DVP3304V/17

Service
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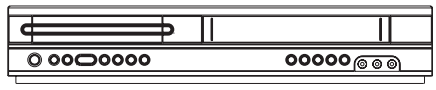

Service Manual

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PHILIPS

CONTENTS

SECTION 1

SUMMARY

CONTENTS

PRODUCT SAFETY SERVICING GUIDELINES FOR VCR+DVD COMBO 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.

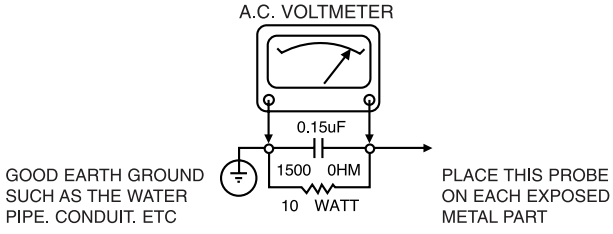
WHILE SERVICING, USE AN ISOLATION TRANSFORMER FOR PROTECTION FROM A.C. LINE SHOCK.

SAFETY CHECKS

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

SUBJECT: FIRE & SHOCK HAZARD

1. BE SURE THAT ALL COMPONENTS ARE POSITIONED IN SUCH AWAY 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 RECIVING TUBE OR A RESISTOR RATED AT 1 WATT OR MORE. LEAD TENSION AROUND PROTRUNING 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 MILLIAMP 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 ESSNTIAL 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 RECORDER 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 EXCES SIVE 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 INTE GRAL 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 PALCEMENT 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.

SERVICING PRECAUTIONS

CAUTION: Before servicing the VCR+DVD Combo 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.
Remember Safety First :

General Servicing Precautions

1. Always unplug the VCR+DVD Combo AC power cord from the AC power source before:
   (1) Removing or reinstalling any component, circuit board, module, or any other assembly.
   (2) Disconnecting 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 VCR+DVD Combo 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 VCR+DVD Combo and / or any of its electrical assemblies unless all solid state device heat sinks are correctly installed.

6. Always connect the test instrument ground lead to an appropriate ground before connecting 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 1Mohm.
Note 1: Accessible Conductive Parts include 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 as “anti-static” can generate electrical charges sufficient to damage ES devices.

5. Do not use freon-propelled chemicals. These can generate an 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.)

INFORMATION ABOUT LEAD-FREE SOLDERING

Philips CE is producing lead-free sets from 1.1.2005 onwards.

INDENTIFICATION:
Regardless of special logo (not always indicated)

one must treat all sets from 1 Jan 2005 onwards, according next rules:

Example S/N:

Bottom line of typeplate gives a 14-digit S/N. Digit 5&6 is the year, digit 7&8 is the week number, so in this case 1991 wk 18

So from 0501 onwards = from 1 Jan 2005 onwards

Important note: In fact also products of year 2004 must be treated in this way as long as you avoid mixing solder-alloys (leaded/ lead-free). So best to always use SAC305 and the higher temperatures belong to this.

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free solder alloy Philips SAC305 with order code 0622 149 00106. If lead-free solder-paste is required, please contact the manufacturer of your solder-equipment. In general use of solder-paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free solder alloy. The solder tool must be able
  * To reach at least a solder-temperature of 400°C,
  * To stabilize the adjusted temperature at the solder-tip
  * To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature around 360°C – 380°C is reached and stabilized at the solder joint. Heating-time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C otherwise wear-out of tips will rise drastically and flux-fluid will be destroyed. To avoid wear-out of tips switch off un-used equipment, or reduce heat.
- Mix of lead-free solder alloy / parts with leaded solder alloy / parts is possible but PHILIPS recommends strongly to avoid mixed solder alloy types (leaded and lead-free).
  If one cannot avoid or does not know whether product is lead-free, clean carefully the solder-joint from old solder alloy and re-solder with new solder alloy (SAC305).
- Use only original spare-parts listed in the Service-Manuals. Not listed standard-material (commodities) has to be purchased at external companies.
- Special information for BGA-ICs:
  - always use the 12nc-recognizable soldering temperature profile of the specific BGA (for de-soldering always use the lead-free temperature profile, in case of doubt)
  - lead free BGA-ICs will be delivered in so-called 'dry-packaging' (sealed pack including a silica gel pack) to protect the IC against moisture. After opening, dependent of MSL-level seen on indicator-label in the bag, the BGA-IC possibly still has to be baked dry. (MSL=Moisture Sensitivity Level). This will be communicated via AYS-website.
  Do not re-use BGAs at all.

- For sets produced before 1.1.2005 (except products of 2004), containing leaded solder-alloy and components, all needed spare-parts will be available till the end of the service-period. For repair of such sets nothing changes.

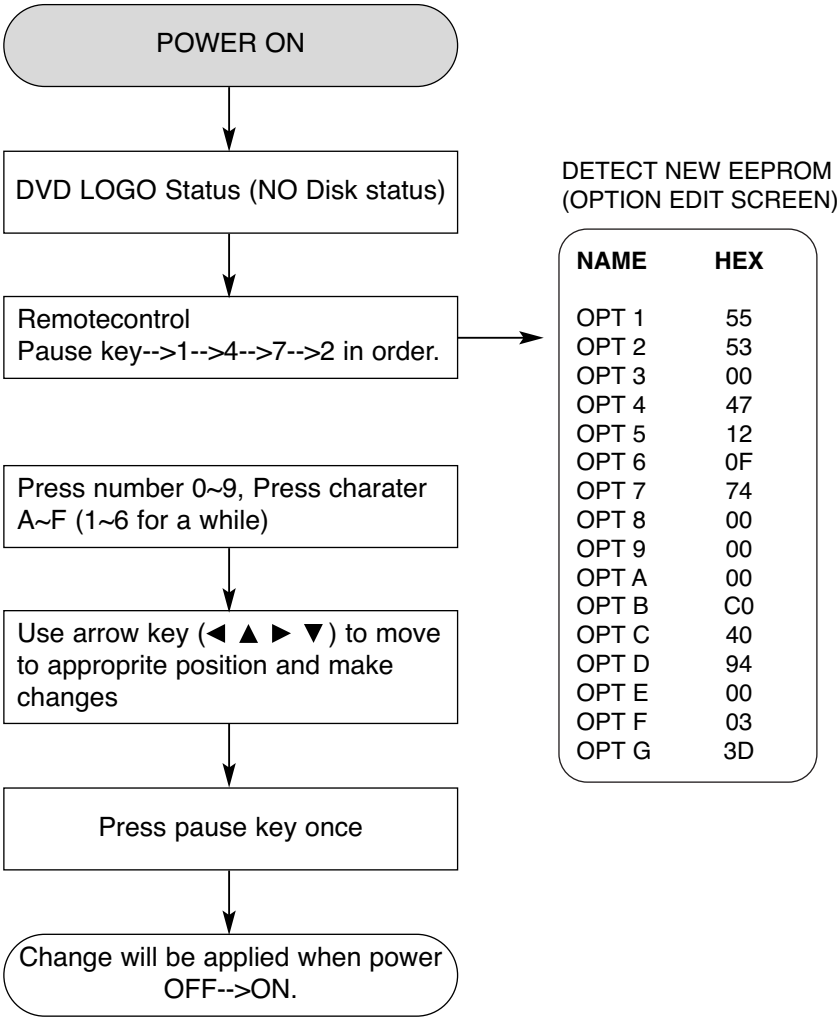
- On our website **www.atyourservice.ce.Philips.com** you find more information to:

  * BGA-de-/soldering (+ baking instructions)
  * Heating-profiles of BGAs and other ICs used in Philips-sets

You will find this and more technical information within the "magazine", chapter "workshop news".

For additional questions please contact your local repair-helpdesk.

SERVICE INFORMATION FOR EEPROM



*** OPTION**

- NTSC model doesn't have VCR option and use DVD option B~F as VCR option. (only DVD exist)
- PAL model has another separate VCR option. (Both VCR and DVD exist)

SPECIFICATIONS

• GENERAL

Power requirements	120V, 60Hz
Power consumption	16W
Dimensions (Approx.)	16.9 x 3.1 x 10.2inches (430 x 79 x 260mm) (W x H x D)
Net Weight (Approx.)	8.8lbs (4.0kg)
Operating temperature	5°C to 40°C (41°F to 104°F)
Operating humidity	5% to 90%
Signal system	NTSC

• OUTPUTS

VHS VIDEO IN (LINE1, 2)	1V (p-p)ohms, sync negative, RCA jack x 2
VHS AUDIO IN (LINE1, 2)	-6.0dBm more than 47ohms, RCA jack (L, R) x 2

• OUTPUTS

VIDEO OUT	1V (p-p), 75ohms, sync negative
S-VIDEO OUT	(Y) 1.0V (p-p), 75ohms, negative sync, Mini DIN 4-pin x 1
	(C) 0.286V (p-p), 75ohms
COMPONENT VIDEO OUT	(Y) 1.0V (p-p), 75ohms, negative sync, RCA jack x 1
(PROGRESSIVE SCAN)	(Pb)/(Pr) 0.7V (p-p), 75ohms, RCA jack x 2
Audio output (digital audio)	0.5V (p-p) 75ohms, RCA jack x 1
Audio output (analog audio)	2.0Vrm (1kHz, 0dB), 600ohms, RCA jack (L, R) x 1

• VCR SPECIFICATIONS

Head system	Four head helical scan azimuth system
Timer	12-hour display type with AM, PM
Tape speed	SP: 33.35mm/sec, LP: 16.67mm/sec, SLP: 11.12mm/sec
Tape width	12.7mm
Maximum recording time	SP: 2HOURS (T-120), SLP: 6HOURS (T-120) / 8HOURS (T-160)
Rewind time	About 3 minutes (T-120)
Frequency range	20Hz to 20kHz
Signal-to-noise ratio	More than 43dB
Dynamic range	More than 88dB
Channel separation	More than 60dB

• DVD SPECIFICATIONS

Laser system	Semiconductor laser, wavelength 650nm
Frequency response	DVD (PCM 96kHz): 8Hz to 44kHz
	DVD (PCM 48kHz): 8Hz to 22kHz
	CD: 8Hz to 20kHz
Signal-to-noise ratio	More than 90dB (ANALOG OUT jacks only)
Harmonic distortion	Less than 0.02%
Dynamic range	More than 95dB (DVD/CD)

• ACCESSORY

Video cable x 1, Audio cable(L/R) x 1, Remote control x 1, Batteries(R03/AAA) x 2

SECTION 2

CABINET & MAIN CHASSIS

CONTENTS

EXPLODED VIEWS

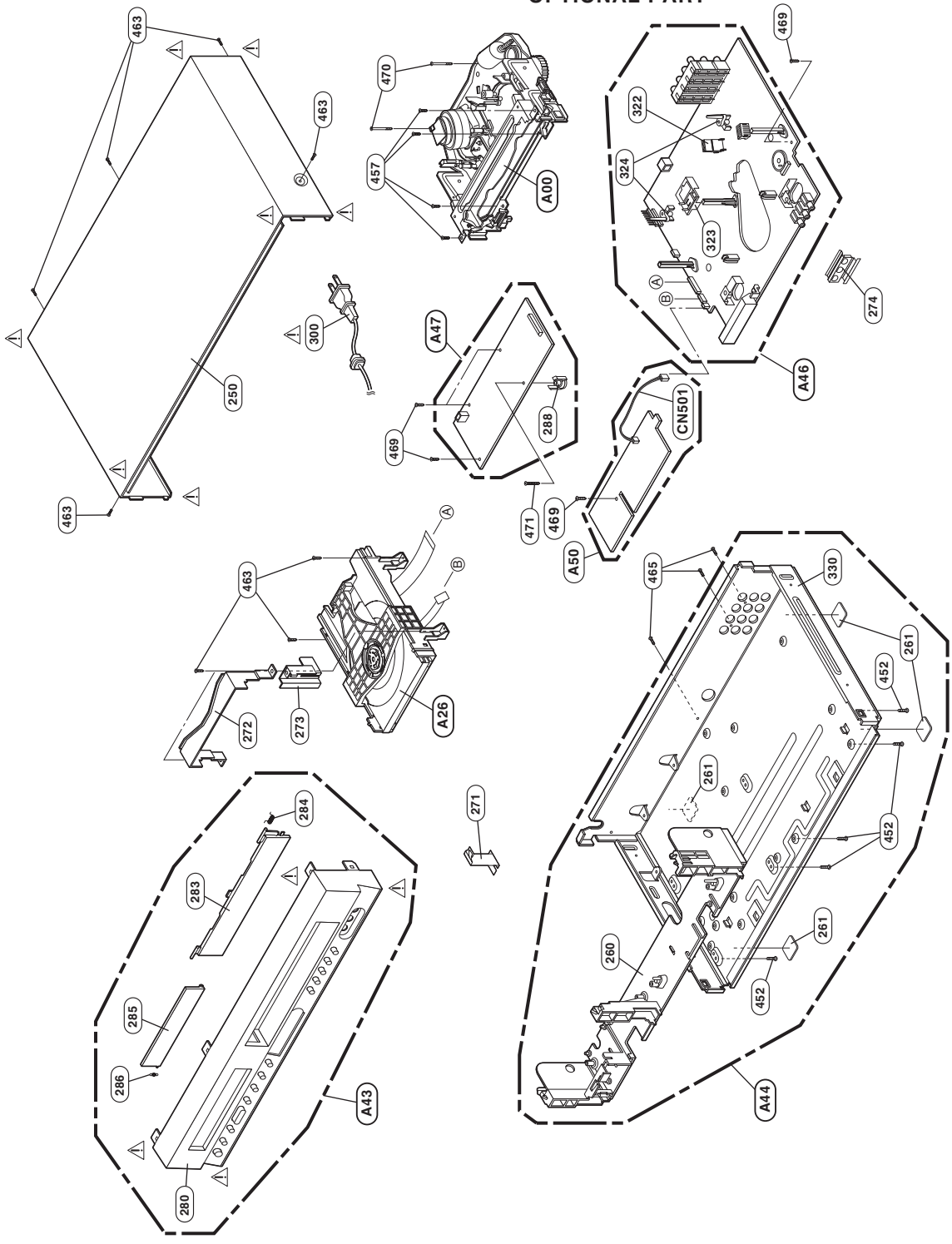
1. CABINET AND MAIN FRAME SECTION

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

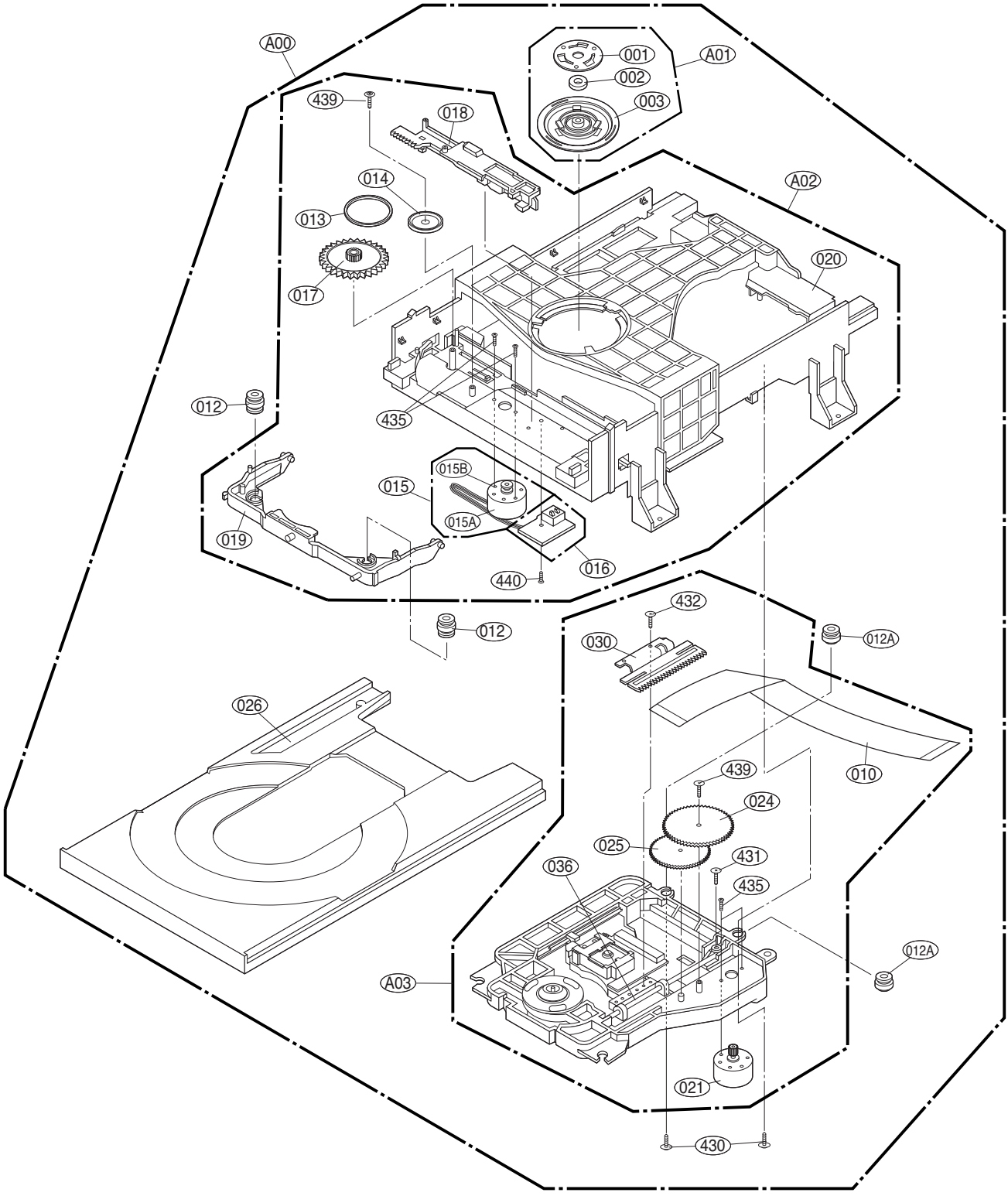
SVC purchase order caution

Key board is array coming main board.
Purchase order board separately supply incomprehensible.
Supply is possible in Location No A46 state in exploded views.

★**OPTIONAL PART**

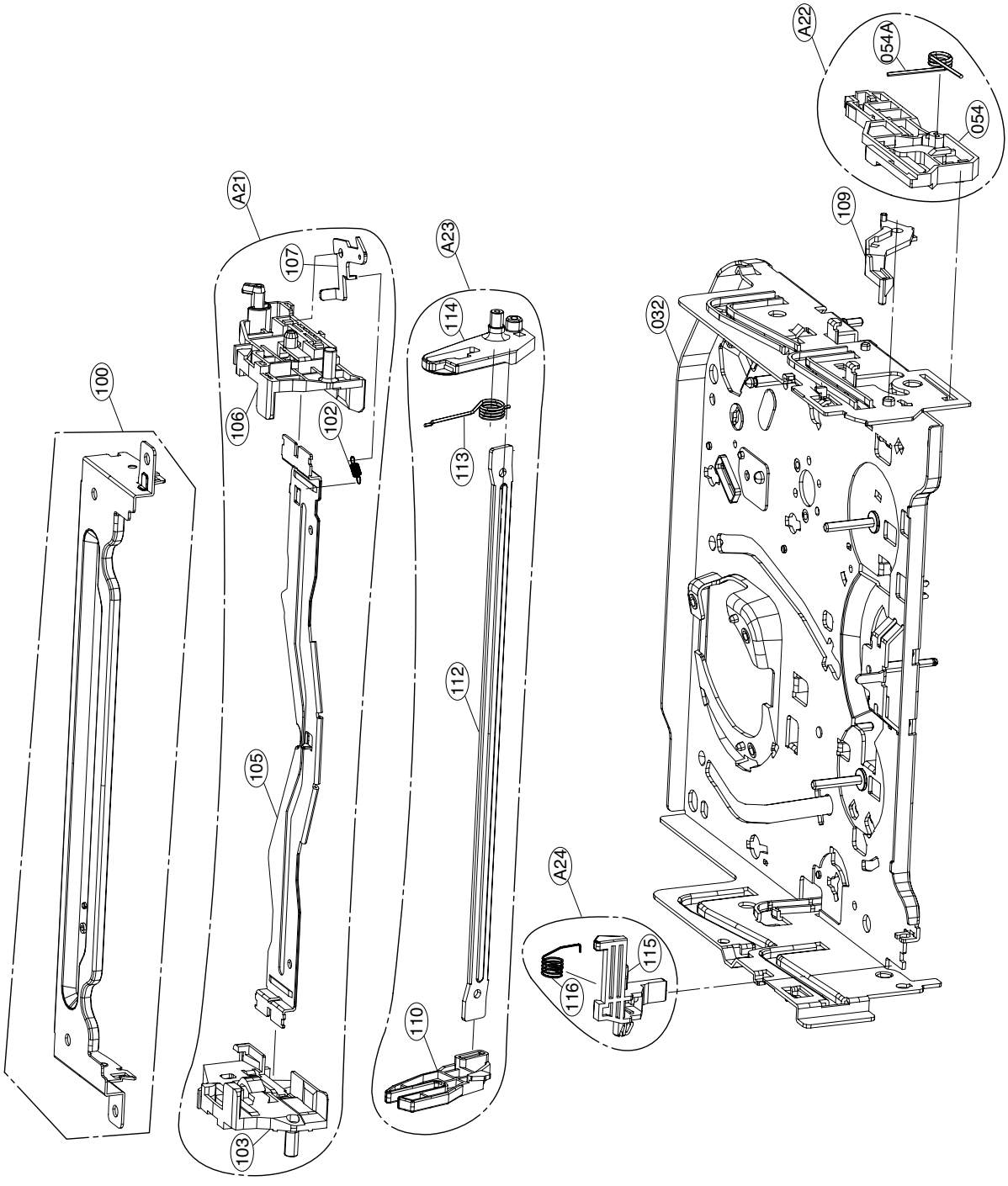


2. DECK MECHANISM SECTION (DP-10C)

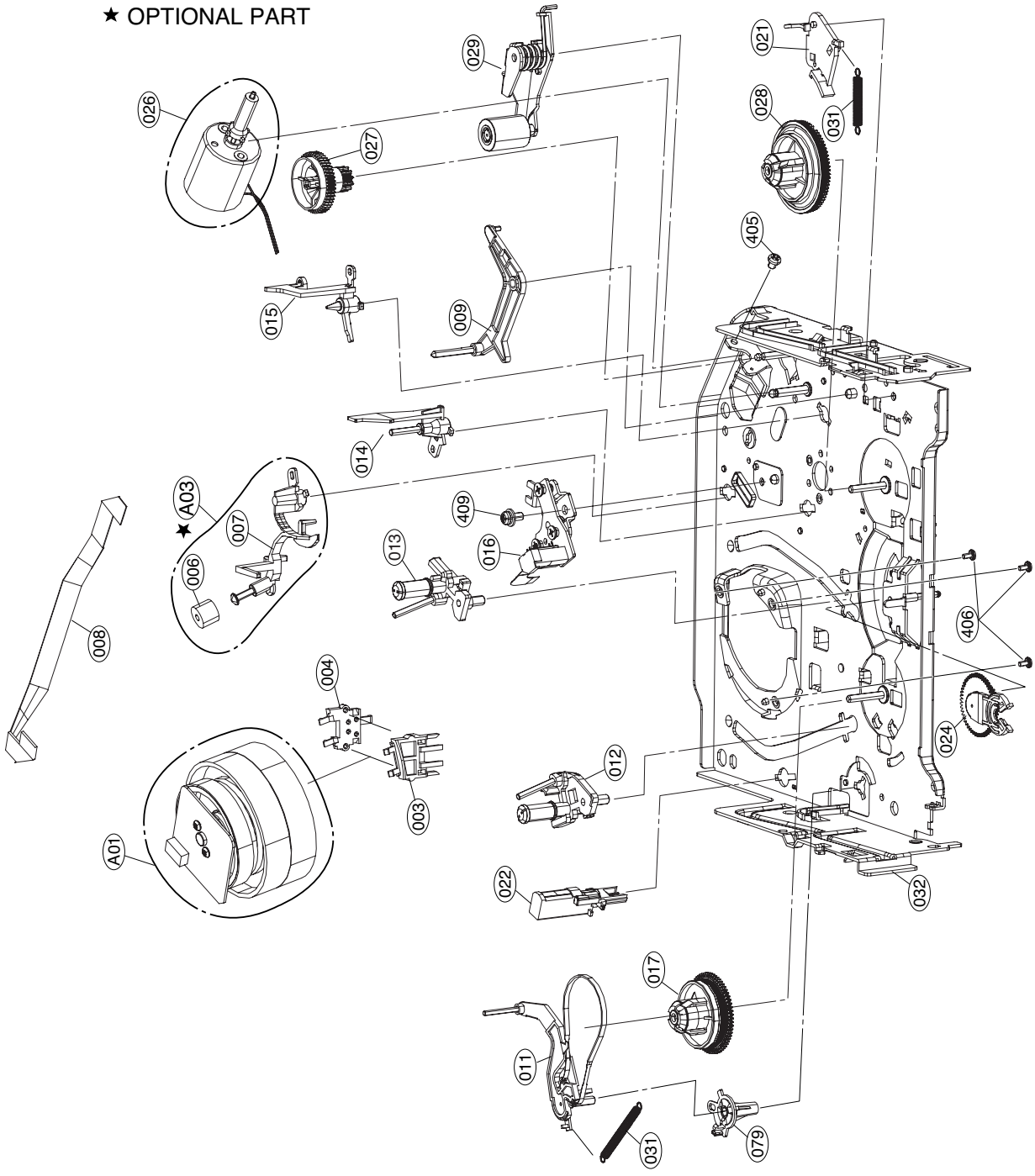


3. DECK MECHANISM SECTION (D37(N))

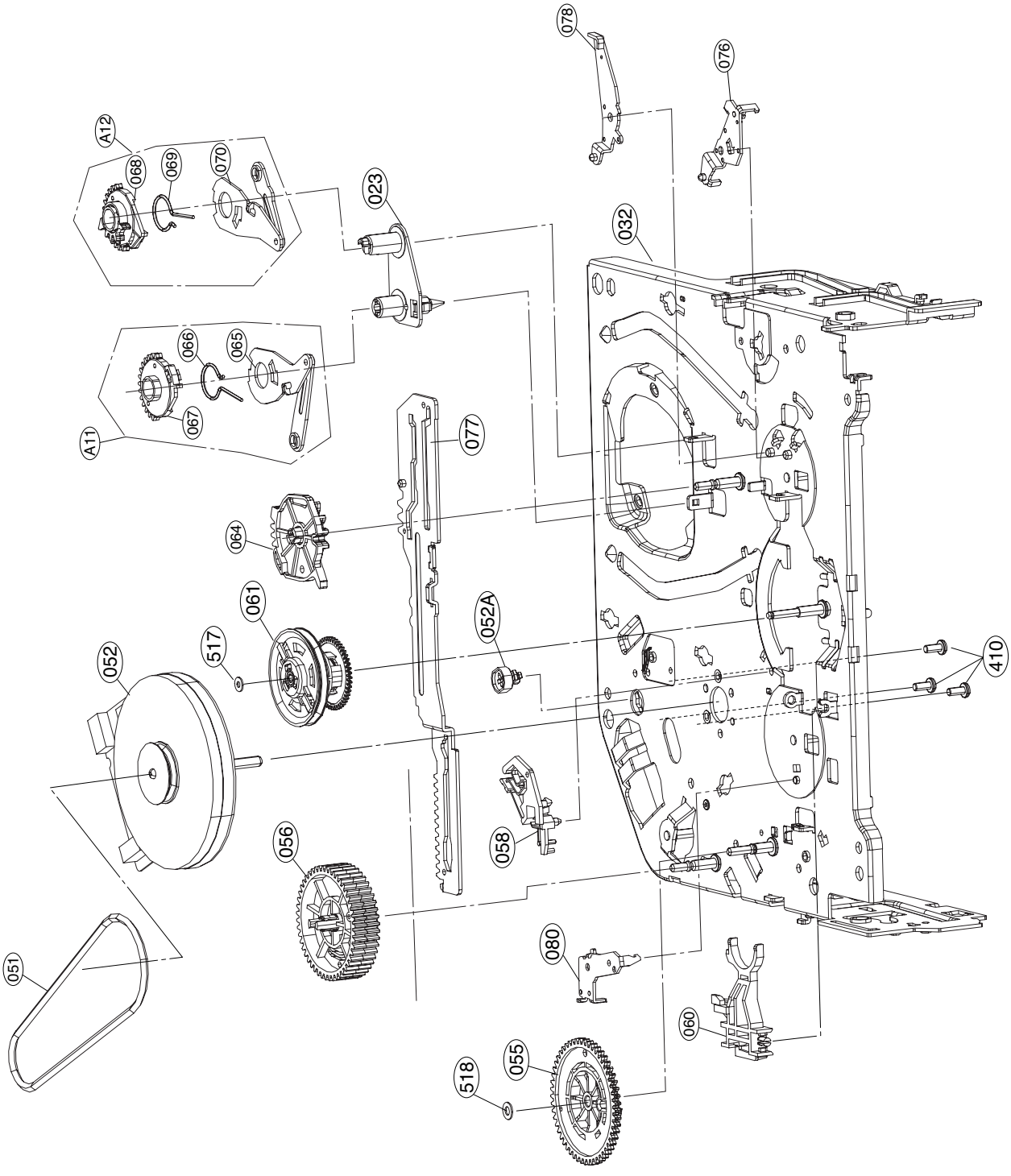
3-1. Front loading mechanism section



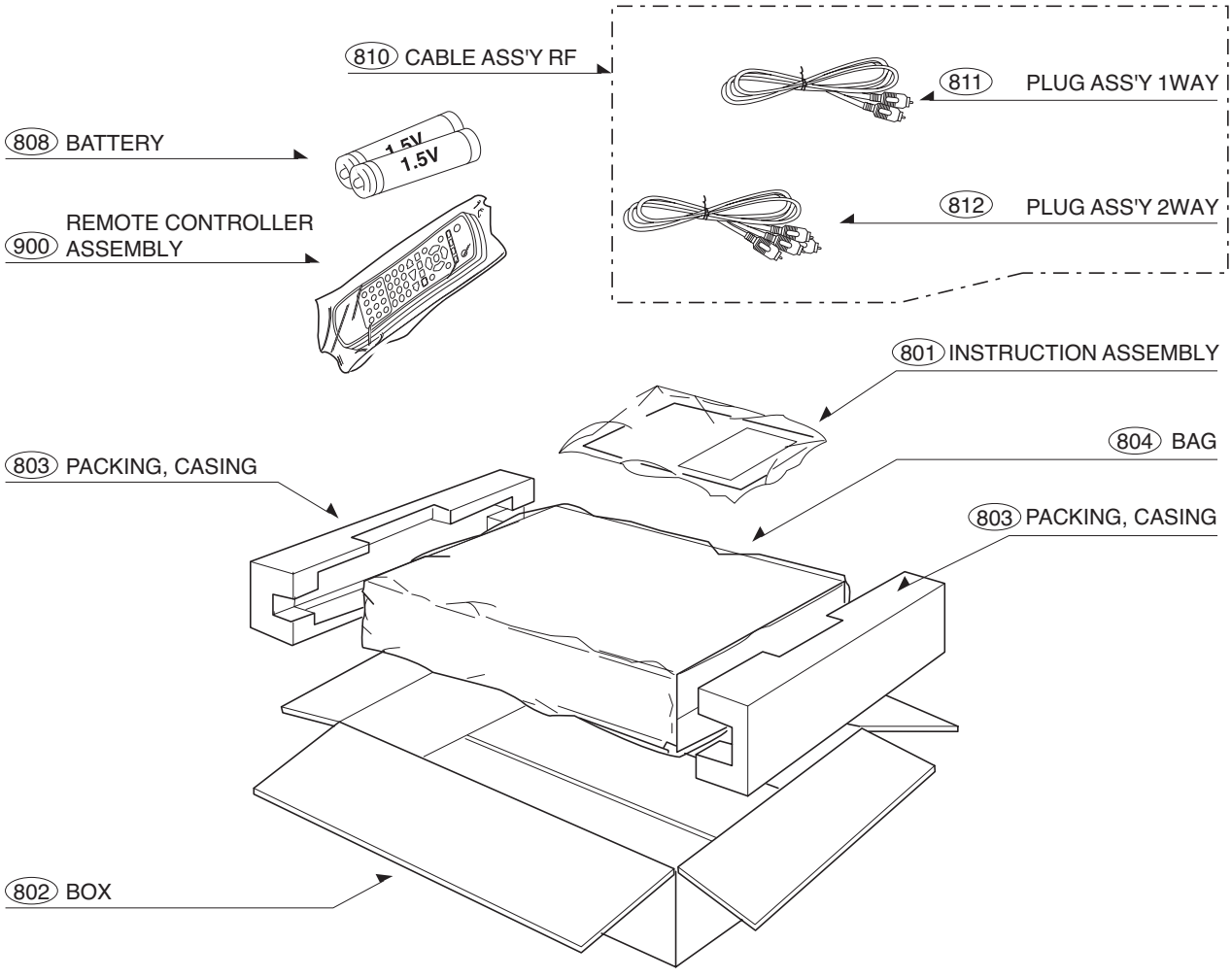
3-2. Moving mechanism section (1)



3-3. Moving mechanism section (2)



4. PACKING ACCESSORY SECTION



SECTION 3

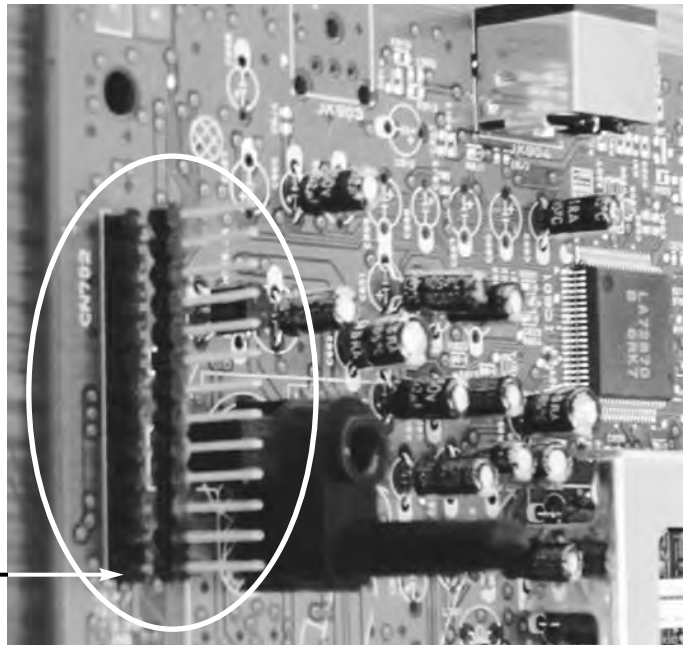
ELECTRICAL

CONTENTS

CONNECTOR PICTURE

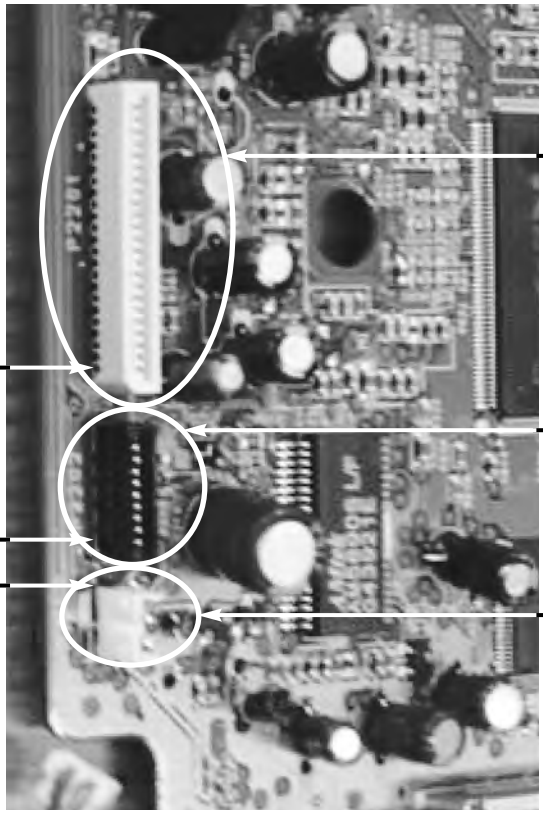
1. ALL CONNECTOR PICTURE

2. CN702 CONNECTOR PICTURE



CN702	
MOTOR_Vcc	1
REG_12V	2
REG_9V	3
GND	4
8V(NC)	5
GND	6
3.8V	7
PWR_CTL_H	8
33V	9
GND	10
5.3VA	11
5V	12
M5V	13

3. P2201, P2202, CN603 CONNECTOR PICTURE



P2201	
HFM_Vcc	1
RF_OUT	2
LD_DVD	3
MD_DVD	4
VR_DVD	5
GND_PD	6
VREF	7
Vcc	8
F	9
E	10
A	11
D	12
C	13
B	14
FOCUS+	15
TRACKING(-)	16
TRACKING(+)	17
FOCUS-	18
SW_PDIC	19
GND_LD	20
LD_CD	21
MD_CD	22
VR_CD	23

P2202	
LM-	1
LM+	2
OPEN	3
CLOSE	4
GND	5
FM+	6
FM-	7
SP+	8
SP-	9

CN603	
1	K_ATN2
2	GND

VCR PART
ELECTRICAL ADJUSTMENT PROCEDURES

1. SERVO ADJUSTMENT

1) PG Adjustment

• Test Equipment

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

• Adjustment And Specification

MODE	MEASUREMENT POINT	ADJUSTMENT POINT	SPECIFICATION
PLAY	V.Out H/SW(TP)	R/C TRK JIG KEY	6.5 ± 0.5H

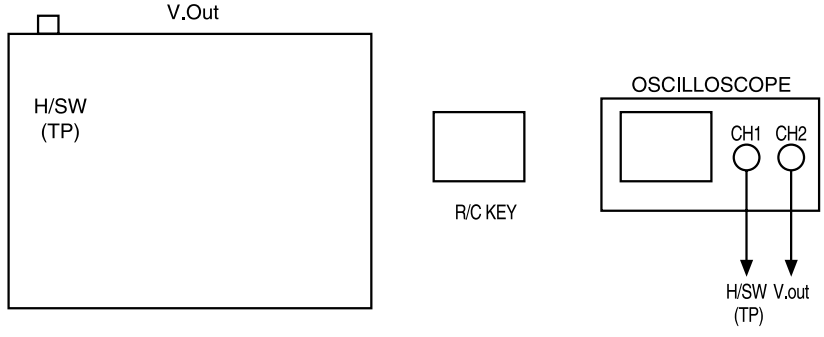
• **Adjustment Procedure**

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(TP) and CH2 to the Video Out for the VCR.
c) Trigger the mixed Combo Video Signal of CH2 to the CH1 H/SW(TP) and then check the distance (time difference), which is from the selected A(B) Head point of the H/SW(TP) signal to the starting point of the vertical synchronized signal, to 6.5H ± 0.5H (412μs, 1H=63μs).

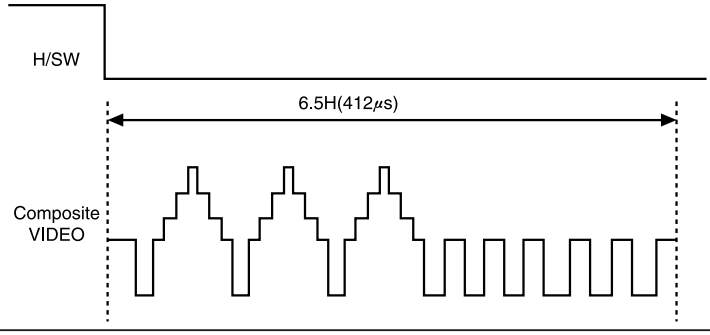
• **PG Adjustment Method**

a-1) Playback the SP standard tape
b-2) Press the “OK(ENTER)” key on the Remote control and the “REC” key on the Front Panel at the same time, then it goes in to Tracking initial mode.
c-3) Repeat the above step(No. b-2), then PG adjusts automatically.
d-4) Stop the playback, PG adjustment is finished.

• **CONNECTION**



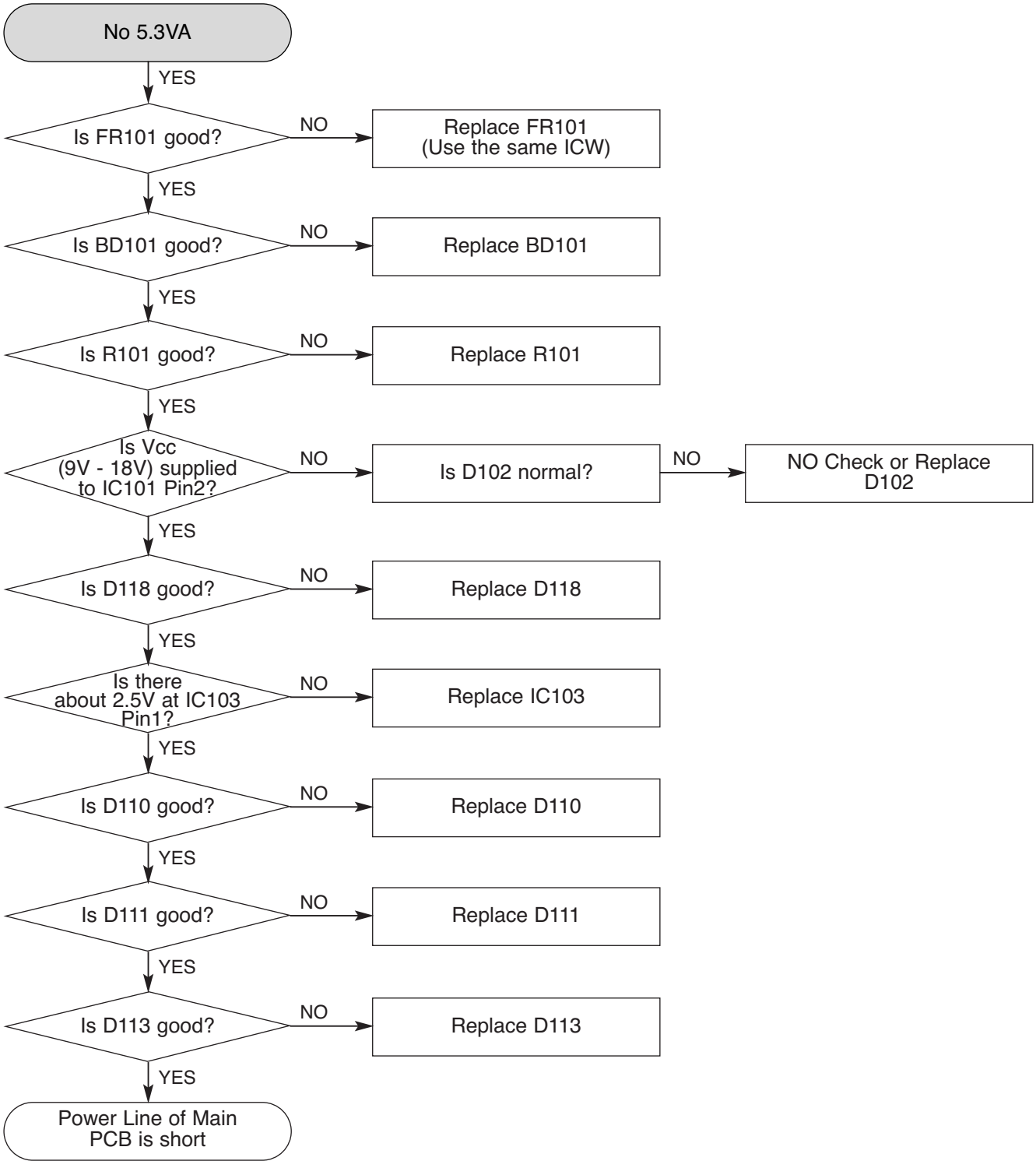
• **WAVEFORM**



VCR ELECTRICAL TROUBLESHOOTING GUIDE

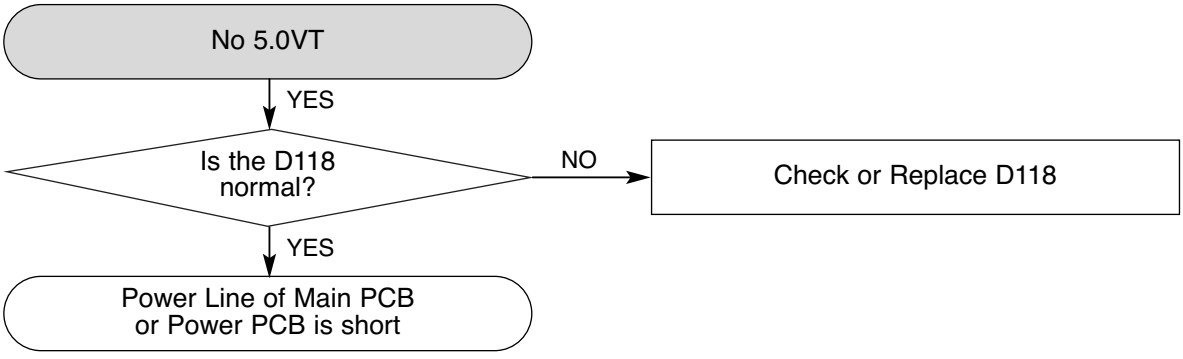
1. POWER(SMPS) CIRCUIT

1-1. No 5.3VA

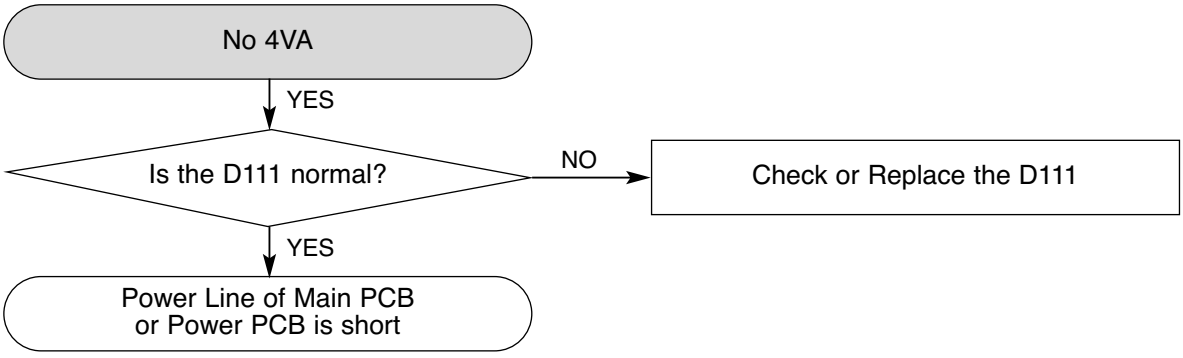


VCR ELECTRICAL TROUBLESHOOTING GUIDE

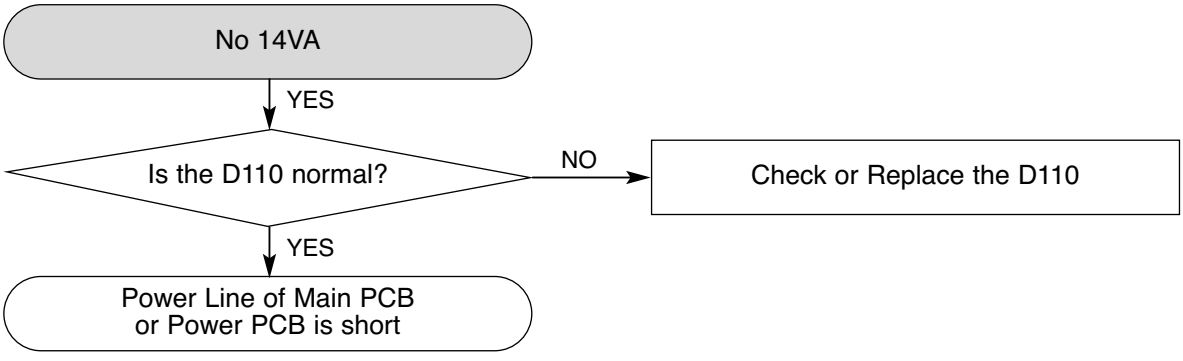
1-2. No 5.0VT



1-3. No 4VA

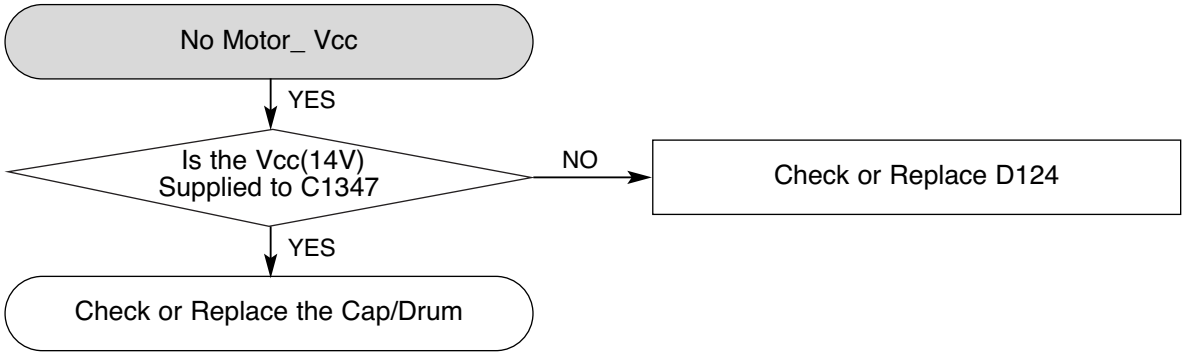


1-4. No 14VA

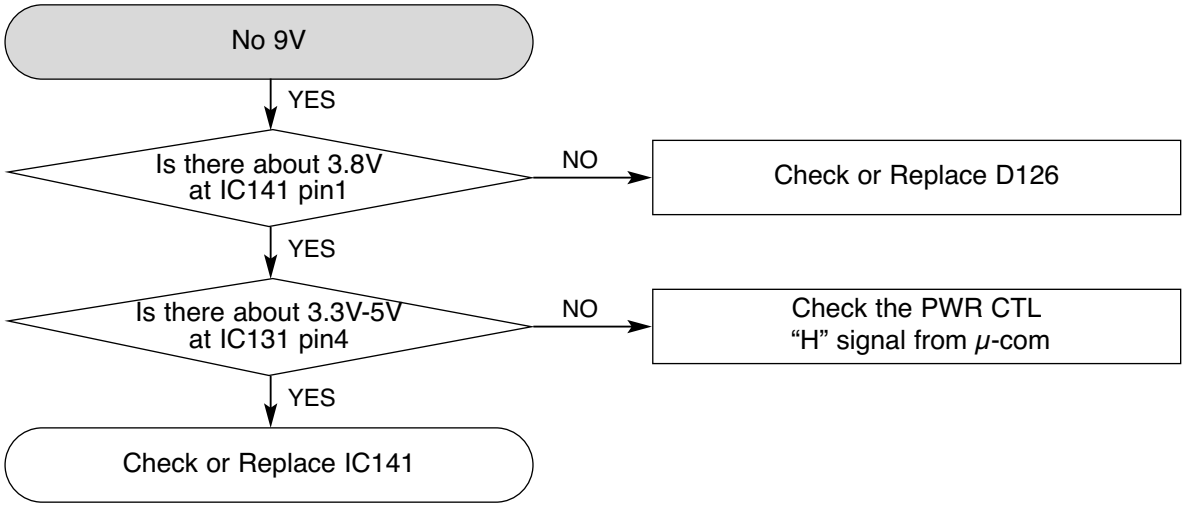


VCR ELECTRICAL TROUBLESHOOTING GUIDE

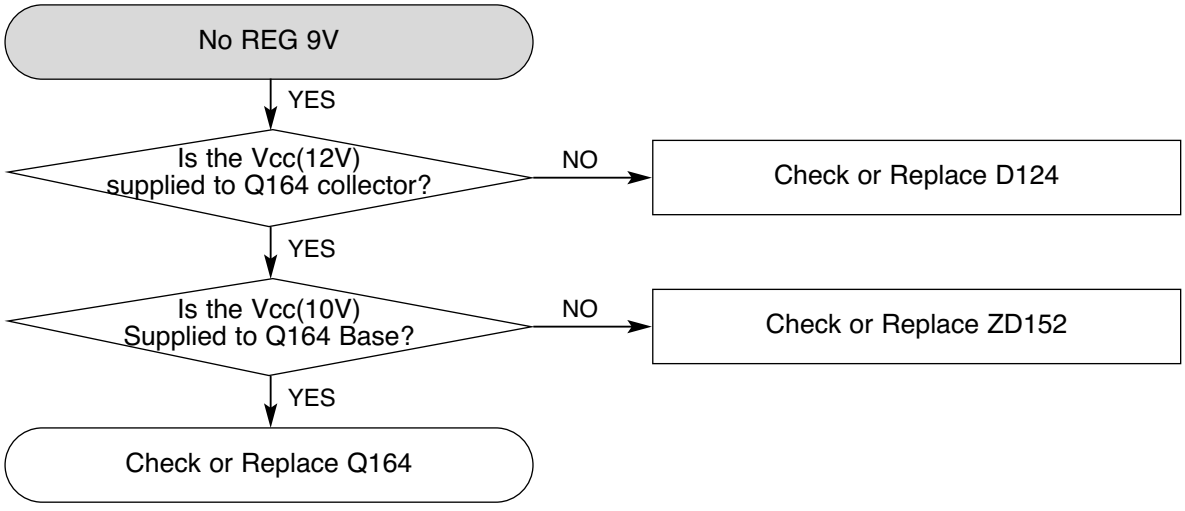
1-5. No Motor_Vcc (To Cap, Drum Motor)



1-6. No 9V



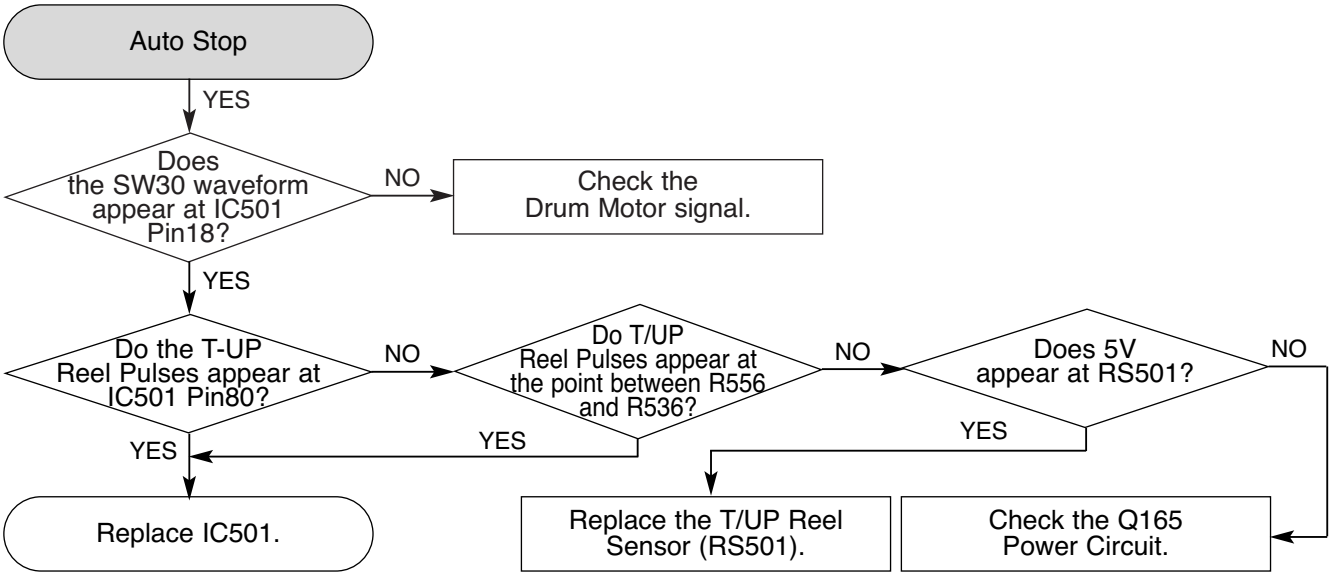
1-7. No REG 9V



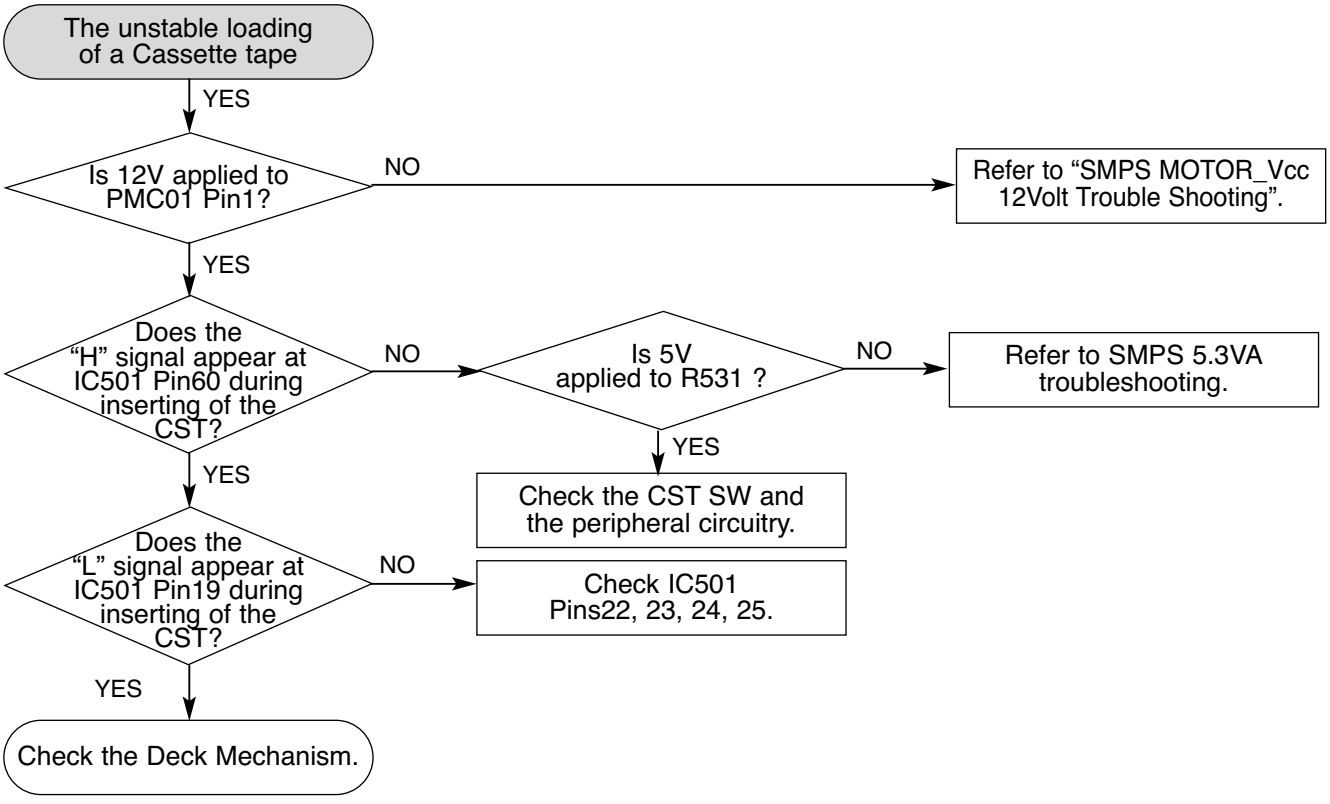
VCR ELECTRICAL TROUBLESHOOTING GUIDE

2. SYSTEM/KEY CIRCUIT

2-1. AUTO STOP



2-2. The unstable loading of a Cassette tape

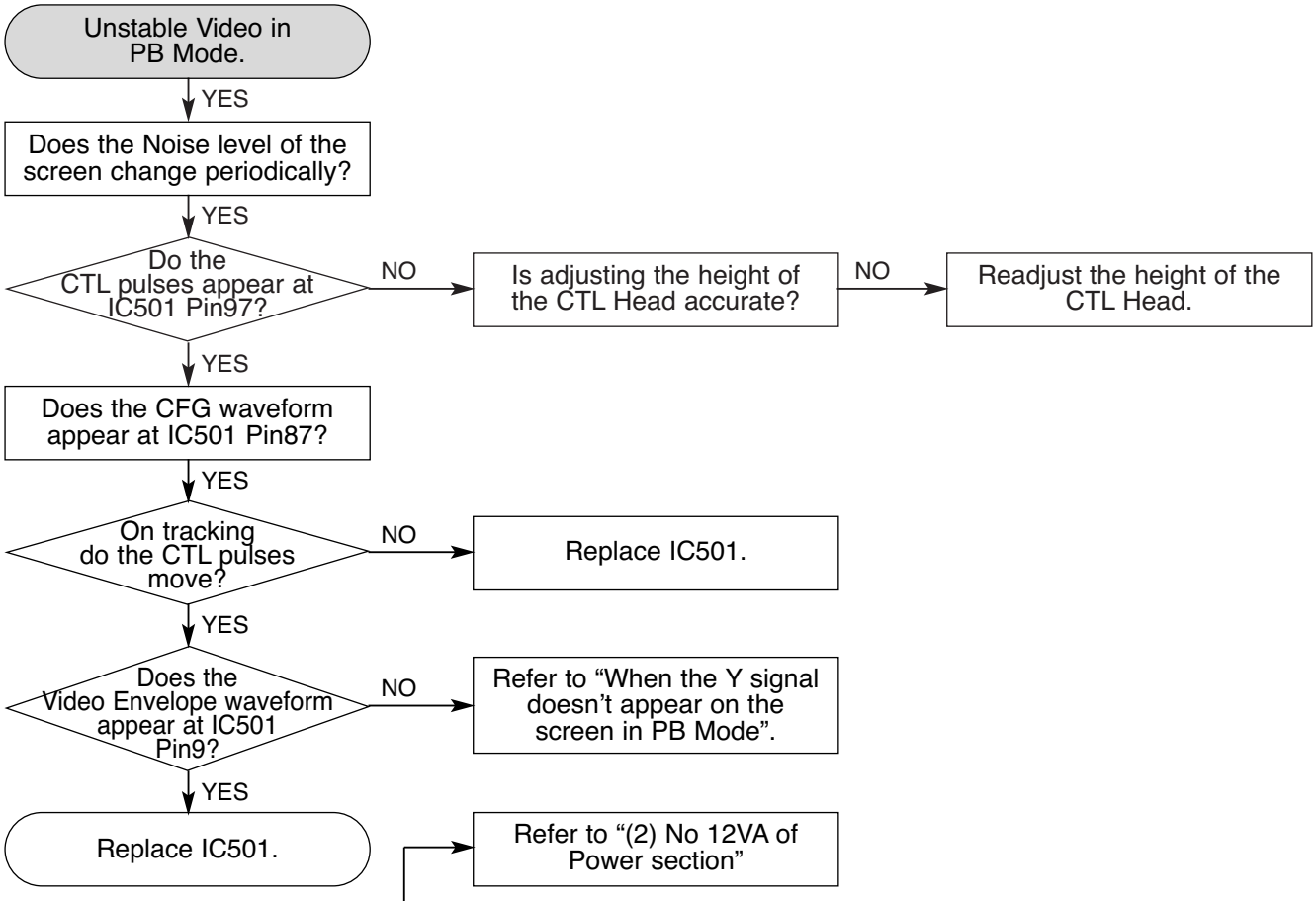


Caution : Auto stop can occur because Grease or Oil has dried up

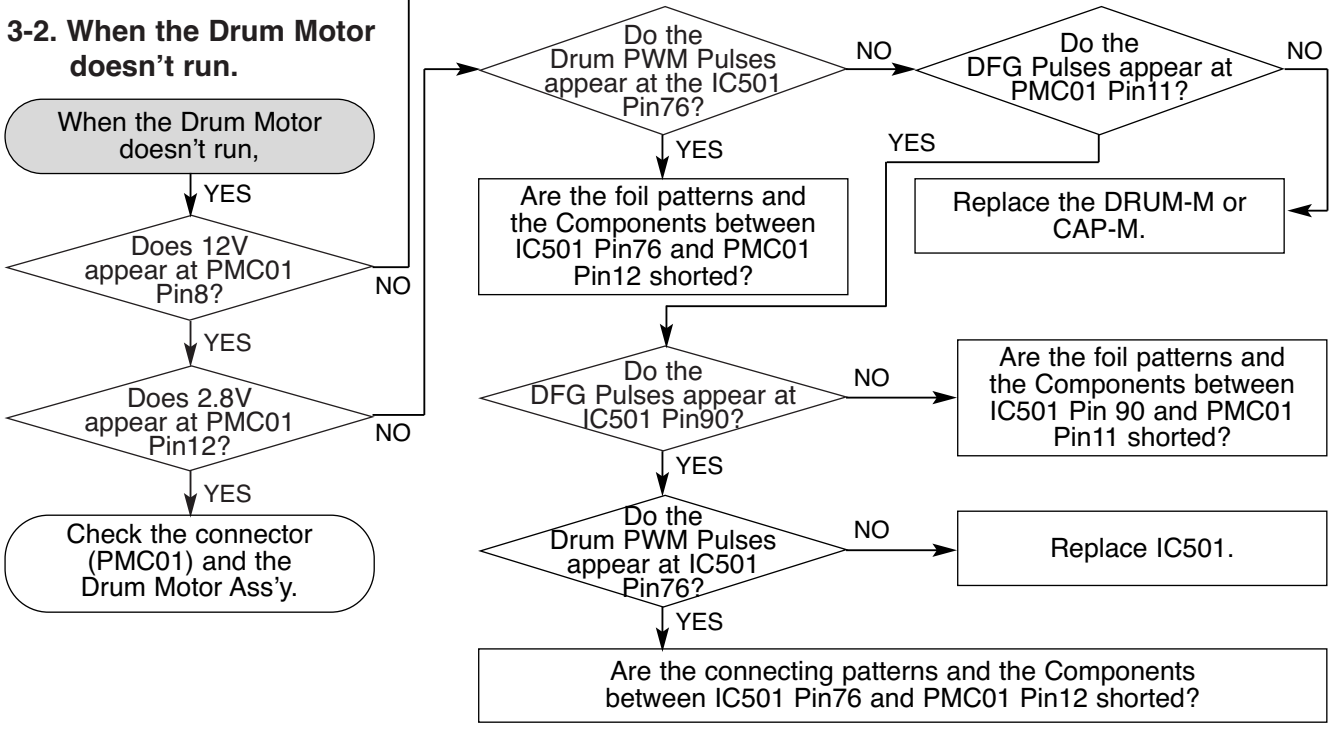
VCR ELECTRICAL TROUBLESHOOTING GUIDE

3. SERVO CIRCUIT

3-1. Unstable Video in PB MODE

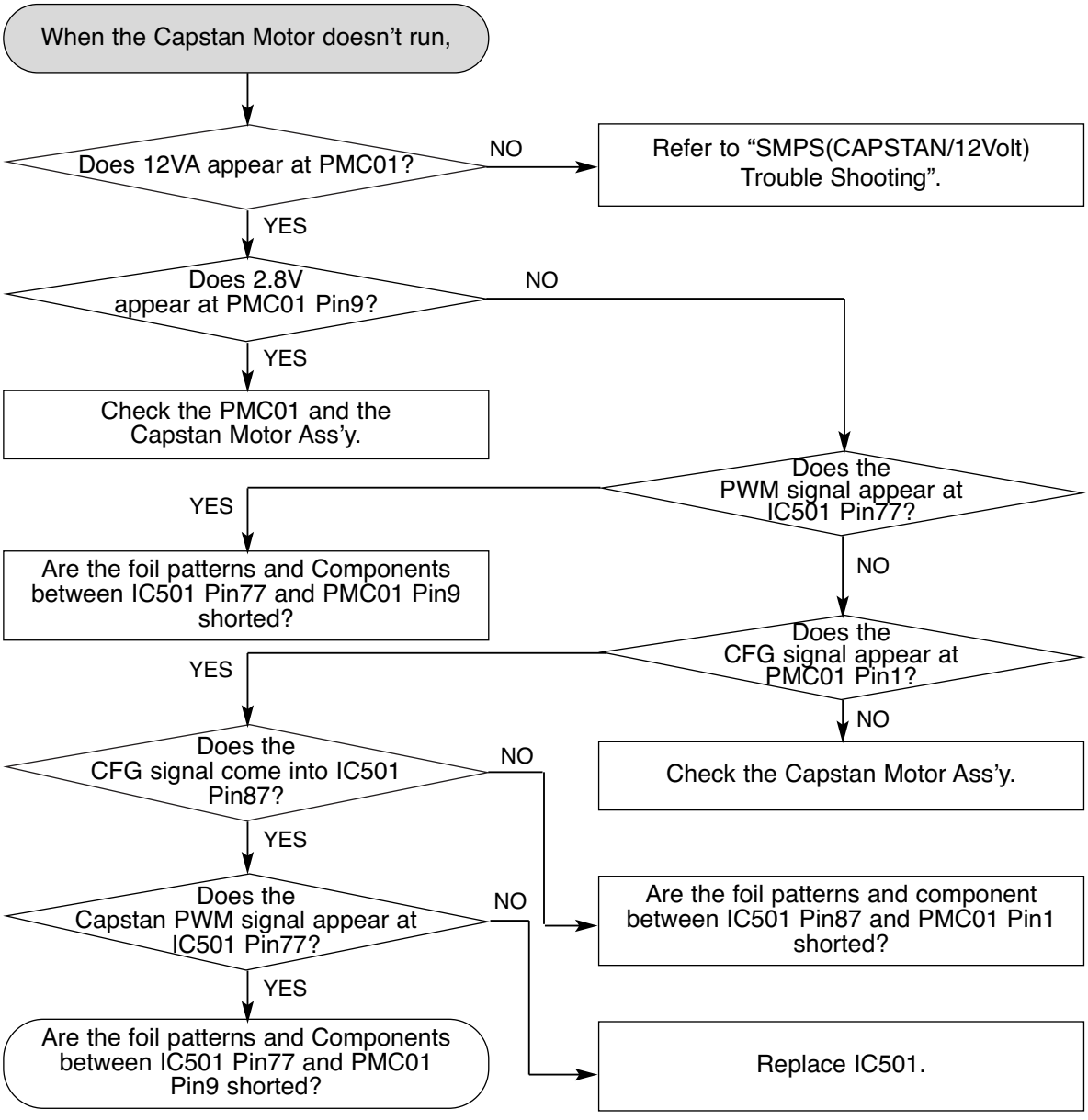


3-2. When the Drum Motor doesn't run.



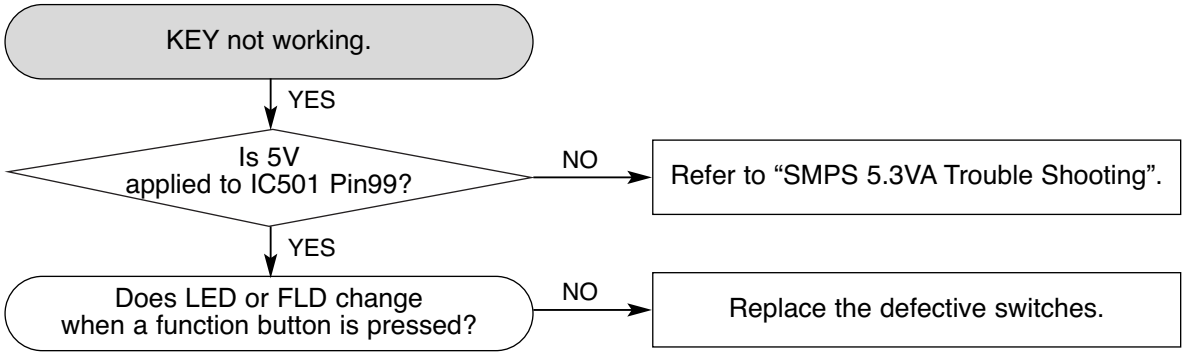
VCR ELECTRICAL TROUBLESHOOTING GUIDE

3-3. When the Capstan Motor doesn't run,



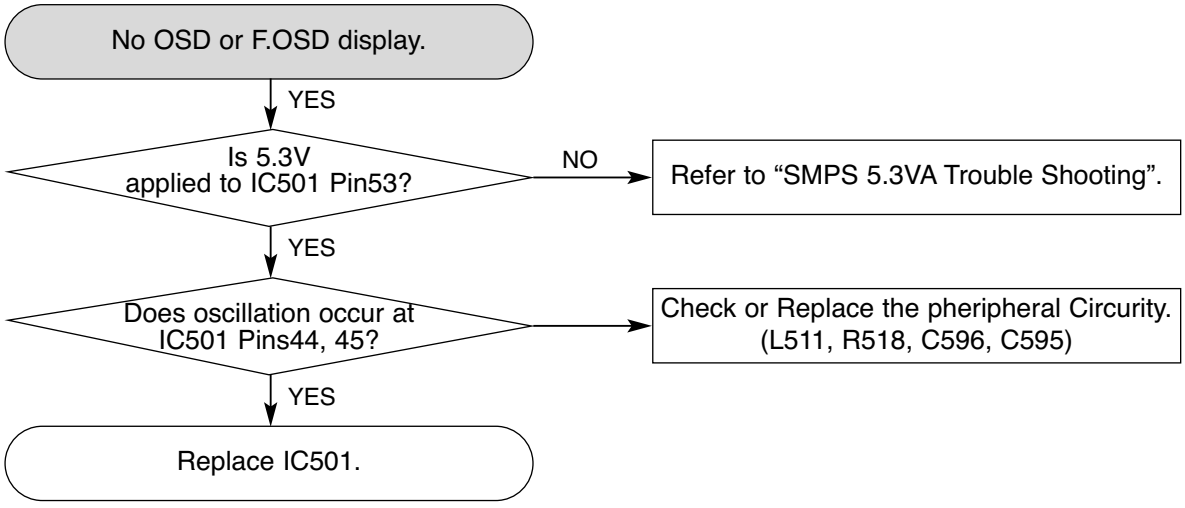
VCR ELECTRICAL TROUBLESHOOTING GUIDE

3-4. KEY not working

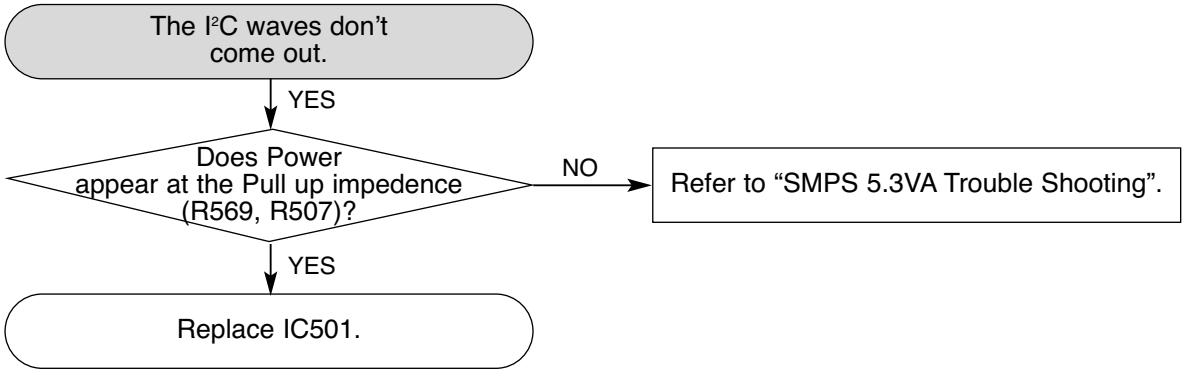


4. OSD CIRCUIT

4-1. No OSD display.



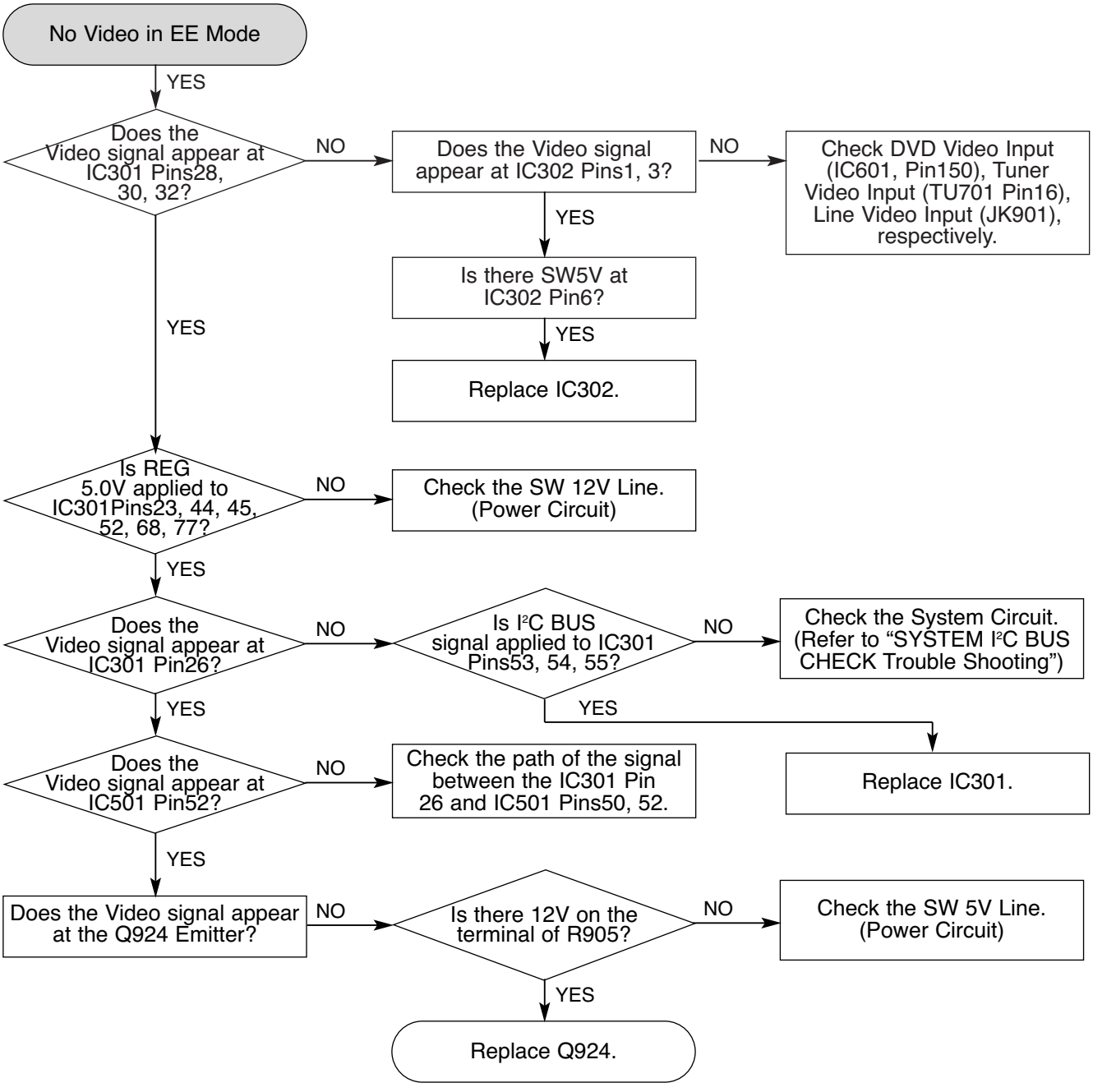
4-2. I²C BUS Check



VCR ELECTRICAL TROUBLESHOOTING GUIDE

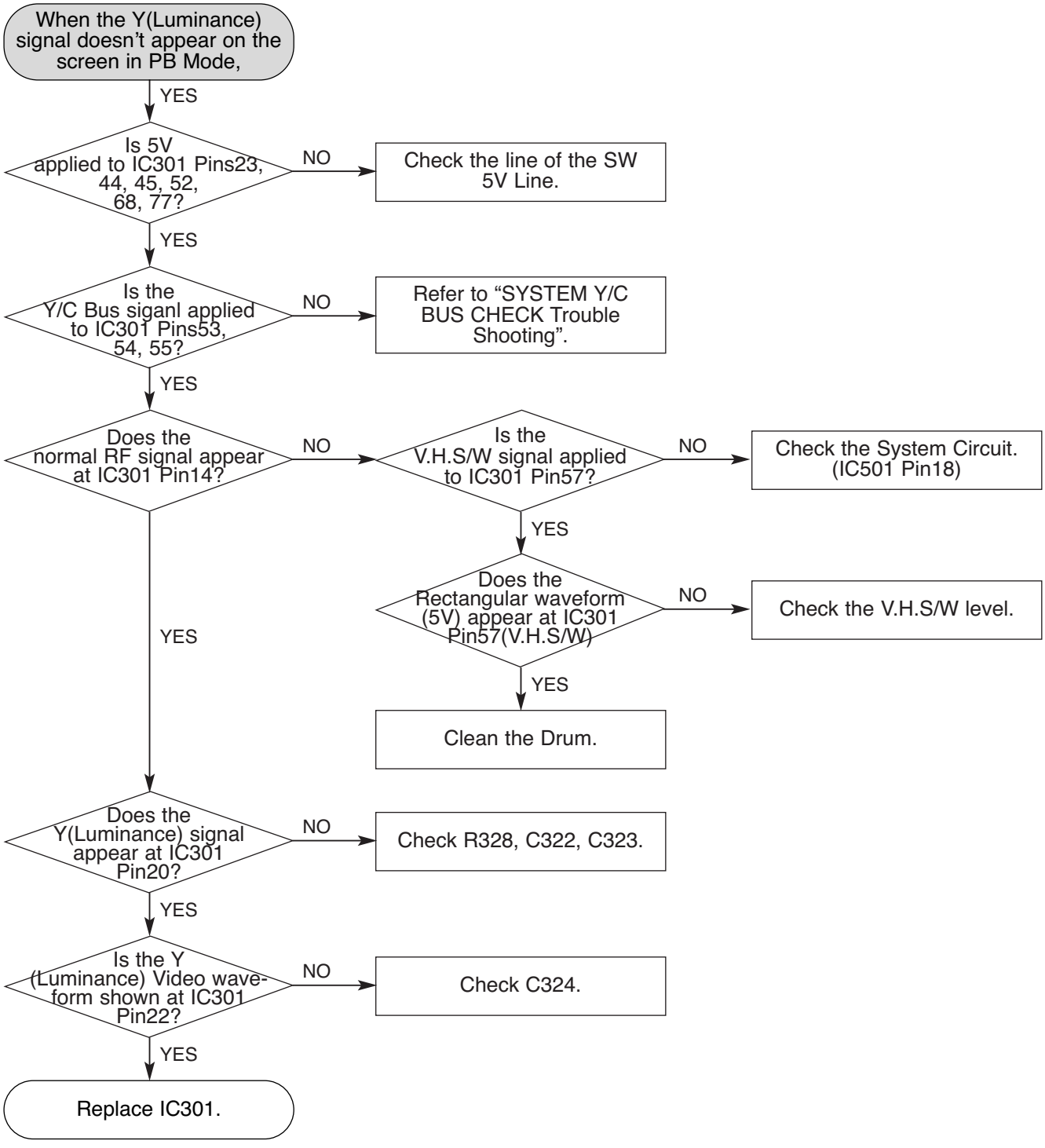
5. Y/C CIRCUIT

5-1. No Video in EE Mode,



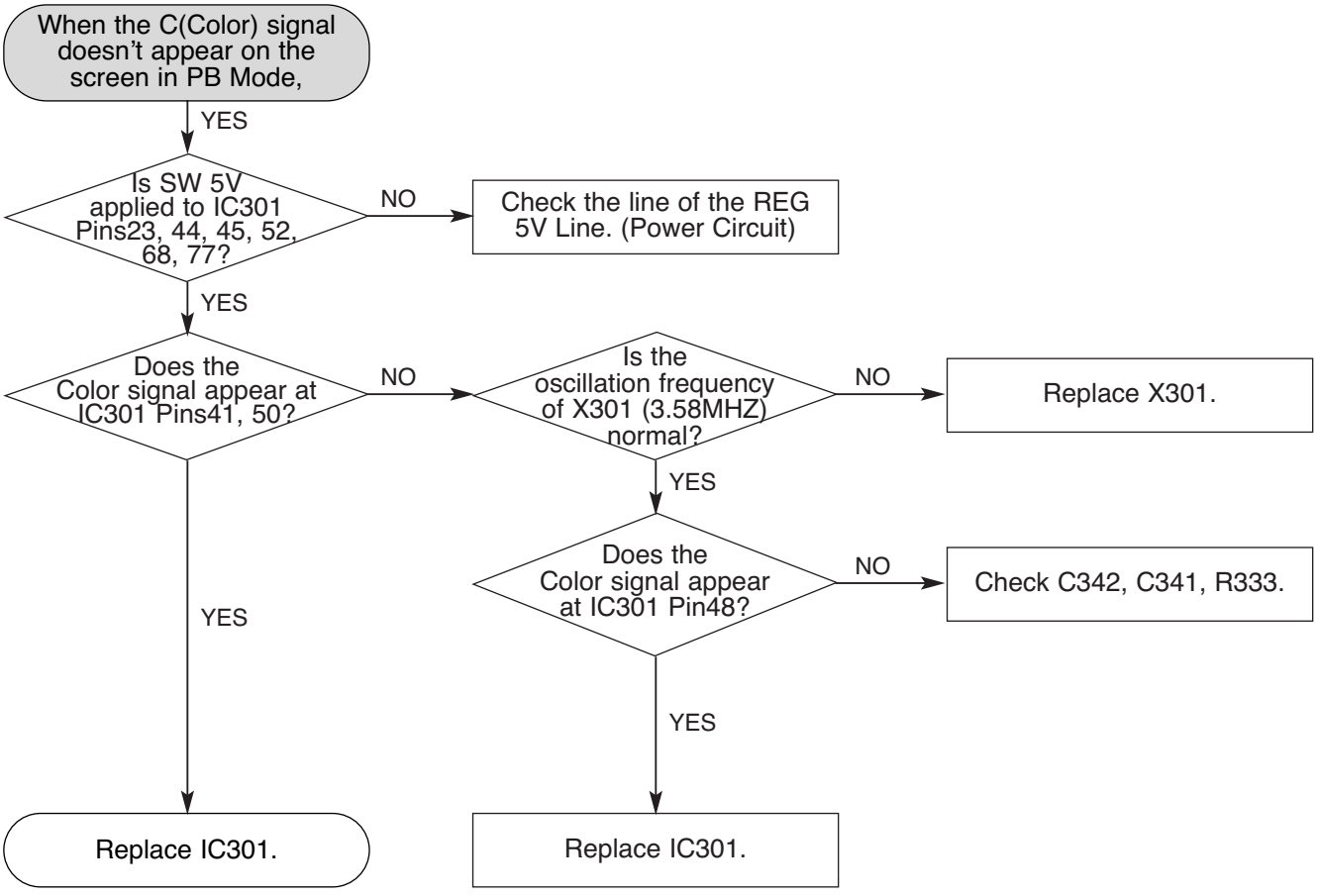
VCR ELECTRICAL TROUBLESHOOTING GUIDE

5-2. When the Y(Luminance) signal doesn't appear on the screen in PB Mode,



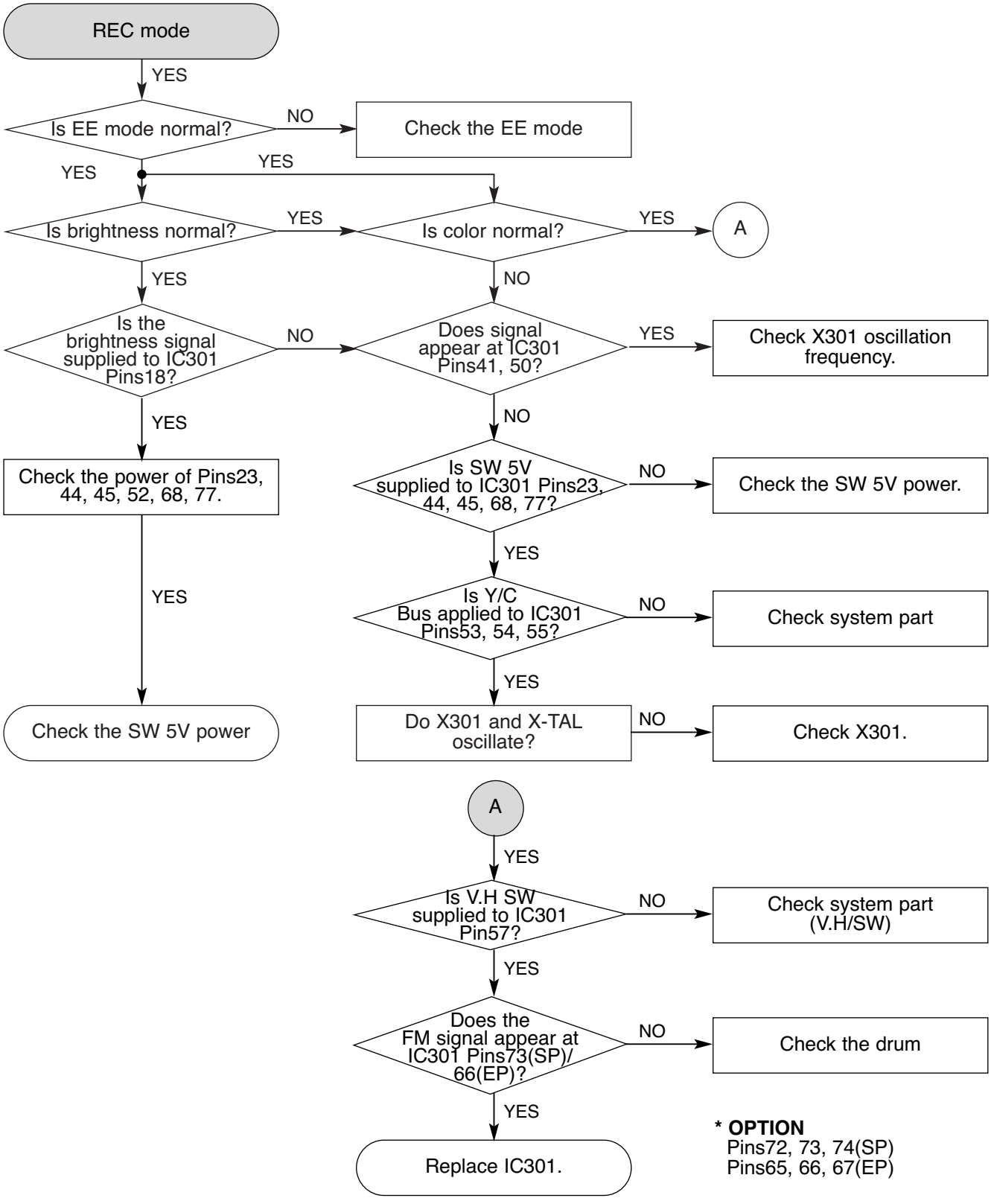
VCR ELECTRICAL TROUBLESHOOTING GUIDE

5-3. When the C(Color) signal doesn't appear on the screen in PB Mode,



VCR ELECTRICAL TROUBLESHOOTING GUIDE

5-4. When the Video signal doesn't appear on the screen in REC Mode,

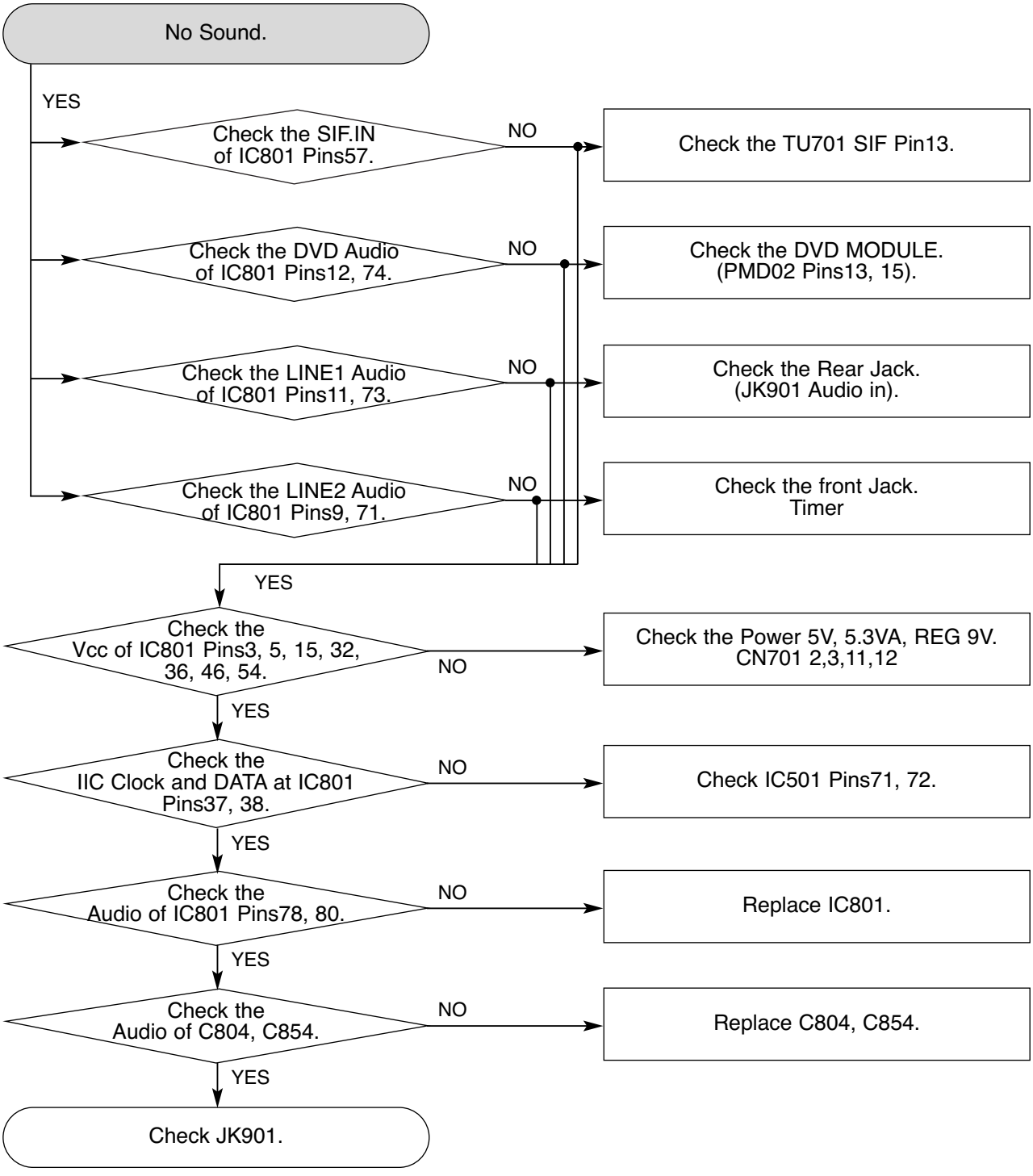


*** OPTION**
Pins72, 73, 74(SP)
Pins65, 66, 67(EP)

VCR ELECTRICAL TROUBLESHOOTING GUIDE

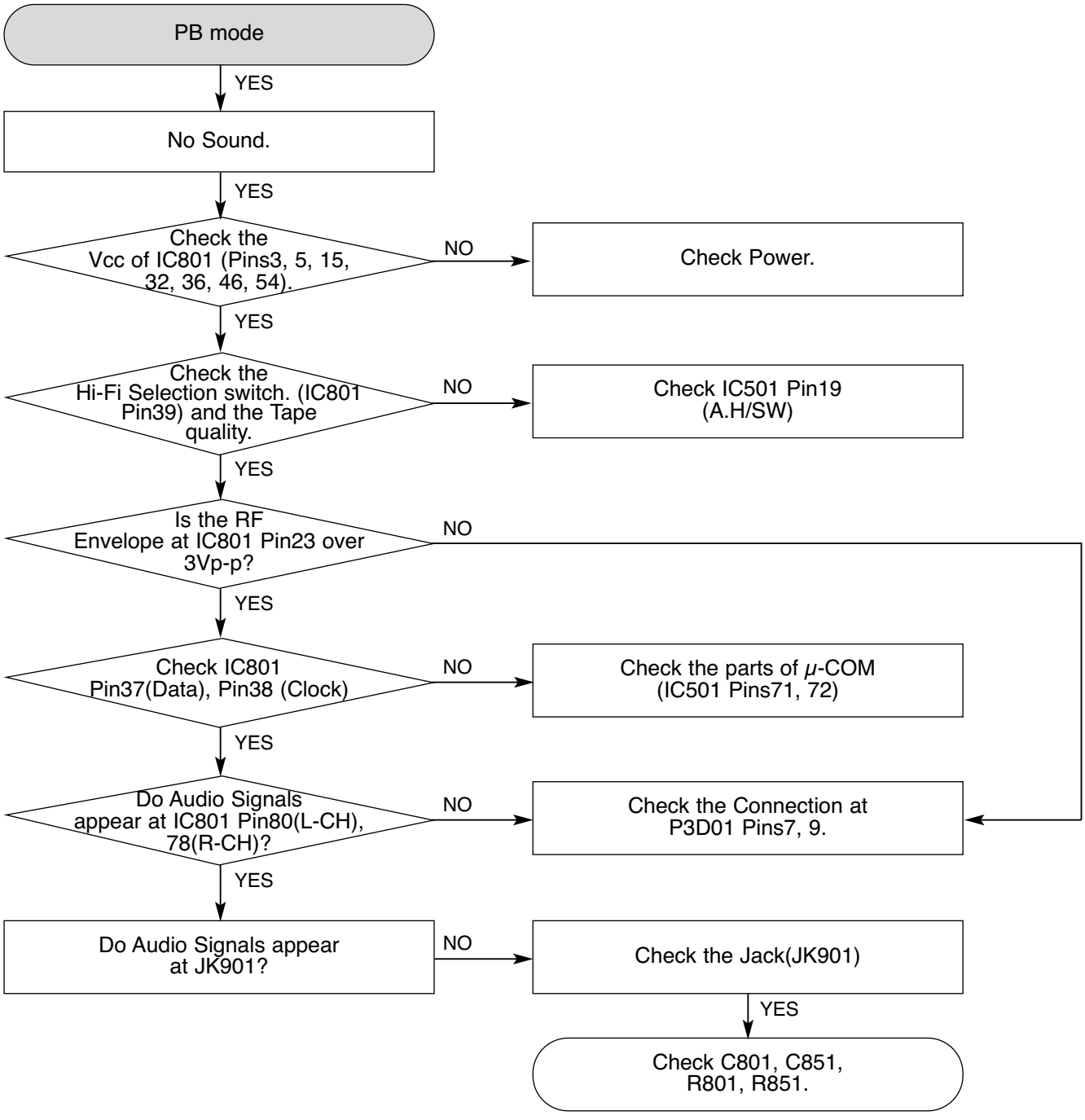
6. Hi-Fi CIRCUIT

6-1. No Sound(EE Mode)



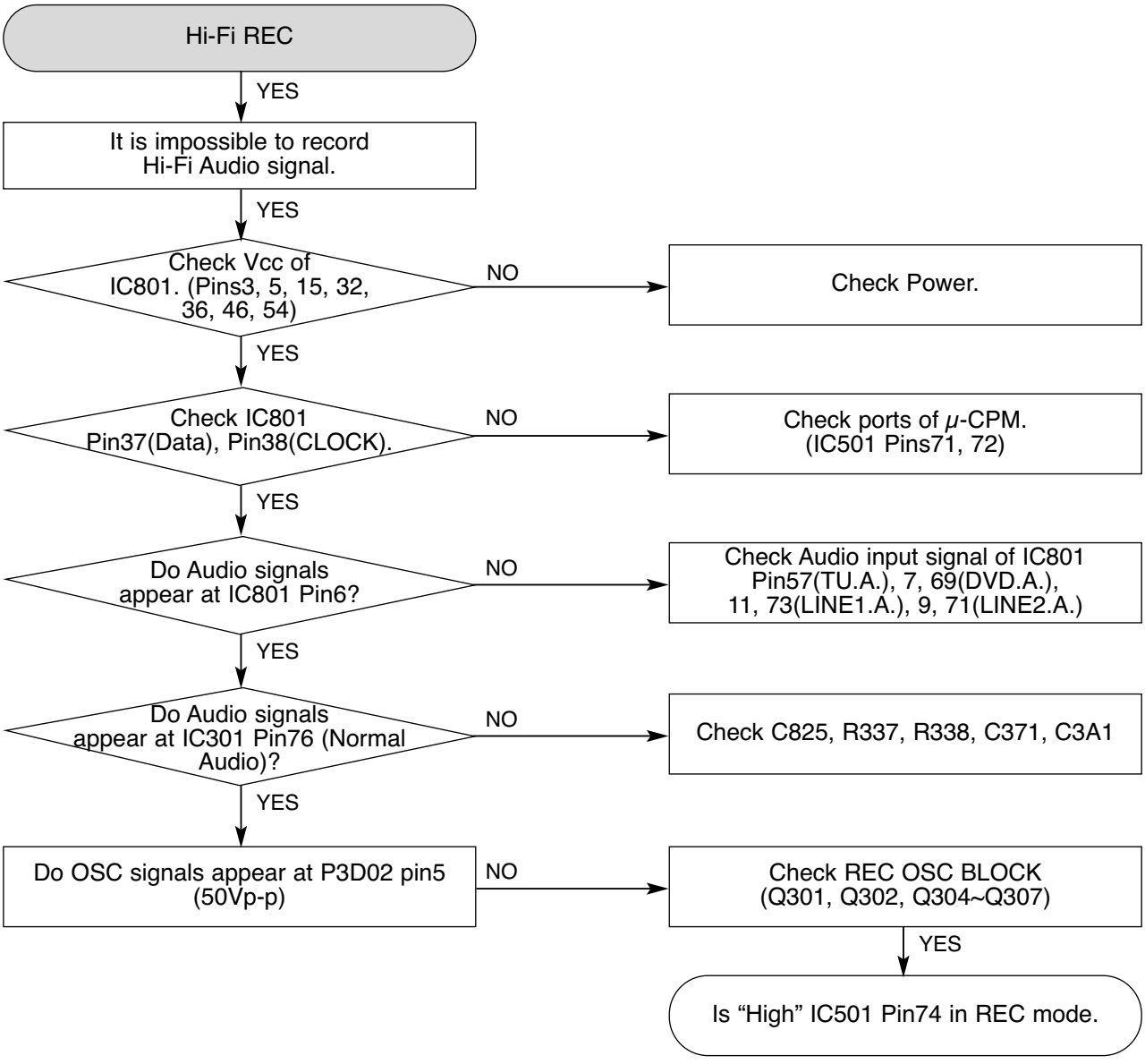
VCR ELECTRICAL TROUBLESHOOTING GUIDE

6-2. Hi-Fi Playback



VCR ELECTRICAL TROUBLESHOOTING GUIDE

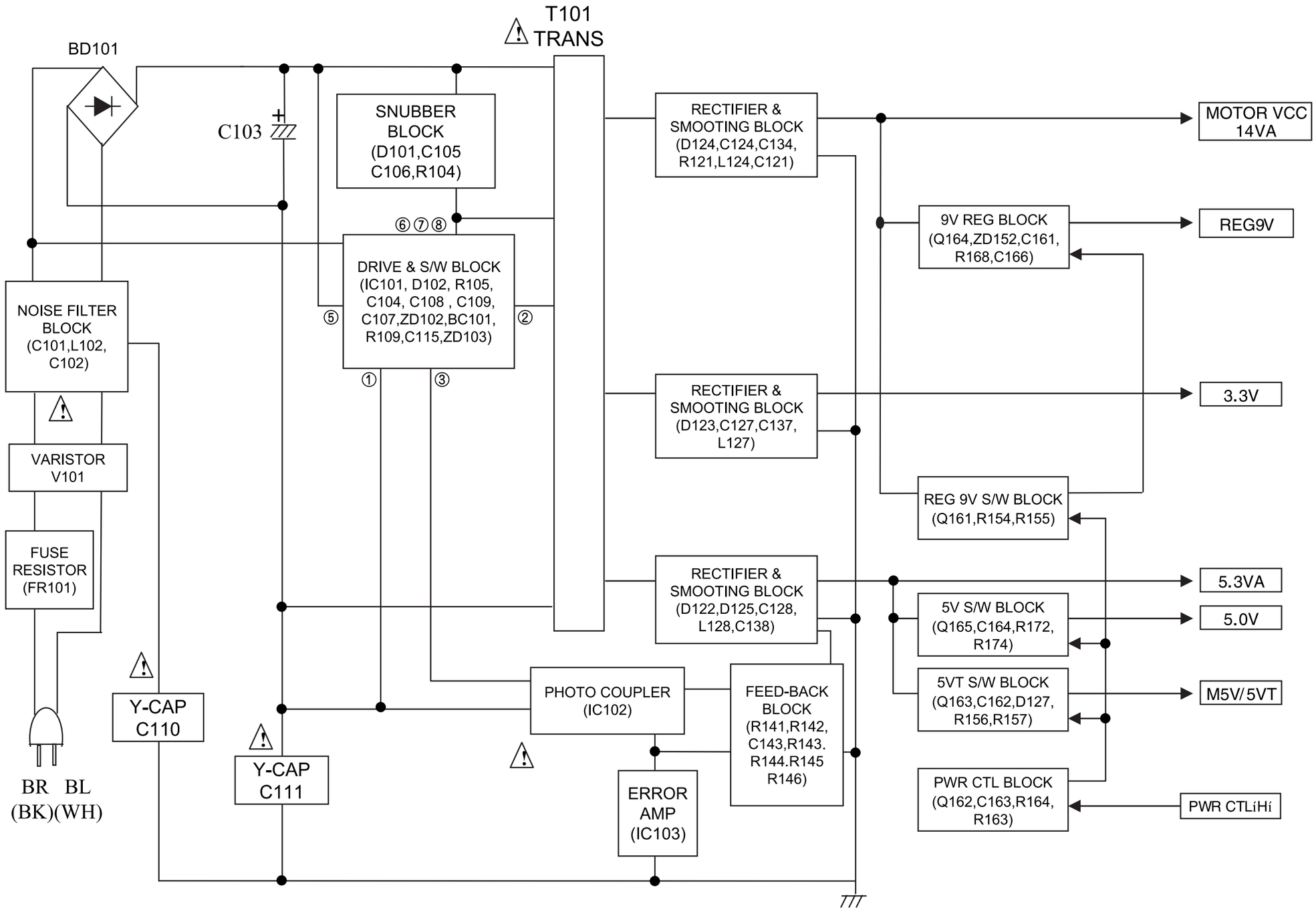
6-3. Hi-Fi REC



BLOCK DIAGRAMS

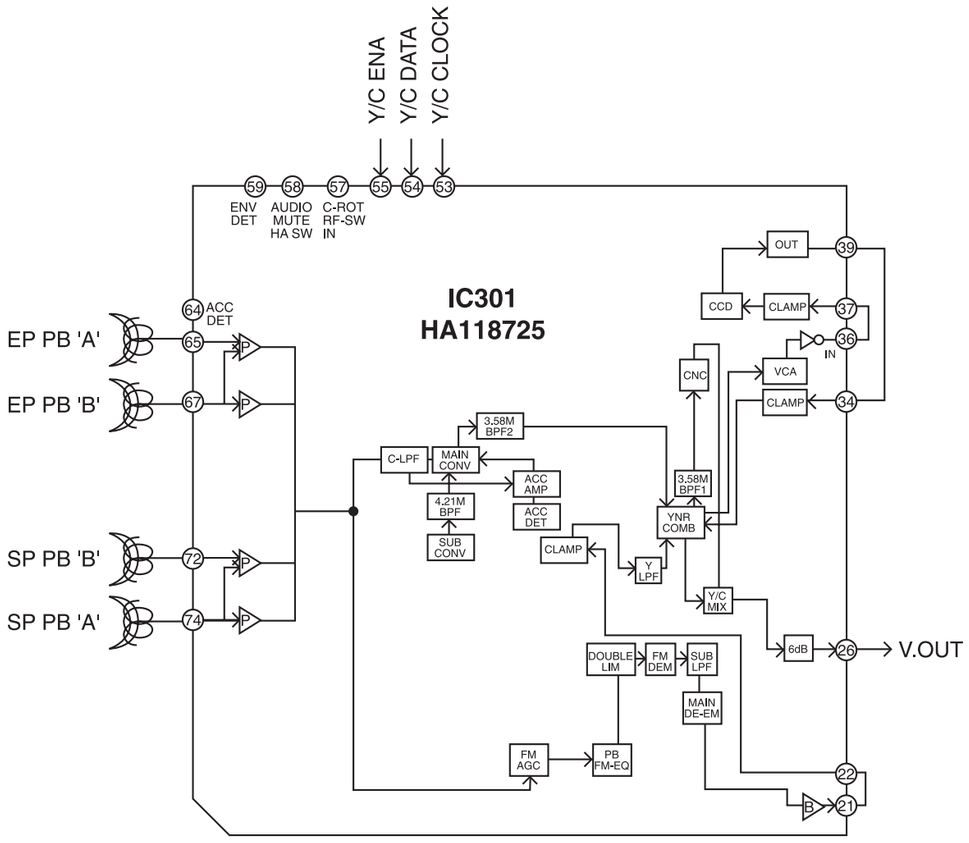
1. POWER(SMPS) BLOCK DIAGRAM

NOTES) ⚠ Warning
Parts that are shaded are critical
With respect to risk of fire or
electricial shock.

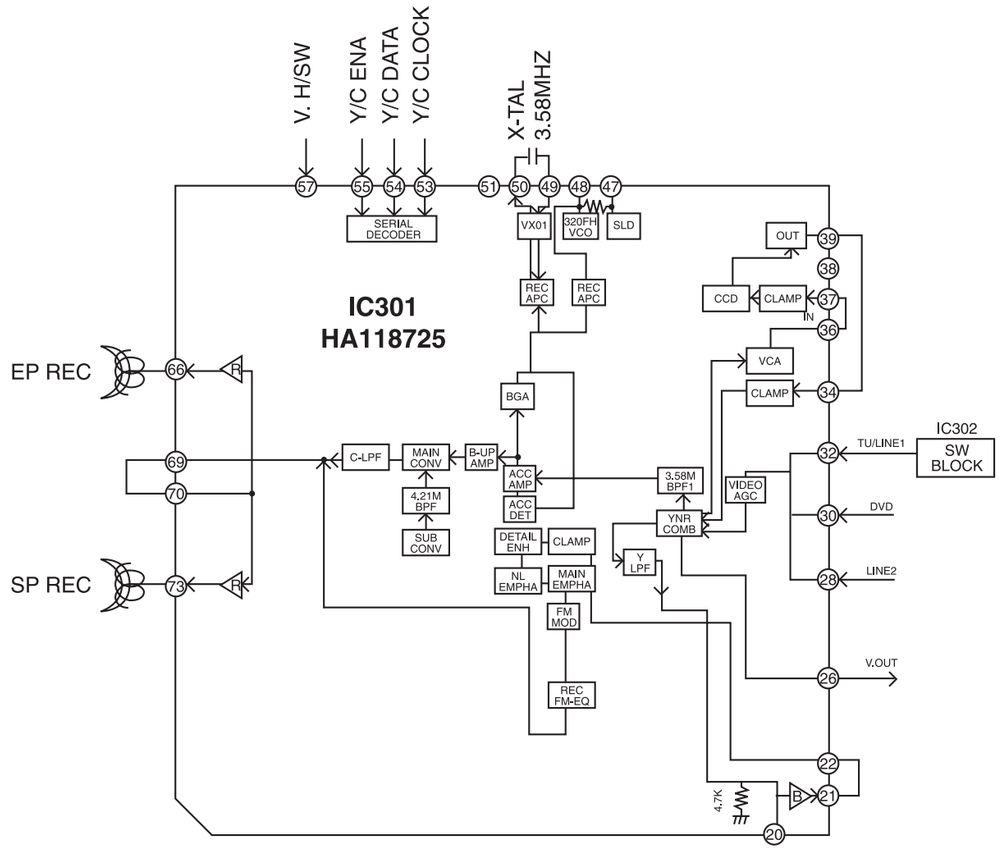


2. Y/C BLOCK DIAGRAM

(PB Mode)



(REC Mode)



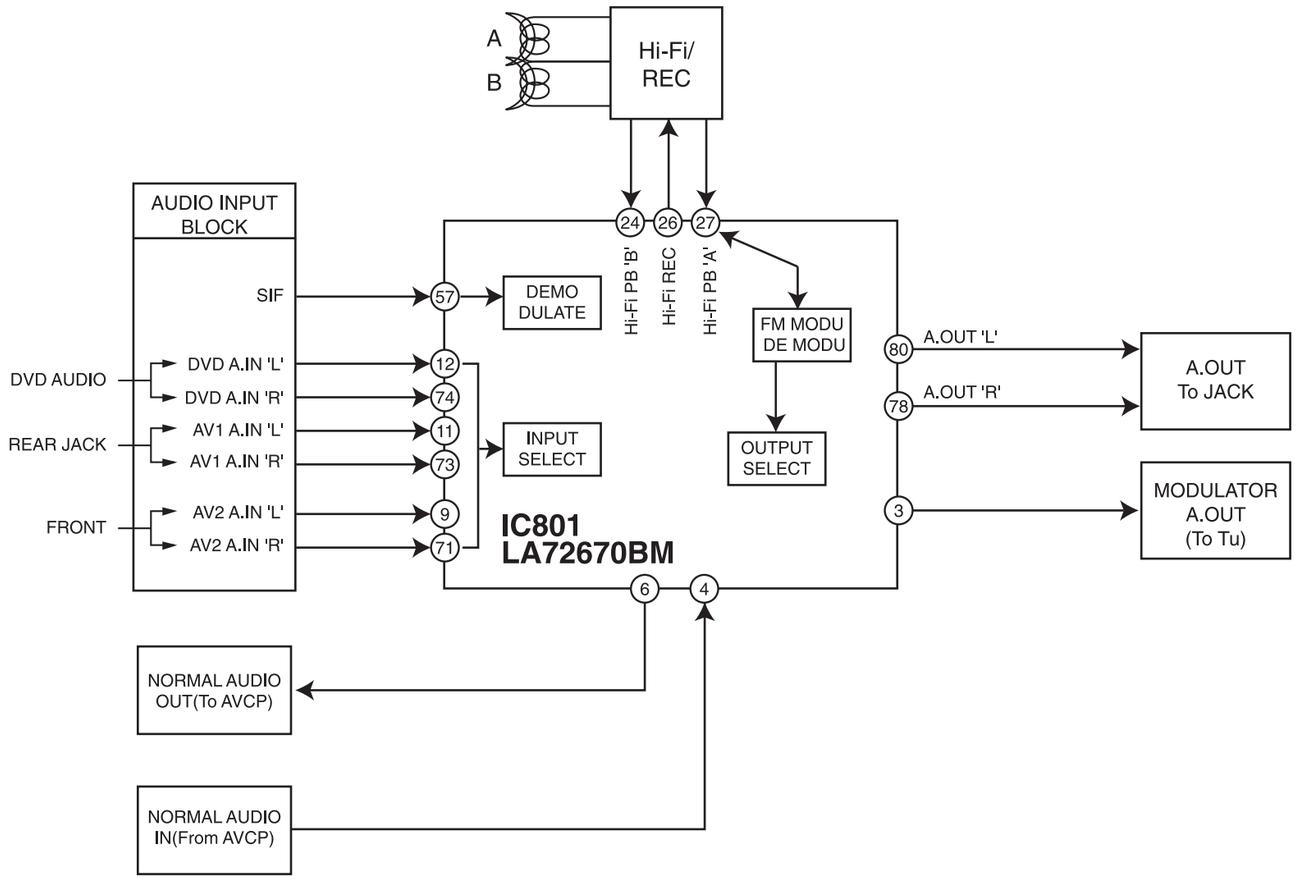
3. NORMAL AUDIO BLOCk DIAGRAM

(EE Mode)

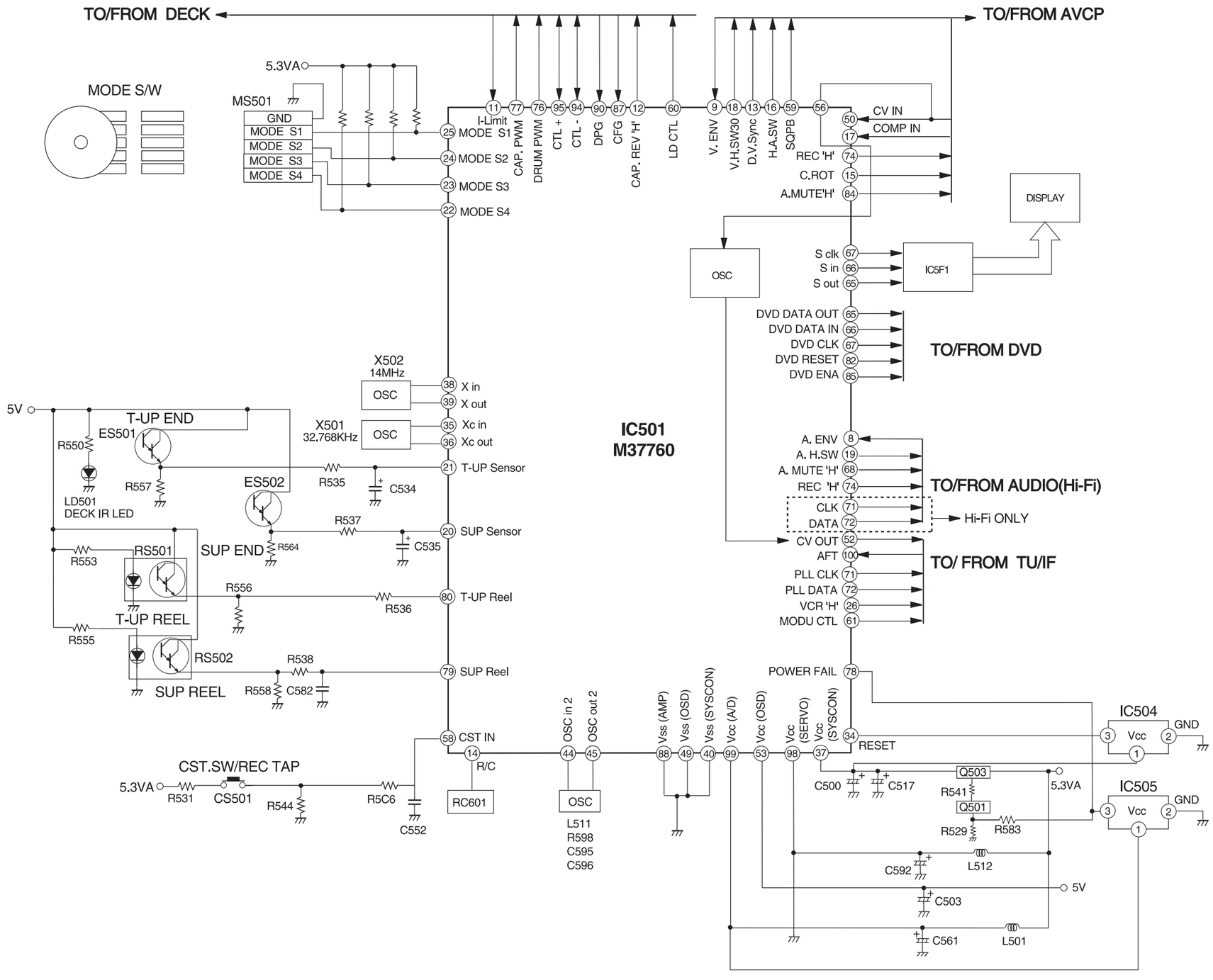
(PB Mode)

(REC Mode)

4. Hi-Fi BLOCK DIAGRAM



5. SYSTEM BLOCK DIAGRAM



CIRCUIT DIAGRAMS

1. POWER(SMPS) CIRCUIT DIAGRAM

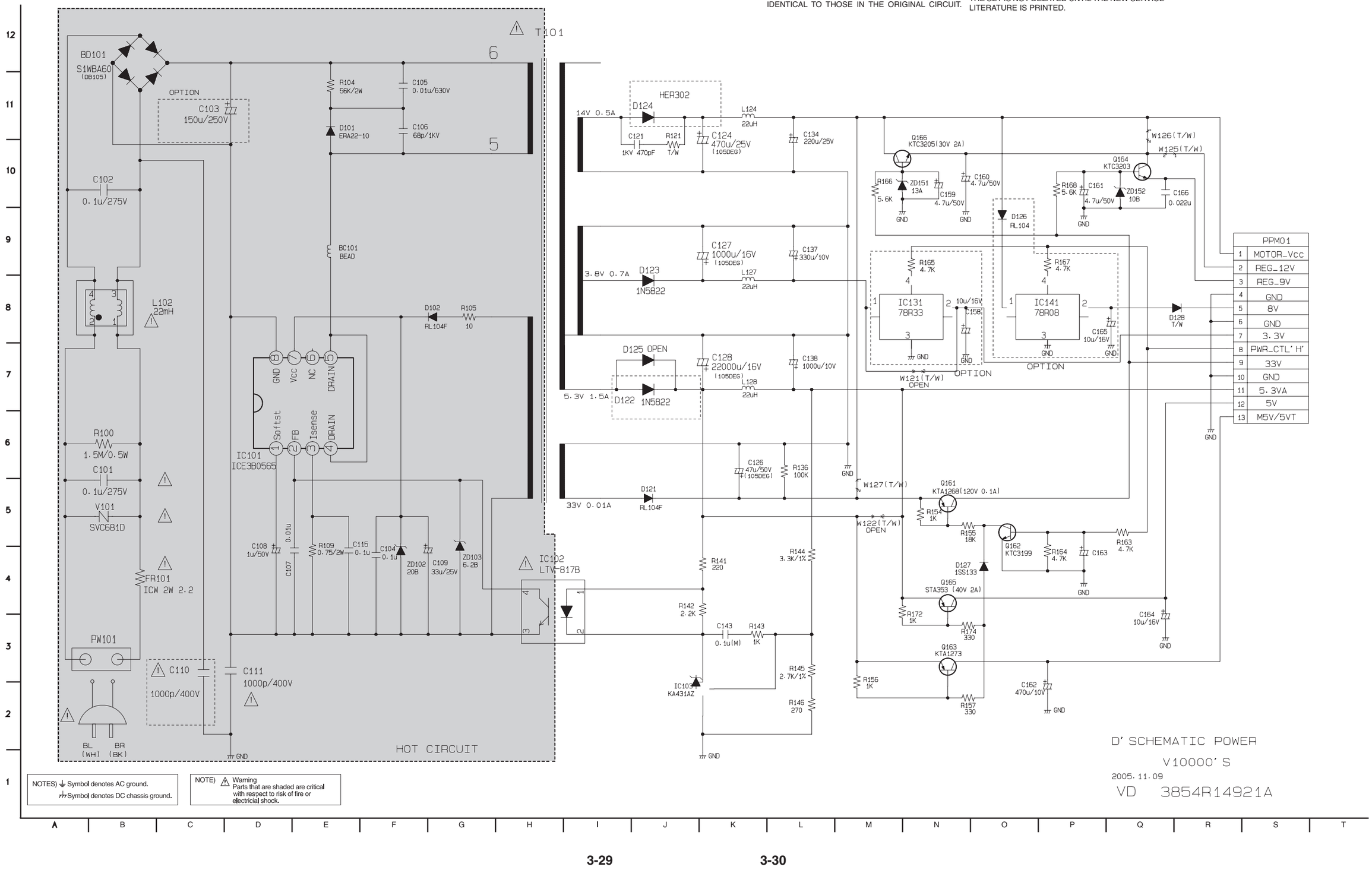
IMPORTANT SAFETY NOTICE

WHEN SERVICING THIS CHASSIS, UNDER NO CIRCUMSTANCES SHOULD THE ORIGINAL DESIGN BE MODIFIED OR ALTERED WITHOUT PERMISSION FROM THE Philips CORPORATION. ALL COMPONENTS SHOULD BE REPLACED ONLY WITH TYPES IDENTICAL TO THOSE IN THE ORIGINAL CIRCUIT. SPECIAL COMPONENTS ARE SHADED ON THE SCHEMATIC FOR EASY IDENTIFICATION.

THIS CIRCUIT DIAGRAM MAY OCCASIONALLY DIFFER FROM THE ACTUAL CIRCUIT USED. THIS WAY, IMPLEMENTATION OF THE LATEST SAFETY AND PERFORMANCE IMPROVEMENT CHANGES INTO THE SET IS NOT DELAYED UNTIL THE NEW SERVICE LITERATURE IS PRINTED.

NOTE :

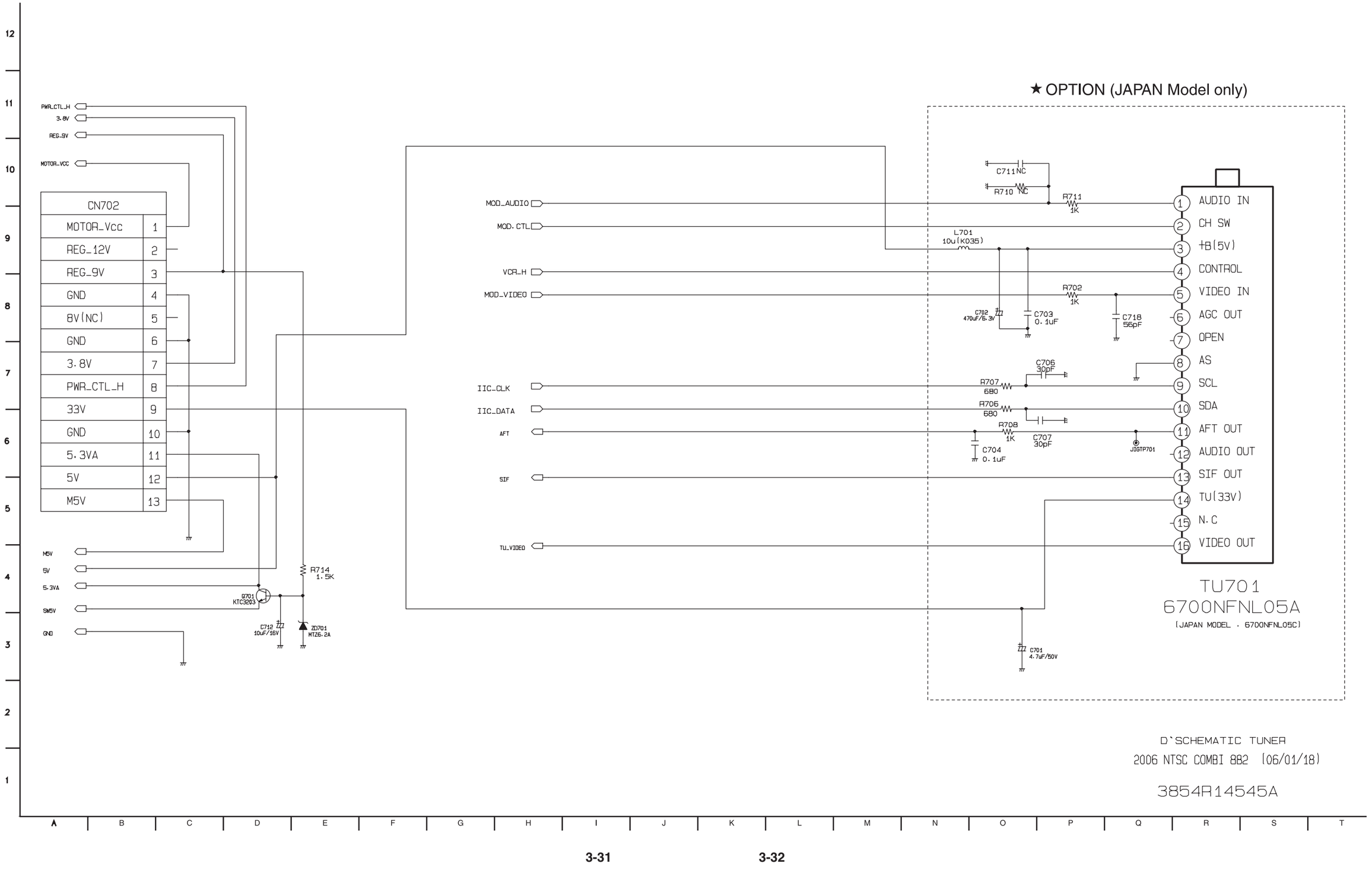
1. Shaded(■) parts are critical for safety. Replace only with specified part number.
2. Voltages are DC-measured with a digital voltmeter during Play mode.



NOTES) ⏚ Symbol denotes AC ground.
⏚ Symbol denotes DC chassis ground.

NOTE) ⚠ Warning
Parts that are shaded are critical with respect to risk of fire or electricial shock.

2. TUNER CIRCUIT DIAGRAM



3. AVCP CIRCUIT DIAGRAM

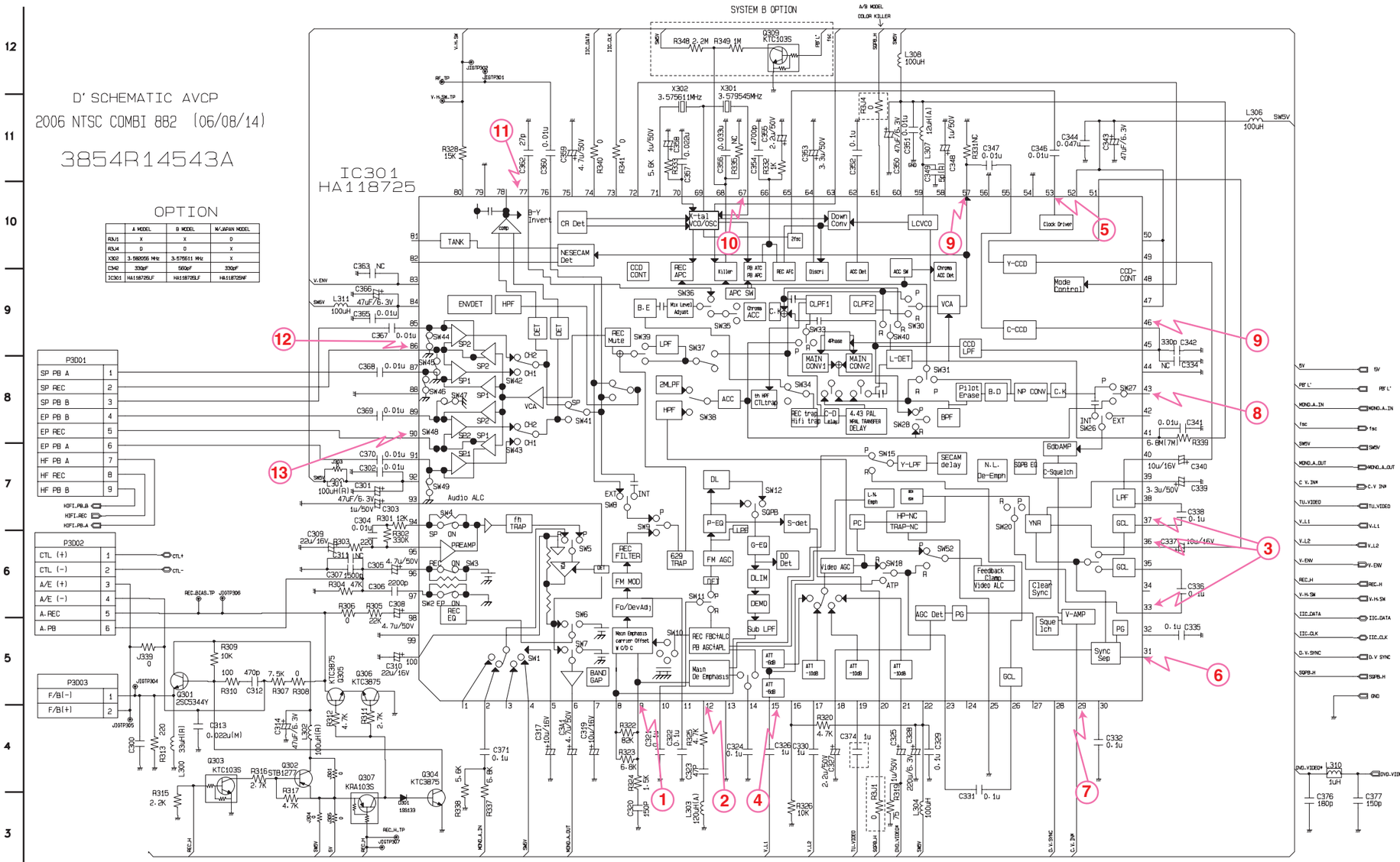
D' SCHEMATIC AVCP

2006 NTSC COMBI 882 (06/08/14)

3854R14543A

OPTION

	A MODEL	B MODEL	M/JAPAN MODEL
R341	X	X	0
R344	0	0	X
X302	3.582056 MHz	3.575611 MHz	X
C342	330pF	560pF	330pF
IC301	HA118725LF	HA118725LF	HA118725NF



WAVEFORMS

① IC301_Pin 9
100mV/10msec DIV
W/EE
(Main De-Emphasis out)

② IC301_Pin 12
100mV/10msec DIV
PB
(Main De-Emphasis peacking)

③ IC301_Pins 33, 36, 37
100mV/10msec DIV
W/EE
Clamp Drive IN Pin 33
Y-out(to 1H CCD) Pin 36
Y-out(from 1H CCD) Pin 37

④ IC301_Pin 15
200mV/10msec DIV
EE
(VIDEO IN)

⑤ IC301_Pin 53
100mV/0.2msec DIV
REC/PB
(21sc)

⑥ IC301_Pin 31
1.0V/20msec DIV
W/EE
(C-SYNC OUT)

⑦ IC301_Pin 29
500mV/10msec DIV
W/EE
(VIDEO OUT)

⑧ IC301_Pin 43
200mV/20msec DIV
PB
(C.OUT)

⑨ IC301_Pins 46, 57
200mV/20msec DIV
W/EE
from 1H CCD Pin 46
to IH CCD Pin57

⑩ IC301_Pin 67
100mV/0.2msec DIV
PB/REC
(3.58MHz X-TAL IN)

⑪ IC301_Pin 77
100mV/5msec DIV
PB
(PB RF out)

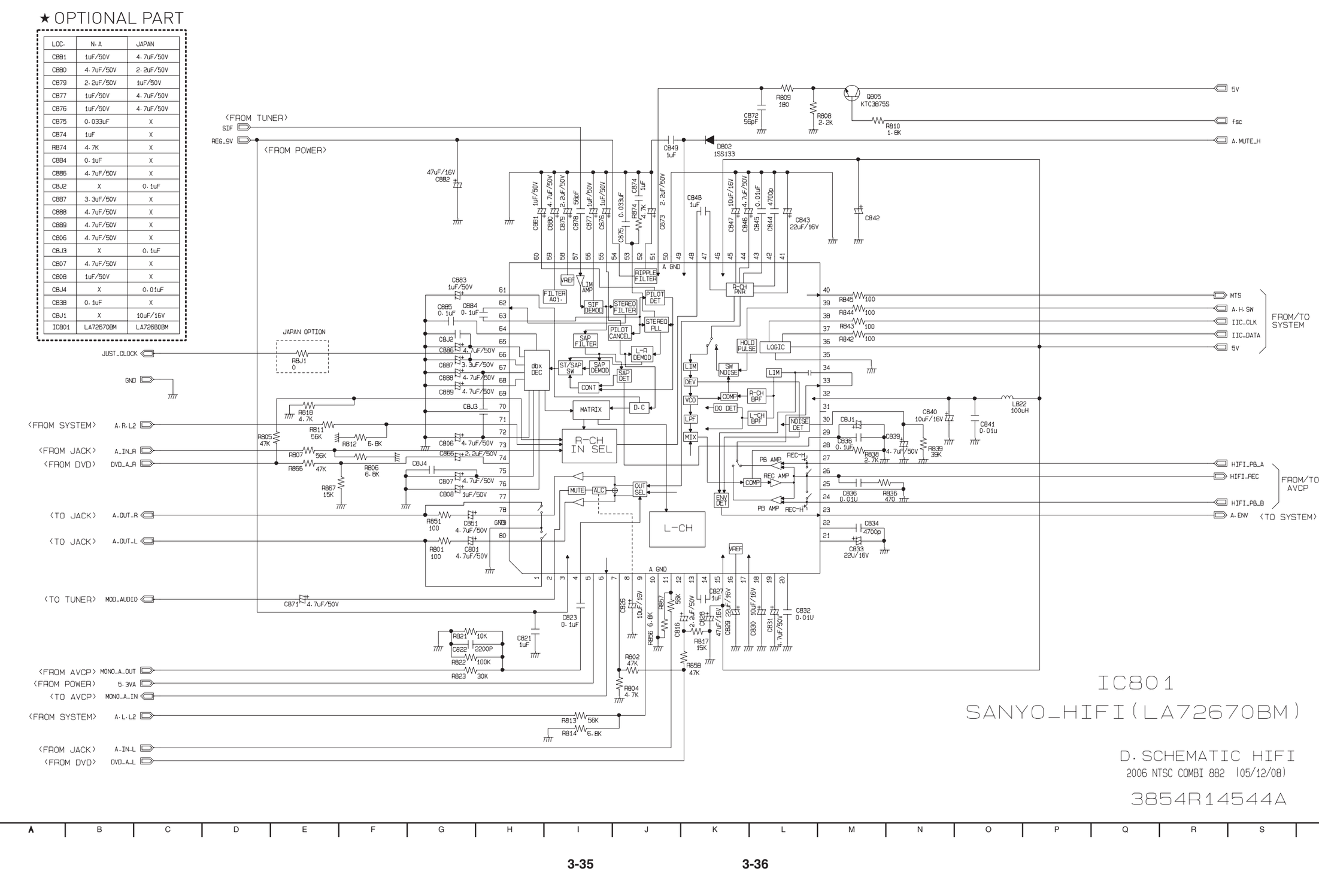
⑫ IC301_Pin 86
500mV/2msec DIV
SP REC
(REC RF)

⑬ IC301_Pin 90
500mV/2msec DIV
EP REC
(REC RF)

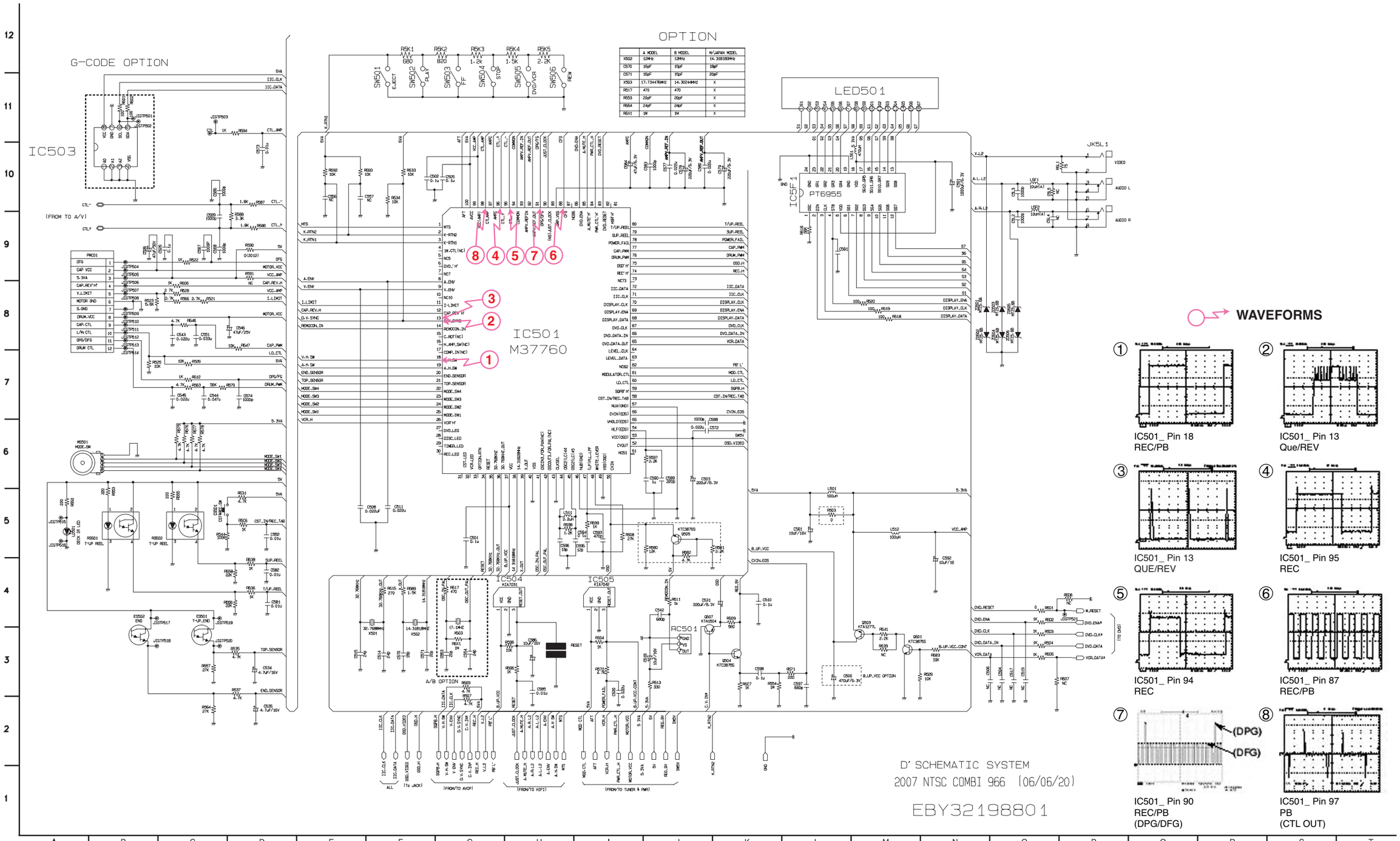
4. Hi-Fi CIRCUIT DIAGRAM

★ OPTIONAL PART

LOC.	N.A	JAPAN
C881	1uF/50V	4.7uF/50V
C880	4.7uF/50V	2.2uF/50V
C879	2.2uF/50V	1uF/50V
C877	1uF/50V	4.7uF/50V
C876	1uF/50V	4.7uF/50V
C875	0.033uF	X
C874	1uF	X
R874	4.7K	X
C884	0.1uF	X
C886	4.7uF/50V	X
CBJ2	X	0.1uF
C887	3.3uF/50V	X
C888	4.7uF/50V	X
C889	4.7uF/50V	X
C806	4.7uF/50V	X
CBJ3	X	0.1uF
C807	4.7uF/50V	X
C808	1uF/50V	X
CBJ4	X	0.01uF
C838	0.1uF	X
CBJ1	X	10uF/16V
IC801	LA72670BM	LA726B0BM



5. SYSTEM CIRCUIT DIAGRAM



WAVEFORMS

① IC501_ Pin 18
REC/PB

② IC501_ Pin 13
Que/REV

③ IC501_ Pin 13
QUE/REV

④ IC501_ Pin 95
REC

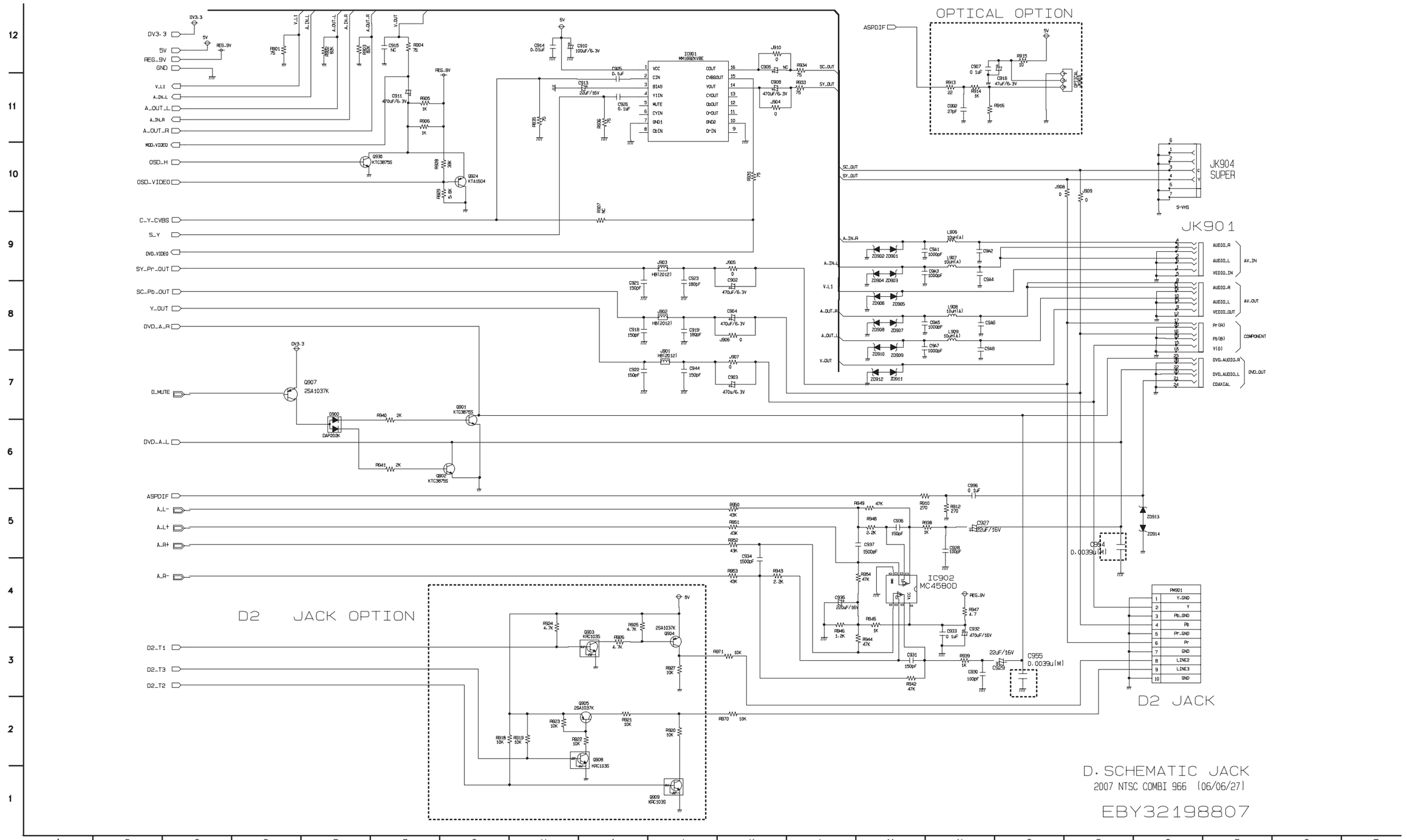
⑤ IC501_ Pin 94
REC

⑥ IC501_ Pin 87
REC/PB

⑦ IC501_ Pin 90
REC/PB
(DPG/DFG)

⑧ IC501_ Pin 97
PB
(CTL OUT)

6. JACK CIRCUIT DIAGRAM

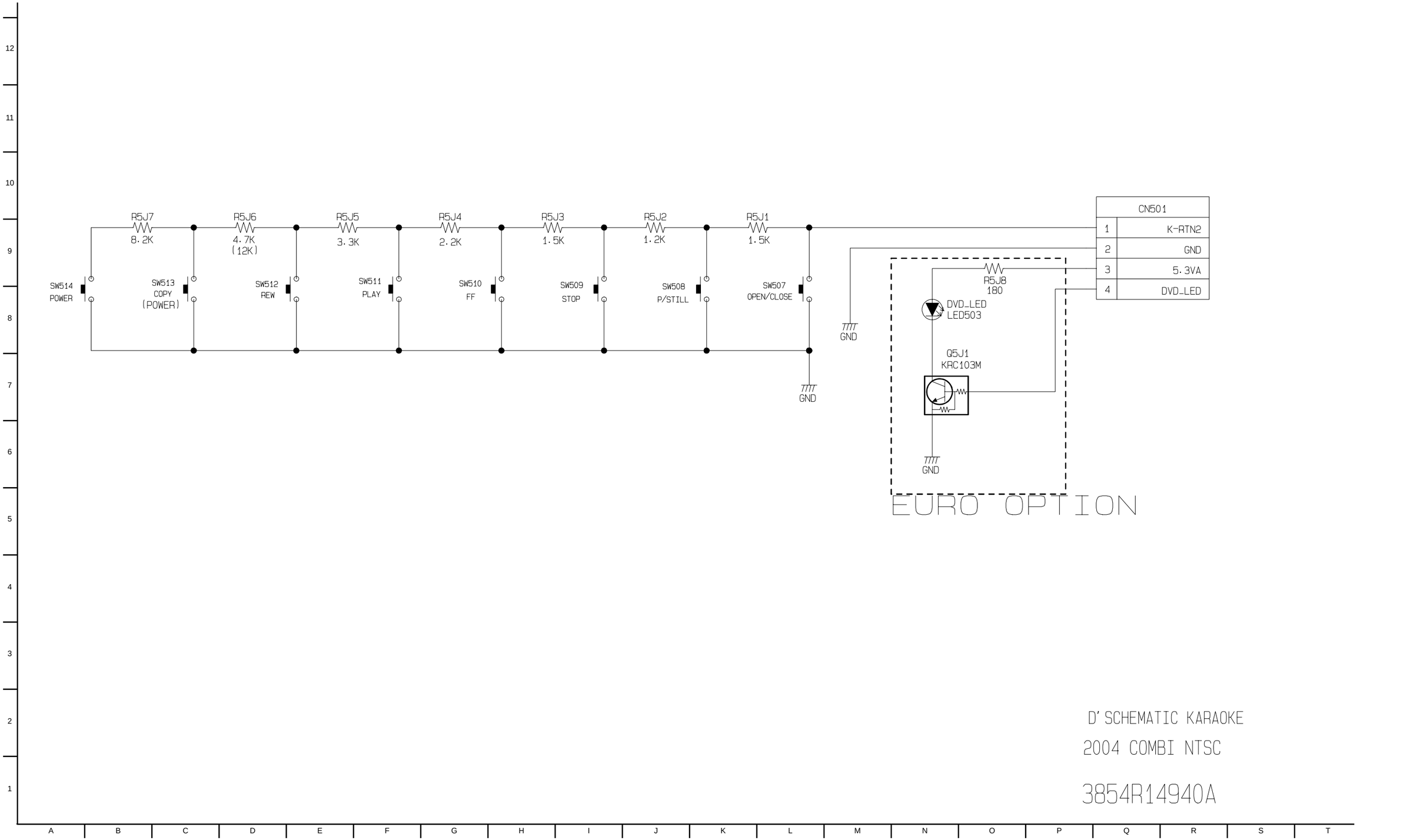


D. SCHEMATIC JACK

2007 NTSC COMBI 966 (06/06/27)

EBY32198807

7. KEY CIRCUIT DIAGRAM



CIRCUIT VOLTAGE CHART

MODE / PIN NO.	STOP	PLAY
IC301		
1	0.06	0.06
2	0.06	0.06
3	0.06	0.06
4	5.08	5.1
5	2.17	2.1
6	2.57	2.56
7	2.83	2.83
8	1.9	2
9	1.87	1.3
10	2.36	1.42
11	2.06	1.88
12	1.65	0.56
13	0	0
14	1.38	2.31
15	2.8	2.8
16	0.18	1.9
17	0	2.8
18	0	1.56
19	2.78	2.8
20	0	4.1
21	2.8	2.8
22	5	5
23	2.3	2.32
24	0.33	0.44
25	2.11	2.13
26	0	2.77
27	0.32	0.36
28	0.03	0.03
29	1.68	2.15
30	2.22	2.85
31	0.14	0.22
32	2.25	2.2
33	2.11	2.12
34	1.85	1.86
35	3.03	3
36	2.38	2.4
37	3.03	3
38	2.14	2.17
39	1.48	1.52
40	2.1	2.11
41	2.7	2.76
42	1.97	2
43	2.1	2
44	0	0
45	3.26	3.2
46	3.26	3.23
47	5.05	5.1
48	4.92	4.95
49	3.56	3.53
50	5.05	5.08
51	2.25	2.23
52	5.06	5.1
53	2.57	2.6
54	0	0
55	2.06	2.06
56	0	0
57	2.15	2.11
58	2.02	1.9
59	4.96	0
60	4.1	5
61	2.37	4.15
62	2.18	1.37
63	1.97	2.2
64	2.22	2.61
65	1.93	2.24
66	2.16	2.31
67	2.45	2.18
68	2.03	2.45
69	1.8	2
70	1.9	1.8
71	0.23	0.76
72	4.92	4.95
73	4.75	5
74	4.75	0
75	2.63	2.65
76	2.2	2.12
77	2.83	2.84
78	0.03	2.15
79	0	0
80	2.83	2.54
81	0.04	0.04
82	0.01	0.01
83	0.13	0.02
84	5	5
85	2.28	1.37
86	2.28	1.4
87	2.28	1.35
88	0	0
89	2.27	1
90	2.27	1
91	2.27	1
92	5.05	5
93	0.45	0.44
94	0.01	2.5
95	2.52	2.5
96	0	2.5
97	0	0
98	2.36	2.2
99	0	0
100	2.57	2.57
IC501		
1	0.97	0.08
2	5.2	5.2
3	5.2	5.2
4	0	0
5	0	1
6	5.1	5
7	0.2	0.74
8	0.17	0.09
9	0.17	0.16
10	0.01	0.01
11	0.03	3.4
12	0.24	0.01
13	0.03	0.03
14	4.8	0
15	0.01	2.57
16	0.3	0.01
17	0.33	0.01
18	5.14	2.57
19	5.14	2.57
20	4.32	0.14
21	4.28	0.02
22	0	5.1
23	0	5.2
24	5.2	5.2
25	5.21	0.01
26	5.14	5.1
27	0	0.1
28	5.14	5.1
29	0	0.01
30	0.01	0.01
31	0.01	0.01
32	0.01	0.01
33	0.01	0
34	5.17	5
35	1.46	0
36	0	1.35
37	5.17	0
38	2.22	0
39	2.3	2.29
40	0	0
41	0.25	0.57
42	0.28	0.57
43	0	0
44	2.4	2.37
45	2	2.37
46	0	0
47	1.44	1.36
48	0	0
49	0	0
50	0.15	1.64
51	0.2	0.7
52	1.37	1.63
53	5.04	5.1
54	0	2.6
55	1.4	1.96
56	0	1.77
57	0	01.56
58	0	0
59	0.01	4.1
60	2.6	2.6
61	4.15	4.13
62	0.01	0
63	0.06	0.06
64	0.06	0.06
65	2.25	2.3
66	2.4	0.06
67	5.2	5.2
68	4.94	4.94
69	4.9	4.88
70	4.9	4.92
71	4.77	4.94
72	4.74	5.12
73	0.01	0.01
74	0.01	0.01
75	0.8	0.01
76	0.82	2.66
77	0.01	2.66
78	4.8	4.8
79	4.87	4.44
80	4.85	4.21
81	0	2.58
82	4.11	4.17
83	4.66	4.86
84	0	0.01
85	4.26	4.2
86	0.13	0
87	2.6	2.36
88	0	0
89	0.12	0.3
90	0	1.37
91	2.59	2.5
92	2.6	2.5
93	0	0.03
94	2.54	2.52
95	2.54	2.52
96	2.58	2.54
97	0.28	2.4
98	5.2	5.1
99	5.2	5.2
100	0.16	0.16
IC801		
1	0	0
2	2.17	2.53
3	9.27	9.2
4	2.48	2.5
5	5.23	5.23
6	1.98	1.98
7	0	0
8	0.01	0.73
9	0	0
10	0	0
11	0	0
12	2.5	2.5
13	1.97	1.95
14	2.49	2.51
15	2.52	5
16	0	2.5
17	0.48	0
18	0.49	0.48
19	2.54	2.53
20	2.54	2.54
21	2.53	2.53
22	0	2.53
23	0	0.17
24	2.27	2.24
25	0	0
26	2.27	2.25
27	2.27	2.25
28	0	0
29	3.2	3.25
30	0	0
31	2.5	2.53
32	5.05	5
33	2.66	2.64
34	0	2.64
35	0	0
36	5.1	5
37	4.74	4.75
38	4.75	4.74
39	5.13	5.12
40	0	0.97
41	2.52	2.55
42	2.52	2.53
43	2.53	2.54
44	2.53	2.58
45	0.49	0.49
46	5.09	5.07
47	2.49	2.51
48	0	2
49	4.4	0
50	0	0
51	1.74	1.72
52	1.23	1.24
53	3.88	3.89
54	9.27	9.2
55	3.88	3.9
56	2.16	2.16
57	0	4.6
58	4.56	2.48
59	2.51	3.9
60	3.88	3.2
61	3.2	3.78
62	3.83	3.86
63	3.65	2.5
64	2.5	3.9
65	3.9	4.1
66	3.9	4.1
67	3.4	3.96
68	3.96	0
69	0	0
70	0	0
71	0	3.9
72	3.9	0
73	0	2.5
74	2.49	3.9
75	3.69	3.2
76	3.2	0
77	0.01	4.2
78	4.14	0
80	4.13	4.19
IC5F1		
1	2.45	2.15
2	4.9	4.9
3	4.93	4.92
4	4.88	4.88
5	5	4.5
6	0.7	2.8
7	0.71	2.57
8	0.72	2.5
9	0.72	2.7
10	1.24	2.3
11	1.74	2.77
12	2.4	0.94
13	0.9	1
14	1.37	1.93
15	0.55	2.44
16	2.08	2.27
17	1.85	2.21
18	5	4.5
19	0	0
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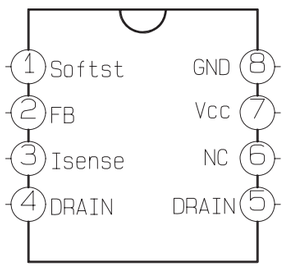
21	0	2.16
22	2	2.2
23	1.84	2.34
24	0	0

IC BLOCK DIAGRAMS



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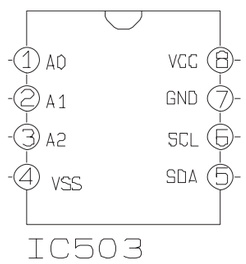
ICE3B0565

IC101_ICE3B0565



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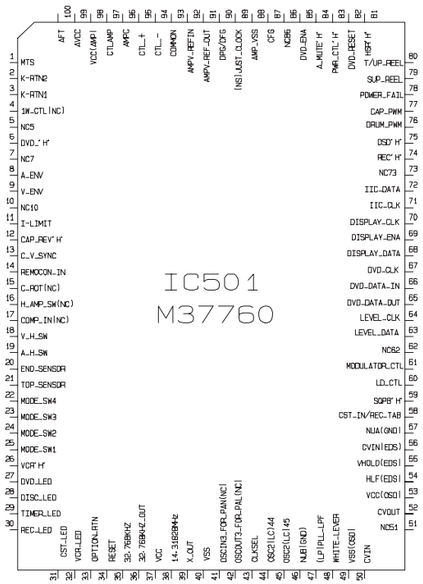

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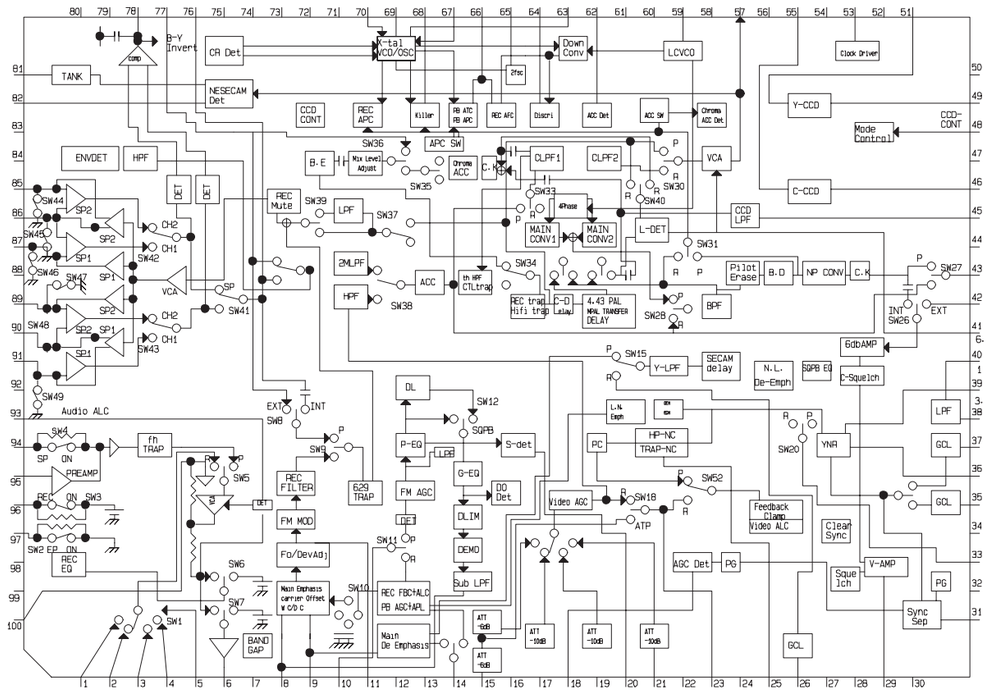

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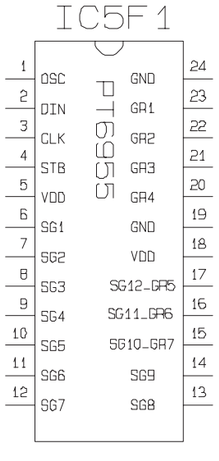

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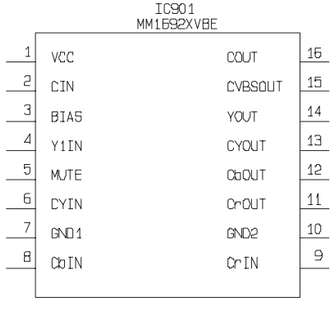

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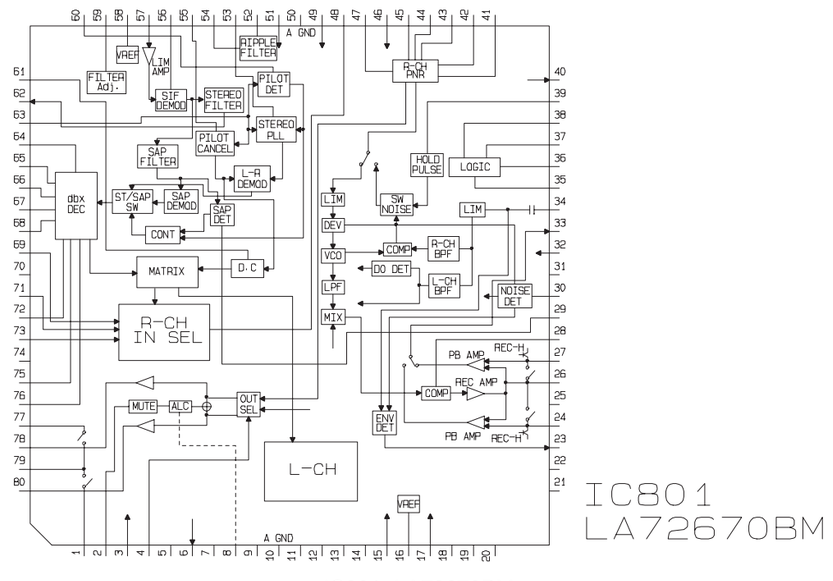
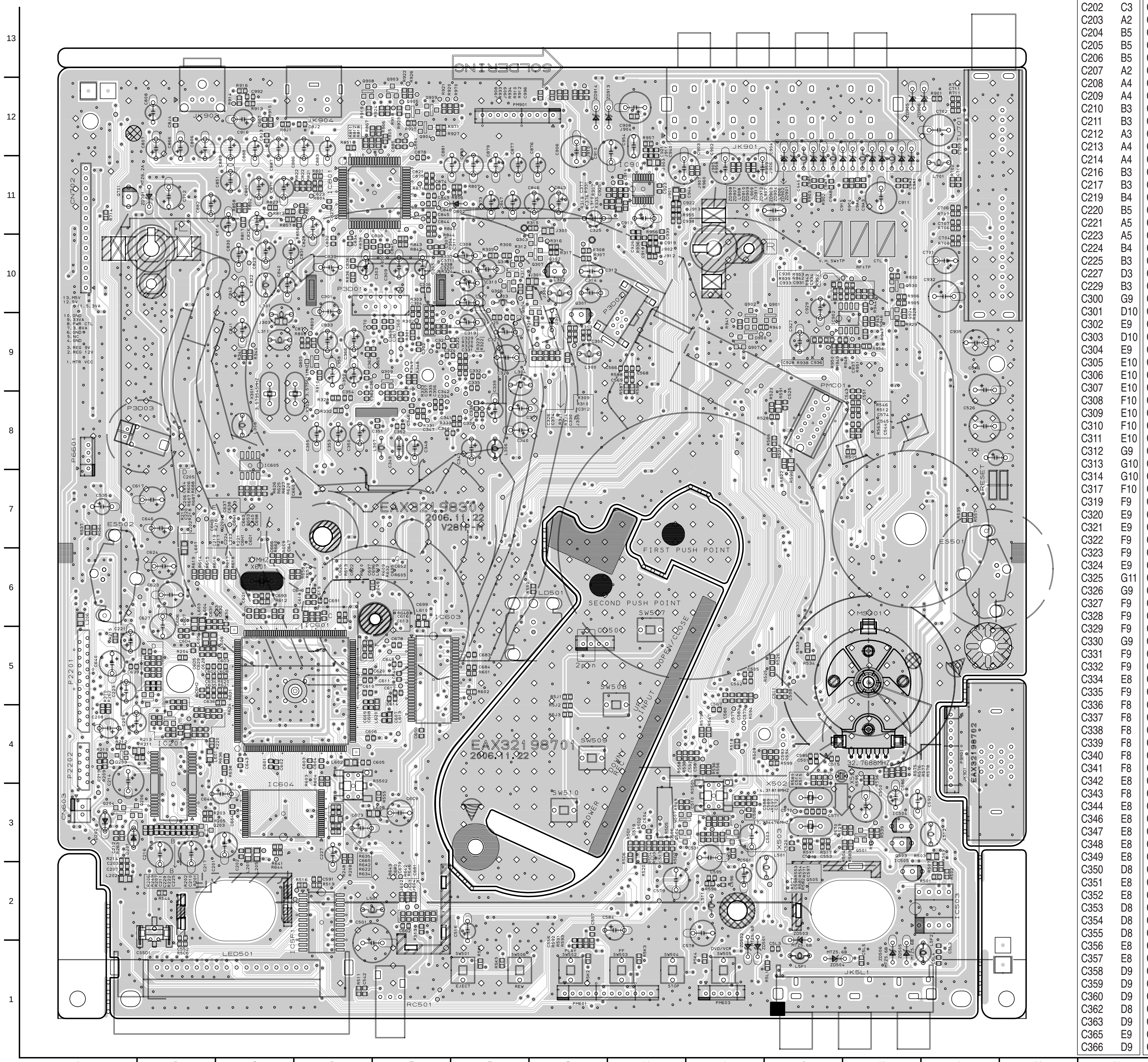


IC801_LA72670BM

PRINTED CIRCUIT DIAGRAMS

1. MAIN P.C.BOARD (TOP SIDE)



LOCATION GUIDE

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C202	C3
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C204	B5
C205	B5
C206	B5
C207	A2
C208	A4
C209	A4
C210	B3
C211	B3
C212	A3
C213	A4
C214	A4
C216	B3
C217	B3
C219	B4
C220	B5
C221	A5
C223	A5
C224	B4
C225	B3
C227	D3
C229	B3
C300	G9
C301	D10
C302	E9
C303	D10
C304	E9
C305	E10
C306	E10
C307	E10
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C311	E10
C312	G9
C313	G10
C314	G10
C317	F10
C319	F9
C320	E9
C321	E9
C322	F9
C323	F9
C324	E9
C325	G11
C326	G9
C327	F9
C328	F9
C329	F9
C330	G9
C331	F9
C332	F9
C334	E8
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C355	D8
C356	E8
C357	E8
C358	D9
C359	D9
C360	D9
C362	D8
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C365	E9
C366	D9

C367	E9
C368	E9
C369	E9
C370	E9
C371	E9
C374	G9
C376	H11
C377	H11
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C500	K3
C501	J4
C502	I5
C503	I3
C504	H3
C505	I5
C506	H3
C508	J5
C510	I3
C511	J5
C514	J4
C515	J4
C516	F2
C517	H3
C519	H3
C520	J3
C525	J8
C526	L8
C531	I3
C534	L8
C535	A7
C542	D1
C543	K8
C544	K8
C545	K8
C546	L9
C551	K8
C552	B2
C553	J3
C554	J3
C556	G1
C557	G2
C561	I2
C566	H9
C567	I4
C568	H9
C569	H9
C570	J3
C571	J3
C572	I3
C573	I5
C574	K8
C577	I5
C578	I2
C579	H2
C580	I5
C581	I4
C582	I4
C583	I5
C584	H2
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C594	J4
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C596	I2
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C5L4	L1
C5L5	K1
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C605	D4
C606	D4
C607	E4

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C609	D4
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C611	D5
C612	E5
C613	D5
C614	E5
C616	D5
C617	B7
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C623	B6
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C637	B4
C638	B4
C639	A5
C640	A5
C643	C4
C644	C3
C645	B4
C646	B7
C647	C6
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C652	D6
C660	C7
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C666	C6
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C683	F5
C684	F5
C691	D6
C693	C6
C695	D6
C696	D6
C697	C6
C698	C4
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C6D1	B4
C6D2	B5
C6D3	C5
C6D4	B5
C6D5	B5
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C6D7	B5
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C6H2	B5
C6H3	B4
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C703	L12
C704	L10
C706	L11
C707	L11
C711	L12
C712	B11
C718	L11
C801	C11

C806	B12
C807	B12
C808	B12
C816	C11
C821	E11
C822	D11
C823	D11
C826	C11
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C886	D12
C887	C12
C888	C12
C889	C12
C8J2	D12
C8J3	C12
C8J4	B12
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C914	H11
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C923	H11
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C930	J10
C931	K10
C932	L10
C933	J10
C934	K10
C935	L9
C936	K9
C937	K9
C938	H11

C939	H10
C940	H12
C944	H11
C954	H12
C955	J11
C992	C12
C996	G12
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C9A8	J11
CN501	G5
CN603	A3
CN702	A11
CS5D1	B2
CTL	K10
D201	A3
D202	A3
D203	A4
D301	G9
D802	F11
D900	I9
ES501	L7
ES502	A6
IC201	B3
IC503	L2
IC504	K3
IC505	K2
IC5F1	D2
IC601	D5
IC603	E5
IC604	C3
IC605	C8
IC801	E11
IC901	H11
IC902	K9
J301	G10
J303	C9
J304	G10
J305	G11
J339	G9
J602	E2
J603	E2
J604	E2
J901	H11
J902	H10
J903	H11
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J906	I11
J907	I11
J908	G12
J909	G12
J910	G12
J911	H12
J912	H10
J913	H11
JK5L1	K1
JK901	K12
JK903	B12
JK904	D13
JK9D1	L4
L201	C3
L202	A2
L203	B4
L205	C3
L206	A6
L300	G9
L301	C9
L302	G10
L303	F10
L304	F9
L306	F8
L307	E8
L308	C8
L310	H11
L311	C9
L501	J2
L511	I2
L512	L3

L5F1	J1
L5F2	L1
L5G1	E2
L601	B4
L602	D4
L603	B6
L604	B6
L605	B5
L606	B5
L607	B6
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L613	E4
L619	D6
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L906	K11
L907	K11
L908	J11
L909	J11
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P3D02	H9
P3D03	A8
P6601	A8
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PM901	F12
PMC01	J8
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Q204	A3
Q206	A3
Q301	G9
Q302	G10
Q303	G10
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Q305	F10
Q306	F10
Q307	G10
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Q504	H3
Q505	I3
Q507	H3
Q701	A11
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Q905	E12
Q907	I9
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Q930	K10
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R203	B3
R204	B5
R205	B3
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R220	B4
R221	B4
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R301	E9
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R332	D8
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R337	E10
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R503	L3
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R5J3	G4
R5K1	F1
R5K2	G1
R5K3	H1
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R5K5	F1
R5L1	J1
R5X1	J3
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R605	D6
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R607	B5
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R613	C6
R614	B6
R615	B6
R616	B6
R617	C6
R618	C6
R619	B6
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R624	C5
R625	C7
R626	C7
R627	C7
R628	C7
R631	C5
R632	D6
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R635	D3
R636	C4

R638	C4
R641	C3
R642	E2
R643	E2
R644	C3
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R653	B4
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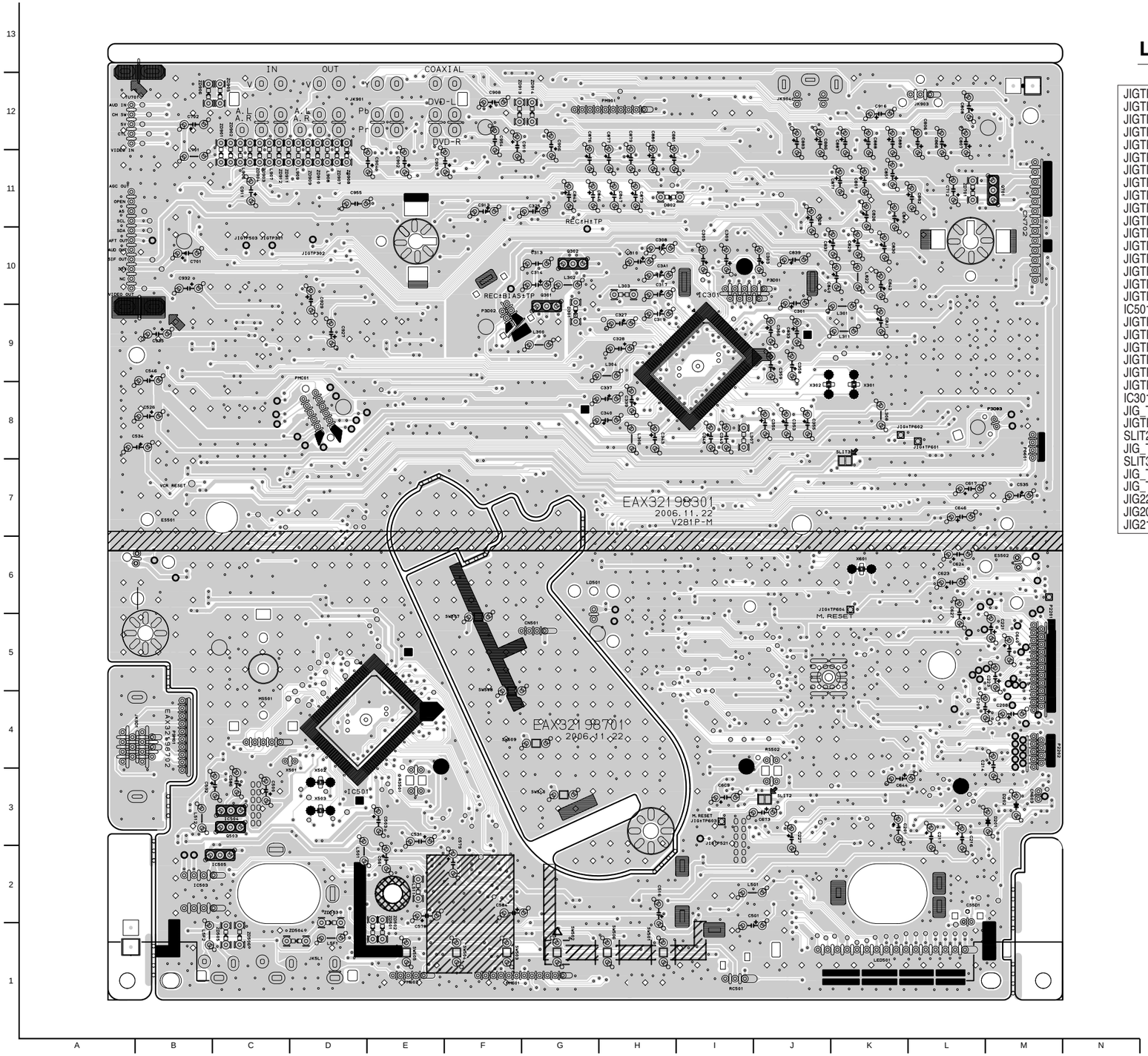
R914	C12
R915	C12
R916	C12
R918	E12
R919	D12
R920	E12
R921	E12
R922	E12
R923	E12
R924	E12
R925	E12
R926	E12
R927	E12
R928	K9
R929	K9
R930	K10
R931	H11
R933	G12

R934	G12
R935	H11
R936	H10
R938	J9
R939	J10
R940	I9
R941	I9
R942	K10
R943	K10
R944	K10
R945	K9
R946	K9
R947	K9
R948	K9
R949	J9
R950	J9
R951	K9
R952	K10
R953	K10
R954	K9
R955	H11
R956	H10
R957	H12
R958	I11
R959	I11
R960	I11
R970	F12
R971	E12
RC501	E1
REC_H_TP	F11
RESET	L7
RF_TP	K10
RS501	I3
RS502	D3
SW501	F1
SW502	G1
SW503	H1
SW504	H1
SW505	I1
SW506	F1
SW507	H5
SW508	H4
SW509	G4
SW510	G3
TP1	E12
TP2	E12
TP3	D12
TU701	M12
V.H.SW_TP	J10
X301	C8
X302	D8
X501	J4
X502	J3
X503	J3
X601	C6
ZD501	I1
ZD502	I1
ZD503	J1
ZD504	J1
ZD505	K1
ZD506	K1
ZD701	B11
ZD901	K11
ZD902	K11
ZD903	K11
ZD904	K11
ZD905	K12
ZD906	L12
ZD907	J11
ZD908	J11
ZD909	J11
ZD910	J11
ZD911	K11
ZD912	K11
ZD913	H12
ZD914	G12

2. MAIN P.C.BOARD (BOTTOM SIDE)

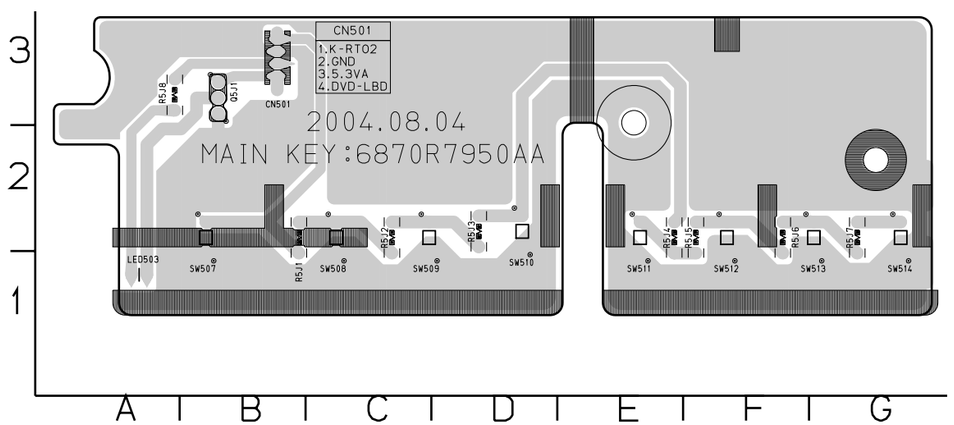


LOCATION GUIDE

JIGTP517	B6
JIGTP520	B6
JIGTP501	B2
JIGTP502	B2
JIGTP701	B10
JIGTP512	C8
JIGTP513	C8
JIGTP514	C8
JIGTP301	C10
JIGTP503	C10
JIGTP504	D8
JIGTP505	D8
JIGTP506	D8
JIGTP507	D8
JIGTP509	D8
JIGTP510	D8
JIGTP511	D8
IC501	D4
JIGTP302	D10
JIGTP508	E8
JIGTP306	F10
JIGTP307	G10
JIGTP515	H6
JIGTP516	H5
IC301	I9
JIG_TP603	I3
JIGTP521	I3
SLIT2	J3
JIG_TP602	K8
SLIT3	K7
JIG_TP604	K6
JIG_TP601	L8
JIG221	L6
JIG207	L5
JIG212	L5

JIG213	L5
JIG214	L5
JIG218	L5
JIG204	L4
JIGTP304	M8
JIGTP305	M8
JIG220	M6
JIG223	M6
JIGTP518	M6
JIGTP519	M6
PH1	M6
JIG208	M5
JIG209	M5
JIG210	M5
JIG211	M5
JIG215	M5
JIG216	M5
JIG217	M5
JIG219	M5
JIG222	M5
JIG201	M4
JIG202	M4
JIG203	M4
JIG205	M4
JIG224	M4
JIG225	M4
JIG226	M4
JIG227	M4
JIG228	M4
JIG229	M4
JIG230	M4
JIG231	M4
JIG232	M4
JIG206	M3

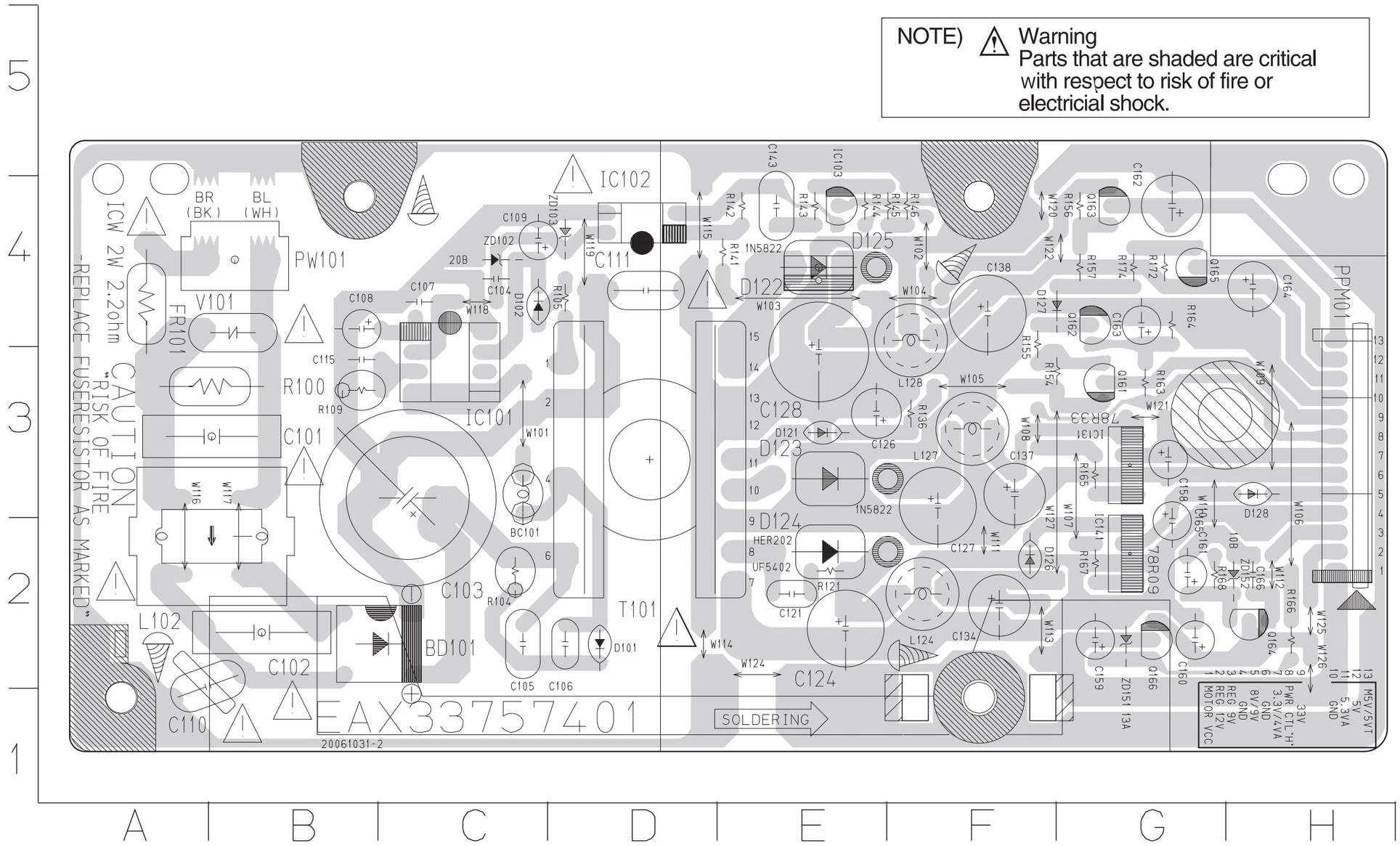
3. KEY P.C.BOARD



LOCATION GUIDE

CN501	B3
LED503	A1
Q5J1	B3
R5J1	B2
R5J2	C2
R5J3	D2
R5J4	E2
R5J5	F2
R5J6	F2
R5J7	G2
R5J8	A3
SW507	B2
SW508	C2
SW509	C2
SW510	D2
SW511	E2
SW512	F2
SW513	G2
SW514	G2

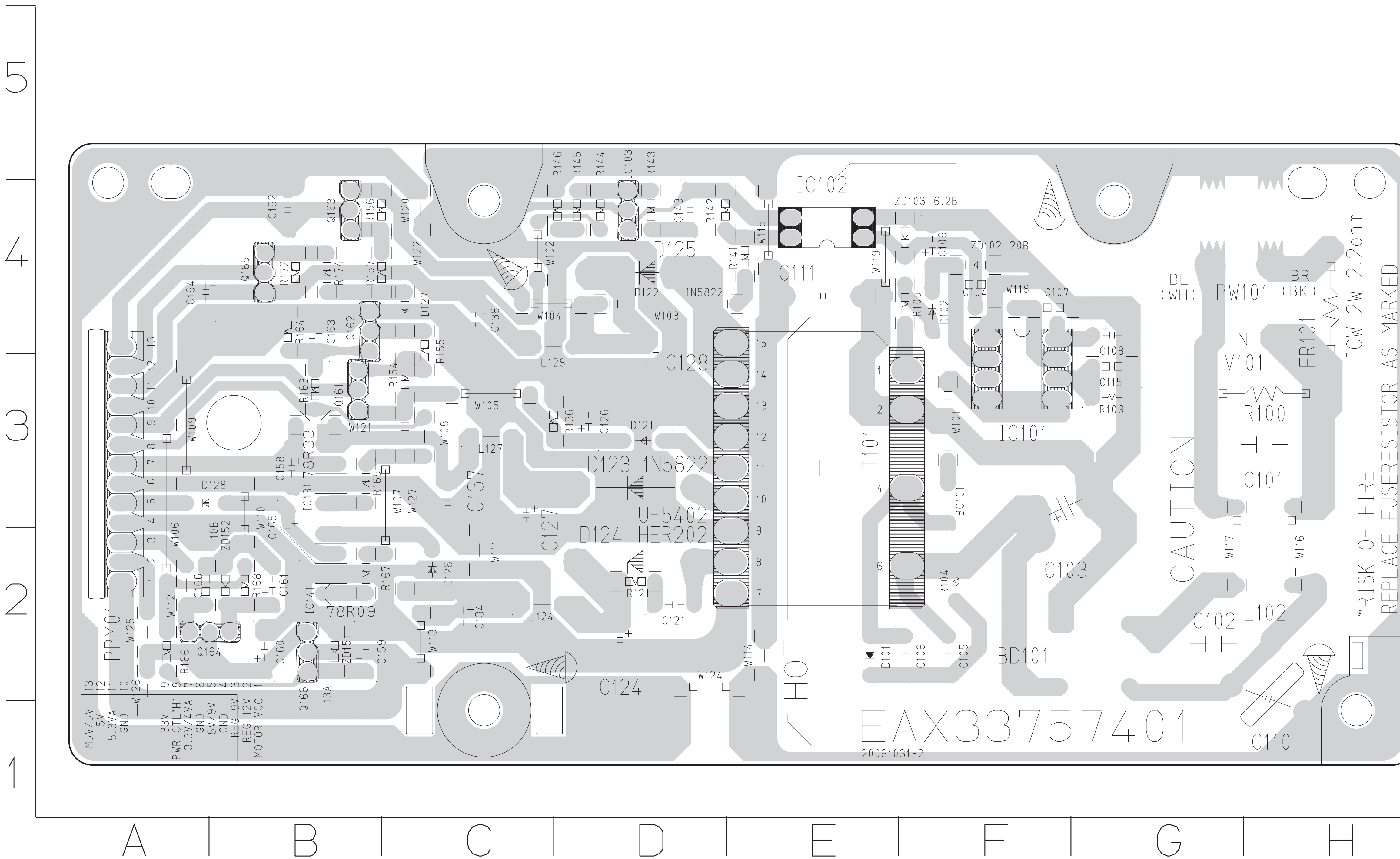
4. POWER P.C.BOARD (TOP SIDE)



LOCATION GUIDE

BC101	C3	Q165	G4
BD101	C2	Q166	G2
C101	B3	R100	B3
C102	B2	R104	C2
C103	C3	R105	D4
C104	C4	R109	B3
C105	C2	R121	E2
C106	D2	R136	F3
C107	C4	R141	E4
C108	B4	R142	E4
C109	C4	R143	E4
C110	A2	R144	E4
C111	D4	R145	E4
C115	B3	R146	F4
C121	E2	R154	F3
C124	E2	R155	F4
C126	E3	R156	G4
C127	F3	R157	G4
C128	E3	R163	G3
C134	F2	R164	G4
C137	F3	R165	G3
C138	F4	R166	H2
C143	E4	R167	G2
C158	G3	R168	G2
C159	G2	R172	G4
C160	G2	R174	G4
C161	G2	T101	D3
C162	G4	V101	B4
C163	G4	W101	C3
C164	H4	W102	F4
C165	G2	W103	E4
C166	H2	W104	F4
D101	D2	W105	F3
D102	C4	W106	H3
D121	E3	W107	G3
D122	E4	W108	F3
D123	E3	W109	H3
D124	E2	W110	G3
D125	E4	W111	F2
D126	F2	W112	H2
D127	F4	W113	F2
D128	H3	W114	D4
FR101	A4	W115	D4
IC101	C4	W116	A2
IC102	D4	W117	B2
IC103	E4	W118	C4
IC131	G3	W119	D4
IC141	G2	W120	F4
L102	B2	W121	G3
L124	F2	W122	G4
L127	F3	W124	E2
L128	F4	W125	H2
PPM01	H2	W126	H2
PW101	B4	W127	F3
Q161	G3	ZD102	C4
Q162	G4	ZD103	D4
Q163	G4	ZD151	G2
Q164	H2	ZD152	H2

5. POWER P.C.BOARD (BOTTOM SIDE)



LOCATION GUIDE

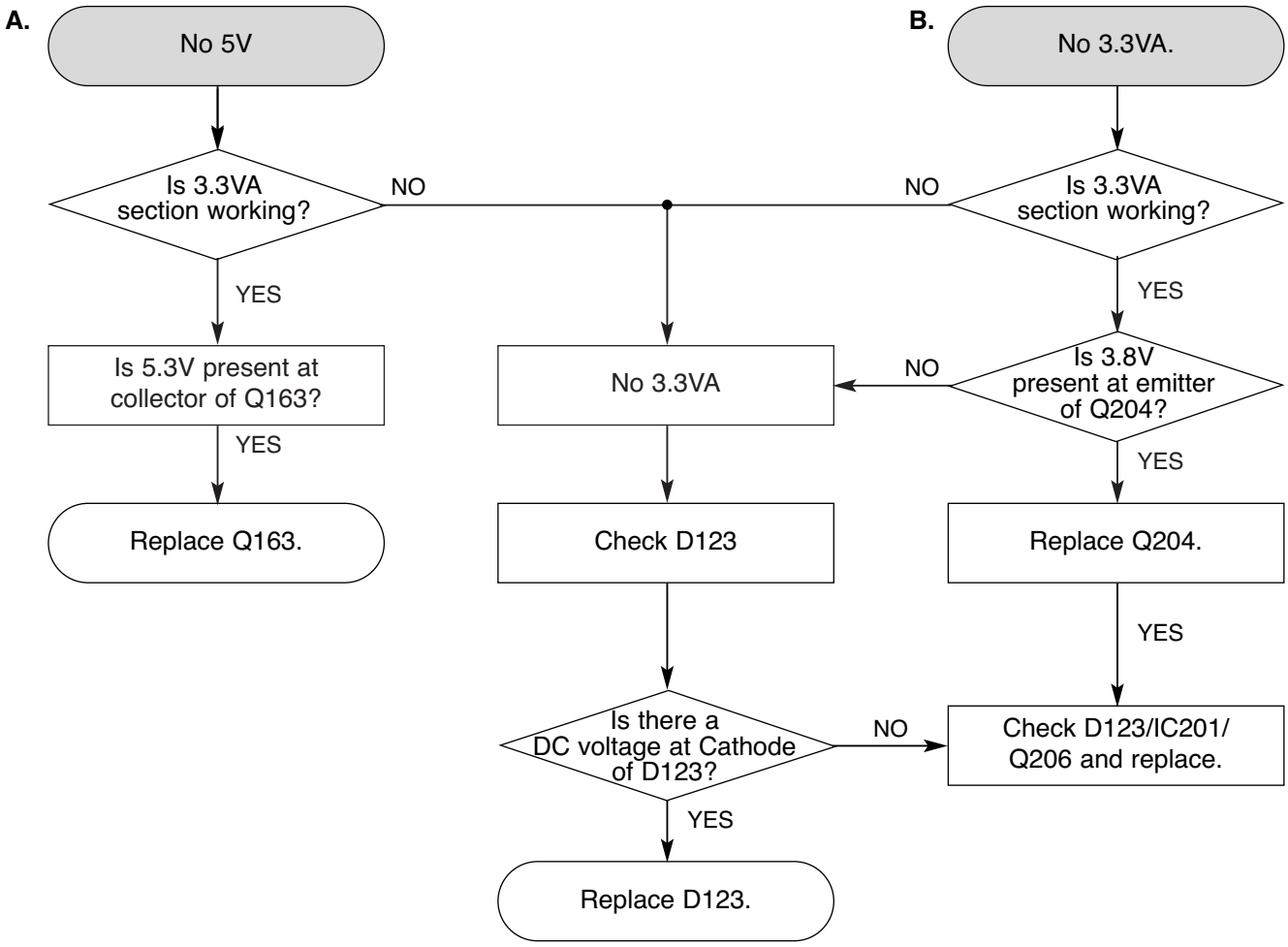
BC101	F3	Q165	B4
BD101	G2	Q166	B2
C101	H3	R100	H3
C102	G2	R104	F2
C103	F3	R105	F4
C104	F4	R109	G3
C105	F2	R121	D2
C106	F2	R136	D3
C107	F4	R141	E4
C108	G4	R142	E4
C109	F4	R143	D4
C110	H2	R144	D4
C111	E4	R145	D4
C115	G3	R146	D4
C121	D2	R154	C3
C124	D2	R155	C4
C126	D3	R156	C4
C127	C3	R157	C4
C128	D3	R163	B3
C134	C2	R164	B4
C137	C3	R165	B3
C138	C4	R166	A2
C143	D4	R167	B2
C158	B3	R168	B2
C159	B2	R172	B4
C160	B2	R174	B4
C161	B2	T101	E3
C162	B4	V101	H4
C163	B4	W101	F3
C164	B4	W102	C4
C165	B2	W103	D4
C166	B2	W104	D4
D101	E2	W105	C3
D102	F4	W106	A3
D121	D3	W107	C3
D122	D4	W108	C3
D123	D3	W109	A3
D124	D2	W110	B3
D125	D4	W111	C2
D126	C2	W112	A2
D127	C4	W113	C2
D128	B3	W114	E2
FR101	H4	W115	E4
IC101	F4	W116	H2
IC102	E4	W117	G2
IC103	D4	W118	F4
IC131	B3	W119	E4
IC141	B2	W120	C4
L102	H2	W121	B3
L124	C2	W122	C4
L127	C3	W124	D2
L128	D4	W125	A2
PPM01	A2	W126	A2
PW101	H4	W127	C3
Q161	B3	ZD102	F4
Q162	B4	ZD103	F4
Q163	B4	ZD151	B2
Q164	B2	ZD152	B2

MEMO

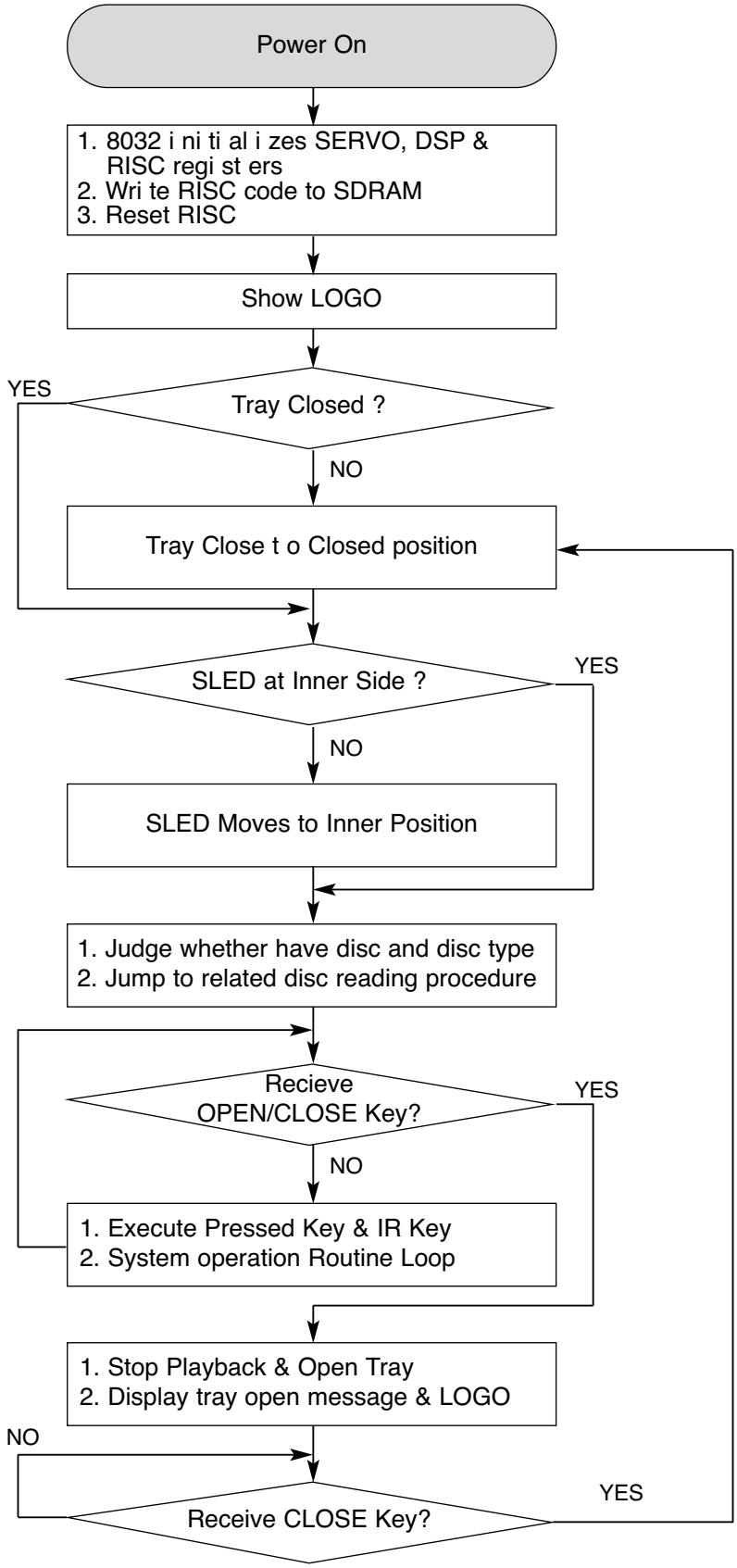
MEMO

DVD PART
ELECTRICAL TROUBLESHOOTING GUIDE

1. POWER CHECK FLOW

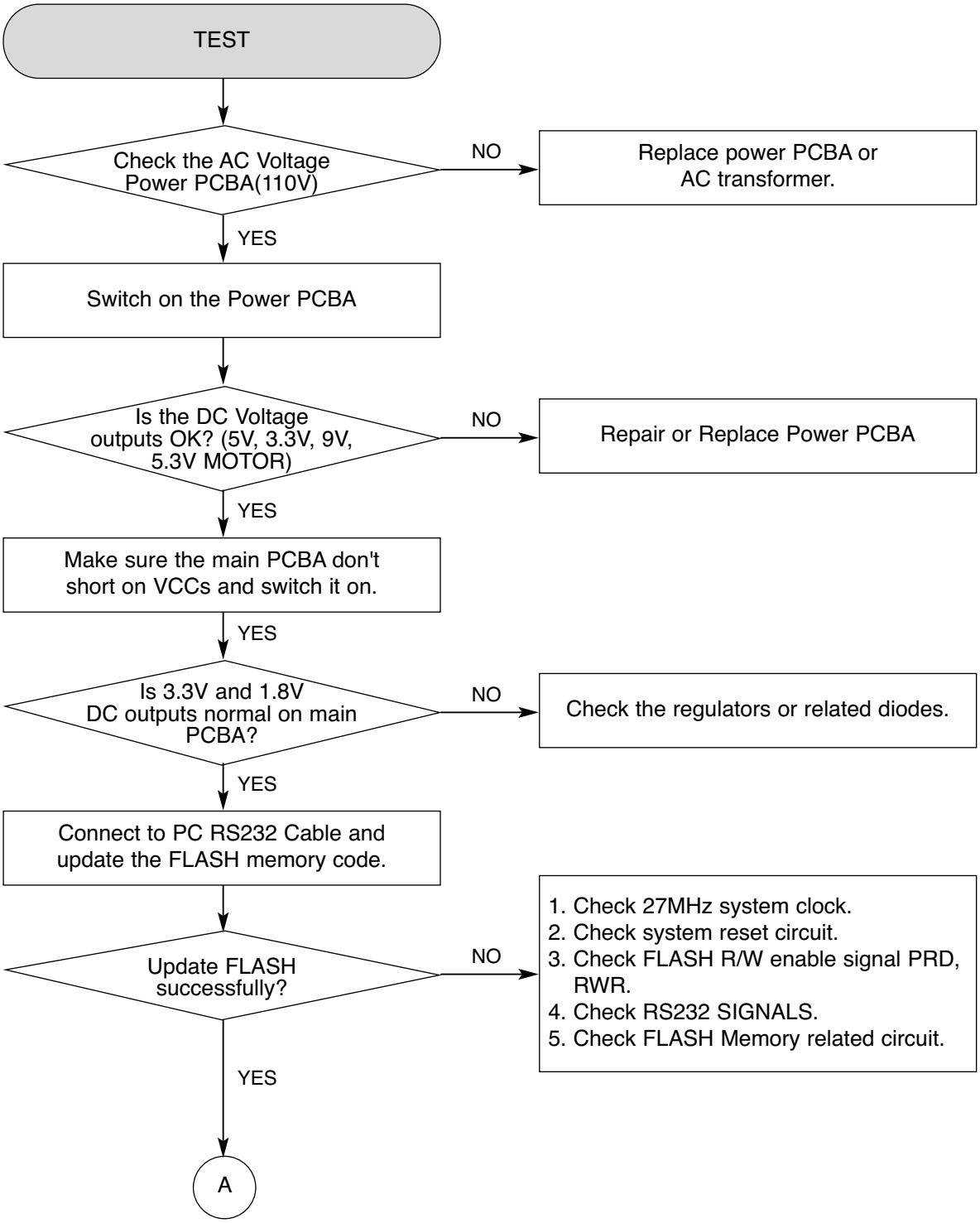


2. SYSTEM OPERATION FLOW

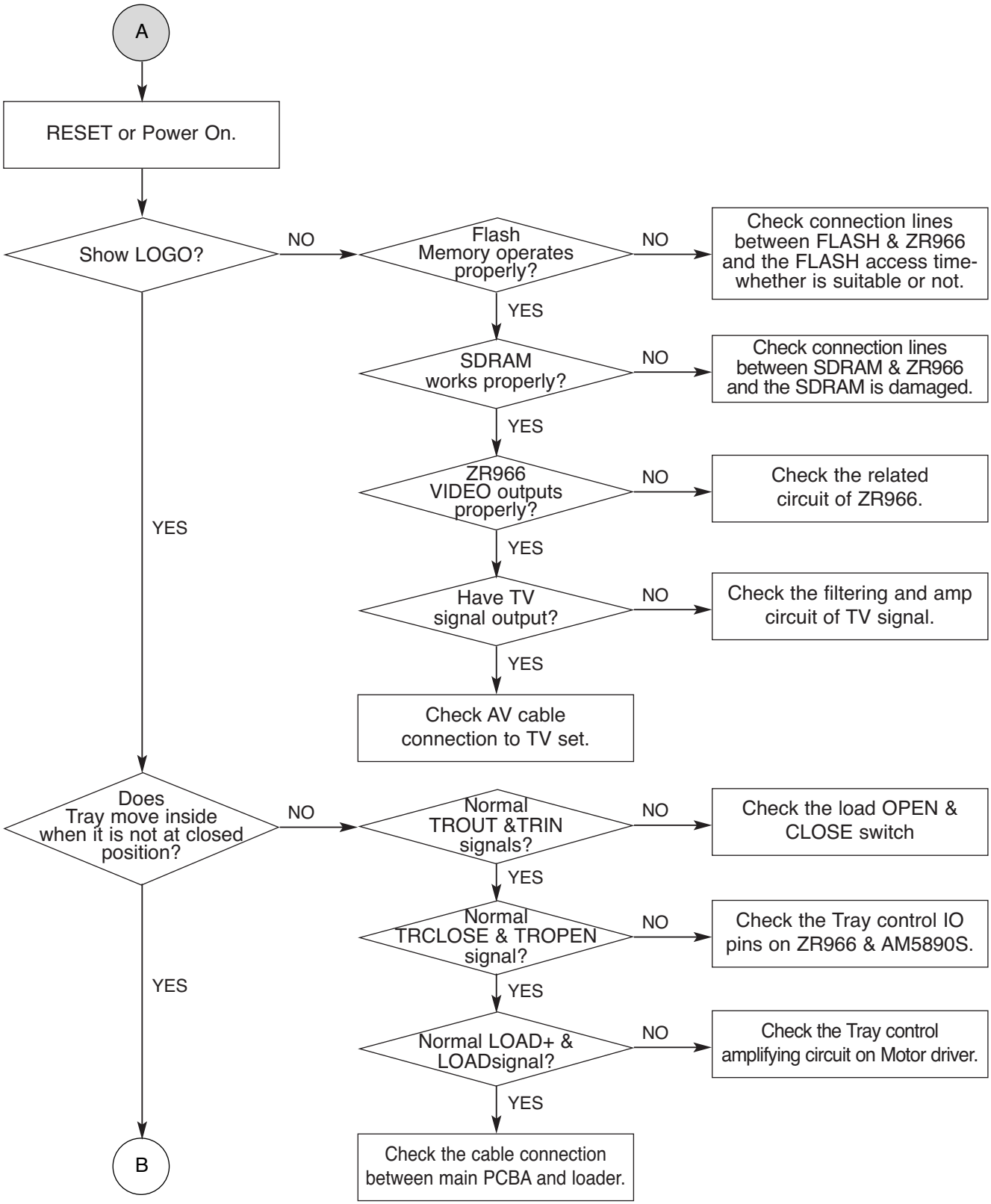


DVD ELECTRICAL TROUBLESHOOTING GUIDE

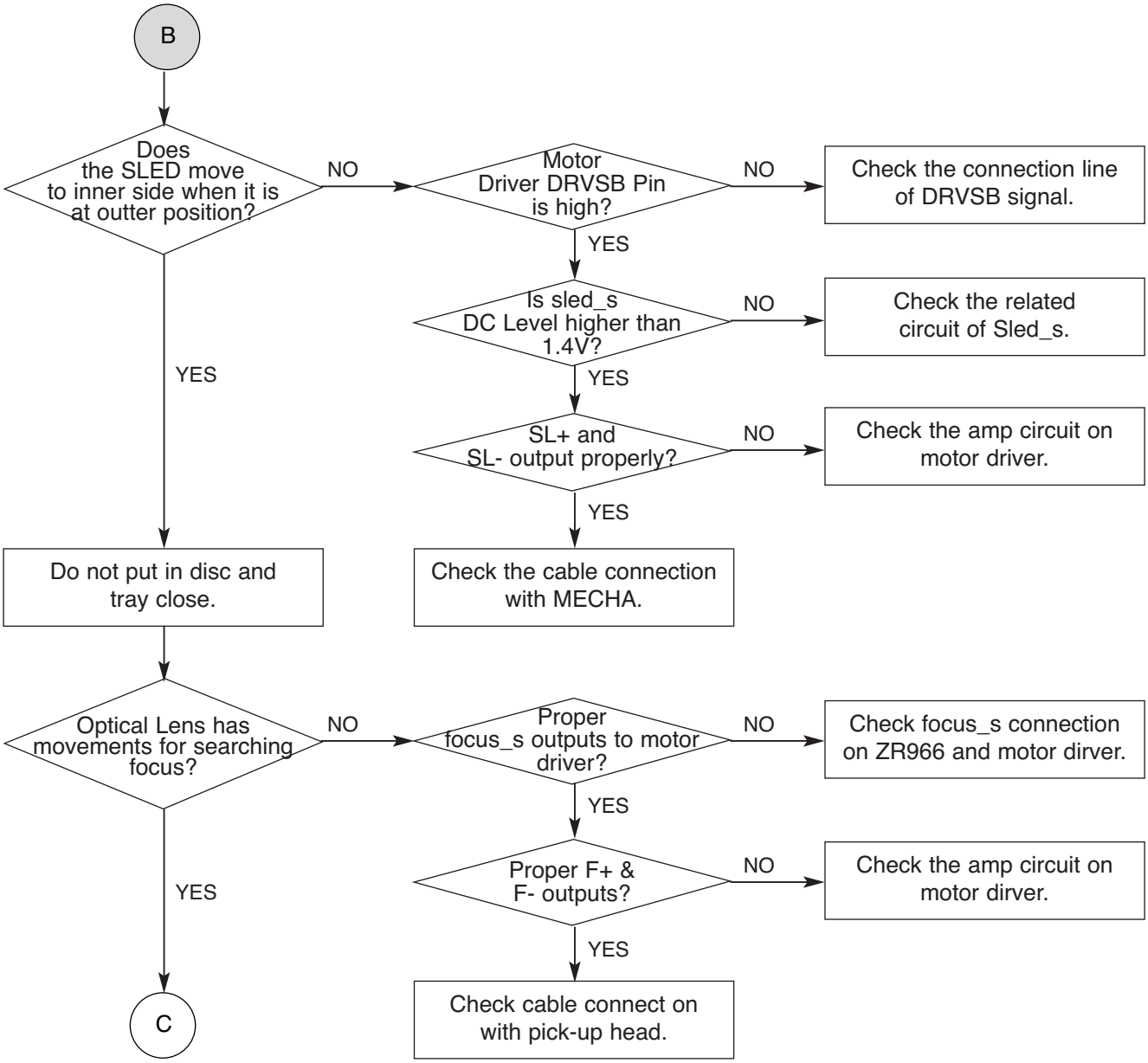
3. SYSTEM TEST FLOW



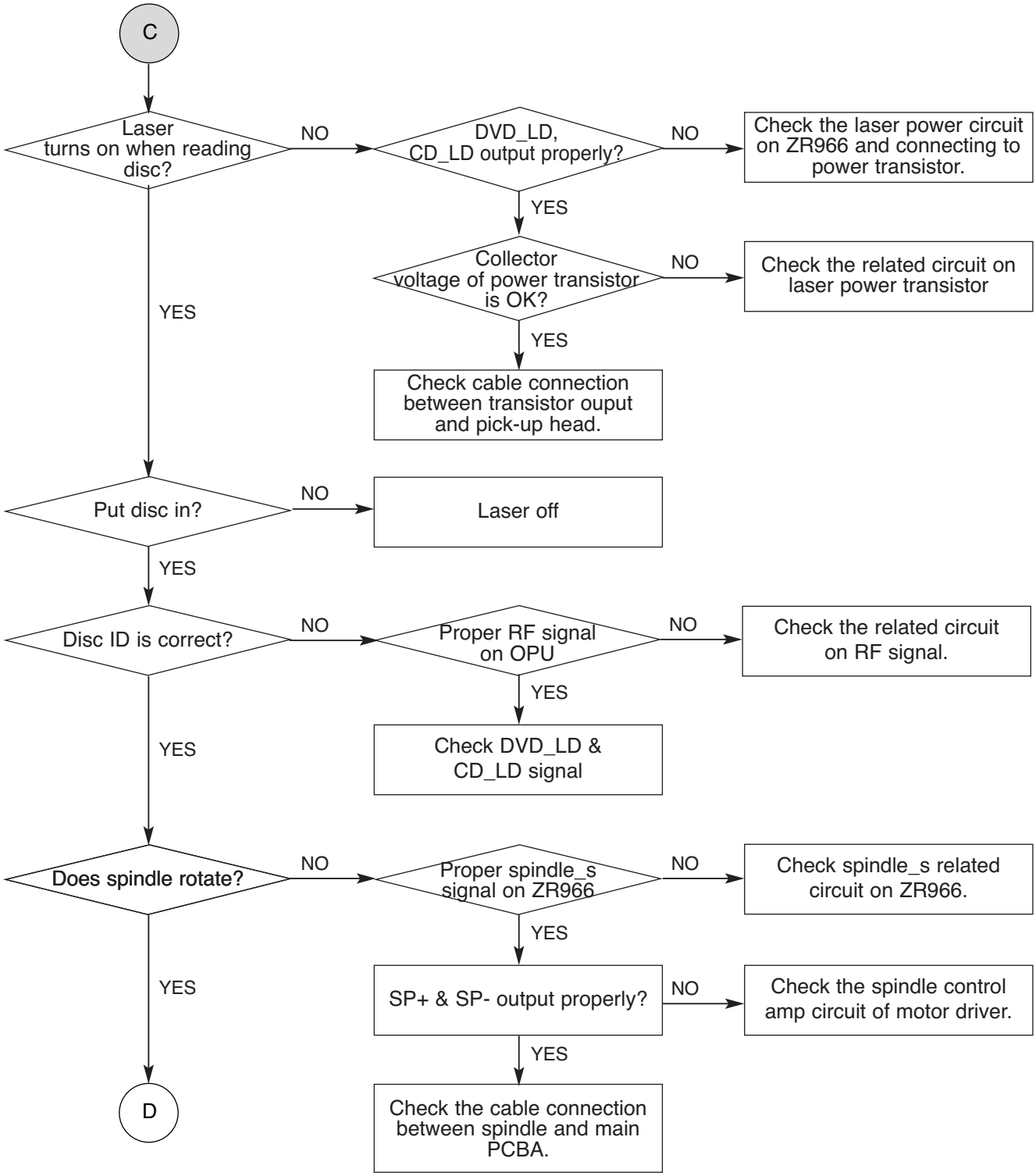
DVD ELECTRICAL TROUBLESHOOTING GUIDE



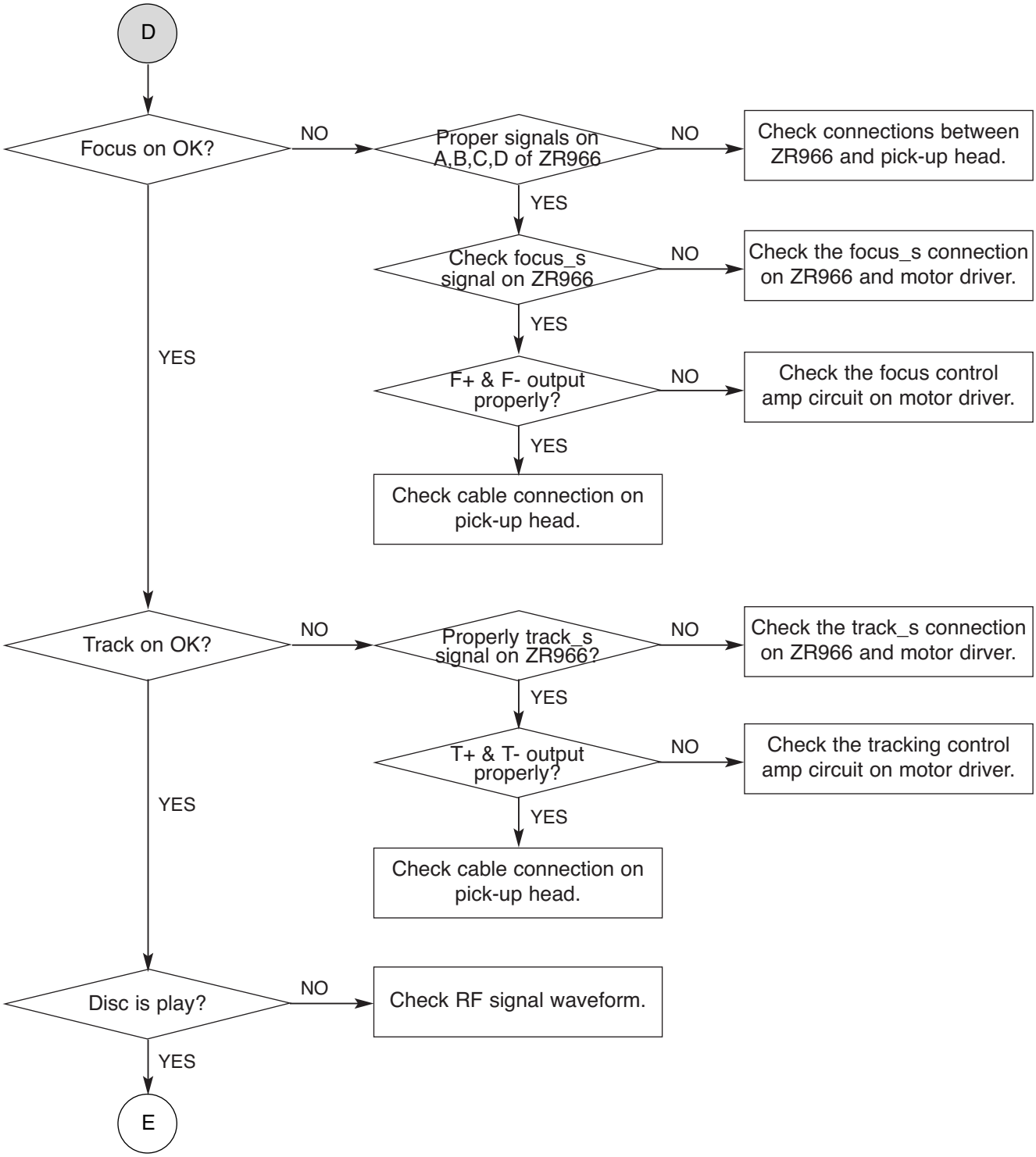
DVD ELECTRICAL TROUBLESHOOTING GUIDE



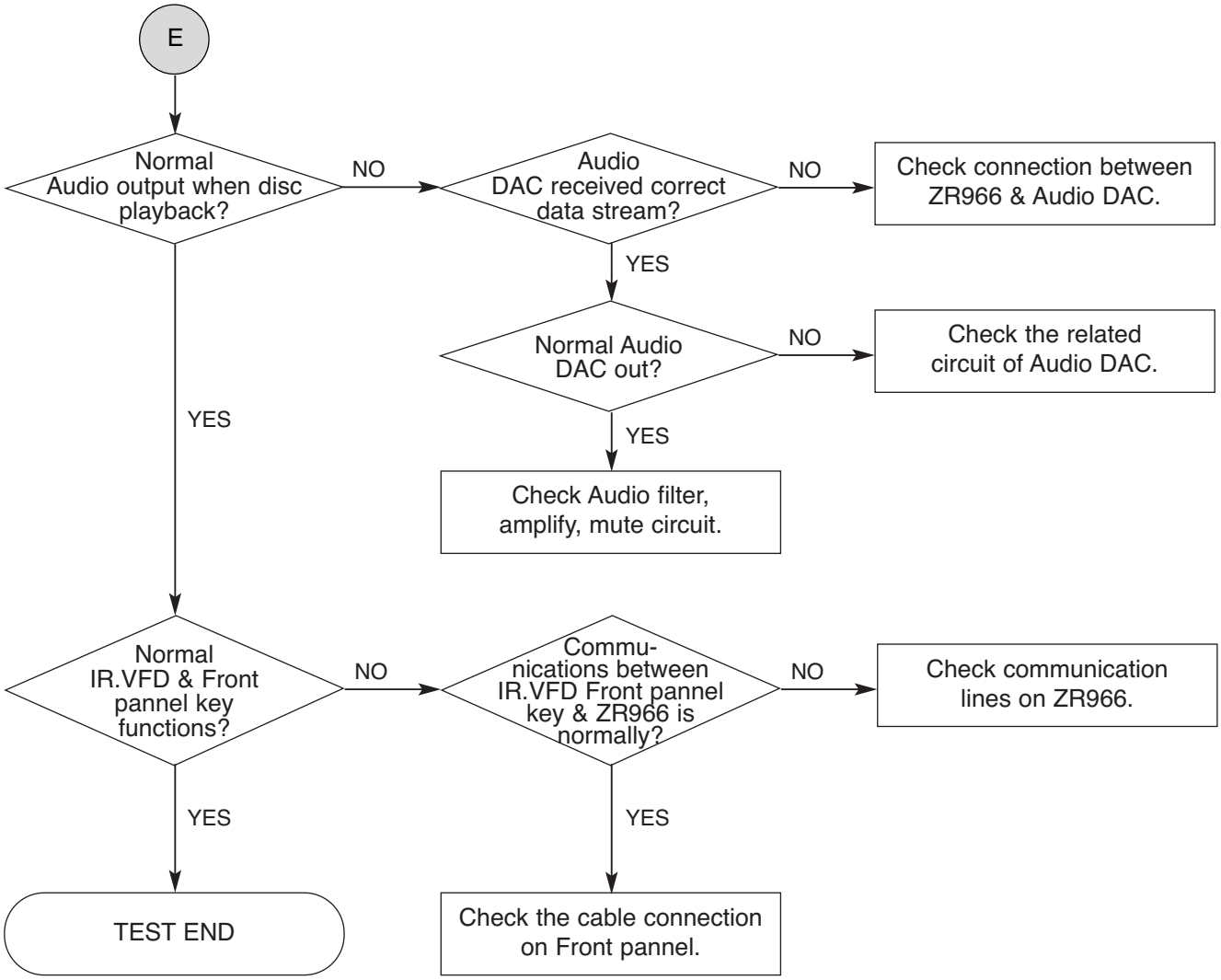
DVD ELECTRICAL TROUBLESHOOTING GUIDE



DVD ELECTRICAL TROUBLESHOOTING GUIDE



DVD ELECTRICAL TROUBLESHOOTING GUIDE



DETAILS AND WAVEFORMS ON SYSTEM TEST AND DEBUGGING

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

1-1. ZR966 main clock is at 27MHz (X601)

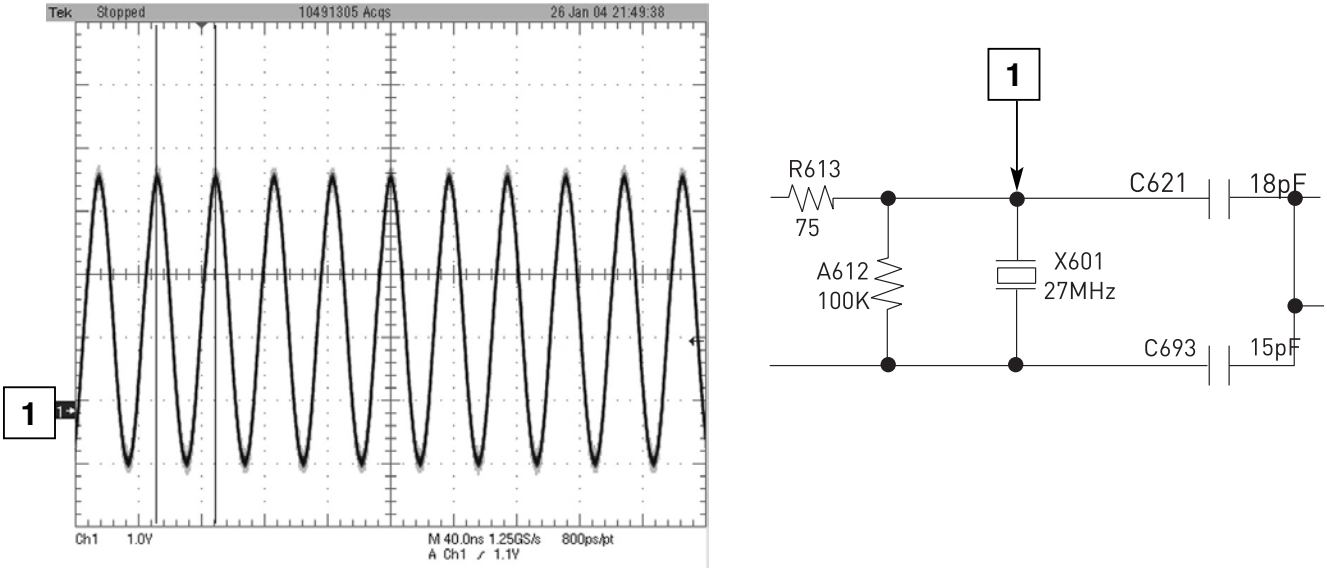


FIG 1-1

1-2. ZR966 reset is active high.

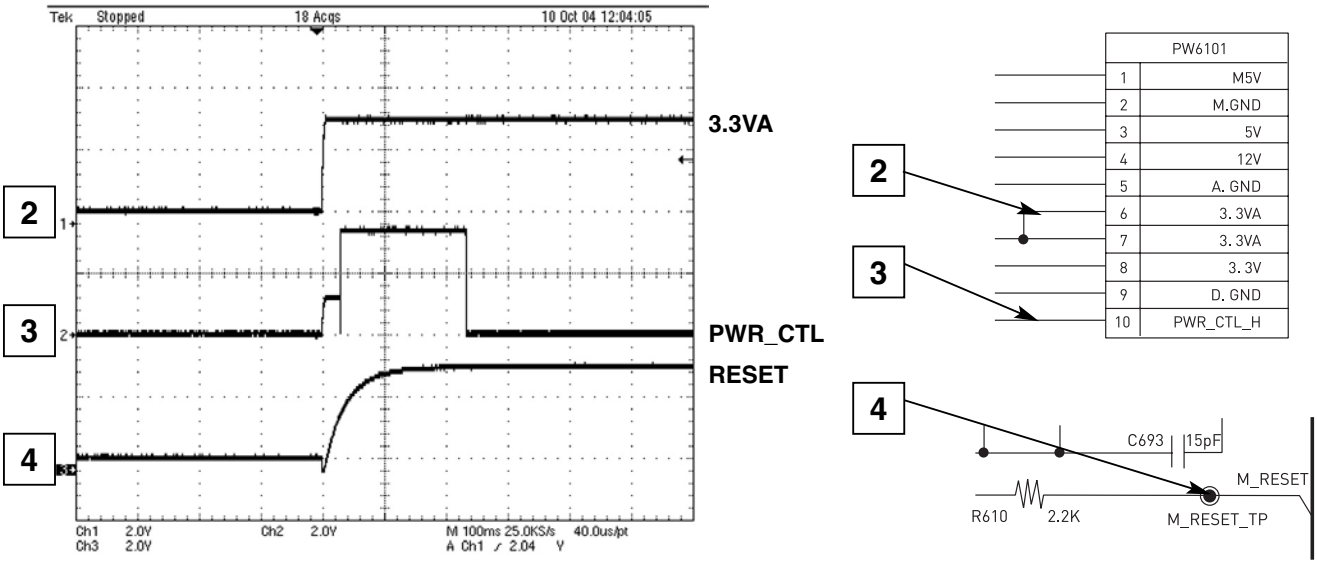
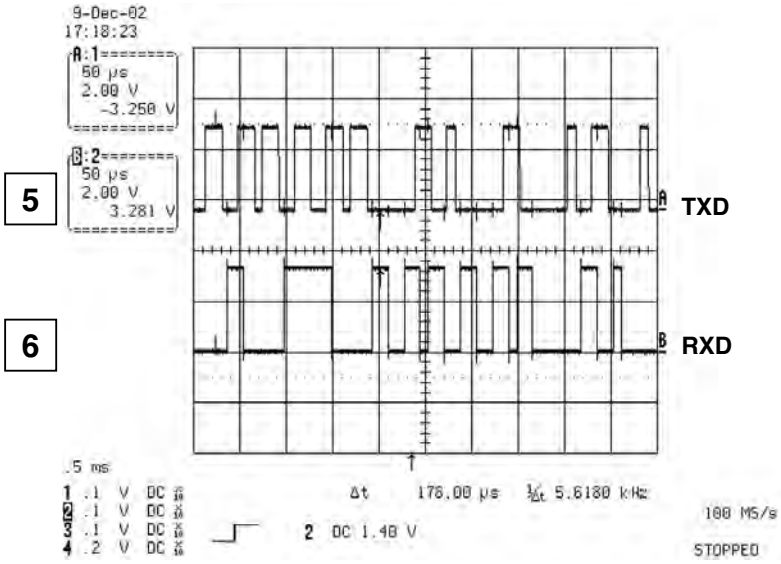


FIG 1-2

1-3. RS232 waveform during procedure (Downloading)



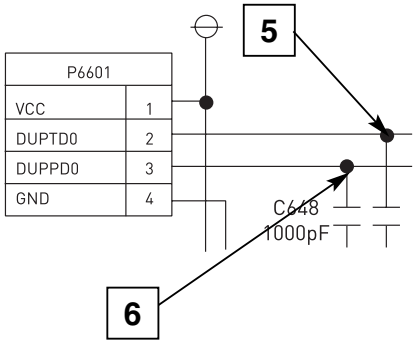
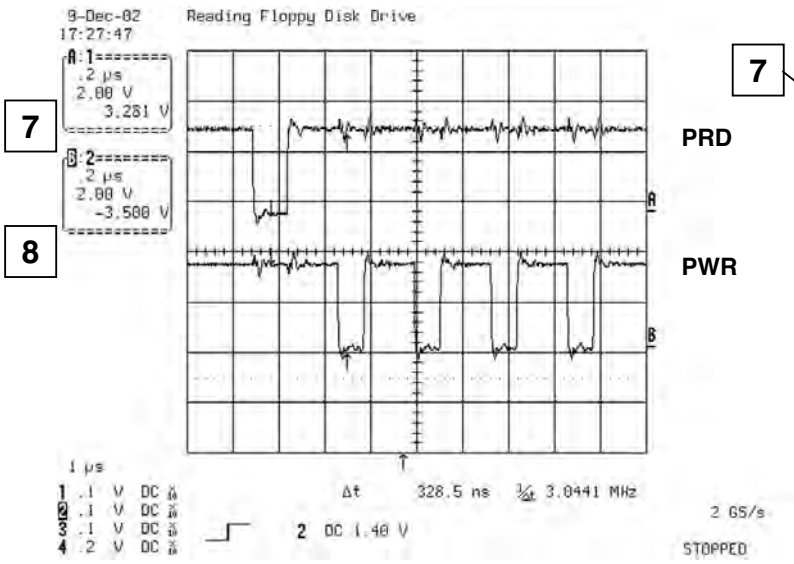


FIG 1-3

1-4. Flash R/W enable signal during download (Downloading)



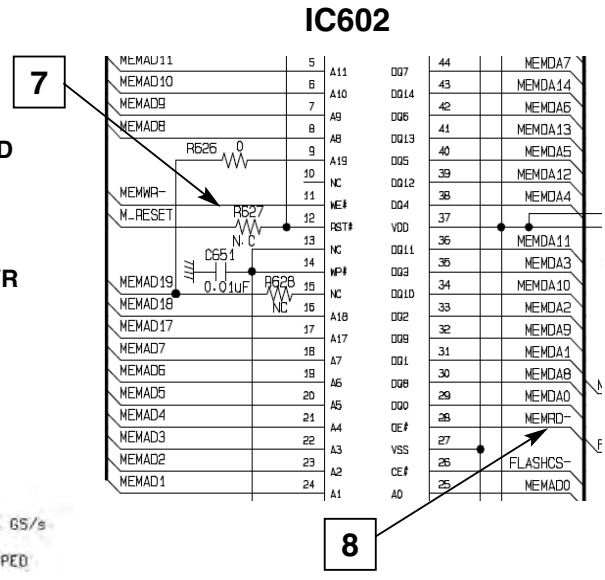
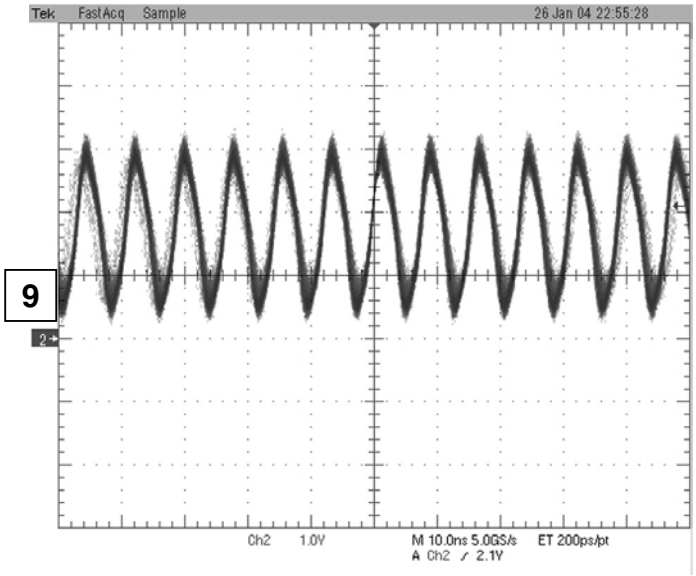


FIG 1-4

2. SDRAM CLOCK

DCLK = 128MHz, Vp-p=2.2, Vmax=2.7V



IC603

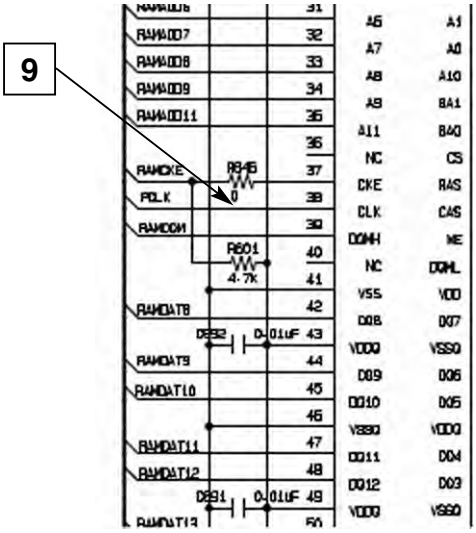
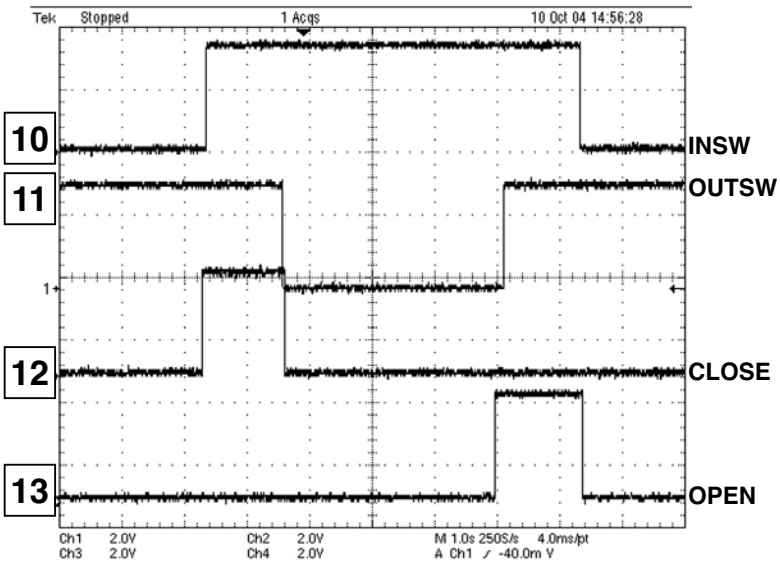
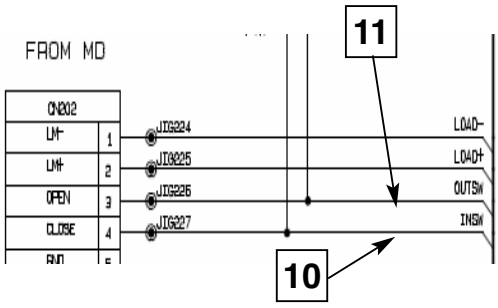


FIG 2-1

3. TRAY OPEN/CLOSE SIGNAL





IC201

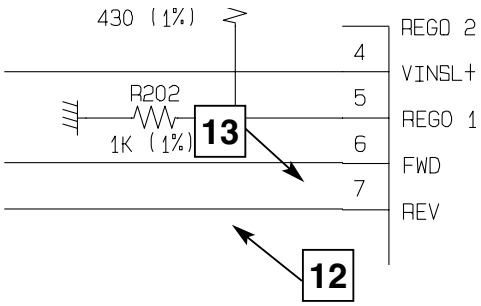


FIG 3-1

4. SLED CONTROL RELATED SIGNAL (NO DISC CONDITION)

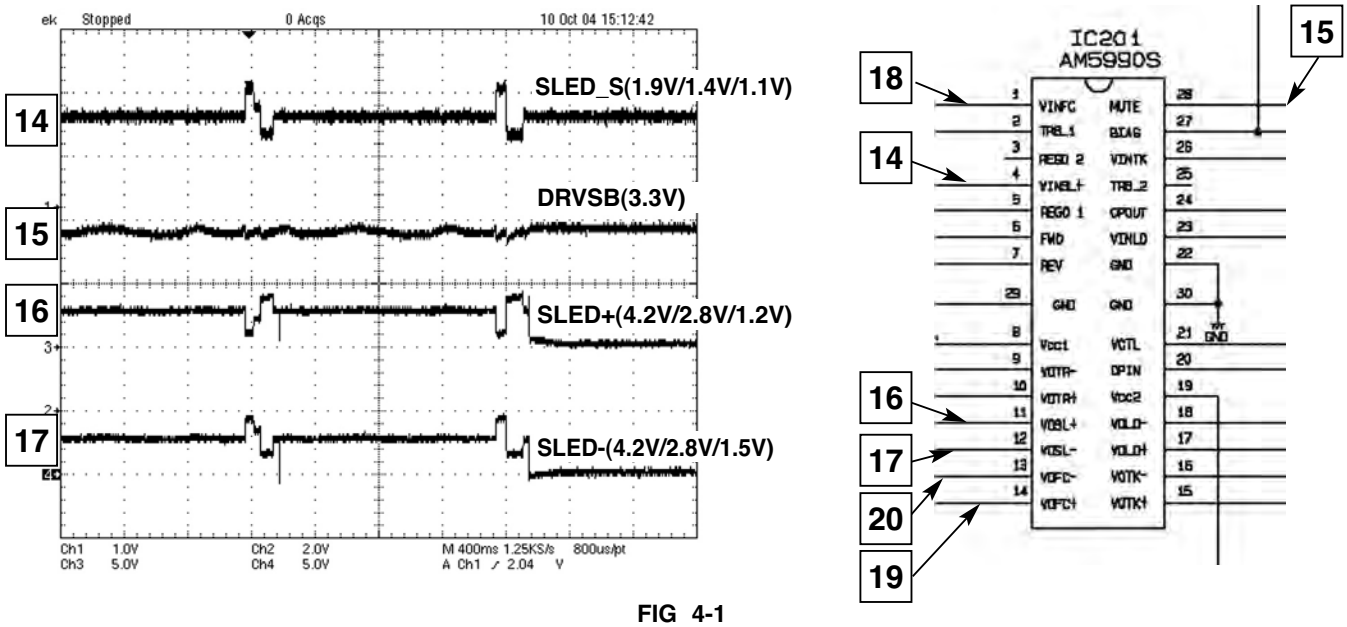


FIG 4-1

5. LENS CONTROL RELATED SIGNAL (NO DISC CONDITION)

FOCUS_S(1.5V/1.4V/1.3V)

FACT+(3.2V/2.7V/2.2V)

FACT-(3.2V/2.7V/2.2V)

FIG 5-1

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

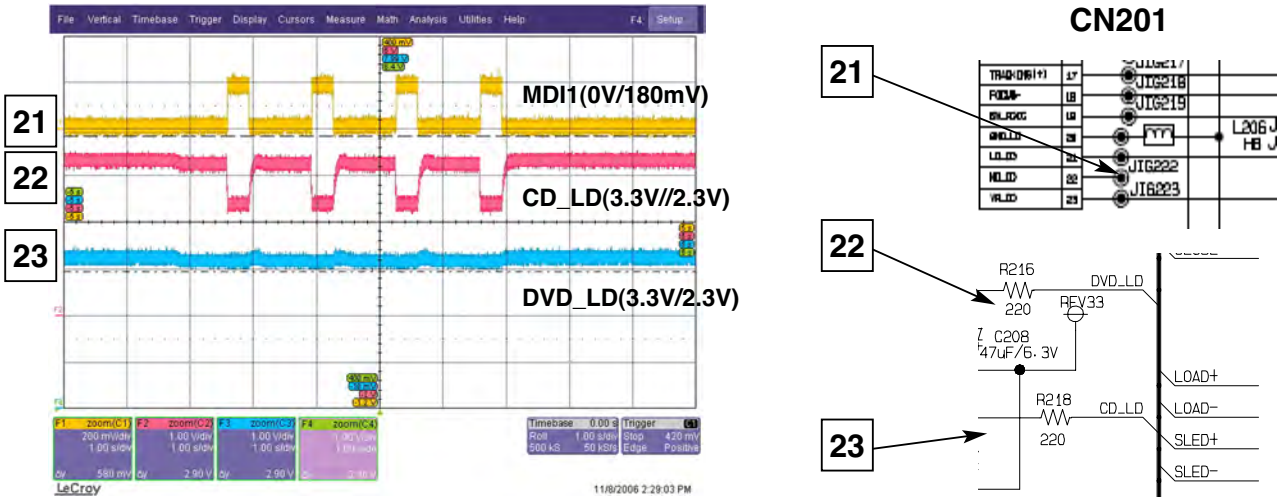


FIG 6-1

7. SPINDLE CONTROL WAVEFORM (NO DISC CONDITION)

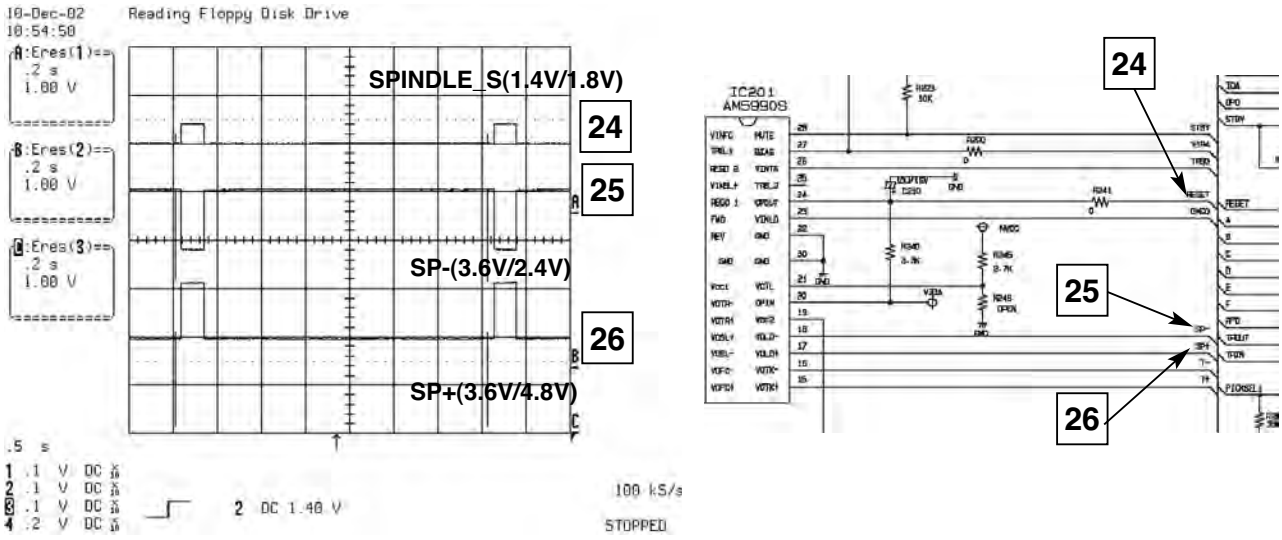


FIG 7-1

8. FOCUS ON WAVEFORM

FIG 8-1 (DVD)

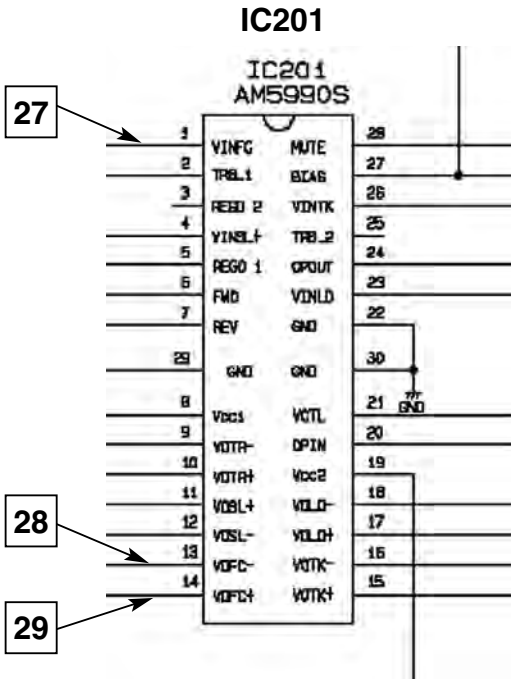


FIG 8-2 (CD)

9. TRACKING CONTROL RELATED SIGNAL (SYSTEM CHECKING)

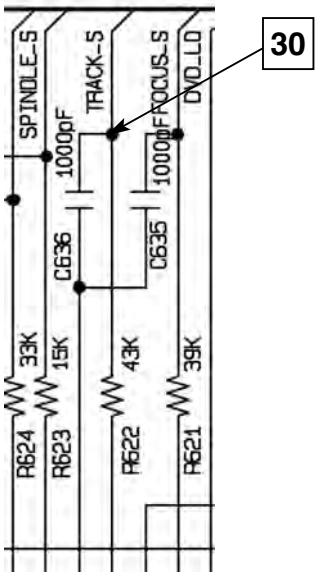


FIG 9-1 (DVD)

P2201

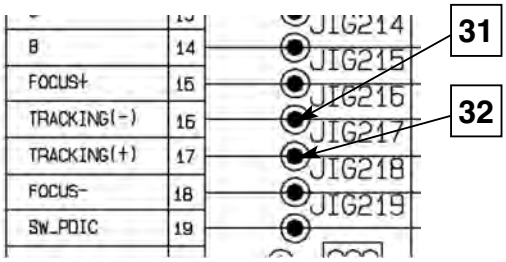


FIG 9-2 (CD)

10. ZR966 AUDIO COAXIAL OUTPUT (SPDIF)

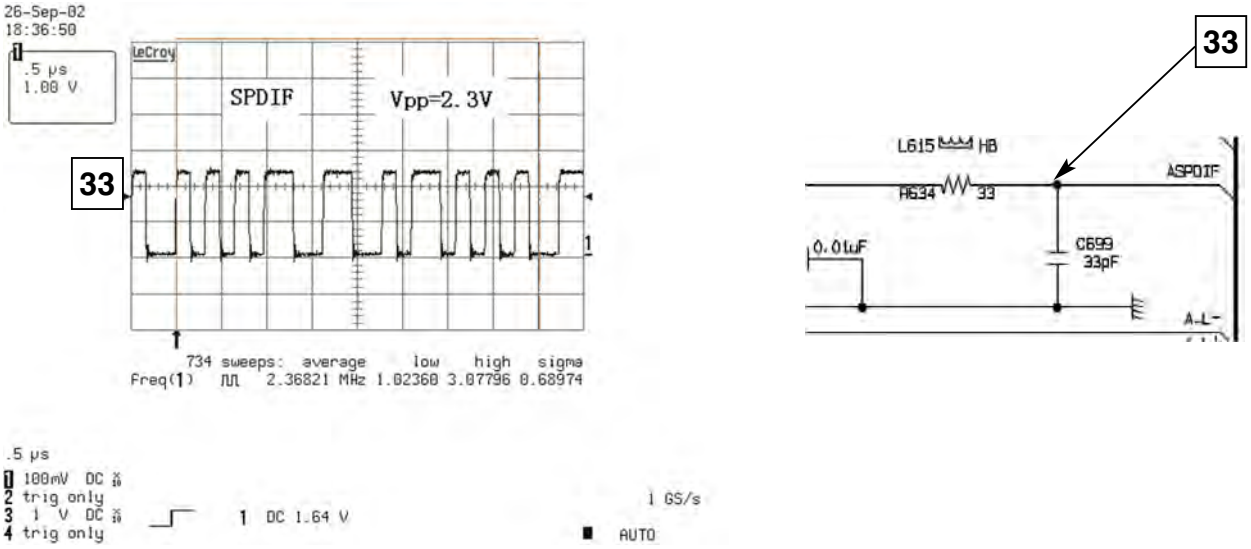


FIG 10-1

11. ZR966 VIDEO OUTPUT WAVEFORM

11-1. 100% COLOR BAR

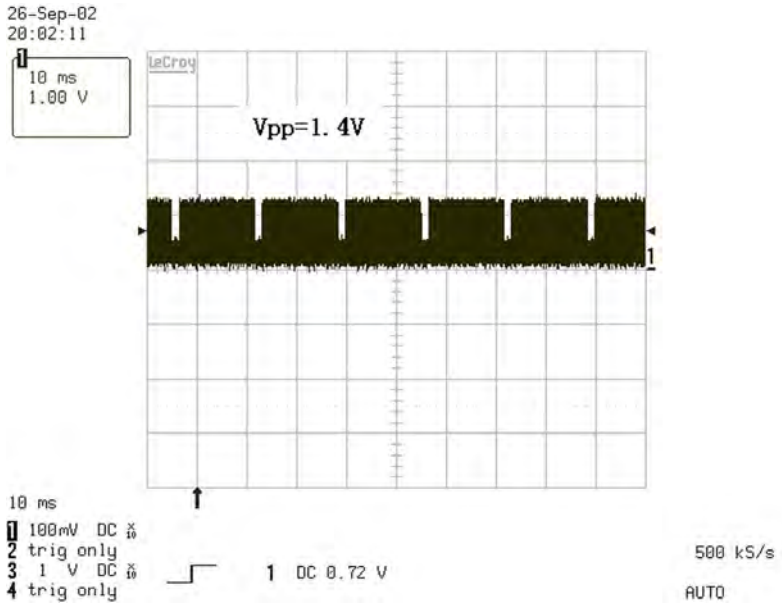


FIG 11-1

11-2. COMPOSITE VIDEO SIGNAL

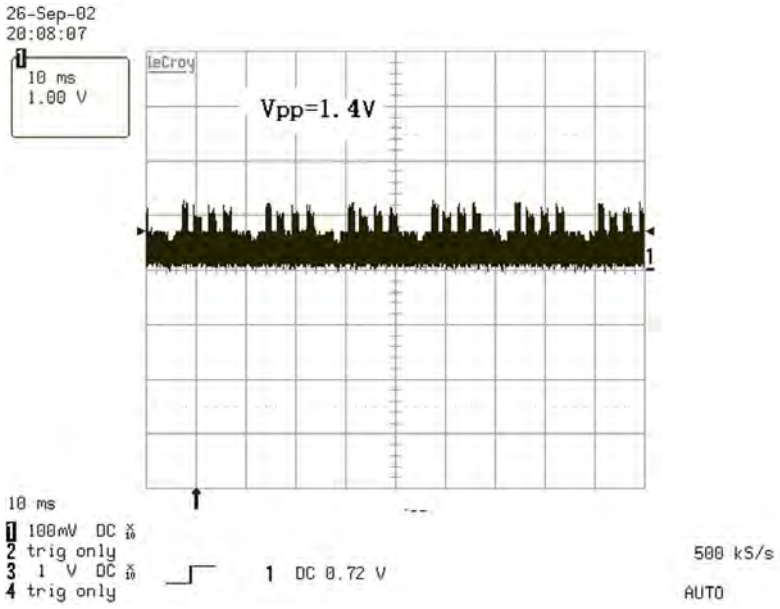


FIG 11-2

12. AUDIO OUTPUT FROM ZR966

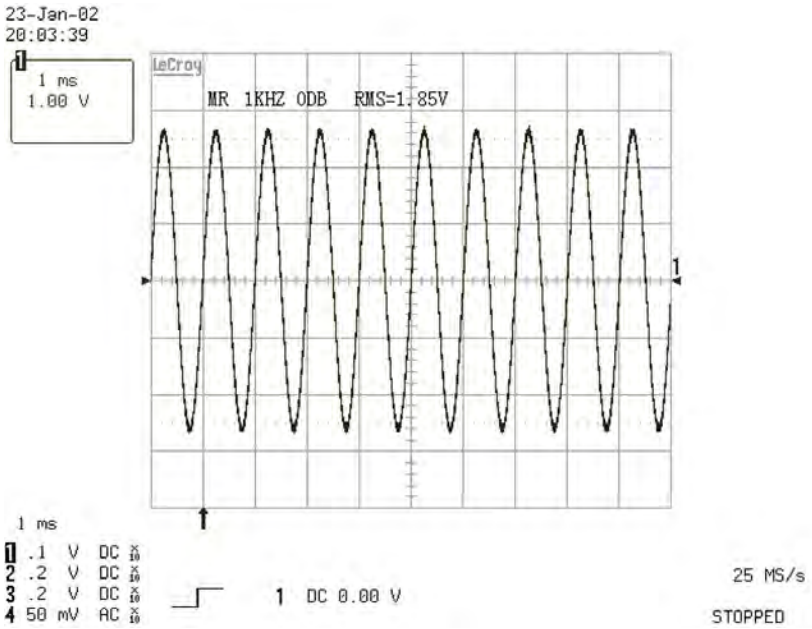
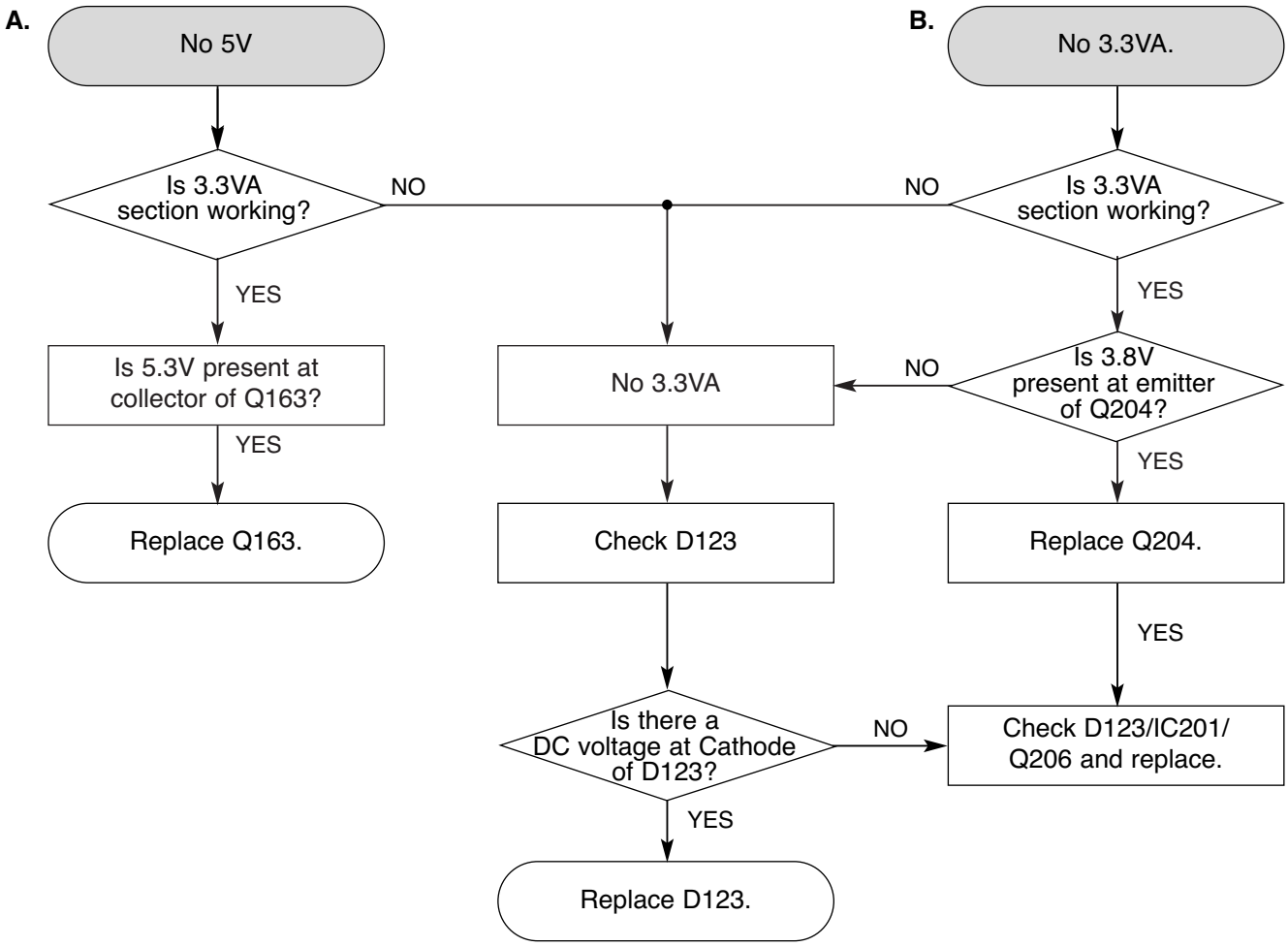


FIG 12-1

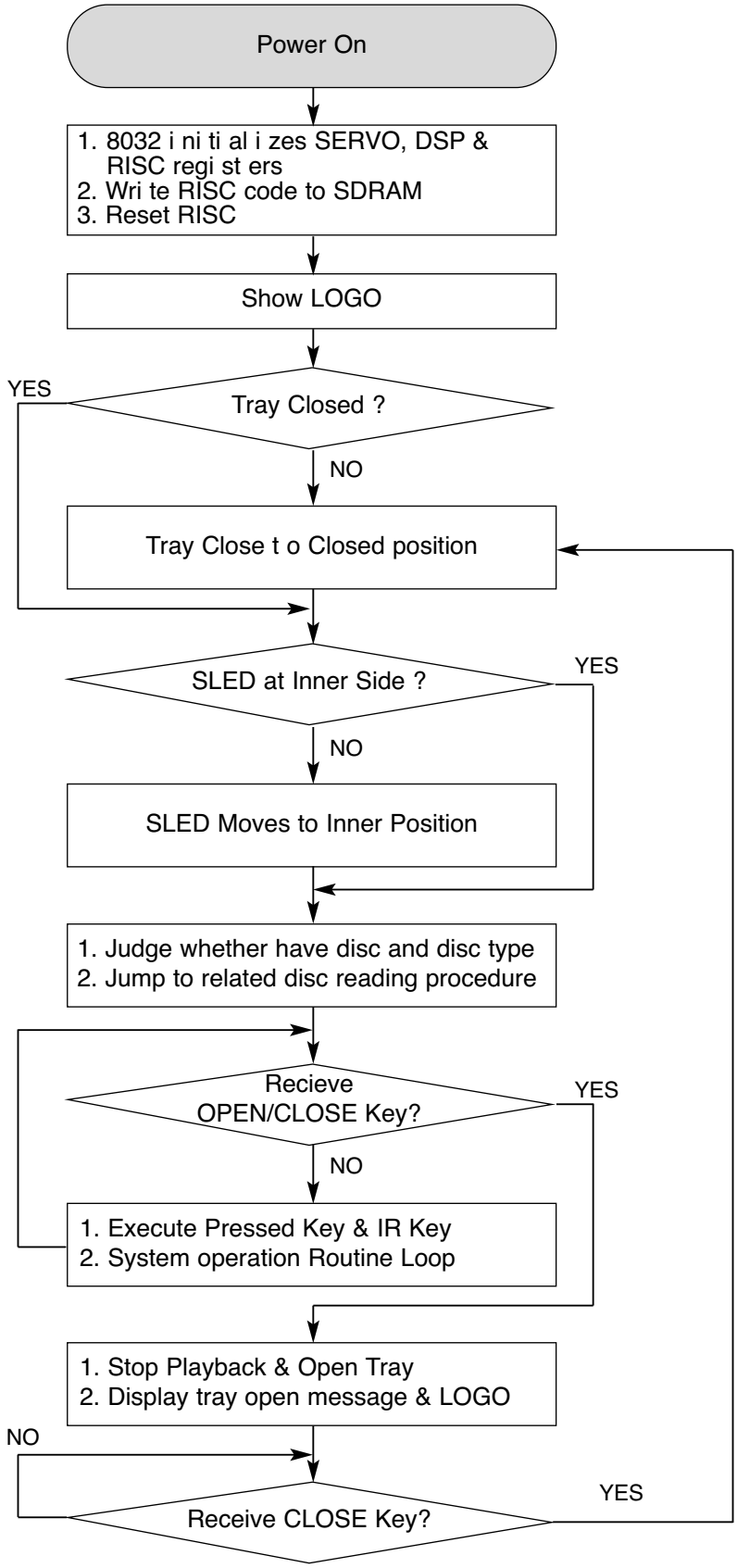
MEMO

DVD PART
ELECTRICAL TROUBLESHOOTING GUIDE

1. POWER CHECK FLOW

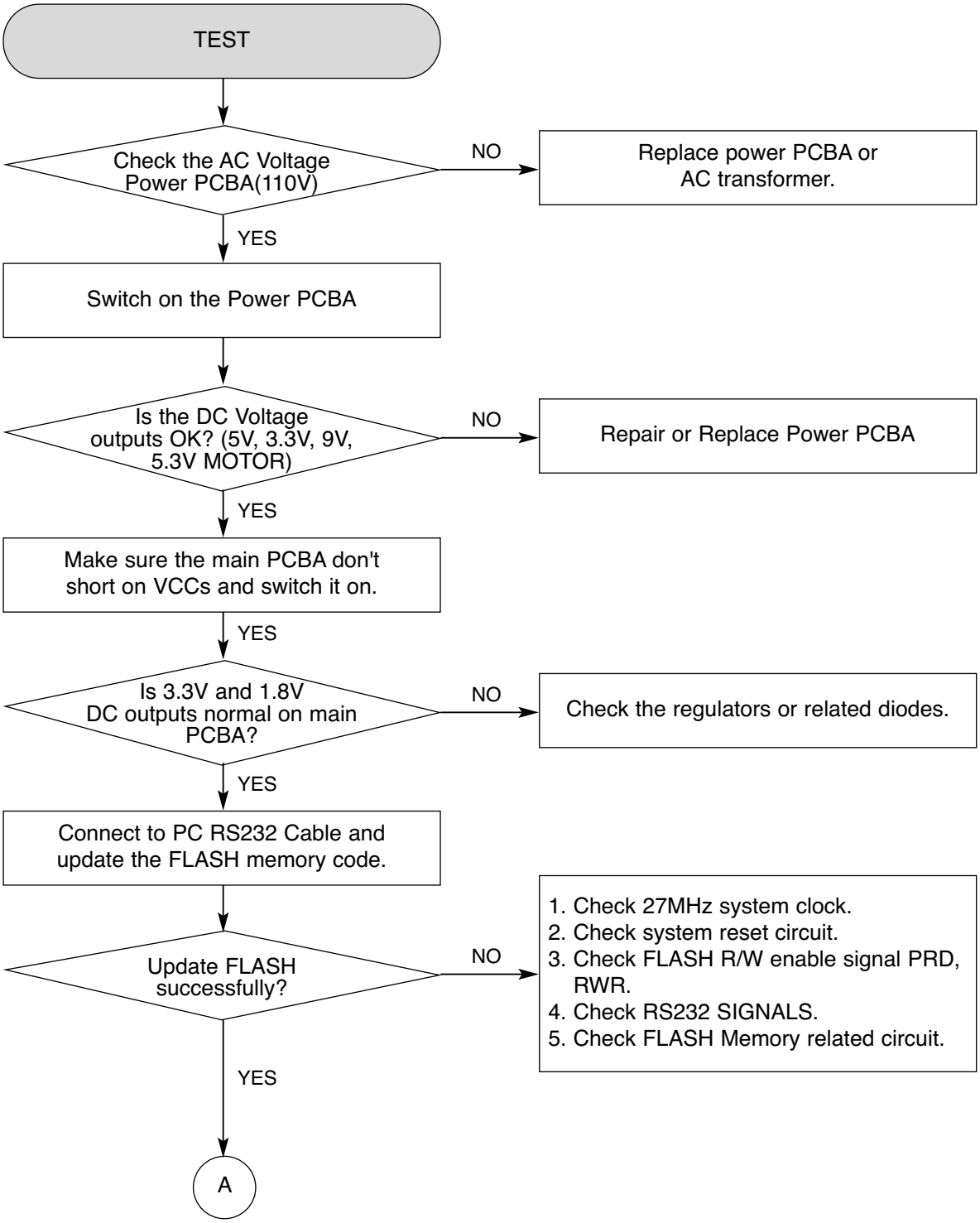


2. SYSTEM OPERATION FLOW

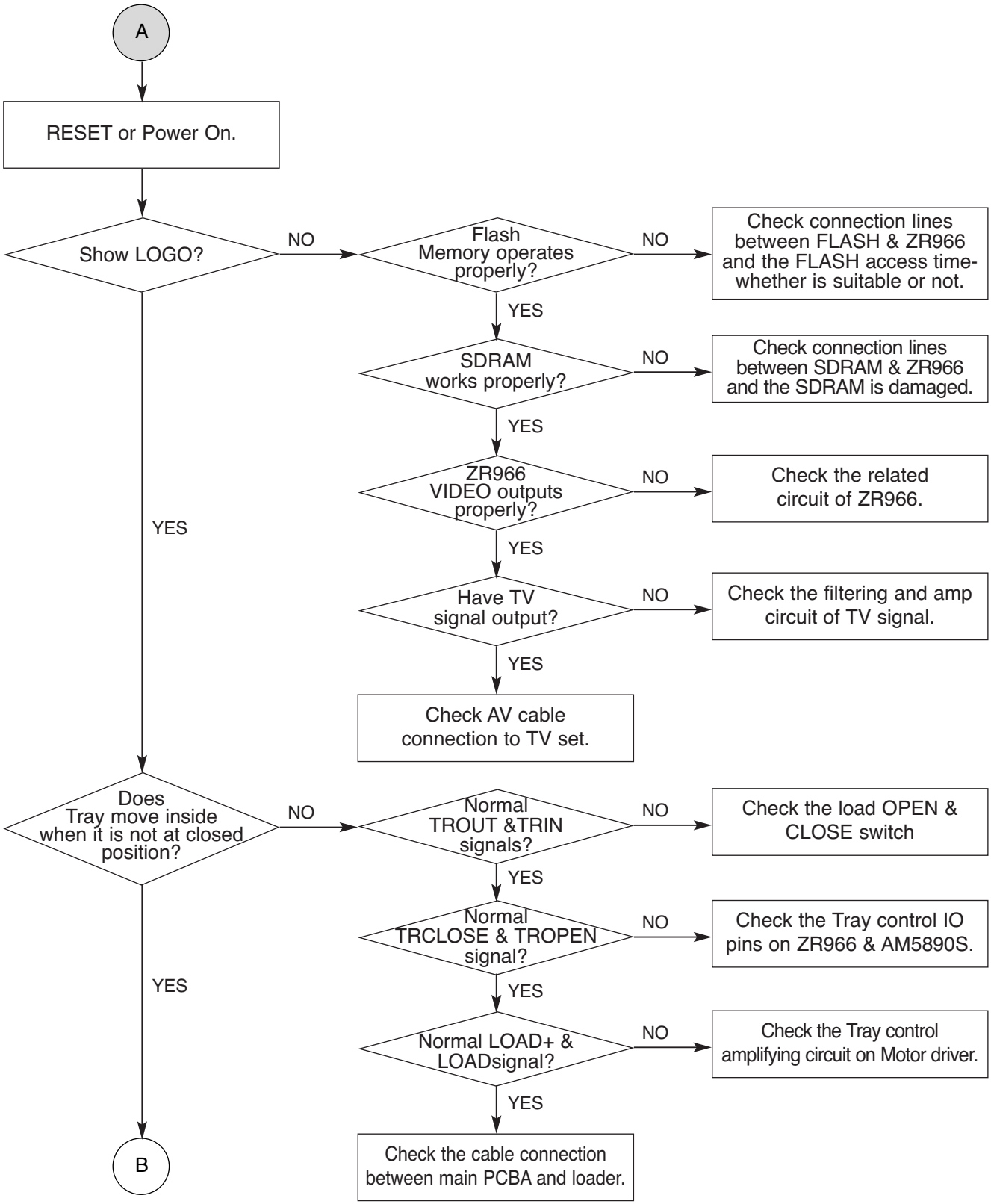


DVD ELECTRICAL TROUBLESHOOTING GUIDE

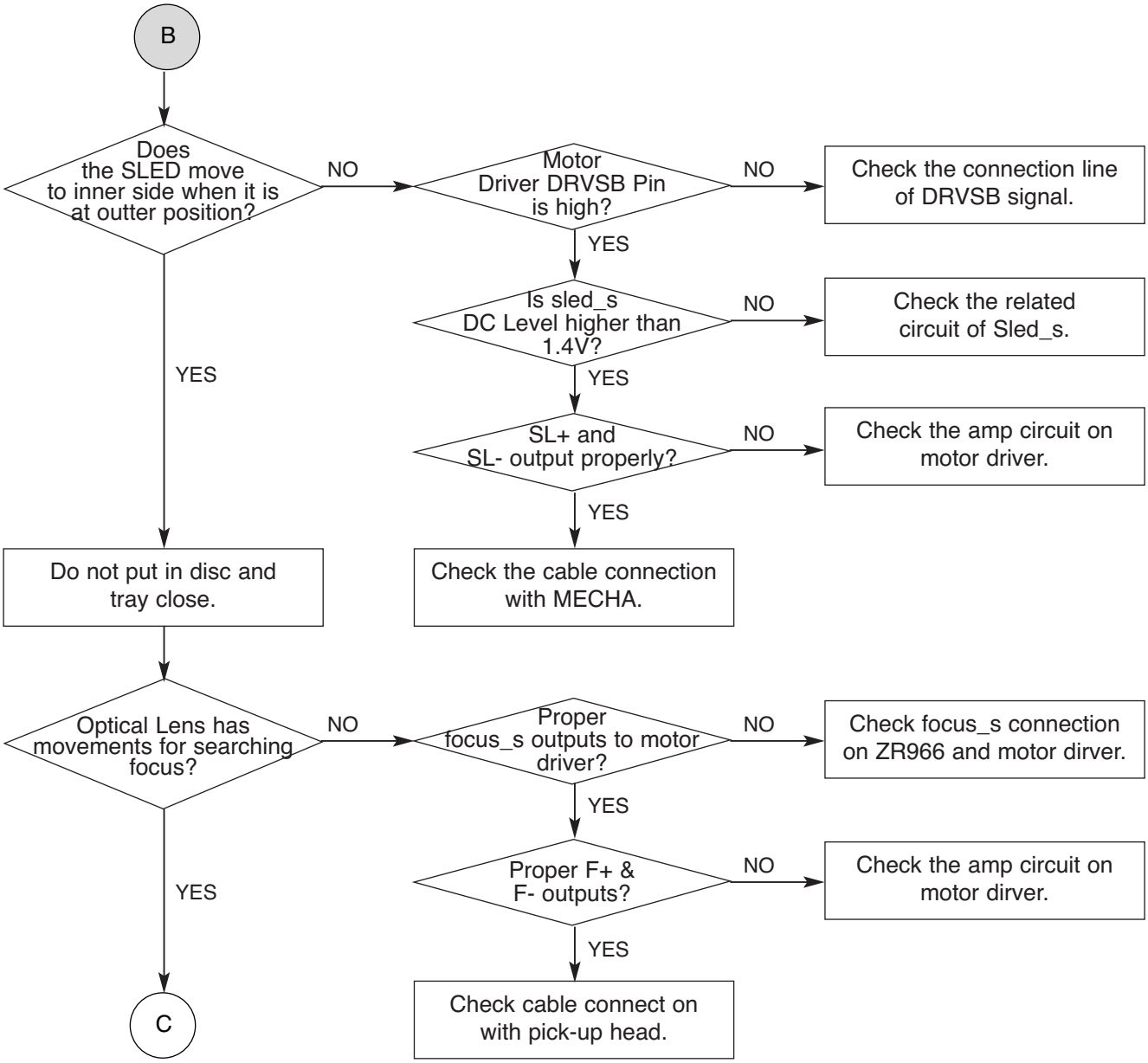
3. SYSTEM TEST FLOW



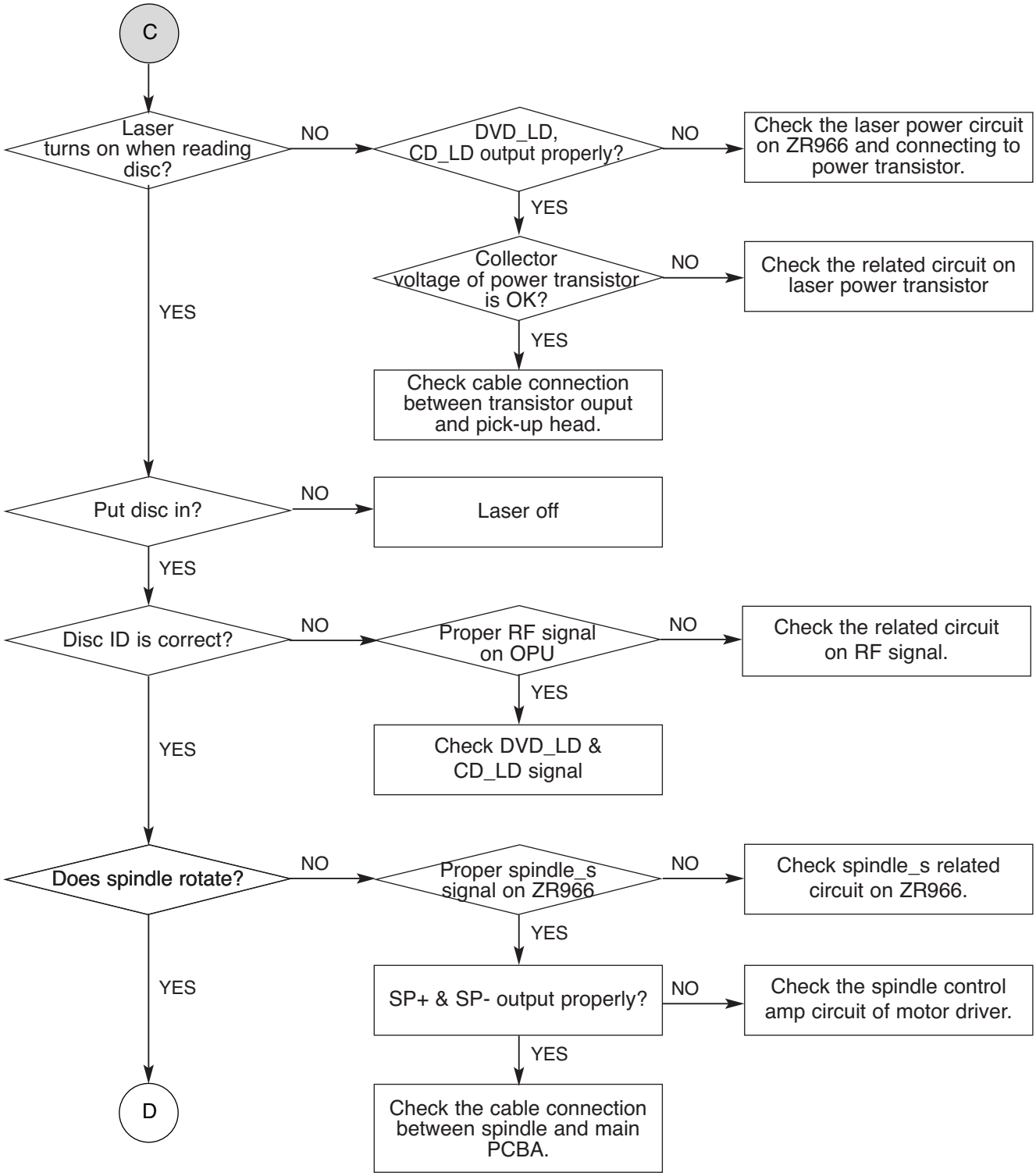
DVD ELECTRICAL TROUBLESHOOTING GUIDE



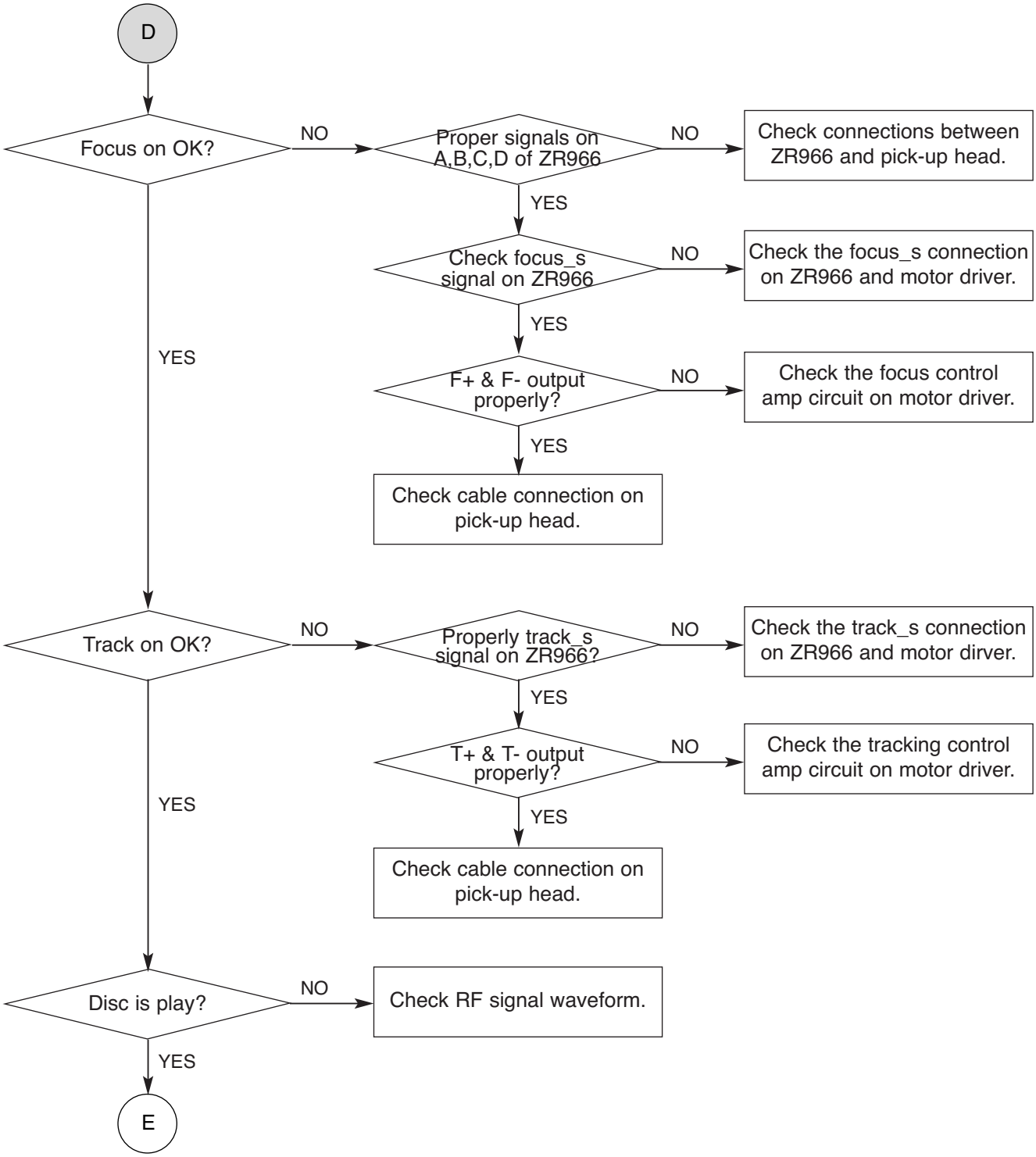
DVD ELECTRICAL TROUBLESHOOTING GUIDE



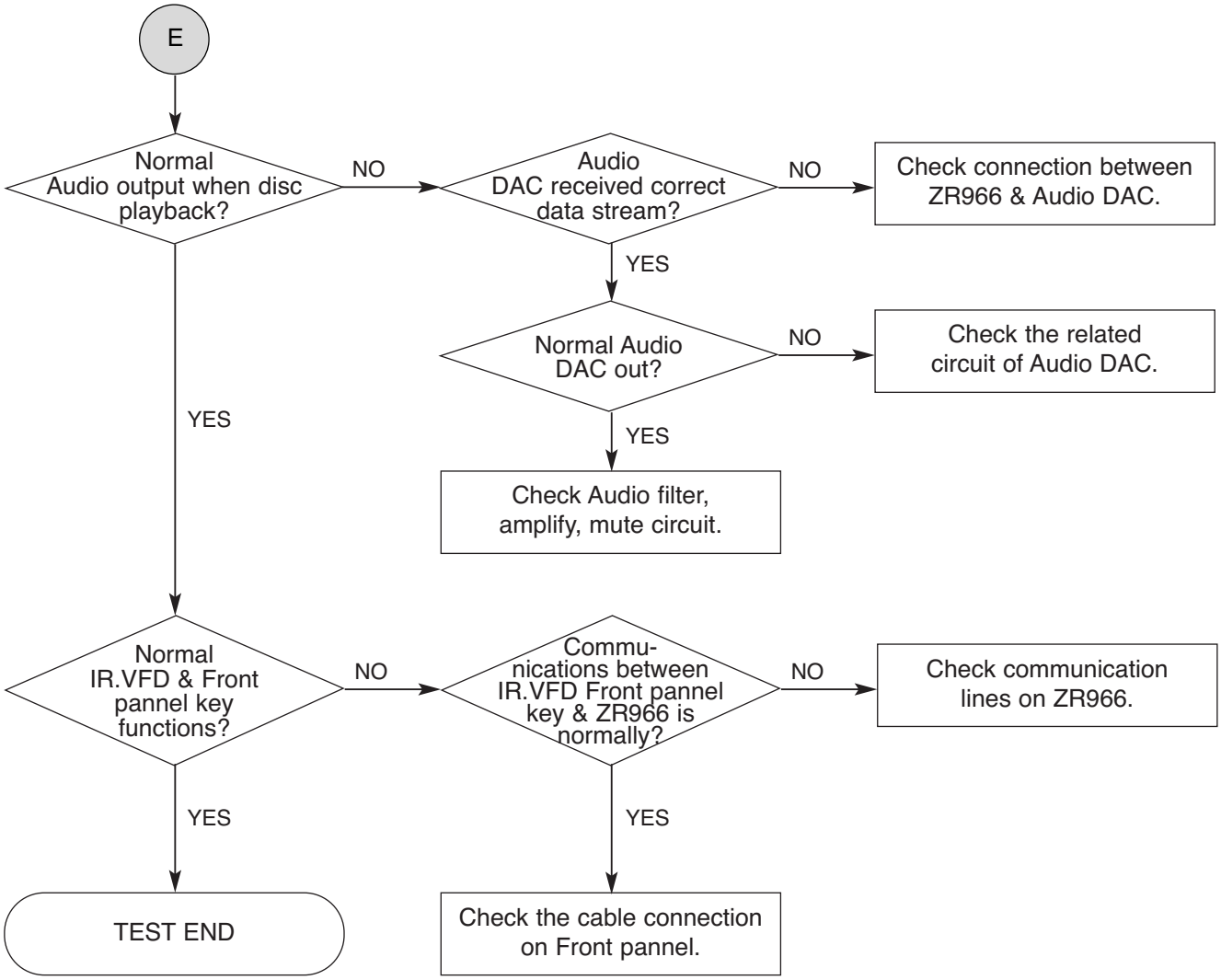
DVD ELECTRICAL TROUBLESHOOTING GUIDE



DVD ELECTRICAL TROUBLESHOOTING GUIDE



DVD ELECTRICAL TROUBLESHOOTING GUIDE



DETAILS AND WAVEFORMS ON SYSTEM TEST AND DEBUGGING

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

1-1. ZR966 main clock is at 27MHz (X601)

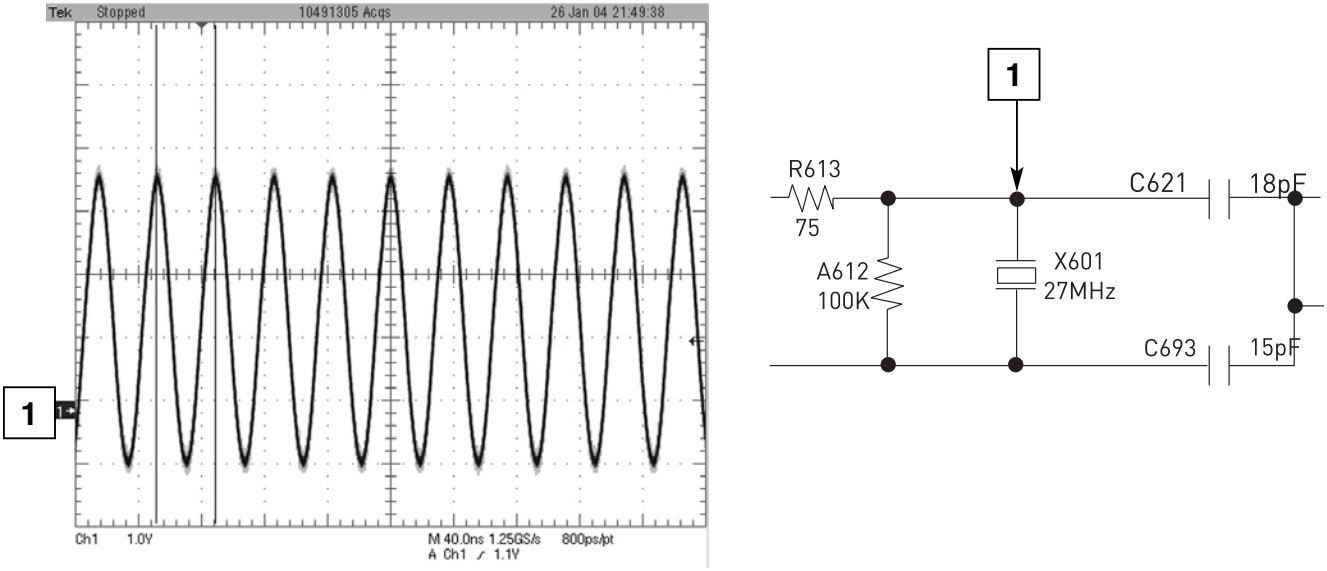


FIG 1-1

1-2. ZR966 reset is active high.

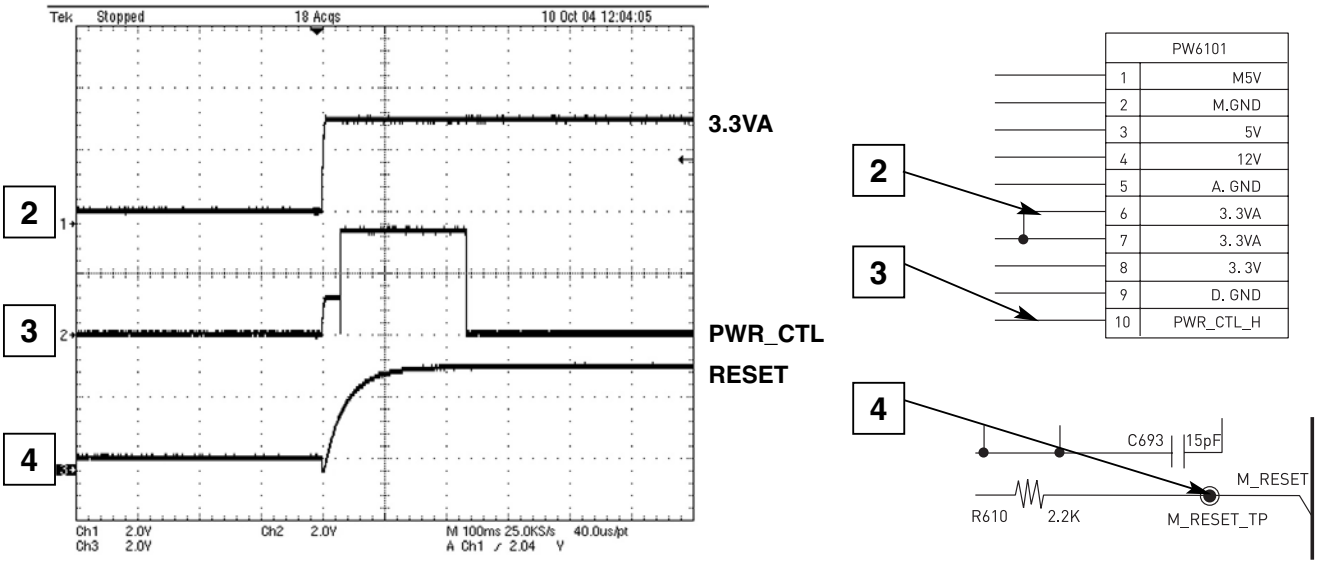
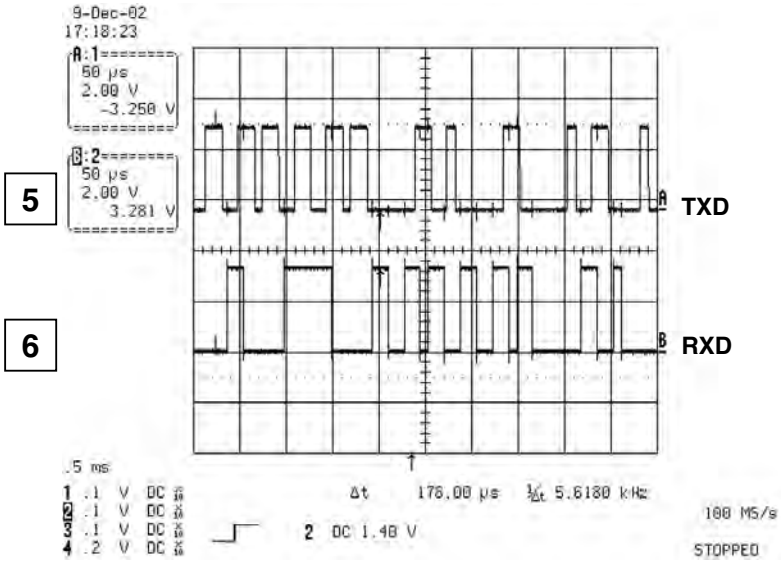


FIG 1-2

1-3. RS232 waveform during procedure (Downloading)



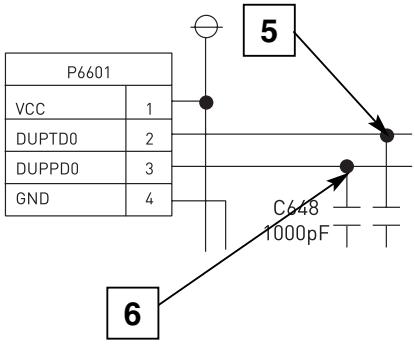
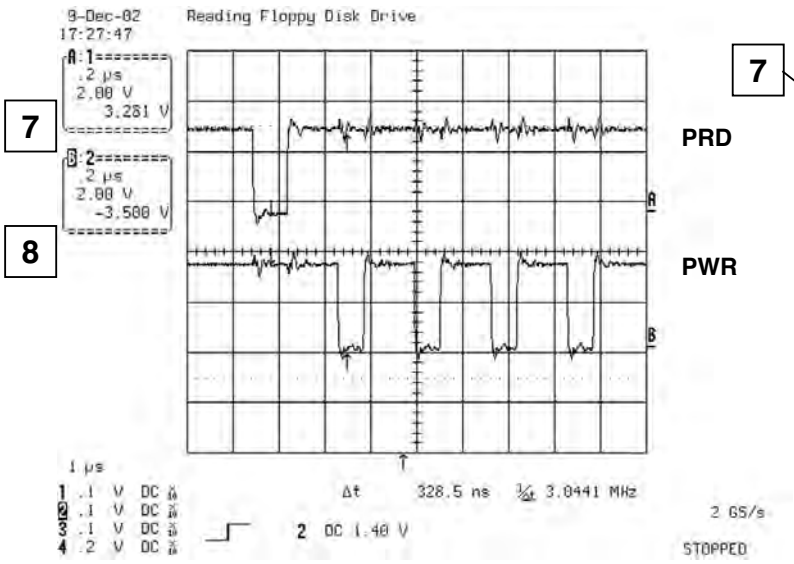


FIG 1-3

1-4. Flash R/W enable signal during download (Downloading)



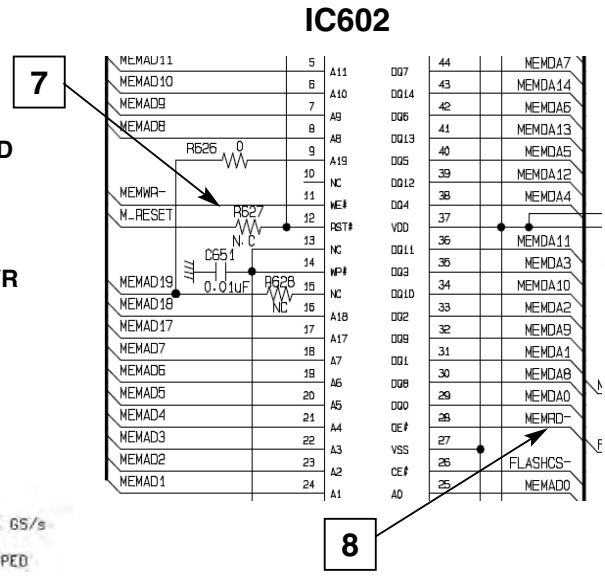
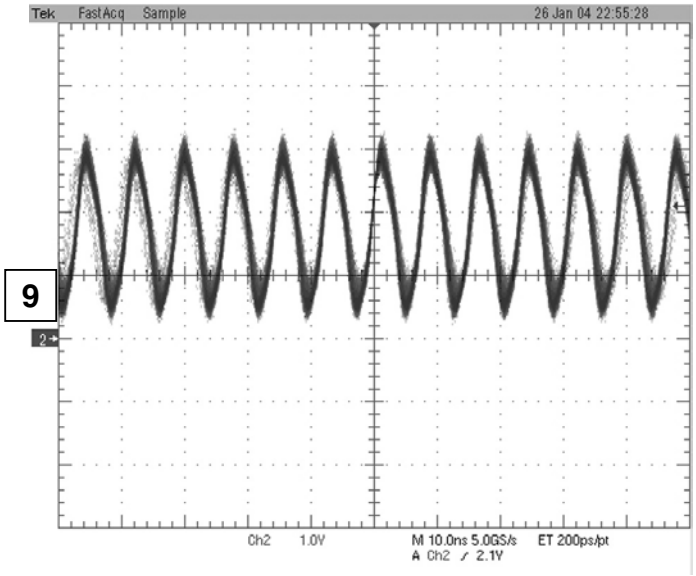


FIG 1-4

2. SDRAM CLOCK

DCLK = 128MHz, Vp-p=2.2, Vmax=2.7V



IC603

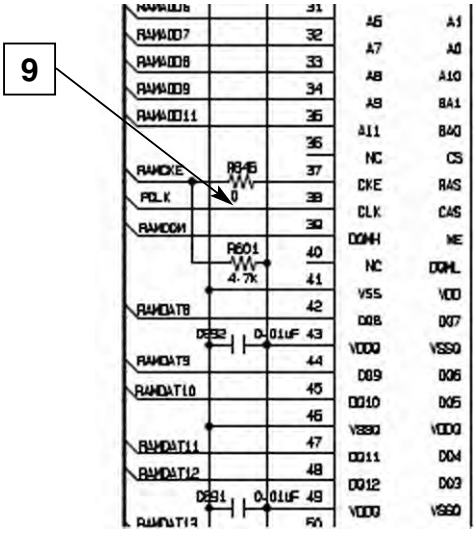
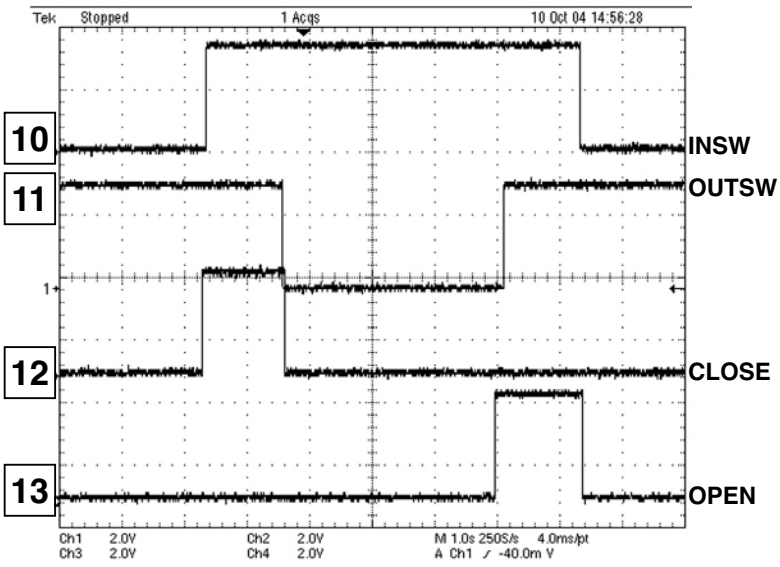
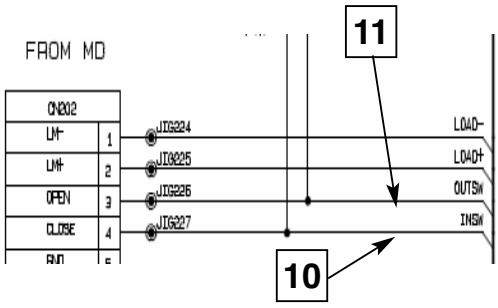


FIG 2-1

3. TRAY OPEN/CLOSE SIGNAL





IC201

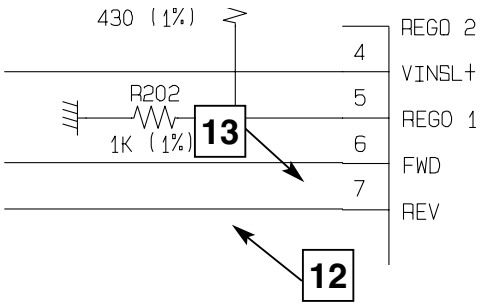


FIG 3-1

4. SLED CONTROL RELATED SIGNAL (NO DISC CONDITION)

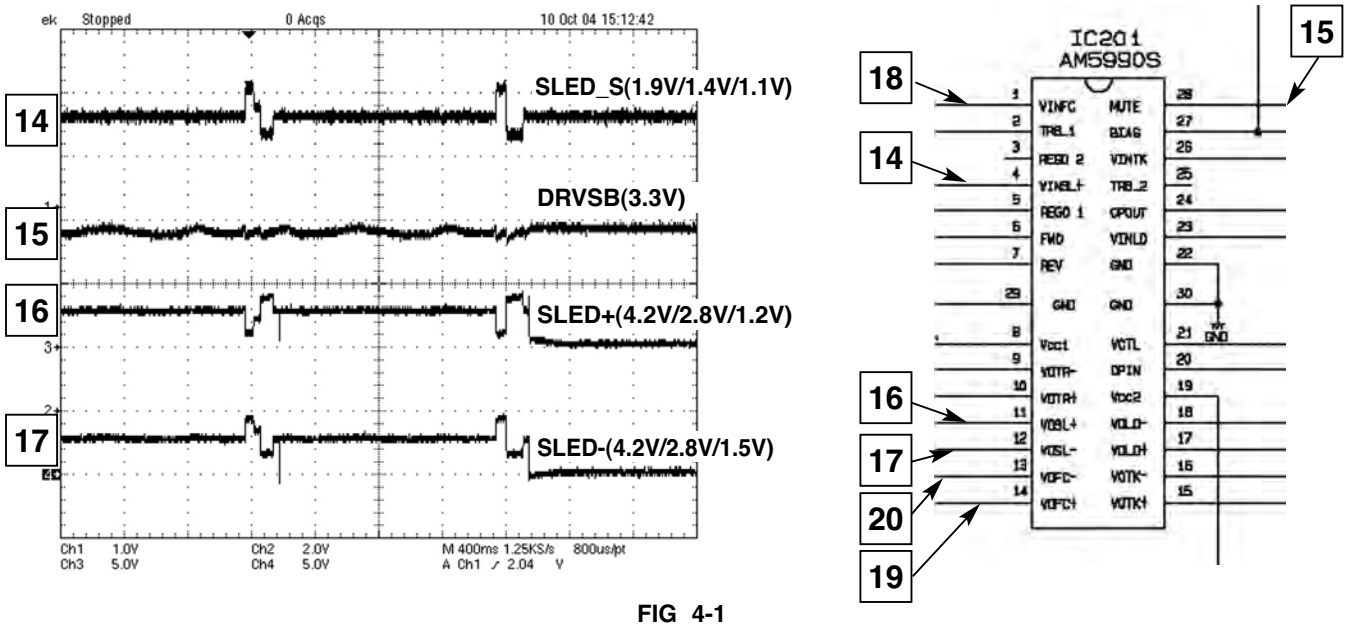


FIG 4-1

5. LENS CONTROL RELATED SIGNAL (NO DISC CONDITION)

FOCUS_S(1.5V/1.4V/1.3V)

FACT+(3.2V/2.7V/2.2V)

FACT-(3.2V/2.7V/2.2V)

FIG 5-1

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

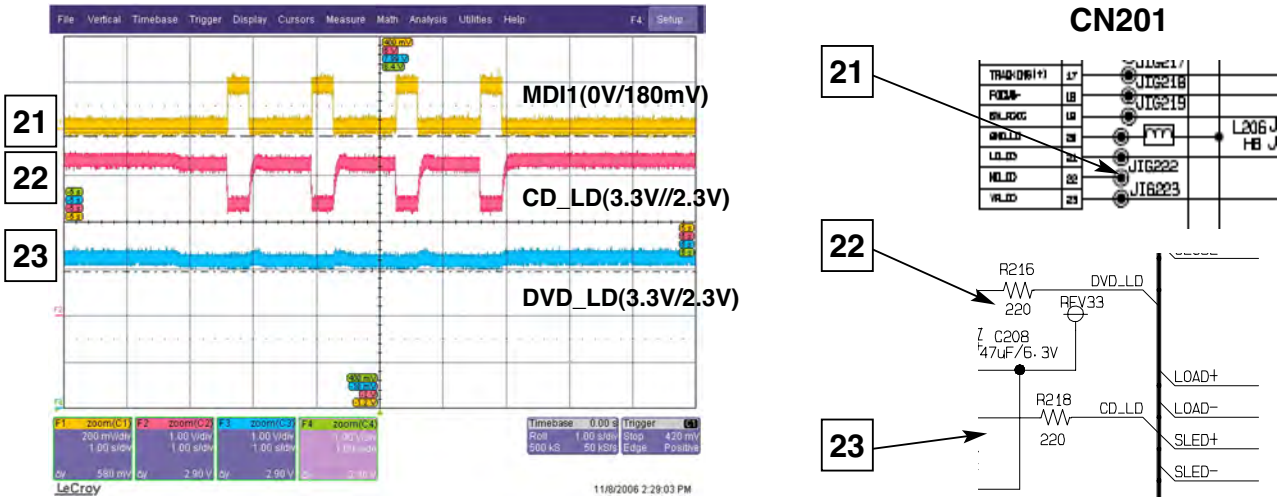


FIG 6-1

7. SPINDLE CONTROL WAVEFORM (NO DISC CONDITION)

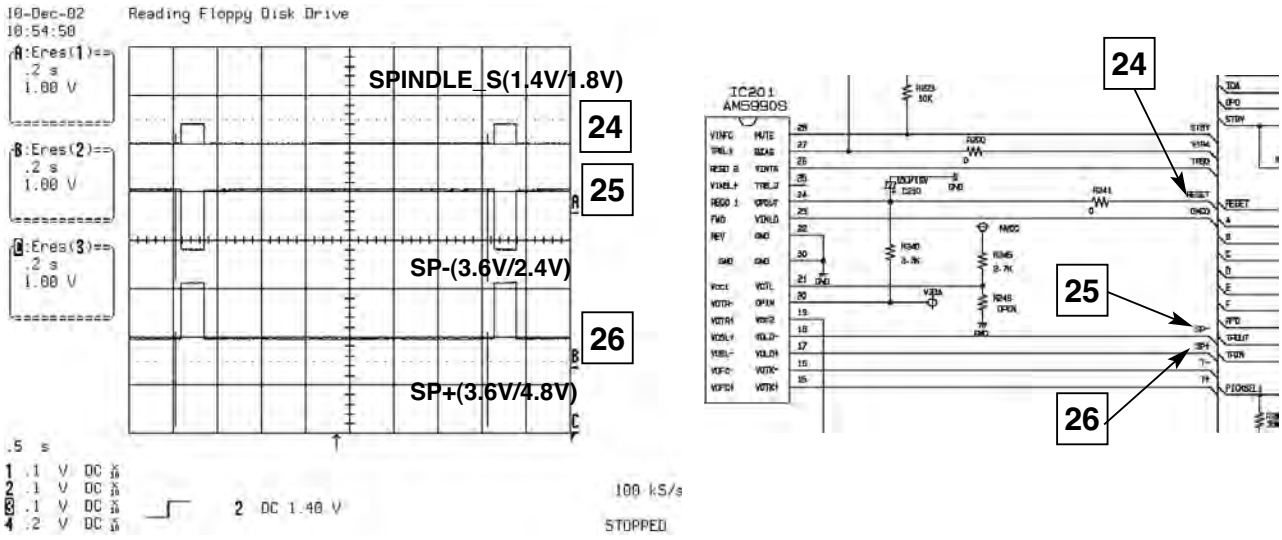


FIG 7-1

8. FOCUS ON WAVEFORM

FIG 8-1 (DVD)

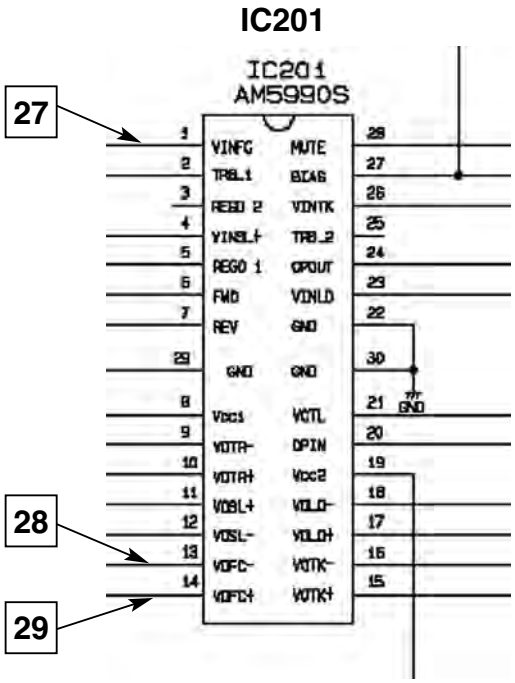


FIG 8-2 (CD)

9. TRACKING CONTROL RELATED SIGNAL (SYSTEM CHECKING)

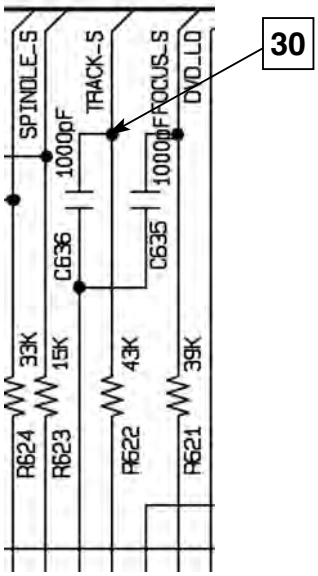


FIG 9-1 (DVD)

P2201

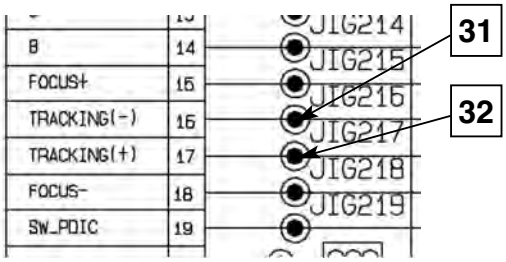


FIG 9-2 (CD)

10. ZR966 AUDIO COAXIAL OUTPUT (SPDIF)

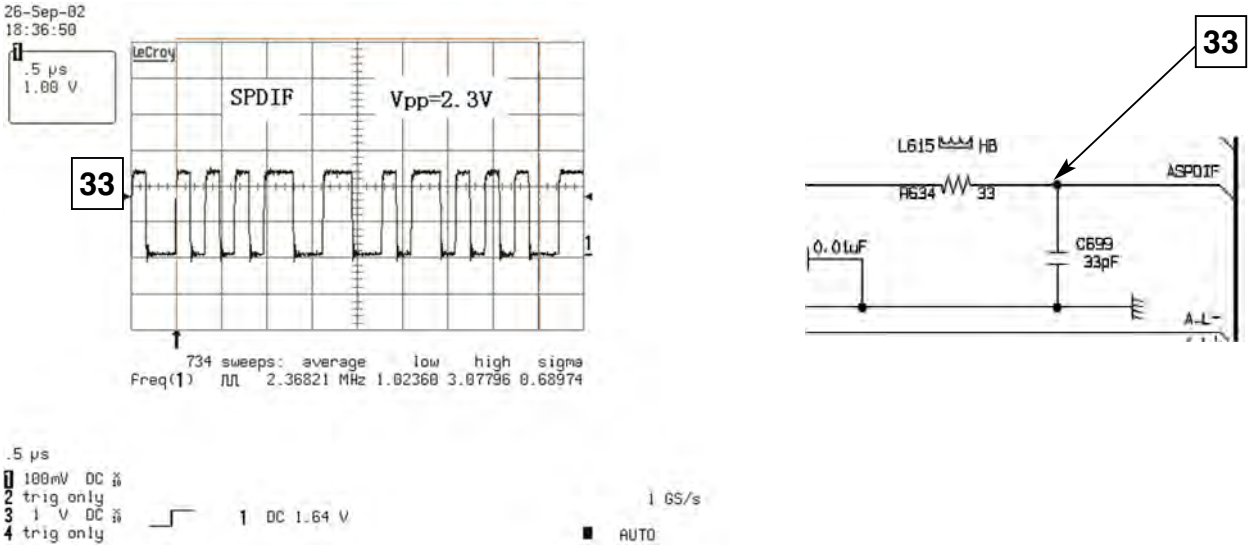


FIG 10-1

11. ZR966 VIDEO OUTPUT WAVEFORM

11-1. 100% COLOR BAR

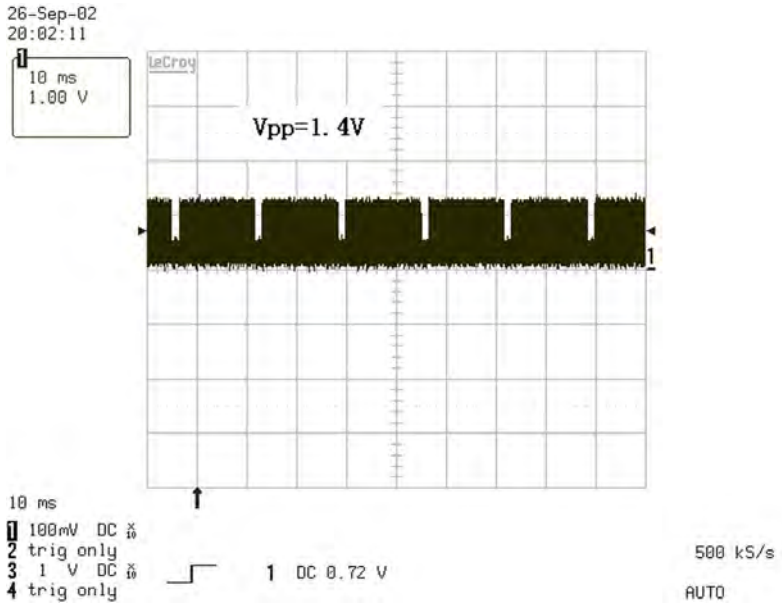


FIG 11-1

11-2. COMPOSITE VIDEO SIGNAL

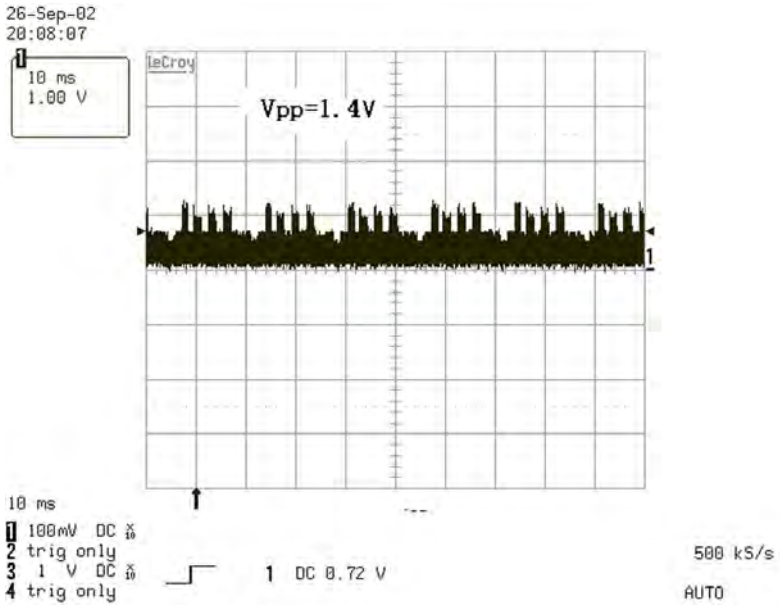


FIG 11-2

12. AUDIO OUTPUT FROM ZR966

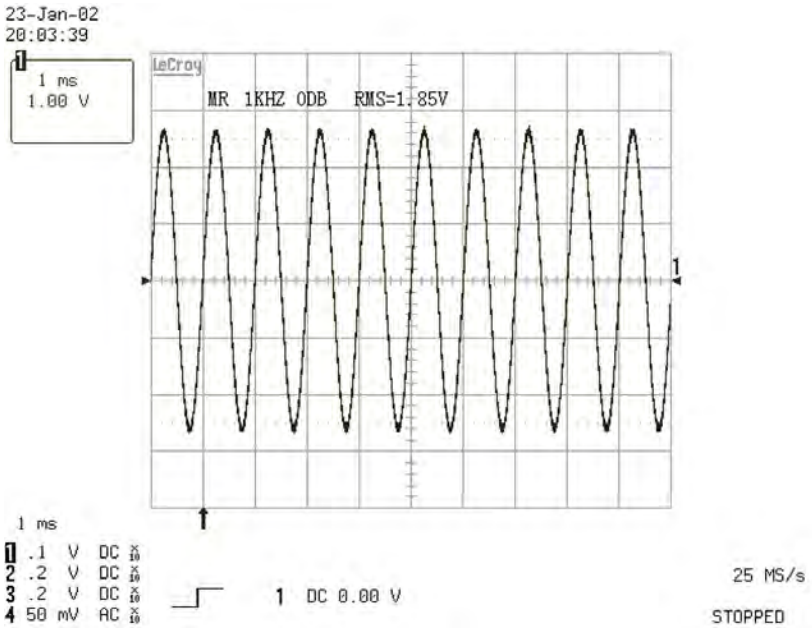


FIG 12-1

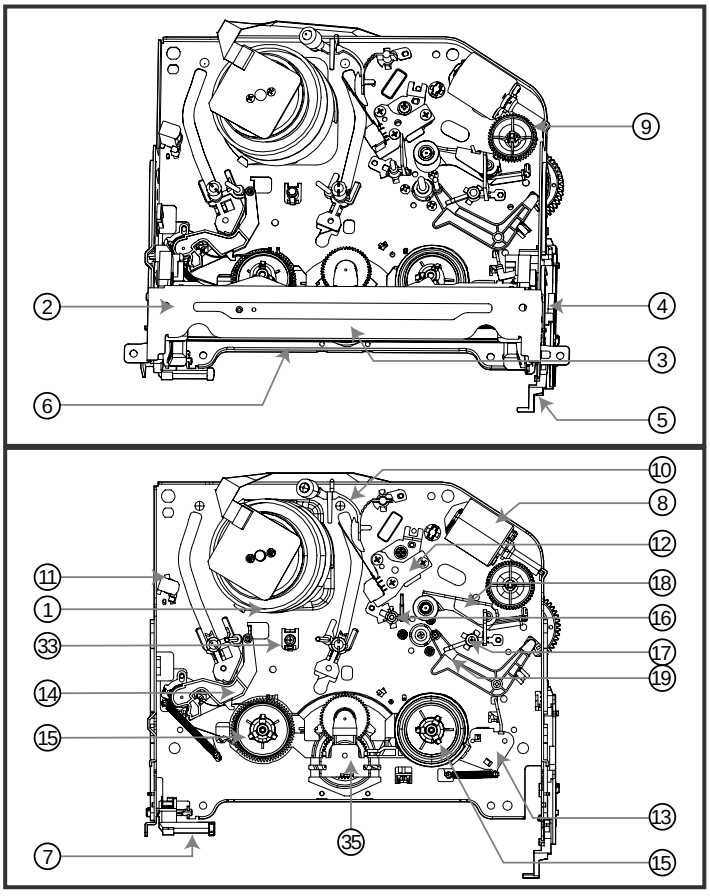
MEMO

SECTION 4 MECHANISM OF VCR PART(D-37)

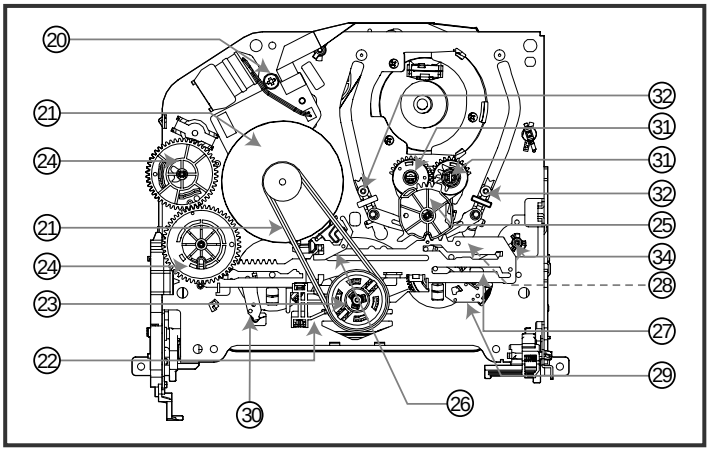
CONTENTS

POSITION DRAWING OF DECK MECHANISM PARTS

• Top View



• Bottom View



Order Of Dis-assembled / Parts firstly Disassembled		Part	Fixing Type	Ref. Drawings	Position
	1	Drum Assembly	3 screws	A-1	T
	2	Plate Top	2 hooks	A-2	T
2	3	Holder Assembly CST	6 chasses	A-2	T
2,3	4	Gear Assembly Rack F/L	1 hook	A-2	T
2,3,4	5	Opener Door	Chassis Hole	A-2	T
2,3,4,5	6	Arm Assembly F/L	Chassis Hole	A-2	T
	7	Lever Assembly S/W	Chassis Hole, 1 hook	A-2	T
	8	Motor Assembly L/D	1 screw	A-3	T
	9	Gear Wheel	2 hooks	A-3	T
	10	Arm Assembly Cleaner	Chassis Embossing	A-3	T
	11	Head F/E	Chassis Embossing	A-3	T
	12	Base Assembly A/C Head	1 screw	A-3	T
2,3	13	Brake Assembly T	1 hook	A-4	T
2,3	14	Arm Assembly Tension	1 hook	A-4	T
2,3,13,14	15	Reel S / Reel T	Shaft	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	Arm T/up	1 hook	A-5	T
	20	Supporter, capstan	Chassis Hole	A-6	B
17,18	21	Belt Capstan/Motor Capstan	3 screws	A-6	B
	22	Lever F/R	Locking Tab	A-6	B
21, 22	23	Clutch Assembly D37	Washer	A-6	B
	24	Gear Drive/Gear Cam	Washer/Hook	A-7	B
	25	Gear Sector	Hook	A-7	B
21	26	Brake Assembly Capstan	Chassis Hole	A-7	B
21,22,23, 24,2526	27	Plate Slider	Chassis Guide	A-7	B
21,22,23, 24,2526,27	28	Lever Tension	1 Hook	A7	B
21,22,23, 24,2526,27	29	Lever Spring	1 Hook	A-7	B
21,22,23, 24,2526,27	30	Lever Brake	1 Hook	A-7	B
25	31	Gear Assembly P2/ Gear Assembly P3	Bass	A-8	B
2, 3, 14, 25, 31	32	Base Assembly P2 /Base Assembly P3	6 Chasses	A-8	B
25, 31	33	Base Loading	3 Hooks	A-8	B
2,3,14	34	Base Tension	Chassis Embossing	A-9	T
	35	Arm Assembly Idler Jog	Locking Tab	A-9	T

T:Top, B:Bottom

NOTE : Assembly order is a reverse of disassembly order.

(1) For assembly, check the assembly mode is accurate.
(2) Parts firstly disassembled indicate parts firstly disassembled in disassembly of related parts.

DISASSEMBLY AND ASSEMBLY OF DECK MECHANISM

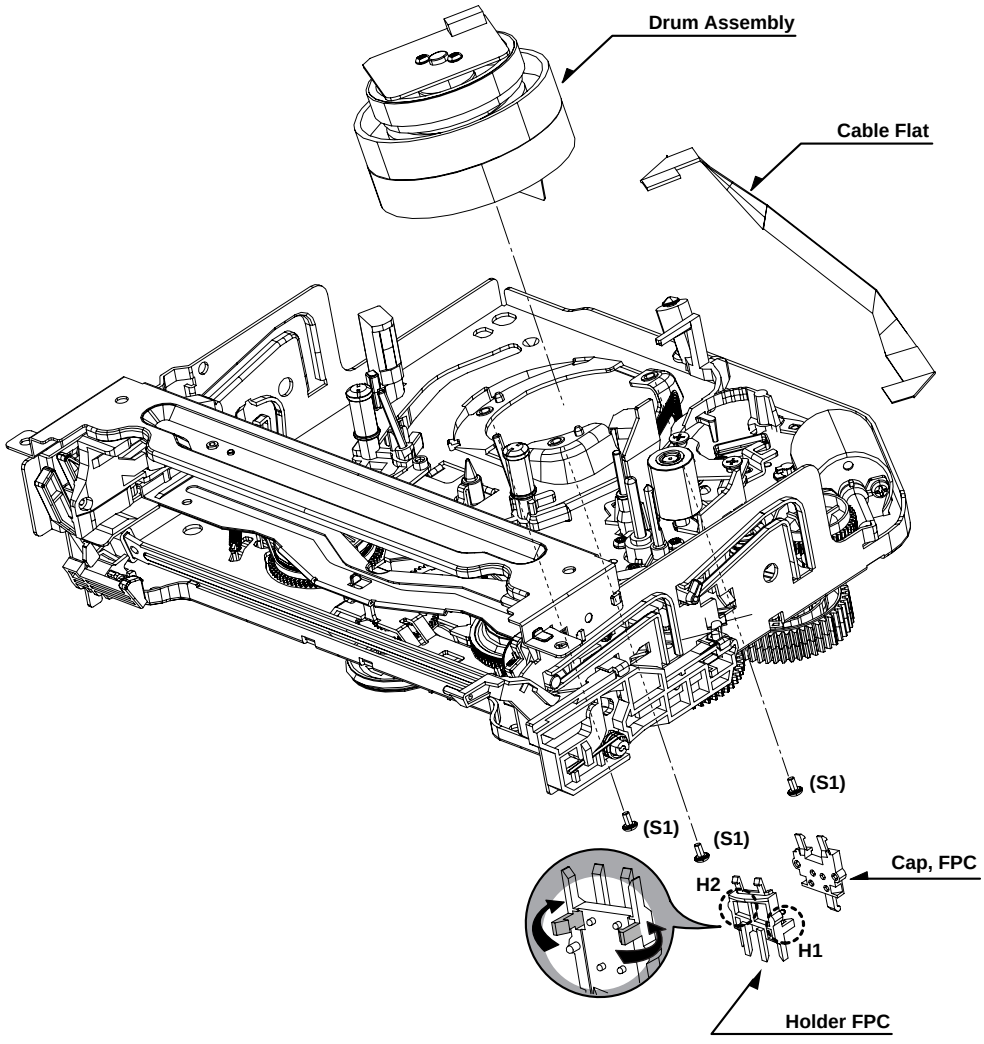
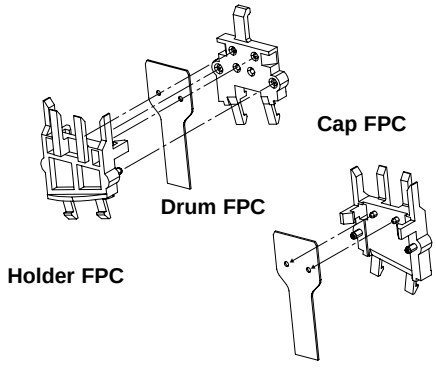


Fig. A-1

1. Disassembly of Drum Assembly (Figure A-1)

1) Separate cable flat from the Drum FPC and the Capstan Motor.
2) Release 3 screws (S1) on the bottom side of the chassis, and separate the drum assembly.
3) Release the hooks (H1, H2) and separate both the holder FPC and the Cap FPC (disassemble if necessary).

Cautions in assembly of FPC



Assembly shape seen in the reverse direction

DISASSEMBLY AND ASSEMBLY OF DECK MECHANISM

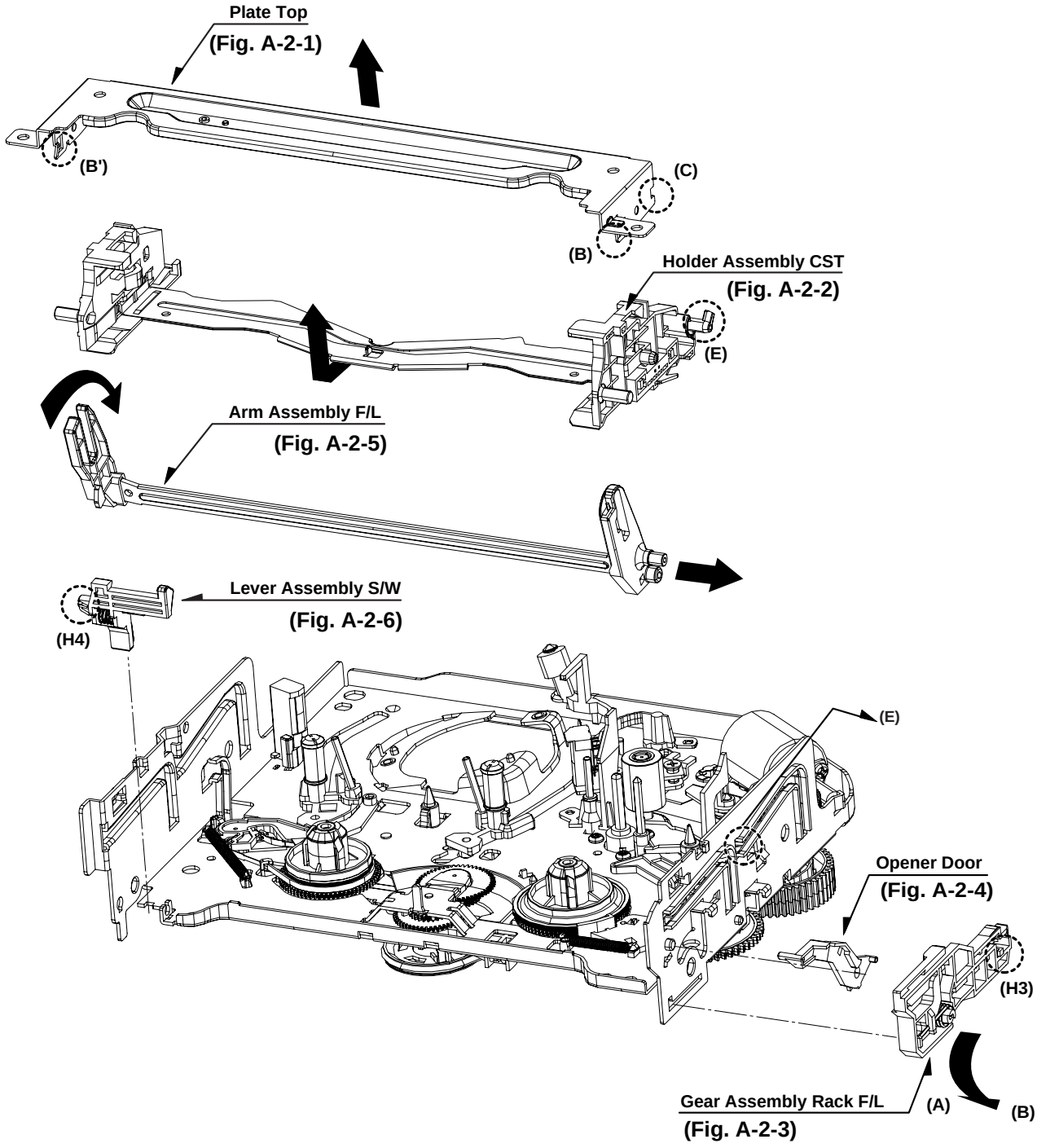


Fig. A-2

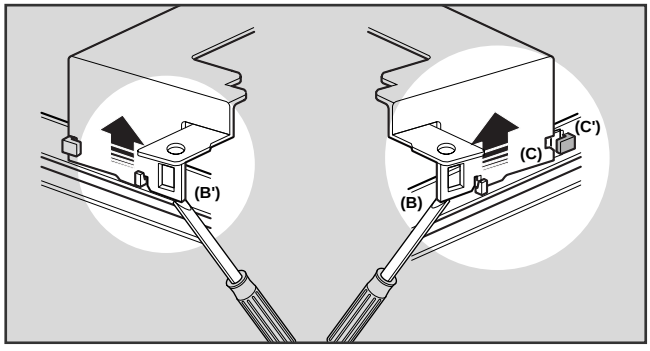
DISASSEMBLY AND ASSEMBLY OF DECK MECHANISM

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

1) Separate the right part while leaning back the (B) part of the plate top toward the arrow direction.
2) Separate the left part while leaning back the (B') part of the plate top toward the arrow direction.
(Tool used: Tool such as (-) driver, auger, etc with pointed or flat end)

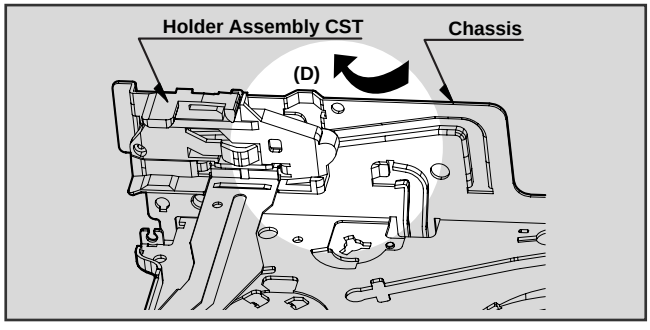
CAUTIONS

Assemble while pressing the (C), (C') part after corresponding them as in drawing.



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

1) Firstly separate the left part from the groove on the (D) part of chassis while moving the holder assembly CST toward the arrow direction.



2) Separate the right part from each groove of chassis

CAUTIONS

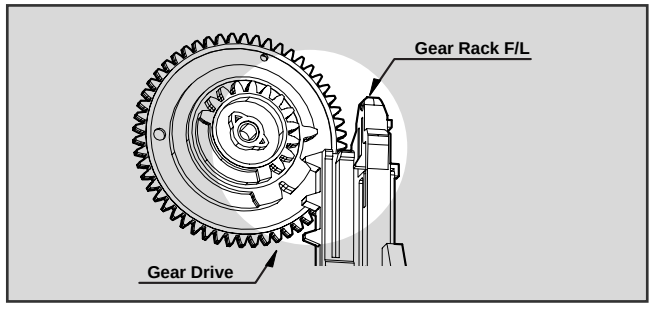
Assemble by inserting the left part after firstly inserting the (E) part of the holder assembly CST into the groove on the (E') part of chassis.

4. Disassembly of Gear Assembly Rack F/L (Fig. A-2-3)

1) Separate the hook (H3) while leaning ahead the hook (3) after moving the gear assembly rack F/L toward the arrow (A) direction.
2) Separate the gear assembly rack F/L toward the arrow (B) direction.

CAUTIONS

For the assembly, correspond the gear part of gear assembly rack F/L to the gear drive.



5. Opener Door (Fig. A-2-4)

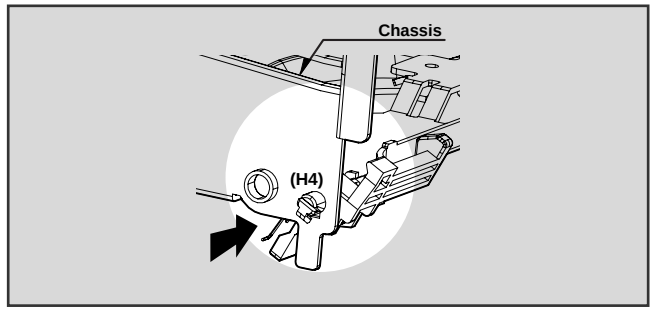
1) Separate the opener door ahead from the guide hole of chassis while turning it clockwise.

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

1) Firstly separate the left part of the arm assembly F/L from the groove of chassis while pushing the arm assembly F/L toward the arrow direction.
2) Separate the right part from the groove of chassis.).

7. Lever Assembly S/W (Fig. A-2-6)

1) Separate the lever assembly S/W while pushing it toward the arrow direction after removing the hook (4) on the left side of chassis.



DISASSEMBLY AND ASSEMBLY OF DECK MECHANISM

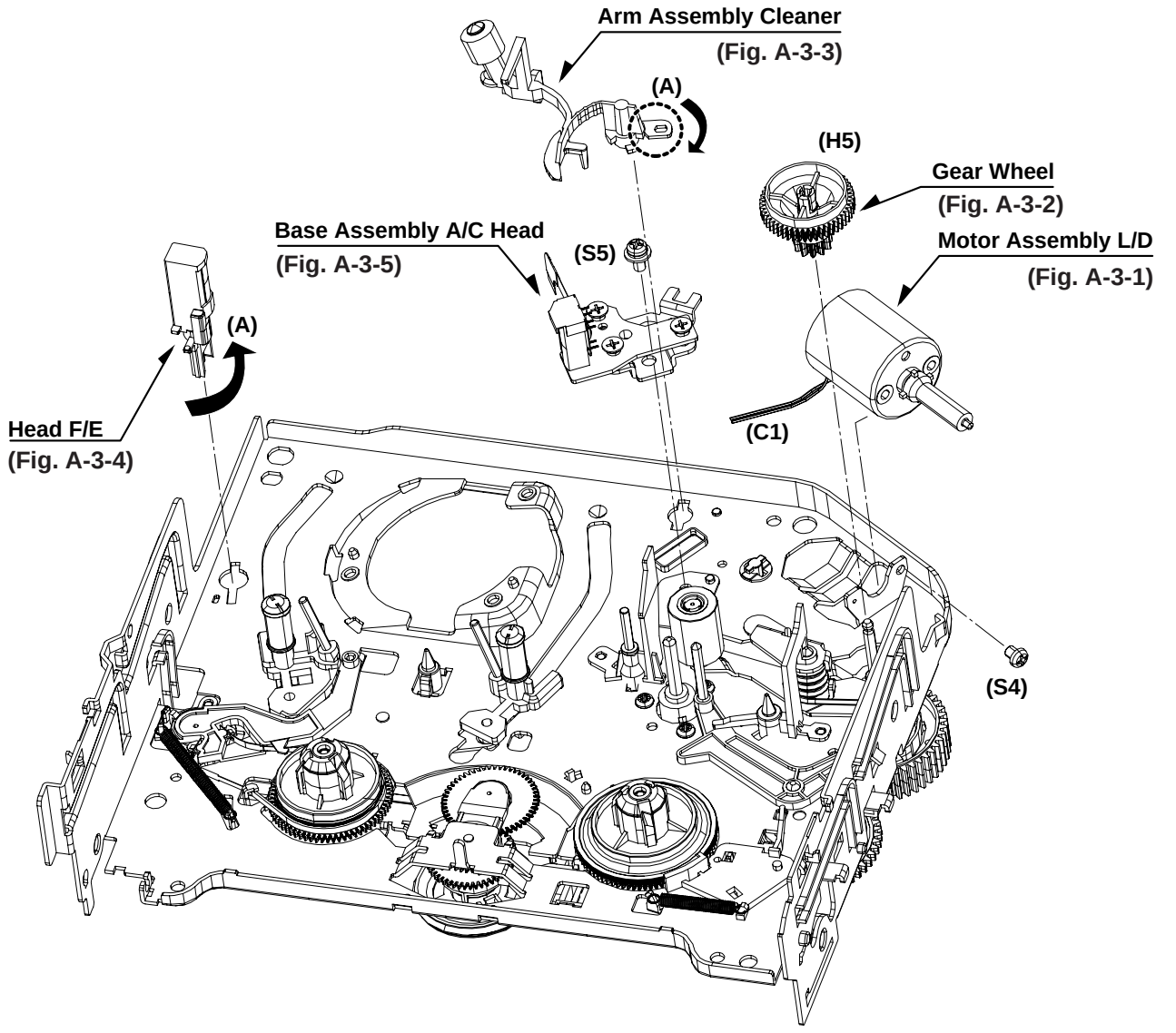


Fig. A-3

8. Motor Assembly L/D (Fig. A-3-1)

1) Take the connector (C1) connected to the Capstan motor PCB out.
2) Remove a screw (S4) of the chassis (S4) and step backward, and disassemble it while holding it up.

9. Gear Wheel (Fig. A-3-2)

1) Release the hook (H5) of the gear wheel and disassemble it upward.

10. Arm Assembly Cleaner (Fig. A-3-3)

1) Separate the (A) part of Fig. A-3-1 from the embossing of chassis, and hold it up while turning it anti-clockwise.

11. Head F/E (Fig. A-3-4)

1) Separate the (A) part of the head F/E from the embossing of chassis, and hold it up while turning it anti-clockwise.

12. Base Assembly A/C Head (Fig. A-3-5)

1) Release a screw (S5) and disassemble while holding it up.

DISASSEMBLY AND ASSEMBLY OF DECK MECHANISM

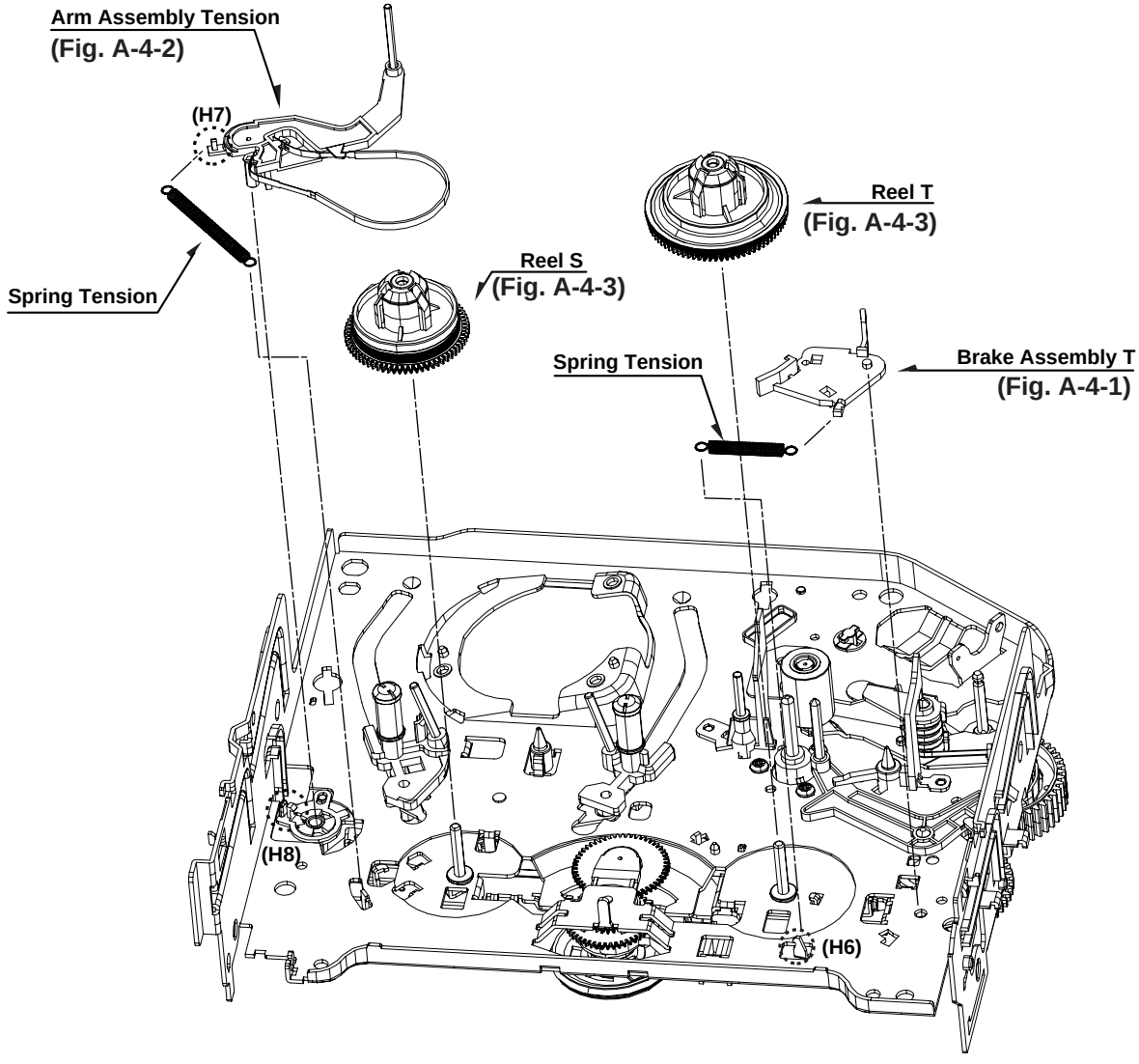


Fig. A-4

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

1) Release the spring tension from the lever spring hook (H6).
2) Disassemble the brake assembly T while holding it upward.

14. Arm Assembly Tension (Fig. A-4-2)

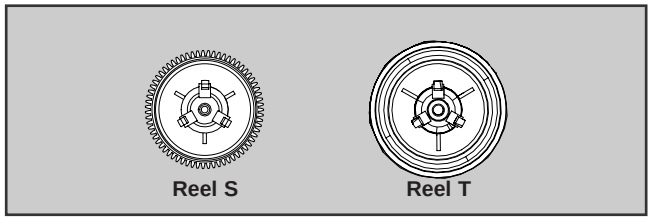
1) Release the spring tension the hook (H7) from the arm assembly tension.
2) After releasing the hook (H8) of the base tension, separate it while holding it up.

CAUTIONS

Spring used for both brake assembly T and arm assembly tension is used (2EA used).

15. Reel S/Reel T (Fig. A-4-3)

1) Disassemble the reel S/ reel T while holding it up (comparison between Reel S and Reel T)



DISASSEMBLY AND ASSEMBLY OF DECK MECHANISM

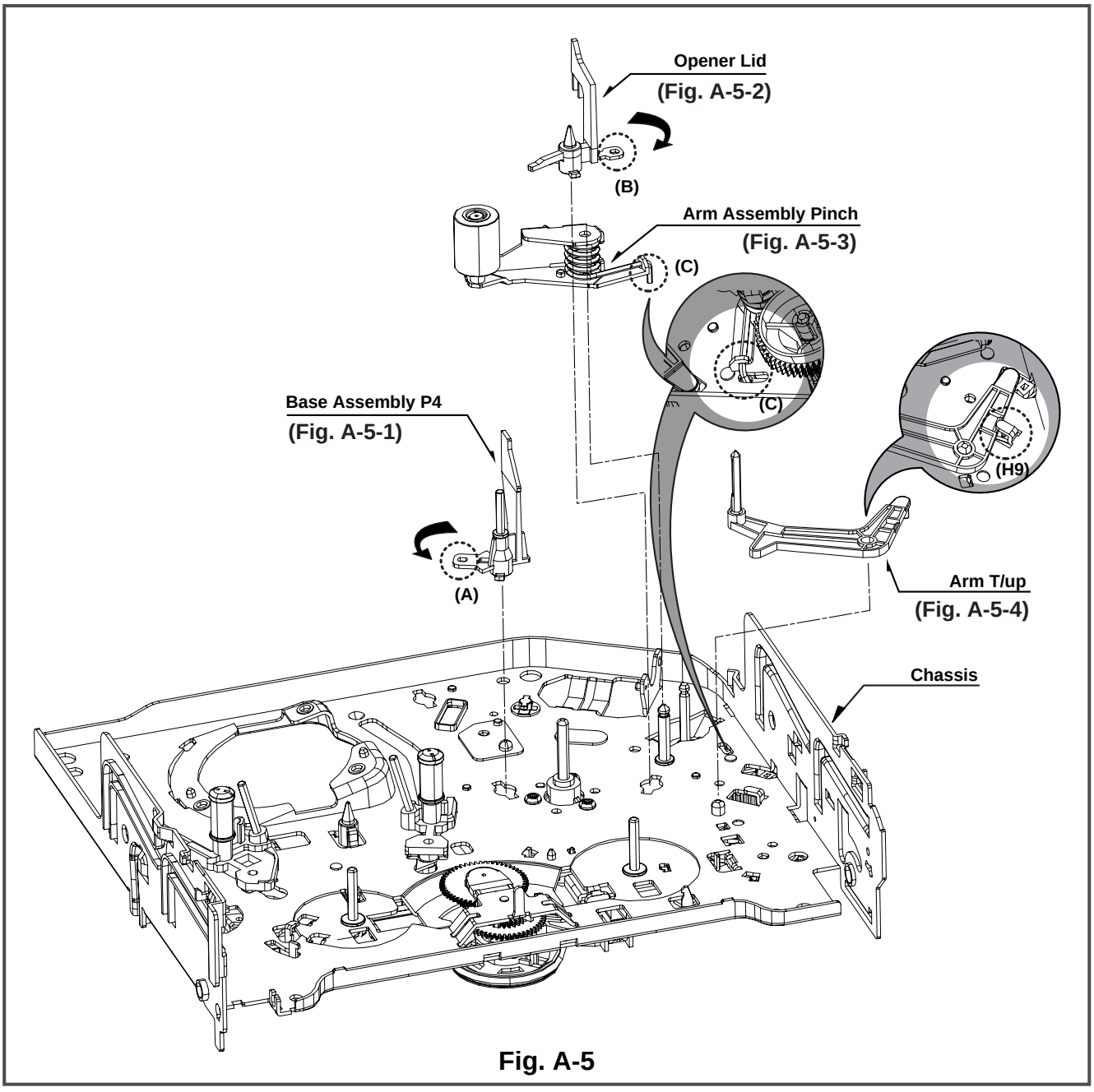


Fig. A-5

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

1) Release the (A) part of the base assembly P4 from the embossing of chassis.
2) Hold the base assembly P4 up while turning it anti-clockwise.

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

1) Release the (B) part of the opener lid from the embossing of chassis.
2) Disassemble the opener lid upward while turning it anti-clockwise.

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

1) Hold the arm assembly pinch up.

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

1) Turn the arm T/up to release the anchor jaw (H9) part of chassis and then hold it upward.

CAUTIONS

For the assembly, check the (C) part of the arm assembly pinch is assembled as in drawing.

- REVERSE THE MECHANISM.

DISASSEMBLY AND ASSEMBLY OF DECK MECHANISM

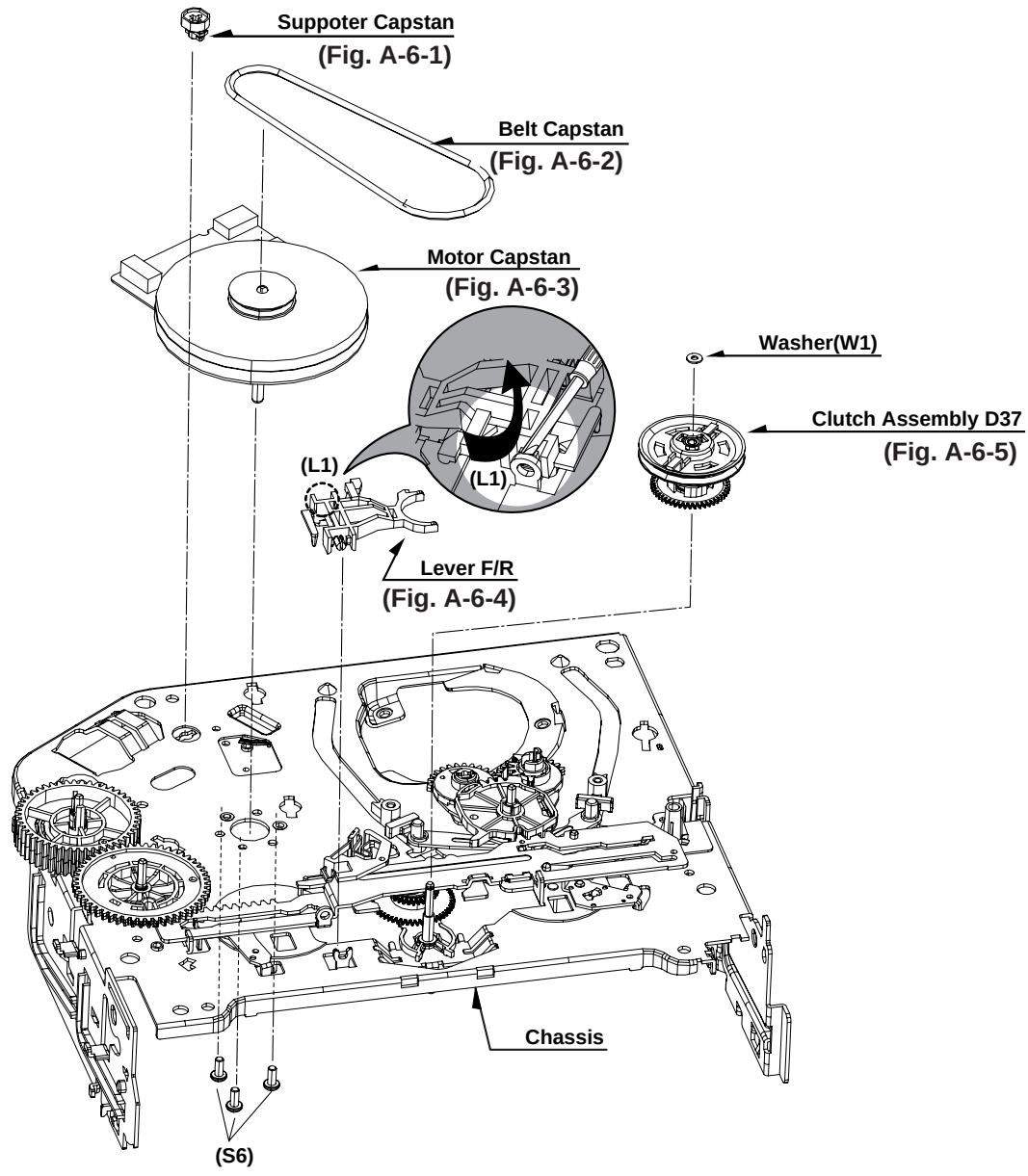


Fig. A-6

20. Supporter, Capstan (Fig. A-6-1)

1) Turn the supporter and Capstan by 90 deg. clockwise with a driver for disassembly.

21. Belt Capstan (Fig. A-6-2) / Motor Capstan (Fig. A-6-3)

1) Separate the belt Capstan.
2) Undo 3 screws (S6) on the bottom side of chassis and disassemble it upward.

22. Lever F/R (Fig. A-6-4)

1) Release the locking tab (L1) and then disassemble it upward.

23. Clutch Assembly D37 (Fig. A-6-5)

1) Remove the washer (W1) and then disassemble it upward.

DISASSEMBLY AND ASSEMBLY OF DECK MECHANISM

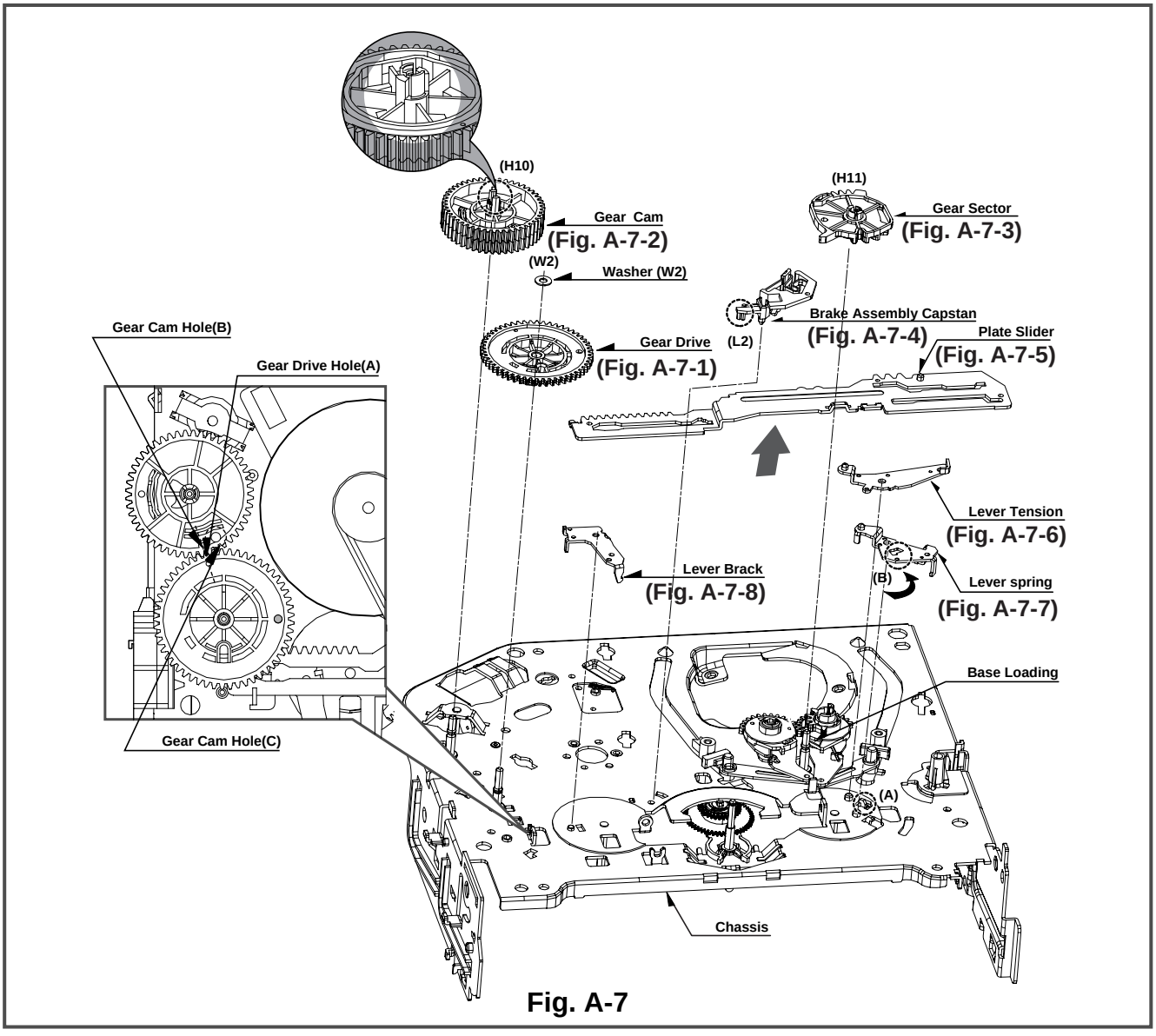


Fig. A-7

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

1) Remove the washer (W2) and then disassemble the gear drive.
2) Release the hook (H10) of the gear cam and then disassemble it upward.

CAUTIONS

For the assembly, adjust both the gear driver hole (A) and the gear cam hole (B) straightly and then correspond the gear cam hole (C) to the chassis hole.

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

1) Release the hook (H11) of the gear sector and then hold the gear sector upward.

26. Brake Assembly Capstan (Fig. A-7-4)

1) Release the locking tab (L2) on the bottom side of the plate slider and then disassemble it upward.

27. Plate Slider (Fig. A-7-5)

1) Disassemble the plate slider while holding it up.

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

1) Release the lever tension from the guide (A) of chassis while turning it anti-clockwise.
2) Disassemble the lever tension while holding it up.

29. Lever Spring (Fig. A-7-7)

1) Release the (B) part of the lever spring from the guide (A) of chassis while turning it anti-clockwise.
2) Disassemble the lever tension while holding it up.

30. Lever Brake (Fig. A-7-8)

1) Disassemble the lever brake while holding it up.

DECK MECHANISM DISASSEMBLY

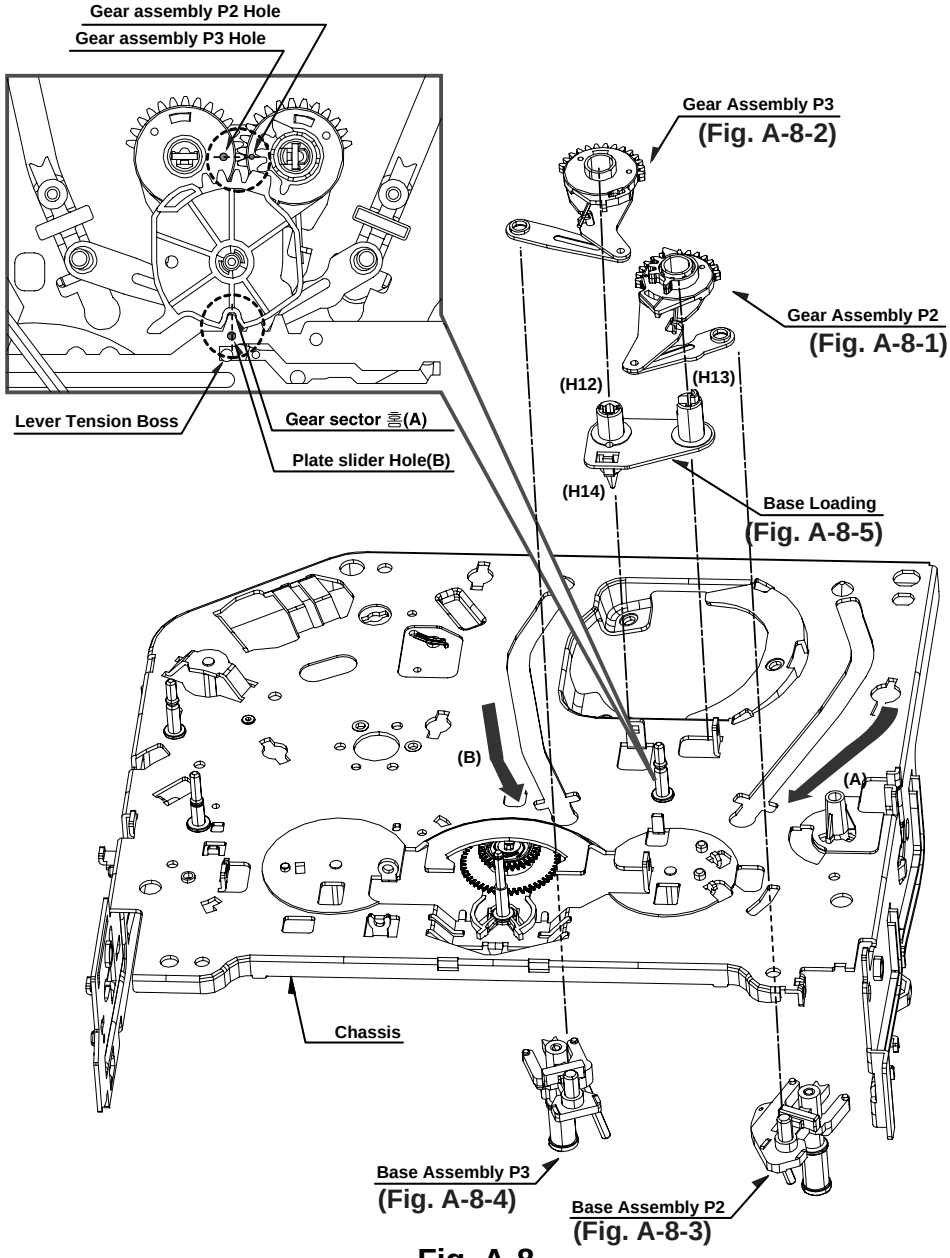


Fig. A-8

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

1) Hold the gear assembly P2 upward.
2) Hold the gear assembly P3 upward.

CAUTIONS

For the assembly, check the holes of both the gear assembly P2 and the P3 are adjusted straightly, and then correspond the gear section groove (A) to the plate slider hole (B).

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

1) Disassemble the base assembly P2 downward while moving it toward the arrow (A) direction along with the guide hole of chassis.
2) Disassemble the base assembly P2 downward while moving it toward the arrow (B) direction along with the guide hole of chassis.

33. Base Loading (Fig. A-8-5)

1) Release 3 hooks (H12, 13, 14) of the base loading, and then disassemble them upward.
   - Reverse the mechanism.

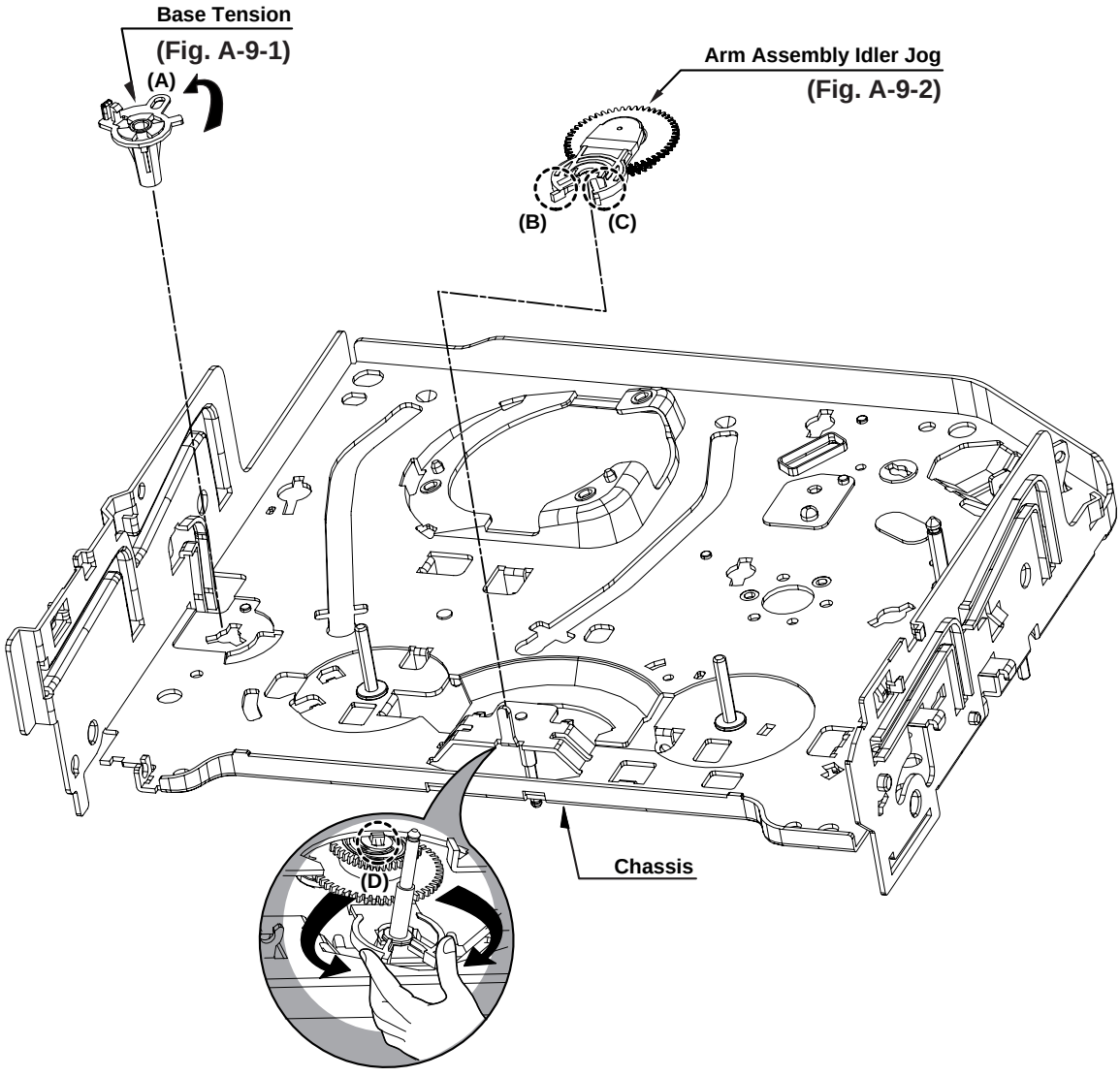


Fig. A-9

34. Base Tension (Fig. A-9-1)

1) Release the (A) part of the base tension from the embossing of chassis.
2) Hold the base tension upward while turning it anti-clockwise.

35. Arm assembly Idler Jog (Fig. A-9-2)

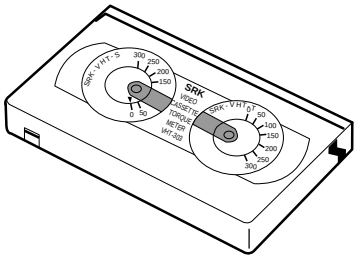
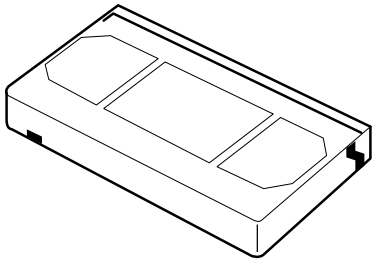
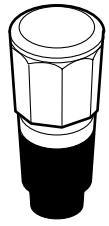
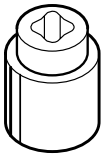
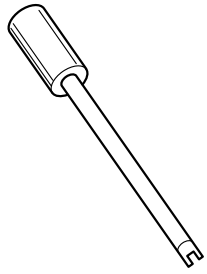
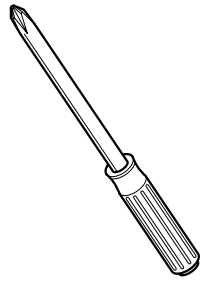
1) Push both (B), (C) parts in Fig. A-9-2 toward the arrow direction.
2) Disassemble the arm assembly idler upward.

CAUTIONS

Take care to ensure that the (D) part in the drawing is not hung to chassis in disassembly.

DECK MECHANISM ADJUSTMENT

• Fixtures and Tools for Service

1. Cassette Torque Meter **SRK-VHT-303(Not SVC part)** **Part No:D00-D006** 	**2. Alignment tape** **Part No NTSC:DTN-0001** **PAL:DTN-0002** 	**3. Torque gauge** **600g.Cm ATG** **Part No:D00-D002** 
4. Torque gauge adaptor **Part No:D09-R001** 	**5. Post height adjusting driver** **Part No:DTL-0005** 	**6. + Type driver (ø5)** 

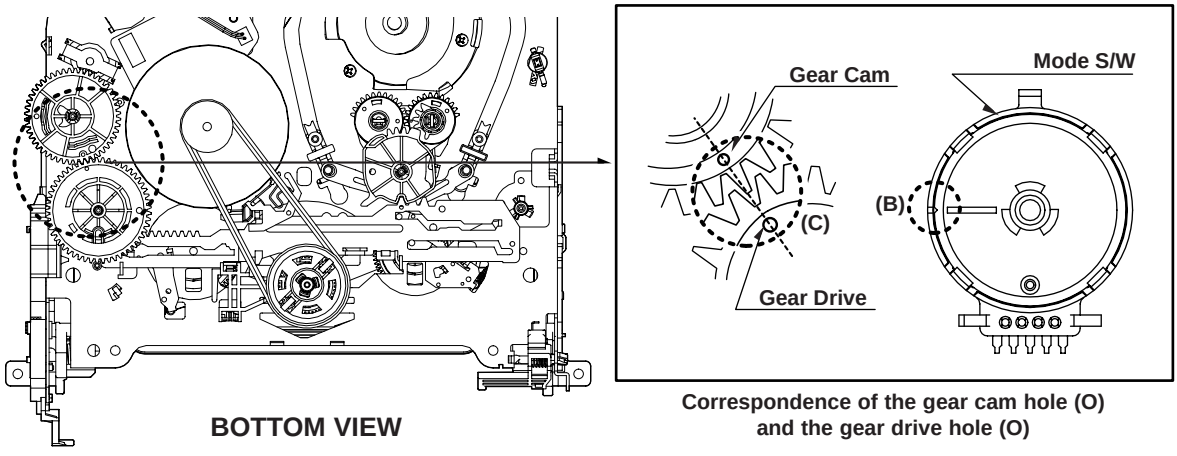
DECK MECHANISM ADJUSTMENT

1. Mechanism Assembly Mode Check

Purpose of adjustment : To make tools normally operate by positioning tools accurately.		
Fixtures and tools used	**VCR (VCP) status**	**Checking Position**
• Blank Tape (empty tape)	• Eject Mode (with cassette withdrawn)	• Mechanism and Mode Switch

1) Turn the VCR on and take the tape out by pressing the eject button.
2) Separate both top cover and plate top, and check both the hole (A) of gear cam and the hole (A') of chassis correspond (Fig. C-2).
3) If it is done as in the paragraph 2): Turn the gear cam as in No.2) after mantling the motor assembly L/D.
4) Undo the screw fixing the deck and the main frame, and separate the deck assembly. Check both the hole (A) of gear cam and the hole (A') of chassis correspond (Fig. C-1).
5) Check the mode S/W on the main P.C. board locates at a proper position as in (B) of the Fig. (C-1).
6) Connect the deck to the main P.C. board and perform all types of test.

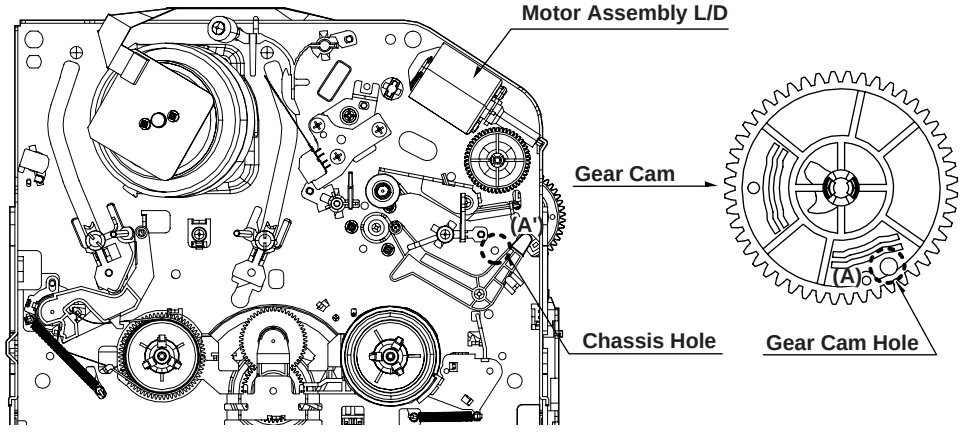
CHECK DIAGRAM



BOTTOM VIEW

Correspondence of the gear cam hole (O) and the gear drive hole (O)

Fig. C-1



TOP VIEW

Fig. C-2

2. Previous Preparation for Deck Adjustment

(Preparation to load the VCR (VCP) with cassette tape not inserted)

1) Take the power cord from the consent.
2) Separate the top cover and the plate assembly top.
3) Insert the power cord into again.
4) Turn the VCR (VCP) on and load the cassette while pushing the lever stopper of the holder assembly CST backward. In this case, clog both holes on the housing rail part of chassis to prevent detection of the end sensor. If doing so, proceeding to the stop mode is done. In this status, input signals of all modes can be received. However, operation of the Rewind and the Review is impossible since the take-up reel remains at stop status and so cannot detect the reel pulse (however, possible for several seconds).

3. Torque Measuring

Purpose of Measuring : To measure and check the reel torque on the take-up part and the supply part that performs basic operation of the VCR (VCP) for smoothly forwarding the tape.
Measure and check followings when the tape is not smoothly wound or the tape velocity is abnormally proceeded:

Fixtures and tools used	VCR (VCP) status	Measuring method
• Torque Gauge (600 g.cm ATG) • Torque Gauge Adaptor • Cassette Torque Meter SRK-VHT-303	• Play (FF) or Review (REW) Mode	• Try to operate the VCR (VCP) per mode with the tape not inserted (See '2. Prior Preparation for Deck Adjustment). • Measure after adhering and fixing the torque gauge adaptor to the torque gauge (Fig. C-3-1) • Read scale of the supply or take-up part of the cassette torque meter (Fig. C-3-2).

Item	Mode	Instruments	Reel Measured	Measuring Value
Fast forward Torque	Fast Forward	Torque Gauge	Take-Up Reel	More than 400g°cm
Rewind Torque	Rewind	Torque Gauge	Supply Reel	More than 400g°cm
Play Take-Up Torque	Play	VHT-303	Take-Up Reel	40~100g°cm
Review Torque	Review	VHT-303	Supply Reel	120~210g°cm

NOTE

Adhere the torque gauge adaptor to the torque gauge for measuring the value.

• Torque Gauge (600g.cm ATG)

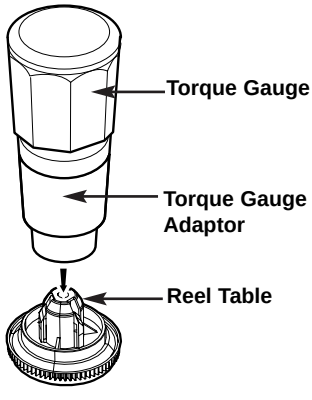


Fig. C-3-1

• Cassette Torque Meter (SRK-VHT-303)

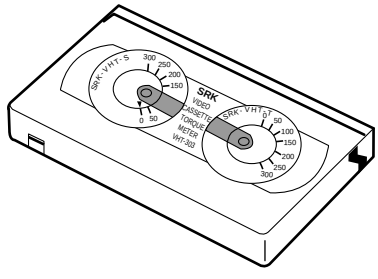


Fig. C-3-2

DECK MECHANISM ADJUSTMENT

4. Guide Roller Height Adjustment

Purpose of adjustment : To ensure that the bottom surface of the tape can travel along with the tape lead line of the lower drum by constantly and adjusting and maintaining the height of the tape.

4-1. Prior Adjustment

Fixtures and tools used	VCR (VCP) status	Adjustment position
• Post Height Adjusting Driver	• Play or Review Mode	• The guide roller height adjusting screw on the supply guide roller and the take-up guide roller

Adjustment Procedure

1) Travel the tape and check the bottom surface of the tape travels along with the guide line of the lower drum.
2) If the tape travels toward the lower part of guide line on the lower drum, turn the guide roller height adjusting screw to the left
3) If it travels to the upper part, turn it to the right.
4) Adjust the height of the guide roller to ensure that the tape is guided on the guide line of the lower drum at the inlet/outlet of the drum. (Fig. C-4-1)

ADJUSTMENT DIAGRAM

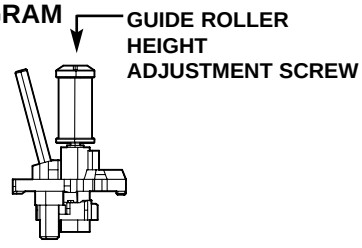


Fig. C-4-1

4-2. Fine Adjustment

Fixtures and tools used	Measuring tools and connection position	VCR (VCP) status	Adjustment position
• Oscilloscope • Standard test 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 the standard test tape.	• Guide roller height adjusting screw

1) Play the standard test tape after connecting the probe of oscilloscope to the RF envelope output point and the head switching output point.
2) Tracking control (playback) : Locate it at the center (Set the RF output to the maximum value via the tracking control when such adjustment is completed after the drum assembly is replaced.)
3) Height adjusting screw: Flatten the RF waveform. (Fig. C-4-2)
4) Move the tracking control (playback) to the right/left. (Fig. C-4-3)
5) Check the start and the end of the RF output reduction width are constant.

CAUTIONS

There must exist no crumpling and folding of the tape due to excess adjustment or insufficient adjustment.

Waveform

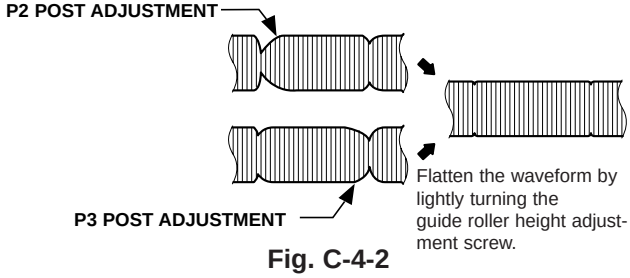


Fig. C-4-2

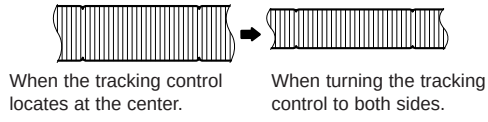
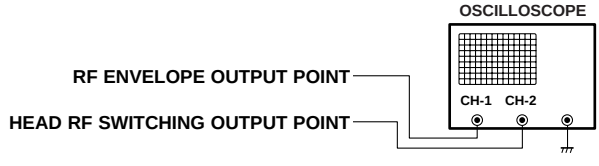


Fig. C-4-2

Connection Diagram



DECK MECHANISM ADJUSTMENT

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

Purpose of adjustment : To ensure that audio and control signals can be recorded and played according to the contract tract by constantly maintaining distance between tape and head, and tape tension between the P3 post and the P4 post.

5-1. Prior Adjustment (performed only when no audio output appears in play of the standard test tape)

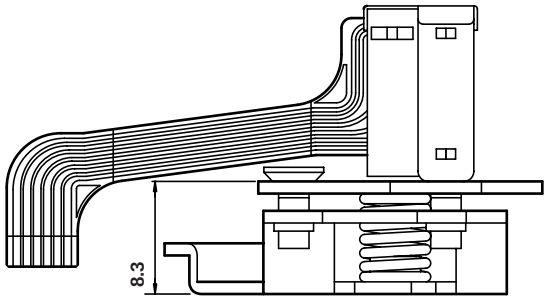
Fixtures and tools used	VCR (VCP) status	Adjustment position
• Blank Tape (Empty Tape) • Driver (+) Type ø 5	• Play the blank tape (empty tape).	• Tilt adjusting screw (C) • Height adjusting screw (B) • Azimuth adjusting screw (A)

Adjustment Procedure/Adjustment Diagrams

1) Basically use the A/C head assembly adjusted as in SPEC.
2) Check there is crumpling and folding of the tape around the A/C head. If it is, Turn and adjust the tilt adjusting screw to ensure that the tape corresponds to the bottom guide of the P4, and recheck the tape path after proceeding play for 4-5 seconds.
3) Where the tape bottom is not equal to Fig. C-5-3, Adjust the height by using the height adjusting screw (B) and then readjust it by using the tilt adjusting screw (C).

CAUTIONS

Always check the height of the A/C head since most ideal height of A/C head can be obtained when the bottom part of the tape is away 0.2 ~ 0.25mm from the bottom part of the A/C head.



A/C Head Base

Fig. C-5-1

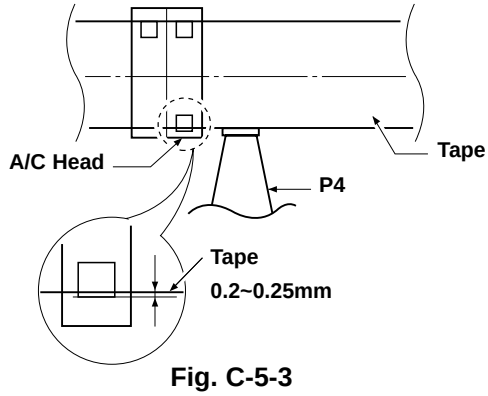
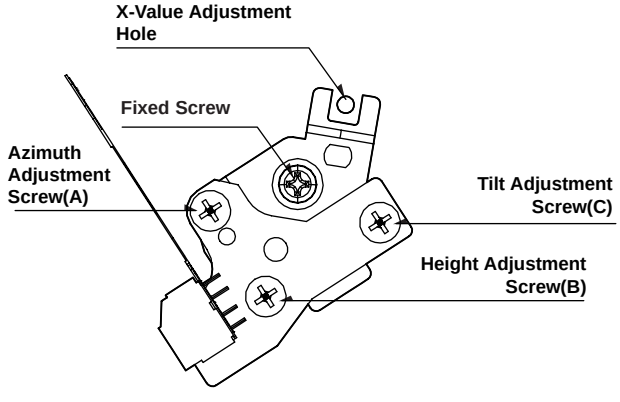


Fig. C-5-3



A/C Head Assembly

Fig. C-5-2

5-2. Tape Path Check between Pinch Roller and Take up Guide (Check in the Rev Mode)

1) Check the tape pass status between the pinch roller and the take-up guide.(Check there is crumpling of the tape pass and folding of the take-up guide.)
   (1) When holding of the take-up guide bottom occurs Turn the tilt adjusting screw (C) clockwise and travel it stably to ensure there is no crumbling or folding of the tape.
   (2) When holding of the take-up guide top occurs Turn the tilt adjusting screw (C) anti-clockwise and travel it stably to ensure there is no crumbling or folding of the tape.

2) Check there is folding of the tape at the bottom or top of the take-up guide in cutting-off the REV mode

CAUTIONS

If the RF waveform is changed after adjusting the A/C head, perform fine adjustment to ensure the RF waveform is flattened.

5-3. Fine Adjustment (Azimuth Adjustment)

Fixtures and tools used	Connection position	VCR (VCP) status	Adjustment position
• Oscilloscope • Standard test tape (only for SP) • Driver (+) Type Ø 4	• Audio Output Jack	• Play the standard test • Tape, 1KHz, 7KHz.	• Azimuth Adjusting Screw (A) • Height Adjusting Screw (B)

Adjustment Procedure

1) Connect the probe of Oscilloscope to the audio output jack.
2) Ensure that Audio 1KHz, 7KHz output is flattened at the maximization point by adjusting the Azimuth adjusting screw (A).

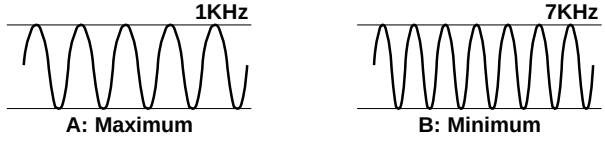
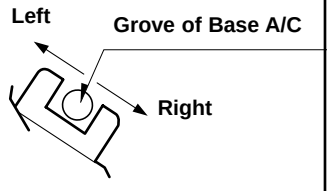


Fig. C-5-4

6. X-distance Adjustment

Purpose of adjustment : To maintain compatibility with other VCR (VCP).

Fixtures and tools used	Connection position	VCR (VCP) status	Adjustment position
• Oscilloscope • Standard test tape (only for SP) • Driver (+) Type Ø 4	• CH-1: PB RF Envelope • CH-2: NTSC ; SW 30Hz PAL:SW 25Hz • Head switching output point • RF Envelope output point	• Play the standard test tape.	

Adjustment Procedure

1) After releasing the auto tracking, lightly turn the fixing screw. Turn the (+) type driver (Ø 3 ~ Ø 4) on the X-distance adjusting hole to the right or left. Adjust the RF envelope level to the maximum point and then fix the fixing screws.
2) For the 31mm head, adjust it with the SP tape recorded in the width of 31mm since the head travels on the tape track only for SP with the width of 58mm.

Connection Diagram

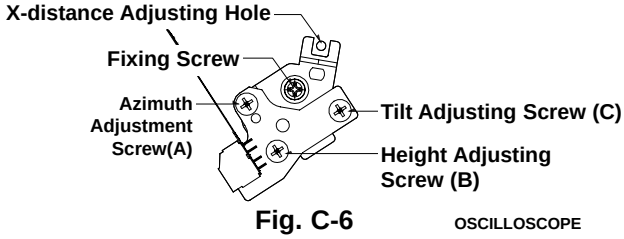
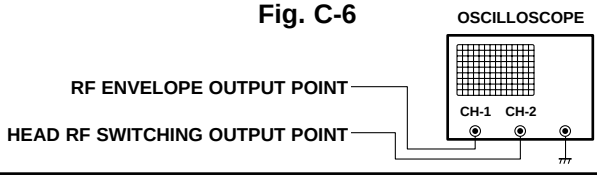


Fig. C-6



DECK MECHANISM ADJUSTMENT

7. Adjustment after Drum Assembly (Video Heads)

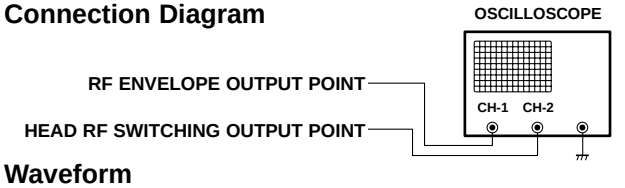
Purpose of adjustment : To adjust and stabilize the height change, X-distance change, etc depending on the guide roller after assembling the drum.

Fixtures and tools used	Connection position	VCR (VCP) status	Adjustment position
• Oscilloscope • Standard test tape (only for SP) • Post Height Adjusting Driver • Driver (+) Type Ø 5	• CH-1: PB RF Envelope • CH-2: NTSC : SW 30Hz PAL:SW 25Hz • Head switching output point • RF Envelope output point	• Play the blank tape. • Play the standard test tape.	• Fine adjustment of guide roller • Switching Point • Tracking Preset • X-distance

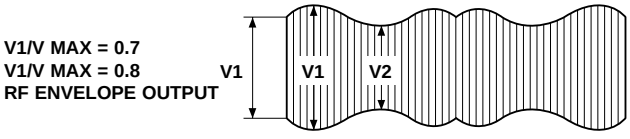
Checking/Adjustment Procedure

1) Play the blank tape (empty tape) and check whether the guide roller crumbles or wrinkles the tape and adjust it if necessary.
2) Check that the RF envelope output waveform is flat, and adjust the height of the guide roller while playing the standard test tape.
3) Adjust the switching point.
4) Check the RF envelope output is the maximum when the tracking control locates at the center. If not maximum, set up to ensure that RF envelope output becomes the maximum by turning the (+) type driver (Ø 3 ~ Ø 4) on the base A/C groove.

Connection Diagram



Waveform



8. Check of Traveling Device after Deck Assembly

8-1. Audio, RF Normalization Time (Locking Time) Check in Play after CUE or REV

Fixtures and tools used	Measuring standard	Connection position	VCR (VCP) status
• Oscilloscope • 6H 3KHz Color Bar Standard Test tape • Stop Watch	• RF Locking Time: Within 5 seconds • Audio Locking Time : Within 10 seconds	• CH-1: PB RF Envelope • CH-2: Audio output • RF Envelope output point • Audio output jack	• Play the 6H 3KHz Color Bar Standard Test tape.

Checking Procedure

1) Check that locking time of the RF and Audio waveform is fallen within the measuring standard in conversion of the play mode from the CUE or the REV mode.
2) Readjust the paragraph 5 and 6 if it deviates from the standard.

8-2. Check of Tape Curl and Jam Status

Fixtures and tools used	Fixtures and tools used	Fixtures and tools used
• T-160 Tape • T-120 Tape	• There must be no jam or curl at the first, middle and end position of tape.	• Travel the tape at the position of its first and end.

Checking Procedure

1) Check there is no abnormality of every traveling post status.
2) There must be no abnormal operation of the counter in occurrence of folding of the bottom tape. There must be not abnormality of audio signal in damage of the top tape.
3) If there is abnormality, readjust the adjustment paragraph 4 and 5.

1. Checking Points prior to Repair

Following abnormal phenomena may be repaired by removal of foreign materials and oil supply. Check oiling is required at the checking set or cleaning status is complete. Determine that necessity of checking and repair the set exists after checking the using period of the set together with the user. In this case, followings must be checked:

Phenomena	Checking Points and Cause	Replace-ment
Color beat	Pollution of Full-Erase Head	o
S/N, Color Faded	Pollution of Video Head	o
Horizontal, Vertical Jitte	Pollution of Video Head or Tape Transport System	o
Poor Sound, Low Sound	Pollution of Audio/Control Head	o
No tape wound or tape wound loosely. FF or REW impossible, or slow turning	Pollution of Pinch Roller or Belt Capstan Belt	o
Tape loosely wound in REV or Unloading	Deterioration of Clutch Assembly D37 Torque	o
	Pollution of Drum and Traveling Device	Fig. C-9-3

CAUTIONS

If operation of the position with (O) mark is abnormal even after removing cause, replace it with substitute product since it shows damage or wearing.

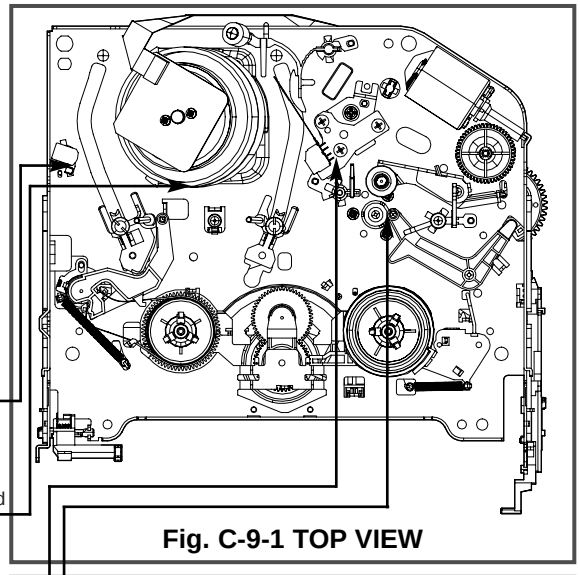


Fig. C-9-1 TOP VIEW

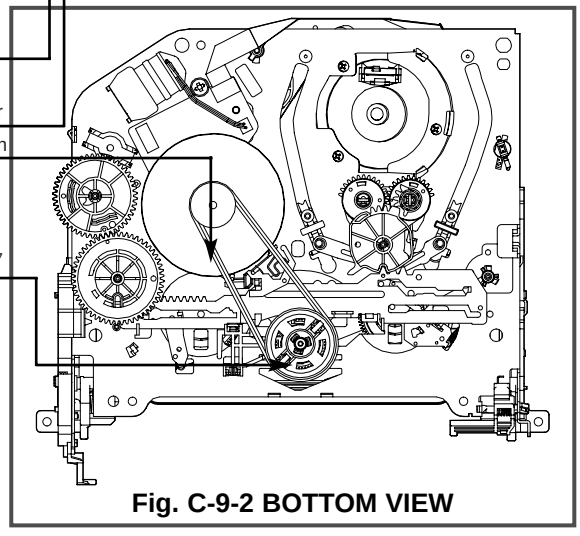


Fig. C-9-2 BOTTOM VIEW

*** No. (1) ~ (12) shows sequence that the tape moves from the supply reel to the take-up reel.)**

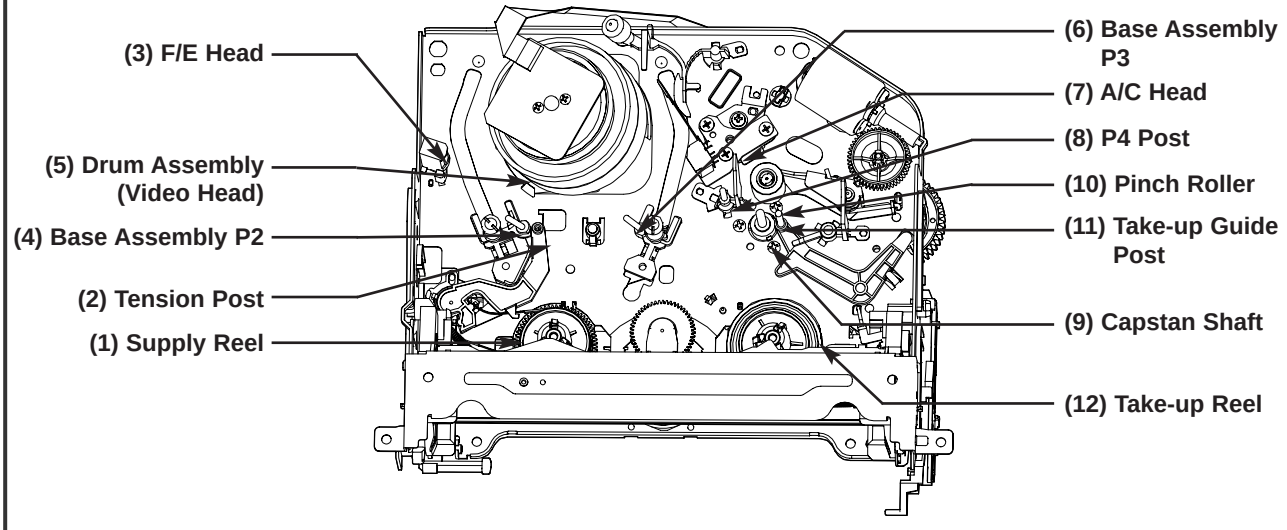


Fig. C-9-3 Tape Transport System

2. Essential Check and Repair

Recording density of the video is far higher than the audio. Therefore video parts are very precise so as to allow only error of 1/1000mm or so in order to maintain compatibility with other videos.
If one of these parts is polluted or old, same phenomena will appear as they are damaged.
To maintain clear screen, regular check, replacement of old and damaged parts and oil supply, etc are essential.

3. Regular Check and Repair

Check and repair schedule is not constant since they vary depending on method that the consumer uses video and environment where the video is installed at.
However, for the video used by common household, good screen will be maintained if regular check and repair per 1,000 hour is performed. The following chart shows relationship between using time and checking time:

Table 1

Time Requiring Checking / Average hours used per day	About 1 year	About 18 months	About 3 years
One hour	■	■	■
Two hours	■	■	
Three hours	■		

4. Tools for Check and Repair

(1) Grease: Floil G-3114 (KANTO) or equivalent grease (Green)
(2) Grease: Kanto G-754, PL-433 (Yellow)
(3) Alcohol (Isopropyl Alcohol)
(4) Cleaning Patch (cloth)

5. Maintenance Process

5-1) Removal of Foreign Material

(1) Removal of foreign material from video head (Fig. C-9-4)
Firstly try to use a cleaning tape.
Use a cleaning patch if foreign materials are not removed with the cleaning tape due to severe dirty of the head. Soak the cleaning patch in alcohol and put it to the head tip. Smoothly turn the drum (turning cylinder) to the right or left (In this case, the cleaning patch must not be moved vertically).
After completely drying the head, test the traveling status of the tape.
If alcohol (Isopropyl Alcohol) remains at the video head, the tape may be damaged when this solution touches with the head surface.

Never use a cloth bar (commercial sale)

(2) Wipe the tape transport system and the drive system with the cleaning patch soaked in alcohol (Isopropyl Alcohol) when removing foreign materials from them.
1) The part touched with the traveling tape is called as tape transport system. The drive system consists of parts to travel the tape.
2) Care must be exercised so that unreasonable force to change the pattern will be applied to the tape transport system during removal of foreign materials.

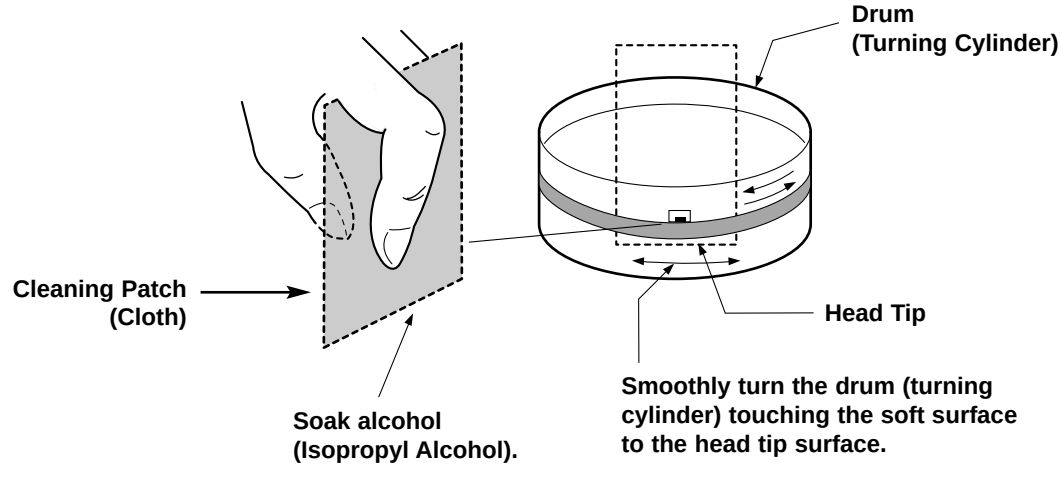


Fig. C-9-4

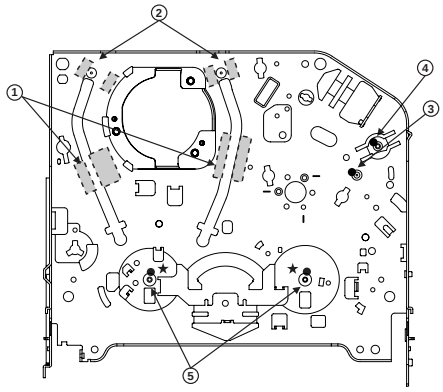
5-2) Grease Applications

(1) Grease Application Method

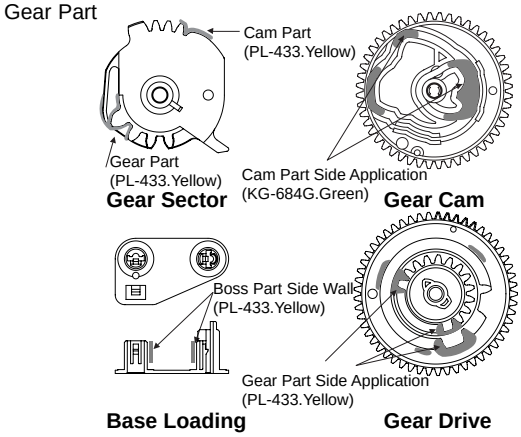
Apply grease by using a cloth swab or brush. Care must be exercised so that excess quantity should not be used. If the excessive quantity is applied, wipe it with the gauze soaked in alcohol (Isopropyl Alcohol).

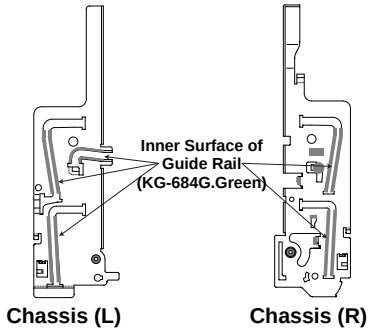
NOTE: POSITION OF GREASE APPLICATION

(1) Inner Side Surface and Top Surface of Loading Path
(2) Stable Adhesion Part of Base P2, P3
(3) Arm Pinch Shaft
(4) Gear Wheel Shaft
(5) Reel S. T. Shaft
(1) (2) (3) (4): KG-684G (Green)
(5): PL-433 (Yellow)



Chassis (TOP)

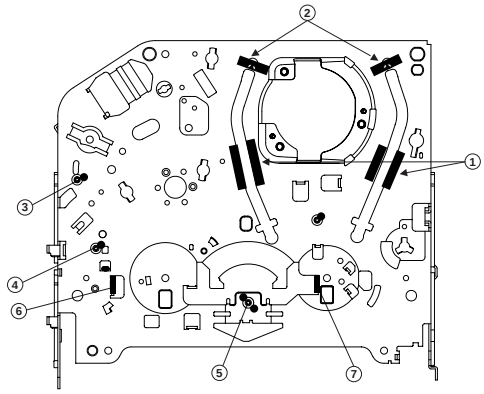




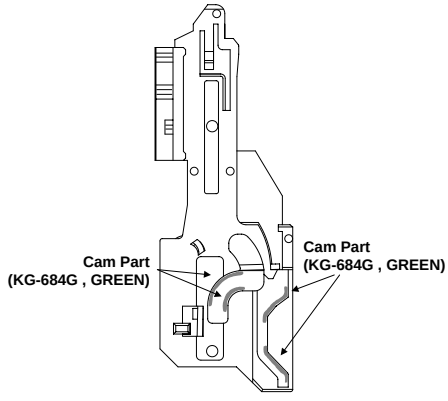
(2) Regular Grease Application

Apply grease to the designated application position every 500 hour.

(1) Inner Side Surface and Top Surface of Loading Path
(2) Stable Adhesion Part of Base P2, P3 Coil
(3) Gear Cam Shaft
(4) Gear Drive Shaft
(5) Clutch Shaft Groove
(6) Guide Part on the Plate Slider Side Wall (Left)
(7) Guide Part on the Plate Slider Side Wall (Right)
(1) (2) (3) (4) (5) (6) (7): KG-684G (Green)



Chassis (Bottom)



Gear Rack F/L

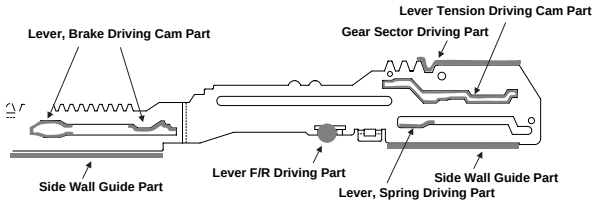
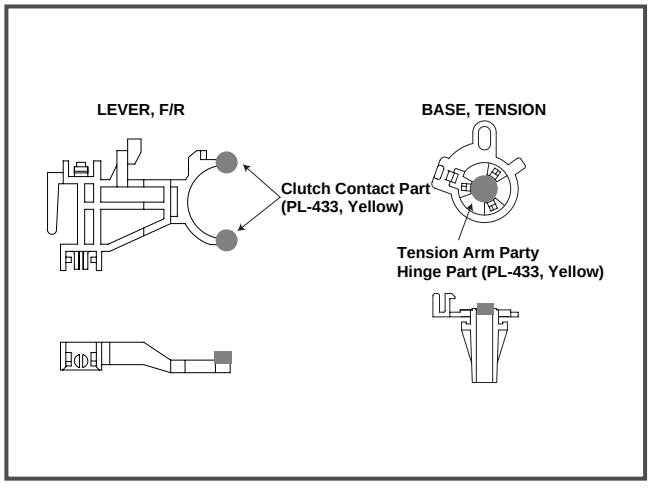
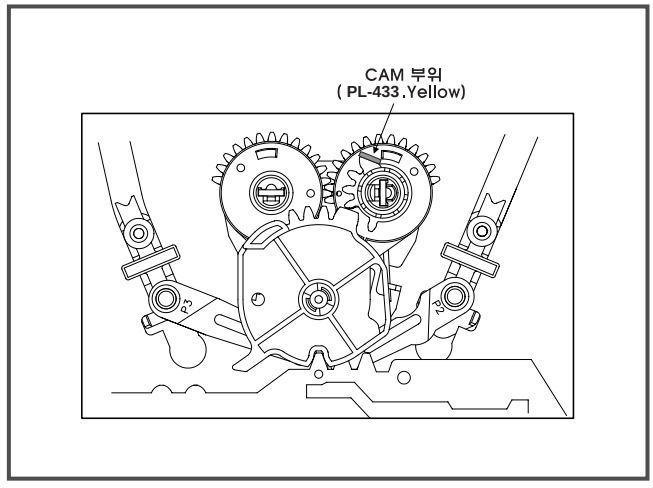


Plate Slider

Lever, F/R, Base, Tension

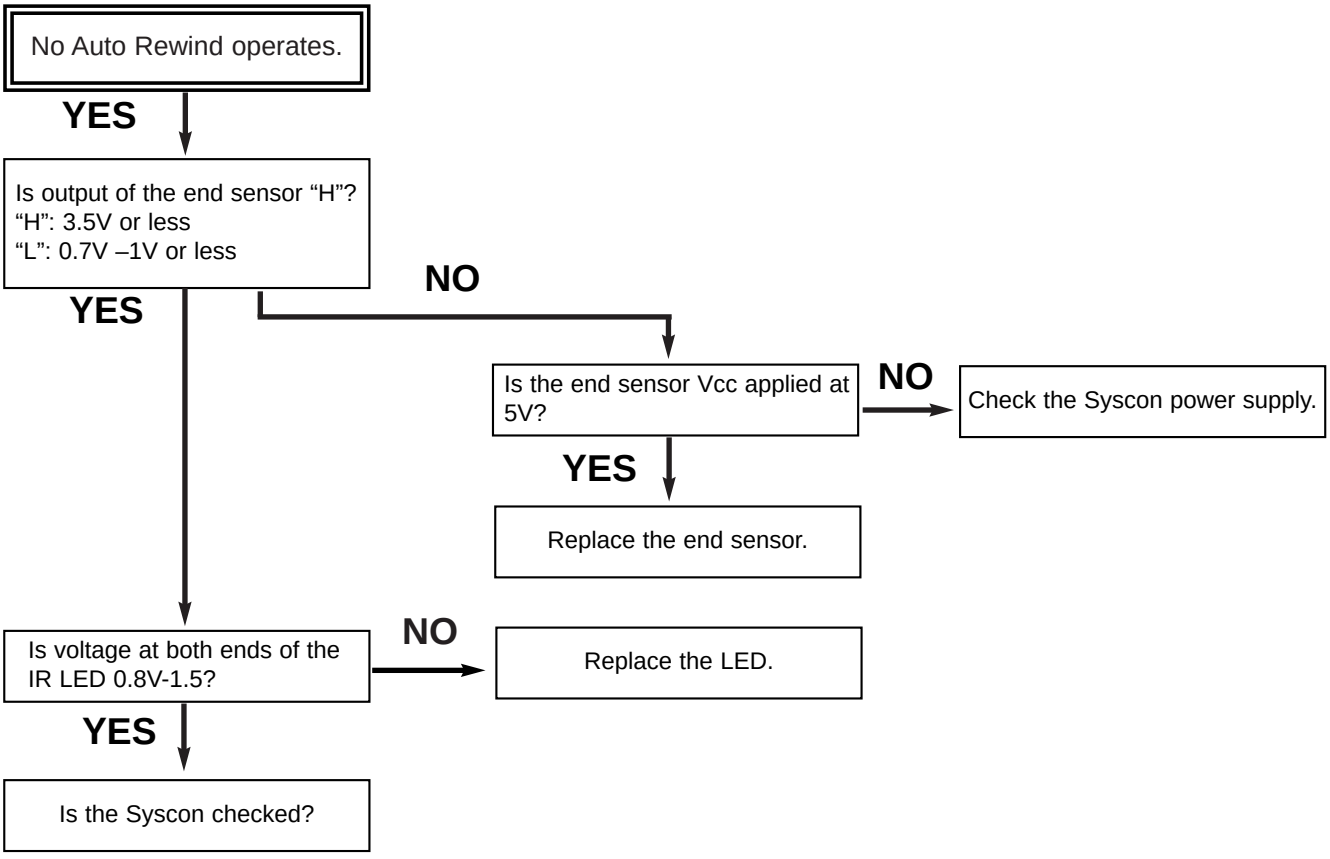


GEAR AY, P2 & P3

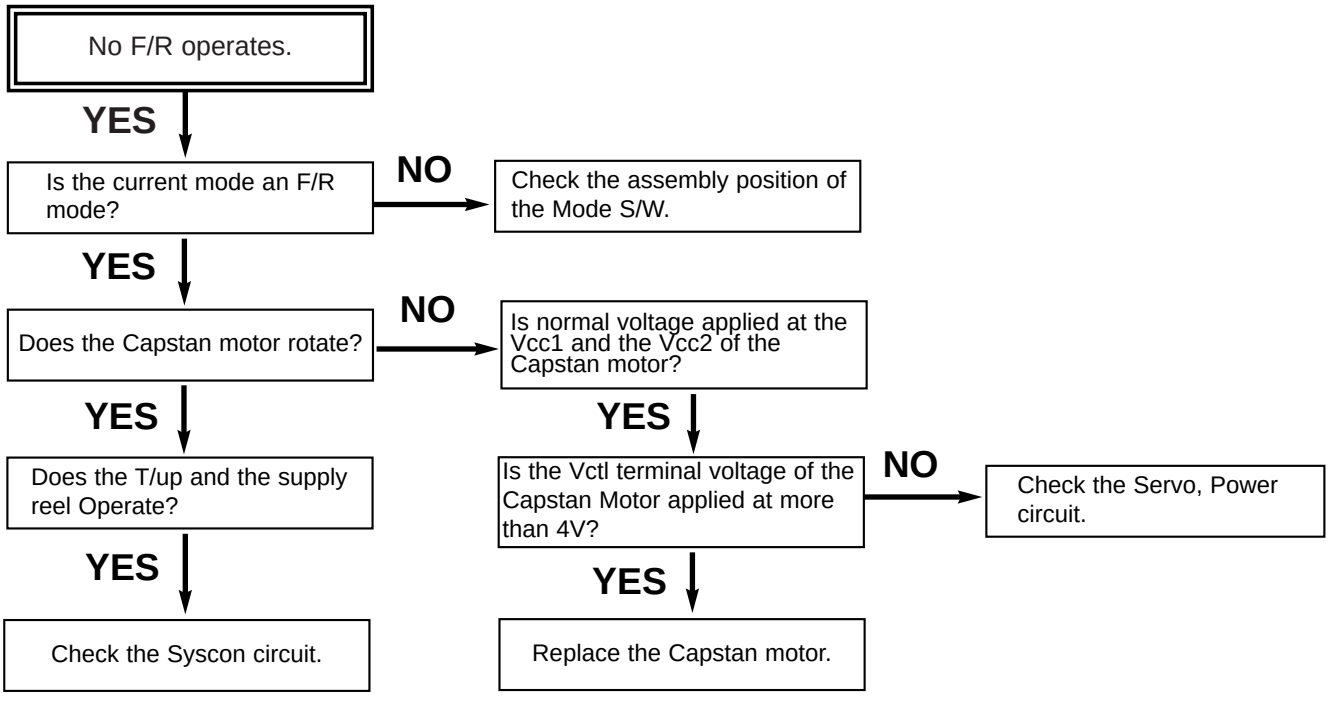


1.Deck Mechanism

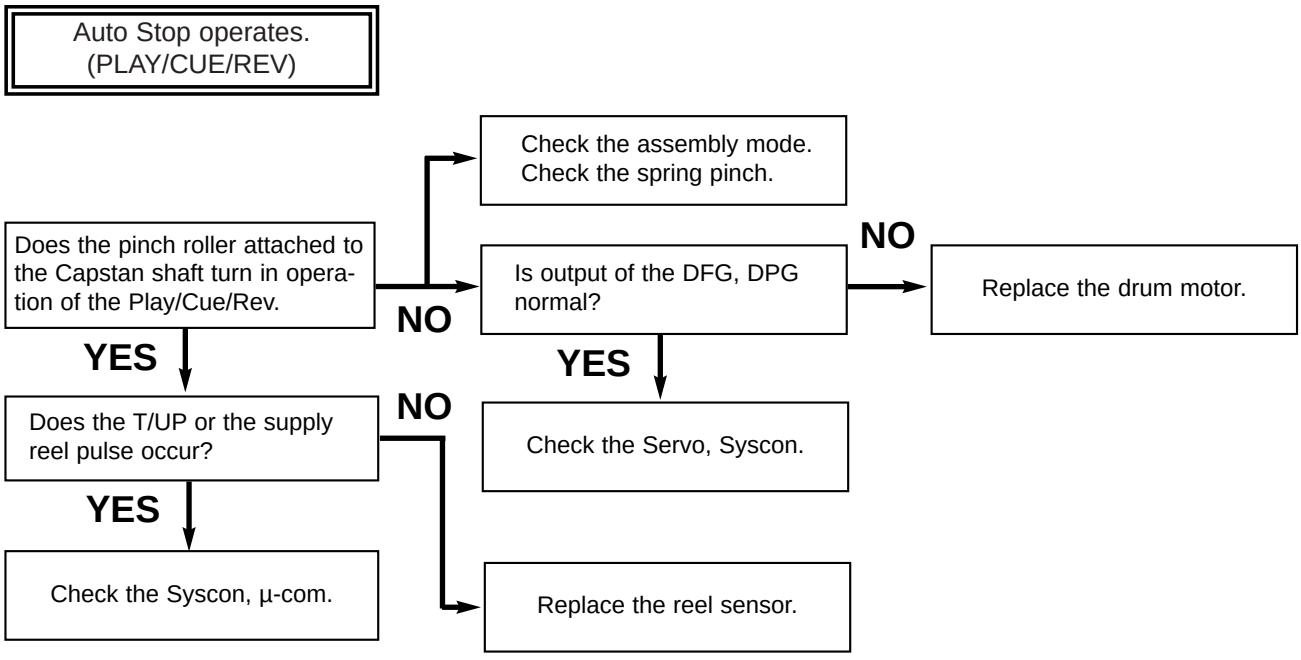
A.



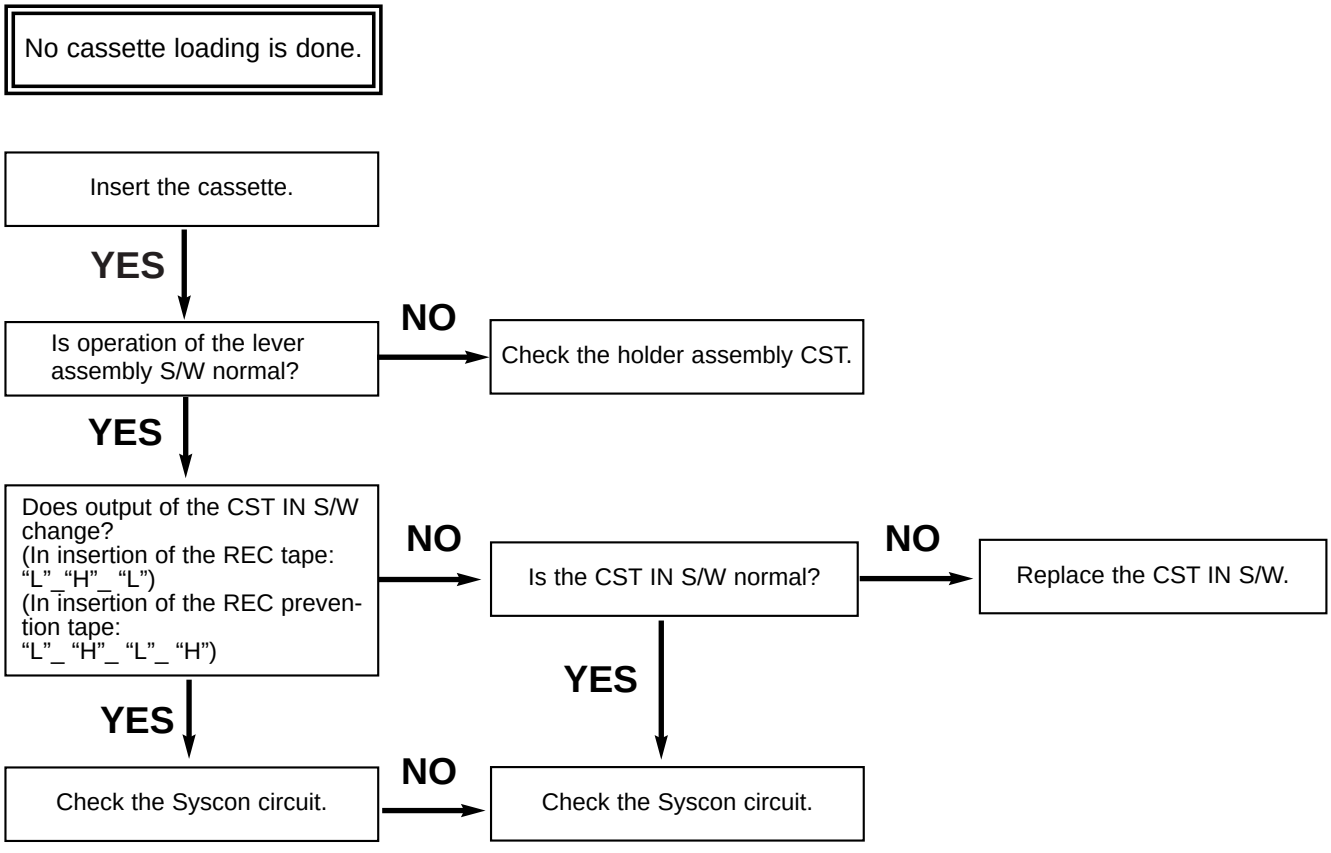
B.



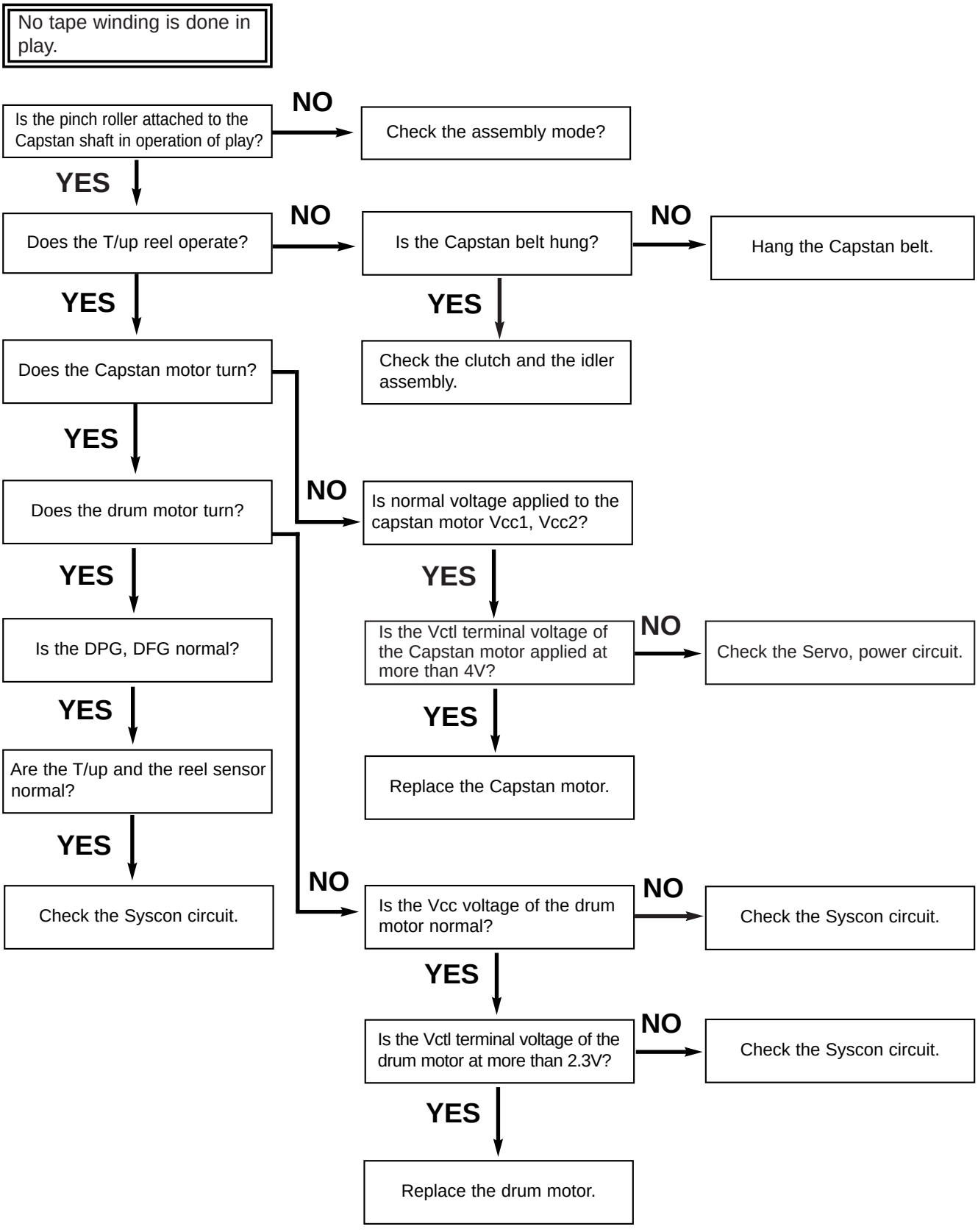
C.


Auto Stop operates.
(PLAY/CUE/REV)
Does the pinch roller attached to the Capstan shaft turn in operation of the Play/Cue/Rev.
NO
Check the assembly mode.
Check the spring pinch.
Is output of the DFG, DPG normal?
NO
Replace the drum motor.
YES
YES
Does the T/UP or the supply reel pulse occur?
NO
Check the Servo, Syscon.
YES
Check the Syscon, µ-com.
Replace the reel sensor.

D.

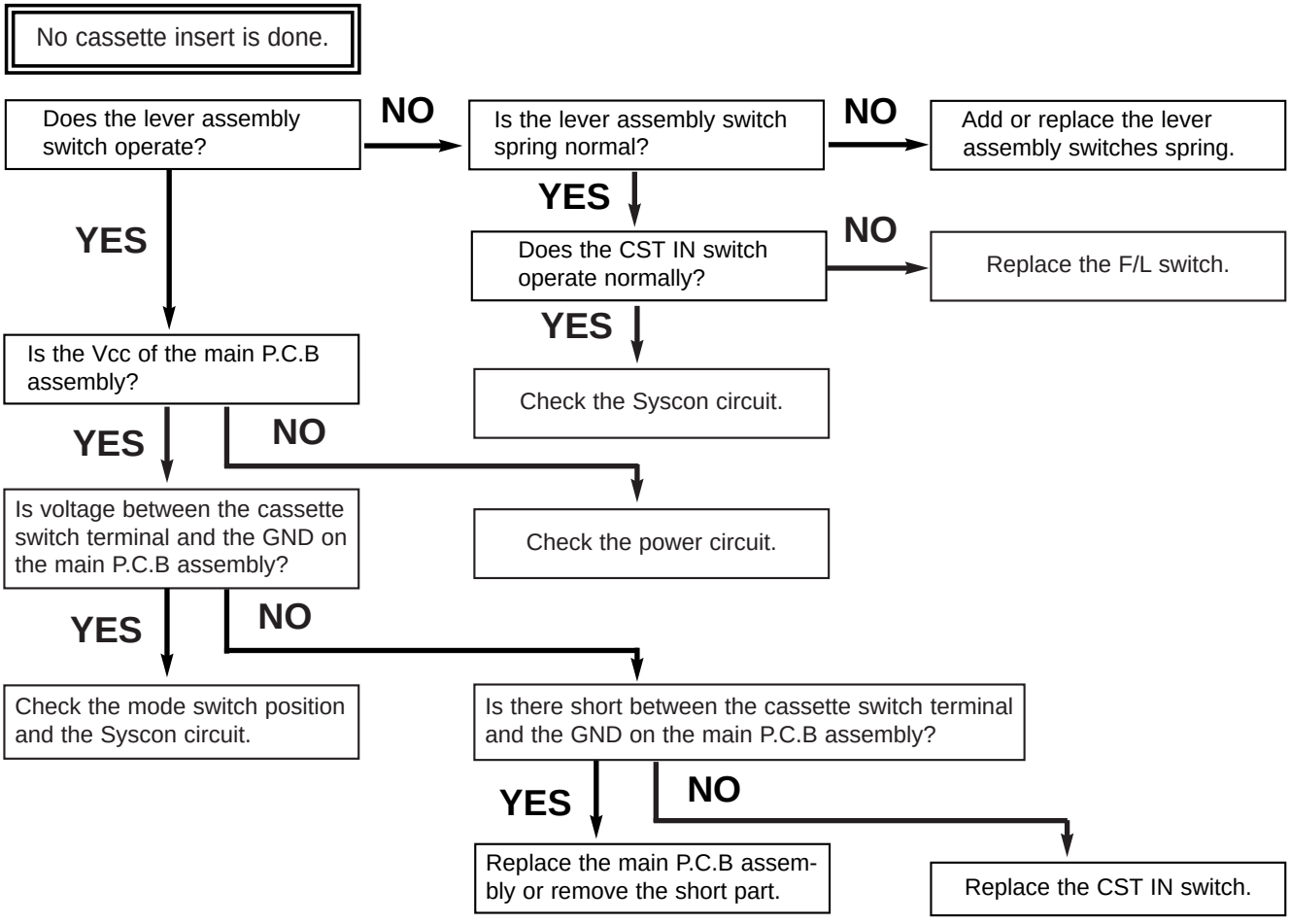

No cassette loading is done.
Insert the cassette.
YES
Is operation of the lever assembly S/W normal?
NO
Check the holder assembly CST.
YES
Does output of the CST IN S/W change?
(In insertion of the REC tape:
"L"_ "H"_ "L")
(In insertion of the REC prevention tape:
"L"_ "H"_ "L"_ "H")
NO
Is the CST IN S/W normal?
NO
Replace the CST IN S/W.
YES
YES
Check the Syscon circuit.
NO
Check the Syscon circuit.

E.

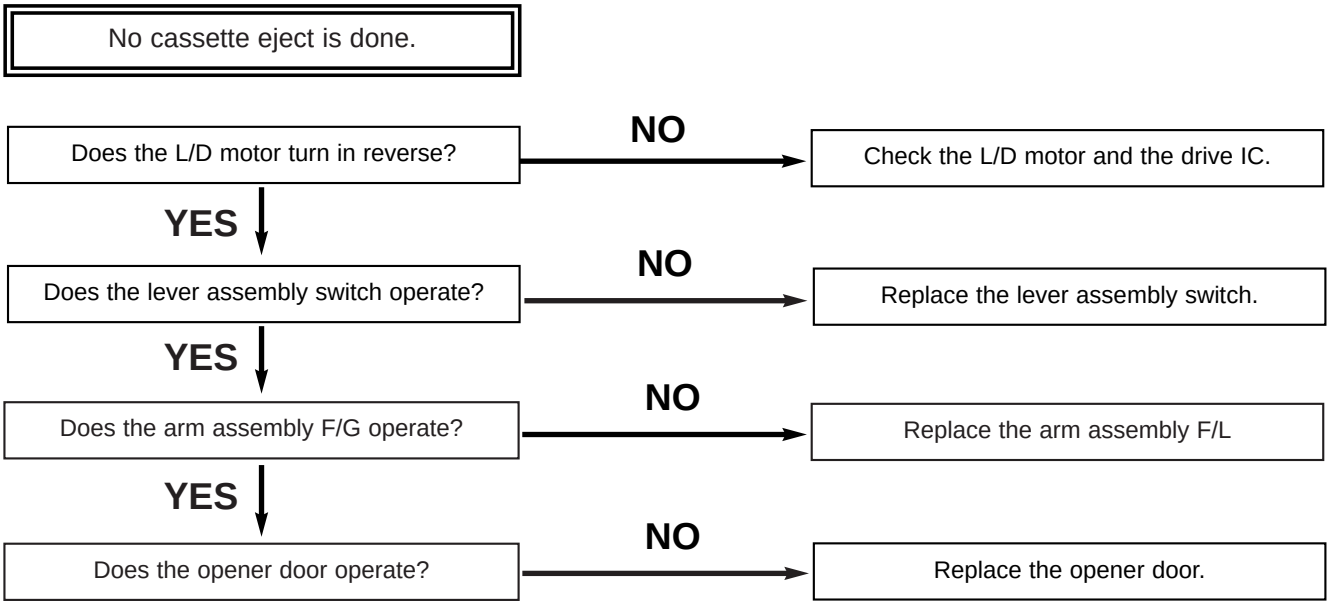

No tape winding is done in play.
Is the pinch roller attached to the Capstan shaft in operation of play?
NO
Check the assembly mode?
YES
Does the T/up reel operate?
NO
Is the Capstan belt hung?
NO
Hang the Capstan belt.
YES
YES
Check the clutch and the idler assembly.
Does the Capstan motor turn?
YES
Does the drum motor turn?
NO
Is normal voltage applied to the capstan motor Vcc1, Vcc2?
YES
YES
Is the DPG, DFG normal?
Is the Vctl terminal voltage of the Capstan motor applied at more than 4V?
NO
Check the Servo, power circuit.
YES
YES
Are the T/up and the reel sensor normal?
Replace the Capstan motor.
YES
NO
Check the Syscon circuit.
Is the Vcc voltage of the drum motor normal?
NO
Check the Syscon circuit.
YES
Is the Vctl terminal voltage of the drum motor at more than 2.3V?
NO
Check the Syscon circuit.
YES
Replace the drum motor.

2. Front Loading Mechanism

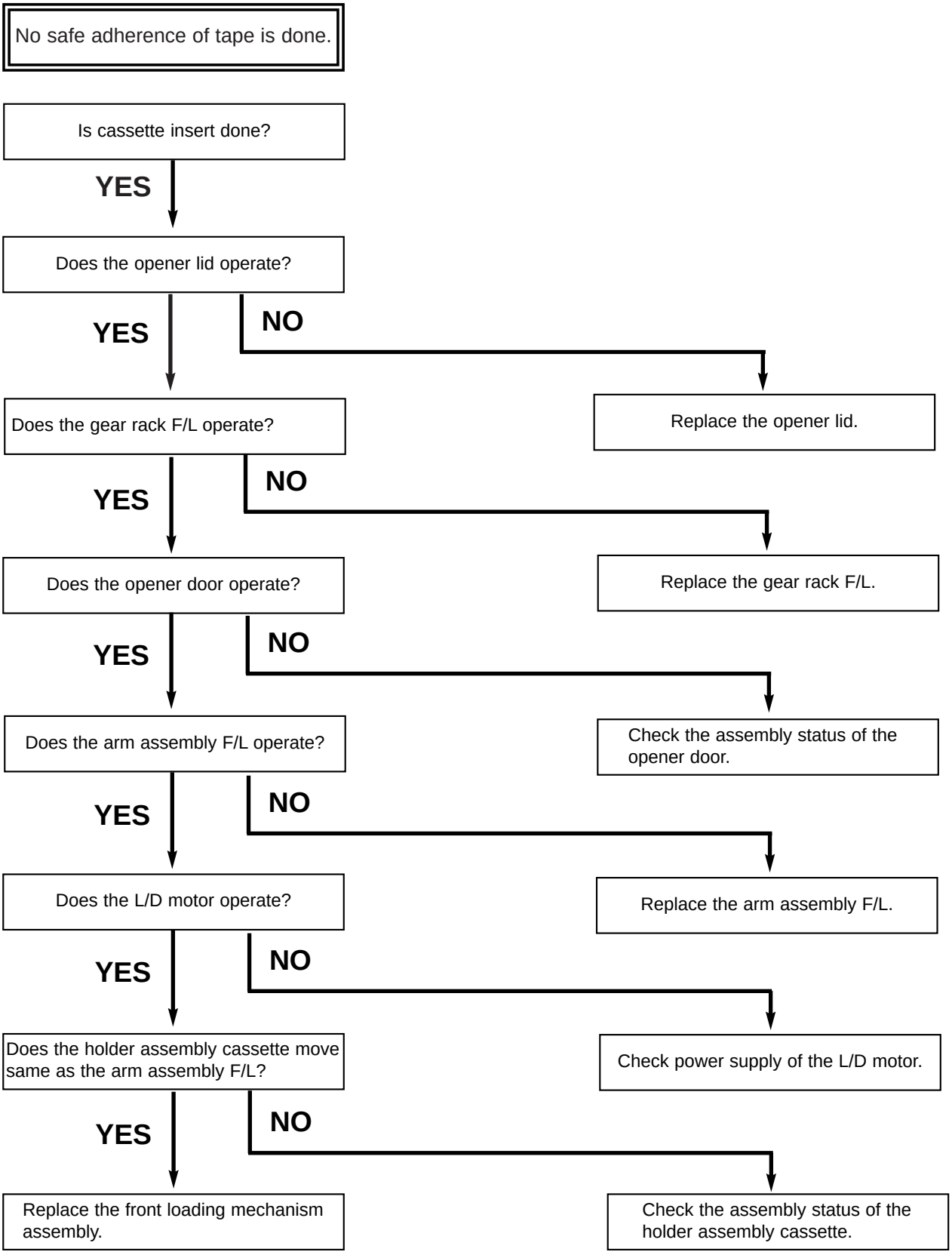
A.



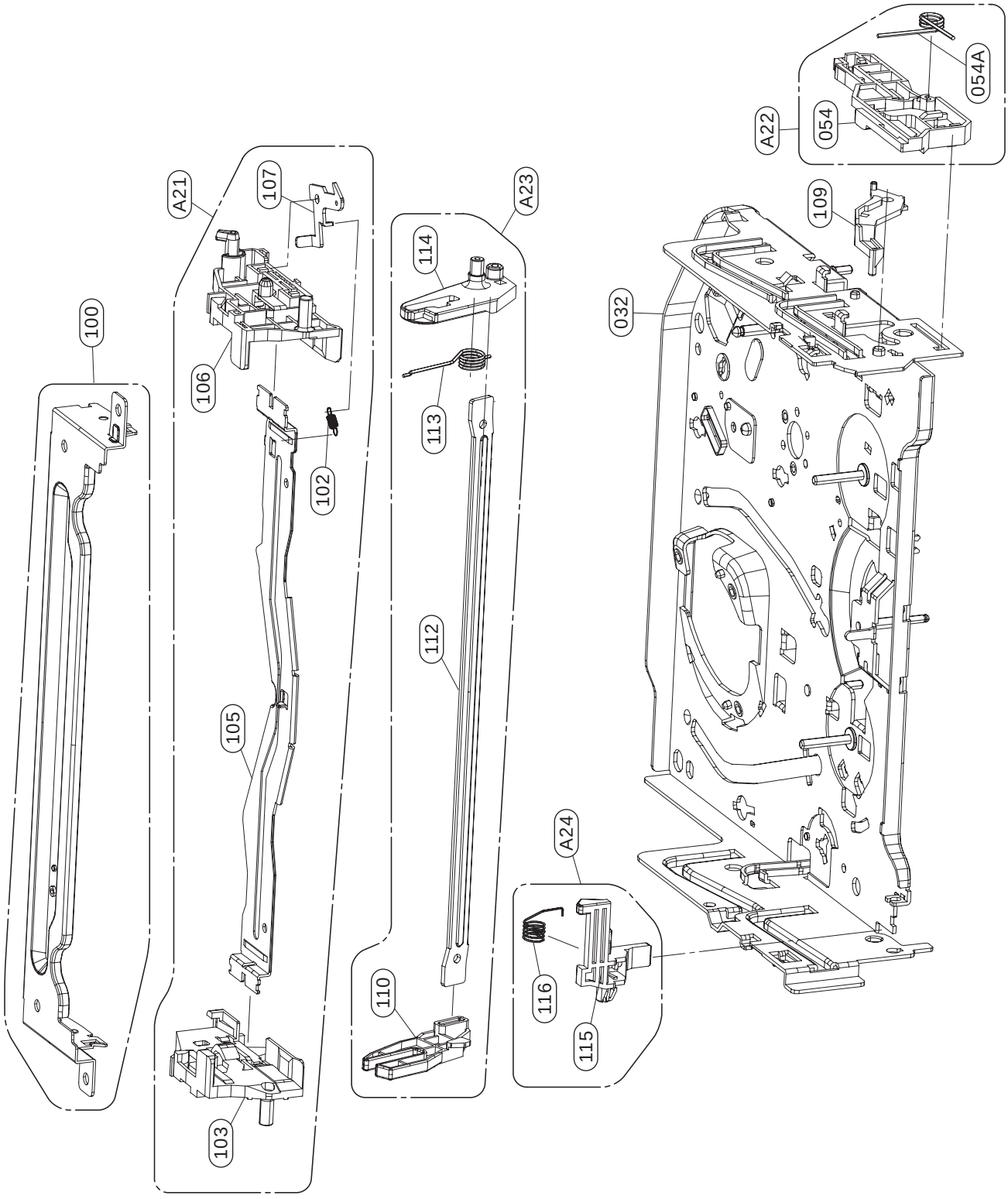
B.



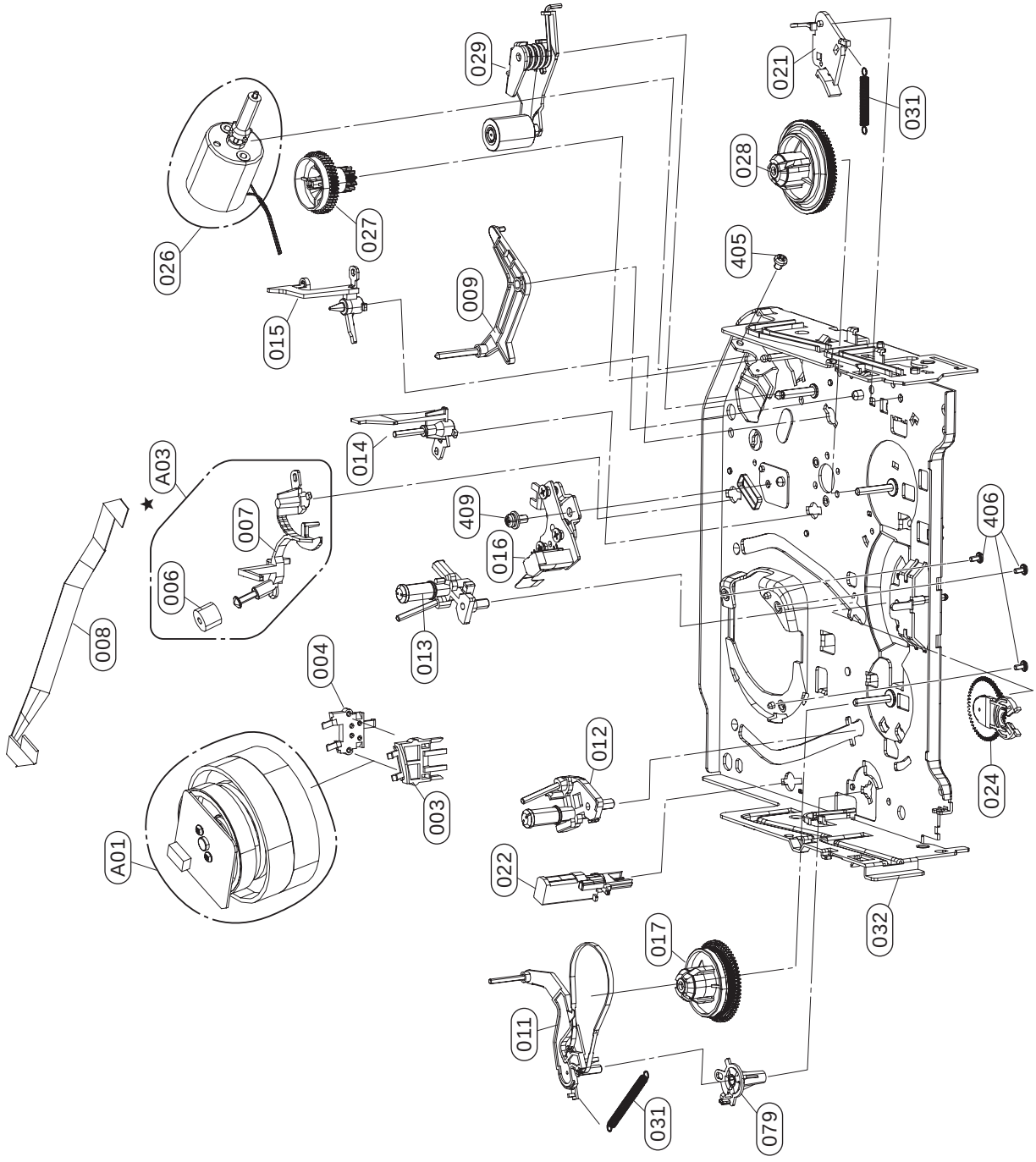
C.


No safe adherence of tape is done.
Is cassette insert done?
YES
Does the opener lid operate?
YES
NO
Replace the opener lid.
Does the gear rack F/L operate?
YES
NO
Replace the gear rack F/L.
Does the opener door operate?
YES
NO
Check the assembly status of the opener door.
Does the arm assembly F/L operate?
YES
NO
Replace the arm assembly F/L.
Does the L/D motor operate?
YES
NO
Check power supply of the L/D motor.
Does the holder assembly cassette move same as the arm assembly F/L?
YES
NO
Check the assembly status of the holder assembly cassette.
Replace the front loading mechanism assembly.

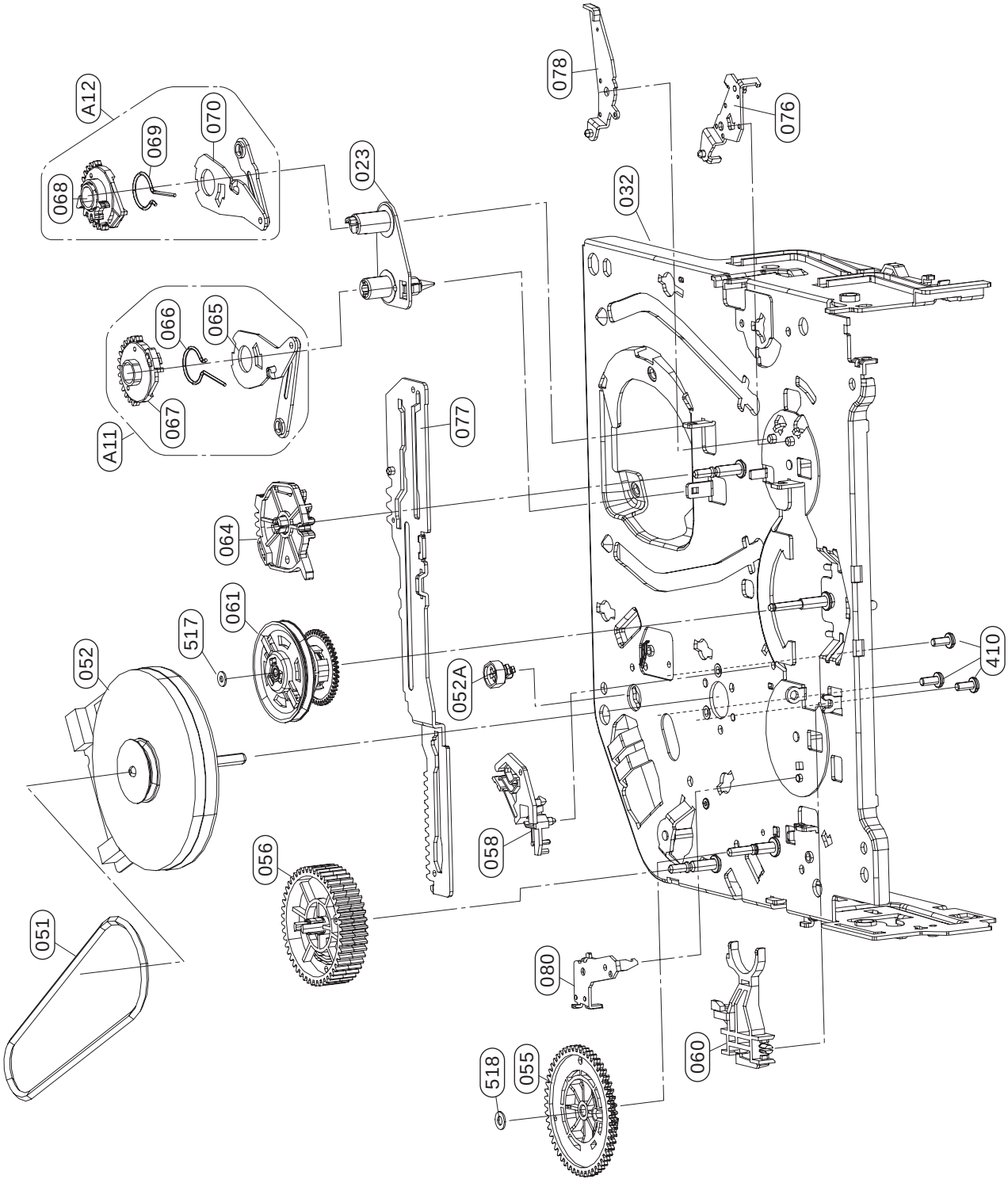
1. Front Loading Mechanism Section



2. Moving Mechanism Section (1)



3. Moving Mechanism Section (2)



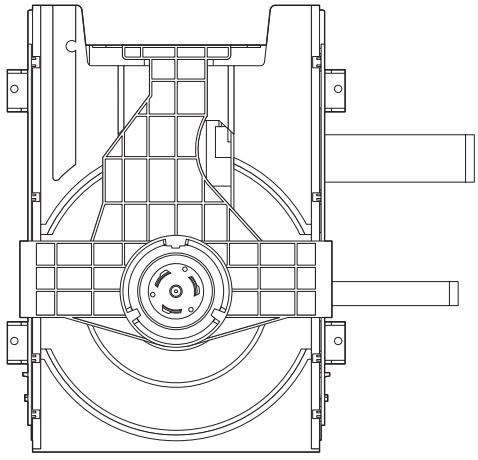
MEMO

SECTION 5 MECHANISM OF DVD PART (DP-10C)

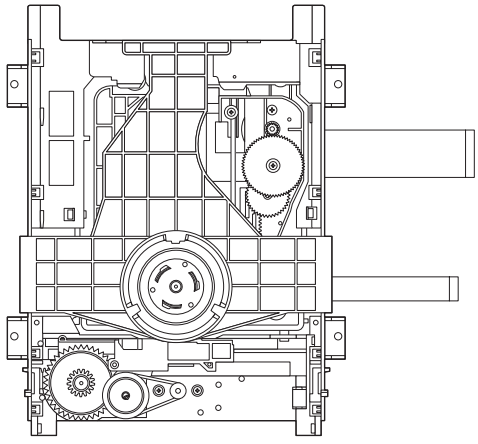
CONTENTS

DECK MECHANISM PARTS LOCATION

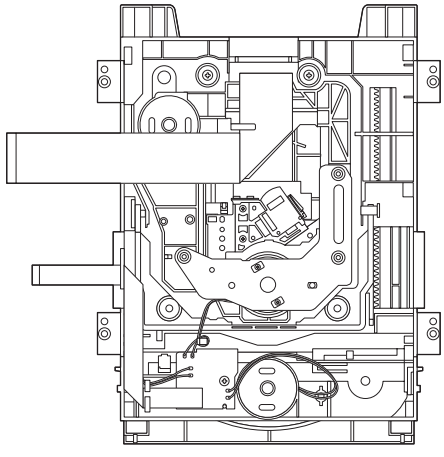
• Top View (With Tray)



• Top View (Without Tray)



• Bottom View



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

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

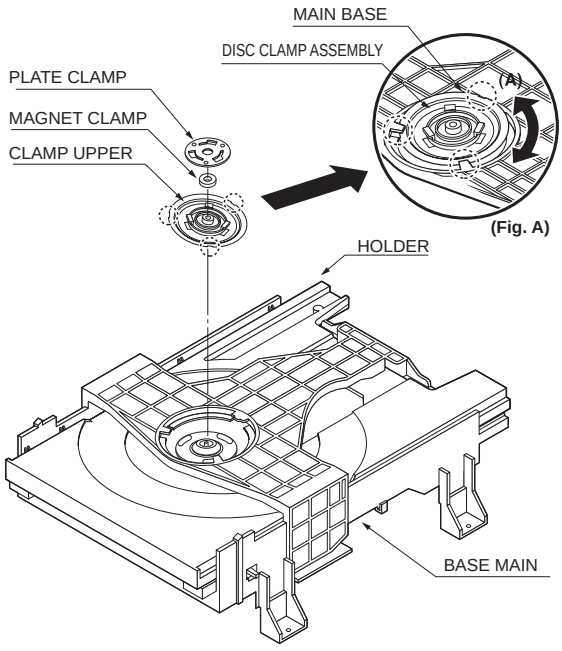


Fig. 5-1

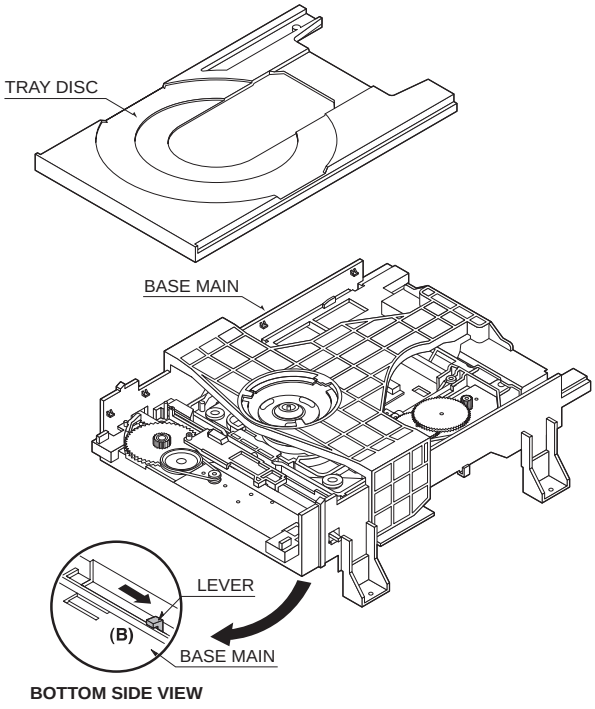


Fig. 5-2

1.Main Base (Fig. 5-1)

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

2. Tray Disc (Fig. 5-2)

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

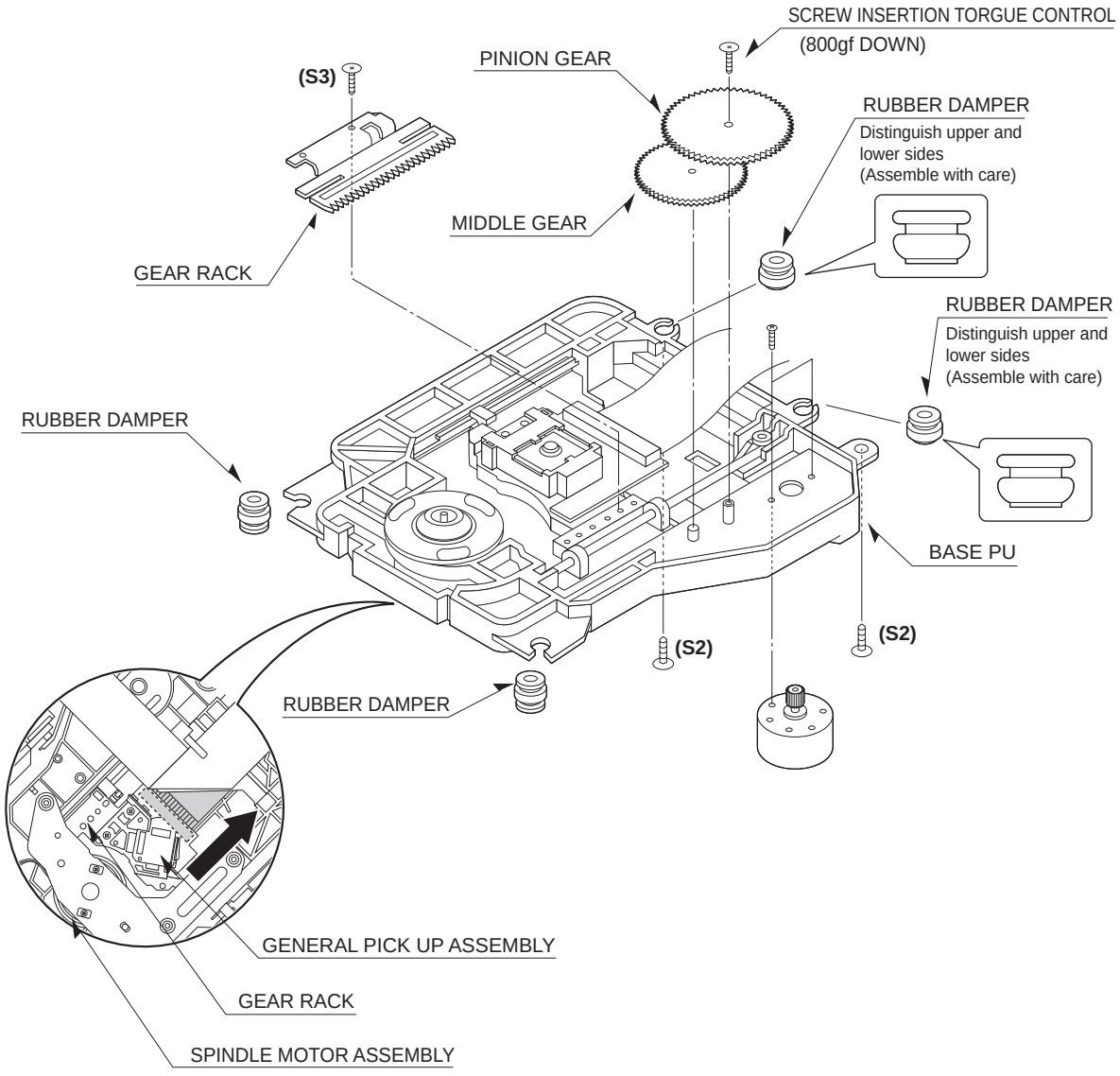


Fig. 5-3

3. Base Assembly Sled (Fig. 5-3)

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

3-1. Gear Feed
3-2. Gear Middle

3-3. Gear Rack

1) Release the Scerw(S3)

4. Rubber Rear (Fig. 5-3)

DECK MECHANISM DISASSEMBLY

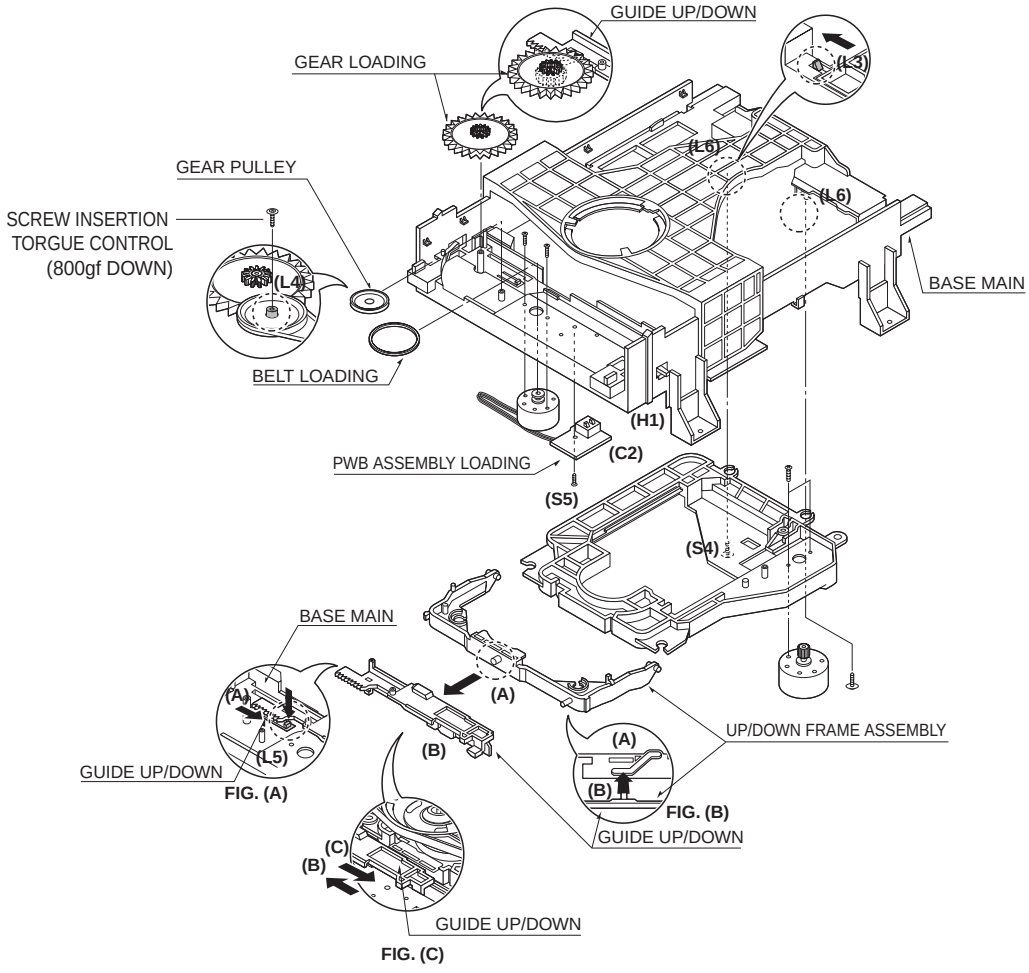


Fig. 5-4

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

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. 5-4)

Note

Put the Base Main on original position(Top Side)

7. Gear pulley (Fig. 5-4)

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. 5-4)

9. Guide Up/Down (Fig. 5-4)

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. 5-4)

Note

Put the Base Main face down(Bottom Side)

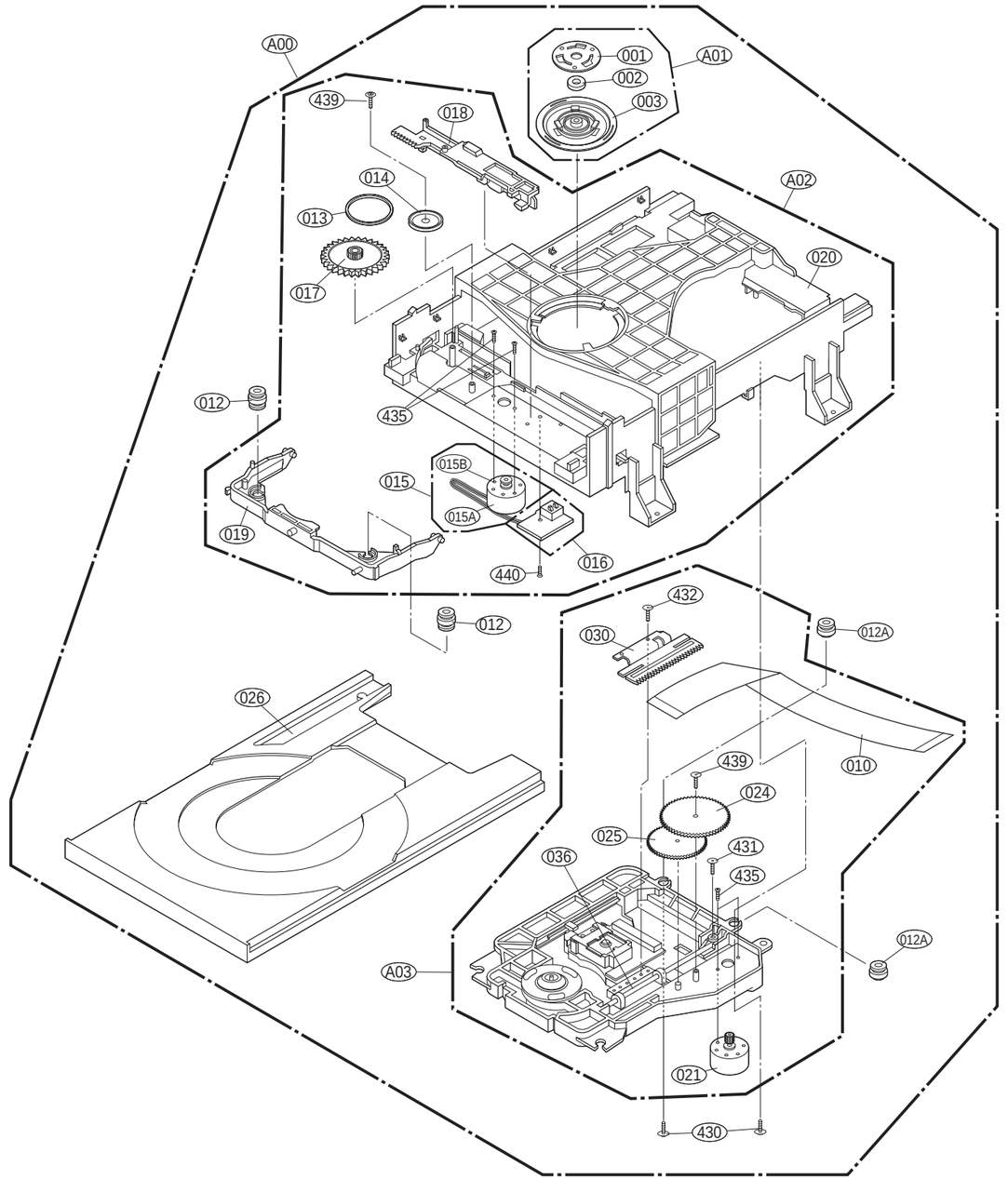
1) Release 1 Screws(S5)
2) Unlock the Loading Motor (C2) from the Hook (H1) on the Base Main.
3) Unlock 2 Locking Tabs(L6) and separate the PWB Assembly Loading from the Base Main.

11. Base Main(Fig. 5-4)

MEMO

EXPLODED VIEWS

1. DECK MECHANISM EXPLODED VIEW(DP-10C)



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DV3340V/17 Part List

ACAB	996500025783	AUDIO CABLE WHITE/RED
MC	996500027790	MAINS CORD
RC	996510001507	Remote Controller
VCAB	996510001508	VCR LGEIN 1WAY YELLOW 1.8M +2W
VCCAB	996500025782	VIDEO CABLE YEL

Note:Only the parts mentioned in this list are normal service spare parts