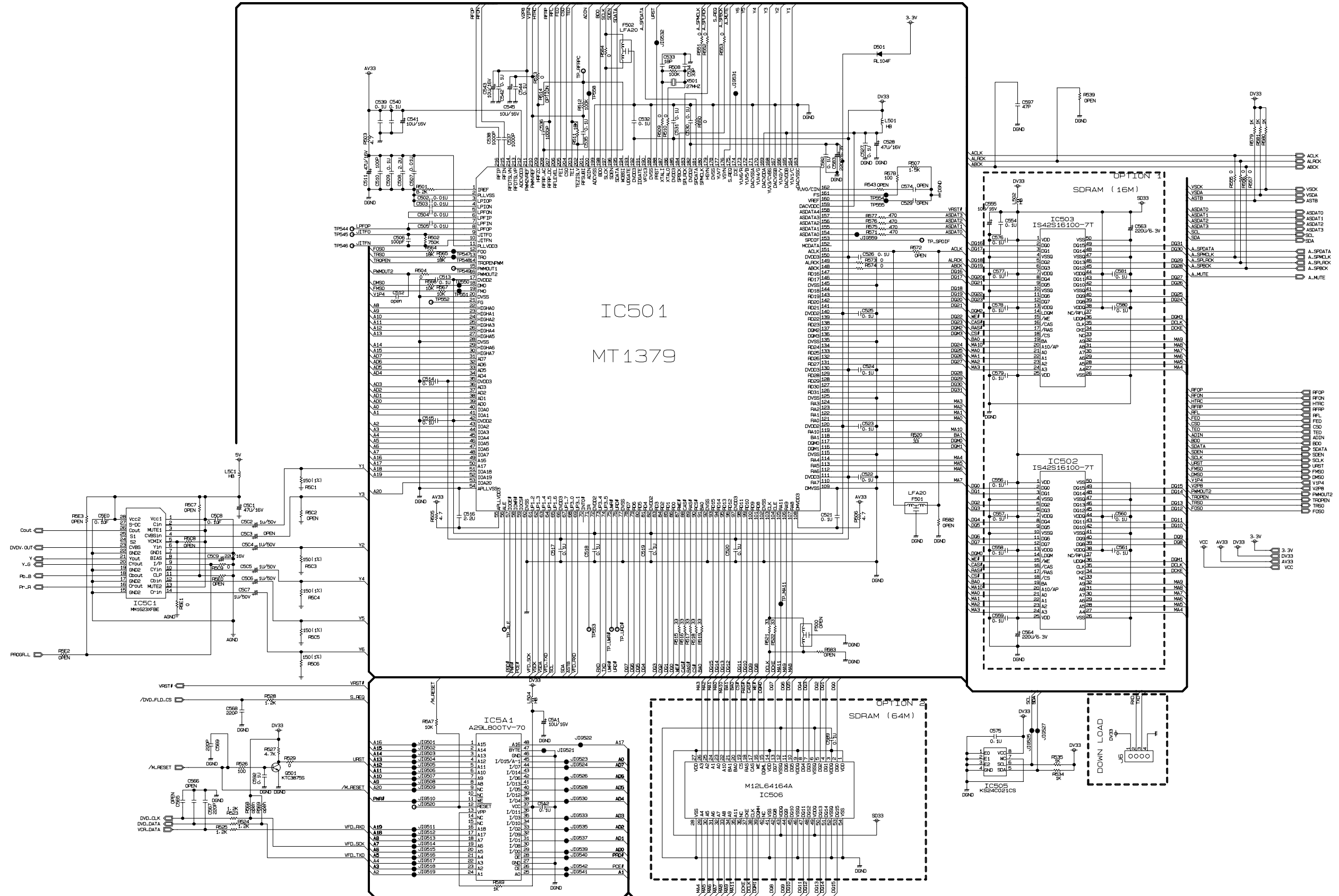
• VCR P.C BOARD



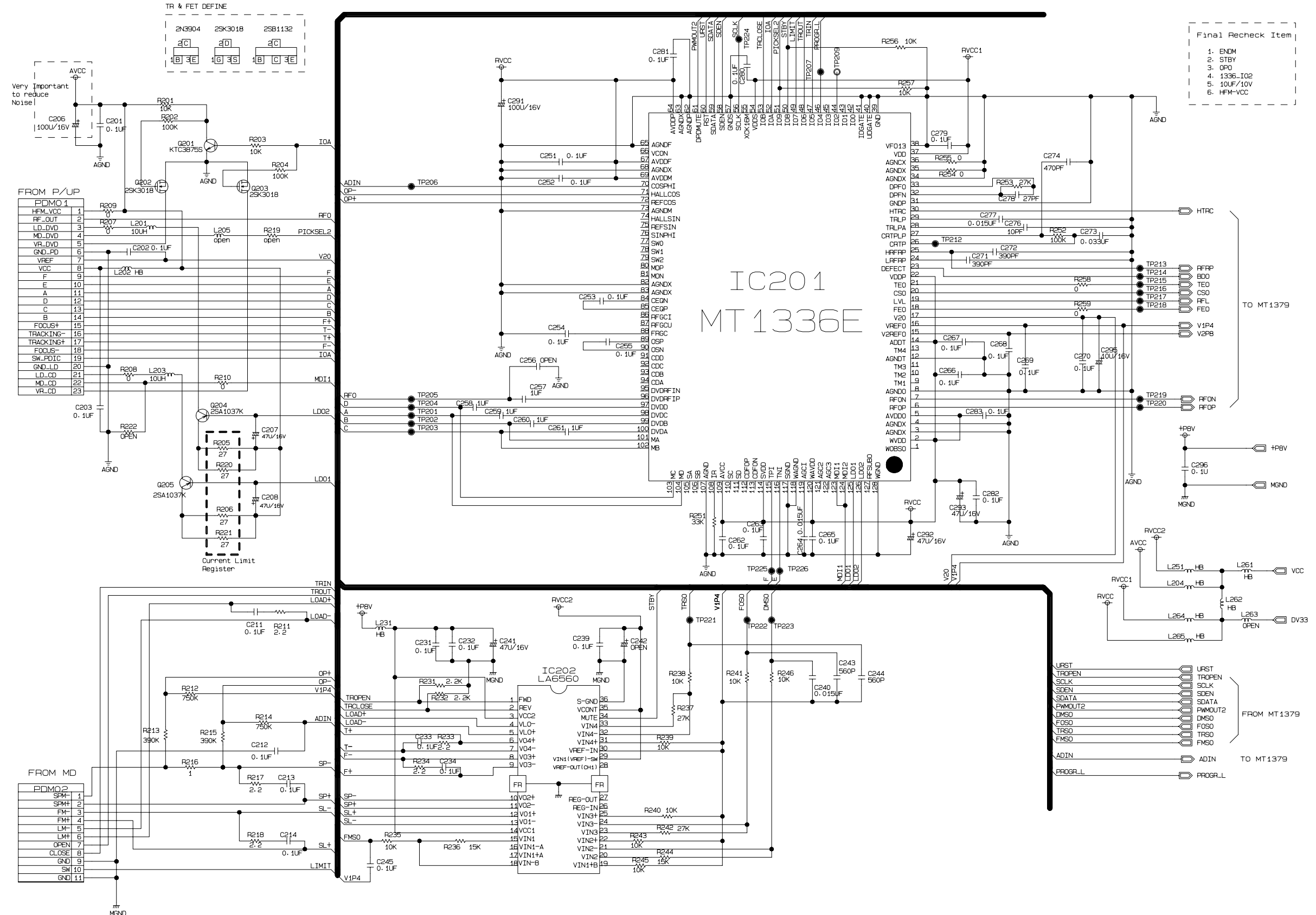
BC101	P2	C715	P5	J1A3	M2
BC92	012	C716	P5	J1A4	M3
BC92	010	C718	03	J1A5	M2
C163	L5	C719	04	J1V1	L5
C164	L4	C727	04	J1V2	M2
C165	L4	C729	05	J1V3	M3
C166	M2	C732	05	J1V4	M2
C167	K2	C751	P6	J301	D1
C168	L3	C751	07	J801	N10
C169	M4	C752	07	J802	N10
C170	K3	C7V1	A5	J803	M10
C173	N4	C7V3	A6	J804	L10
C174	N5	C804	L8	J805	L10
C175	N3	C805	L8	J806	F11
C176	M5	C806	L8	L201	H4
C203	I3	C807	K10	L301	J10
C204	I3	C808	L7	L302	J8
C207	H3	C809	L7	L303	H6
C210	I4	C810	L7	L304	H6
C211	J4	C811	L7	L305	G7
C212	J4	C812	K7	L307	J10
C213	I4	C814	K7	L501	E9
C215	J4	C815	K7	L503	D9
C301	J8	C816	K7	L504	D4
C302	J6	C817	K7	L505	B10
C304	I10	C818	J8	L506	D9
C307	I7	C820	K8	L551	D10
C308	K6	C822	K8	L702	K4
C310	J6	C825	K9	L704	03
C311	J8	C828	N10	L705	P3
C313	J7	C829	N10	L706	L10
C314	I7	C830	L11	L707	06
C315	G10	C831	K11	L751	P6
C316	H9	C834	M10	L7V1	A4
C318	H7	C842	M11	L801	K9
C319	I7	C854	M10	L802	J9
C320	G8	C859	N12	L901	010
C322	G8	C861	N12	L902	010
C323	I5	C863	N12	L903	010
C324	I5	C864	L11	L904	011
C325	G8	C869	N10	L905	P10
C327	G8	C870	L6	L906	P10
C331	H6	C871	L6	L907	P10
C333	G7	C884	L11	L910	010
C336	H6	C885	L10	LD501	E7
C337	H6	C886	012	M5501	D3
C339	H6	C887	M7	P3D01	18
C346	J9	C888	M7	P3D02	16
C347	H7	C891	L10	P3D03	H12
C348	H9	C901	011	PM601	A3
C349	H7	C902	011	PM602	A3
C353	G9	C917	I12	PM604	B12
C356	G9	C918	I12	PM701	09
C357	H10	C919	K12	PM702	L9
C359	I9	C5501	B11	PMC01	G3
C362	G9	D160	L3	PMD01	E12
C368	I6	D161	L3	PMD02	J12
C500	C4	D162	L3	PMD03	M5
C502	B6	D163	M4	PMJ01	E1
C503	B8	D301	I10	PVS01	M2
C504	D9	D501	D4	PVS02	M5
C505	D4	D502	B9	Q161	N4
C509	D9	D509	B8	Q162	N4
C514	A7	D901	011	Q166	L2
C515	A7	D902	011	Q167	L2
C523	C9	D905	012	Q168	M4
C524	C9	D906	011	Q306	J6
C525	H3	E5501	G1	Q503	D4
C526	J2	E5502	E12	RS501	C4
C535	B9	FL301	J7	RS502	C9
C544	A9	IC160	M4	SC901	P1
C546	H2	IC161	L3	X301	H7
C551	A8	IC162	L4	X501	B7
C561	C10	IC501	C8	X502	B7
C570	A7	IC503	C2	X751	P5
C571	A7	IC504	A6	ZD161	M2
C576	E9	IC505	D5	ZD162	N4
C5A5	D10	IC7V1	A5	ZD163	N3
C704	06	J101	02	ZD503	D4
C708	N7	J1A1	M5	ZD801	K9
C710	N5	J1A2	M3	ZD802	K9

DVD PART SCHEMATIC DIAGRAMS

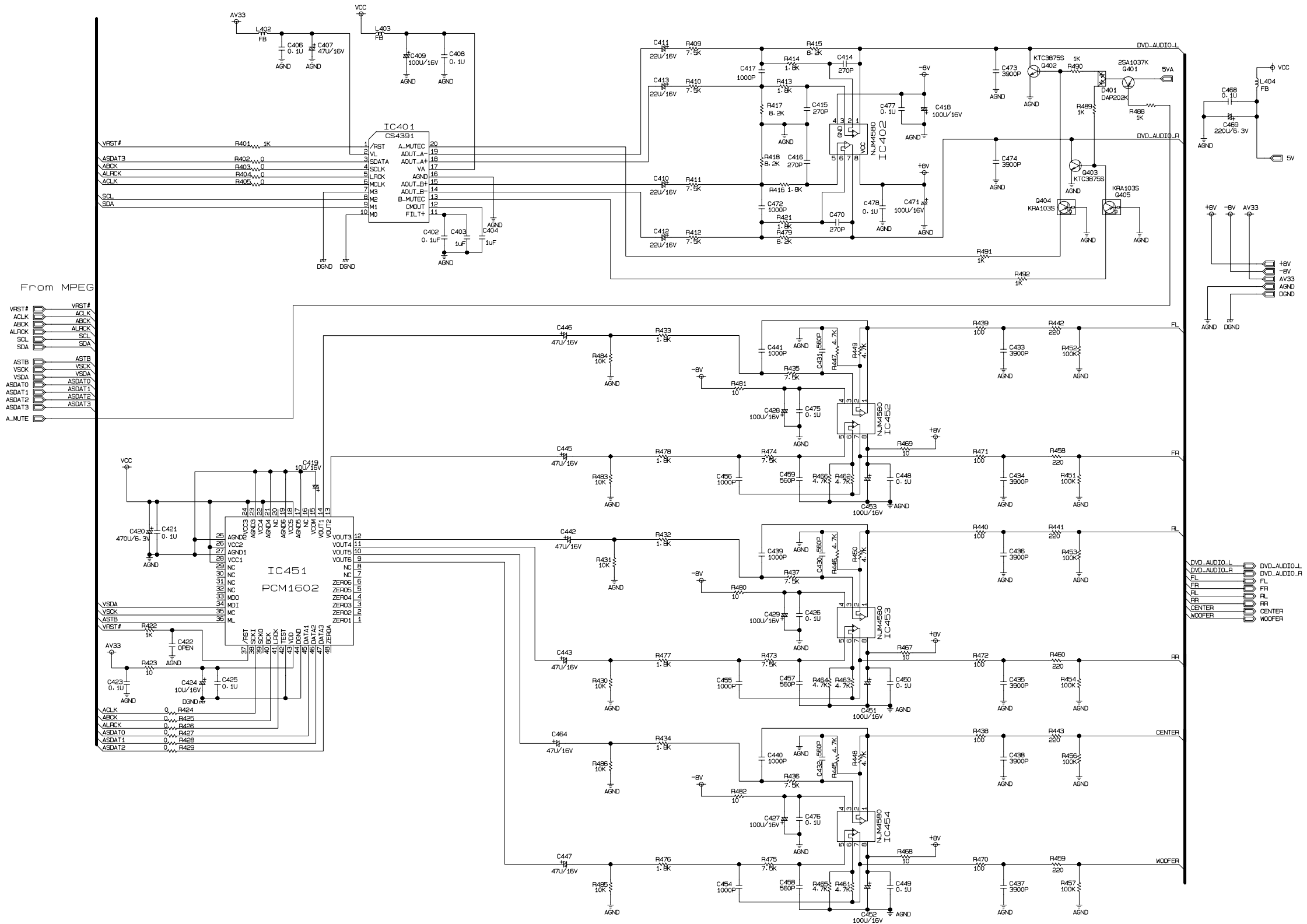
• MPEG SCHEMATIC DIAGRAM



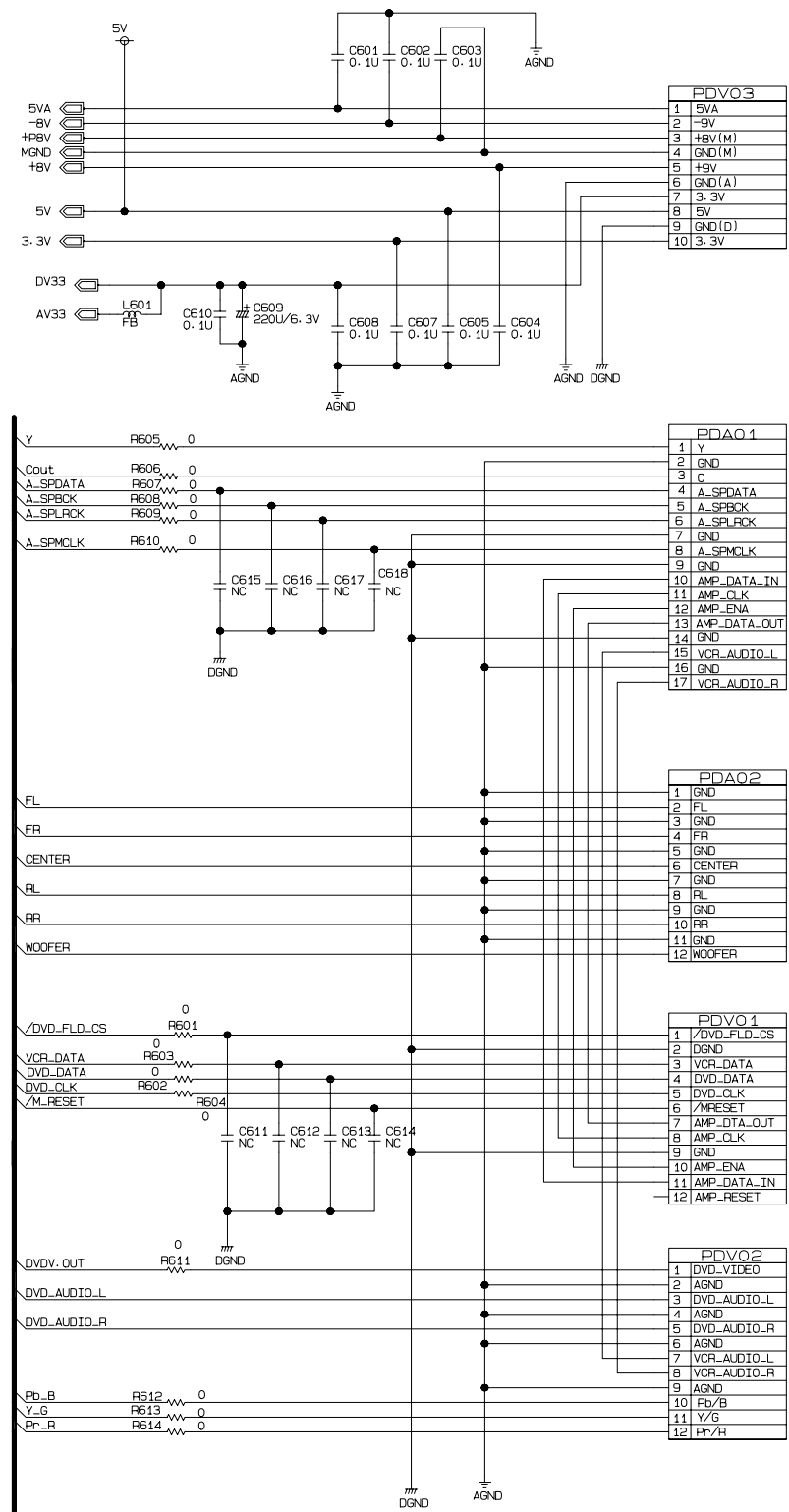
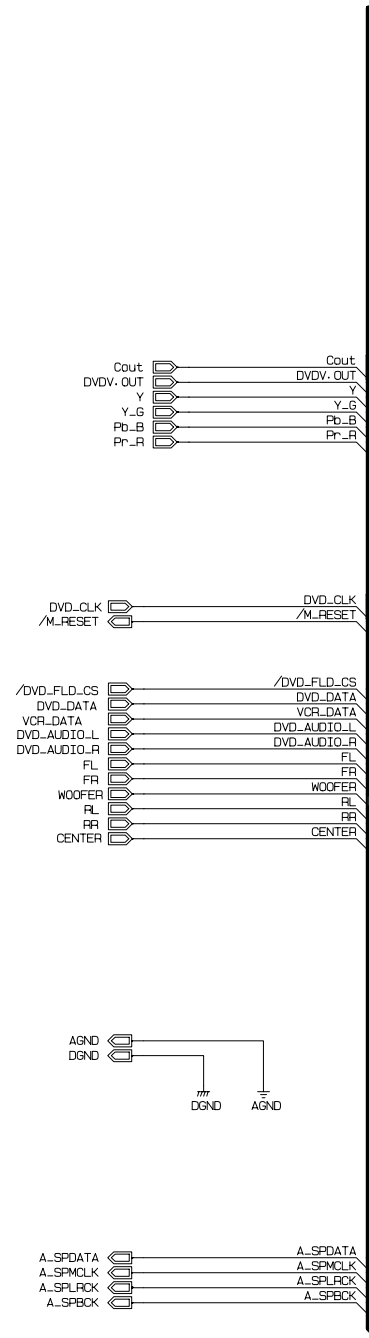
• SERVO SCHEMATIC DIAGRAM



• AUDIO SCHEMATIC DIAGRAM



• INTERFACE SCHEMATIC DIAGRAM

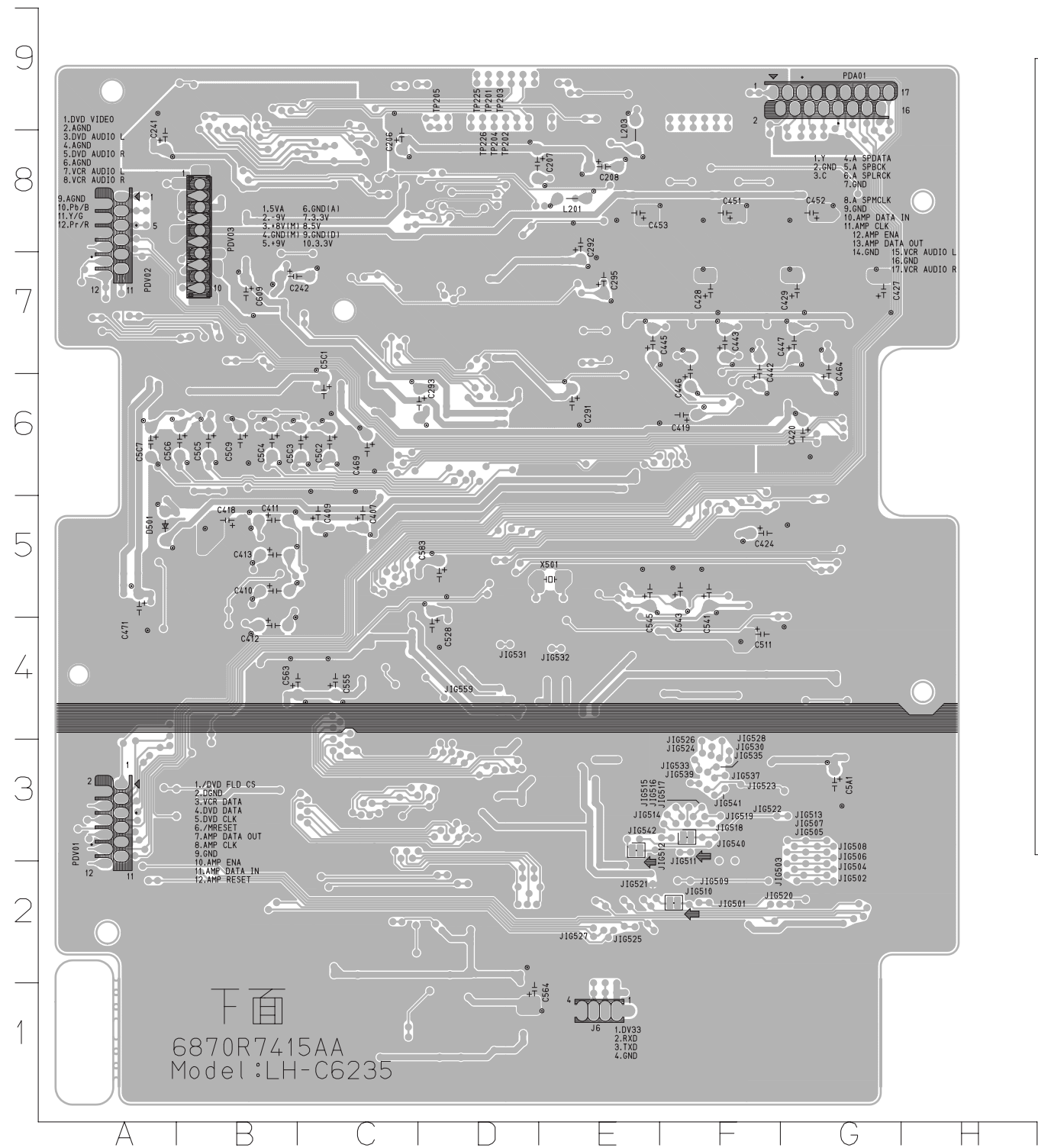


VOLTAGE SHEET (IC&TR)

PIN	IC201(MT1336E)		IC202(MOTOR)		IC401(CS4391)		IC402(AMP)		IC5C1(MM1623XFB)		IC501(MT1379)		IC502(SDRAM)		IC505(EEPROM)		IC510(BUFFER)	
	STOP	PLAY	STOP	PLAY	STOP	PLAY	STOP	PLAY	STOP	PLAY	STOP	PLAY	STOP	PLAY	STOP	PLAY	STOP	PLAY
1	1.03	2.99	0	0	3.28	3.29	5.52	5.49	5.09	5.08	1.22	1.22	3.27	3.28	0	0	0	0
2	5.11	5.08	0	0	3.28	3.28	5.52	5.48	2.43	2.42	0	0	1.18	1.26	0	0	2.59	2.55
3	0	0	8.04	8.01	0	1.65	5.51	5.47	5.09	5.08	0.96	0.9	1.1	1.52	0	0	0	0
4	0	0	0.12	0.06	1.63	1.64	0	0	1.45	0	2	2.06	0	0	0	0	2.59	2.56
5	5.11	5.07	0	0.06	1.64	1.65	5.51	5.48	0	0	0	1.51	0.66	1.07	3.28	3.29	0	0
6	0	1.95	3.64	3.69	1.59	1.61	5.51	5.48	1.45	1.69	1.48	1.47	0.85	1.12	3.28	3.29	3.24	3.23
7	0	0	3.62	3.61	0	0	5.52	5.47	0	0	0	1.56	3.27	3.28	0	0	0	0
8	0	0	3.64	3.53	3.28	0	12.03	12.03	2.47	2.46	3.2	1.52	0.51	0.97	3.28	3.29	0.14	0.08
9	5.11	0	3.6	3.76	3.28	3.29			0	0	0.12	0.06	3.06	0			0	0
10	5.11	5.08	3.62	2.43	0	0			1.14	1.76	0.12	0.06	0	0			0	0
11	5.11	5.08	3.63	4.85	5.01	5.01			0	0	3.25	3.25	0.06	0.98			0.15	0.09
12	0	0	3.62	3.72	2.31	2.31			2.42	2.42	1.41	1.49	3.18	0.87			0	0
13	5.11	0	3.64	3.57	4.96	0			5.09	5.08	1.41	1.41	3.27	3.28			0.15	0.08
14	5.11	5.08	8.04	8.01	1.42	2.41			2.43	2.42	0	0	2.94	2.56			5.19	5.19
15	2.84	2.81	1.45	1.48	2.4	2.39			0	0	1.42	1.42	0.47	0.42			0.14	0.09
16	1.45	1.43	0.27	1.39	0	0			2.49	2.47	3.3	0	2.93	3.01			5.25	5.24
17	2.08	2.07	0.29	1.32	5.11	5.09			0	0	2.53	2.53	3.21	3.22			0.15	0.08
18	1.37	1.42	1.45	1.43	2.41	2.41			2.48	2.47	1.42	2.27	2.87	2.95			5.23	5.23
19	0.69	2.3	1.45	1.43	2.43	2.43			0	0	1.42	1.39	0.15	1.32			0	0
20	2.4	0	1.45	0.82	0	0			1.18	2.3	0	0	0	0.05			5.25	5.25
21	2.35	0	1.45	1.43					1.76	2.17	2.61	2.58	3.09	1.32				
22	5.11	5.08	1.45	1.43					0	0	0.75	1.46	3.09	1.32				
23	0	0	1.47	1.37					1.76	2.24	2.83	1	3.09	1.32				
24	2.59	3.2	1.45	1.43					0	0	1.9	0.89	3.09	1.33				
25	0.19	1.88	1.45	1.43					0	0	1.72	0.39	3.27	3.29				
26	1.58	0	0.95	0.91					0	0	0.68	0.31	0	0				
27	2.56	3.13	0	0					0.06	0.05	2.84	3.16	0.15	1.36				
28	2	2.01	1.45	1.43					5.09	0	0	0	1.84	2.36				
29	2	2.06	5.15	5.11							2.85	0.66	1	2.32				
30	2.96	1.52	1.45	1.43							1.83	0.49	0.54	1.75				
31	0	0	1.45	1.43							0.91	1.39	0.06	0.06				
32	0.06	2.07	1.45	1.43							1.43	1.2	0.05	0.06				
33	0.07	2.07	1.46	1.45							1.51	1.57	0	0				
34	0	0	5.08	5.06							1.51	1.43	0.73	1.26				
35	0	0	5.15	5.11							3.3	3.29	1.48	1.55				
36	0	0	0	0							0.81	1.26	2.91	2.53				
37	5.13	0									1.45	1.02	0.07	0				
38	0	0									1.82	1.6	3.27	3.28				
39	0	0									1.2	1.5	1.06	1.05				
40	0	0									2	2.06	0.47	0.98				
41	0	0									2.17	1.95	0	0				
42	5.12	5.09									2.53	2.52	0	0.6				
43	5.12	5.09									1.96	1.9	1.12	1.24				
44	5.12	5.09									1.79	1.9	3.27	3.28				
45	5.12	5.09									0.8	1.72	1.21	0.99				
46	5.12	5.09									0.8	1.96	1.31	1.34				
47	0	0									0.8	1.84	0	0				
48	5.12	5.09									3.3	2.63	1.43	1.44				
49	5.12	0									0	0.13	0.88	1.01				
50	5.08	5.06									0	0.07	0	0				
51	5.09	5.07									0	0						
52	5.1	0									0	0						
53	0	0									0	0						
54	5.13	0									0	0						
55	0.09	0.2									3.25	3.27						
56	1.61	0									1.21	1.18						
57	0	0									0	0						
58	0	0									3.29	3.29						
59	0	0									0	0						
60	0	0									0	0						
61	3.28	0									2.59	2.57						
62	0	0									2.58	2.58						
63	0	0									0	0						
64	0	0									2.59	2.56						
65	0	0									3.29	3.29						
66	0.26	0									3.3	3.29						
67	5.12	5.08									3.29	3.29						
68	0	0									2.57	2.56						
69	5.12	0									5.19	5.18						
70	3.21	2.03									2.59	2.57						
71	3.46	2.2									0.12	0.08						
72	2.81	0									2.53	2.52						
73	0	0									2.59	2.57						
74	0.21	0.09									3.29	3.29						
75	0.22	0									2.61	2.61						
76	0	0.1									3.27	3.24						
77	0.21	0.09									0	0						
78	0.23	0.09									0.94	1.04						
79	0.21	0.08									0.78	1.06						
80	0.23	0.08									0.89	1.15						

PRINTED CIRCUIT DIAGRAM

• DVD P.C. BOARD(SOLDER SIDE)

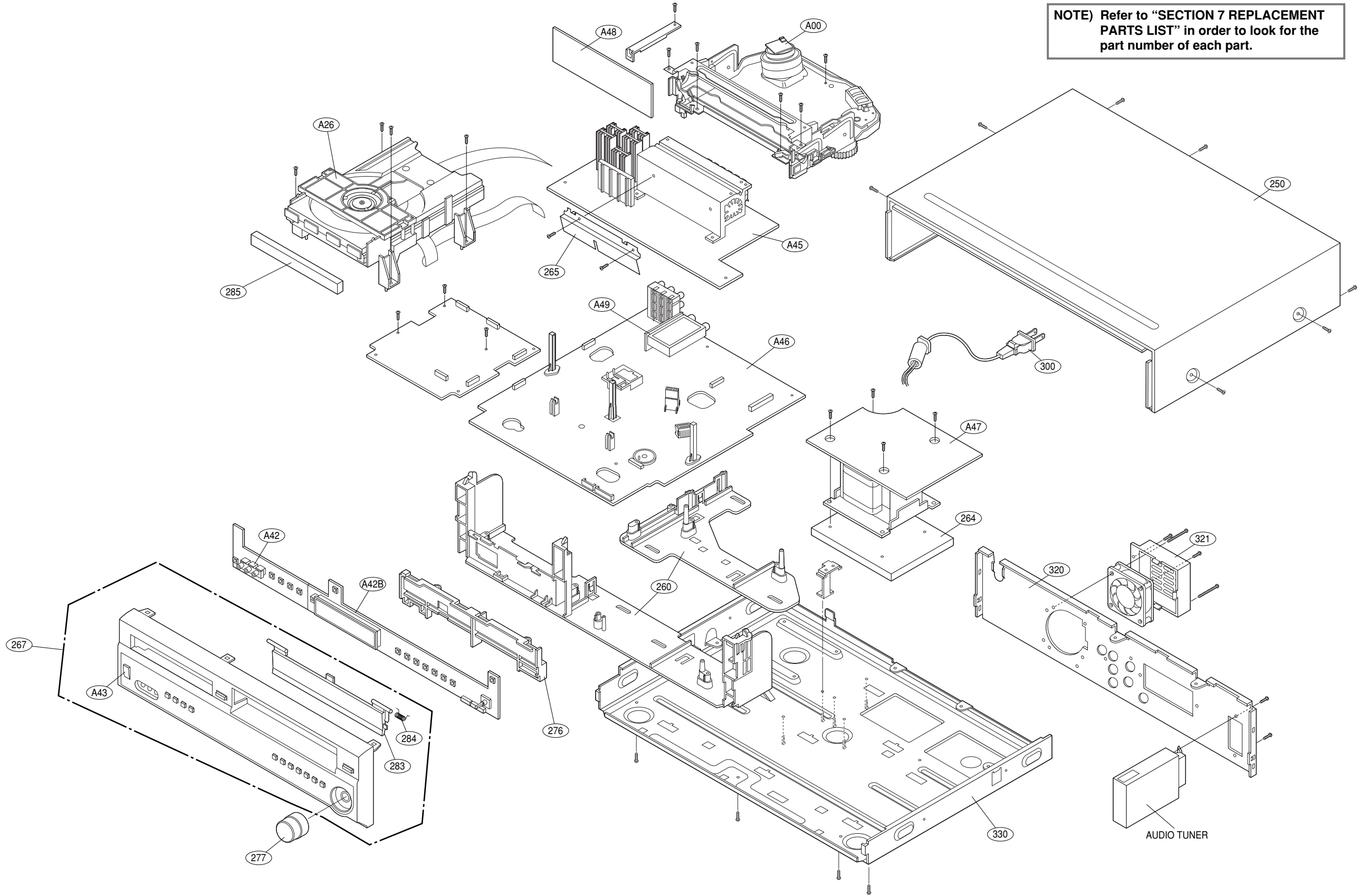


J1G501	F2
J1G502	G2
J1G503	G2
J1G504	G2
J1G505	G2
J1G506	G3
J1G507	G3
J1G508	G3
J1G509	F2
J1G510	F2
J1G511	F3
J1G512	F3
J1G513	G3
J1G514	F3
J1G515	F3
J1G516	F3
J1G517	F3
J1G518	F3
J1G519	F3
J1G520	G2
J1G521	E2
J1G522	F3
J1G523	F3
J1G524	F3
J1G525	E2
J1G526	F3
J1G527	E2
J1G528	F3
J1G530	F3
J1G531	D4
J1G532	E4
J1G533	F3
J1G535	F3
J1G537	F3
J1G539	F3
J1G540	F3
J1G541	F3
J1G542	E3
J1G559	D4
TP201	D9
TP202	D9
TP203	D9
TP204	D9
TP205	D9
TP225	D9
TP226	D9

SECTION 7. EXPLODED VIEWS

• CABINET AND MAIN FRAME

NOTE) Refer to "SECTION 7 REPLACEMENT PARTS LIST" in order to look for the part number of each part.



SECTION 4. MECHANISM OF VCR PART

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MECHANISM TROUBLESHOOTING GUIDE

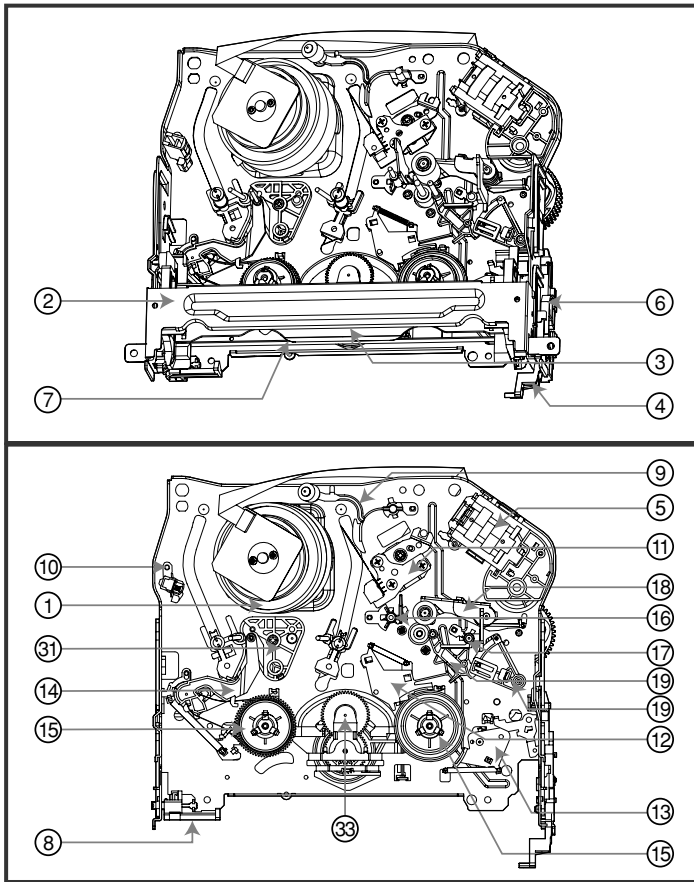
1. Deck Mechanism.....4-23
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EXPLODED VIEWS

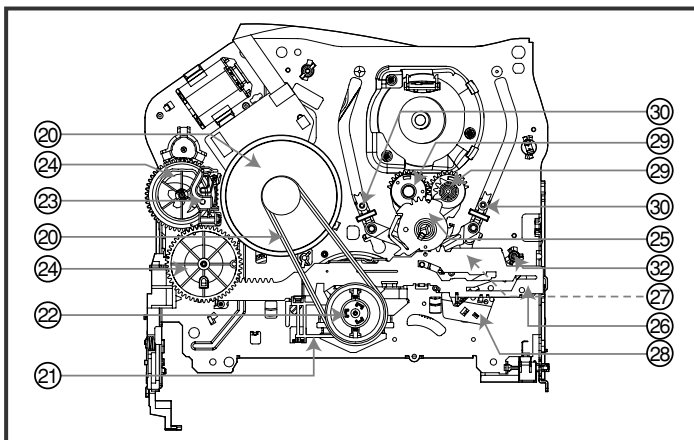
1. Front Loading Mechanism Section4-28
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DECK MECHANISM PARTS LOCATIONS

• Top View



• Bottom View



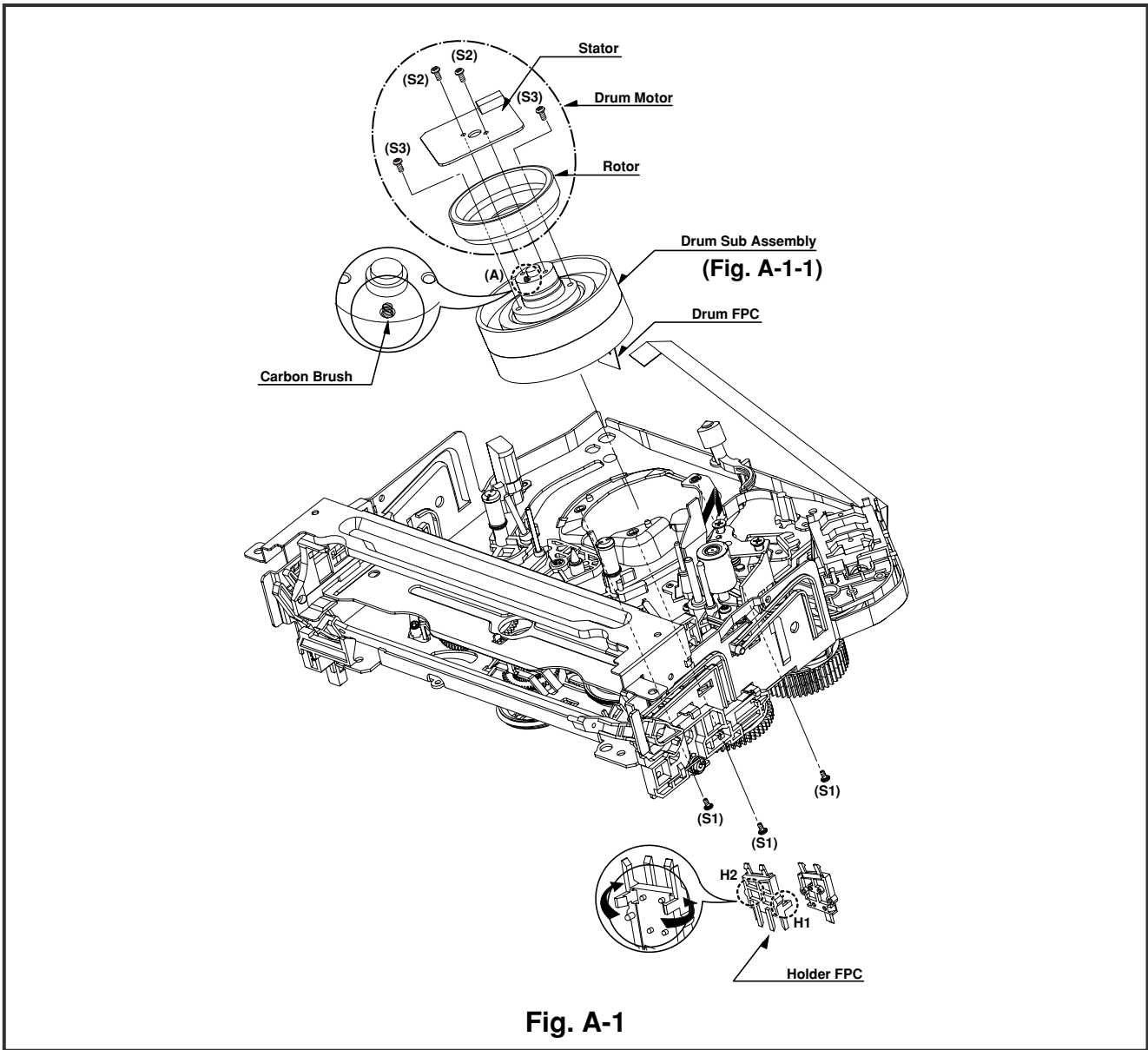
NOTE : When reassembly perform the procedure in the reverse order.

- 1) When reassembling, confirm Mechanism and Mode Switch Alignment Position (Refer to Page 4-13)
- 2) When disassembling, the Parts for Starting No. Should be removed first.

Starting No.	Part	Fixing Type	Figure	View
1	Drum Assembly	3 Screw	A-1	T
2	Plate Top	2 Hook	A-2	T
2	3 Holder Assembly CST	Chassis Hole	A-2	T
2	4 Opener Door	Chassis Hole	A-2	T
5	Bracket Assembly L/D Motor	3 Hook	A-2	T
2,3,4	6 Gear Assembly Rack F/L	1 Hook, Chassis Hole	A-2	T
2,3,4,6	7 Arm Assembly F/L	Chassis Hole	A-2	T
8	Lever Assembly S/W	1 Hook	A-2	T
9	Arm Assembly Cleaner	Chassis Embossing	A-3	T
10	Head F/E	Chassis Embossing	A-3	T
11	Base Assembly A/C Head	1 Screw	A-3	T
2,3	12 Brake Assembly T	1 Hook	A-4	T
2,3	13 Brake Assembly RS	1 Hook	A-4	T
2,3	14 Arm Assembly Tension	2 Hook	A-4	T
2,3,12,13,14	15 Reel S/Reel T		A-4	T
16	Base Assembly P4	Chassis Embossing	A-5	T
17	Opener Lid	Chassis Embossing	A-5	T
17	18 Arm Assembly Pinch	Shaft	A-5	T
17	19 Lever T/Up / Arm T/Up	1 Hook	A-5	T
17,18	20 Belt Capstan/Motor Capstan	3 Screw	A-6	B
21	Lever F/R	Locking Tab	A-6	B
20, 21	22 Clutch Assembly D35	Washer	A-6	B
23	Brake Assembly Capstan	Locking Tab	A-6	B
24	Gear Drive/Gear Cam	Washer/Hook	A-7	B
25	Gear Sector	1 Hook	A-7	B
20,21,23,24,25	26 Plate Slider	Shaft Guide	A-7	B
20,21,23,24,25,26	27 Lever Tension	1 Hook	A-7	B
2,3,14,20,21,25,23,24,26	28 Lever Spring	Locking Tab	A-7	B
25	29 Gear Assembly P2/Gear Assembly P3	Boss	A-8	B
2,3,14,25,29	30 Base Assembly P2/Base Assembly P3	Chassis Slot	A-8	B
2,3,14,25,29	31 Base Loading	1 Screw	A-9	T
2,3,14	32 Base Tension	Chassis Embossing	A-9	B
2,3,20,21,22	33 Arm Assembly Idler	Locking Tab	A-9	T

T:Top, B:Bottom

DECK MECHANISM DISASSEMBLY



1. Drum Assembly (Fig. A-1-1)

- 1) Unplug the Drum FPC Connector.
- 2) Remove three Screws(S1) on bottom side and separate the Drum assembly.
- 3) Unhook (H1), (H2) and separate the Holder FPC and Cap FPC.

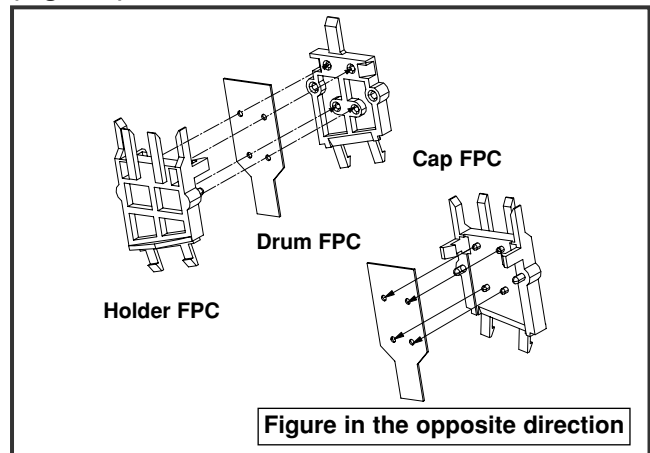
1-1. Drum Motor

- 1) Remove two Screws(S2) and disassemble the Stator of the Drum Motor.
- 2) Remove two Screws(S3) and separate the Rotor of the Drum Motor from the Drum Sub assembly.

NOTE

When reassembling, confirm (A) portion of the Drum Sub assembly whether the Carbon Brush is in there or not.

(Fig. B-1)



DECK MECHANISM DISASSEMBLY

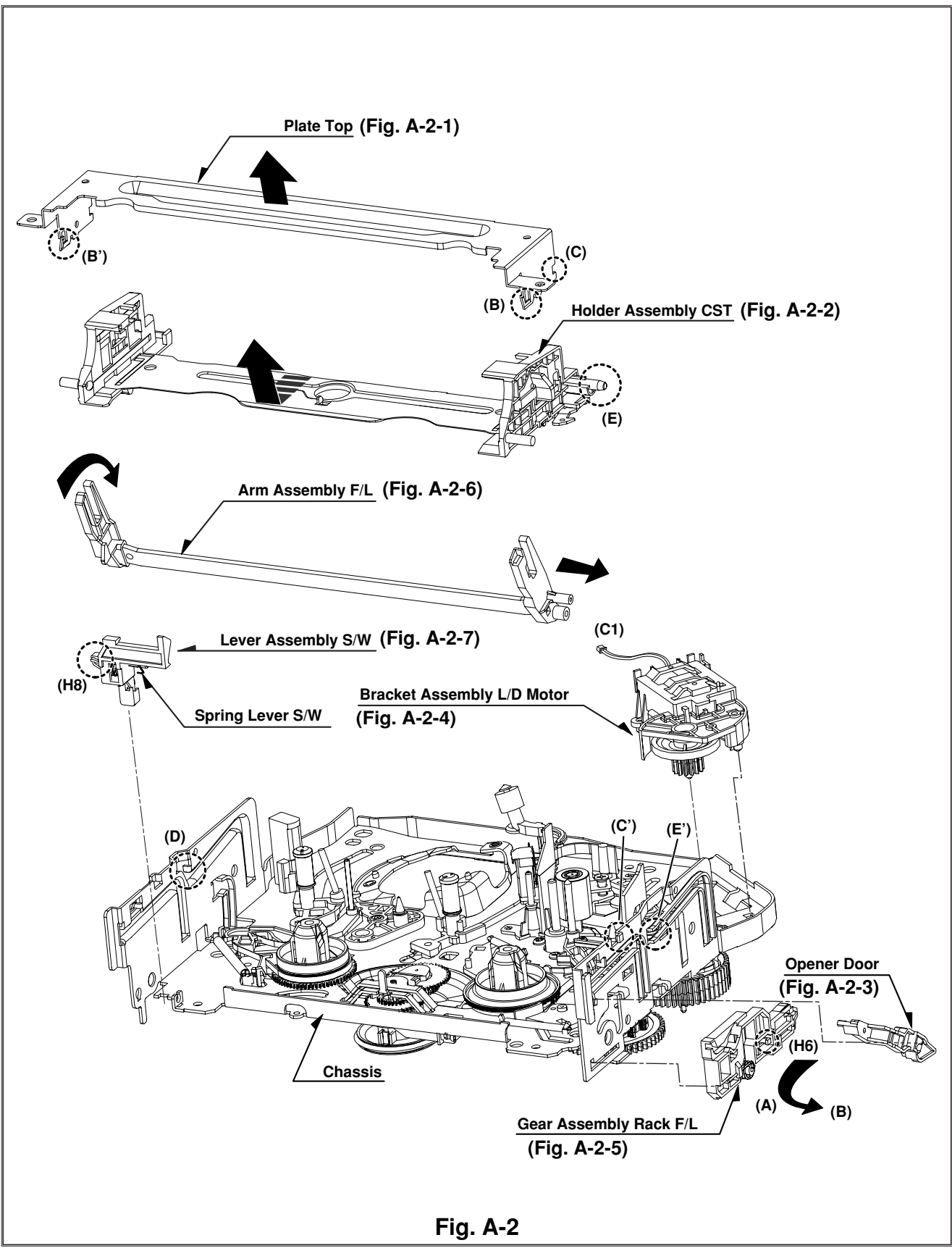


Fig. A-2

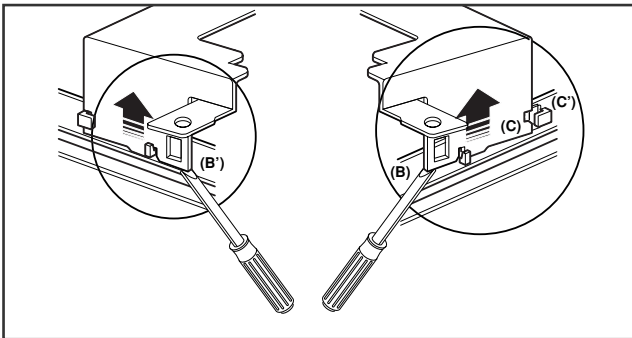
DECK MECHANISM DISASSEMBLY

2. Plate Top (Fig. A-2-1)

- 1) Pull the (B) portion of the Plate Top back in direction of arrow and separate the right side of it.
- 2) pull the (B) portion of the Plate Top back in direction of arrow and separate the left side of it.
(Used tools : (-) type driver, anything tool with sharp point or flat point.)

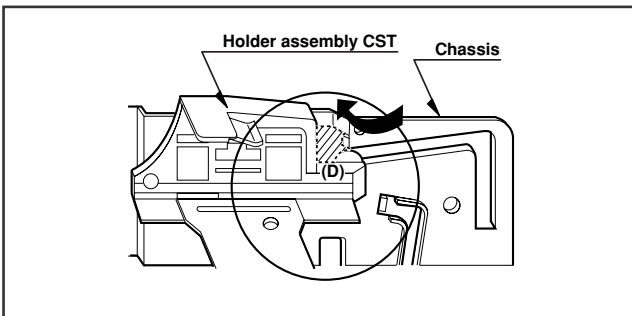
NOTE

- (1) When reassembling, push the Plate Top after alignment the two position(C), (C) as below Fig.



3. Holder Assembly CST (Fig.A-2-2)

- 1) Move the Holder Assembly CST in direction of arrow and separate the left side of it first through the (D) position of the Chassis.



- 2) Disassemble the right side of the Holder Assembly CST from each guided hole of the Chassis.

NOTE

When reassembling, insert the (E) part of the Holder Assembly CST in the (E) hole of the Chassis first and assemble the left side of it.

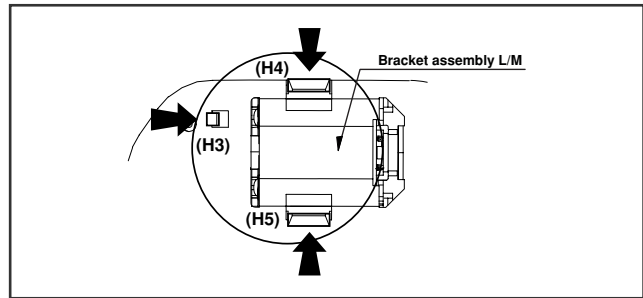
4. Opener Door (Figure. A-2-3)

- 1) Turn the Opener Door clockwise and remove it through the guide hole of the Chassis.

5. Bracket Assembly L/D Motor (Fig. A-2-4)

- 1) Unplug the Connector(C1).

- 2) Unhook three Hooks(H3, H4, H5) on bottom side of the Chassis, lift up the Bracket Assembly L/M and disassemble the Bracket Assembly L/D Motor.

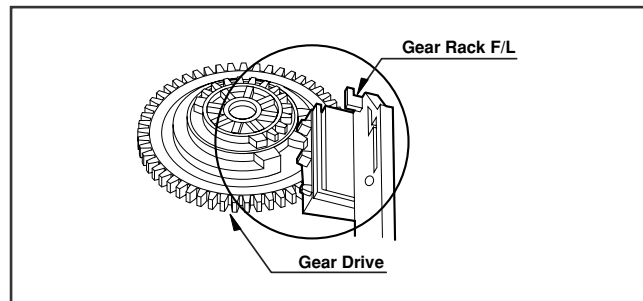


6. Gear Assembly Rack F/L (Fig. A-2-5)

- 1) Move the Gear Assembly Rack F/L in direction of arrow(A) and unhook the Hook(H6) pulling back in front.
- 2) Separate the Gear Rack F/L in direction of arrow(B).

NOTE

When reassembling, align the gear part of the Gear Assembly Rack F/L with the Gear Drive as below Fig.

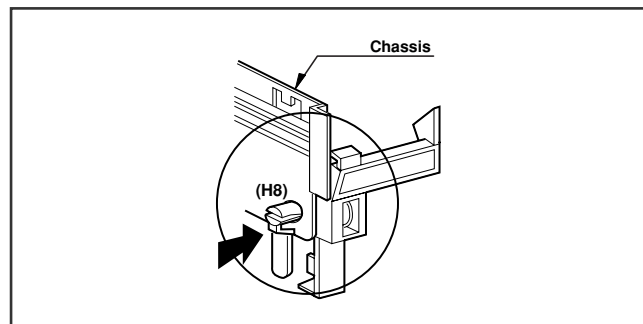


7. Arm Assembly F/L (Fig. A-2-6)

- 1) Move the Arm Assembly F/L in direction of arrow and separate the left side of it first.
- 2) Disassemble the Arm Assembly F/L from each guided hole of the Chassis.

8. Lever Assembly S/W(Fig. A-2-7)

- 1) Unhook the Hook(H8) in the left side of the Chassis and remove the Lever Assembly S/W.



DECK MECHANISM DISASSEMBLY

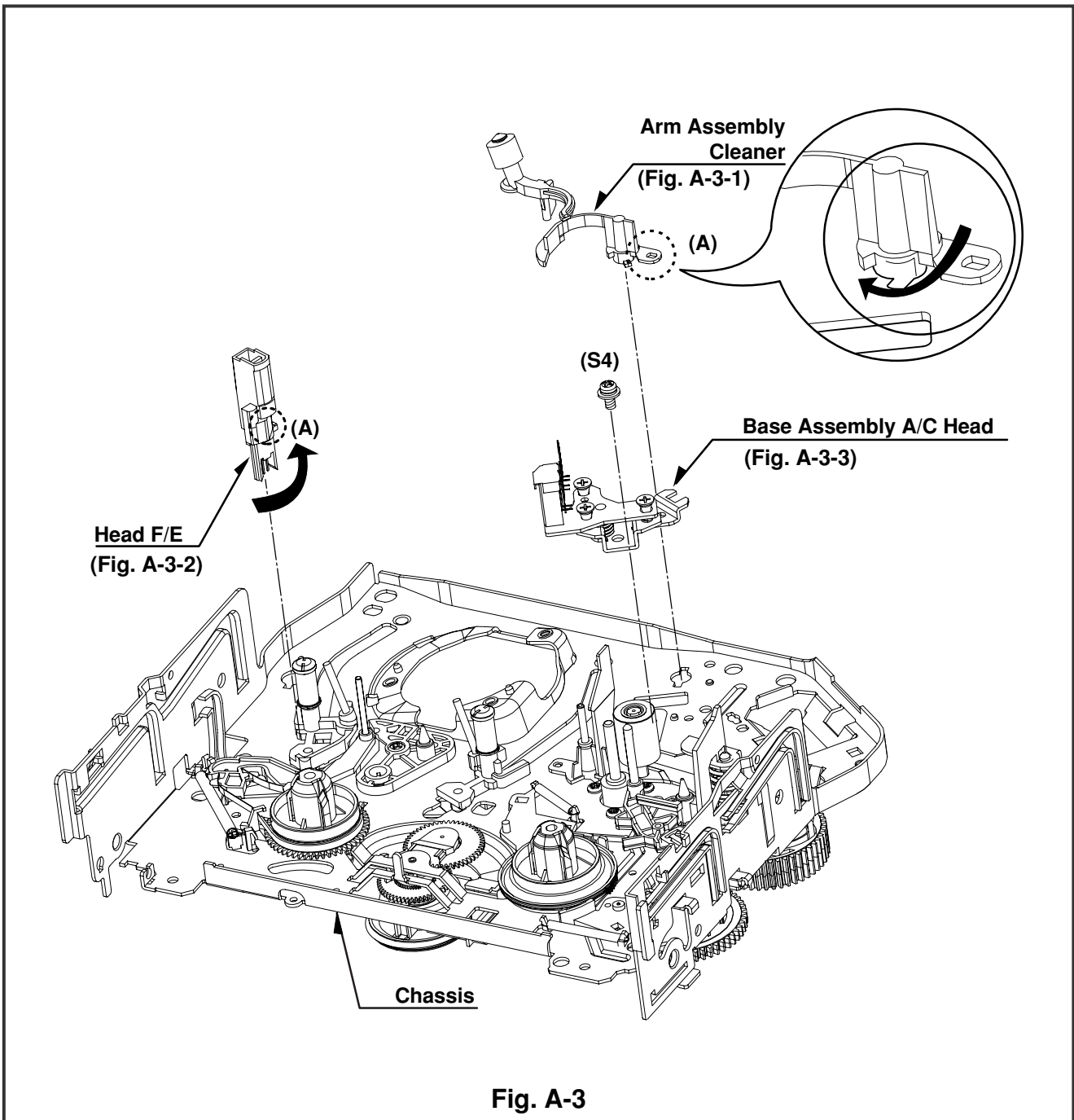


Fig. A-3

9. Arm Assembly Cleaner (Fig. A-3-1)

- 1) Breakaway the (A) portion as Fig. A-3-1 from the embossing of the Chassis, turn the Arm assembly Cleaner to clockwise direction and lift it up.

10. Head F/E (Fig. A-3-2)

- 1) Breakaway the (A) portion of the Head F/E from the embossing of the Chassis, turn it to counterclockwise direction and lift it up.

11. Base Assembly A/C Head (Fig. A-3-3)

- 1) Remove the Screw(S4) and lift the Base Assembly A/C Head up.

DECK MECHANISM DISASSEMBLY

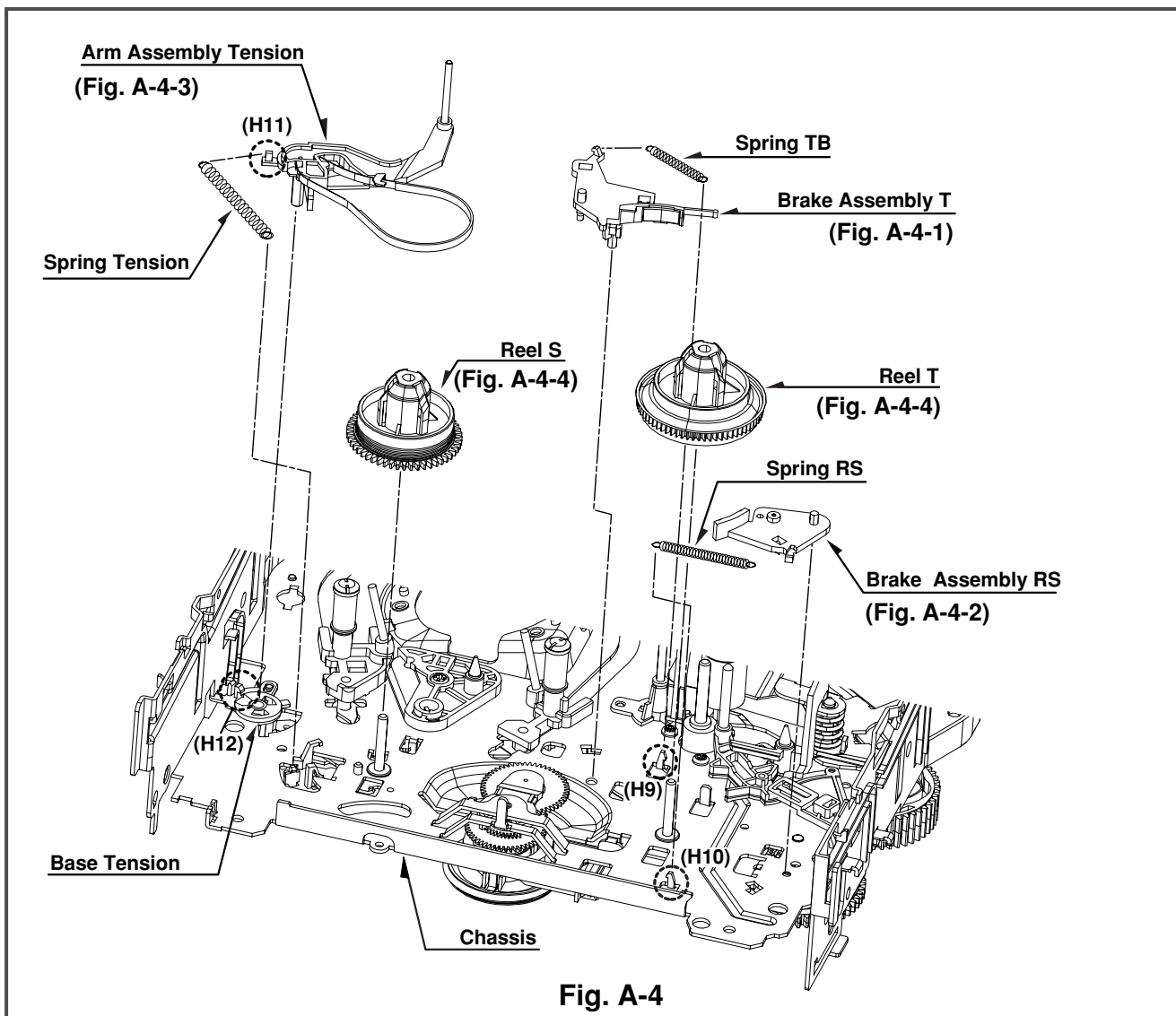


Fig. A-4

12. Brake Assembly T (Fig. A-4-1)

- 1) Unhook the Spring TB from the Hook(H9) of the Chassis.
- 2) Lift the Brake Assembly T up.

13. Brake Assembly RS (Fig. A-4-2)




- 1) Unhook the Spring RS from the Hook(H10) of the Chassis.
- 2) Lift the Brake Assembly T up.

14. Arm Assembly Tension (Fig. A-4-3)

- 1) Unhook the Spring Tension from the Hook(H11) of the Arm Assembly Tension.
- 2) Unhook the Hook(H12) of the Base Tension and lift the Arm Assembly Tension up.

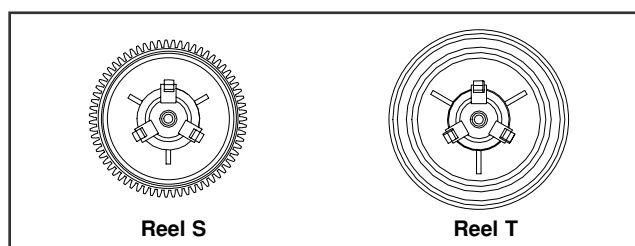
NOTE

Difference for Springs

	Spring TB
	Spring RS Color (Black)
	Spring Tension

15. Reel S / Reel T (Fig. A-4-4)

- 1) Difference for Reel S / Reel T



DECK MECHANISM DISASSEMBLY

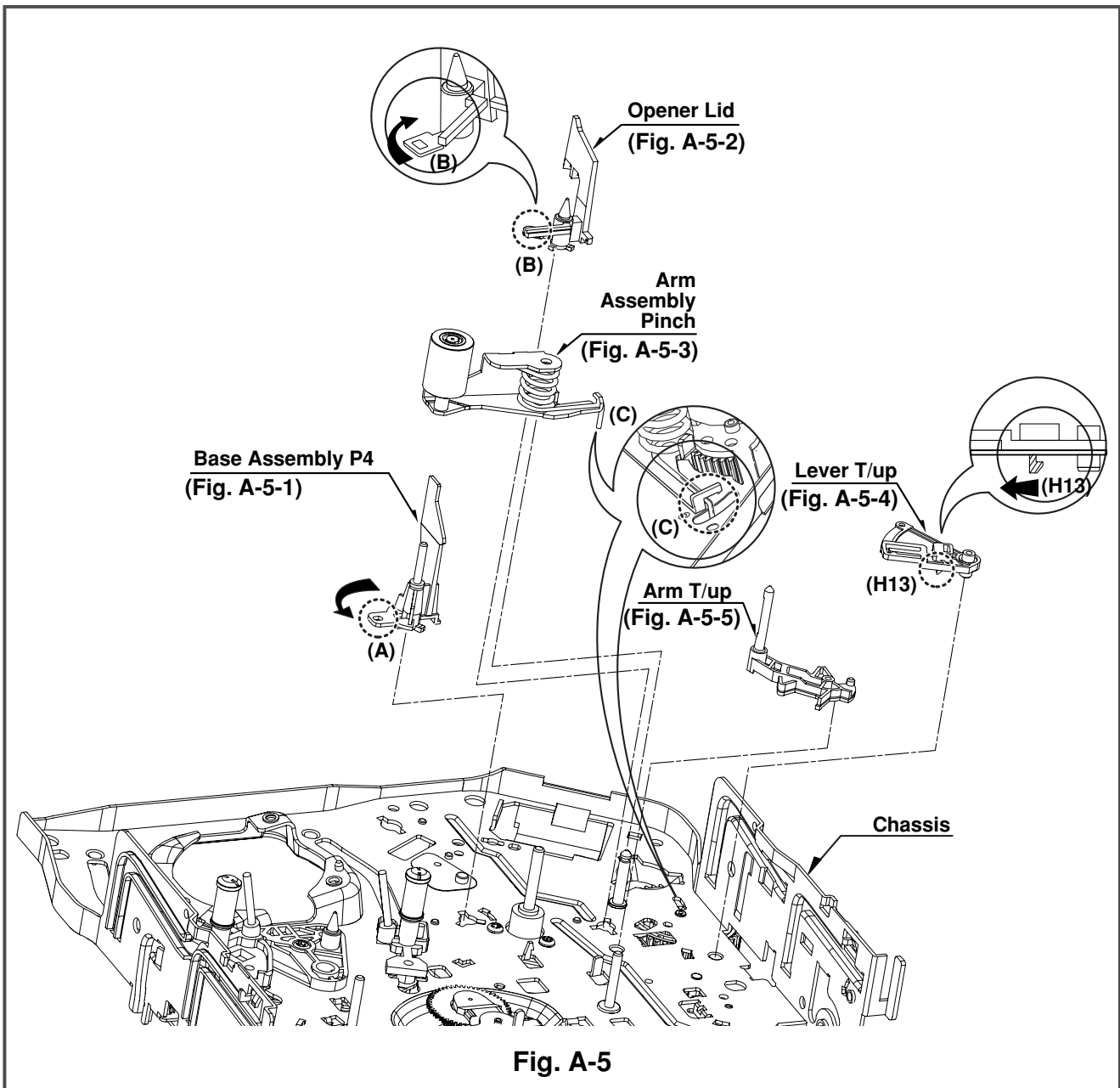


Fig. A-5

16. Base Assembly P4 (Fig. A-5-1)

- 1) Breakaway the (A) portion of the Base Assembly P4 from the embossing of the Chassis.
- 2) Turn the Base Assembly P4 to counterclockwise direction and lift it up.

17. Opener Lid (Fig. A-5-2)

- 1) Breakaway the (B) portion of the Opener Lid from the embossing of the Chassis.
- 2) Turn the Opener Lid to clockwise direction and lift it up.

18. Arm Assembly Pinch (Fig. A-5-3)

- 1) Lift the Arm Assembly Pinch up.

NOTE

When reassembling, confirm the (C) portion of the Arm Assembly Pinch is inserted to the Chassis hole correctly as Fig.

19. Lever T/up (Fig. A-5-4)/ Arm T/up (Fig. A-5-5)

- 1) Unhook the Hook(H13) of the bottom Chassis and lift the Lever T/up up.
- 2) Lift the Arm T/up up.

DECK MECHANISM DISASSEMBLY

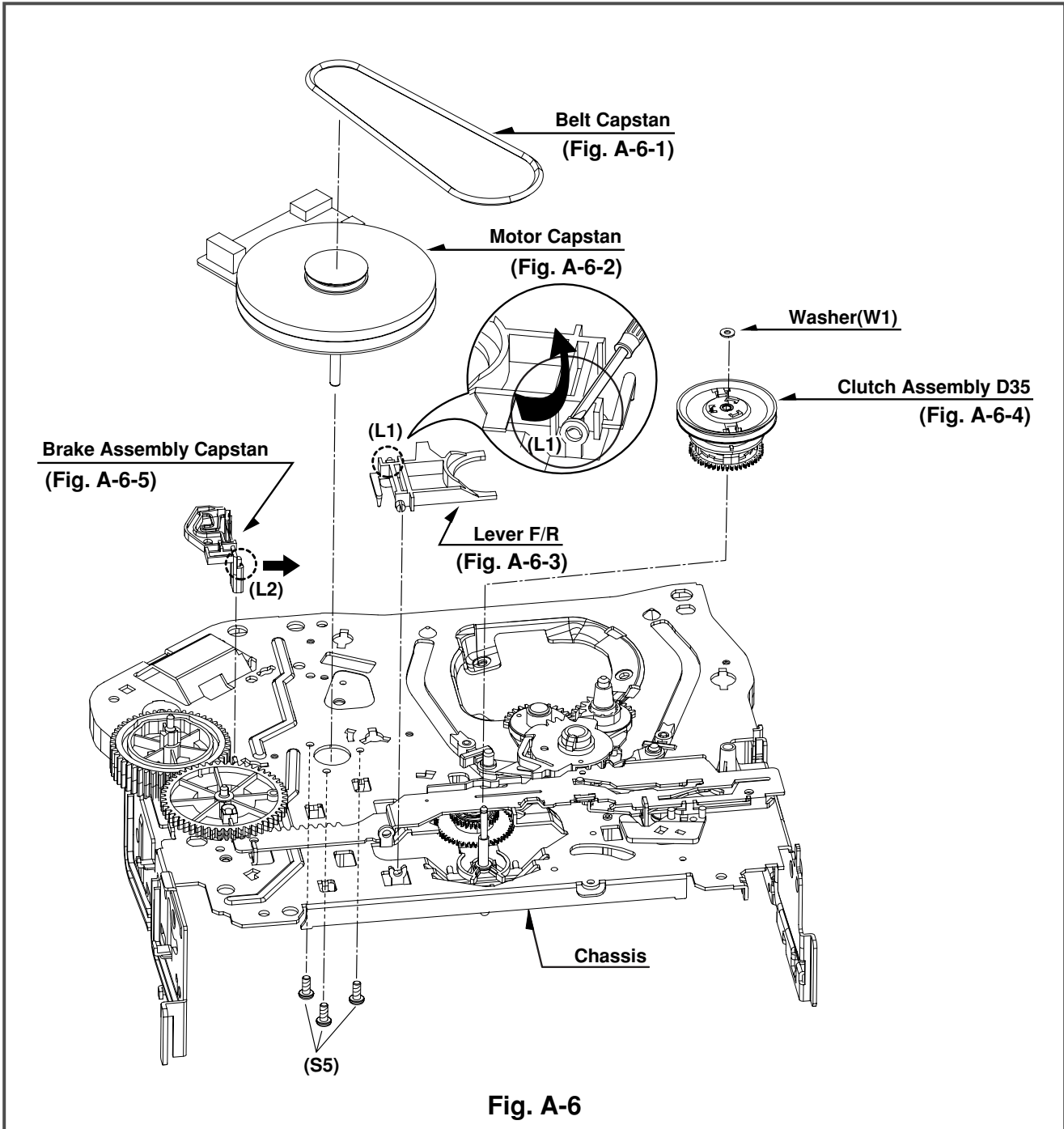


Fig. A-6

20. Belt Capstan (Fig. A-6-1)/ Motor Capstan (Fig. A-6-2)

- 1) Remove the Belt Capstan.
- 2) Remove the three Screws(S5) on bottom Chassis and lift the Motor Capstan up.

21. Lever F/R (Fig. A-6-3)

- 1) Unlock the Locking Tab(L1) as Fig. A-6-3 and lift the Lever F/R up.

22. Clutch Assembly D35 (Fig. A-6-4)

- 1) Remove the Washer(W1) and lift the Clutch Assembly D35 up.

23. Brake Assembly Capstan (Fig. A-6-5)

- 1) Pull the Locking Tab(L2) back in direction of arrow and lift it up.

DECK MECHANISM DISASSEMBLY

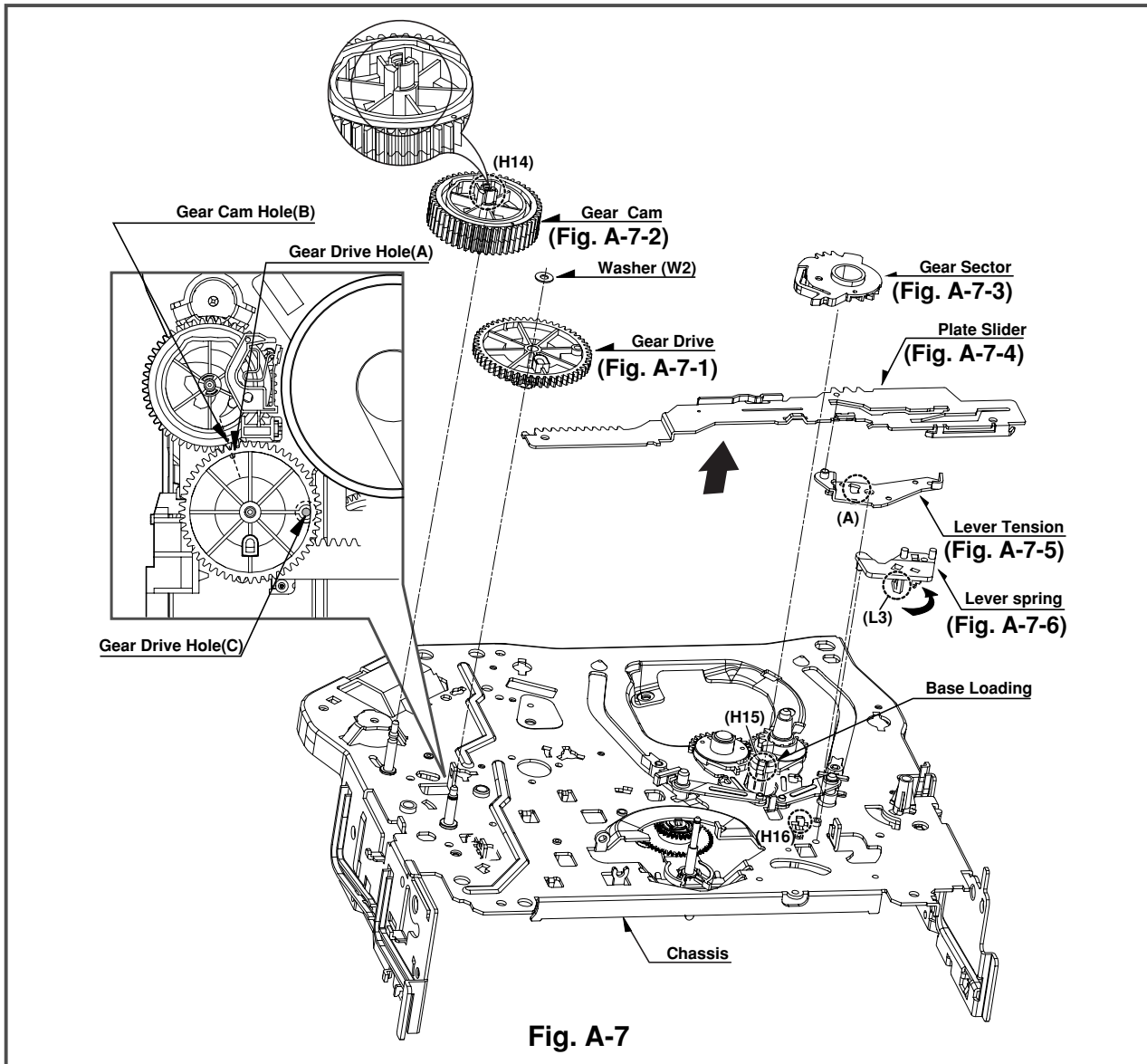


Fig. A-7

24. Gear Drive (Fig. A-7-1)/ Gear Cam (Fig. A-7-2)

- 1) Remove the Washer(W2) and lift the Gear Drive up.
- 2) Unhook the Hook(H14) of the Gear Cam and lift the Gear Cam up.

NOTE

When reassembling, align the Gear Drive Hole(A) and the Gear Cam Hole(B) in a straight line after the Gear Drive Hole(C) is aligned with the Chassis Hole as Fig.

25. Gear Sector (Fig. A-7-3)

- 1) Unhook the Hook(H15) of the Base Loading on bottom Chassis and lift the Gear Sector up.

26. Plate Slider (Fig. A-7-4)

- 1) Just lift the Plate Slider up.

27. Lever Tension (Fig. A-7-5)

- 1) Unhook the (A) portion of the Lever Tension from the Hook(H16) of the Chassis.
- 2) Turn the Lever Tension to counterclockwise direction and lift it up.

28. Lever Spring (Fig. A-7-6)

- 1) Unlock the Locking Tab(L3) of the bottom Chassis and lift the Lever Spring up.

DECK MECHANISM DISASSEMBLY

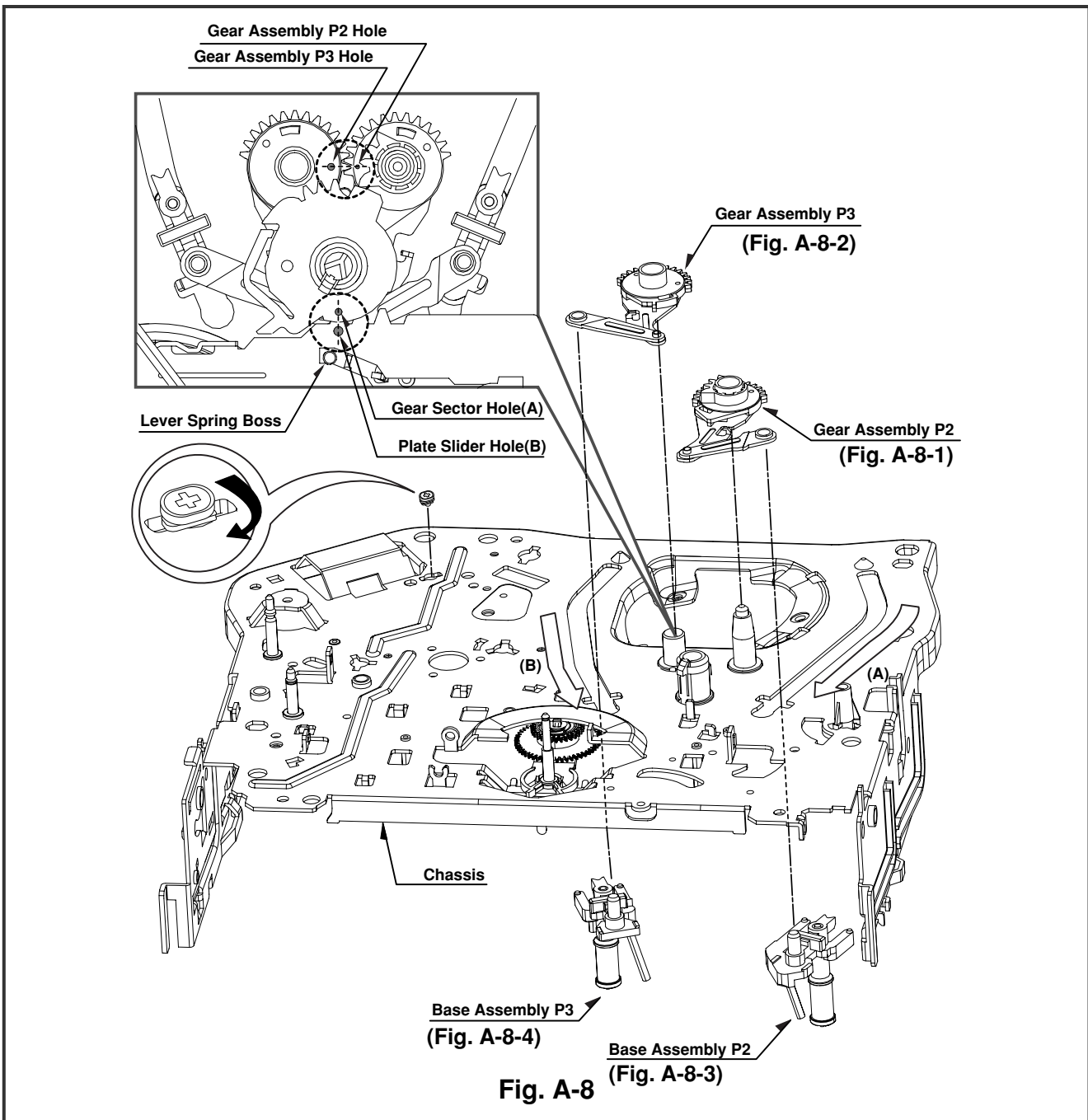


Fig. A-8

29. Gear Assembly P2 (Fig. A-8-1)/ Gear Assembly P3 (Fig. A-8-2)

- 1) Just lift the Gear Assembly P2 up.
- 2) Just lift the Gear Assembly P3 up.

NOTE

When reassembling, align the two holes of the Gear Assembly P2 and P3 in a straight line after confirmation whether the Gear Sector Hole(A) and the Plate Slider Hole(B) are aligned or not as Fig.

30. Base Assembly P2 (Fig. A-8-3)/ Base Assembly P3 (Fig. A-8-4)

- 1) Move the Base Assembly P2 in direction of arrow(A) along the guide hole of the Chassis and disassemble it on bottom side.
- 2) Move the Base Assembly P3 in direction of arrow(B) along the guide hole of the Chassis and disassemble it on bottom side.

DECK MECHANISM DISASSEMBLY

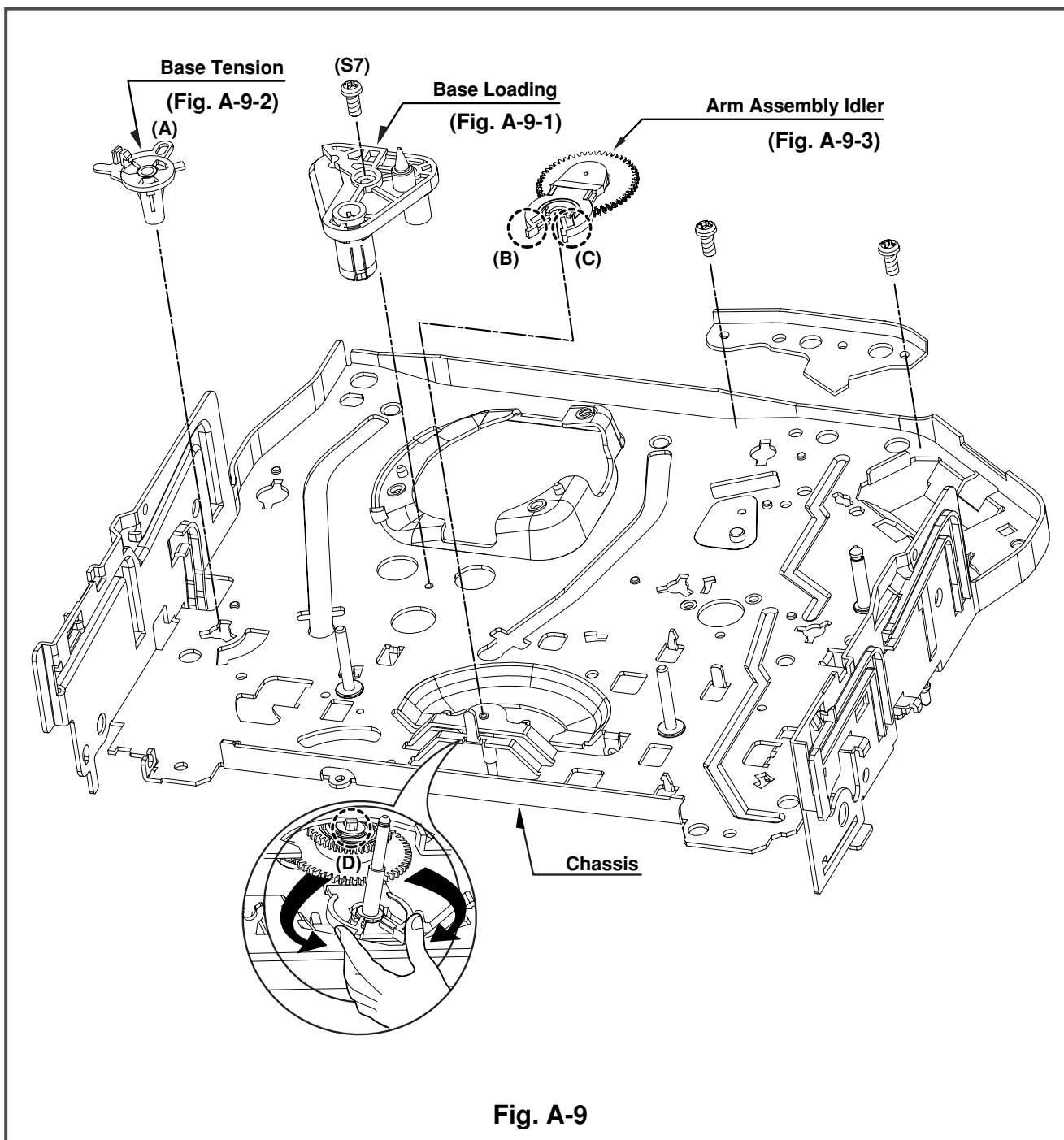


Fig. A-9

31. Base Loading (Fig. A-9-1)

- 1) Remove the Screw(S7).
- 2) Lift the Base Loading up.

32. Base Tension (Fig. A-9-2)

- 1) Breakaway the (A) portion of the Base Tension from the embossing of the Chassis.
- 2) Turn the Base Tension to counterclockwise direction and lift it up.

33. Arm Assembly Idler (Fig. A-9-3)

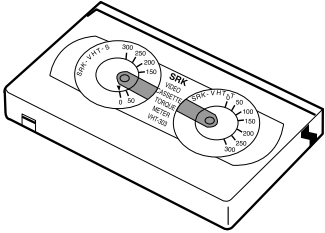
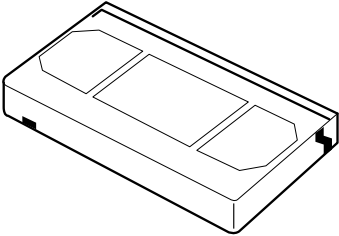
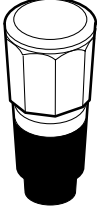
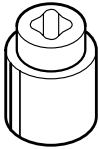
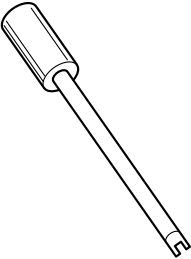
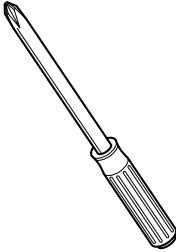
- 1) Make narrower the two parts, (B) and (C), as Fig. A-9-3.
- 2) Lift the Arm assembly Idler up.

NOTE

When disassembling, be careful not to be caught the (D) part by the Chassis as Fig.

DECK MECHANISM ADJUSTMENT

• Tools and Fixfures for Service

<p>1. Cassette Torque Meter SRK-VHT-303(Not SVC part) Parts No: D00-D006</p> 	<p>2. Alignment Tape Parts No NTSC: DTN-001 PAL:DTN-0002</p> 	<p>3. Torque Gauge 600g.Cm ATG Parts No:D00-D002</p> 
<p>4. Torque Gauge Adaptor Parts No:D09-R001</p> 	<p>5. Post Height Adjusting Driver Parts No:DTL-0005</p> 	<p>6. + Type Driver (ø 5)</p> 

DECK MECHANISM ADJUSTMENT

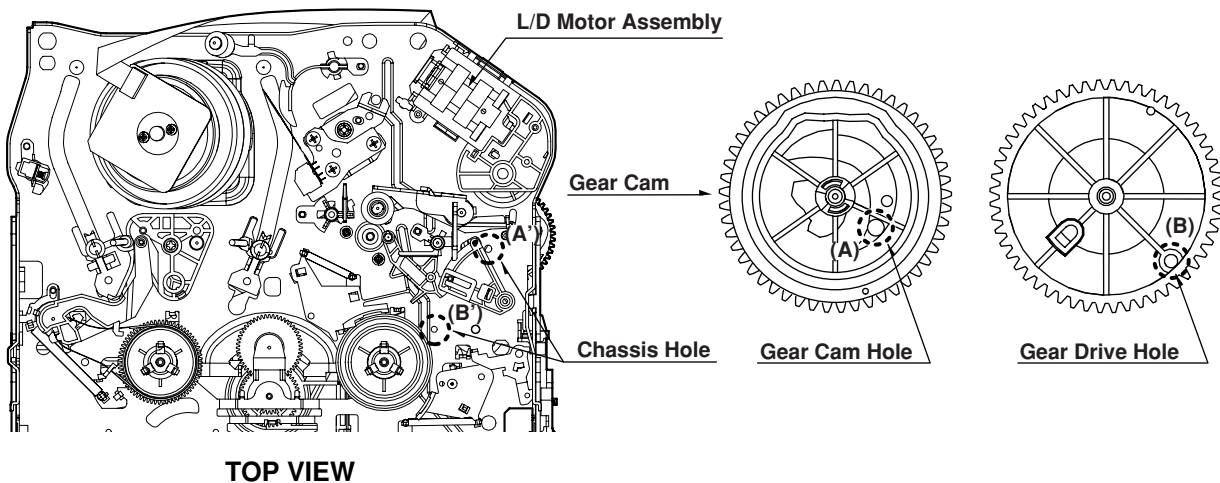
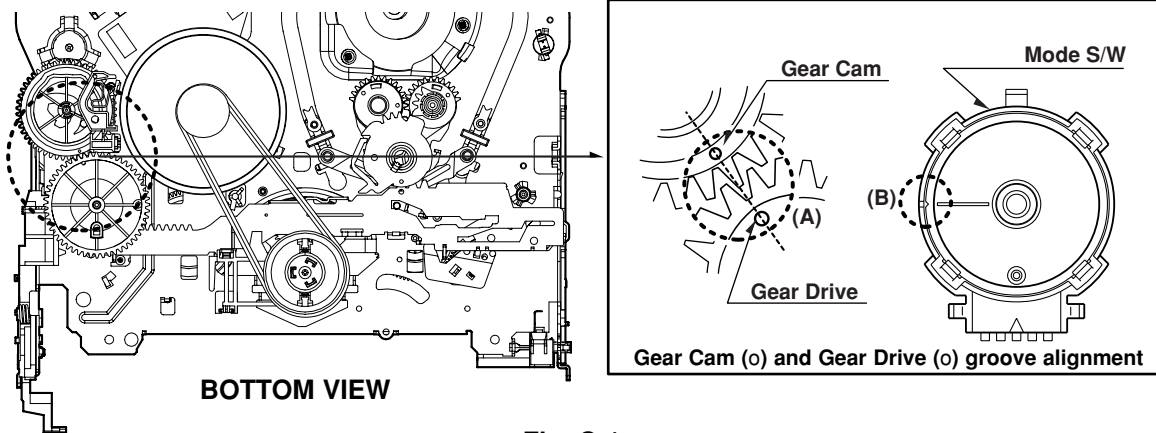
1. Mechanism Alignment Position Check

Purpose:To determine if the Mechanism is in the correct position, when a Tape is ejected.

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Check Point
• Blank tape	• Eject Mode (with Cassette ejected)	• Mechanism and Mode Switch Position

- 1) Turn the Power S/W on and eject the Cassette by pressing the Eject Button.
- 2) Remove the Top Cover and Plate Assembly Top, visually check if the Gear Cam is aligned with the Chassis Hole as below Fig. C-2.
- 3) IF not, rotate the Shaft of the Loading Motor to either clockwise or counterclockwise until the alignment is as below Fig. C-2.
- 4) Remove the Screw which fixes the Deck Mechanism and Main Frame and confirm if the Gear Cam is aligned with the Gear Drive as below Fig. C-1(A).
- 5) Confirm if the Mode S/W on the Main P.C.Board is aligned as below Fig. C-1(B).
- 6) Remount the Deck Mechanism on the Main P.C.Board and check each operation.

CHECK DIAGRAM



DECK MECHANISM ADJUSTMENT

2. Preparation for Adjustment (To set the Deck Mechanism of the loading state without inserting a cassette tape).

- 1) Unplug the power cord from the AC outlet.
- 2) Disassemble the Top Cover and Plate Assembly Top.
- 3) Plug the power cord into the AC outlet.
- 4) Turn the power S/W on and push the Lever Stopper of the Holder Assembly CST to the back for loading the

cassette without tape.

Cover the holes of the End Sensors at the both sides of the Chassis to prevent a light leak.

Then the Deck Mechanism drives to the Stop Mode. In this case, the Deck Mechanism can accept inputs of each mode, however the Rewind and Review operation can not be performed for more than a few seconds because the Take-up Reel Table is in the Stop State and can not be detected the Reel Pulses.

3. Checking Torque

Purpose: To insure smooth transport of the tape during each mode of operation.

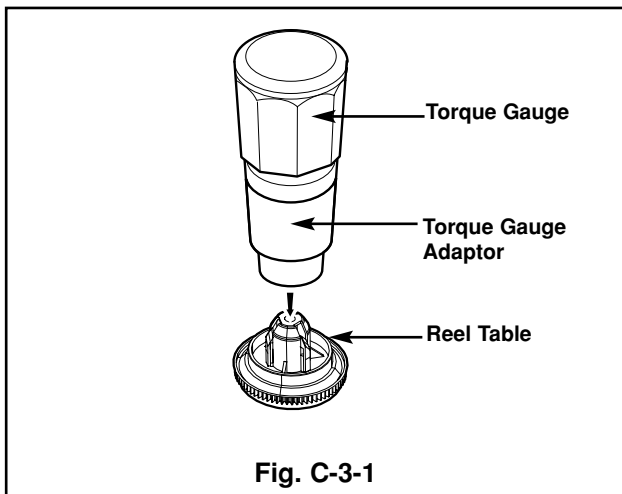
If the tape transport is abnormal, then check the torque as indicated by the chart below.

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Checking Method		
¥Torque Gauge(600g/cm ATG) ¥Torque Gauge Adaptor ¥Cassette Torque Meter SRK-VHT-303	¥Play (FF) or Review (REW) Mode	¥Perform each Deck Mechanism mode without inserting a cassette tape(Refer to above No.2 Preparation for Adjustment). ¥Read the measurement of the Take-up or Supply Reels on the Cassette Torque Meter(Fig. C-3-2). ¥Attach the Torque Gauge Adaptor to the Torque Gauge and then read the value of it(Fig. C-3-1).		
Item	Mode	Test Equipment	Measurement Reel	Measurement Values
Fast Forward Torque	Fast Forward	Cassette Torque Gauge	Take-Up Reel	More than 400g/cm
Rewind Torque	Rewind	Cassette Torque Gauge	Supply Reel	More than 400g/cm
Play Take-Up Torque	Play	Cassette Torque Meter	Take-Up Reel	40~100g/cm
Review Torque	Review	Cassette Torque Meter	Supply Reel	120~210g/cm

NOTE:

The values are measured by using a Torque Gauge and Torque Gauge Adaptor with the Torque Gauge affixed.

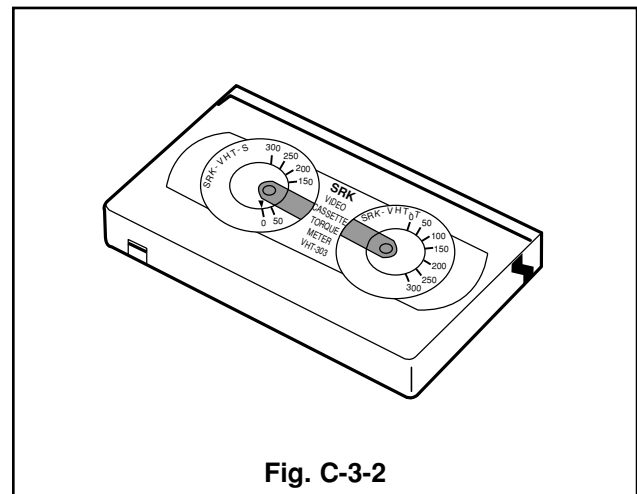
¥Torque Gauge (600g.cm ATG)



NOTE:

The torque reading to measure occurs when the tape abruptly changes direction from Fast Forward to Rewind Mode, when quick braking is applied to both Reels.

¥Cassette Torque Meter (SRK-VHT-303)



DECK MECHANISM ADJUSTMENT

4. Guide Roller Height Adjustment

Purpose: To regulate the height of the tape so that the bottom of the tape runs along the tape guide line on the Lower Drum.

4-1. Preliminary Adjustment

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Adjustment Point
• Post Height Adjusting Driver	• Play or Review Mode	• Guide Roller Height Adjustment screws on the Supply and Take-Up Guide Rollers.

Adjustment Procedure

- 1) Confirm if the tape runs along the tape guide line of the Lower Drum.
- 2) If the tape runs the bottom of the guide line, turn the Guide Roller Height Adjustment Screw to clockwise direction.
- 3) If it runs the top, turn to counterclockwise direction.
- 4) Adjust the height of the Guide Roller to be guided to the guide line of the Lower Drum from the starting and ending point of the Drum.

ADJUSTMENT DIAGRAM

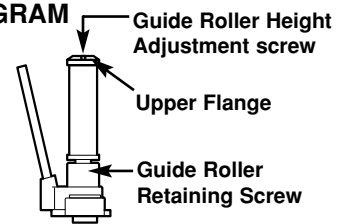


Fig. C-4-1

4-2. Precise Adjustment

Test Equipment/Fixture	Test Equipment Connection Points	Test Conditions VCR(VCP) State	Adjustment Point
• Oscilloscope • Alignment Tape • Post Height Adjusting Driver	• CH-1:PB RF Envelope • CH-2:NTSC: SW 30Hz PAL: SW 25Hz • Head Switching Output Point • RF Envelope Output Point	• Play an Alignment Tape	• Guide Roller Height Adjustment Screws

Adjustment Procedure

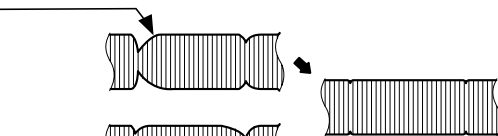
- 1) Play an Alignment Tape after connecting the probe of the Oscilloscope to the RF Envelope Output Test Point and Head Switching Output Test Point.
- 2) Tracking Control(in PB Mode) : Center Position(When this adjustment is performed after the Drum Assembly has been replaced, set the Tracking Control so that the RF Output is Maximum).
- 3) Height Adjustment Screw : Flatten the RF waveform. (Fig. C-4-2)
- 4) Turn(Move) the Tracking Control(in PB Mode) clockwise and counterclockwise.(Fig. C-4-3)
- 5) Check that any drop of RF Output is uniform at the start and end of the waveform.

NOTE

If the adjustment is excessive or insufficient the tape will jam or fold.

Waveform Diagrams

P2 POST ADJUSTMENT

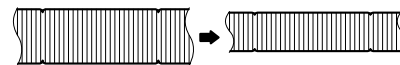


P3 POST ADJUSTMENT

Turn the Roller Guide Height Adjustment Screw slightly to flatten the waveform.

Fig. C-4-2

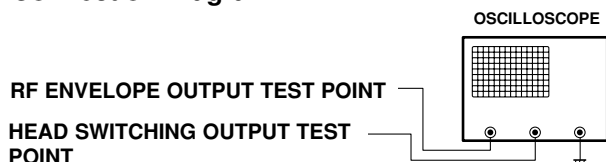
Tracking Control at center



Turn(Move) the Tracking Control to both directions

Fig. C-4-3

Connection Diagram



DECK MECHANISM ADJUSTMENT

5. Audio/Control (A/C) Head Adjustment

Purpose: To insure that the tape passes accurately over the Audio and Control Tracks in exact alignment of the both Record and Playback Modes.

5-1. Preliminary Adjustment (Height and Tilt Adjustment)

Perform the Preliminary Adjustment, when there is no Audio Output Signal with the Alignment Tape.

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Adjustment Point
<ul style="list-style-type: none"> • Blank Tape • Screw Driver(+) Type 5mm 	<ul style="list-style-type: none"> • Play the blank tape 	<ul style="list-style-type: none"> • Tilt Adjustment Screw(C) • Height Adjustment Screw(B) • Azimuth Adjustment Screw(A)

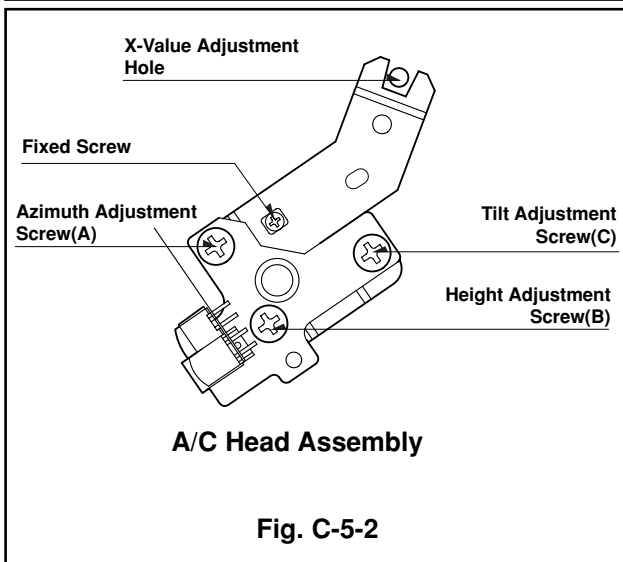
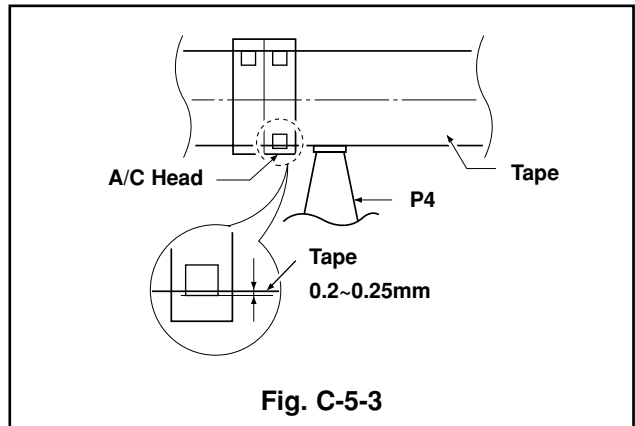
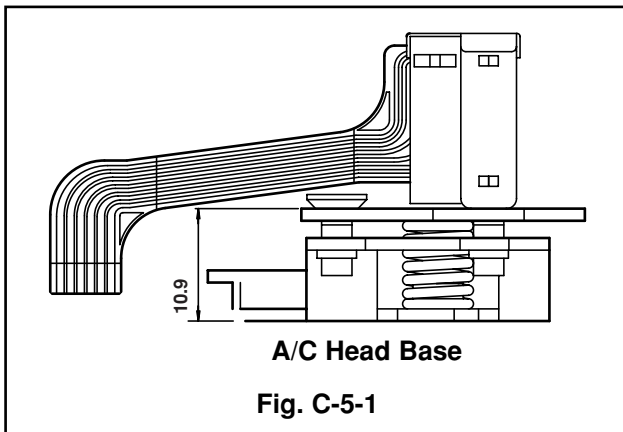
Adjustment Procedure/Diagrams

- 1) Initially adjust the Base Assembly A/C Head as shown Fig. C-5-1 by using the Height Adjustment Screw(B).
- 2) Play a blank tape and observe if the tape passes accurately over the A/C Head without tape curling or folding.
- 3) If folding or curling is occurred then adjust the Tilt Adjustment Screw(C) while the tape is running to resemble Fig. C-5-3.

- 4) Reconfirm the tape path after Playback about 4~5 seconds.

NOTE

Ideal A/C head height occurs when the tape runs between 0.2~0.25mm above the bottom edge of the A/C Head core.



DECK MECHANISM ADJUSTMENT

5-2. Confirm that the tape passes smoothly between the Take-up Guide and Pinch Roller(using a mirror or the naked eye).

- 1) After completing Step 5-1.(Preliminary Adjustment), check that the tape passes around the Take-up Guide and Pinch Roller without folding or curling at the top or bottom.
 - (1) If folding or curling is observed at the bottom of the Take-up Guide then slowly turn the Tilt Adjustment Screw(C) in the clockwise direction.

- (2) If folding or curling is observed at the top of it then slowly turn the Tilt Adjustment Screw(C) in the counterclockwise direction.

NOTE:

Check the RF envelope after adjusting the A/C Head, if the RF waveform differs from Fig. C-5-4, performs Precise Adjustment to flat the RF waveform.

5-3. Precise Adjustment (Azimuth adjustment)

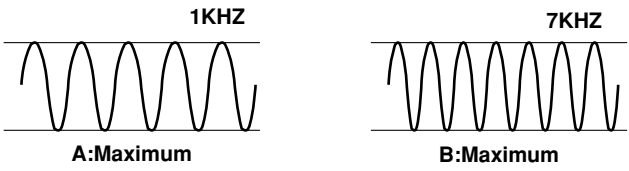
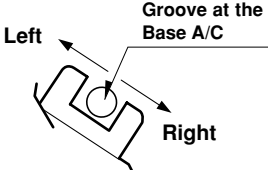
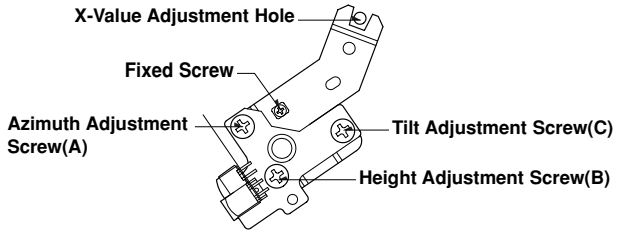
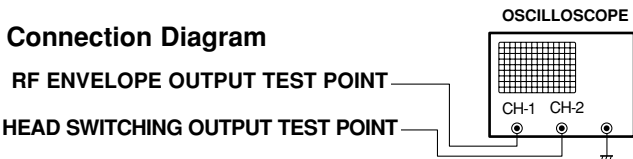
Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Point
<ul style="list-style-type: none"> • Oscilloscope • Alignment Tape(SP) • Screw Driver(+) Type 5mm 	<ul style="list-style-type: none"> • Audio output jack 	<ul style="list-style-type: none"> • Play an Alignment Tape 1KHz, 7KHz Sections 	<ul style="list-style-type: none"> • Azimuth Adjustment Screw(A) • Height Adjustment Screw(B)
Adjustment Procedure <ol style="list-style-type: none"> 1) Connect the probe of the oscilloscope to Audio Output Jack. 2) Alternately adjust the Azimuth Adjustment Screw(A) and the Tilt Adjustment Screw(C) for maximum output of the 1KHz and 7KHz segments, while maintaining the flattest envelope differential between the two frequencies. 			

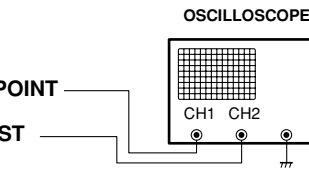
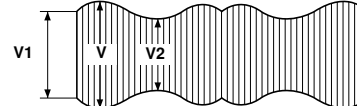
Fig. C-5-4

6. X-Value Adjustment

Purpose: To obtain compatibility with the other VCR(VCP) Models.			
Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Point
<ul style="list-style-type: none"> • Oscilloscope • Alignment Tape(SP only) • Screw Driver(+) Type 5mm 	<ul style="list-style-type: none"> • CH-1: PB RF Envelope • CH-2: NTSC: SW 30Hz PAL: SW 25Hz • Head Switching Output Test Point • RF Envelope Output Test Point 	<ul style="list-style-type: none"> • Play an Alignment Tape 	
Adjustment Procedure <ol style="list-style-type: none"> 1) Release the Automatic Tracking to run long enough for tracking to complete its cycle. 2) Loosen the Fixed Mounting Screw and move the Base Assembly A/C Head in the direction as shown in the diagram to find the center of the peak that allows for the maximum waveform envelope. This method should allow the 31 m Head to be centrally located over the 58 m tape track. 3) Tighten the Base Assembly A/C Head mounting Screw. 		Adjustment Diagram 	
		Connection Diagram 	

DECK MECHANISM ADJUSTMENT

7. Adjustment after Replacing Drum Assembly (Video Heads)

Purpose: To correct for shift in the Roller Guide and X value after replacing the Drum.			
Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Points
<ul style="list-style-type: none"> Oscilloscope Alignment Tapes Blank Tape Post Height Adjusting Driver Screw Driver(+) Type 5mm 	<ul style="list-style-type: none"> CH-1: PB RF Envelope CH-2: NTSC: SW 30Hz PAL: SW 25Hz Head Switching Output Test Point RF Envelope Output Test Point 	<ul style="list-style-type: none"> Play the Blank Tape Play an Alignment Tape 	<ul style="list-style-type: none"> Guide Roller Precise Adjustment Switching Point Tracking Preset X-Value
Checking/Adjustment Procedure Play a blank tape and check for tape curling or creasing around the Roller Guide. If there is a problem then follow the procedure 4. "Guide Roller Height" and 5. "Audio Control(A/C) Head Adjustment".		Connection Diagram  Waveform $V1/V \text{ MAX } \pm 0.7$ $V2/V \text{ MAX } \pm 0.8$ RF ENVELOPE OUTPUT 	
Fig. C-7			

8. Check the Tape Travel after Reassembling Deck Assembly.

8-1. Checking Audio and RF Locking Time during playback and after CUE or REV (FF/REW)

Test Equipment/ Fixture	Specification	Connection Points	Test Conditions (Mechanism Condition)
<ul style="list-style-type: none"> Oscilloscope Alignment Tapes(with 6H 3KHz Color Bar Signal) Stop Watch 	<ul style="list-style-type: none"> RF Locking Time: Less than 5 sec. Audio Locking Time: Less than 10sec 	<ul style="list-style-type: none"> CH-1: PB RF Envelope CH-2: Audio Output RF Envelope Output Point Audio Output Jack 	<ul style="list-style-type: none"> Play an Alignment Tape (with 6H 3kHz Color Bar Signal)
Checking Procedure Play an Alignment Tape then change the operating mode to CUE or REV and confirm if the unit meets the above listed specifications.		NOTES: 1) CUE is the forward search mode 2) REV is the backward search mode 3) Refer to the Play mode	

8-2. Checking for tape curling or jamming

Test Equipment/ Fixture	Specification	Test Conditions (Mechanism Condition)
<ul style="list-style-type: none"> T-160 Tape T-120 Tape 	<ul style="list-style-type: none"> Be sure there is no tape jamming or curling at the beginning, middle or end of the tape. 	<ul style="list-style-type: none"> Run the CUE, REV, Play mode at the beginning and the end of the tape.
Checking Procedure 1) Confirm that the tape runs smoothly around the roller guides, Drum and A/C Head Assemblies while abruptly changing operating modes from Play to CUE or REV. This is to be checked at the beginning, middle and end sections of the tape. 2) Confirm that the tape passes over the A/C Head Assembly as indicated by proper audio reproduction and proper tape counter performance.		

MAINTENANCE/INSPECTION PROCEDURE

1. Check before starting repairs

The following faults can be remedied by cleaning and oiling. Check the needed lubrication and the conditions of cleanliness in the unit.

Check with the customer to find out how often the unit is used, and then determine that the unit is ready for inspection and maintenance. Check the following parts.

Phenomenon	Inspection	Replacement
Color beats	Dirt on Full-Erase Head	o
Poor S/N, no color	Dirt on Video Head	o
Vertical or Horizontal jitter	Dirt on Video Head Dirt on tape transport system	o
Low volume, Sound distorted	Dirt on Audio/Control Head	o
Tape does not run. Tape is slack	Dirt on Pinch Roller	o
In Review and Unloading (off mode), the tape is rolled up loosely.	Clutch Assembly D35 torque reduced	o
	Cleaning Drum and transport system	Fig. C-9-3

F/E Head
Video Head
A/C Head
Pinch Roller
Belt Capstan
Clutch Assembly D35

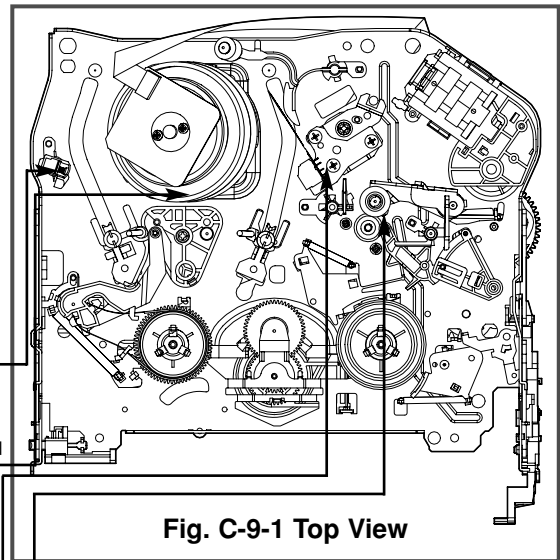


Fig. C-9-1 Top View

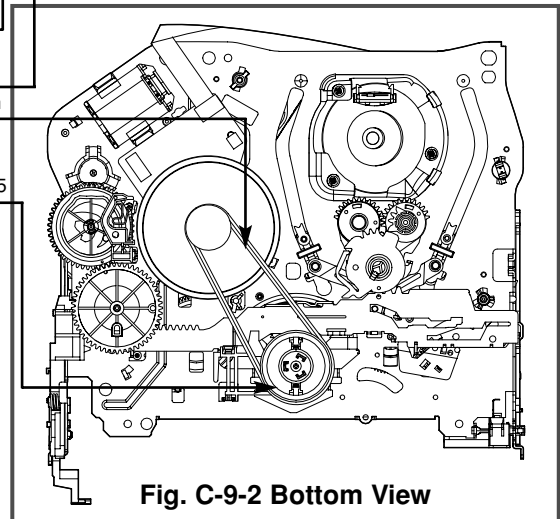


Fig. C-9-2 Bottom View

NOTE

If locations marked with **o** do not operate normally after cleaning, check for wear and replace.

See the EXPLODED VIEWS at the end of this manual as well as the above illustrations and see the Greasing (Page 4-21, 22) for the sections to be lubricated and greased.

* No. (1)~(12) Indicates the Tape Path to be traveled from Supply Reel to Take-up Reel.

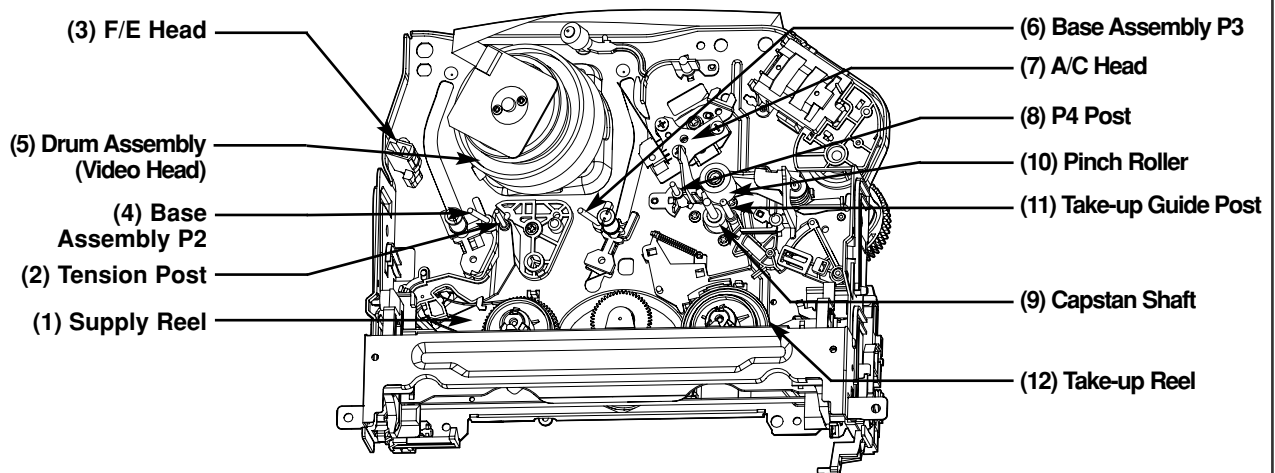


Fig. C-9-3 Tape Transport System

MAINTENANCE/INSPECTION PROCEDURE

2. Required Maintenance

The recording density of a VCR(VCP) is much higher than that of an audio tape recorder. VCR(VCP) components must be very precise, at tolerances of 1/1000mm, to ensure compatibility with the other VCRs. If any of these components are worn or dirty, the symptoms will be the same as if the part is defective. To ensure a good picture, periodic inspection and maintenance, including replacement of worn out parts and lubrication, is necessary.

3. Scheduled Maintenance

Schedules for maintenance and inspection are not fixed because they vary greatly according to the way in which the customer uses the VCR(VCP), and the environment in which the VCR(VCP) is used.

But, in general home use, a good picture will be maintained if inspection and maintenance is made every 1,000 hours. The table below shows the relation between time used and inspection period.

Table 1

When inspection is necessary	About 1 year	About 18 months	About 3 years
Average hours used per day	▲	▲	▲
One hour	[Bar chart showing inspection period]		
Two hours	[Bar chart showing inspection period]		
Three hours	[Bar chart showing inspection period]		

4. Supplies Required for Inspection and Maintenance

- (1) Grease : Kanto G-311G (Blue) or equivalent
- (2) Isopropyl Alcohol or equivalent
- (3) Cleaning Patches
- (4) Grease : Kanto G-381 (Yellow)

5. Maintenance Procedure

5-1) Cleaning

- (1) Cleaning video head

First use a cleaning tape. If the dirt on the head is too stubborn to remove by tape, use the cleaning patch. Coat the cleaning patch with Isopropyl Alcohol. Touch the cleaning patch to the head tip and gently turn the head(rotating cylinder) right and left.

(Do not move the cleaning patch vertically. Make sure that only the buckskin on the cleaning patch comes into contact with the head. Otherwise, the head may be damaged.)

Thoroughly dry the head. Then run the test tape. If Isopropyl Alcohol remains on the video head, the tape may be damaged when it comes into contact with the head surface.

- (2) Clean the tape transport system and drive system, etc, by wiping with a cleaning patch wetted with Isopropyl Alcohol.

NOTES:

- ① It is the tape transport system which comes into contact with the running tape. The drive system consists of those parts which moves the tape.
- ② Make sure that during cleaning you do not touch the tape transport system with excessive force that would cause deformation or damage to the system.

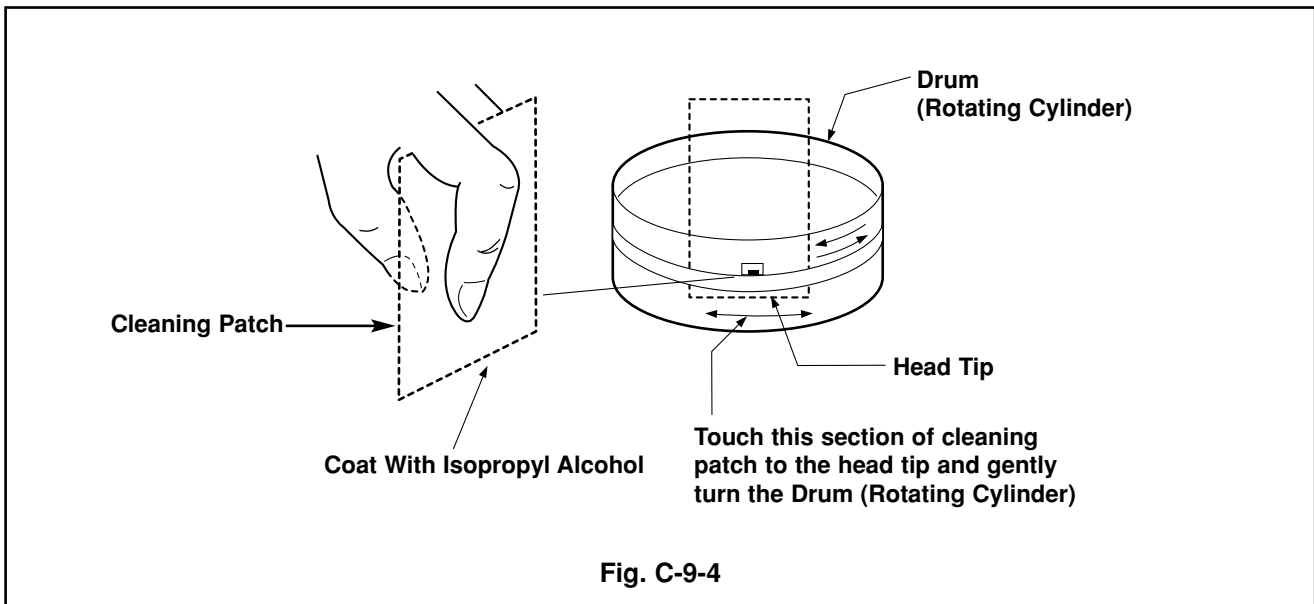


Fig. C-9-4

MAINTENANCE/INSPECTION PROCEDURE

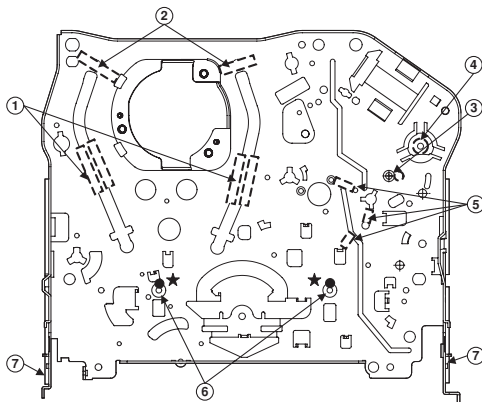
5-2) Greasing

(1) Greasing guidelines

Apply grease, with a cleaning patch. Do not use excessive grease. It may come into contact with the tape transport or drive system. Wipe excessive grease and clean with cleaning patch wetted in Isopropyl Alcohol.

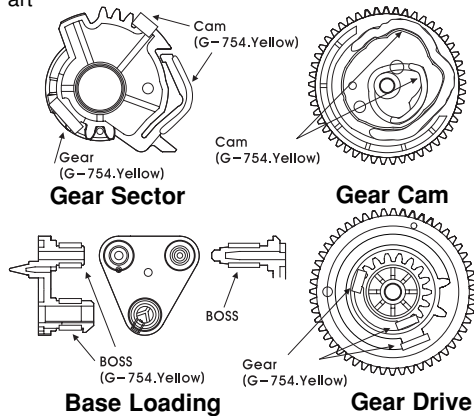
NOTE:Greasing Points

- | | |
|-----------------------------------|---------------------------------------|
| 1) Loading Path Inside & Top side | 5) Arm Take-up Rubbing Sections |
| 2) Base Assembly P2, P3 stopper | 6) Reel S,T shaft(G381:Yellow) |
| 3) Shaft | 7) Arm Assembly F/L Rotating Sections |
| 4) L/D Motor Gear Wheel Part | |



Chassis (Top)

Gear Part



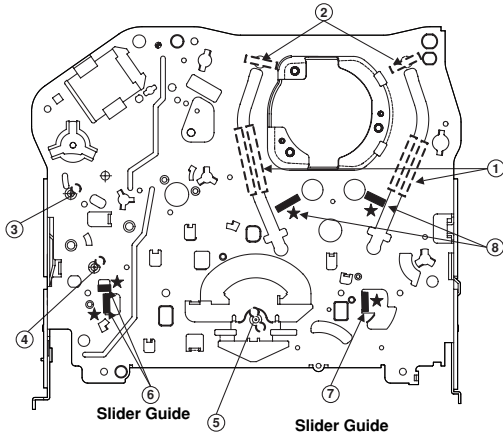
Chassis (Left Side)

Chassis (Right Side)

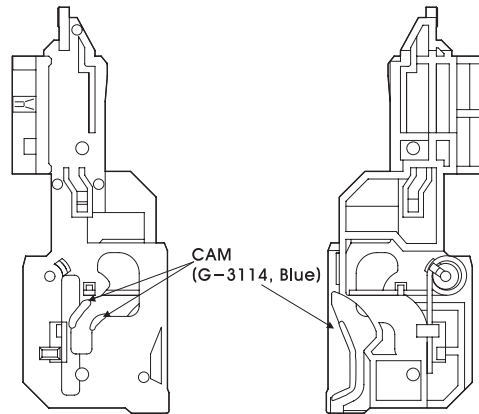
(2) Periodic greasing

Grease specified locations every 5,000 hours.

- | | |
|-----------------------------------|------------------------------------------|
| 1) Loading Path Inside & Top side | 6) Plate Slider Guide Sections |
| 2) Base Assembly P2,P3 stopper | 7) Plate Slider Guide Sections |
| 3) Shaft | 8) Gear Assembly P2, P2 Rubbing Sections |
| 4) Shaft | |
| 5) Clutch Assembly D35 Shaft | |



Chassis (Bottom)



Gear Rack F/L

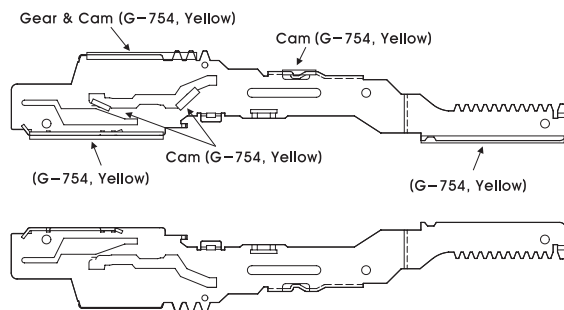
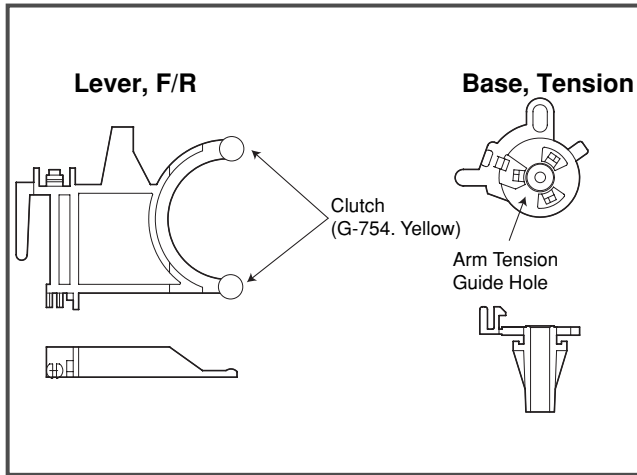


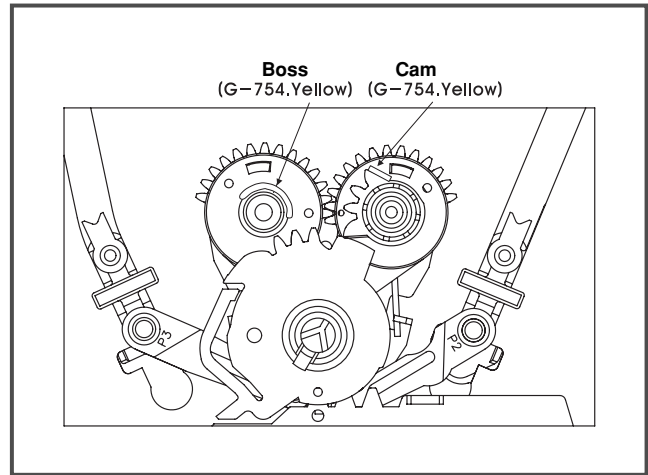
Plate Slider

MAINTENANCE/INSPECTION PROCEDURE

Lever, F/R, Base, Tension



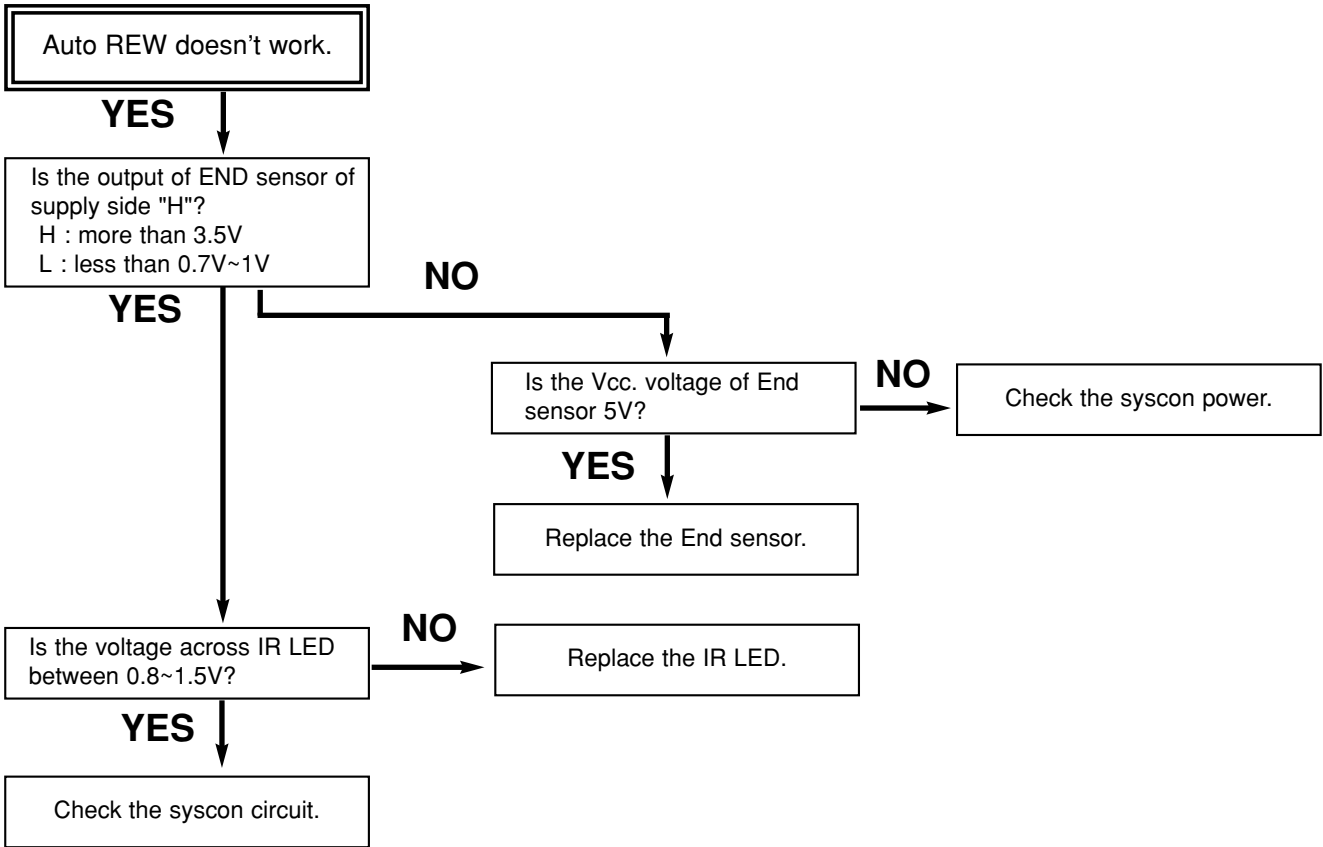
GEAR AY, P2 & P3



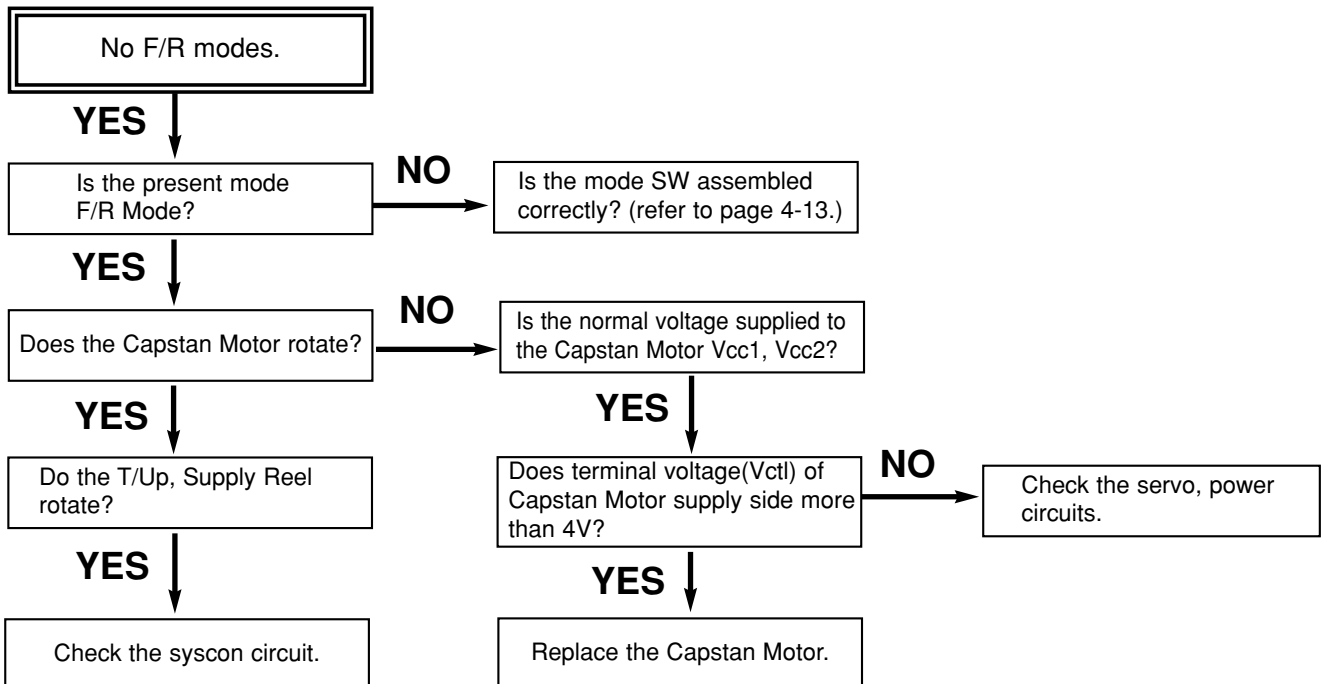
MECHANISM TROUBLESHOOTING GUIDE

1. Deck Mechanism

A.

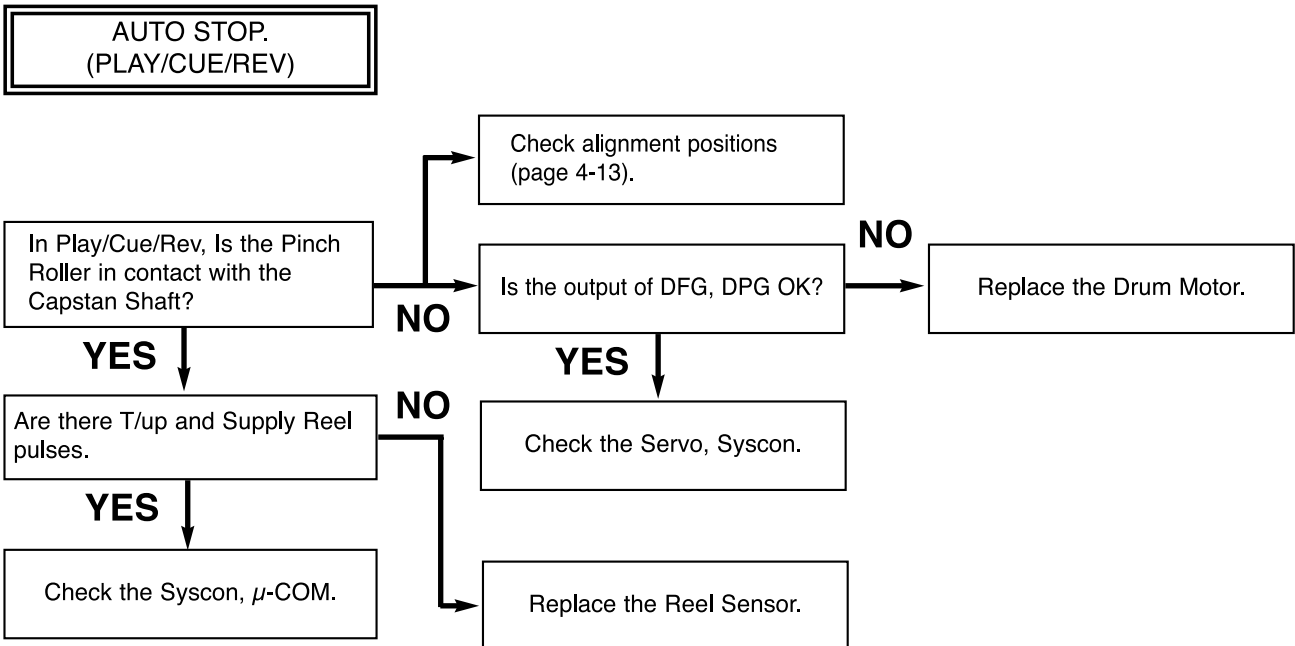


B.

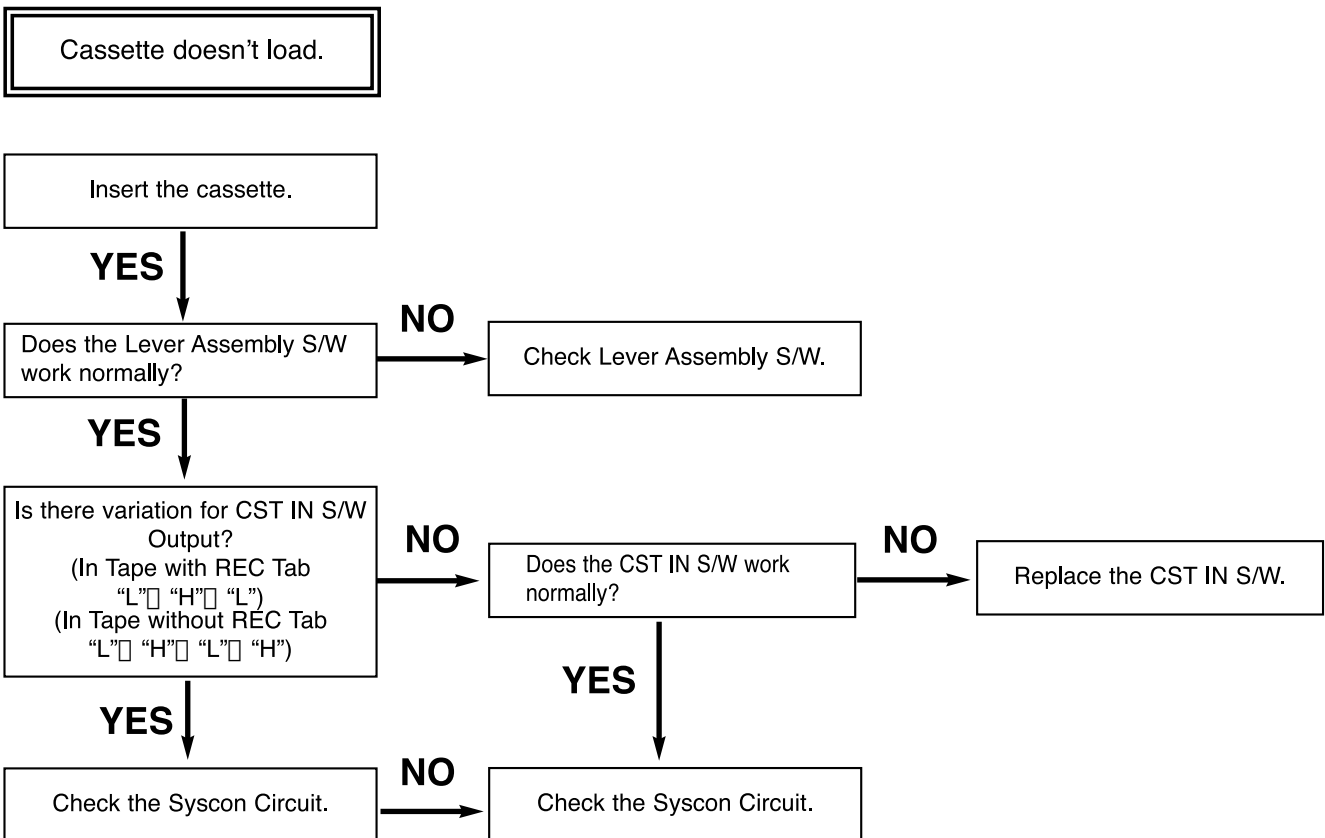


MECHANISM TROUBLESHOOTING GUIDE

C.

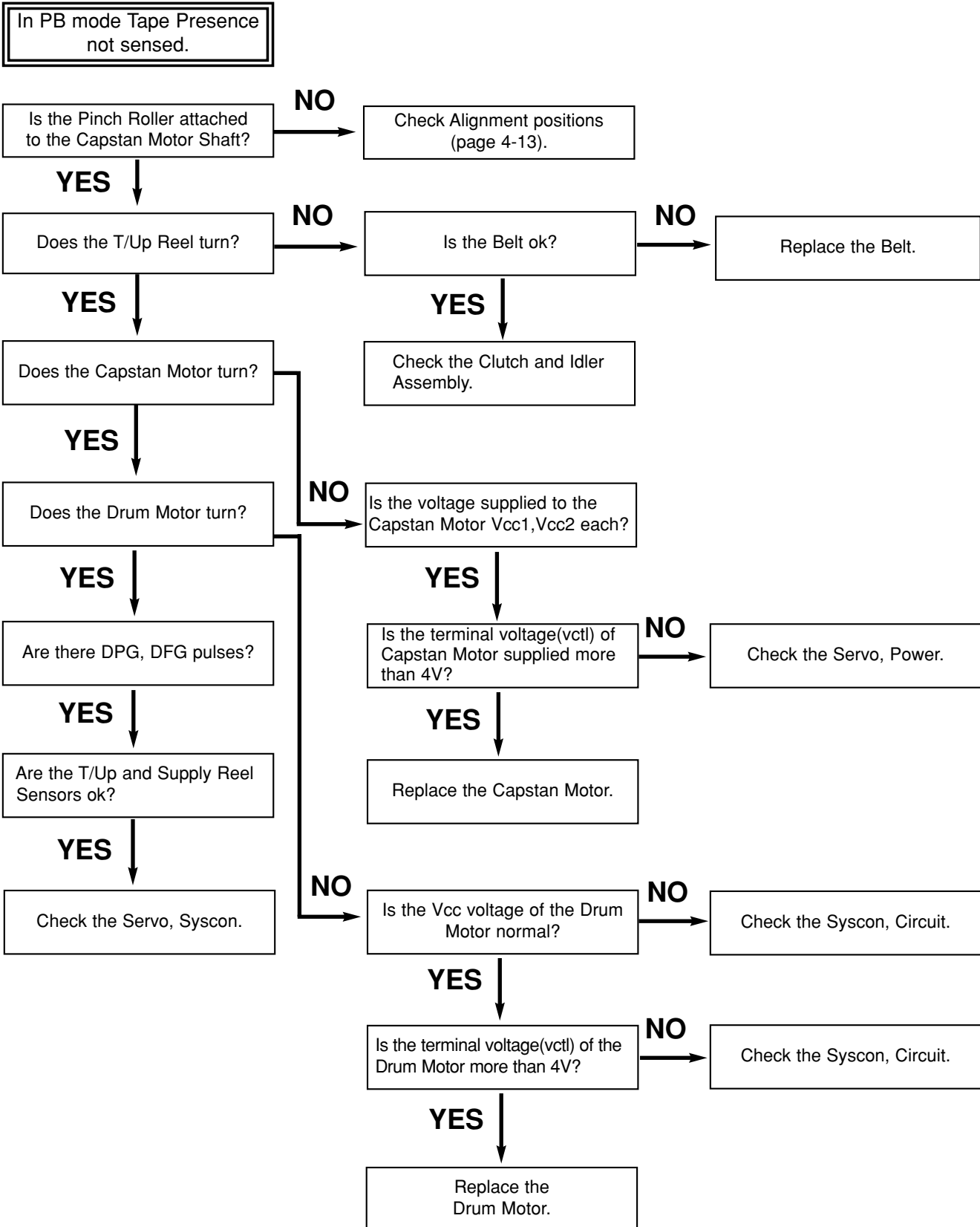


D.



MECHANISM TROUBLESHOOTING GUIDE

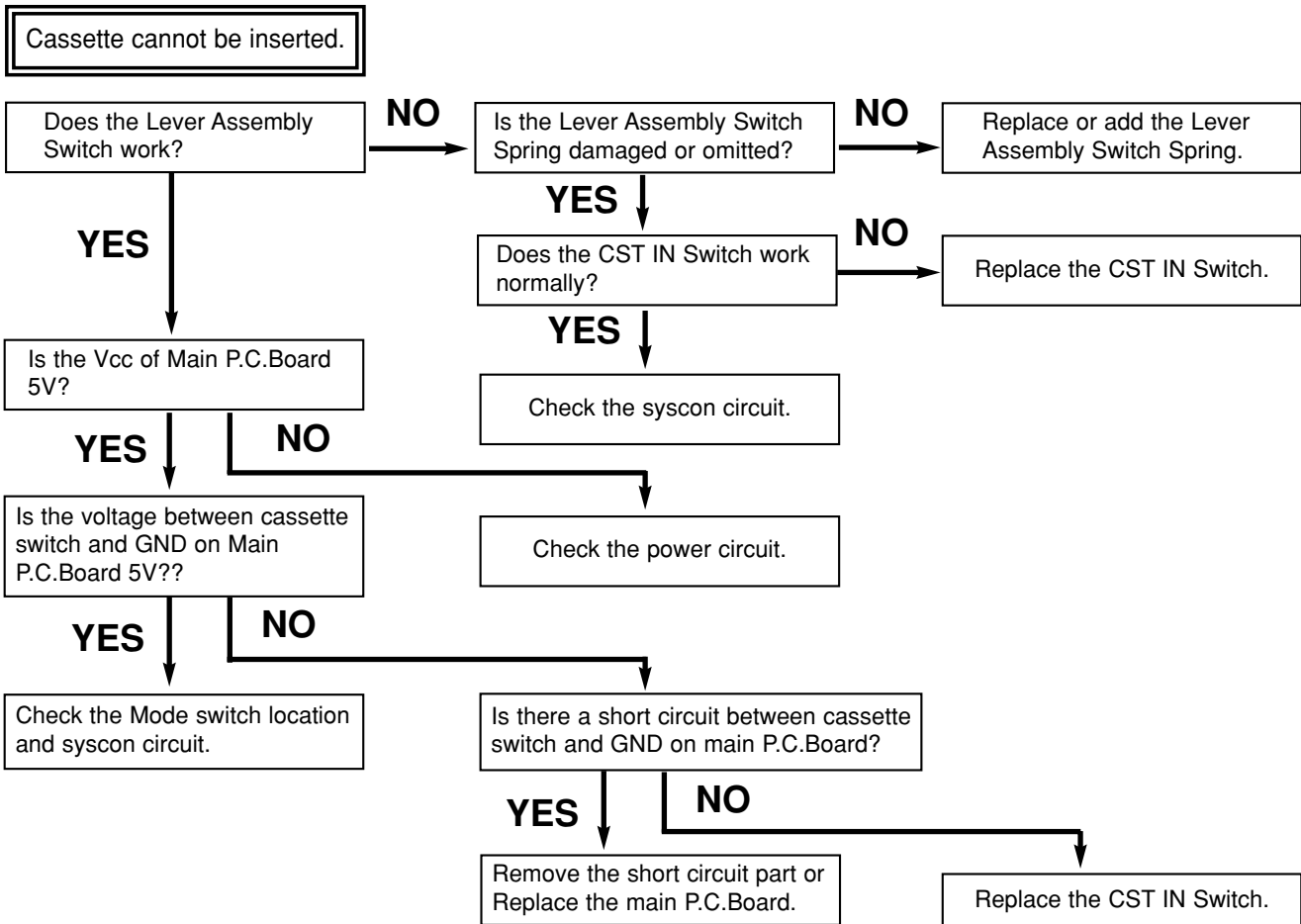
E.



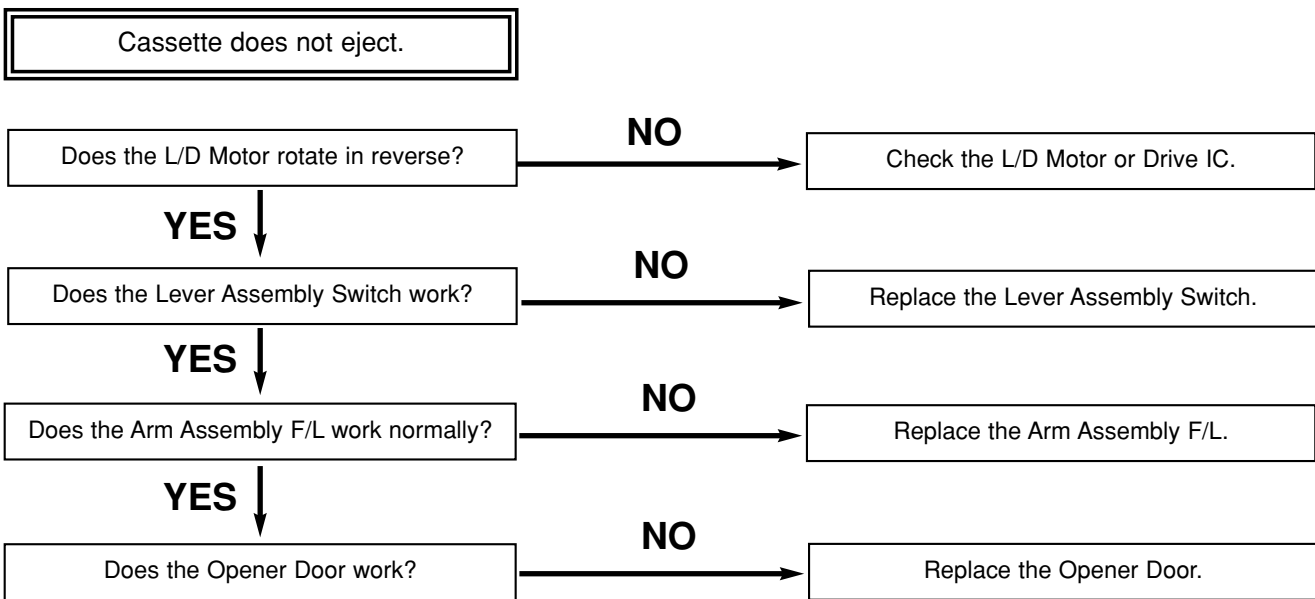
MECHANISM TROUBLESHOOTING GUIDE

2. Front Loading Mechanism

A.

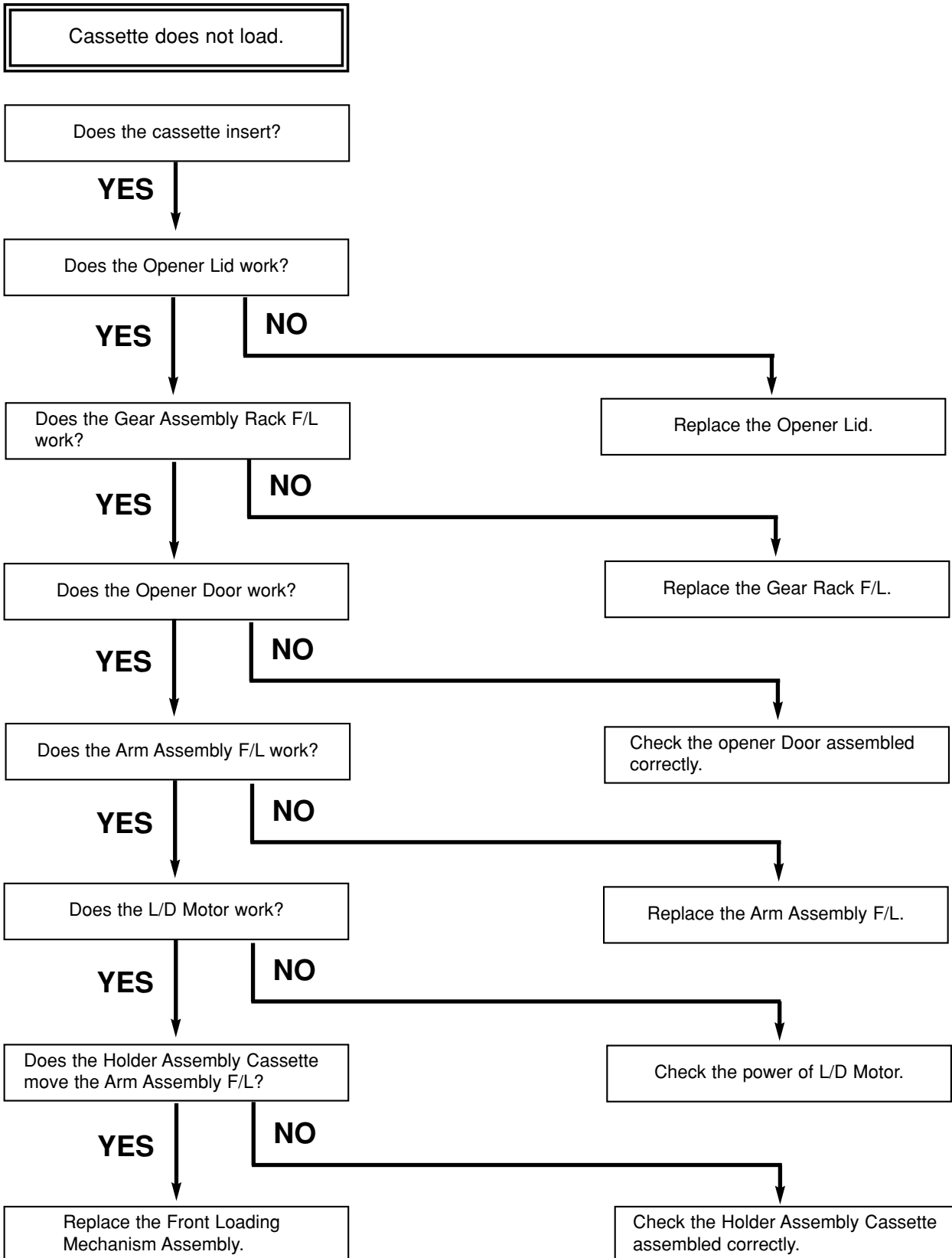


B.



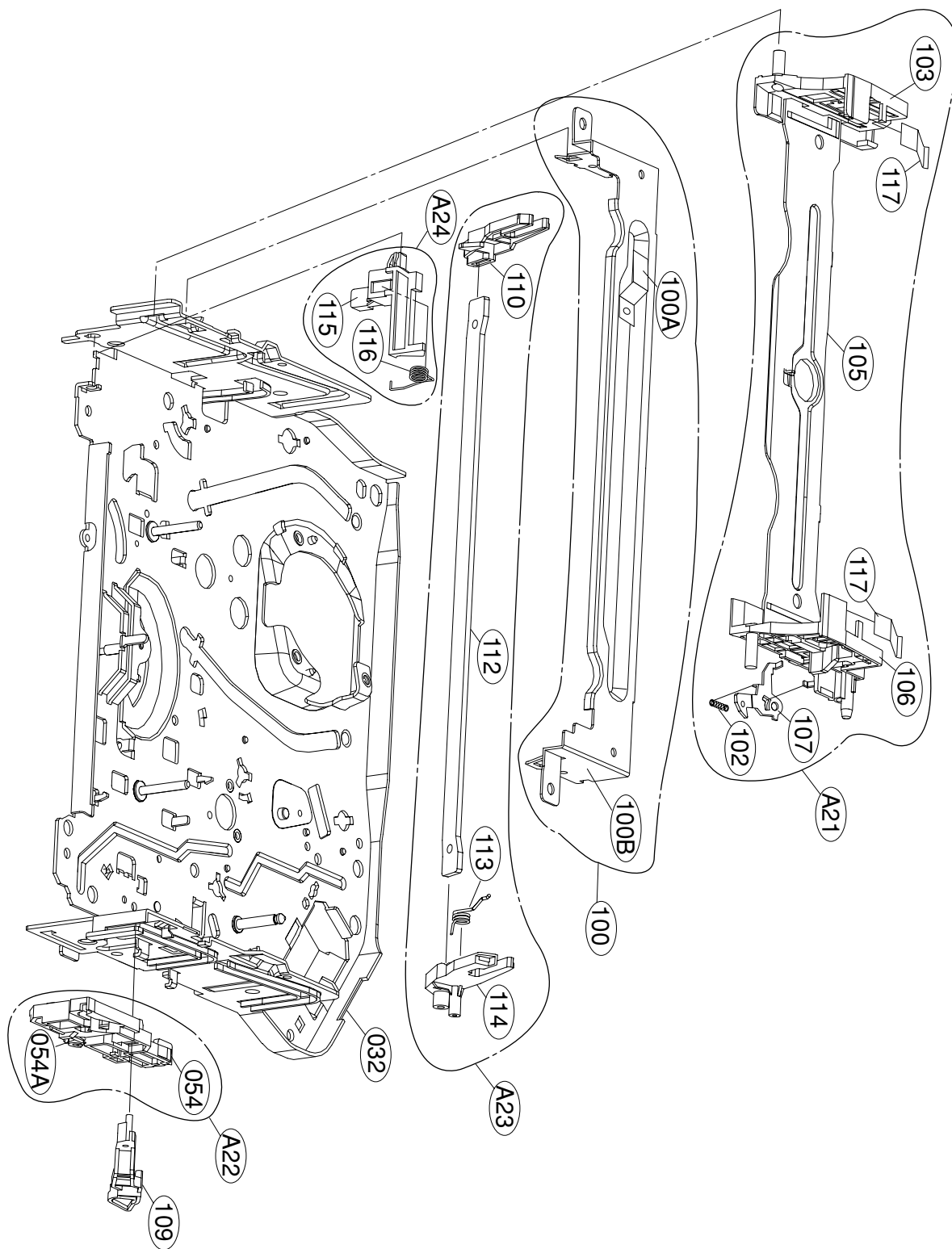
MECHANISM TROUBLESHOOTING GUIDE

C.



EXPLODED VIEWS

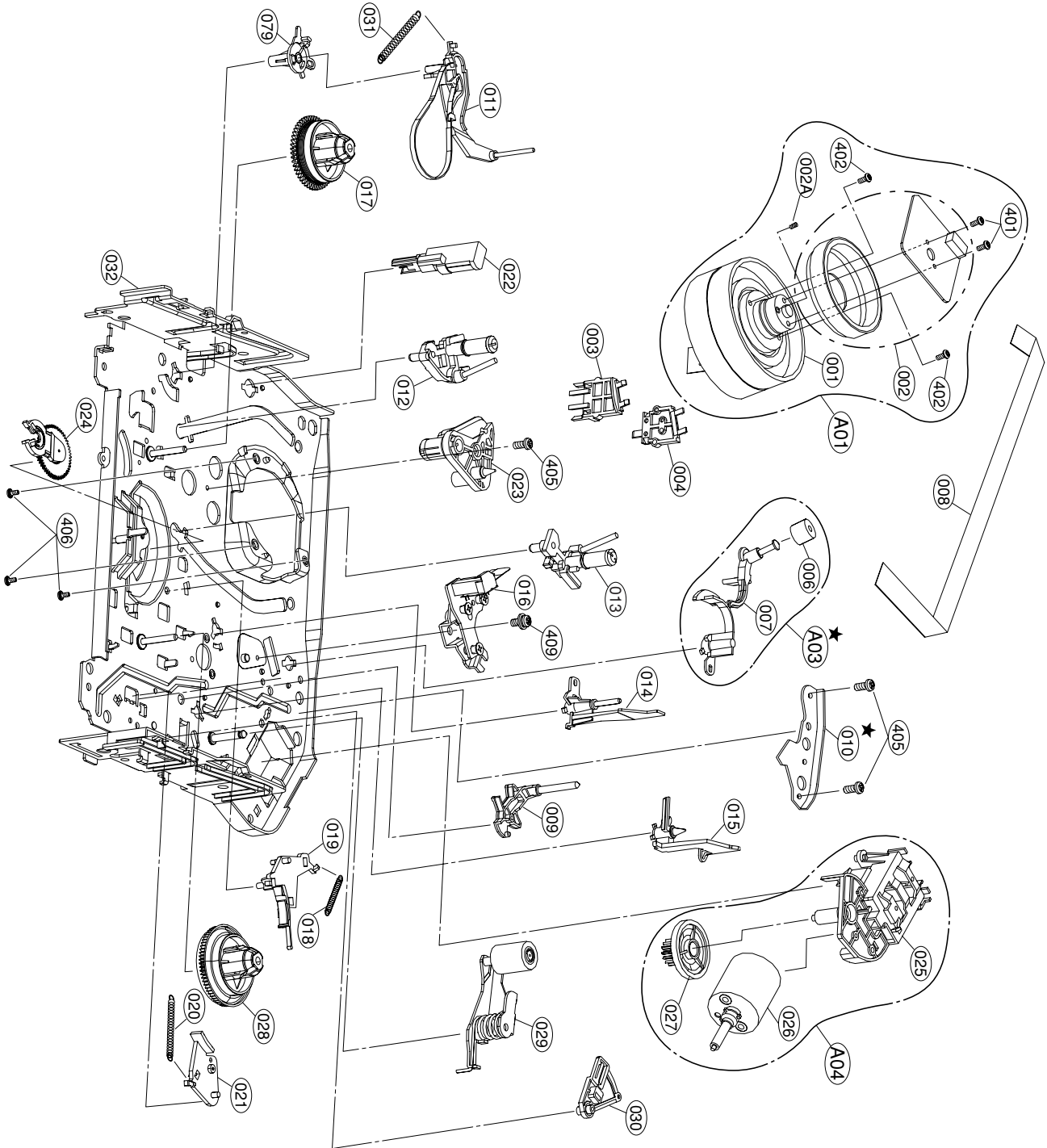
1. Front Loading Mechanism Section



EXPLODED VIEWS

2. Moving Mechanism Section(1)

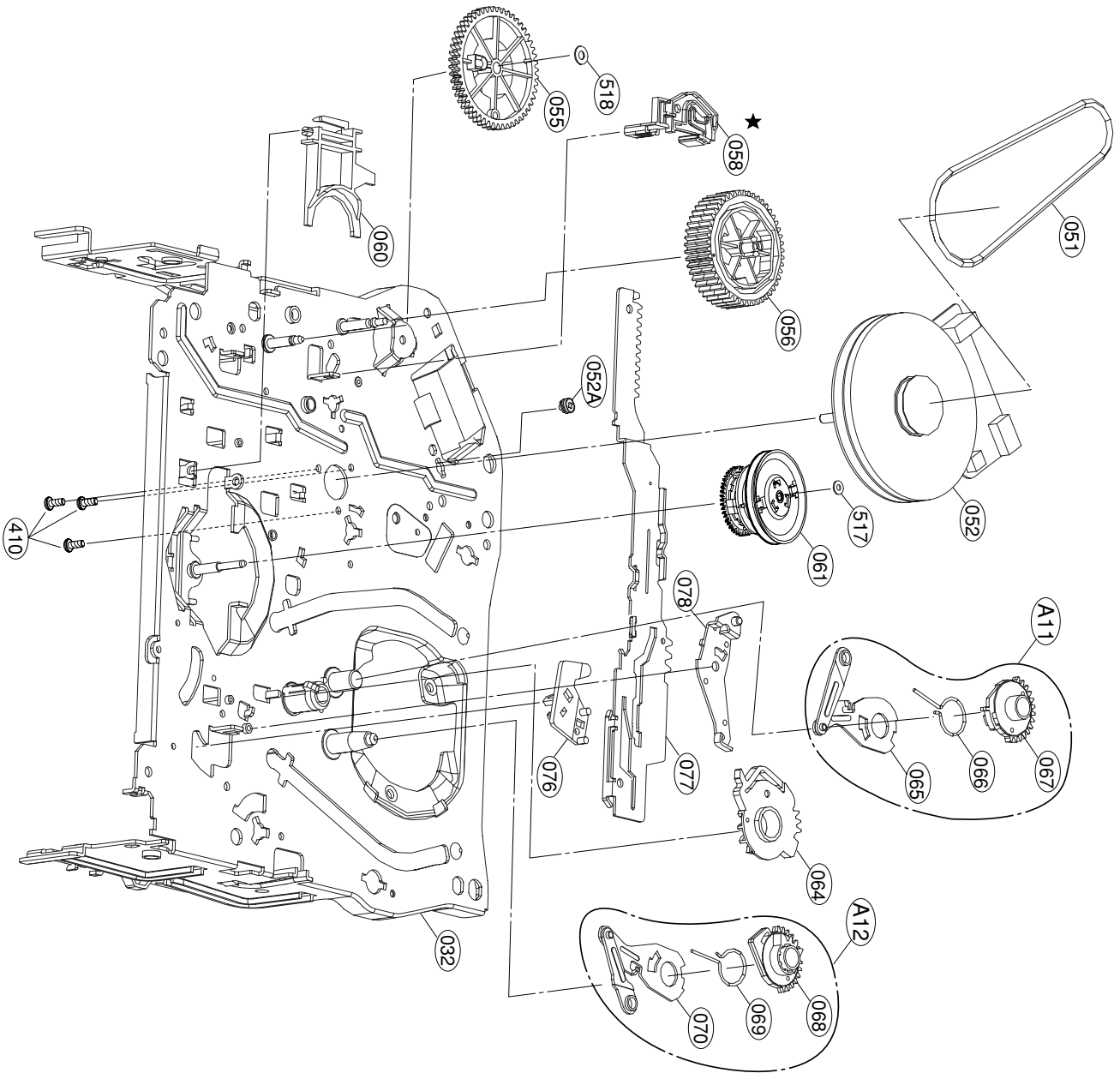
★ OPTIONAL PART



EXPLODED VIEWS

3. Moving Mechanism Section(2)

★ OPTIONAL PART



SECTION 6 MECHANISM OF DVD PART

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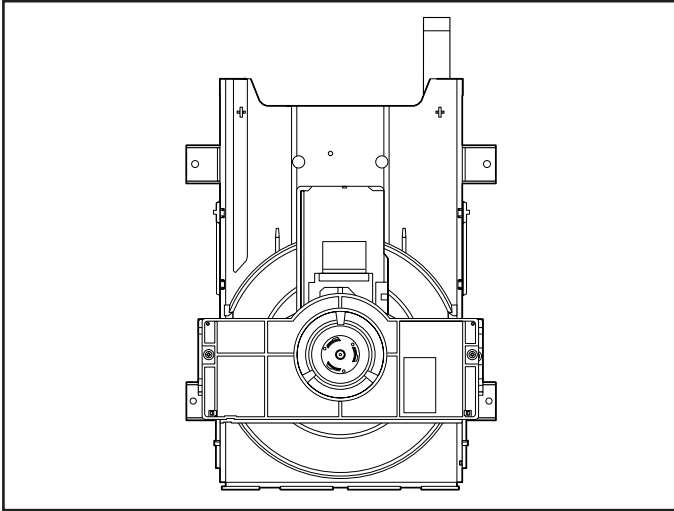
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EXPLODED VIEW

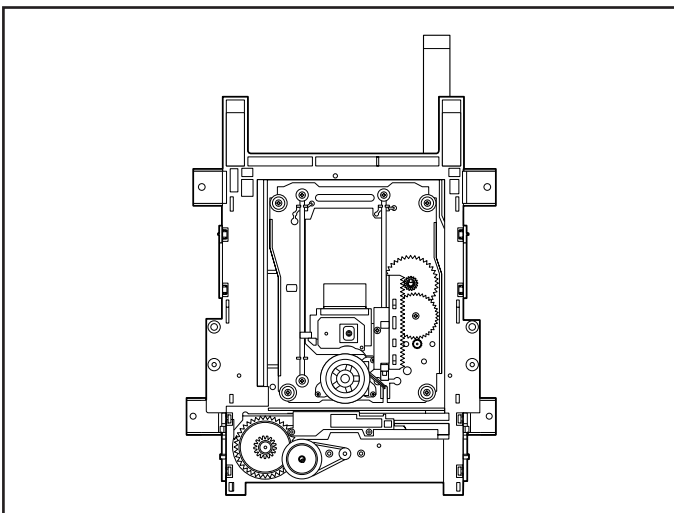
1. Deck Mechanism Exploded View....6-5
-

DECK MECHANISM PARTS LOCATION

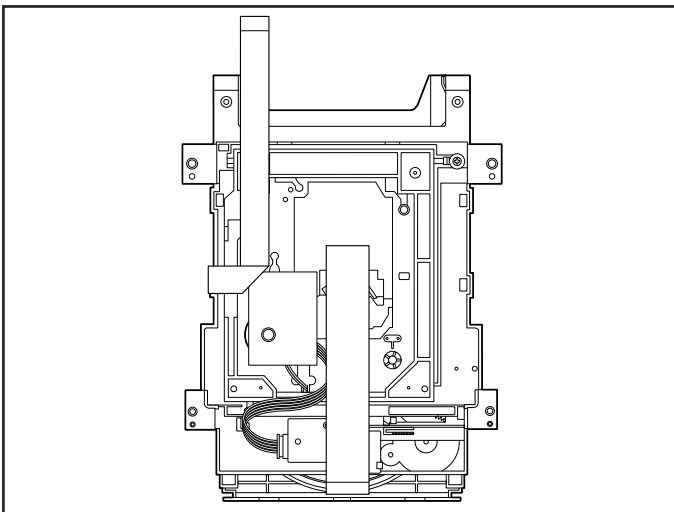
• Top View (With Tray)



• Top View (Without Tray)



• Bottom View



Procedure Starting No.	Parts	Fixing Type	Disassembly	Figure
1	Holder Clamp	2 Screws, 2 Locking Tabs		6-1
1	2 Clamp Assembly Disc			6-1
1, 2	3 Plate Clamp			6-1
1, 2, 3	4 Magnet Clamp			6-1
1, 2, 3, 4	5 Clamp Upper			6-1
1	6 Tray Disc			6-2
1, 6	7 Base Assembly Sled	4 Screws,		6-3
1, 2, 6	8 Gear Assembly Feed			6-3
1, 2, 6, 8	9 Gear Middle			6-3
1, 2, 6, 8, 9	10 Gear Assembly Rack	1 Screw		6-3
1, 2, 7	11 Rubber Rear			6-3
1, 2, 7	12 Frame Assembly Up/Down	1 Screw	Bottom	6-4
1, 2	13 Belt Loading	1 Locking Tab		6-4
1, 2, 13	14 Gear Pulley			6-4
1, 2, 13, 14	15 Gear Loading	1 Locking Tab		6-4
1, 2, 7, 12, 13, 14	16 Guide Up/Down			6-4
1, 2, 13	17 PWB Assembly Loading	1 Locking Tab 1 Hook 2 Screw	Bottom	6-4
1, 2, 7, 12, 13, 14, 15, 16, 17	18 Base Main			6-4

Note

When reassembling, perform the procedure in reverse order.

The "Bottom" on Disassembly column of above Table indicates the part should be disassembled at the Bottom side.

DECK MECHANISM DISASSEMBLY

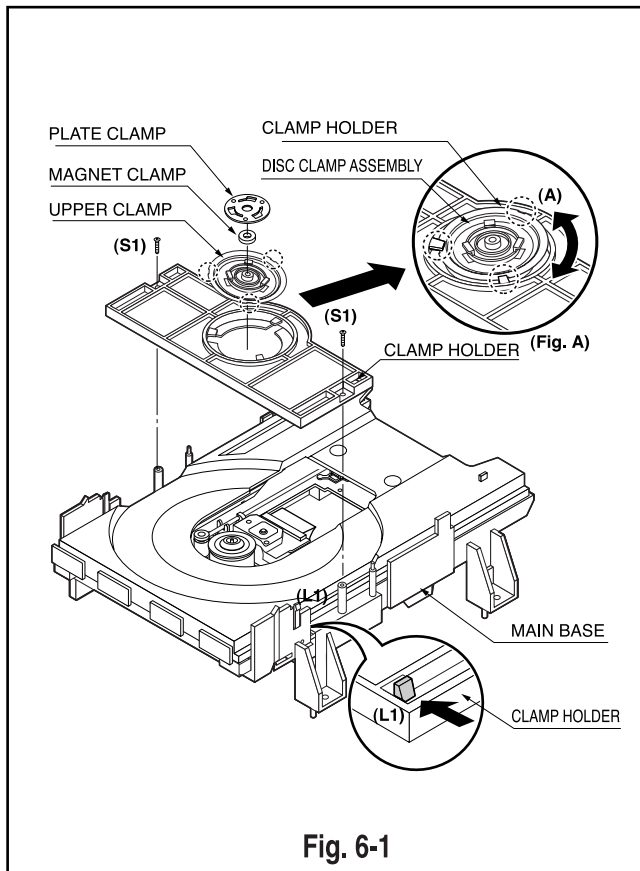


Fig. 6-1

1. Holder Clamp (Fig. 6-1)

- 1) Release 2 Screws(S1).
- 2) Unhook 2 Locking Tabs(L1).
- 3) Lift up the Holder Clamp and then separate it from the Base Main.

1-1. Clamp Assembly Disc

- 1) Place the Clamp Assembly Disc as Fig. (A)
- 2) Lift up the Clamp Assembly Disc in direction of arrow(A).
- 3) Separate the Clamp Assembly Disc from the Holder Clamp.

1-1-1. Plate Clamp

- 1) Turn the Plate Clamp to counterclockwise direction and then lift up the Plate Clamp.

1-1-2. Magnet Clamp

1-1-3. Clamp Upper

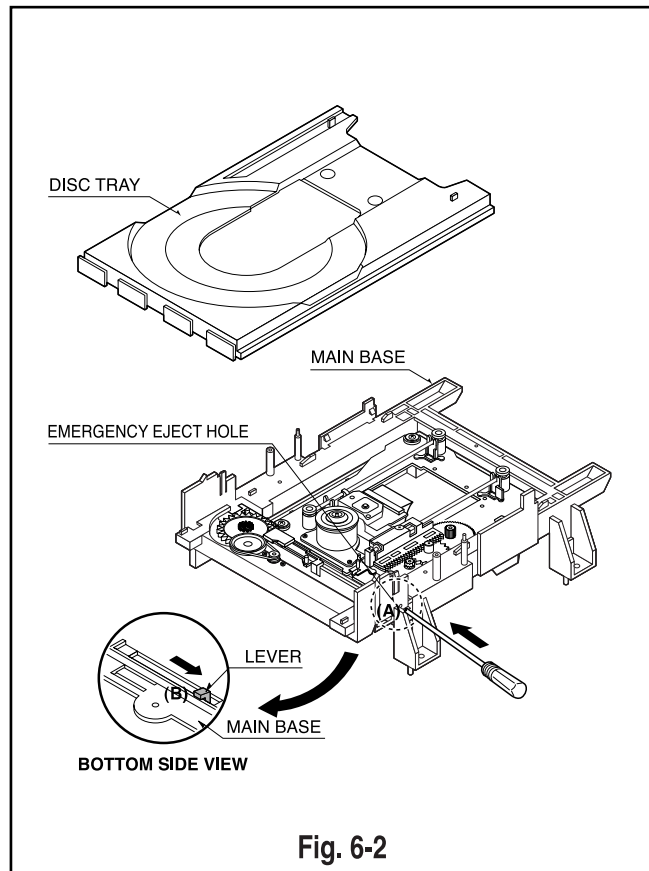


Fig. 6-2

2. Tray Disc (Fig. 6-2)

- 1) Insert and push a Driver in the emergency eject hole(A) at the right side, or put the Driver on the Lever(B) of the Gear Emergency and pull the Lever(B) in direction of arrow so that the Tray Disc is ejected about 15~20mm.
- 2) Pull the Tray Disc until it is separated from the Base Main completely.

DECK MECHANISM DISASSEMBLY

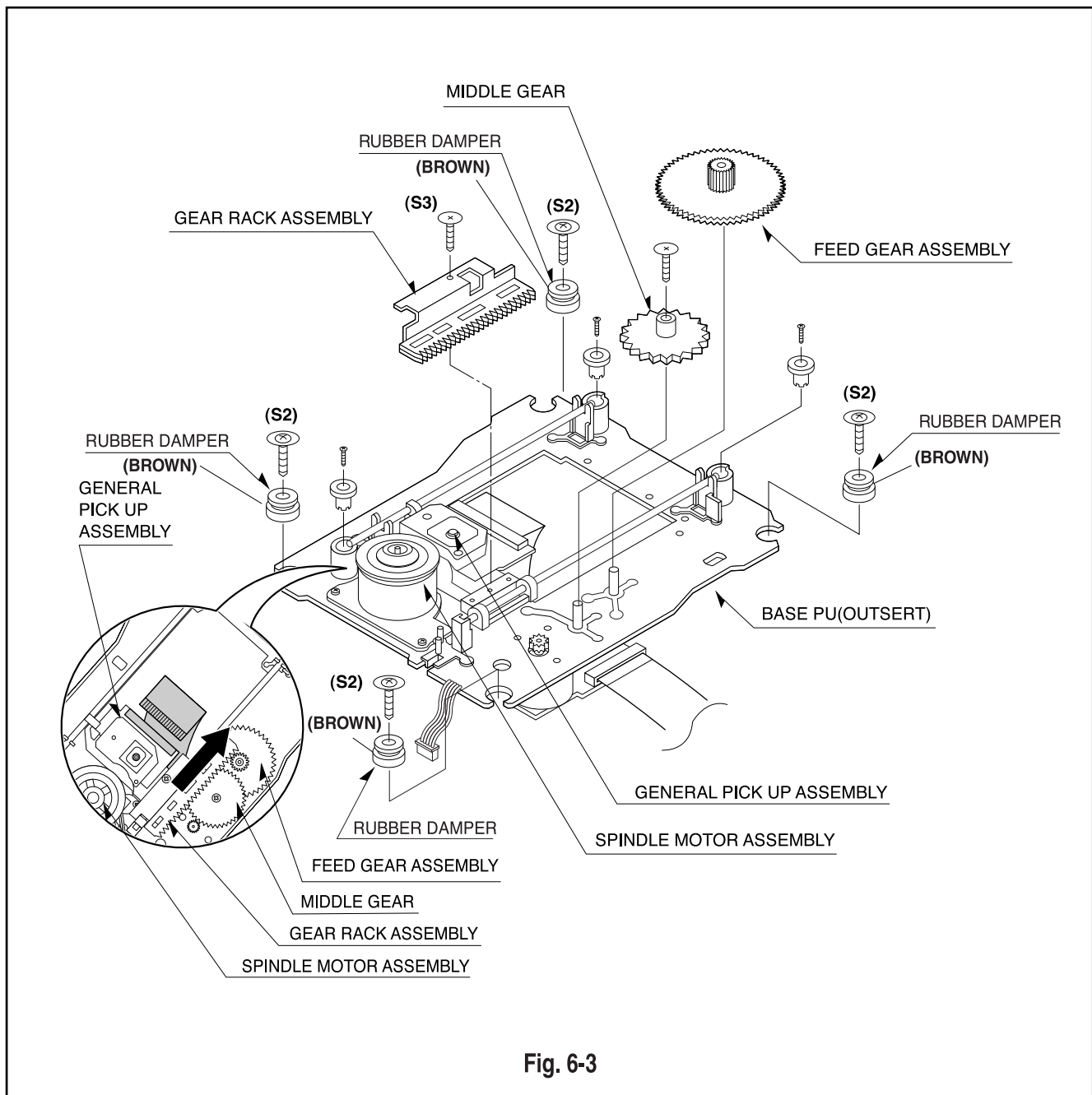


Fig. 6-3

3. Base Assembly Sled (Fig. 6-3)

- 1) Release 4 Screw(S2).
- 2) Disconnect the FFC Connector(C1)

3-1. Gear Assembly Feed

3-2. Gear Middle

3-3. Gear Assembly Rack

- 1) Release the Screw(S3)

4. Rubber Rear (Fig. 6-3)

DECK MECHANISM DISASSEMBLY

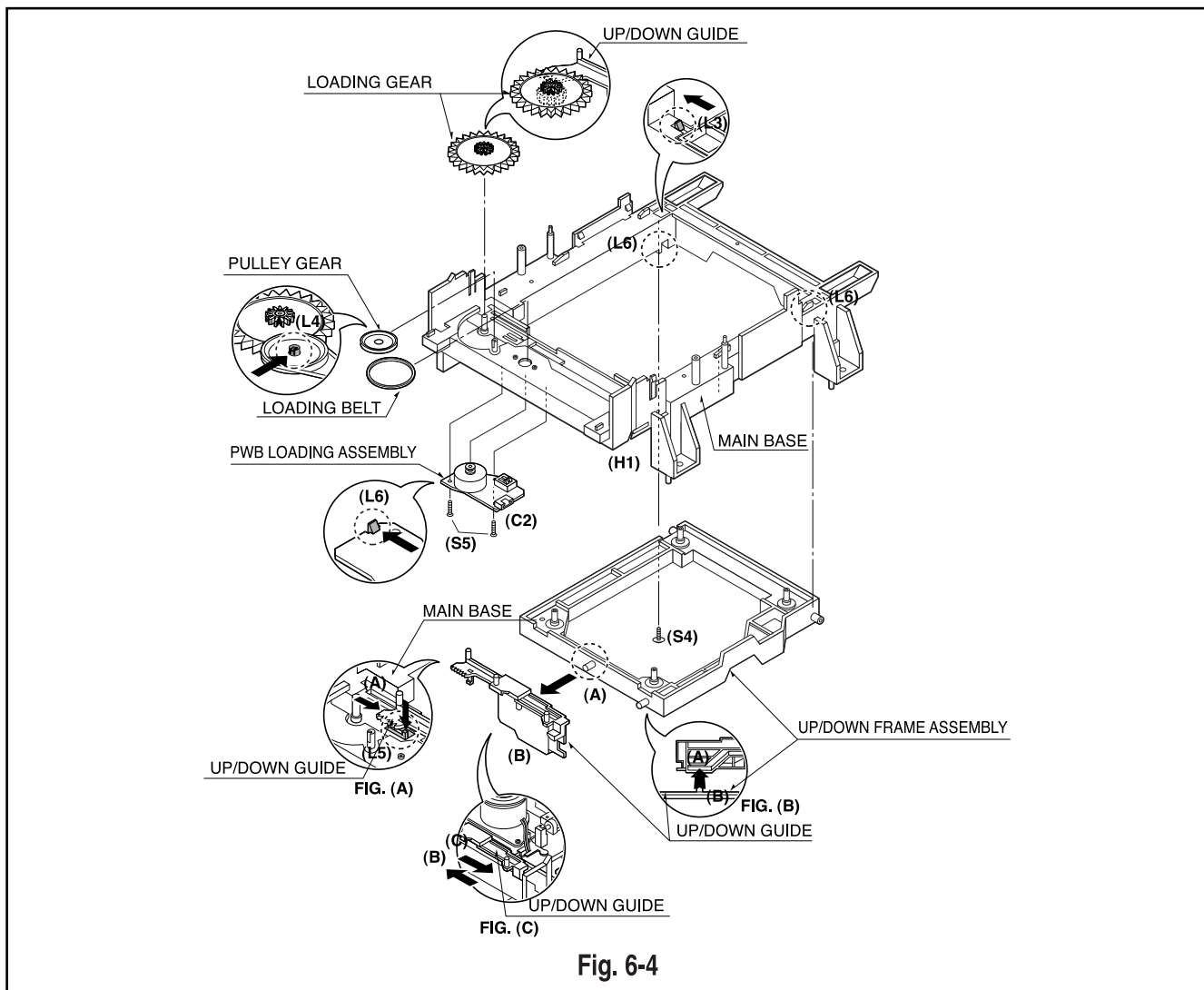


Fig. 6-4

5. Frame Assembly Up/Down (Fig. 6-4)

Note

Put the Base Main face down(Bottom Side)

- 1) Release the Screw(S4)
- 2) Unlock the Locking Tab(L3) in direction of arrow and then lift up the Frame Assembly Up/Down to separate it from the Base Main.

Note

- When reassembling move the Guide Up/Down in direction of arrow(C) until it is positioned as Fig.(C).
- When reassembling insert (A) portion of the Frame Assembly Up/Down in the (B) portion of the Guide Up/Down as Fig.(B)

6. Belt Loading(Fig. 6-4)

Note

Put the Base Main on original position(Top Side)

7. Gear pulley (Fig. 6-4)

- 1) Unlock the Locking Tab(L4) in direction of arrow(B) and then separate the Gear Pulley from the Base Main.

8. Gear Loading (Fig. 6-4)

9. Guide Up/Down (Fig. 6-4)

- 1) Move the Guide Up/Down in direction of arrow(A) as Fig.(A)
- 2) Push the Locking Tab(L5) down and then lift up the Guide Up/Down to separate it from the Base Main.

Note

When reassembling place the Guide Up/Down as Fig.(C) and move it in direction arrow(B) until it is locked by the Locking Tab(L5). And confirm the Guide Up/Down as Fig.(A)

10. PWB Assembly Loading (Fig. 6-4)

Note

Put the Base Main face down(Bottom Side)

- 1) Release 2 Screws(S5)
- 2) Unlock the Loading Motor (C2) from the Hook (H1) on the Base Main.
- 3) Unlock 2 Locking Tabs(L6) and separate the PWB Assembly Loading from the Base Main.

11. Base Main(Fig. 6-4)

EXPLODED VIEWS

1. Deck Mechanism Exploded View

