VCR+DVD RECORDER DVDR3320V

DVDR3320V/01/02/05/19

Service
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Service

Service Manual

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PHILIPS

SECTION 1

SUMMARY

CONTENTS

PRODUCT SAFETY SERVICING GUIDELINES FOR VIDEO PRODUCTS

IMPORTANT SAFETY NOTICE

This manual was prepared for use only by properly trained audio-video service technicians.

When servicing this product, under no circumstances should the original design be modified or altered without permission from PHILIPS Electronics Corporation. All components should be replaced only with types identical to those in the original circuit and their physical location, wiring and lead dress must conform to original layout upon completion of repairs.

Special components are also used to prevent x-radiation, shock and fire hazard. These components are indicated by the letter "x" included in their component designators and are required to maintain safe performance. No deviations are allowed without prior approval by PHILIPS Electronics Corporation.

Circuit diagrams 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.

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 property damage or user injury.

Service work should be performed only after you are thoroughly familiar with these safety checks and servicing guidelines.

GRAPHIC SYMBOLS

The exclamation point within an equilateral triangle is intended to alert the service personnel to important safety information in the service literature.

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the service personnel to the presence of noninsulated "dangerous voltage" that may be of sufficient magnitude to constitute a risk of electric shock.

The pictorial representation of a fuse and its rating within an equilateral triangle is intended to convey to the service personnel the following fuse replacement caution notice:

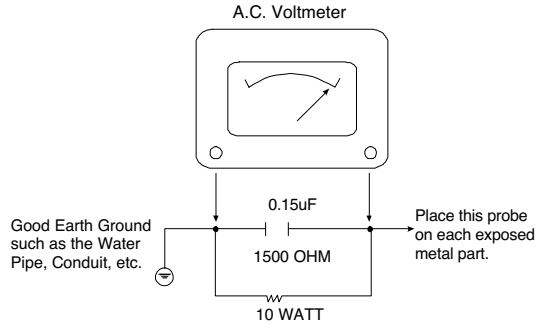
CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ALL FUSES WITH THE SAME TYPE AND RATING AS MARKED NEAR EACH FUSE.

SERVICE INFORMATION

While servicing, use an isolation transformer for protection from AC line shock. After the original service problem has been corrected, make a check of the following:

FIRE AND SHOCK HAZARD

1. Be sure that all components are positioned to avoid a possibility of adjacent component shorts. This is especially important on items trans-ported to and from the repair shop.
2. Verify that all protective devices such as insulators, barriers, covers, shields, strain reliefs, power supply cords, and other hardware have been reinstalled per the 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 or damaged insulation (including the AC cord), and replace if necessary.
5. No lead or component should touch a high current device or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces must be avoided.
6. After reassembly of the set, always perform an AC leakage test on all exposed metallic parts of the cabinet (the channel selector knobs, antenna terminals, handle and screws) to be sure that set is safe to operate without danger of electrical shock. DO NOT USE A LINE ISOLATION TRANSFORMER DURING THIS TEST. Use an AC 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 150V AC type capacitor between a known good earth ground water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination of 1500 ohm resistor and .15 mfd capacitor. Reverse the AC plug by using a non-polarized adaptor and repeat AC voltage measurements for each exposed metallic part. Voltage measured must not exceed 0.75 volts RMS. This corresponds to 0.5 milliamp AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



TIPS ON PROPER INSTALLATION

1. Never install any receiver in a closed-in recess, cubbyhole, or closely fitting shelf space over, or close to, a heat duct, or in the path of heated air flow.
2. Avoid conditions of high humidity such as: outdoor patio installations where dew is a factor, near steam radiators where steam leakage is a factor, etc.
3. Avoid placement where draperies may obstruct venting. The customer should also avoid the use of decorative scarves or other coverings that 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 tests on customized installations.
5. Caution customers against mounting a product on a sloping shelf or in a tilted position, unless the receiver is properly secured.
6. A product on a roll-about cart should be stable in 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 using 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 RECODER 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 RECODER 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 RECODER 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 whitch instruments covered by this service manual might be equipped.

5. Do not apply AC power to this VCR + DVD RECODER 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 1M-ohm.
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:

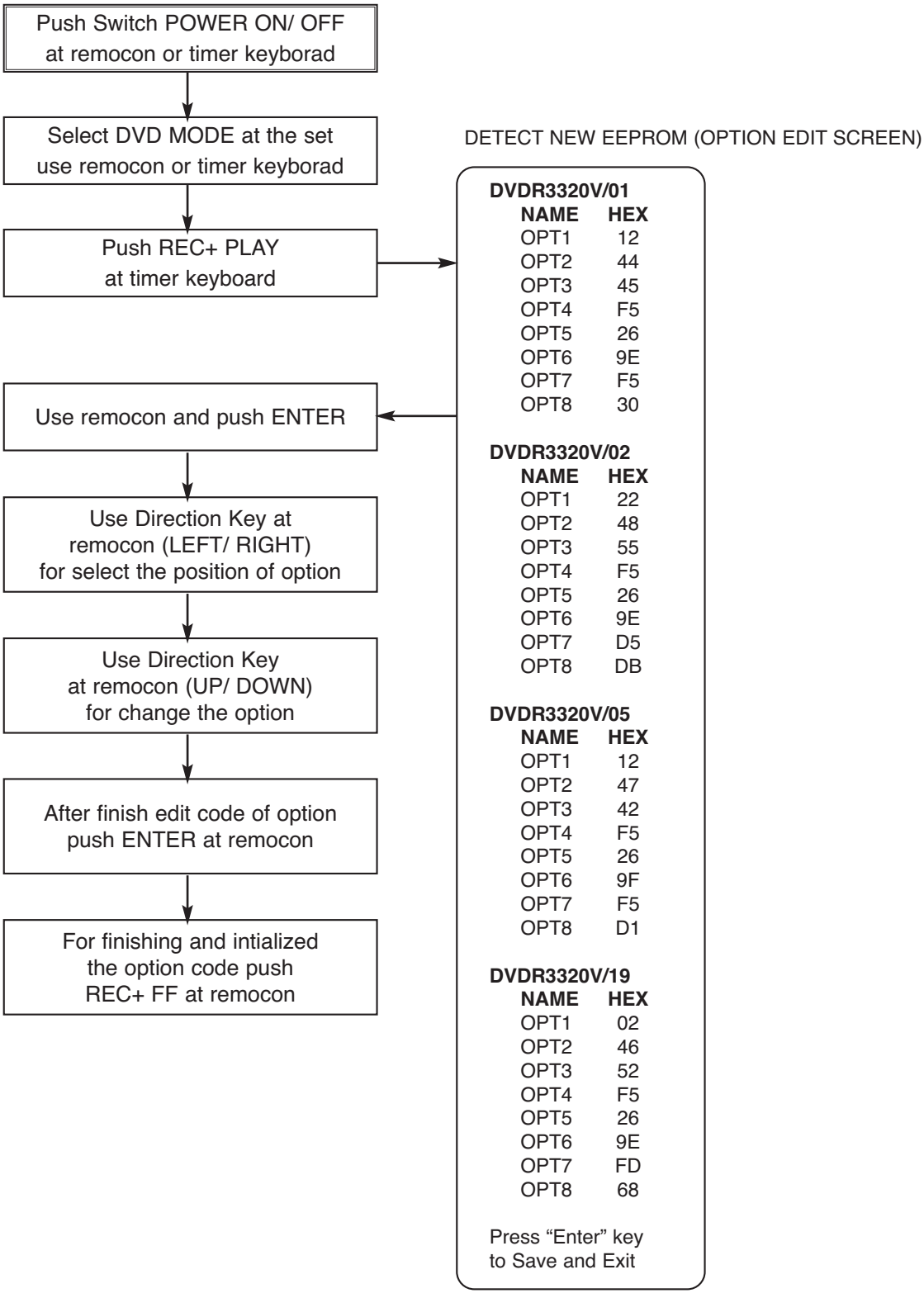
  * BGA-de-/soldering (+ baking instructions)
  * Heating-profiles of BGAs and other ICs used in Philips-sets

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

For additional questions please contact your local repair-helpdesk.

THE STEPS FOR CHANGE THE OPTION CODE

Note : This procedure must be done when IC304(On digital Board) or Digital Boardassy

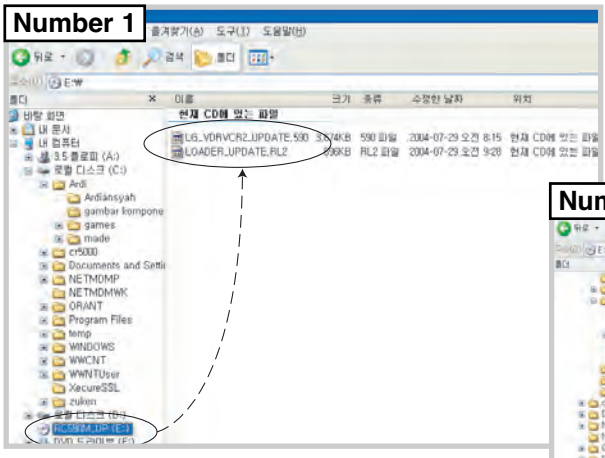


UP-DATING PROGRAM

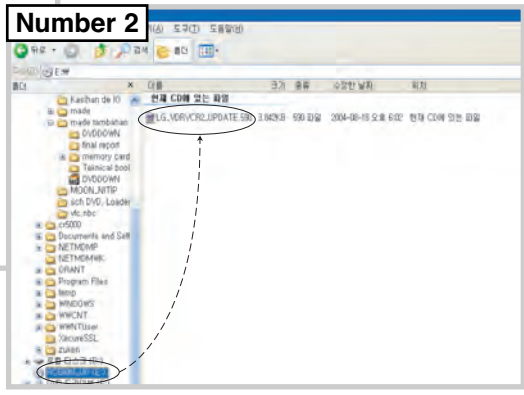
BURNING DISC

- For up-dating the DVD program using the disc, it must burning the disc which include the DVD software.
- For recorder combi set which using the disc downloader program are DVD Program and Loader Program.
- In 2nd generation for recorder combi can download the DVD program and Loader program one by one, or all together.

Number 1



Number 2



* There is two way to format disc DVD Program
1. DVD and LOADER program format in one disc
2. Only DVD program format in one disc

- If you format like number 1 you'll see capture like (figure 1)
- And you have three choice:
  1. Main. It's mean if you chose this it'll up-dating only DVD prgram.
  2. Loader.It's mean if you chose this it'll up-dating only Loader program.
  3. ALL. It's mean if you chose this it'll up-dating DVD and Loader program.

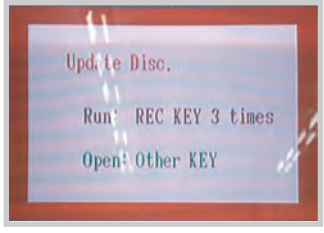
(Figure 1)

- If you format like number 2 you'll not see capture like figure 1 that give you choices, you have no choice only update DVD program

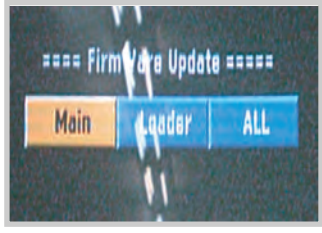
DVD UPGRADE INSTRUCTION

FORMAT NO 1

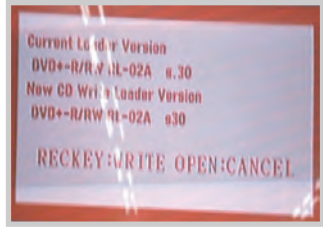
1. Press POWER KEY to turn on.
2. After booting, insert the upgrade disc, and you will see massage like [FIGURE 1]
3. Press “REC” key (front or remote) 3 times and you will see as [FIGURE 2] with remote Chose one of them then Press enter
4. For update both of them [MAIN & LOADER] we chose “ALL” and first you will see [FIGURE 3] DVD update
   → Check the “Current Version” and “ New CD Write Version” and press “REC” key.
5. The DVD update will be on progress.And when finish update MAIN Version it’s automatically continue to Update Loader Version and You will see [FIGURE 4]
   → Check the “Current Version” and “New CD Write Version “ and Press “REC” key once more
6. The LOADER update will be on progress. And tray will open.
7. Remove the disc and wait until finish
8. The tray will be close and open automatically after completing “UNDER UPDATE” 100%
9. Turn off the unit
10. Turn on again the unit is operation with new software



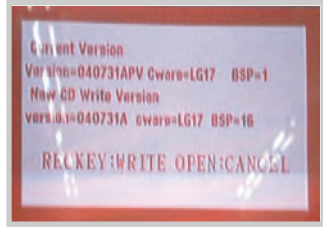
[FIGURE 1]



[FIGURE 2]



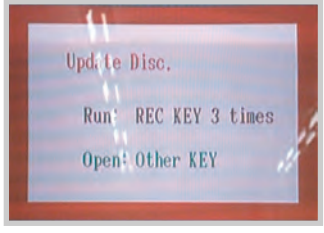
[FIGURE 3]



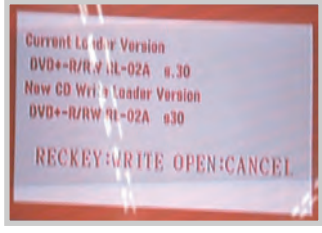
[FIGURE 4]

FORMAT NO 2

1. Press POWER KEY to turn on.
2. After booting, insert the upgrade disc, and you will see massage like [FIGURE 1]
3. Press “REC” key (front or remote) 3 times
4. The DVD update will be on progress.
   → Check the “Current Version” and “New CD Write Version “ and Press “REC” key once more
5. The tray will be open automatically after completing “UNDER UPDATE” 100%
6. Remove the disc andTurn off the unit
7. Turn on again the unit is operation with new software



[FIGURE 1]



[FIGURE 2]

SPECIFICATIONS

General	
Power requirements	AC 220-230V, 50 Hz
Power consumption	35W
Dimensions (approx.)	430 X 78.5 X 354 mm (w x h x d)
Mass (approx.)	5.7 kg
Operating temperature	5°C to 35°C
Operating humidity	5 % to 90 %
Television system	PAL B/G, PAL I/I, SECAM D/K color system
Recording format	PAL
System	
Laser	Semiconductor laser, wavelength 650 mm
Video head system	Double azimuth 4 heads, helical scanning
Signal system	PAL
Recording	
Recording format	DVD+RW/+R Video format
Recordable discs	DVD-ReWritable, DVD-Recordable, DVD+ReWritable, DVD+Recordable
Recordable time	Approx. 1 hour (XP mode), 2 hours (SP mode), 4 hours (LP mode), 6 hours (EP mode)
Video recording format	
Sampling frequency	27MHz
Compression format	MPEG 2
Audio recording format	
Sampling frequency	48kHz
Compression format	Dolby Digital
Playback	
Frequency response	DVD (PCM 48 kHz): 8 Hz to 22 kHz, CD: 8 Hz to 20 kHz DVD (PCM 96 kHz): 8 Hz to 44 kHz
.	
Harmonic distortion	Less than 0.008% (AUDIO OUT connector)
Dynamic range	More than 95 dB (AUDIO OUT connector)
Inputs	
AERIAL IN	Aerial input, 75 ohms
VIDEO IN	1.0 Vp-p 75 ohms, sync negative, RCA jack x 1 / SCART x 2
AUDIO IN	0 dBm more than 47 kohms, RCA jack (L, R) x 1 / SCART x 2
DV IN	4 pin (i.LINK/IEEE 1394 standard)
S-VIDEO IN	(Y) 1.0 V (p-p), 75 Ω, negative sync, Mini DIN 4-pin x 1 (C) 0.3 V (p-p) 75 Ω
Outputs	
S-VIDEO OUT	(Y) 1.0 V (p-p), 75 Ω, negative sync, Mini DIN 4-pin x 1 (C) 0.3 V (p-p) 75 Ω
COMPONENT VIDEO OUT	(Y) 1.0 V (p-p), 75 Ω, negative sync, RCA jack x 1 (Pb)/(Pr) 0.7 V (p-p), 75 Ω, RCA jack x 2
Audio output (digital audio)	0.5 V (p-p), 75 Ω, RCA jack x 1
Audio output (analog audio)	2.0 Vrms (1 KHz, 0 dB), 600 Ω, RCA jack (L, R) x 1 / SCART

* Design and specifications are subject to change without notice.
* Manufactured under license from Dolby Laboratories. “Dolby”, “Pro Logic” and the double-D symbol are trademarks of Dolby Laboratories.
* DTS and DTS Digital Out are registered trademarks of Digital Theater Systems, Inc.

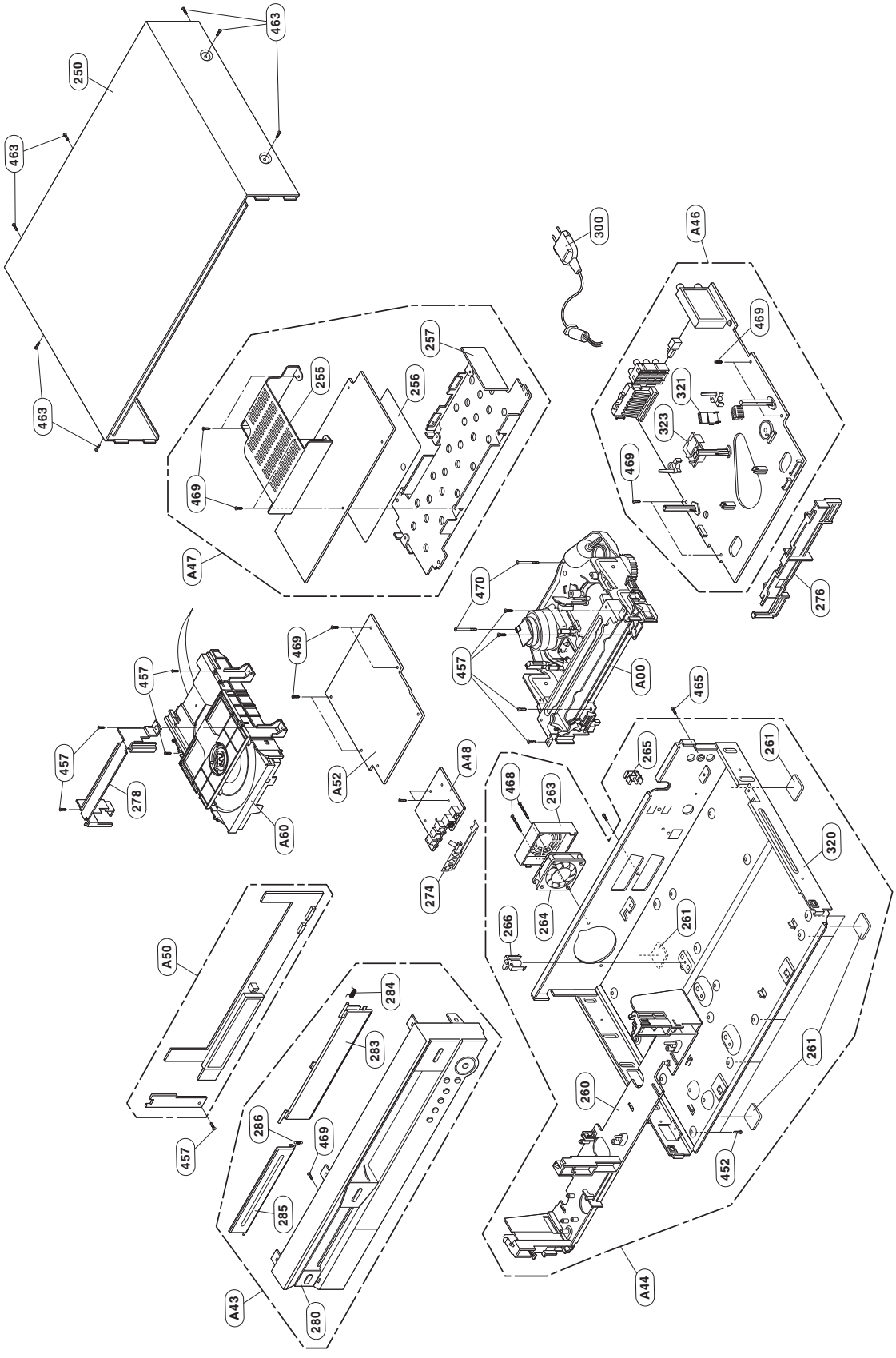
SECTION 2

EXPLODED VIEWS

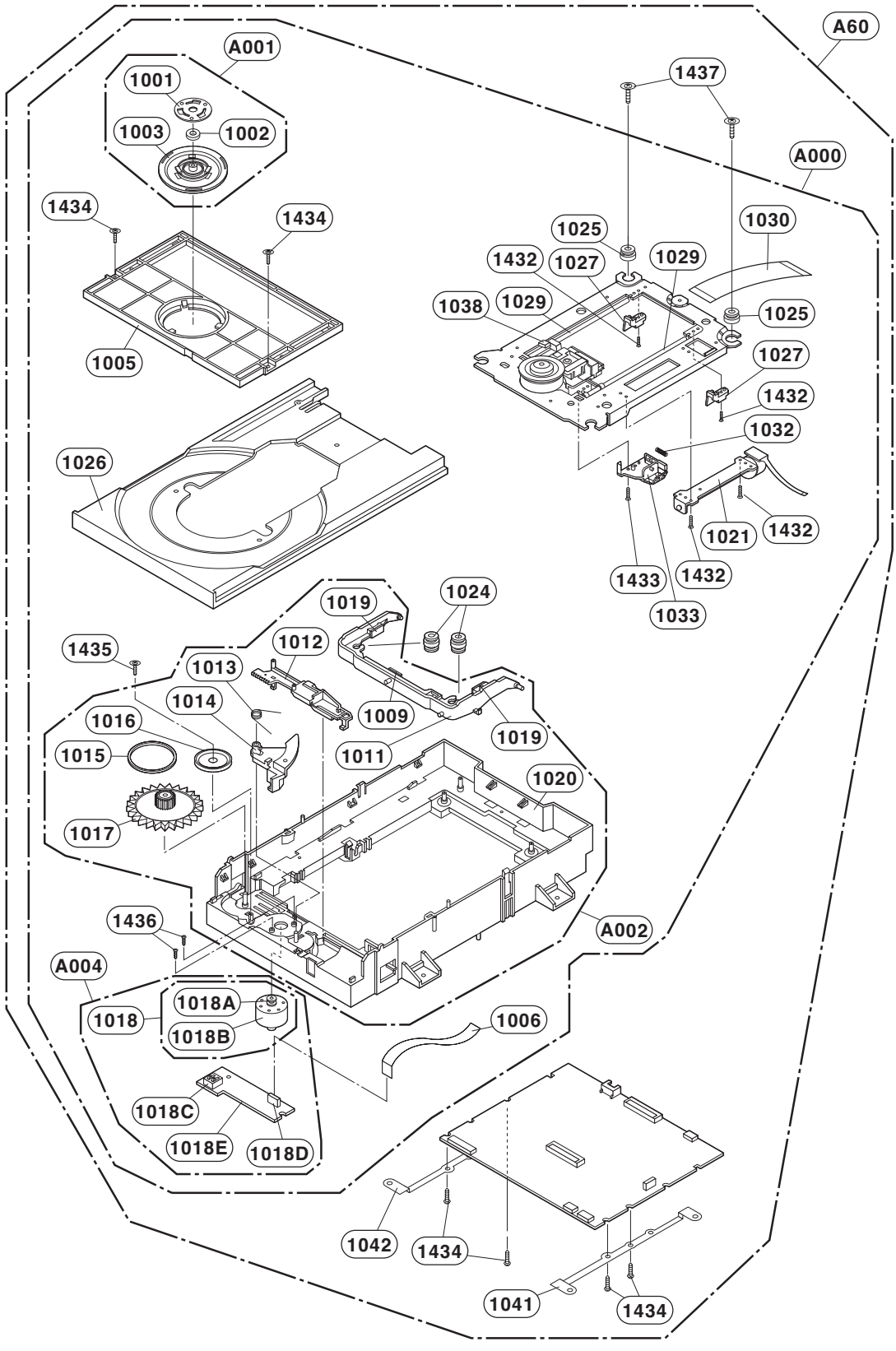
CONTENTS

EXPLODED VIEWS

1. Cabinet and Main Frame Section

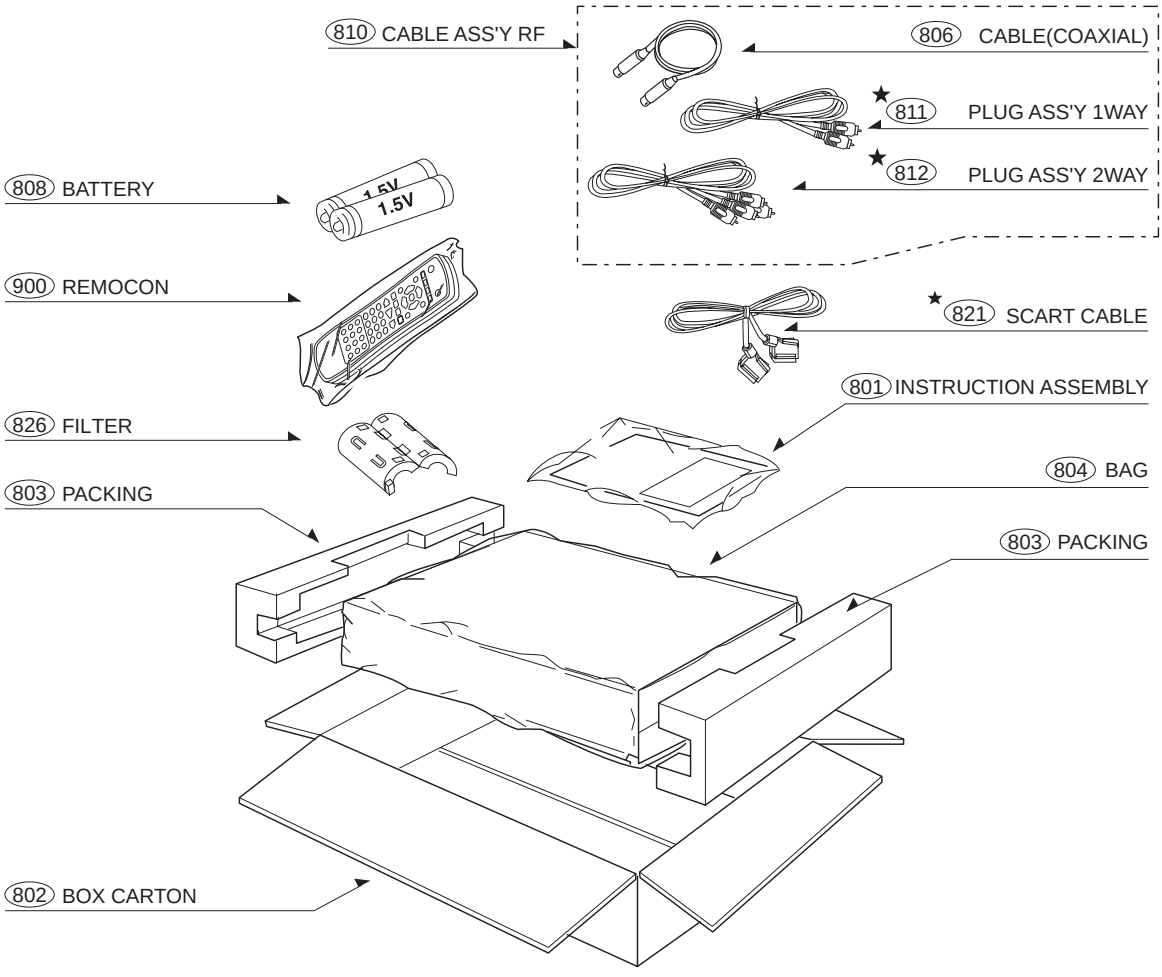


2. Deck Mechanism Section (RL-05) - For information only



3. Packing Accessory Section

★OPTIONAL PARTS



SECTION 3
ELECTRICAL

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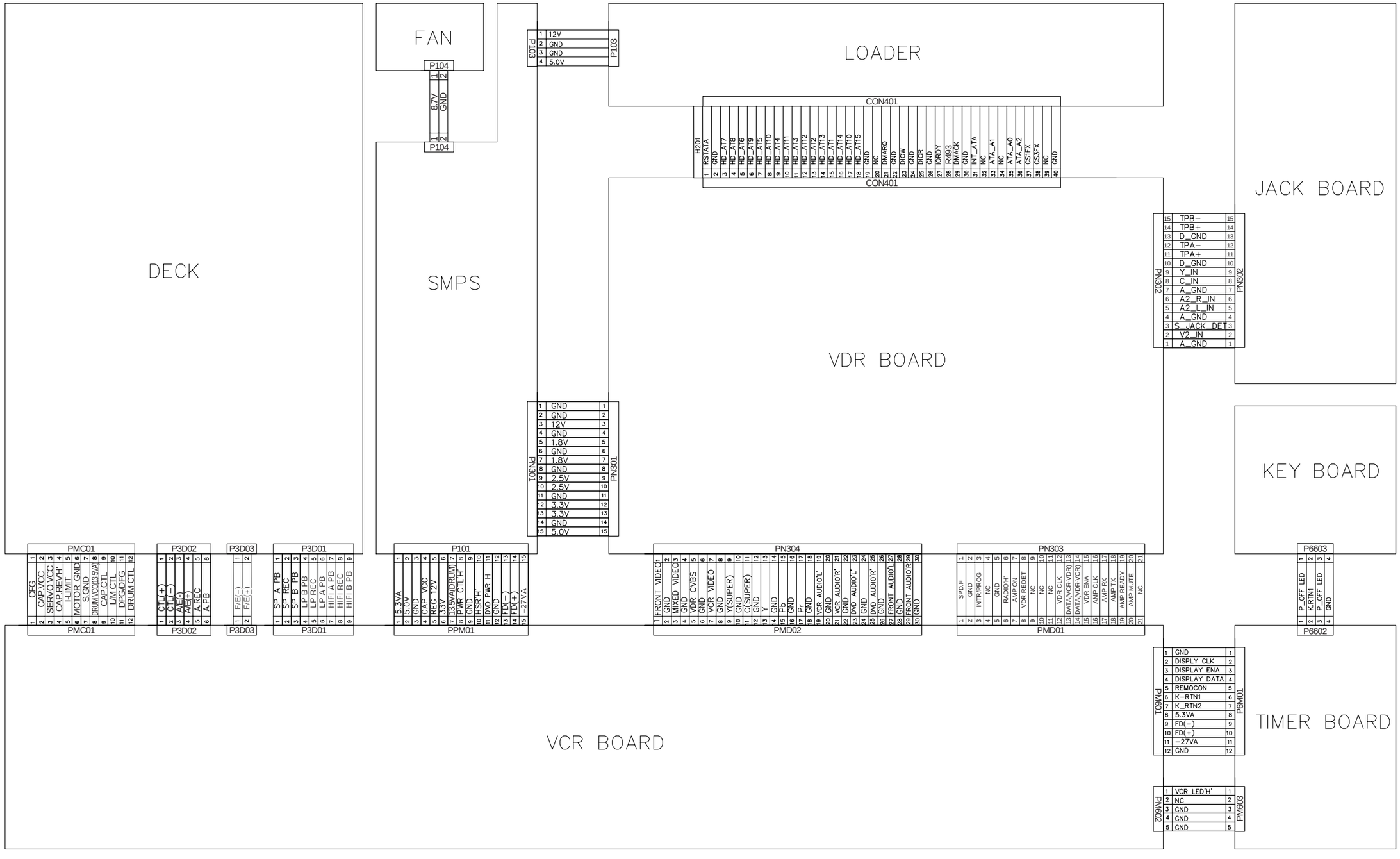
MEMO

OVERALL WIRING DIAGRAMS



MEMO

MEMO

VCR PART
ELECTRICAL ADJUSTMENT PROCEDURES

1. Servo Adjustment

1) PG Adjustment

• Test Equipment
a) OSCILLOSCOPE : PAL 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

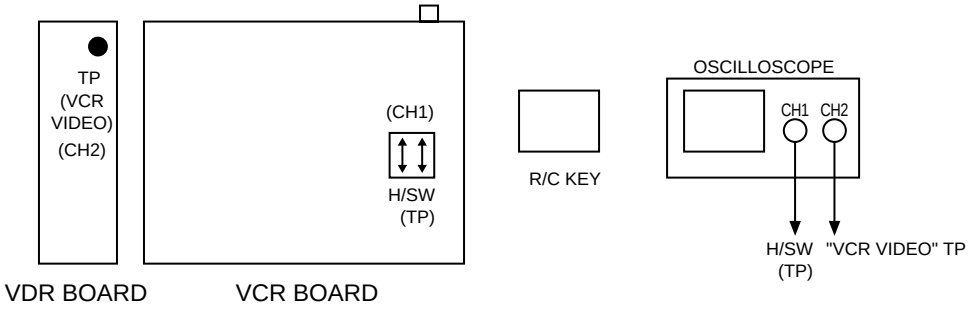
• Adjustment Procedure

a) Insert the SP Test Tape and play.
b) Connect the CH1 of the oscilloscope to the H/SW and CH2 to the “VCR VIDEO” TP for the VCR.
c) Trigger the mixed Combo Video Signal of CH2 to the CH1 H/SW, and then check the distance (time difference), which is from the selected A(B) Head point of the H/SW signal to the starting point of the vertical synchronized signal, to 6.5H ± 0.5H (416μs, 1H=64μs).

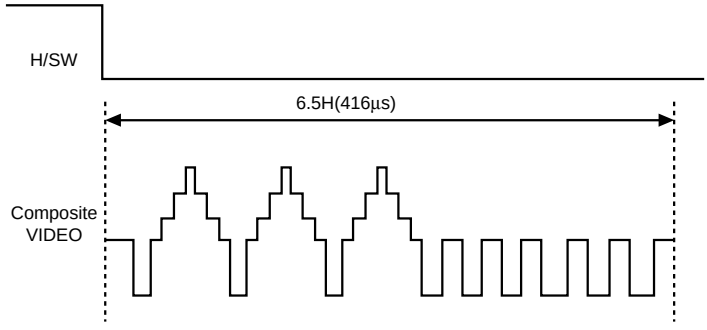
• PG Adjustment Method

a-1) Playback the SP standard tape
b-2) Wait for 3seconds with F/P “REC” key and “PLAY” key presseed at the same time. < Digitron[- -] >
c-3) Repeat the above step(No.b-2), then it finishes the PG adjusting automatically. < Digitron[PG] >
d-4) Stop the playback, then it goes out of PG adjusting mode after mony the PG data.

• CONNECTION

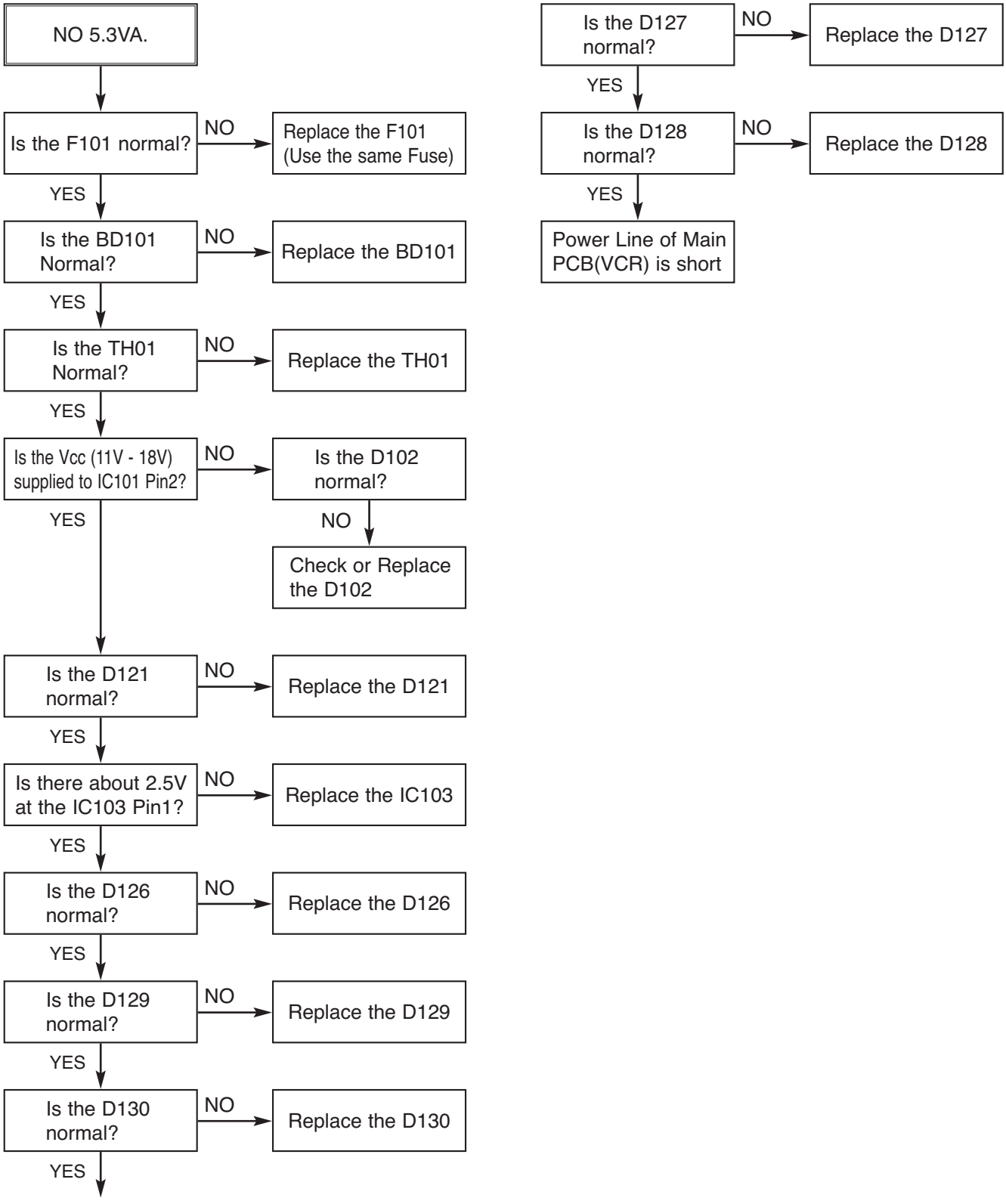


• WAVEFORM

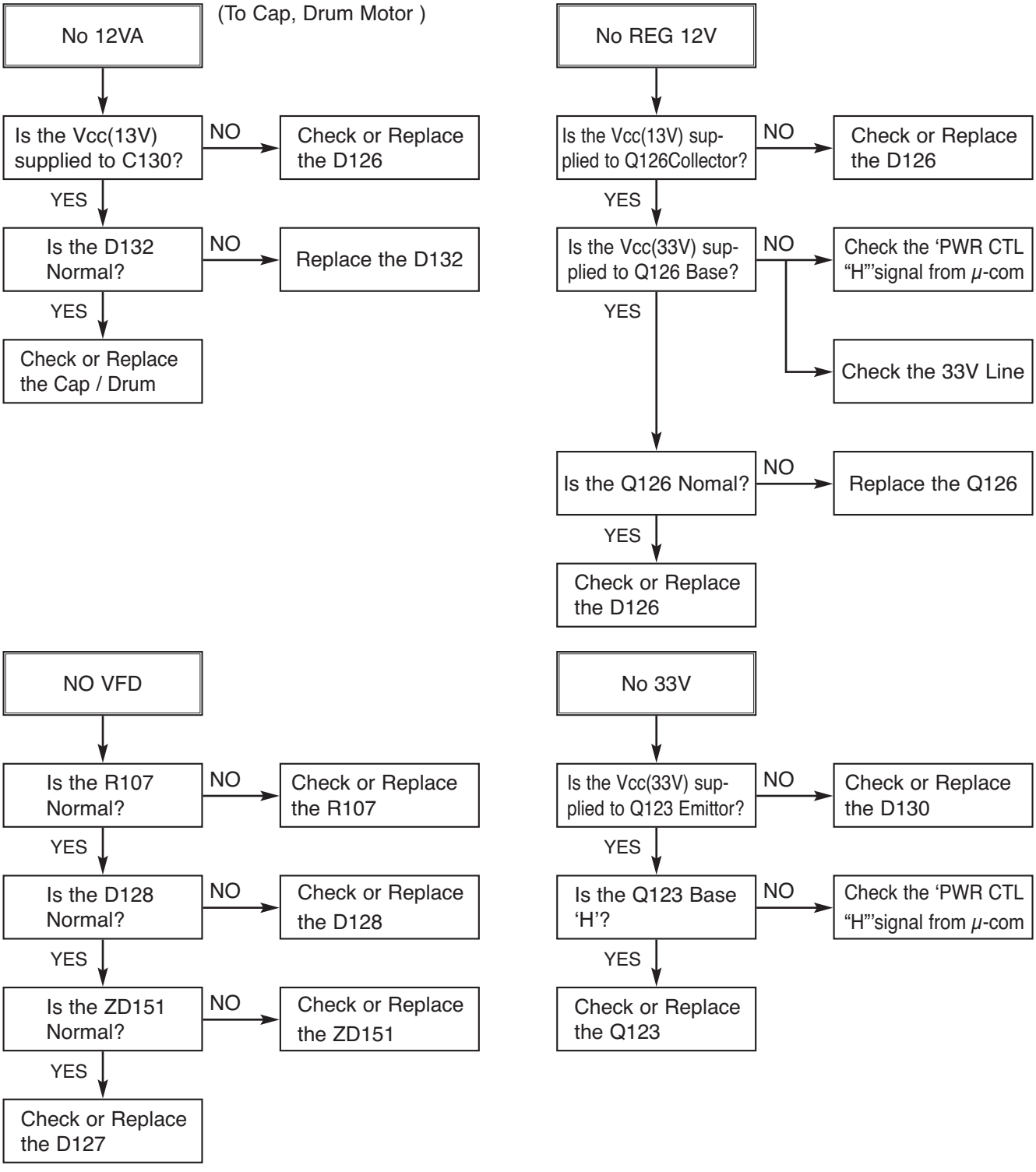


VCR ELECTRICAL TROUBLESHOOTING GUIDE

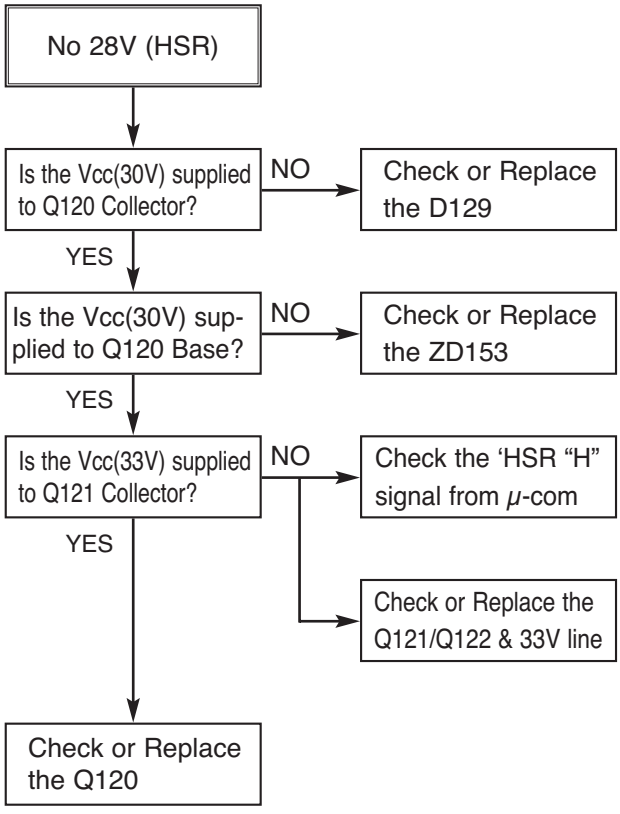
1. Power(SMPS) CIRCUIT



VCR ELECTRICAL TROUBLESHOOTING GUIDE



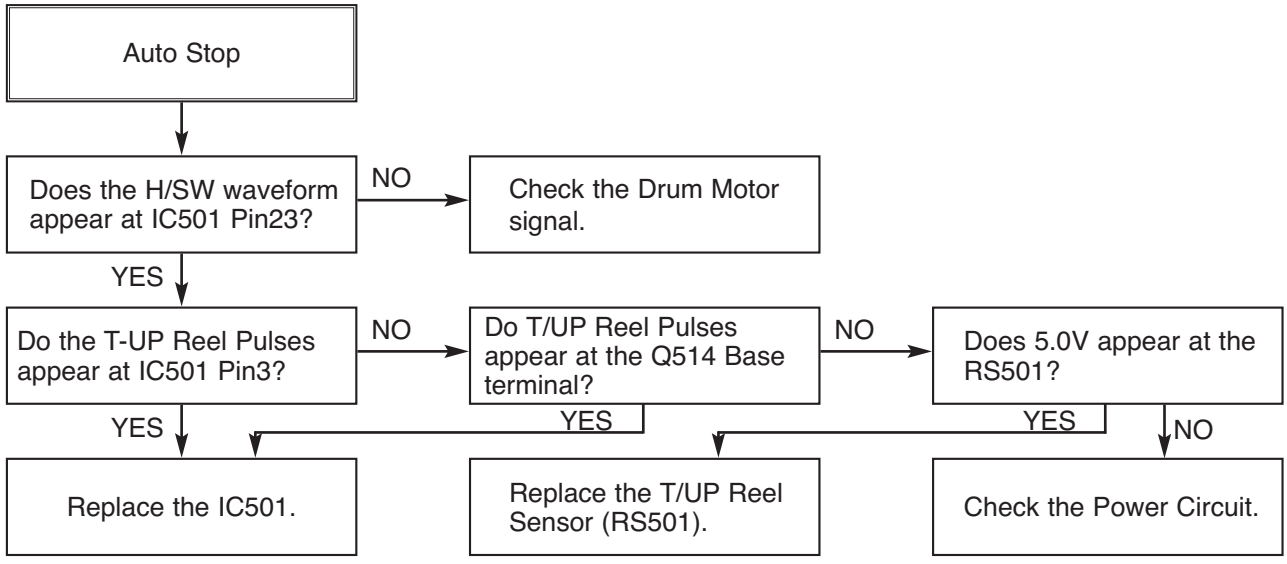
VCR ELECTRICAL TROUBLESHOOTING GUIDE



VCR ELECTRICAL TROUBLESHOOTING GUIDE

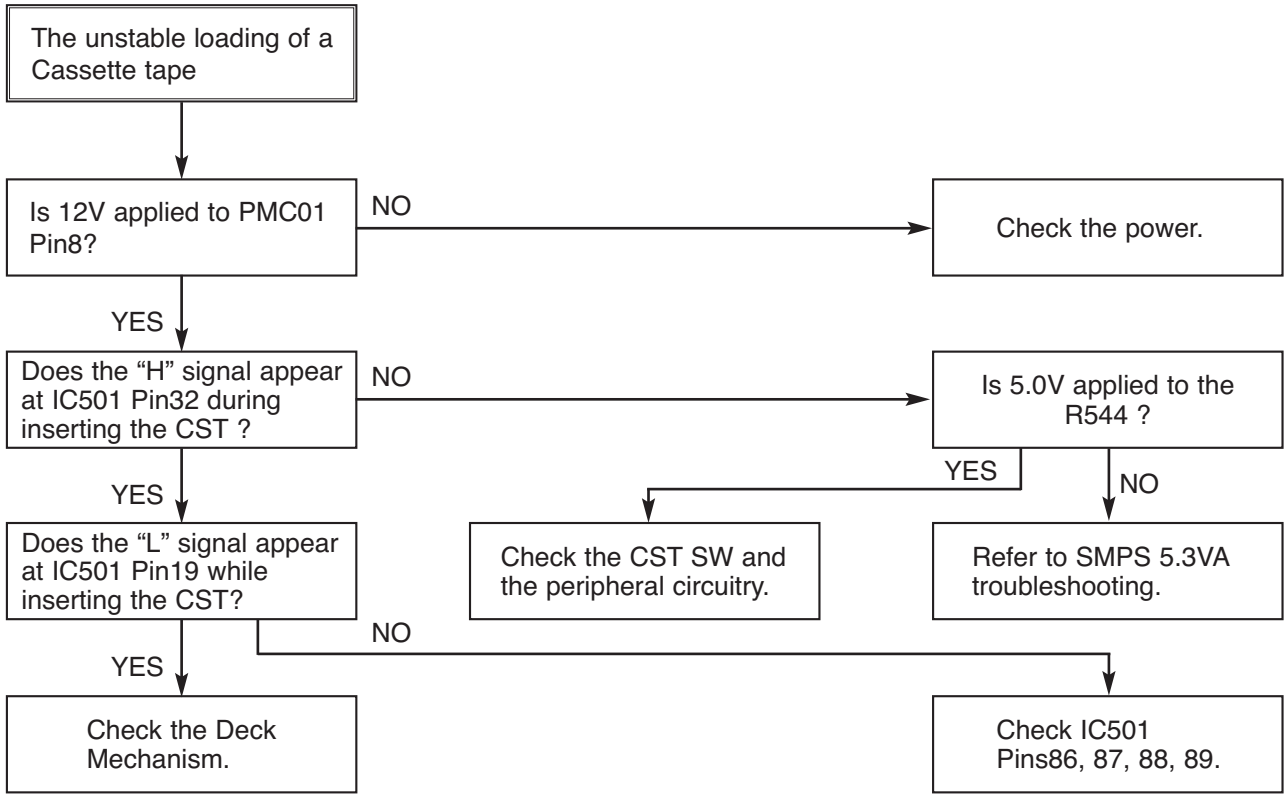
2. SYSTEM/KEY CIRCUIT

(1) AUTO STOP



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

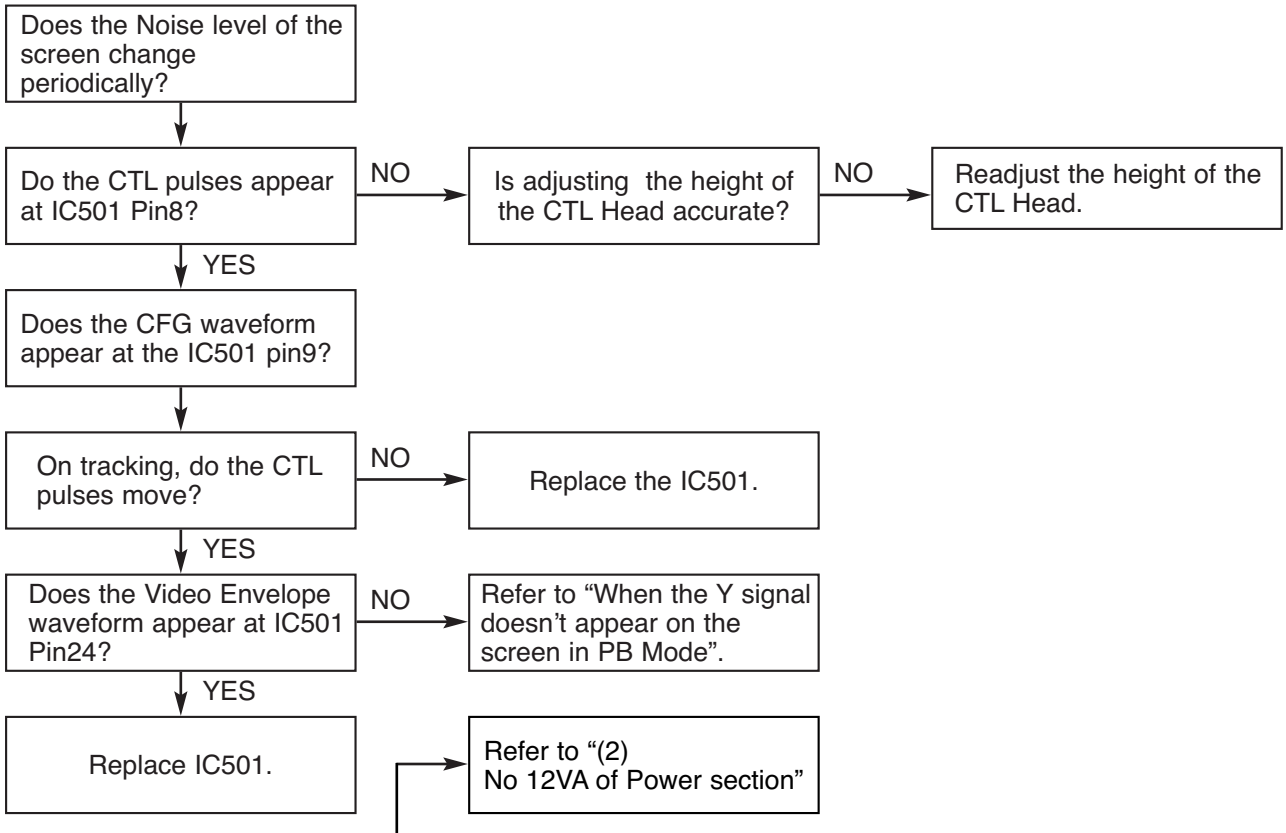
(2) The unstable loading of a Cassette tape



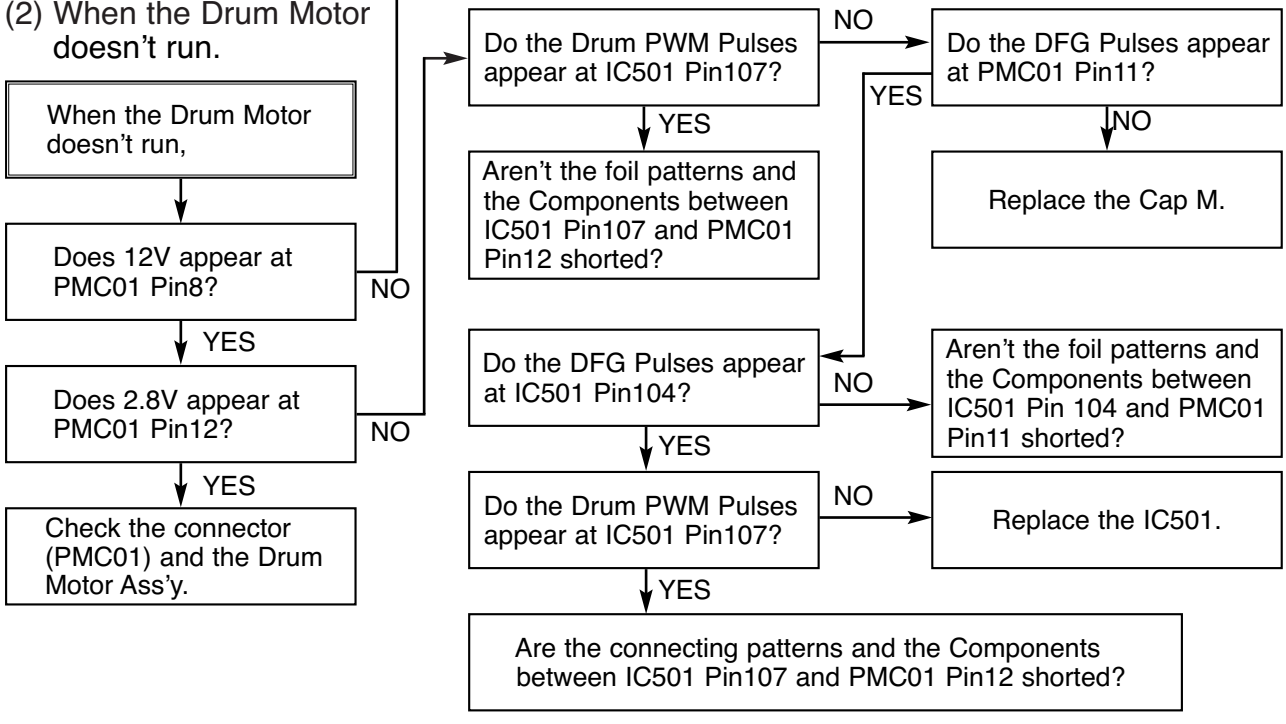
VCR ELECTRICAL TROUBLESHOOTING GUIDE

3. SERVO CIRCUIT

(1) Unstable Video in PB MODE



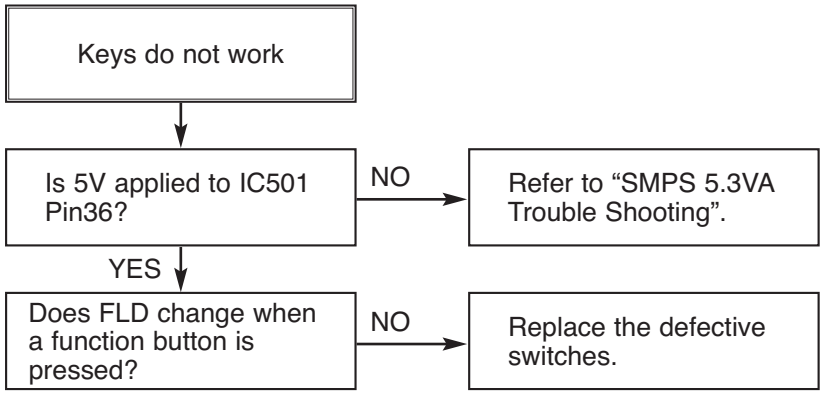
(2) When the Drum Motor doesn't run.



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

VCR ELECTRICAL TROUBLESHOOTING GUIDE

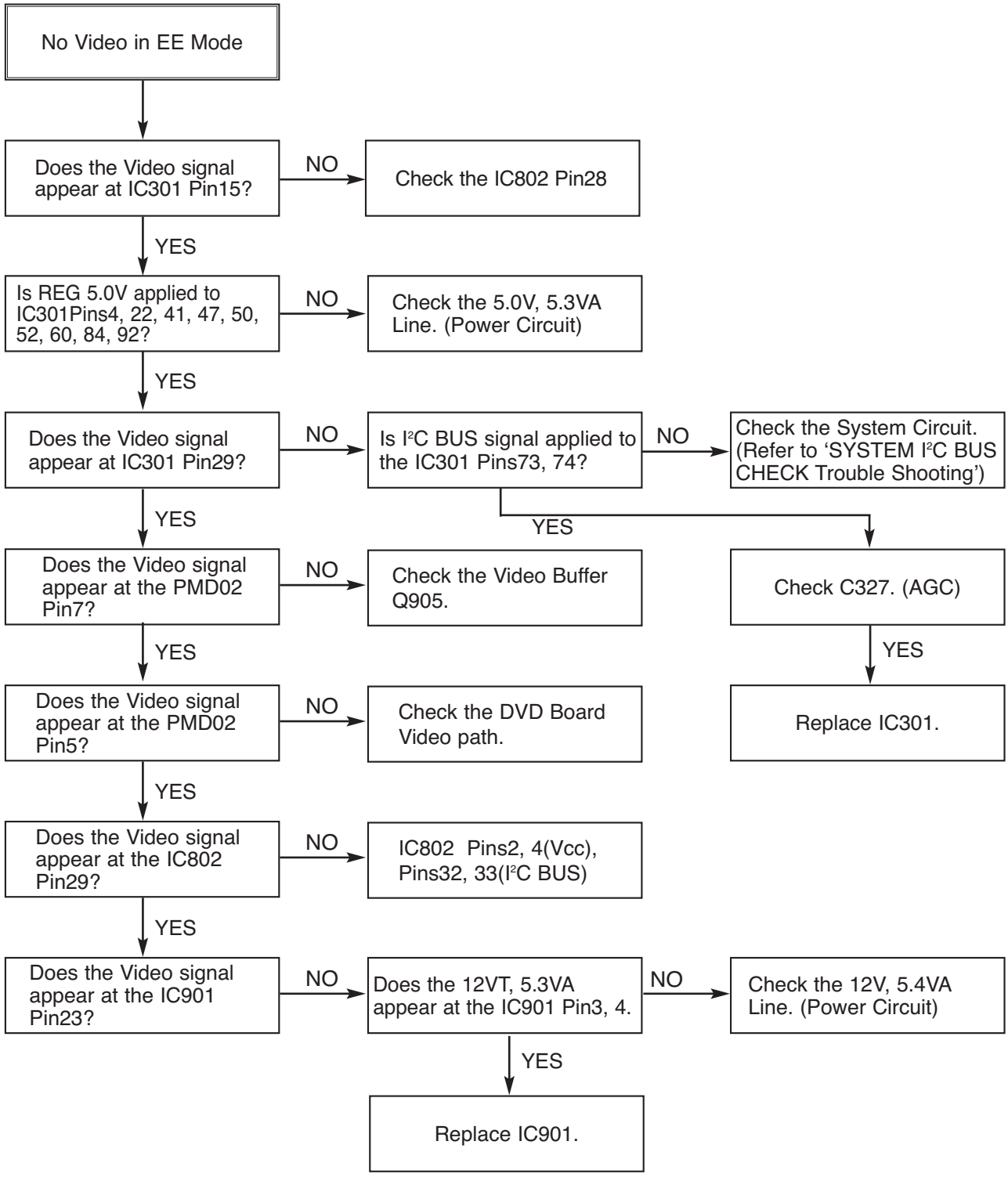
(4) Keys do not work



VCR ELECTRICAL TROUBLESHOOTING GUIDE

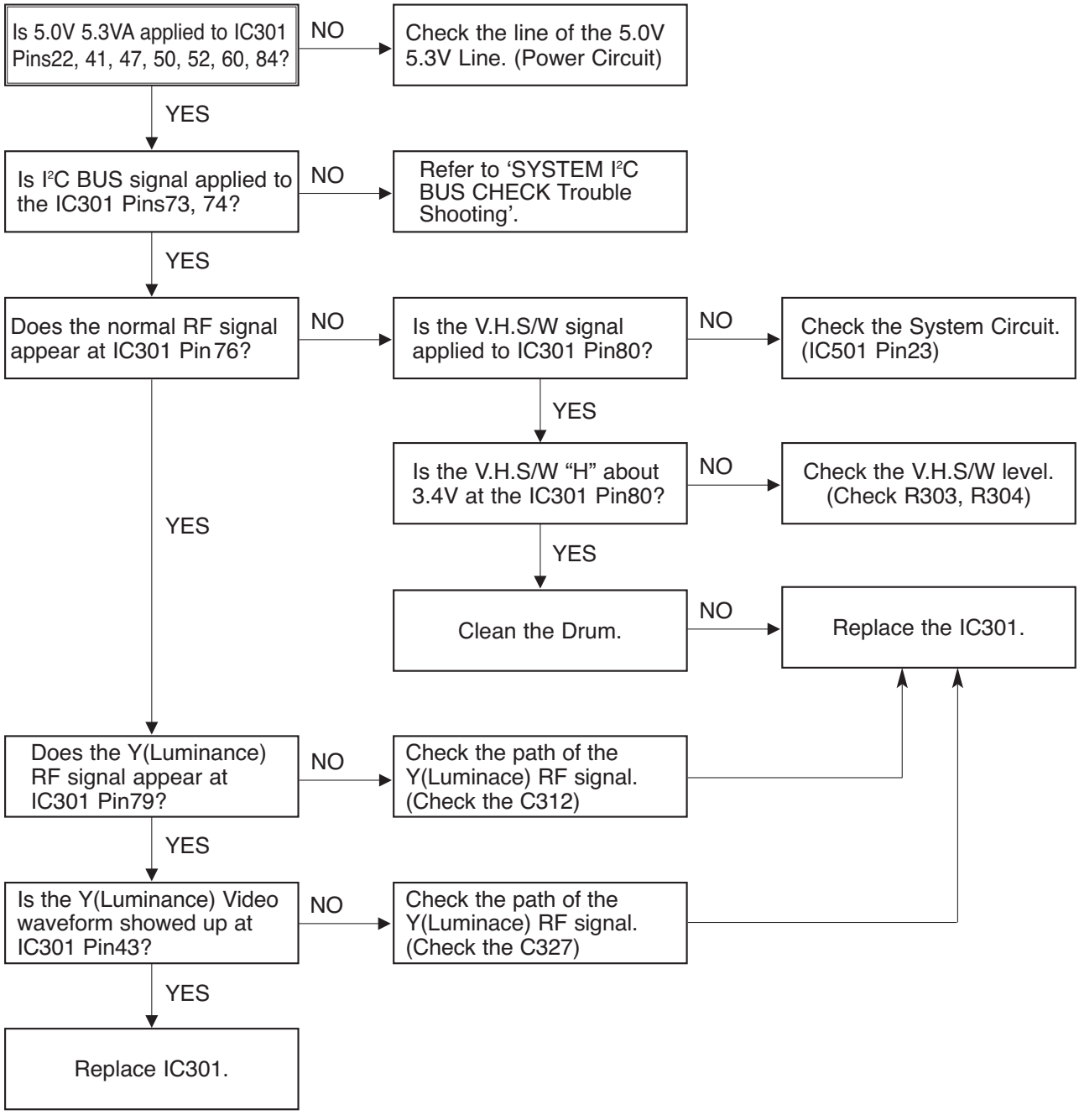
4. Y/C CIRCUIT

(1) No Video in EE Mode,



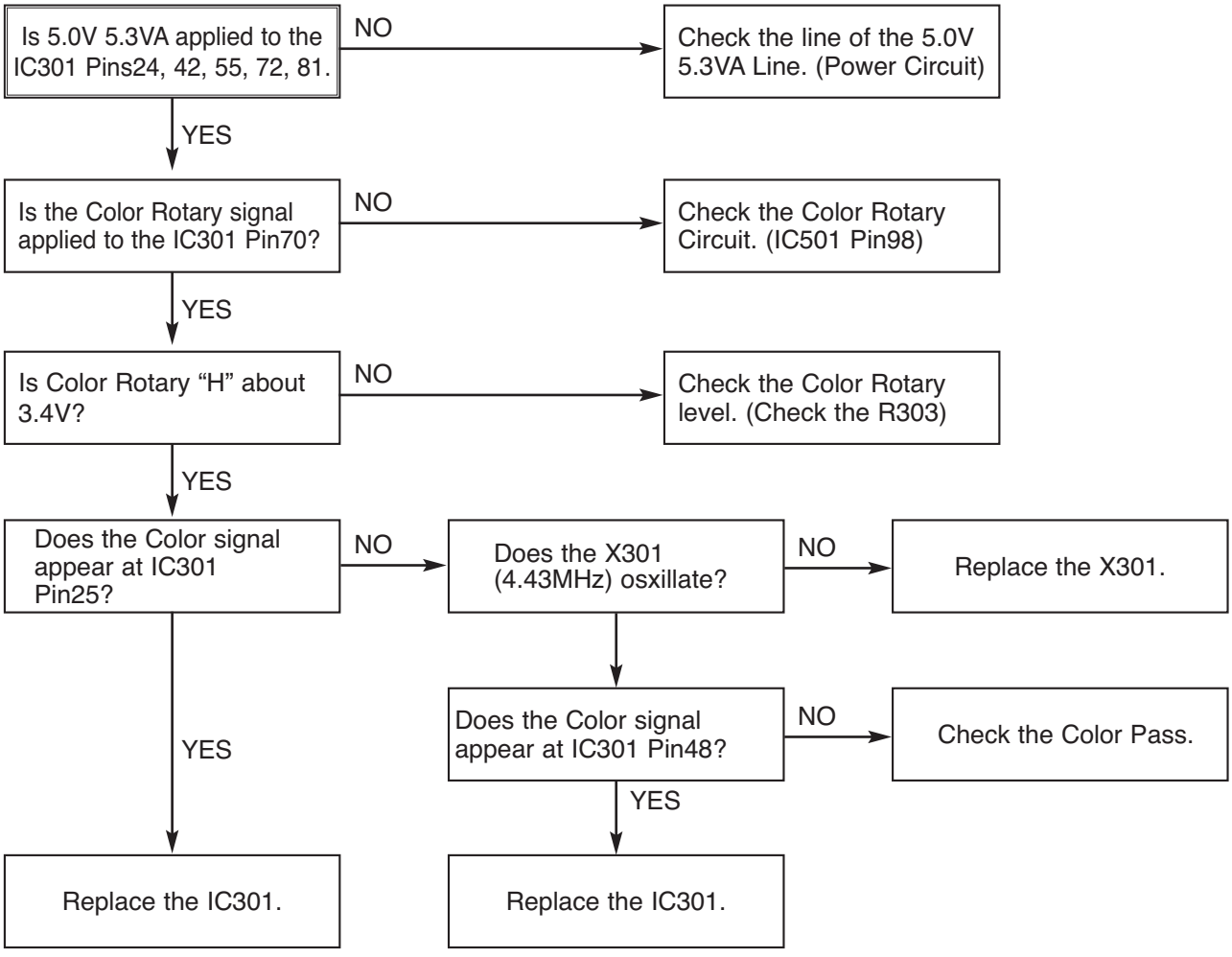
VCR ELECTRICAL TROUBLESHOOTING GUIDE

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



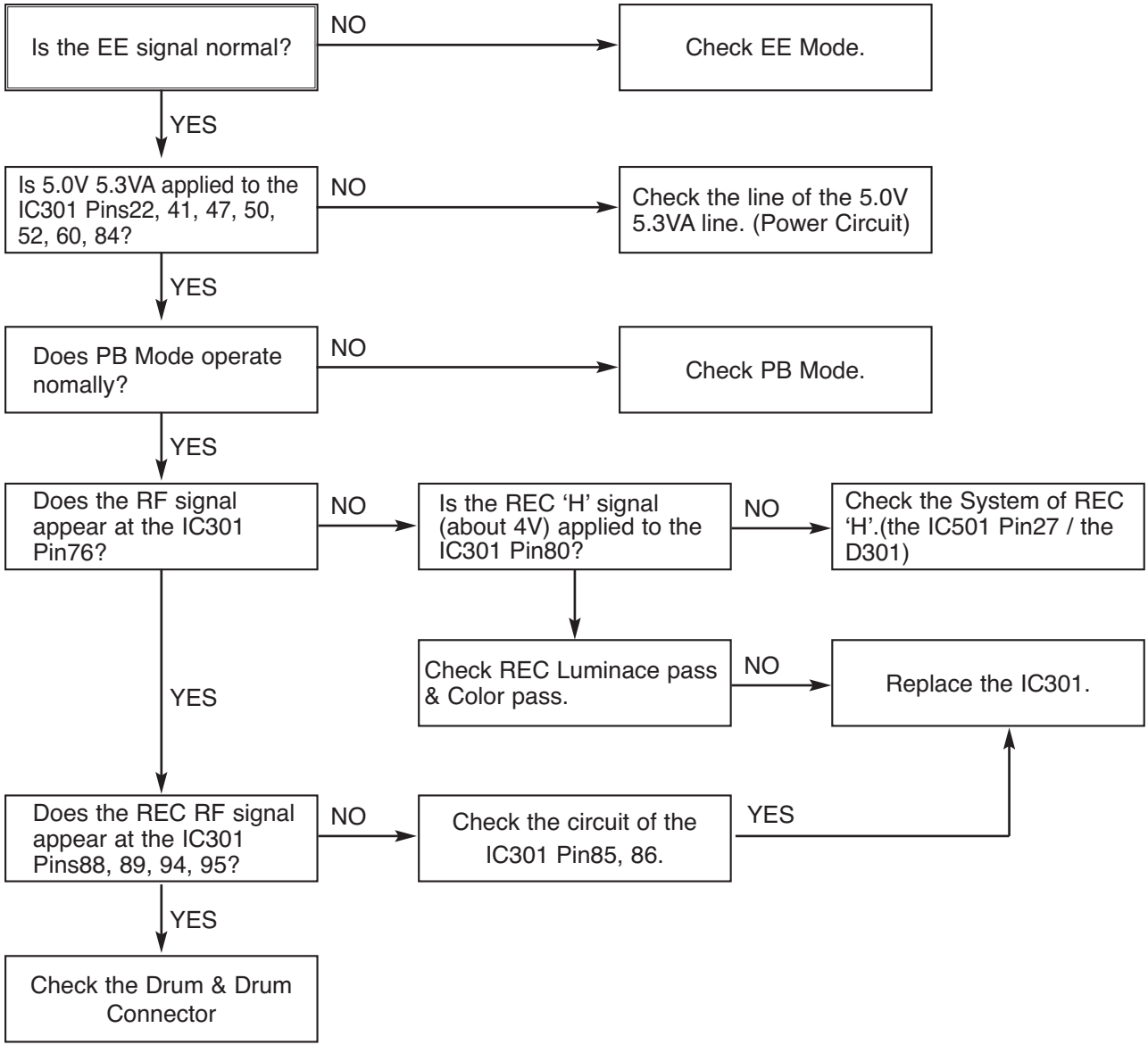
VCR ELECTRICAL TROUBLESHOOTING GUIDE

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



VCR ELECTRICAL TROUBLESHOOTING GUIDE

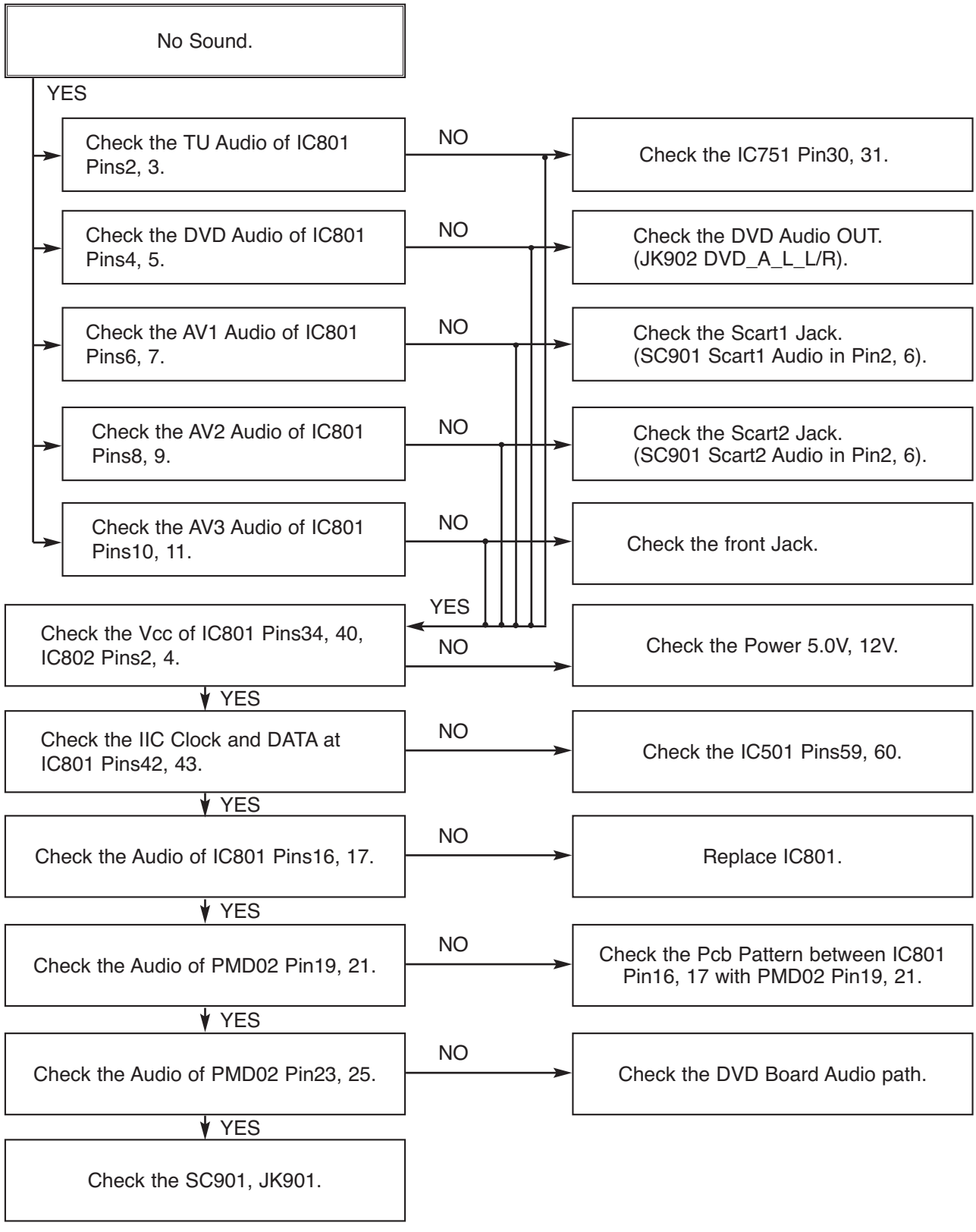
(4) When the Video signal doesn't appear on the screen in REC Mode,



VCR ELECTRICAL TROUBLESHOOTING GUIDE

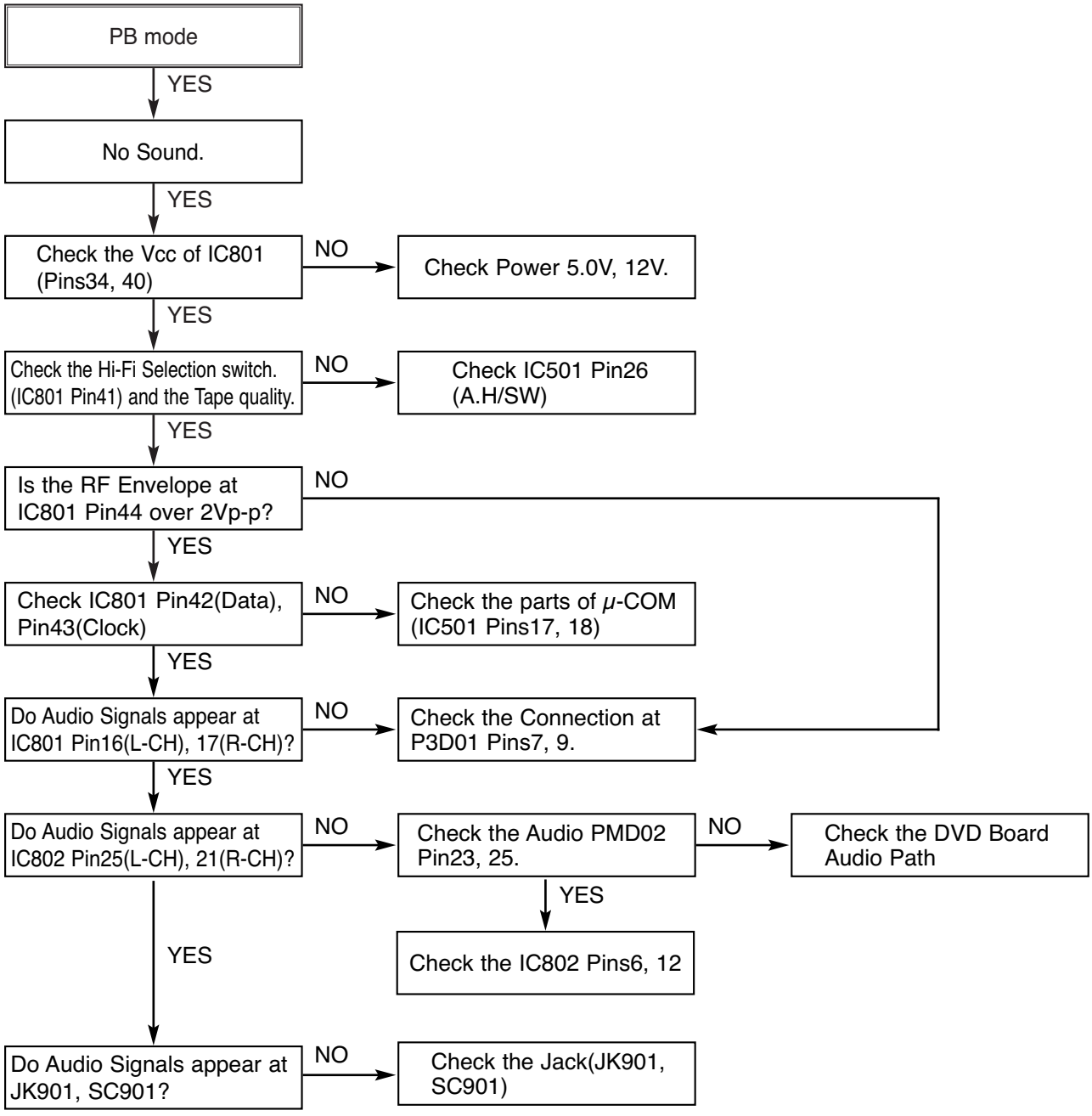
5. Hi-Fi CIRCUIT

(1) No Sound(EE Mode)



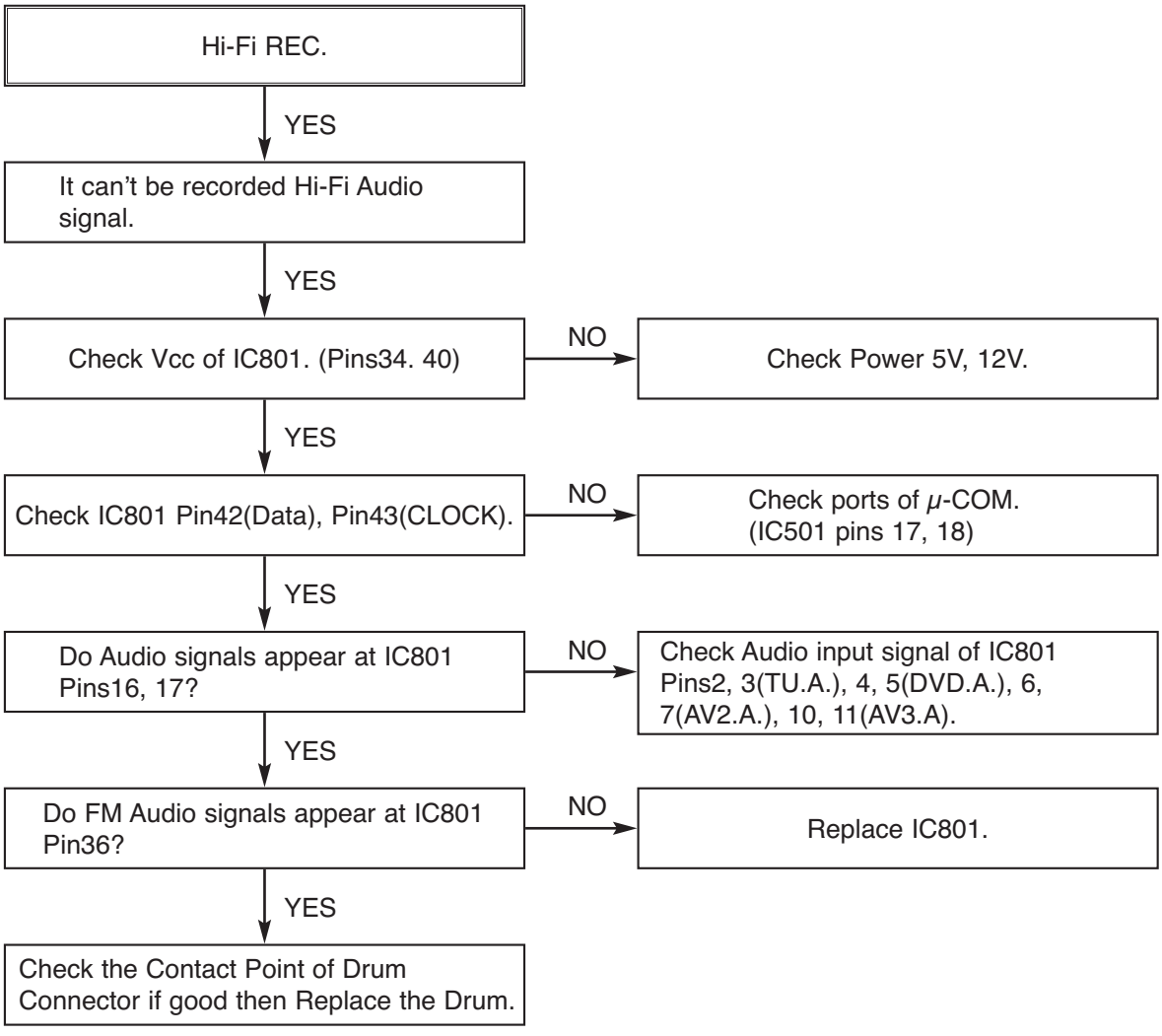
VCR ELECTRICAL TROUBLESHOOTING GUIDE

(2) Hi-Fi Playback



VCR ELECTRICAL TROUBLESHOOTING GUIDE

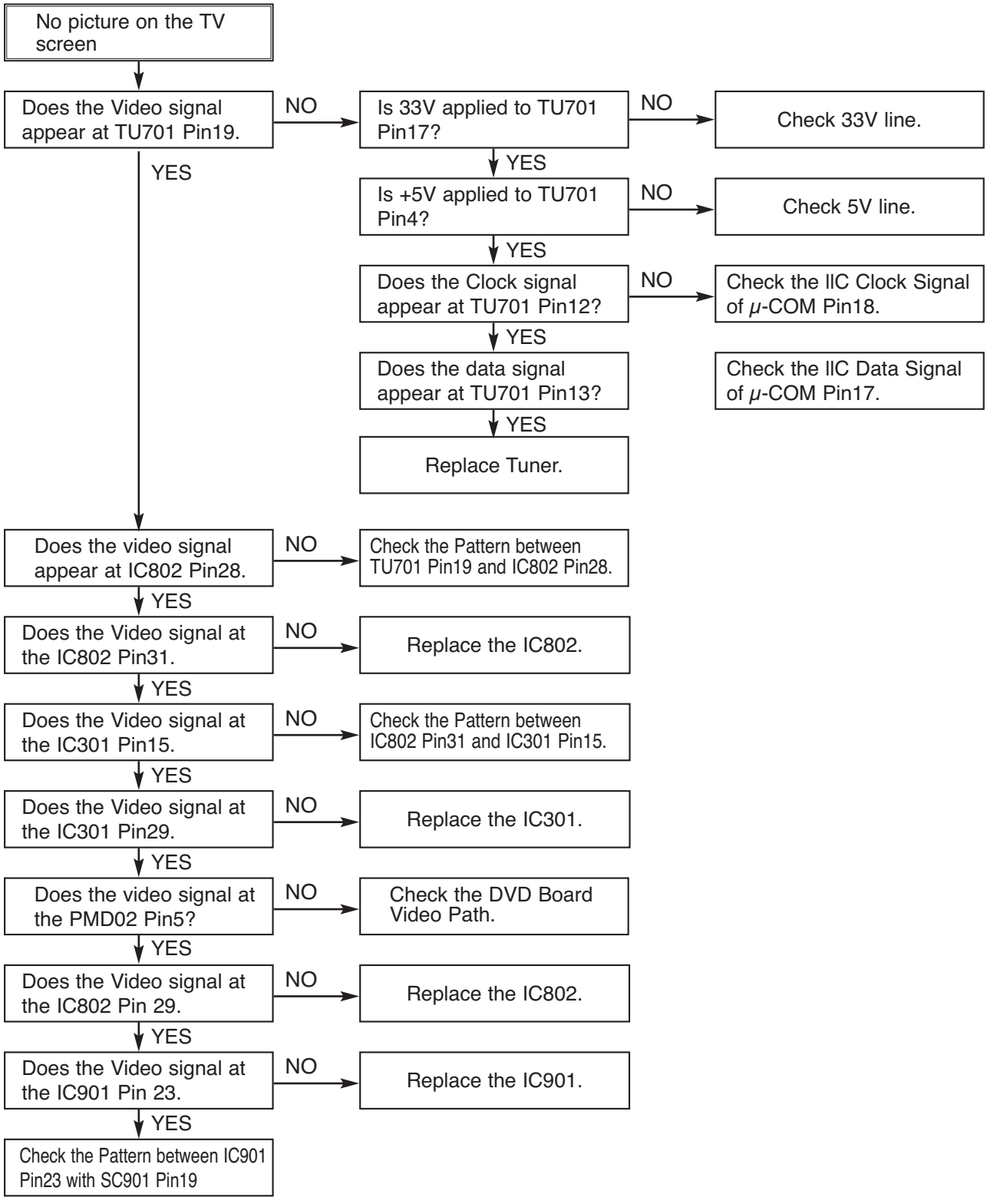
(3)



VCR ELECTRICAL TROUBLESHOOTING GUIDE

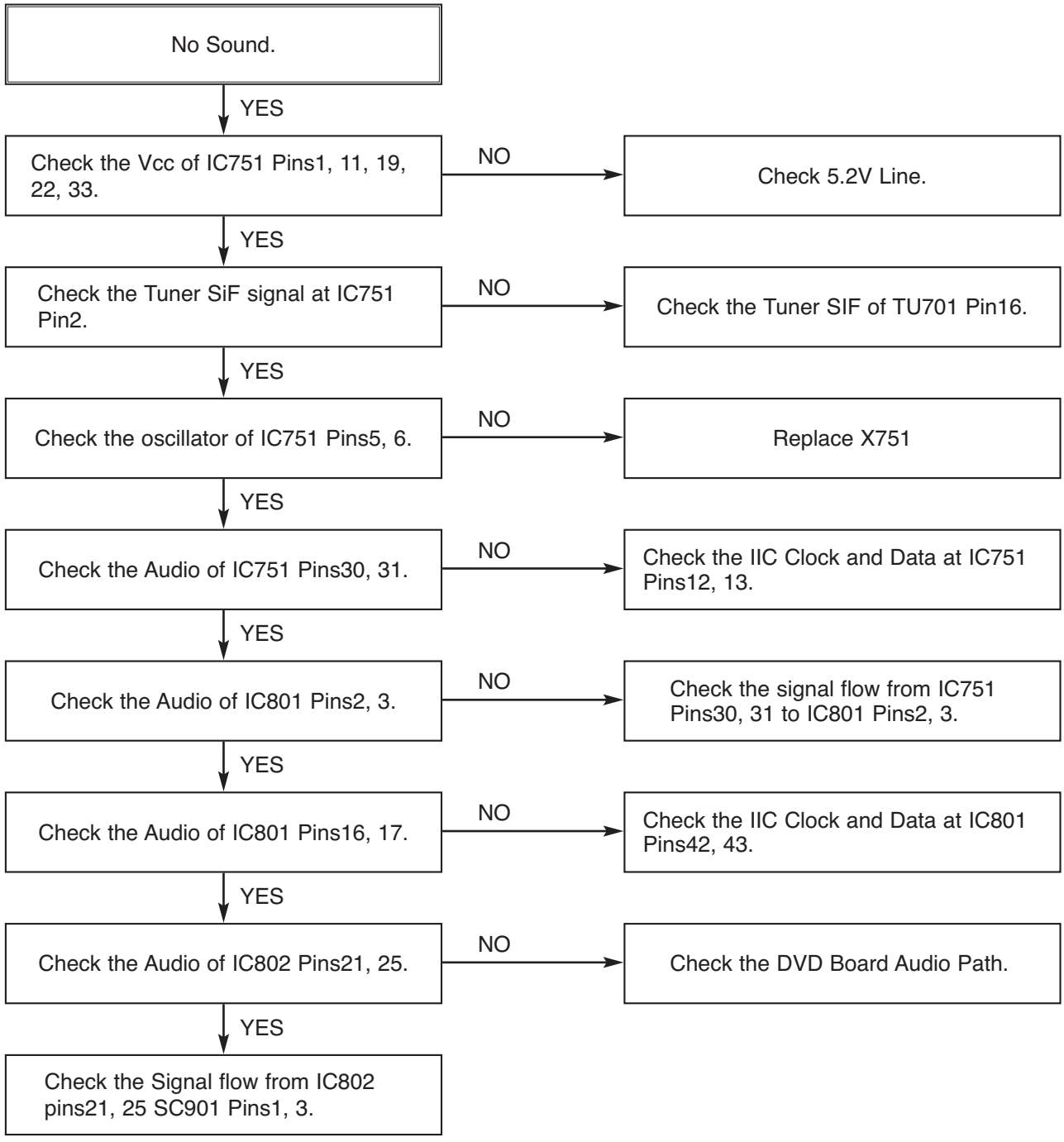
6. Tuner/IF CIRCUIT

(1) No Picture on the TV screen



VCR ELECTRICAL TROUBLESHOOTING GUIDE

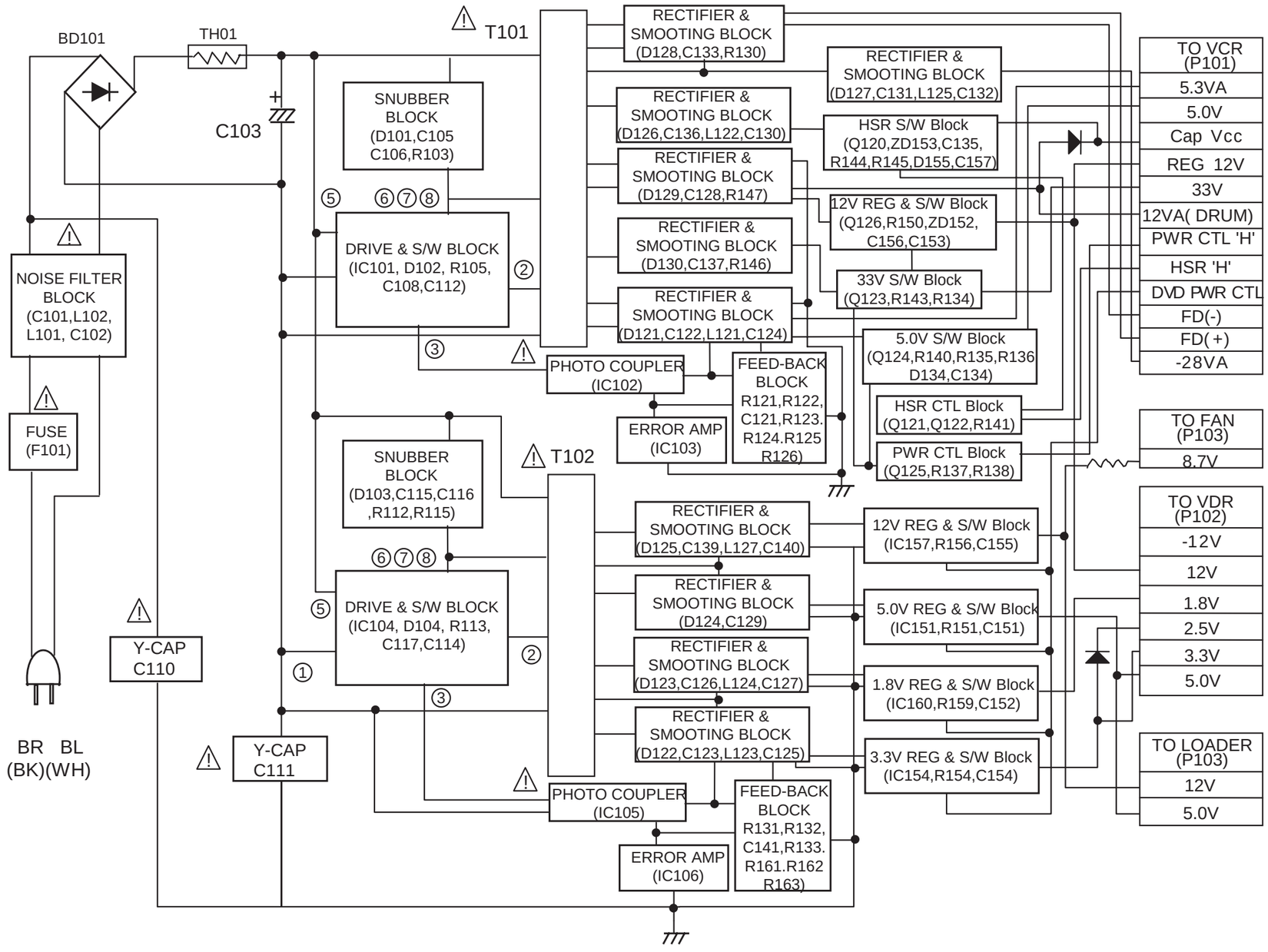
(B) No Sound



MEMO

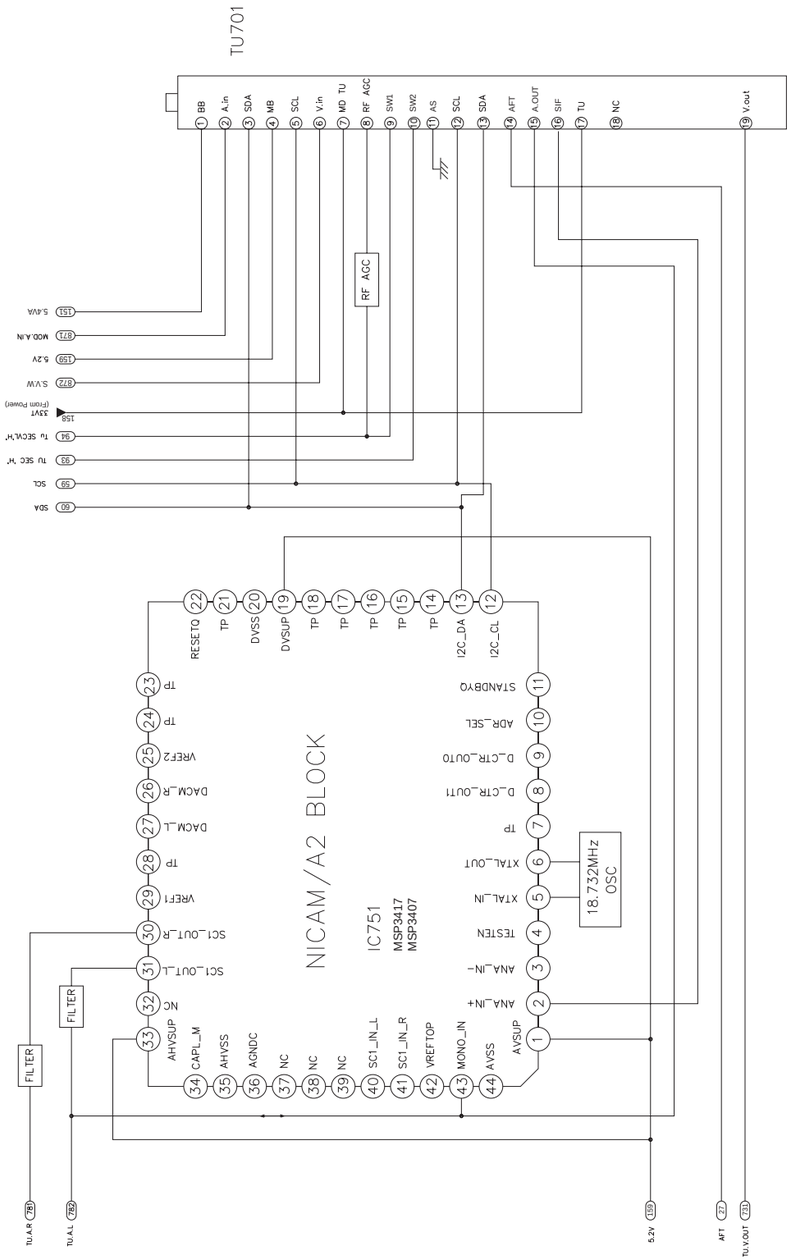
BLOCK DIAGRAMS

1. POWER(SMPS) BLOCK DIAGRAM

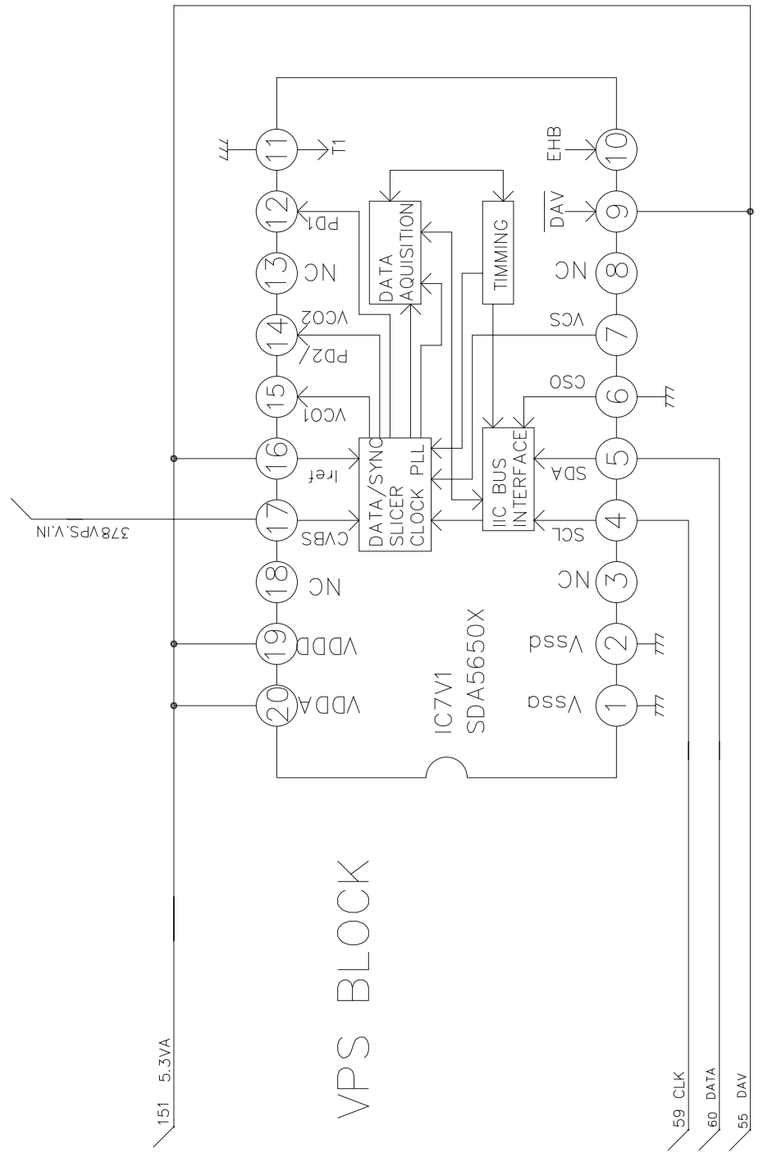


VCR+DVD REC SCART+RCA

2. TU/IF, NICAM & A2 BLOCK DIAGRAM

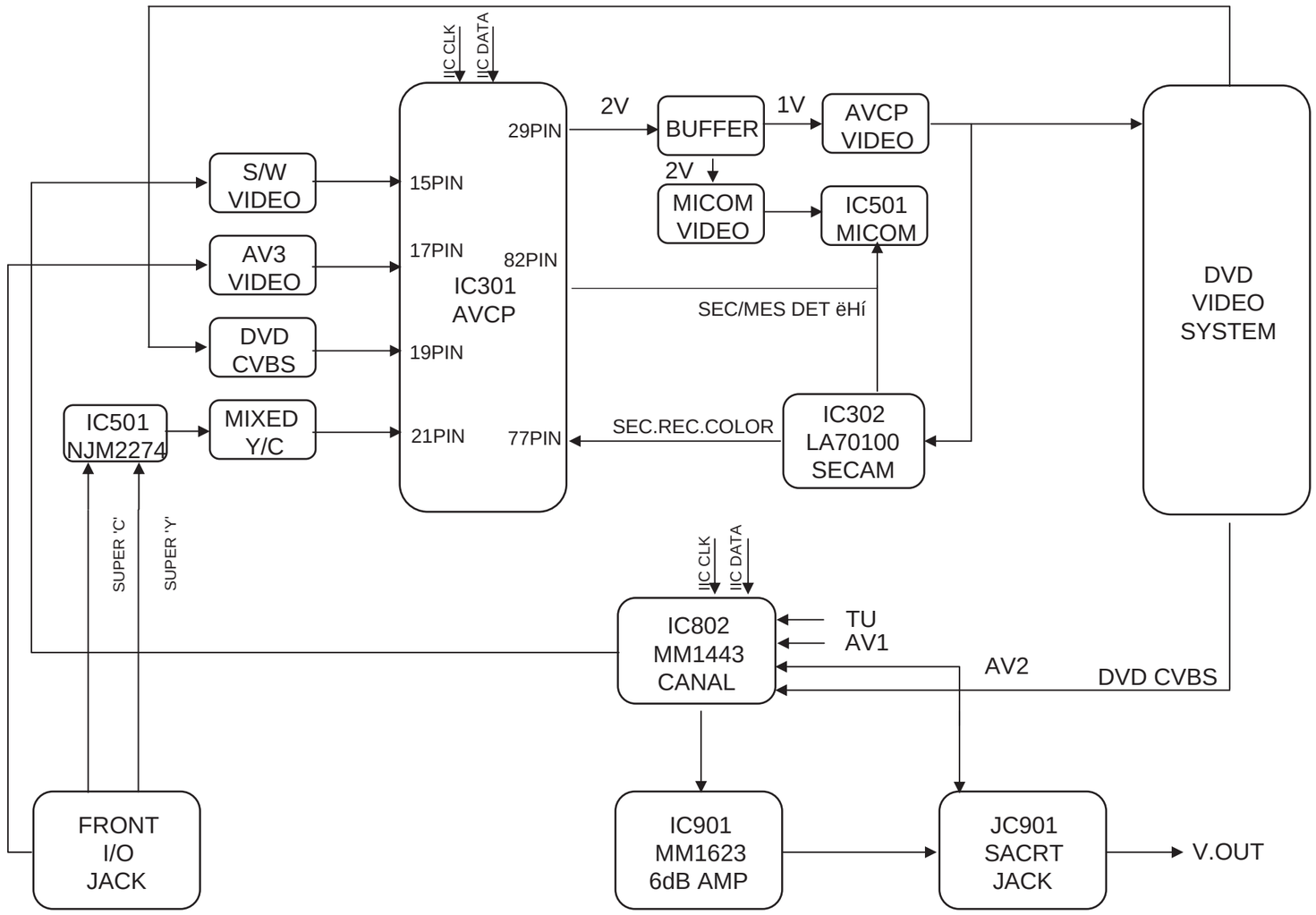


3. VPS BLOCK DIAGRAM

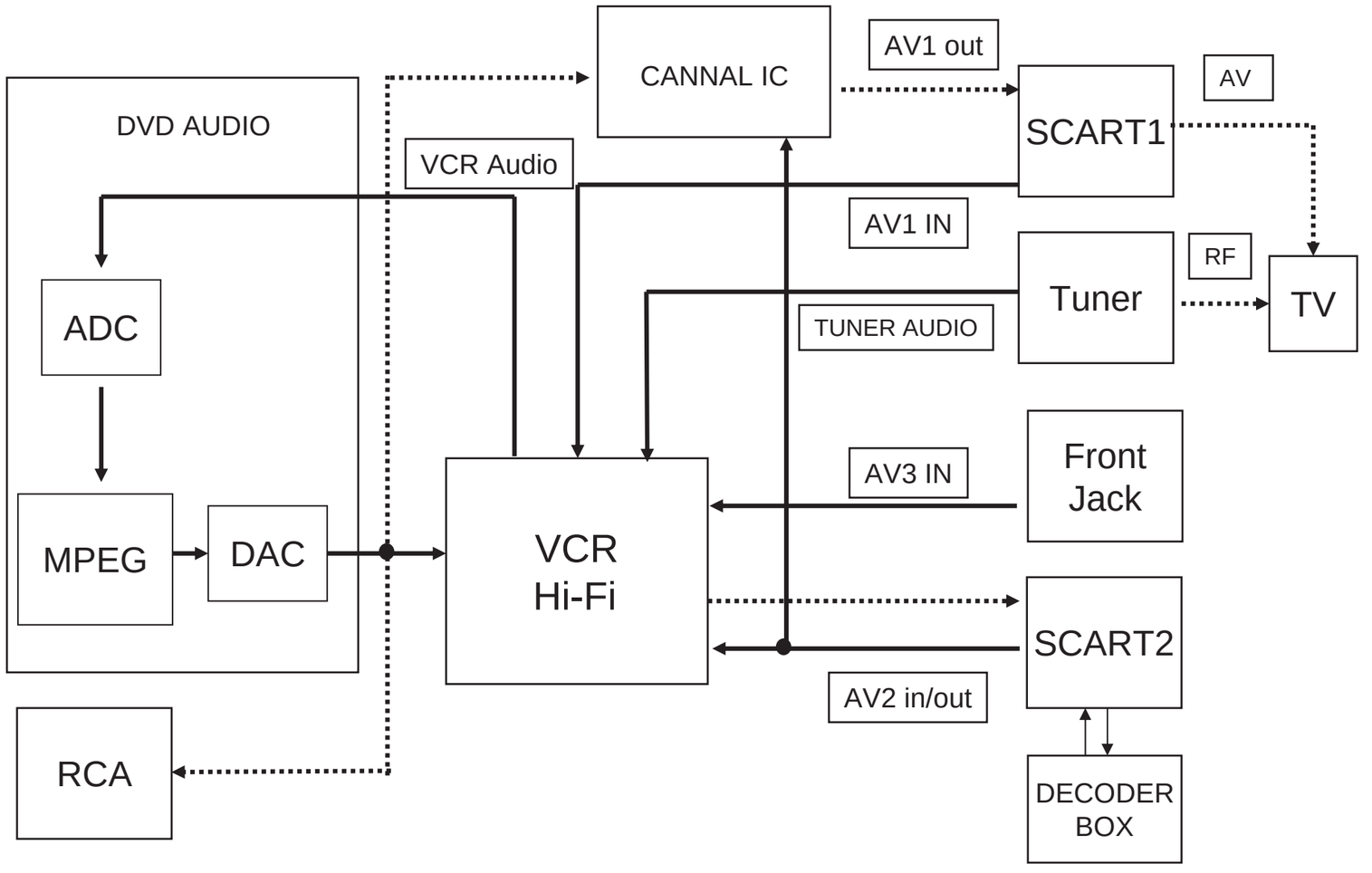


VCR+DVD REC SCART+RCA

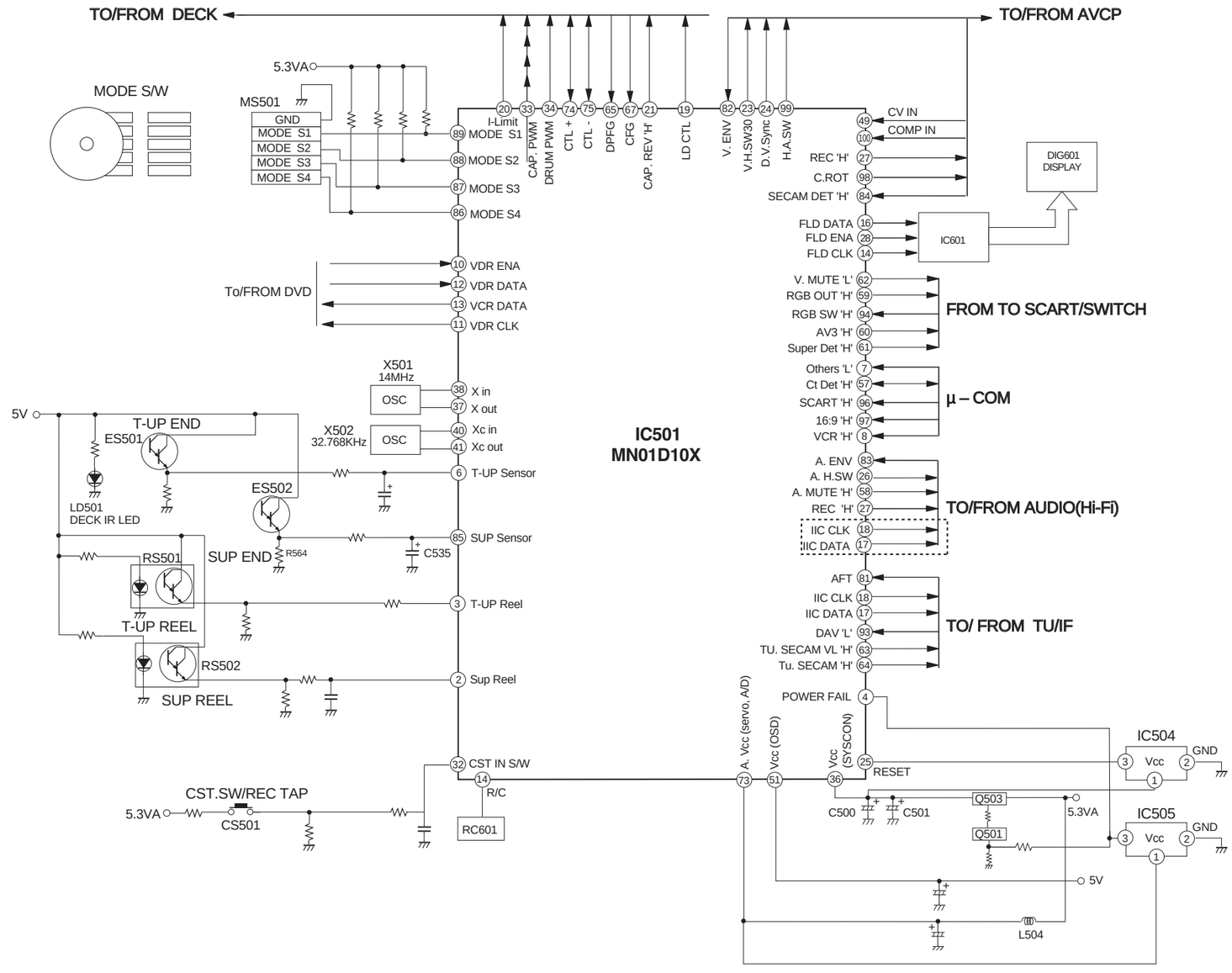
4. Y/C BLOCK DIAGRAM



5. Hi-Fi BLOCK DIAGRAM

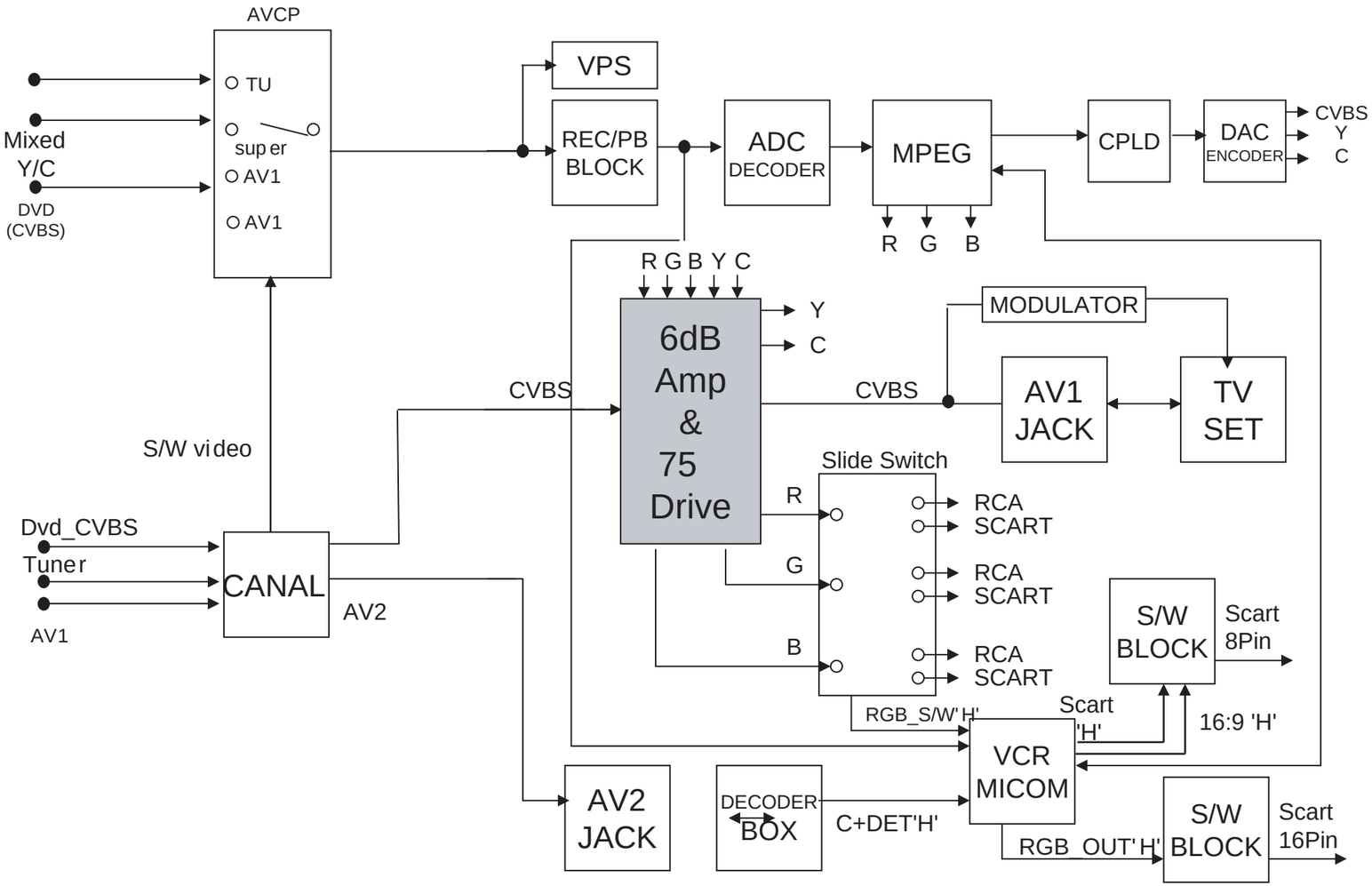


6. SYSTEM BLOCK DIAGRAM



VCR+DVD REC SCART+RCA

7. SCART & SWITCH BLOCK DIAGRAM



CIRCUIT DIAGRAMS

1. POWER(SMPS) CIRCUIT DIAGRAM

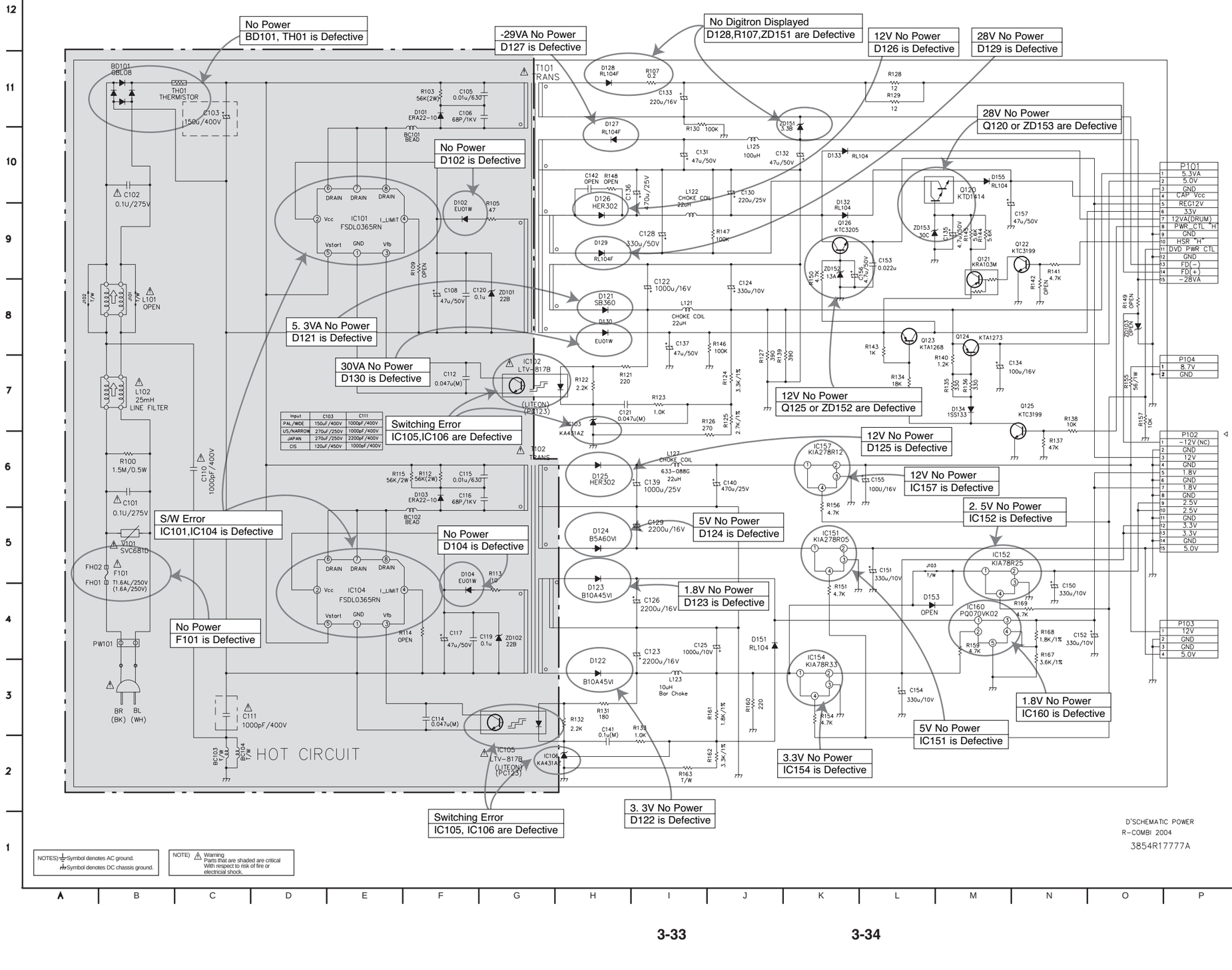
IMPORTANT SAFETY NOTICE

WHEN SERVICING THIS CHASSIS, UNDER NO CIRCUMSTANCES SHOULD THE ORIGINAL DESIGN BE MODIFIED OR ALTERED WITHOUT PERMISSION FROM THE PHILIPS ELECTRONICS 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.

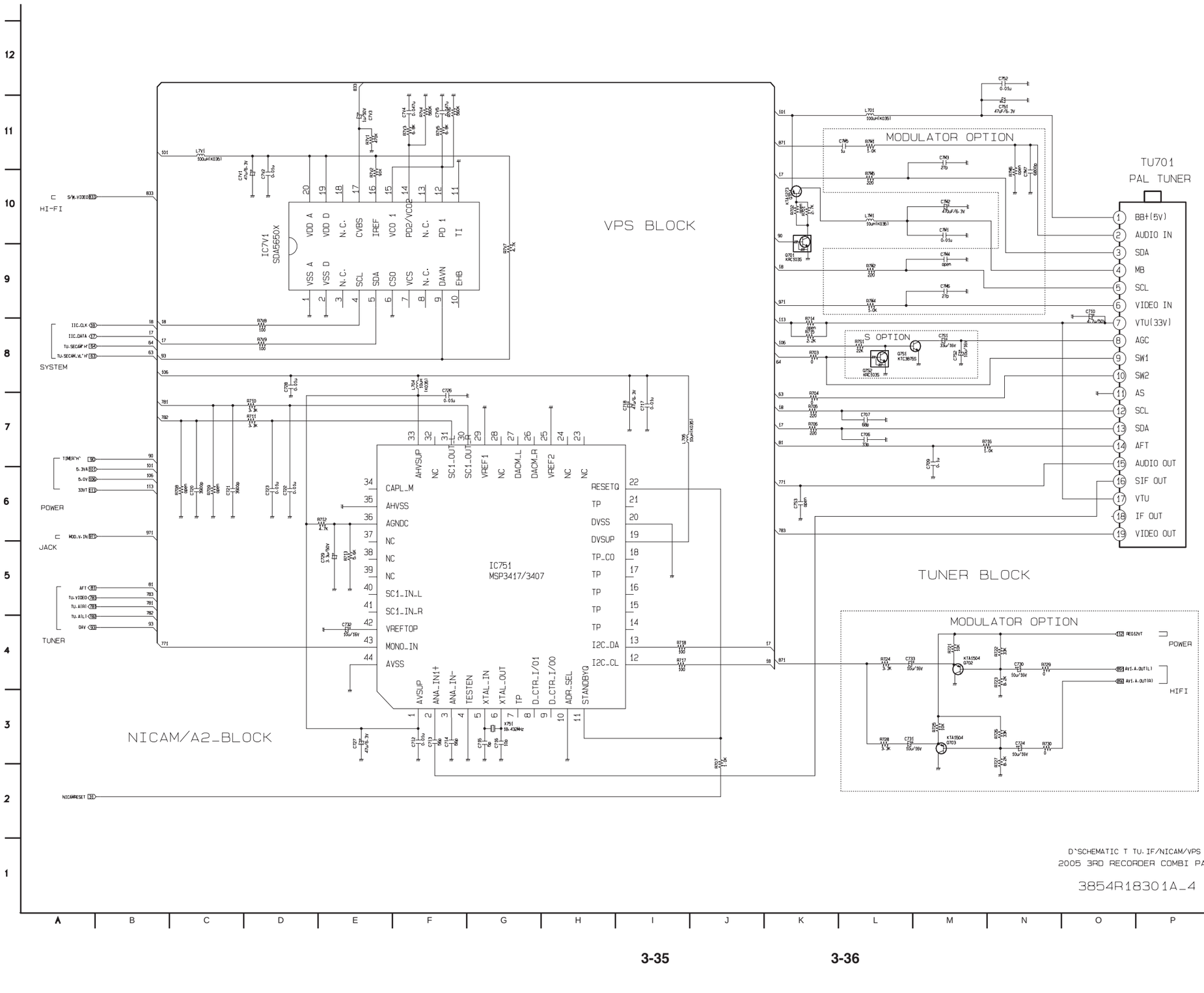
THIS CIRCUIT DIAGRAM MAY OCCASIONALLY DIFFER FROM THE ACTUAL CIRCUIT USED. THIS WAY, IMPLEMENTATION OF THE LATEST SAFETY AND PERFORMANCE IMPROVEMENT CHANGES INTO THE SET IS NOT DELAYED UNTIL THE NEW SERVICE LITERATURE IS PRINTED.

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.



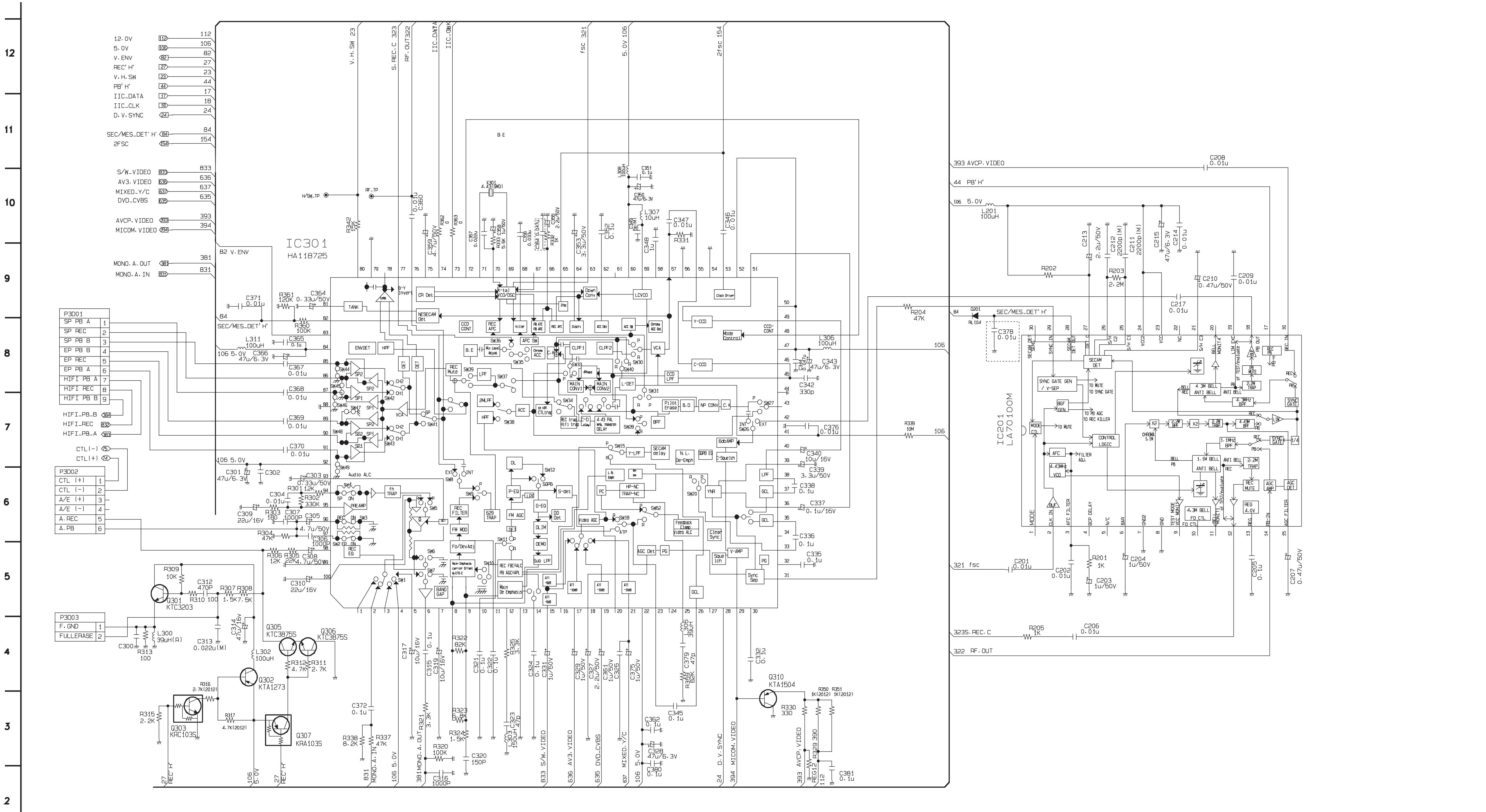
2. TUNER CIRCUIT DIAGRAM



D`SCHEMATIC T TU. IF/NICAM/VPS
2005 3RD RECORDER COMBI PAL

3854R18301A_4

3. A/V CIRCUIT DIAGRAM

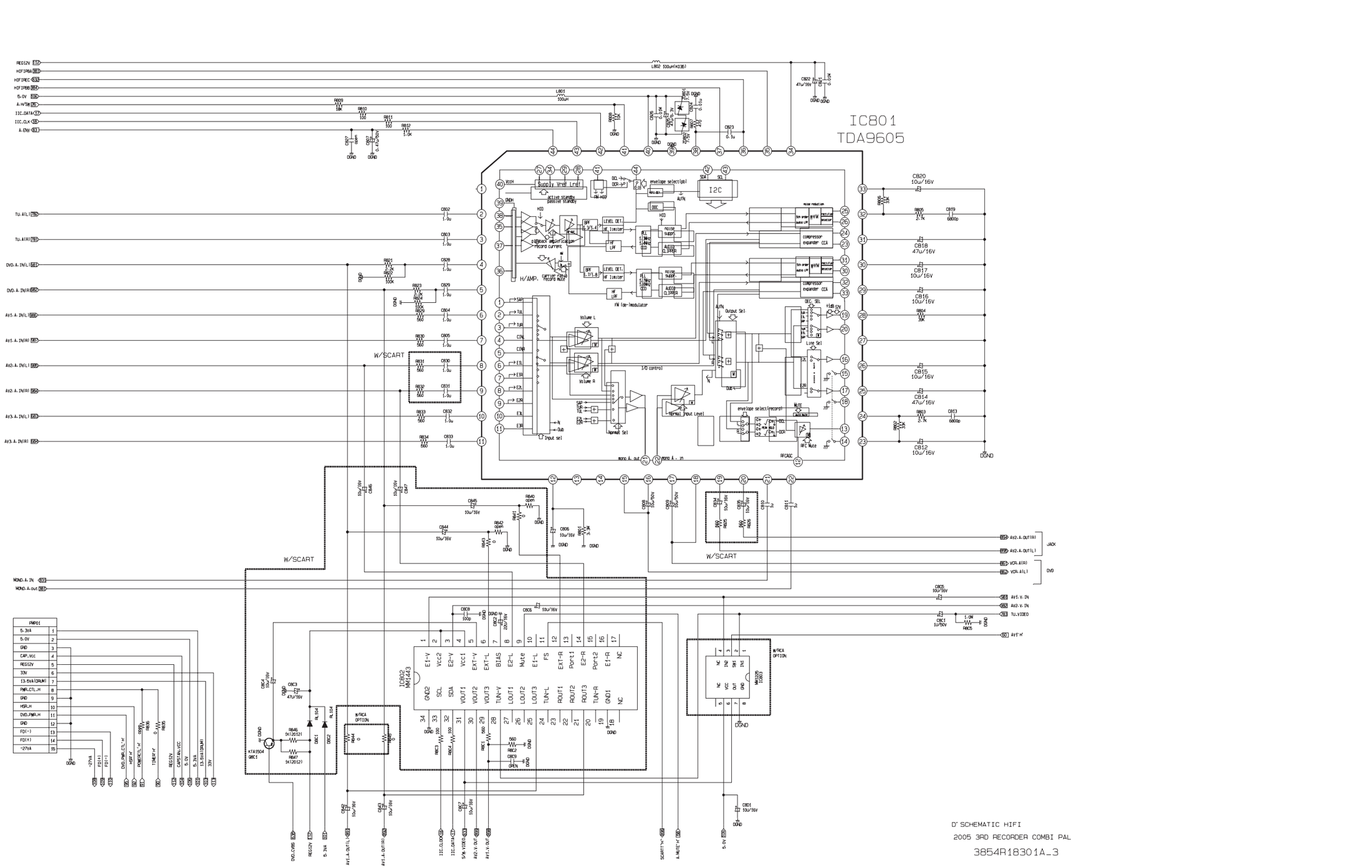


COLOR SYSTEM OPTION TABLE											
	C354	C342	R339	R341	R340	Q311	C376	R344	R343	X302	IC301
B	0.1uF	560pF	10M Ohm	0	0	0	0.01uF	1.5KOhm	270	3.375611	HA118725LF
D	4700pF	330pF	6.8MOhm	X	X	X	X	X	X	X	HA118725NF

D'SCHEMATIC AVCP
2005 3RD RECORDER COMBI

3854R18301A-2

4. Hi-Fi CIRCUIT DIAGRAM

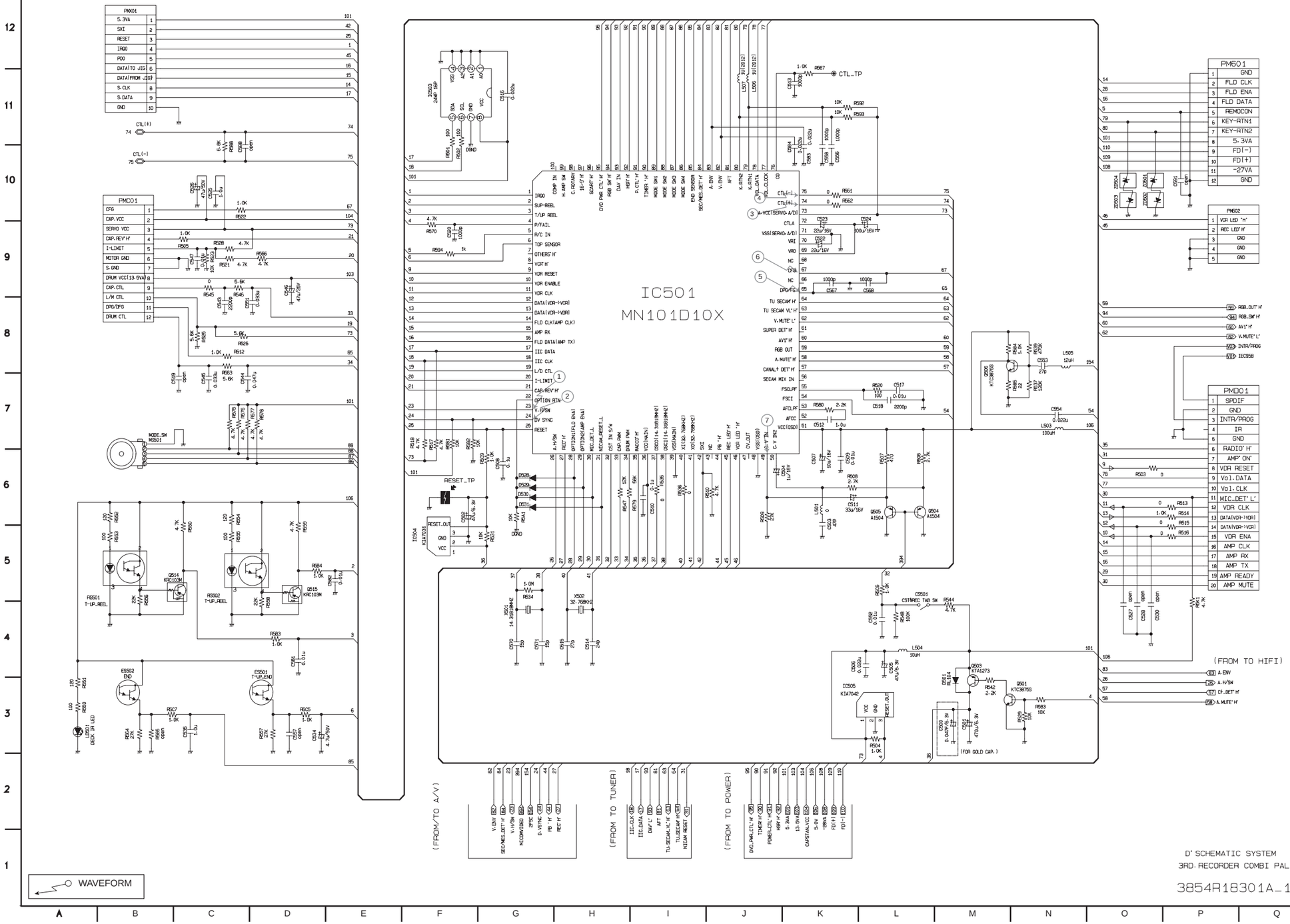


D' SCHEMATIC HIFI

2005 3RD RECORDER COMBI PAL

3854R18301A_3

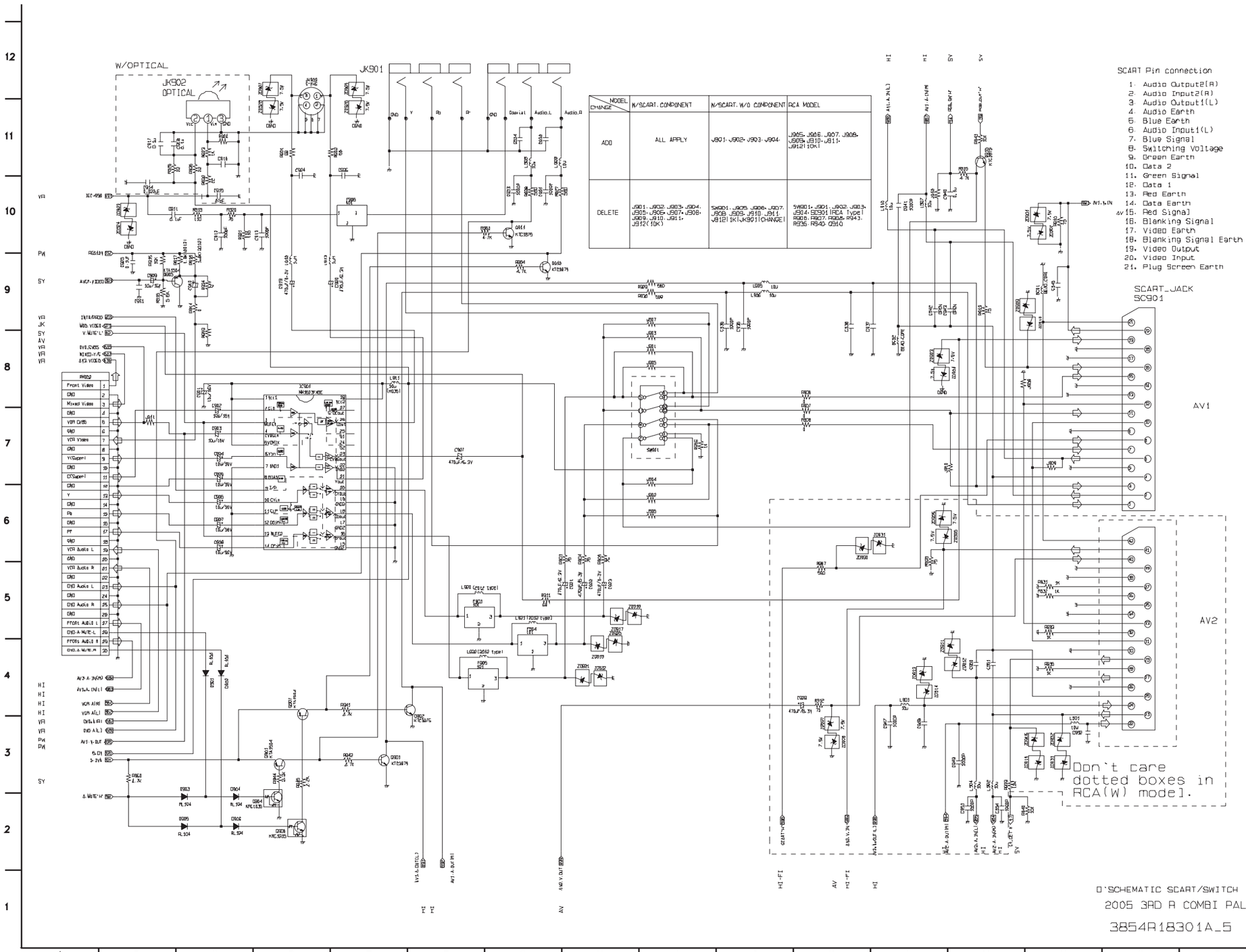
5. SYSTEM CIRCUIT DIAGRAM



D' SCHEMATIC SYSTEM
3RD. RECORDER COMBI PAL

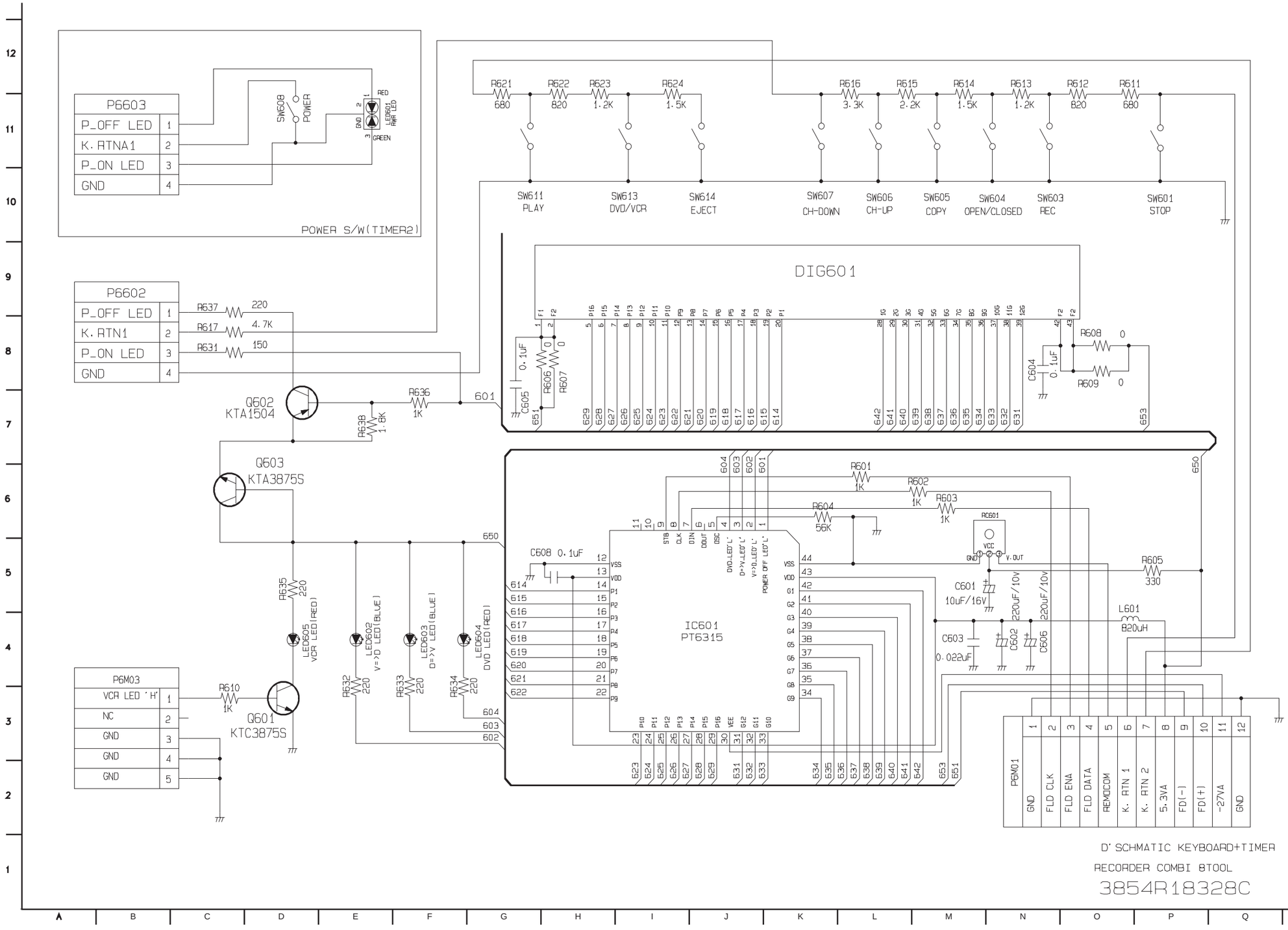
3854R18301A_1

6. SCART CIRCUIT DIAGRAM (SCART Model Only)



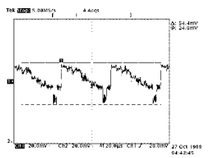
MODEL / CHANGE	W/SCART. COMPONENT	W/SCART. W/O COMPONENT	RCA MODEL
ADD	ALL APPLY	J901, J902, J903, J904.	J905, J906, J907, J908, J909, J910, J911, J912(10K)
DELETE	J901, J902, J903, J904, J905, J906, J907, J908, J909, J910, J911, J912(10K)	SW901, J905, J906, J907, J908, J909, J910, J911, J912(1K)(JK901 CHANGE)	SW901, J901, J902, J903, J904, SC901(RCA Type), R909, R907, R908, R943, R935, R940, Q910

7. TIMER CIRCUIT DIAGRAM

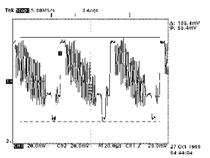


WAVEFORMS

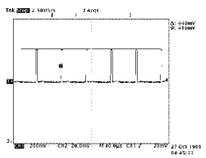
✦ IC301 Oscilloscope Waveform

① 

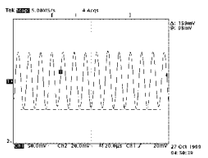
IC301 Pins 8, 9
PB mode
500mvp-p

② 

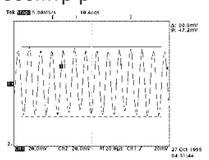
IC301 Pins 15, 17,
19, 21
Video in 1Vp-p

③ 

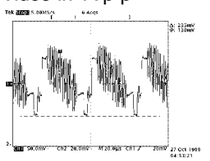
IC301 Pin 31
PB/REC mode
4.0Vp-p

④ 

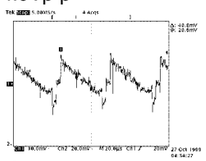
IC301 Pin 98
REC mode
1.1Vp-p

⑤ 

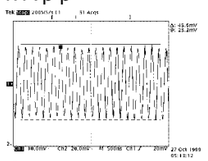
IC301 Pin 94
REC mode
2.0Vp-p

⑥ 

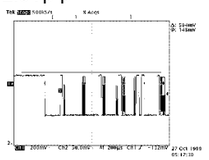
IC301 Pin 29
PB mode
2.02Vp-p

⑦ 

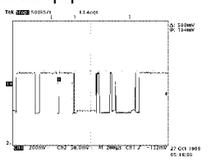
IC301 Pin 57
PB mode
400mVp-p

⑧ 

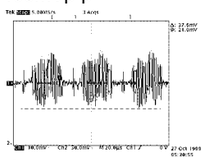
IC301 Pin 63
PB mode
400mVp-p

⑨ 

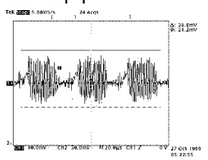
IC301 Pin 73
PB/REC mode
5Vp-p

⑩ 

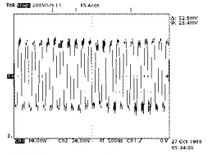
IC301 Pin 74
PB/REC mode
5Vp-p

⑪ 

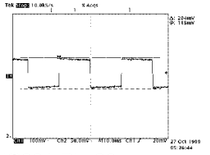
IC301 Pin 77
REC mode
340mVp-p

⑫ 

IC301 Pin 42
PB mode
300mVp-p

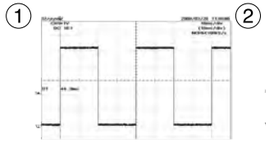
⑬ 

IC301 Pin 53
PB mode
400mVp-p

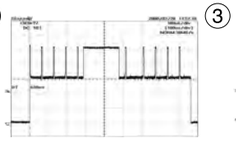
⑭ 

IC301 Pin 80
PB mode
3.6Vp-p

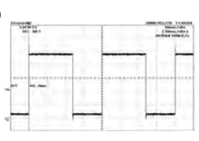
✦ IC501 Waveform Photographs

① 

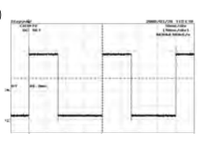
V.HSW
(IC501 Pin 23)
1V/10mS
REC/PB MODE

② 

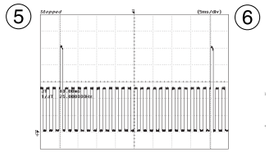
DV.SYNC
(IC501 PIN 24)
1V/100uS
QUE/REV MODE

③ 

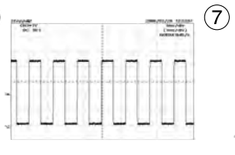
CTL(+)
(IC501 Pin 74)
1V/10mS

④ 

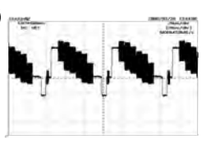
CTL(-)
(IC501 Pin 75)
1V/10mS

⑤ 

DFG/DFG
(IC501 PIN 65)
1V/10mS
REC/PB MODE

⑥ 

CFG
(IC501 Pin 67)
1V/10mS

⑦ 

V.IN
(IC501 Pin 49)
500mV/20uS

• CIRCUIT VOLTAGE CHART

MODE / PIN NO.	EE	PLAY
IC301		
1	20m	100m
2	20m	100m
3	20m	100m
4	1.95V	4.88V
5	1.94V	1.88V
6	2.64	3.12V
7	2.8V	2.74
8	2.5V	1.7V
9	2.04	1.3
10	1.80V	1.88
11	2.0V	1.8
12	1.6V	0.72
13	0V	0
14	1.26V	1.3
15	3.40V	3.36
16	0	4.78
17	2.38V	2.32
18	1.88V	2.84
19	3.02V	2.94
20	0	0
21	2.38V	2.34V
22	4.88V	4.82
23	2.64V	2.24
24	0	0
25	2.08V	2.14
26	3.08V	2.66V
27	0	0
28	150mV	140m
29	3.88V	3.18V
30	2.08V	2.74V
31	4.74V	4.72m
32	2.08V	2.12V
33	2.42V	2.26
34	1.58	1.54V
35	3.30V	3.36
36	2.50V	2.32
37	3.10V	3.18
38	2.60V	2.28
39	1.40V	1.42V
40	2.30V	2.16V
41	1.08V	1.58V
42	1.82V	1.84V
43	2.04V	2.28V
44	0	0
45	2.88V	3.04V
46	2	2.98
47	4.82	4.78
48	120mV	2.40
49	3.48	1.94V
50	4.78	4.74
51	2.08V	1.98
52	4.8V	4.70
53	2.60V	2.8
54	0	0

MODE / PIN NO.	EE	PLAY
55	1.3	1.48
56	0	0
57	2.08V	2.18
58	1.78V	2.14
59	4.6V	4.62
60	4.62V	4.62
61	3.82V	0
62	2.2V	2.08V
63	2.32V	2.32
64	1.62V	1.64
65	1.62	2.28
66	2.30V	1.68
67	0	0
68	1.12V	1.14
69	2.3V	2.38V
70	0.82	0.82V
71	2.2V	2.18V
72	100m	2.42
73	4.96V	4.98
74	4.96V	4.98
75	2.56V	2.54
76	2.34V	2.18
77	2.68V	2.64
78	0	4.72
79	0V	0
80	2.16	2.68
81	4.06V	20M
82	0V	0
83	120M	2.72
84	2.76V	4.74
85	2.114	2.42
86	2.04V	2.08V
87	2.04	2.08V
88	0V	0
89	2.14	2.08V
90	2.14	2.08
91	2.14V	2.08
92	4.88V	4.89
93	300MV	260M
94	2.48V	2.40V
95	2.48V	1.86
96	2.06V	1.86
97	0	0
98	2.30V	2.46V
99	0V	20M
100	2.48	2.42V
IC501		
1	0	0
2	4.52	4.82
3	4.84	4.84v
4	4.64	4.58v
5	4.56	4.56v
6	80m	60m
7	0	0
8	4.98	4.98

MODE / PIN NO.	EE	PLAY
9	4.98	5.30
10	4.8	4.80v
11	4.82	4.82
12	4.72v	4.82
13	4.92	4.92
14	5.02	5.02
15	0	0
16	4.98v	4.98
17	5.04	5.04
18	4.98v	9.98
19	2.46v	2.46
20	3.36V	3.36
21	0	0
22	0	0
23	4.96v	4.96v
24	120mv	140m
25	4.94	4.94
26	4.92v	4.92v
27	20m	20mv
28	5.02	5.02v
29	4.98v	4.98
30	4.84v	4.84
31	5.00v	5.00v
32	0	0
33	4.98	4.94
34	0	5.00v
35	5.02	100m
36	3.16	3.12v
37	5.7v	Da/Clk(5.5)
38	0	5.7v
39	520m	0
40	4.84	520m
41	4.83	Da/Clk(5.62)
42	4.86v	4.86v
43	0	0
44	5.02	5.0v
45	0	0
46	3.94	3.94v
47	2.88	2.88v
48	0	0
49	0.98	2.94
50	1.84	1.94v
51	0.98	4.78
52	3.28	3.28v
53	2.38	2.38v
54	2.52	2.54v
55	1.88	1.88
56	0	0
57	0	0
58	120m	120m
59	4.92v	4.92v
60	4.92v	4.92v
61	0	0
62	4.82	4.82v
63	3.98	3.98v

MODE / PIN NO.	EE	PLAY
64	0	0
65	2.36	2.36v
66	0	0
67	4.68	9.68v
68	0	0
69	2.48	2.48v
70	2.48	2.48
71	0	0
72	2.48	4.98
73	4.92	4.92v
74	0	0
75	2.52	2.42
76	2.42	2.48
77	80m	80m
78	0	0
79	4.02v	4.96v
80	4.96v	4.96
81	2.8	280m
82	1v	2.62v
83	120m	3.24v
84	0	1.96
85	0	0
86	4.98	4.9v
87	4.98	4.98
88	5.0v	5.0v
89	0	0
90	4.88	4.88v
91	0	0
92	0	0
93	5.04v	5.04v
94	4.88	0
95	4.98	4.98
96	0	0
97	0	0
98	4.98	4.98
99	20m	4.98v
100	0	0
IC751		
1	4.88	4.88v
2	1.46	1.48
3	1.38	1.38
4	0	0
5	2.26v	2.24
6	2.38	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	5.0v
12	5.0v	5.0
13	5.0v	0
14	0	0
15	0	0
16	0	0
17	0	0

MODE / PIN NO.	EE	PLAY
18	0	0
19	4.88	4.88
20	0	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	2.96v	3.98
31	2.96	3.98
32	0	0
33	4.88v	4.88
34	3.64v	3.58v
35	0	0
36	2.62v	2.58
37	0	0
38	0	0
39	0	0
40	2.54v	2.54
41	2.54	2.56
42	2.48	2.48
43	2.3v	2.34
44	0	0
IC7V1		
1	0	0
2	0	0
3	0	142M
4	DA/CL(5.34)	DA/CL(5.34)
5	DA/CL(5.34)	DA/CL(5.34)
6	0	0
7	DA/CL(5.34)	DA/CL(5.34)
8	0	0
9	DA/CL(5.34)	DA/CL(5.34)
10	DA/CL(5.34)	DA/CL(5.34)
11	0	41M
12	DA/CL(2.82)	DA/CL(2.82)
13	0	0
14	DA/CL(2.82)	DA/CL(62M)
15	2.89	1.41
16	1.53	950M
17	DA/CL(1.14)	DA/CL(810M)
18	0	0
19	5.26	5.24
20	5.26	5.24
IC801		
1	3.28	3.24
2	3.28v	3.28
3	3.32	3.26
4	3.28	3.92
5	3.28	3.92
6	3.28	3.26

MODE / PIN NO.	EE	PLAY
7	3.28v	3.74
8	3.28	3.24
9	3.28v	3.24
10	3.28	3.24
11	3.28v	3.26
12	0	0
13	3.78	4.52
14	0	0
15	0	640m
16	5.82	6.64
17	5.28v	6.68
18	0	620m
19	6.28	6.66
20	6.28	6.72
21	4.46v	4.42
22	3.28	4.02
23	3.62	3.68
24	3.74	4.12
25	3.74	3.76
26	0.1	640m
27	0	0
28	3.7v	3.68
29	3.66	3.64
30	0.7	680m
31	3.72	3.72v
32	3.74v	4.08
33	3.62	3.68
34	13.4v	13.32
35	580m	520m
36	0	520m
37	580m	520m
38	0	0
39	0	20m
40	4.7	4.76
41	0v	1.68
42	5.0v	5.04m
43	50.v	4.96
44	20m	3.38
IC901		
1	4.76	4.68
2	2.02v	2.24
3	4.88	4.88
4	1.64	1.78
5	4.72	4.78
6	1.88	1.88
7	0	0
8	2.26	2.18
9	0	0
10	1.64v	1.72
11	0	0
12	1.92v	2.08
13	4.86	4.82
14	1.92v	2.08
15	0	2.31
16	2.26v	2.64

MODE / PIN NO.	EE	PLAY
17	0	0
18	2.28	2.74
19	0	0
20	2.56v	2.58
21	2.64v	2.68
22	0	0
23	2.56v	2.92
24	0	0
25	0	0
26	2.52v	2.98
27	20m	0
28	4.72	4.68
IC901		
1	2.51	2.51
2	2.39	2.39
3	3.54	3.53
4	2.57	2.56
5	1.52	1.34
6	0.43	3.68
7	1.3m	0
8	1.2m	0
9	3.04	3.03
10	2.52	2.52
11	2	2.05
12	3.22	1.97
13	3.99	3.99
14	2.5	2.495
15	3.11	1.93
16	3.2	3.18
17	27.4m	4.11
18	112.1m	3.35
19	2.27	2.26
20	1.99	2.12
21	2.31	2.37
22	0.78	0.81
23	5.02	5.01
24	5.02	5
25	2.44	2.27
26	2.44	2.26
27	2.82	2.85
28	181.5m	187.4m
29	371.6m	212.2m
30	2.08	2.08
IC302		
1	3	2.99
2	36.3m	38.1m
3	3.04	3.04
4	6.4m	39.1m
5	3.04	3.04
6	5.02	5.03
7	2.24	2.23
8	0	0
IC804		
1	6.71	6.66
2	5.05	5.05

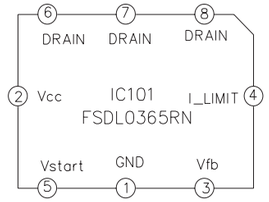
MODE / PIN NO.	EE	PLAY
3	6.02	5.96
4	0	0
5	6	5.96
6	5.99	5.94
7	22.3m	21.3m
8	6.68	6.65
9	6.7	6.67
10	1.1m	0
11	6.71	6.68
12	5.04	5.05
13	12.03	11.99
14	6.7	6.7
15	0	0
16	6.73	6.69
IC902		
1	1.3	1.3
2	4.9	4.9
3	1.66	1.56
4	0	0
5	0	0
6	4.9	4.9
7	1.7	1.6
8	0	0
IC903		
1	1.37	1.37
2	5	5
3	2.18	2.17
4	0	0
5	0	0
6	5.21	5.21
7	2	2.17
8	0	0

E-MODE NO.	E	C	B
Q501	0	0	740M
Q503	5.19	5.19	4.57
Q504	Y/C_VIDEO	0	Y/C_VIDEO
Q505	Y/C_VIDEO	0	Y/C_VIDEO
Q506	0	2Fsc	2Fsc
Q514	0	0	4.87
Q515	0	0	4.87
Q301	0	5.04	0
Q302	5.04	0	5.04
Q303	0	0	0
Q304	0	0	0
Q306	4.93	4.81	4.79
Q308	Y/C_VIDEO	0	Y/C_VIDEO
Q311	5.04	5.04	0
Q7S1	0	1.47	0
Q7S2	0	0	5.13
Q901	5.1	0	4.5
Q902	0	0	0
Q903	0	0	0
Q904	0	4.5	0
Q905	2.69	0	2
Q906	1.7	0	1.7
Q907	11.9	11.8	0
Q908	0	0	5
Q909	0	7.4	0
Q910	4.6	5	5.1

SECTION NO.	EE		PLAY	
	+	–	+	–
C203	3.55	0	3.51	0
C204	3.34	0	3.59	0
C207	3.12	0	1.93	0
C210	2.26	0	2.94	0
C213	3.29	0	2.77	0
C215	4.97	0	4.89	0
C301	5.01	0	0	0
C302	5.03	0	4.24	0
C304	4.99	0	4.85	0
C307	2.29	4.87	2.27	0
C311	5.11	5	190M	0
C314	2.35	0	2.31	0
C315	2.92	2.79	2.83	2.31
C316	1.48	0	1.57	0
C318	4.1	0	2.85	0
C320	2.39	0	2.2	0
C322	4.13	0	4.09	0
C323	2.35	0	2.31	0
C324	2.42	0	0	0
C325	2.95	0	3.13	0
C327	2.61	2.46	3.18(Y/C)	3.18(Y/C)
C331	17.5M	0	0	0
C333	4.94	0	4.88	0
C336	5.04	0	5.01	0
C337	3.36	0	2.53	0
C339	3.38	0	2.62	0
C346	5	0	4.91	0
C347	2.16	0	2.14	0
C348	1.62	0	1.5	0
C349	5.02	0	4.92	0
C353	2.31	0	2.25	0
C356	1.97	0	2.07	0
C357	2.17	0	2.02	0
C359	264M	0	130M	0
C362	5.2	0	5.19	0
C391	2.99	2.7	3.02	780M
C392	3.03	2.75	3.07	2.75
C393	3.03	2.76	3.12	0
C501	5.2	0	5.19	0
C502	5.19	0	5.19	0
C504	2.36	2.06	2.3	2
C505	5.22	0	5.19	0
C507	4.95	0	4.95	0
C511	2.41	1.32	2.41	1.3
C522	2.61	0	2.64	0
C523	2.61	2.61	2.64	0
C524	2.61	0	2.64	0
C526	16.74	0	13.6	0
C534	4.24	0	62M	0
C546	14.73	0	14.2	0
C7S1	4.9	4.17	4.85	4.09
C7S2	4.9	0	4.85	0
C7V1	5.22	0.91	5.28	0
C7V3	2.86	1.47	2.16	950M
C710	32.61	0	32.4	0

SECTION NO.	EE		PLAY	
	+	–	+	–
C718	5.05	0	4.96	0
C719	5.04	0	4.96	0
C724	2.39	164M	2.31	0

• IC BLOCK DIAGRAMS



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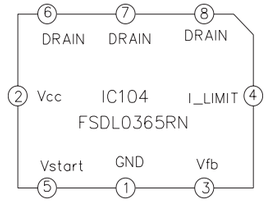

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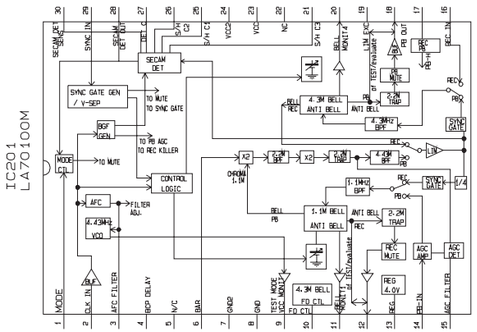

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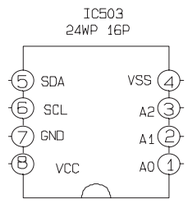

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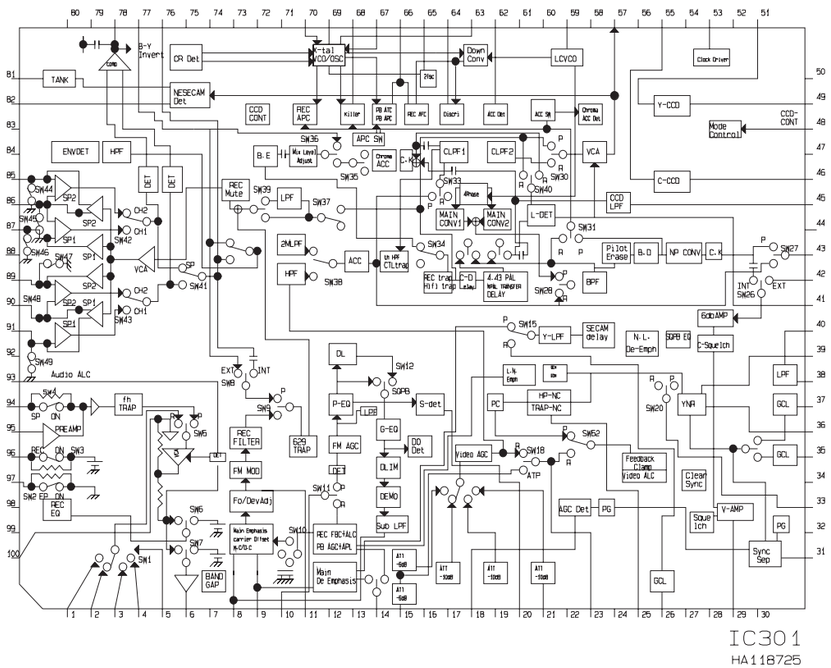

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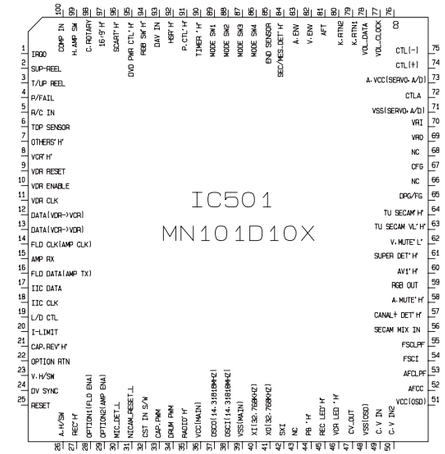

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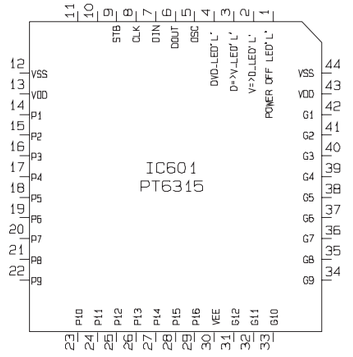

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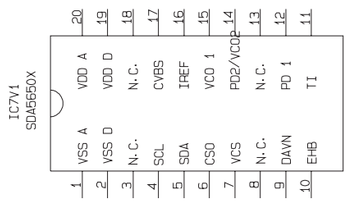

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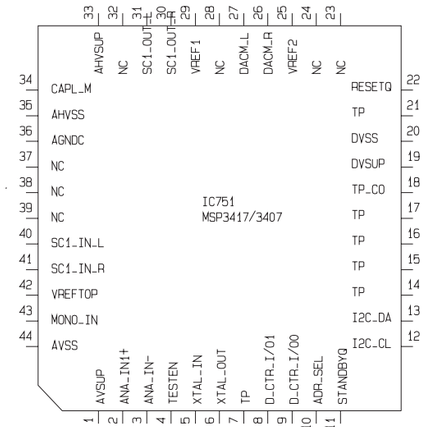

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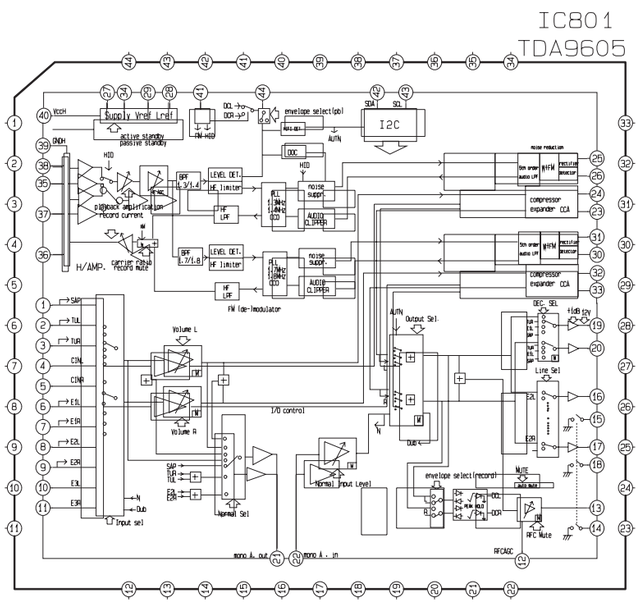

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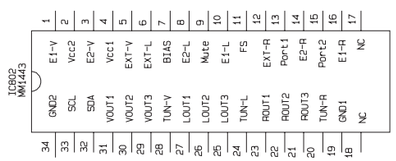

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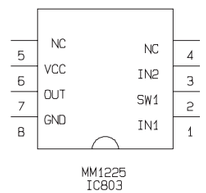

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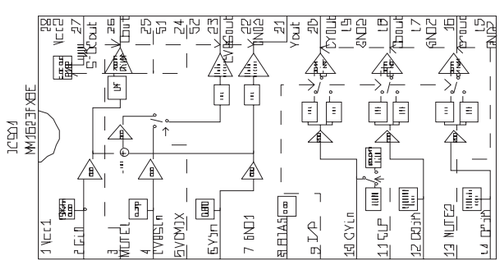
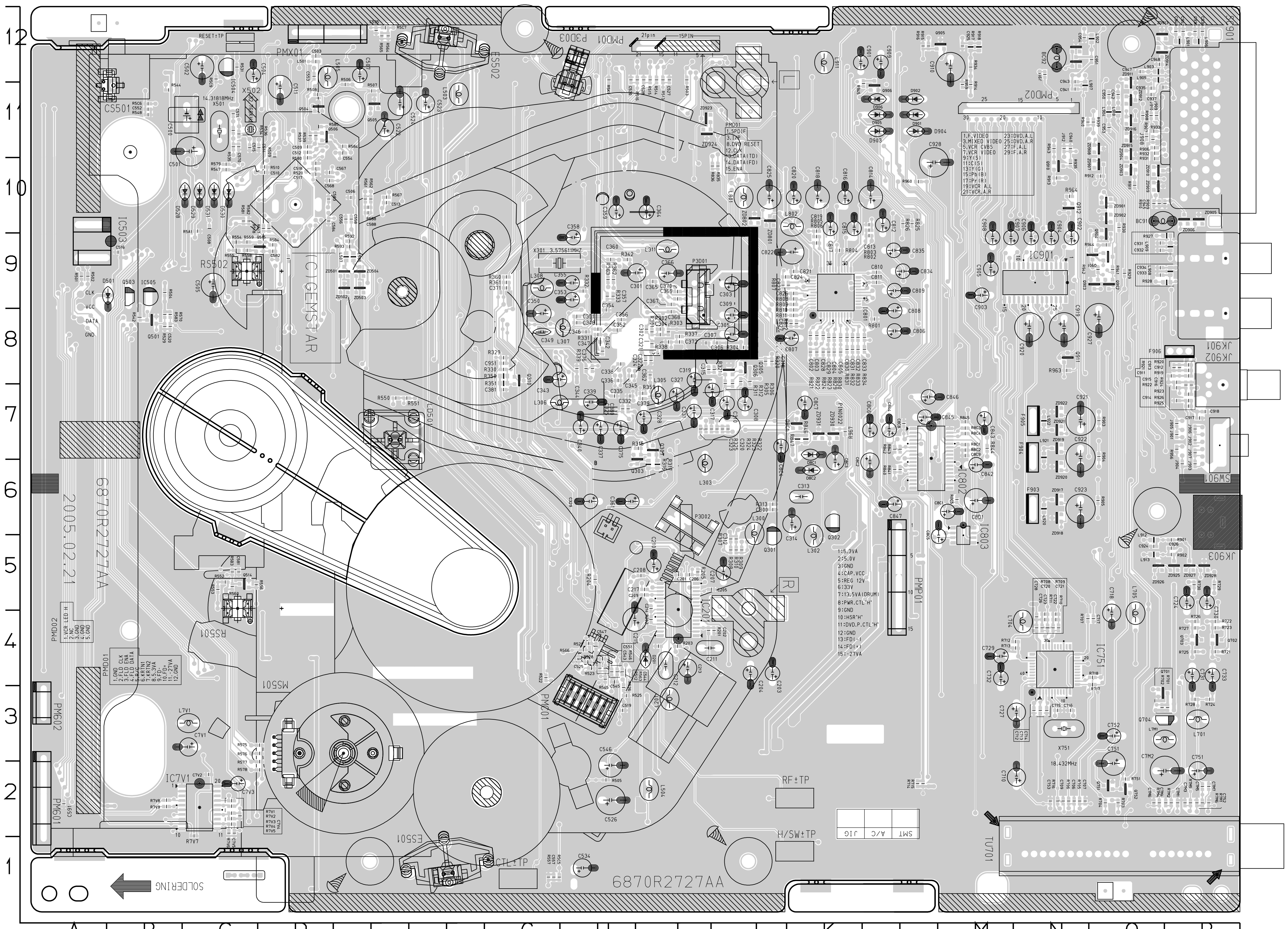


IC901_MM1623FX8E

MEMO

MEMO

PRINTED CIRCUIT DIAGRAMS
1. VCR P.C.BOARD(TOP VIEW)



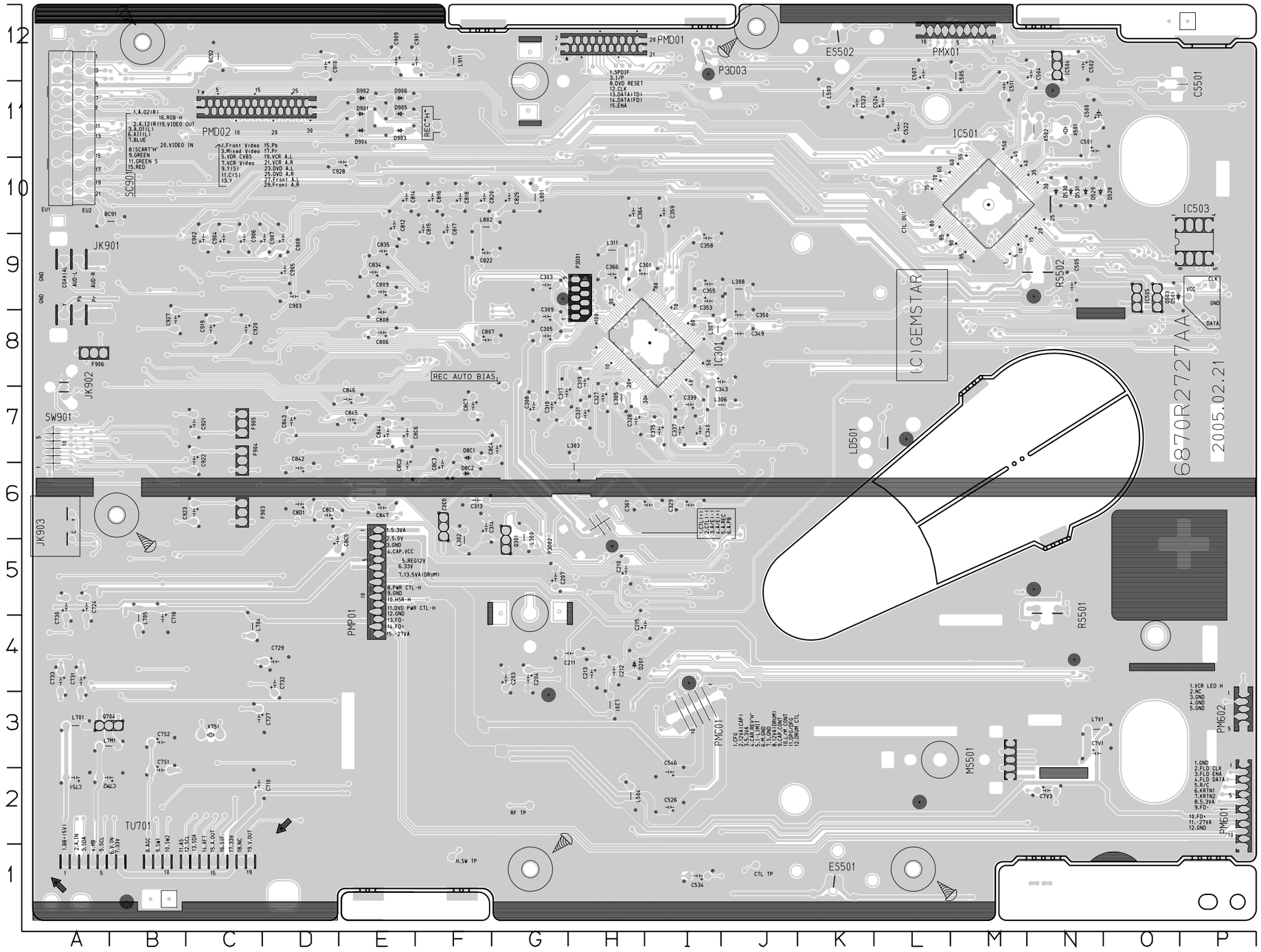
LOCATION GUIDE

BC91	O10	C367	I9	C721	N4	C8C9	M7	IC504	C12	PIN0022	K7	PIN0226	M7	Q907	O9	R539	D11	R7M1	P2	R924	P7
BC92	N12	C368	I8	C722	N4	C8D1	M6	IC505	B9	PIN0042	D10	PIN0227	L7	Q910	N10	R542	B8	R7M2	P2	R925	P7
C201	I5	C369	I9	C723	N4	C901	K12	IC751	N4	PIN0043	D11	PIN0228	N9	Q911	N8	R544	B11	R7M4	O2	R926	P7
C202	J4	C370	I9	C724	P5	C902	N9	IC7V1	C2	PIN0044	E10	PIN0229	N8	Q912	N10	R545	H4	R7M5	P2	R927	P9
C203	J4	C371	G9	C726	N4	C903	M9	IC801	K9	PIN0045	D10	PIN0230	N8	R201	I4	R546	H4	R7M6	P2	R928	P9
C204	J4	C372	I8	C727	N3	C904	N9	IC802	L7	PIN0046	D11	PIN0231	L11	R202	I4	R547	C10	R7S1	O2	R929	O9
C205	J5	C375	H7	C728	N4	C905	M9	IC803	M5	PIN0047	B8	PIN0232	K11	R203	I4	R548	B11	R7V1	C2	R930	O10
C206	I5	C376	H8	C729	M4	C906	N9	IC901	N9	PIN0048	I11	PIN0235	O11	R204	H5	R550	E7	R7V2	C2	R931	O10
C207	J5	C378	I4	C730	P5	C907	M9	J901	P7	PIN0049	H10	PIN0236	O5	R205	I5	R551	E7	R7V3	C2	R932	O11
C208	I5	C379	I7	C731	P4	C908	M9	J902	P7	PIN0050	I11	PIN0237	O5	R301	I8	R552	C5	R7V4	C2	R933	O11
C209	I5	C380	H7	C732	M4	C909	L12	J903	P6	PIN0051	E12	PIN0238	O2	R302	I8	R553	C5	R7V5	C2	R934	M12
C210	I5	C381	G7	C733	P4	C910	M12	J904	P6	PIN0052	H4	PIN0244	K7	R303	I8	R554	C9	R7V6	C2	R935	N10
C211	I4	C500	C11	C751	P2	C911	P8	J905	P7	PIN0055	D11	PIN0245	B8	R304	J8	R555	C9	R7V7	C2	R936	O11
C212	I4	C501	C11	C752	P2	C912	P8	J906	P7	PIN0056	E11	PIN0246	B8	R305	J8	R556	C5	R7V8	B2	R939	O11
C213	I4	C502	C12	C7M1	P2	C913	P8	J907	P7	PIN0057	E10	PIN0247	D11	R306	J8	R557	G1	R7V9	B2	R940	N11
C214	I5	C503	D12	C7M2	P2	C914	P7	J908	O11	PIN0058	D10	PIN0249	D11	R307	J5	R558	C9	R801	L8	R941	O9
C215	H4	C504	C12	C7M3	P2	C915	P8	J909	O11	PIN0059	E10	PIN0250	C5	R308	J5	R559	C9	R802	L9	R942	O9
C217	I5	C505	C9	C7M4	P2	C916	P7	J910	O11	PIN0060	C5	PIN0251	D9	R309	J5	R560	C5	R803	L10	R943	N11
C300	J6	C506	E10	C7M5	P2	C917	P7	J911	N12	PIN0061	D9	PIN0252	O3	R310	J5	R561	E10	R804	K9	R944	O9
C301	I9	C507	E12	C7M6	O2	C918	P7	J912	N11	PIN0062	E10	PIN0253	O9	R311	J7	R562	E10	R805	K9	R945	L11
C302	I8	C508	C10	C7M7	P2	C919	N8	JK901	P8	PIN0063	N2	PIN0254	O9	R312	J7	R563	H4	R806	K9	R956	P7
C303	J9	C509	D11	C7S1	O2	C920	N8	JK902	P7	PIN0064	N3	PIN0255	O9	R313	J6	R564	E12	R807	J9	R959	M11
C304	I8	C510	D10	C7S2	O3	C921	N7	JK903	P6	PIN0065	N3	PIN0256	O9	R315	I7	R565	E12	R808	K9	R960	L10
C305	J8	C511	D11	C7S3	N2	C922	N7	L201	I3	PIN0066	N5	PIN0257	O9	R316	I6	R566	H4	R809	K9	R963	N8
C306	J8	C512	D11	C7V1	C3	C923	N6	L300	J6	PIN0067	N5	PIN0263	H10	R317	I6	R567	E10	R810	K8	R964	N10
C307	I8	C513	E10	C7V2	C2	C924	O5	L302	K5	PIN0068	N4	PIN0264	N10	R320	J8	R570	B8	R811	K8	R967	K7
C308	J7	C514	D11	C7V3	C2	C925	M12	L303	I6	PIN0069	N4	PIN0265	N11	R321	J8	R575	D3	R812	K8	RESET±TP	C12
C309	J8	C515	C11	C7V4	C2	C926	P5	L305	I7	PIN0070	K8	PIN0266	H4	R322	J7	R576	D3	R821	K8	RF±TP	K2
C310	J7	C516	B9	C7V5	C2	C927	O8	L306	G7	PIN0071	K8	PIN0267	E7	R323	J7	R577	D2	R822	K8	RS501	C5
C312	J5	C517	D10	C802	K8	C928	L10	L307	H8	PIN0073	K8	PIN0268	C5	R324	J7	R578	D2	R823	K8	RS502	C9
C313	K6	C518	D10	C803	K8	C931	O9	L308	G9	PIN0075	K8	PIN0269	C9	R325	I7	R579	C10	R824	K8	SC901	P10
C314	K6	C519	H3	C804	K8	C932	O9	L311	I9	PIN0076	I8	PIN0277	J10	R329	G8	R580	D10	R825	L10	SW901	P7
C315	I8	C520	B8	C805	K8	C933	O9	L501	D12	PIN0077	L9	PIN0280	O10	R330	G8	R581	C10	R826	L10	TU701	P1
C316	J8	C522	E11	C806	L8	C934	O9	L503	F11	PIN0078	L9	PIN0283	O10	R331	H8	R582	C10	R829	K8	X301	G9
C317	J7	C523	F11	C807	K8	C935	O11	L504	I2	PIN0079	L10	PIN0286	P10	R332	H9	R583	B8	R830	K8	X501	C11
C319	I8	C524	E11	C808	L8	C936	P12	L505	D12	PIN0080	K10	PIN0289	O11	R333	H9	R584	E11	R831	K8	X502	C11
C320	J7	C525	H4	C809	L9	C937	O11	L506	E9	PIN0081	K9	PIN0292	O10	R337	I8	R585	D11	R832	K8	X751	N3
C321	I8	C526	H2	C810	L9	C938	P12	L507	E9	PIN0082	J9	PIN0295	O12	R338	I8	R588	E10	R833	K8	ZD501	E9
C322	I8	C527	I12	C811	L9	C940	N11	L701	P3	PIN0084	K8	PIN0298	P12	R339	H8	R592	E9	R834	L8	ZD502	E9
C323	I7	C528	I12	C812	L10	C941	N11	L704	N4	PIN0086	K8	PIN0301	O11	R342	H9	R593	E9	R835	J10	ZD503	E9
C324	I8	C530	H12	C813	L10	C942	O11	L705	O4	PIN0088	K8	PIN0304	N6	R350	G8	R594	D9	R836	J10	ZD504	E9
C325	H7	C534	H1	C814	L10	C943	N11	L7M1	P3	PIN0090	K8	PIN0307	N6	R351	G8	R5A1	C10	R840	L6	ZD801	J10
C327	I7	C535	E12	C815	K10	C945	O10	L7V1	C3	PIN0092	K8	PIN0310	N7	R359	I7	R5B3	C5	R841	L6	ZD802	J10
C328	I7	C543	H4	C816	K10	C947	O12	L801	J10	PIN0093	L8	PM601	A3	R360	G9	R5B4	D9	R842	L7	ZD901	O10
C329	H6	C544	H4	C817	K10	C948	O12	L802	K10	PIN0094	L8	PM602	A3	R361	G9	R5C5	G1	R843	L7	ZD902	O10
C331	I7	C545	H4	C818	K10	C949	P12	L901	P12	PIN0095	P8	PMC01	H3	R362	H9	R5C6	B11	R844	M7	ZD903	O10
C332	H7	C546	H2	C819	K10	C950	O11	L902	O12	PIN0096	P8	PMD01	I12	R363	H9	R5C7	E12	R845	M7	ZD904	O11
C335	H7	C547	H4	C820	K10	C951	O12	L903	O12	PIN0097	P7	PMD02	M11	R501	A9	R5C9	C12	R846	K7	ZD905	P10
C336	H8	C551	H4	C821	K9	C952	P12	L904	O11	PIN0098	P9	PMP01	L6	R502	A9	R5K1	H12	R847	K7	ZD906	P10
C337	H7	C552	B11	C822	K9	C953	O11	L905	O12	PIN0099	P9	PMX01	D12	R503	I12	R701	P3	R8C1	M7	ZD907	O10
C338	H8	C553	D12	C823	K9	C954	N12	L906	P12	PIN0102	N11	Q301	J5	R504	B9	R702	O3	R8C2	M7	ZD908	O11
C339	H7	C554	E11	C824	J9	C9S1	G8	L907	N11	PIN0103	N11	Q302	K6	R505	H2	R703	O2	R8C3	M7	ZD909	O10
C340	H7	C556	E10	C825	J10	CS501	B11	L908	P9	PIN0107	B2	Q303	I6	R506	E11	R704	O2	R8C4	M7	ZD910	O10
C342	H8	C557	G1	C826	K9	CTL±TP	G1	L909	P9	PIN0108	B2	Q305	J8	R507	E11	R705	N2	R8C5	M6	ZD911	O11
C343	G8	C558	E10	C827	K8	D201	I4	L910	O11	PIN0109	B2	Q306	J8	R508	D11	R706	N2	R901	P5	ZD912	O11
C344	H8	C567	D10	C828	K8	D501	B9	L911	K12	PIN0110	B2	Q307	I7	R509	D11	R707	N4	R902	P5	ZD913	O12
C345	H8	C568	D10	C829	K8	D528	C10	L912	O5	PIN0111	B2	Q310	G8	R510	D10	R708	N4	R903	O7	ZD914	O12
C346	H8	C570	C11	C830	K8	D529	C10	L913	O5	PIN0112	B2	Q501	B8	R512	H4	R709	N4	R904	O7	ZD915	O11
C347	H8	C571	C11	C831	K8	D530	C10	L920	N6	PIN0113	C2	Q503	B9	R513	I12	R710	N4	R905	O6	ZD916	O11
C348	H8	C581	C5	C832	K8	D531	C10	L921	N7	PIN0115	C2	Q504	D11	R514	I12	R711	N4	R906	O11	ZD917	N6
C349	G8	C582	D9	C833	L8	D8C1	K7	L922	N7	PIN0116	C2	Q505	E11	R515	I12	R712	N4	R907	O11	ZD918	N6
C350	G8	C583	D10	C834	L9	D8C2	K6	LD501	E7	PIN0128	I4	Q506	D11	R516	I12	R713	N4	R908	O11	ZD919	N7
C351	H8	C584	D10	C835	L9	D901	L11	MS501	D3	PIN0163	D10	Q514	C5	R517	D10	R714	L2	R909	P10	ZD920	N6
C352	H8	C588	E10	C842	M6	D902	L11	P3D01	I8	PIN0165	C10	Q515	D9	R518	D10	R715	L2	R910	O10	ZD921	N7
C353	H9	C591	A2	C843	M7	D903	L11	P3D02	I6	PIN0168	C11	Q701	O3	R520	D10	R716	N2	R911	O10	ZD922	N7
C354	H8	C706	N2	C844	L7	D904	L11	P3D03	H12	PIN0171	D10	Q702	P4	R521	H4	R717	O4	R912	O10	ZD923	I11
C355	H9	C707	N2	C845	L7	D905	L11	PIN0001	P3	PIN0172	D11	Q703	P4	R522	G4	R718	O4	R913	N10	ZD924	I11
C356	H8	C709	N2	C846	L7	D906	L11	PIN0002	P2	PIN0194	N3	Q704	P3	R523	H4	R721	P4	R914	M11	ZD925	P5
C357	H9	C710	N2	C847	L6	ES501	G1	PIN0003	C2	PIN0195	N4	Q7S1	O2	R525	H3	R722	P4	R915	L12	ZD926	O5
C358	H9	C712	N3	C8C1	M6	ES502	E12	PIN0004	C2	PIN0217	L9	Q7S2	O2	R526	H3	R723	P4	R916	L12	ZD927	P5
C359	H10	C713	N3	C8C2	L6	F903	N6	PIN0005	I5	PIN0218	K9	Q8C1	K7	R528	H4	R724	P3	R917	M12	ZD928	P5
C360	H9	C714	N3	C8C3	K6	F904	N7	PIN0006	I4	PIN0219	K9	Q901	O9	R529	B8	R725	P4	R918	M12	ZD930	K7
C361	H6	C715	N3	C8C4	J7	F905	N7	PIN0007	I5	PIN0220	K9	Q902	O9	R531	C12	R726	P4	R919	P8	ZD931	K7
C362	I8	C716	N3	C8C5	M5	F906	P8	PIN0008	I5	PIN0221	K9	Q903	O9	R534	C11	R727	P4	R920	P8	ZD932	N12
C364	I10	C717	O4	C8C6	L7	H/SW±TP	K1	PIN0009	I5	PIN0222	K8	Q904	O9	R535	C11	R728	P3	R921	P8	ZD933	N12
C365	I9	C718	O4	C8C7	K7	IC201	I5	PIN0010	I5	PIN0223	K8	Q905	M12	R536	C11	R729	P5	R922	P7		
C366	I9	C720	N4	C8C8	L7	IC503	A10	PIN0011	I5	PIN0224	M7	Q906	L11	R537	D11	R730	P5	R923	P7		

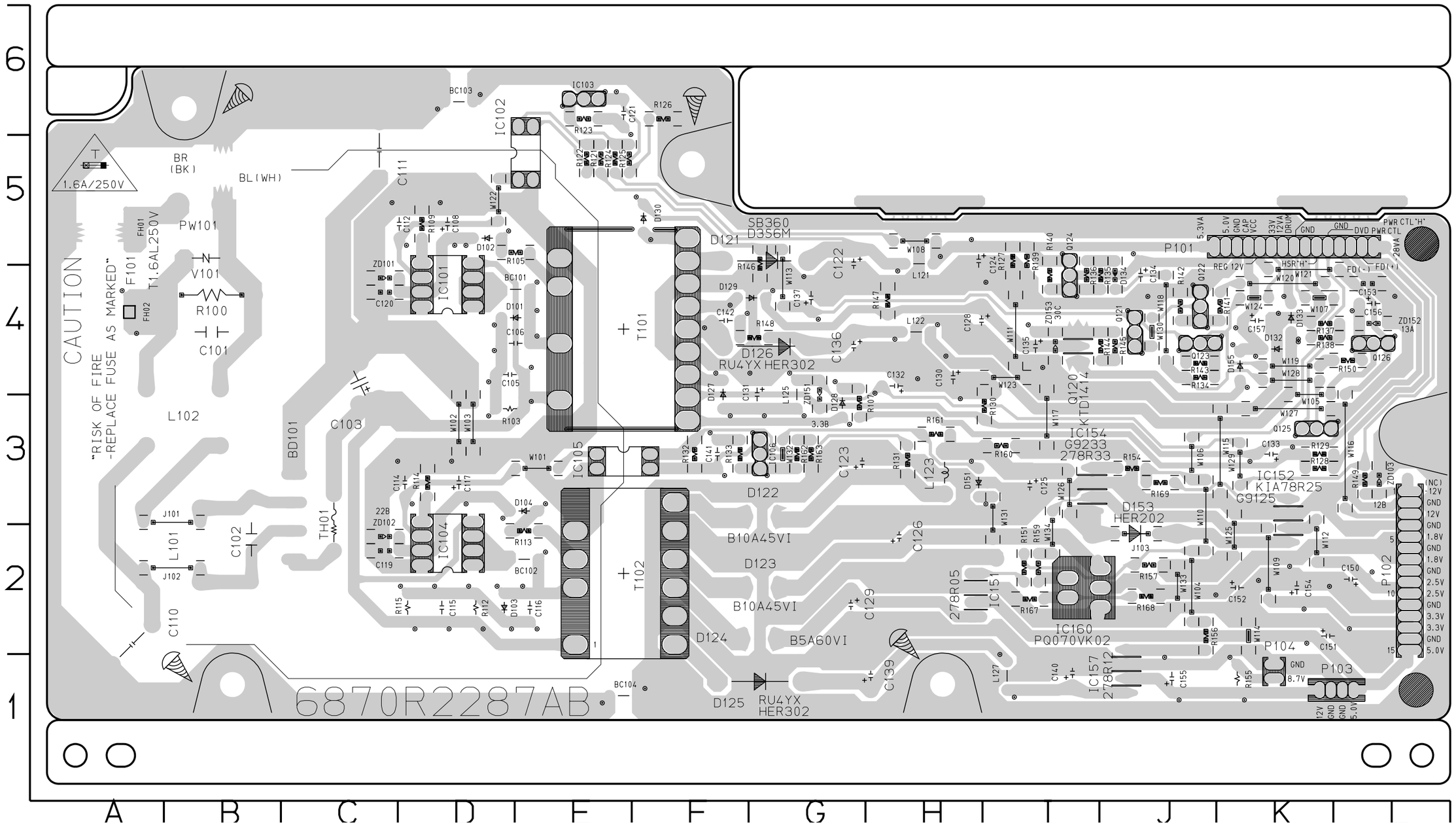
LOCATION GUIDE

IC301	I8
IC501	M10
PIN0053	I4
PIN0054	I4
PIN0100	B12
PIN0101	A12
PIN0104	B12
PIN0105	A12
PIN0158	M9
PIN0159	M9
PIN0160	N9
PIN0161	N9
PIN0162	N9
PIN0164	N10
PIN0166	N10
PIN0167	N11
PIN0174	L11
PIN0175	K11
PIN0176	K10
PIN0177	K10
PIN0178	K10
PIN0181	L10
PIN0182	L10
PIN0185	L9
PIN0186	L9
PIN0248	L11

2. VCR P.C.BOARD(BOTTOM VIEW)



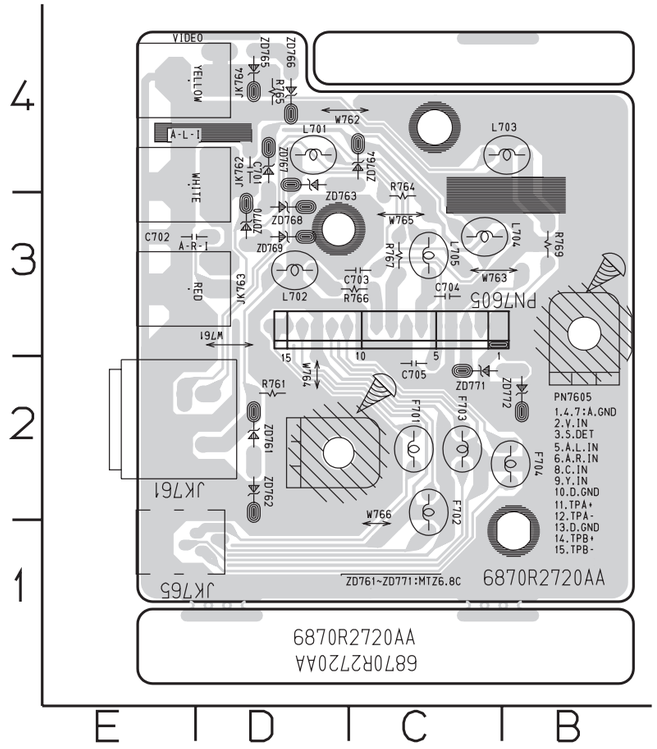
3. SMPS P.C.BOARD



LOCATION GUIDE

BC101	E4	C152	K2	L101	B2	R135	J4
BC102	E2	C153	L4	L102	B3	R136	I4
BC103	D6	C154	K2	L121	H5	R137	K4
BC104	E1	C155	J1	L122	H4	R138	K4
BD101	C3	C156	L4	L123	H3	R139	I5
C101	B4	C157	K4	L125	G3	R140	I4
C102	B2	D101	E4	L127	I1	R141	K4
C103	C4	D102	D5	P101	J5	R142	J4
C105	D4	D103	D2	P102	L3	R143	J4
C106	E4	D104	E3	P103	K1	R144	J4
C108	D5	D121	G5	P104	K1	R145	J4
C110	A2	D122	G3	PW101	B5	R146	G5
C111	C5	D123	G2	Q120	I4	R147	H4
C112	D5	D124	G2	Q121	J4	R148	G4
C114	D3	D125	G1	Q122	J4	R149	L3
C115	D2	D126	G4	Q123	J4	R150	L4
C116	E2	D127	F3	Q124	I4	R151	I2
C117	D3	D128	G3	Q125	K3	R154	J3
C119	C2	D129	G4	Q126	L4	R155	K1
C120	C4	D130	F5	R100	B4	R156	J2
C121	E6	D132	K4	R103	D3	R157	J2
C122	G5	D133	K4	R105	E5	R159	I2
C123	G3	D134	J4	R107	G3	R160	I3
C124	H5	D151	H3	R109	D5	R161	H3
C125	I3	D153	J2	R112	D2	R162	G3
C126	H2	D155	K4	R113	E2	R163	G3
C128	H4	FH01	A5	R114	D3	R167	I2
C129	G2	FH02	A4	R115	D2	R168	J2
C130	H4	IC101	D4	R121	E5	R169	J3
C131	G3	IC102	E6	R122	E5	T101	E4
C132	H4	IC103	E6	R123	E6	T102	E2
C133	K3	IC104	D2	R124	E5	TH01	C3
C134	J4	IC105	F3	R125	E5	V101	B5
C135	I4	IC106	G3	R126	F6	ZD101	C4
C136	G4	IC151	H2	R127	I5	ZD102	C2
C137	G4	IC152	K2	R128	K3	ZD103	L3
C139	H1	IC154	I3	R129	K3	ZD151	G3
C140	I1	IC157	J1	R130	I3	ZD152	L4
C141	F3	IC160	I2	R131	H3	ZD153	I4
C142	F4	J101	B3	R132	F3		
C150	L2	J102	B2	R133	F3		
C151	K2	J103	J2	R134	J4		

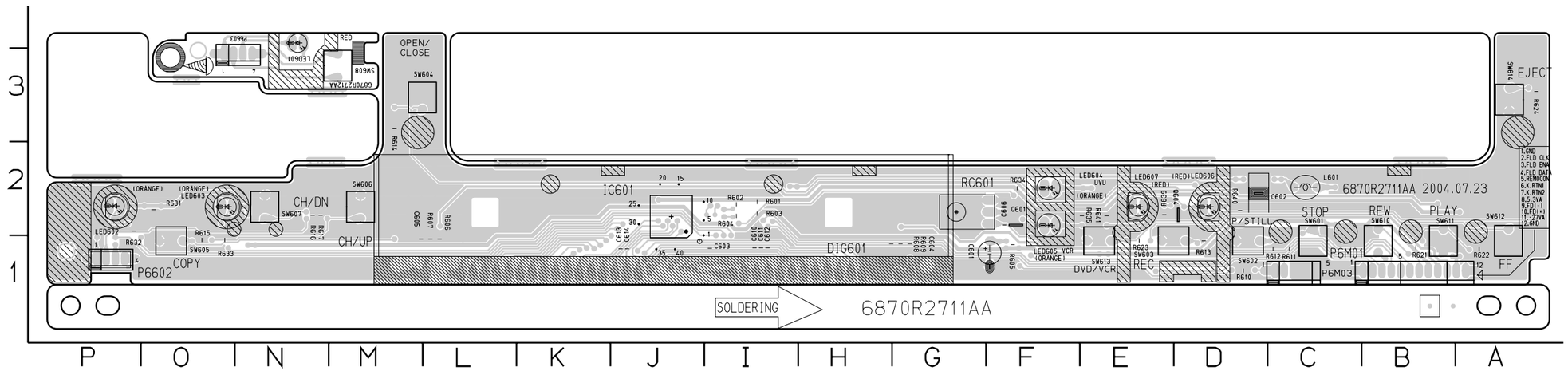
4. JACK P.C.BOARD



LOCATION GUIDE

C701	D4	ZD761	D2	L701	D4
C702	E3	ZD762	D2	L702	D3
C703	C3	ZD763	D4	L703	B4
C704	C3	ZD764	C4	L704	C3
C705	C2	ZD765	D4	L705	C3
F701	C2	ZD766	D4	PN7605	C3
F702	C2	ZD767	D4	R761	D2
F703	C2	ZD768	D3	R764	C3
F704	B2	ZD769	D3	R765	D4
JK761	E2	ZD770	D3	R766	C3
JK762	E4	ZD771	C2	R767	C3
JK763	E3	ZD772	B2	R769	B3
JK764	E4	C701	D4	ZD761	D2
JK765	D1	C702	E3	ZD762	D2
L701	D4	C703	C3	ZD763	D4
L702	D3	C704	C3	ZD764	C4
L703	B4	C705	C2	ZD765	D4
L704	C3	F701	C2	ZD766	D4
L705	C3	F702	C2	ZD767	D4
PN7605	C3	F703	C2	ZD768	D3
R761	D2	F704	B2	ZD769	D3
R764	C3	JK761	E2	ZD770	D3
R765	D4	JK762	E4	ZD771	C2
R766	C3	JK763	E3	ZD772	B2
R767	C3	JK764	E4		
R769	B3	JK765	D1		

5. KEY & TIMER P.C.BOARD

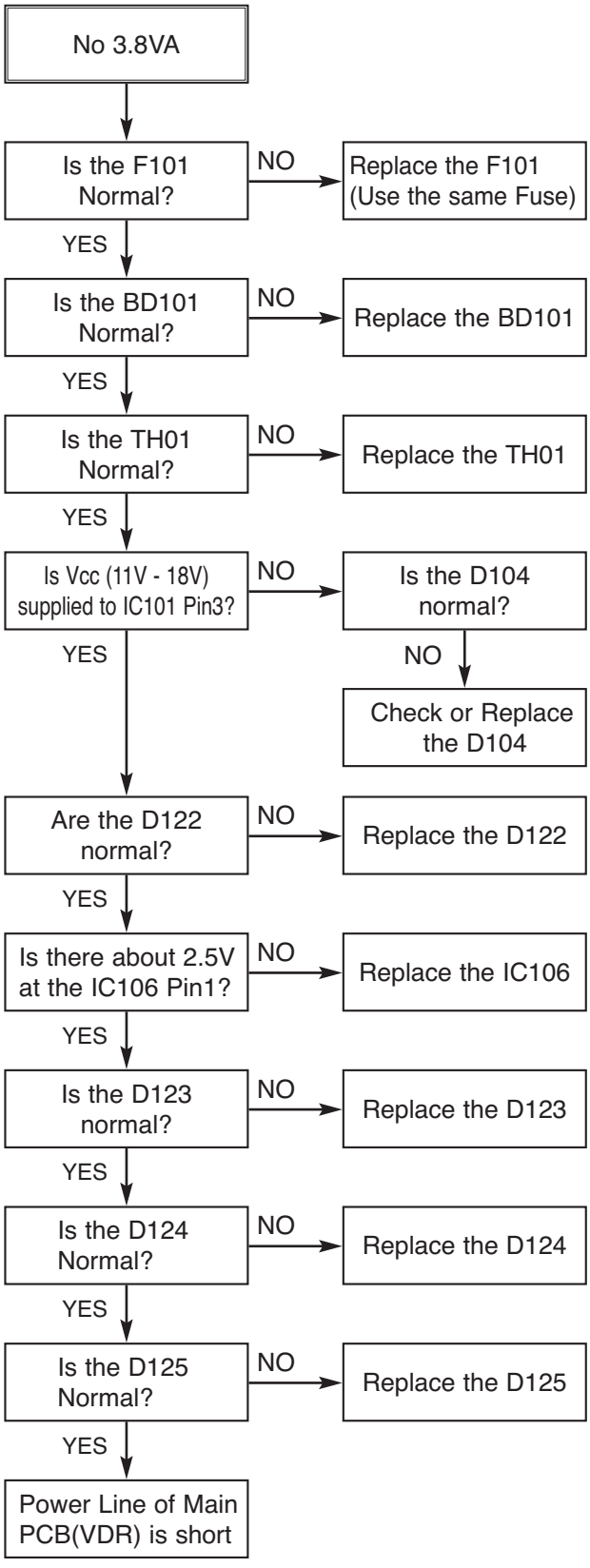


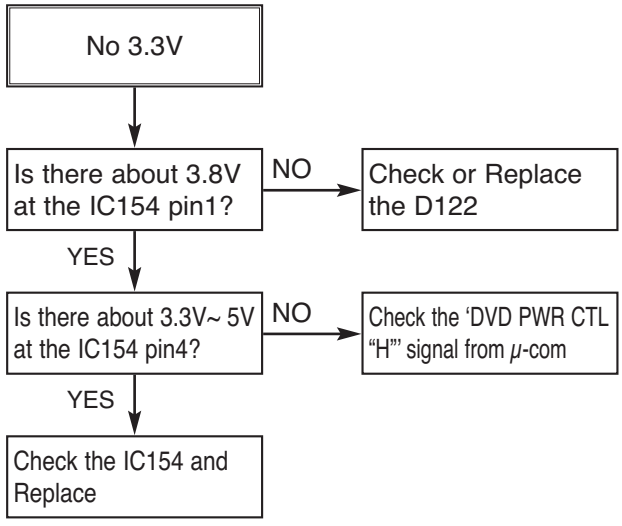
LOCATION GUIDE

C601	F1	P6M03	C1	R631	O2						
C602	D2	Q601	F2	R632	P2						
C603	I1	Q604	D2	R633	O1						
C604	G1	R601	I2	R634	F2						
C605	M1	R602	I2	R635	E2						
C606	F2	R603	I2	R639	E2						
C610	I1	R604	I2	R640	D2						
C611	I1	R605	F1	R641	E2						
C612	I1	R606	L1	RC601	G2						
C613	J1	R607	L1	SW601	C1						
C614	J1	R608	H1	SW602	D1						
DIG601	M1	R609	G1	SW603	E1						
IC601	J2	R610	D1	SW604	M3						
L601	C2	R611	C1	SW605	O1						
LED601	N4	R612	C1	SW606	M2						
LED602	P2	R613	D1	SW607	N2						
LED603	O2	R614	M3	SW608	M3						
LED604	F2	R615	O1	SW610	B1						
LED605	F2	R616	N2	SW611	B1						
LED606	D2	R617	N2	SW612	A1						
LED607	E2	R621	B1	SW613	E1						
P6602	P1	R622	A1	SW614	A3						
P6603	O3	R623	E1								
P6M01	B1	R624	A3								

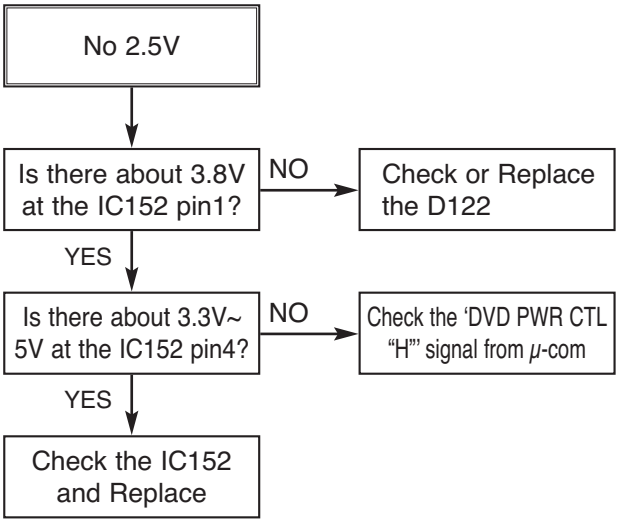
VDR PART
VDR ELECTRICAL TROUBLESHOOTING GUIDE

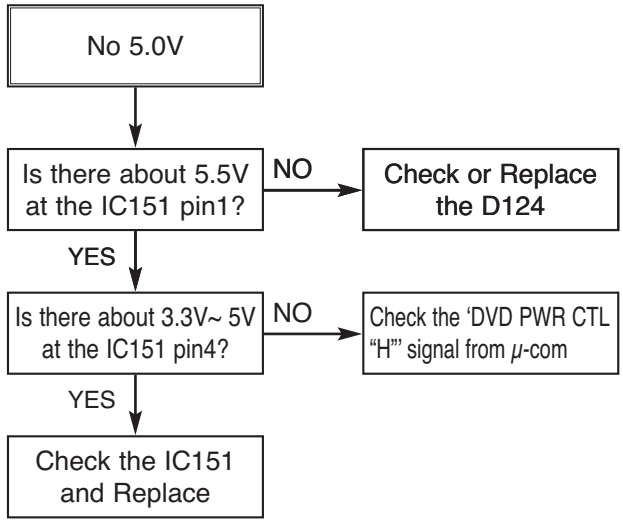
1. Power(SMPS) CIRCUIT

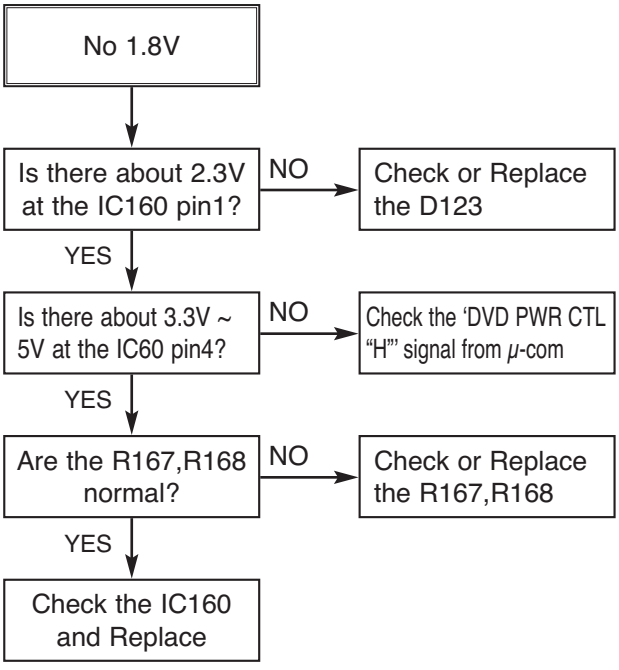


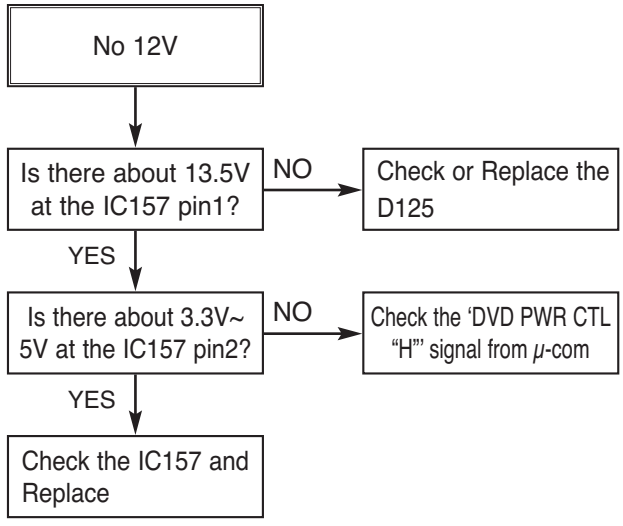


VDR ELECTRICAL TROUBLESHOOTING GUIDE



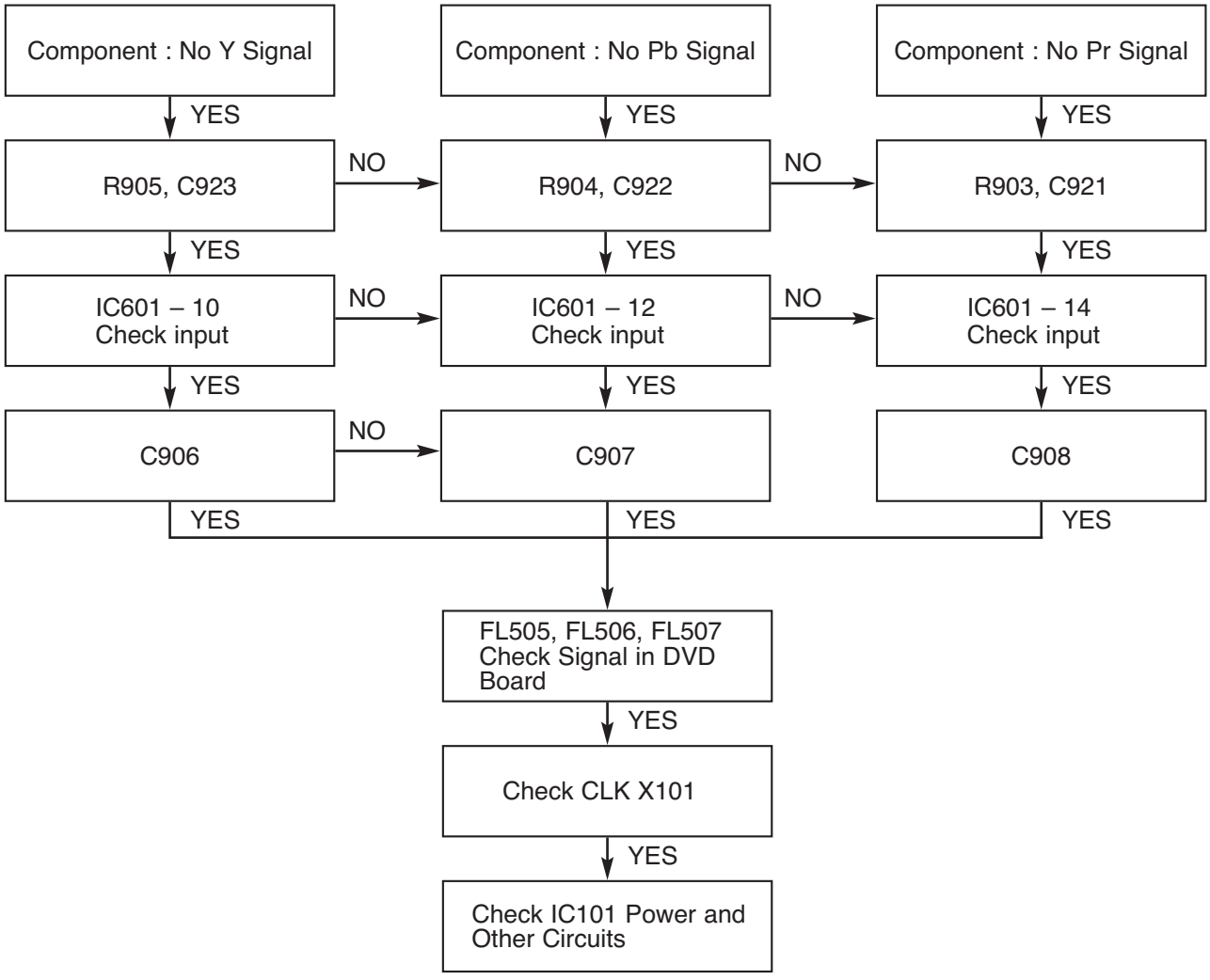






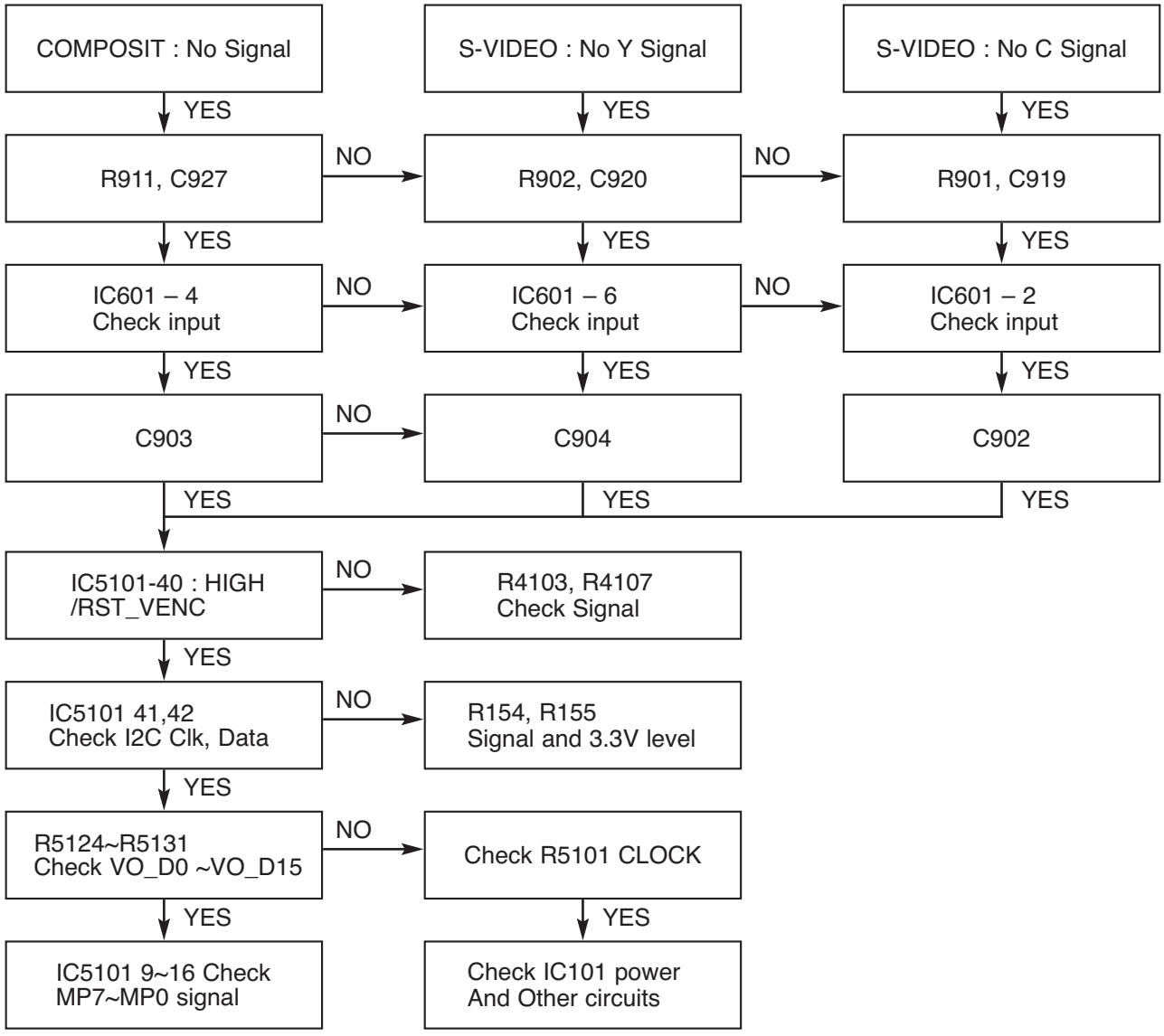
VDR ELECTRICAL TROUBLESHOOTING GUIDE

2. No Component video signal when playing DISC



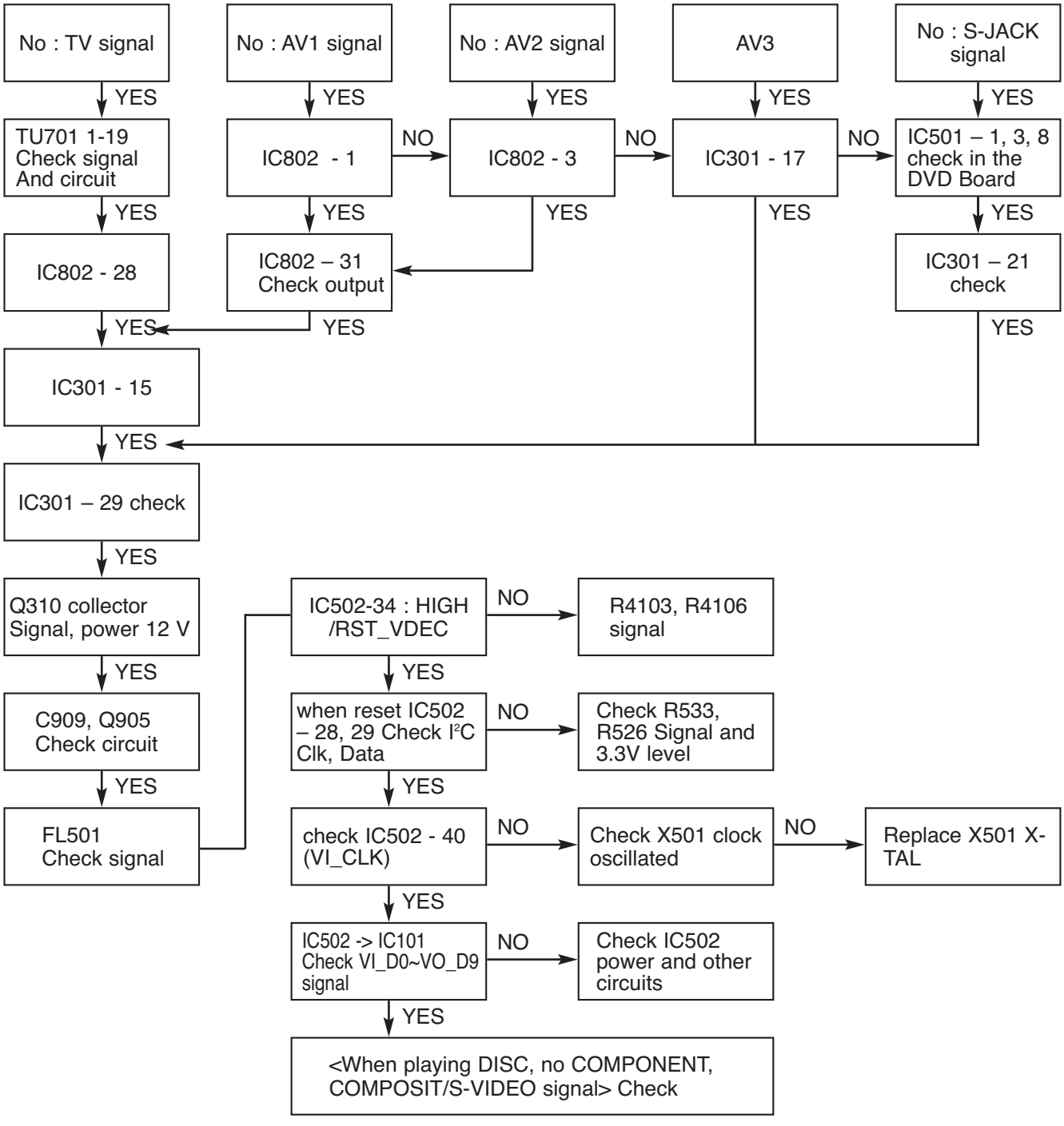
VDR ELECTRICAL TROUBLESHOOTING GUIDE

3. No COMPOSITE / S-VIDEO signal when playing DISC



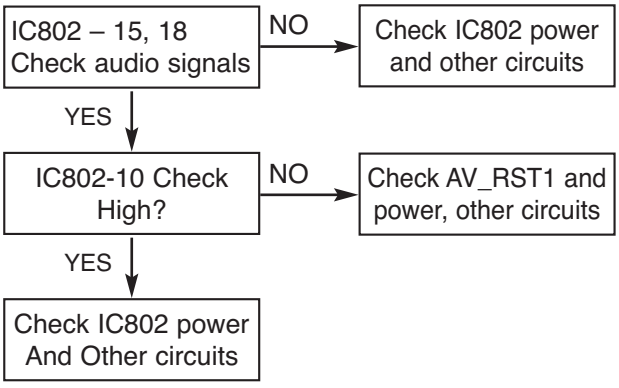
VDR ELECTRICAL TROUBLESHOOTING GUIDE

4. No TV, External Input video signal

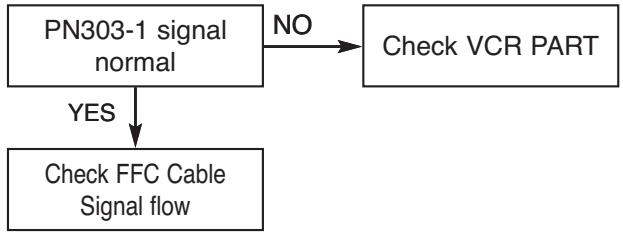


VDR ELECTRICAL TROUBLESHOOTING GUIDE

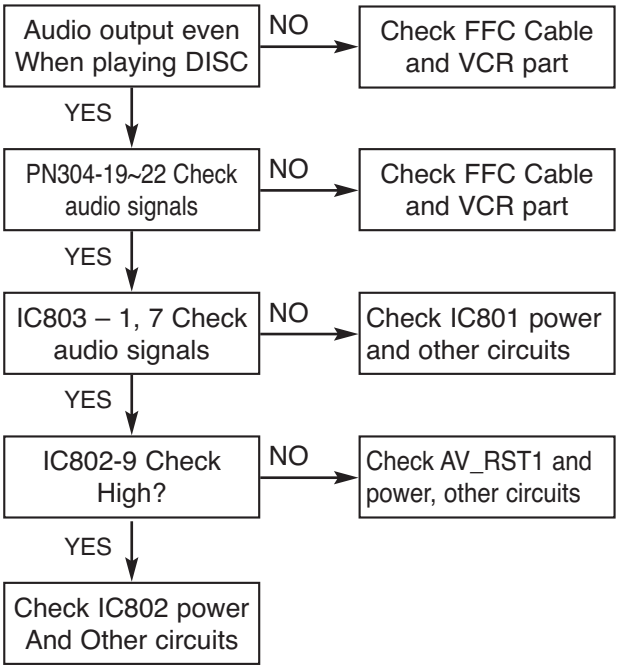
5. When playing DISC, no audio output



7. No OPTICAL / DIGITAL output

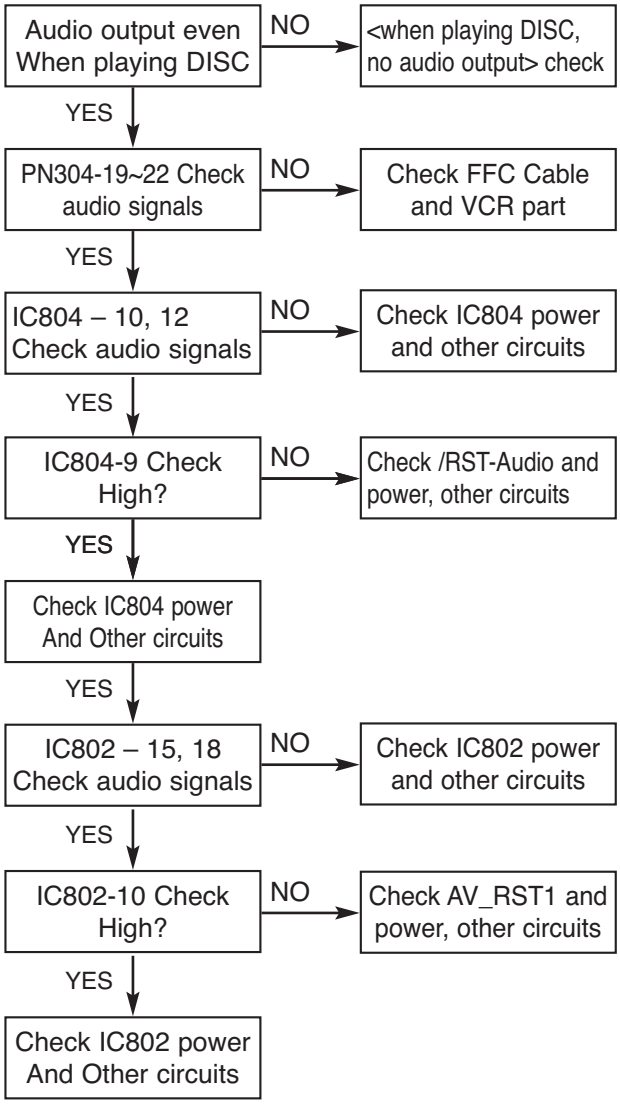


6. No TUNER audio output

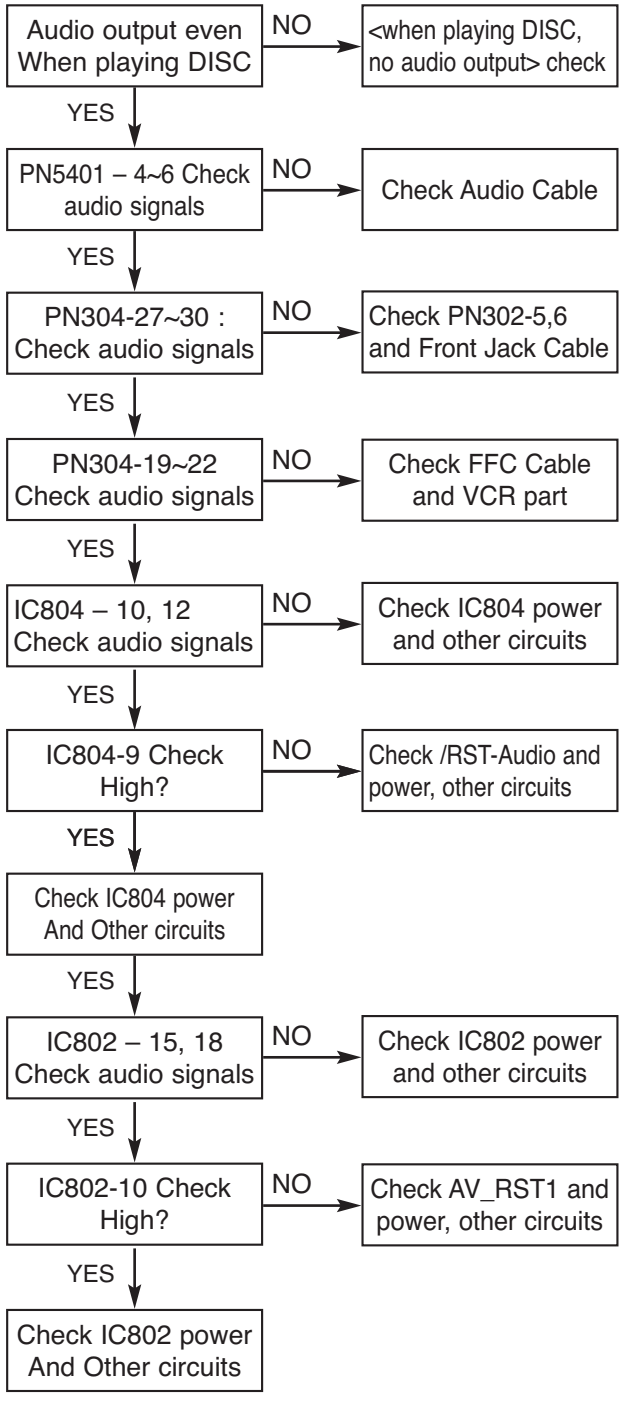


VDR ELECTRICAL TROUBLESHOOTING GUIDE

8. No External Input 1, 2 audio

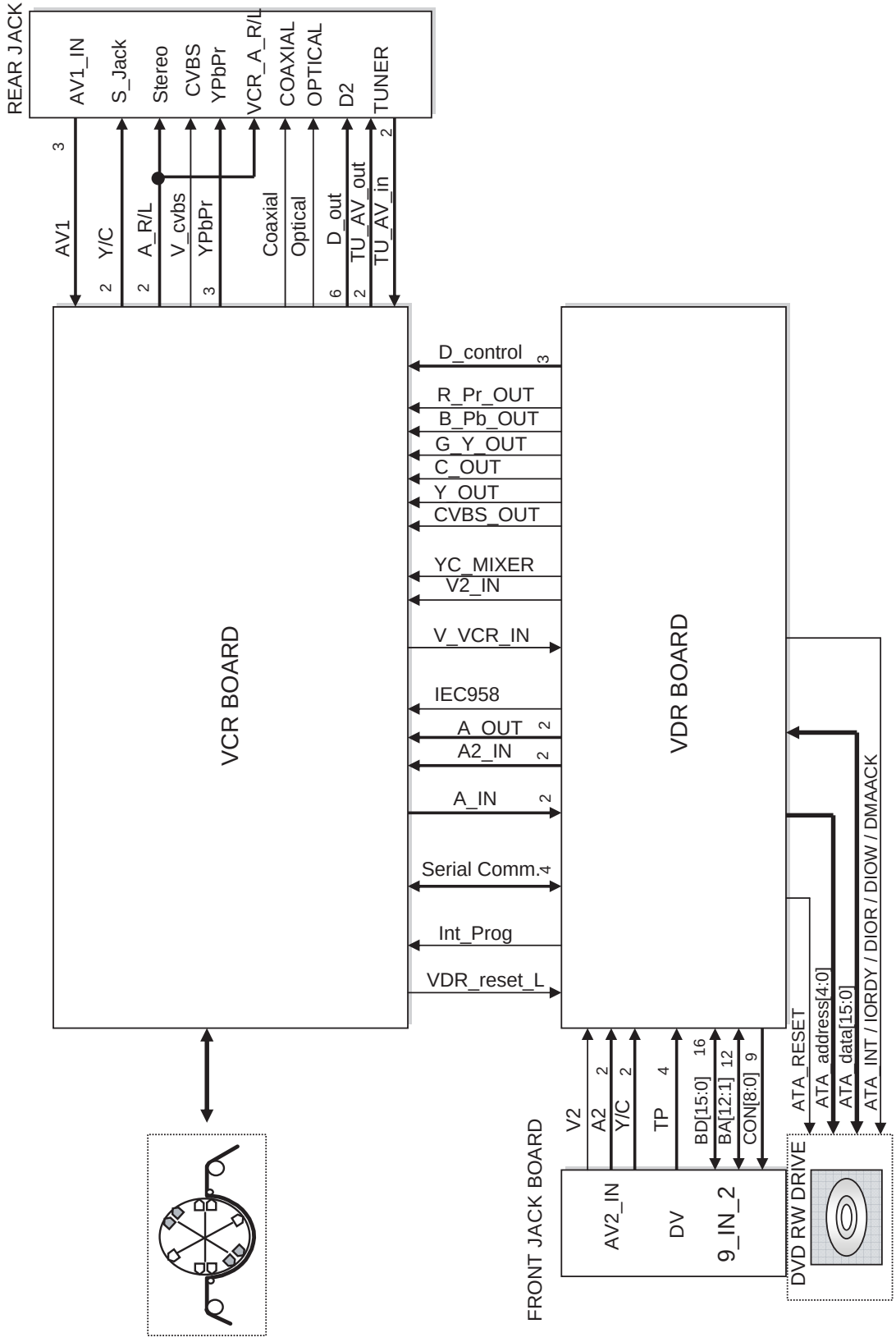


9. No External Input 3 audio

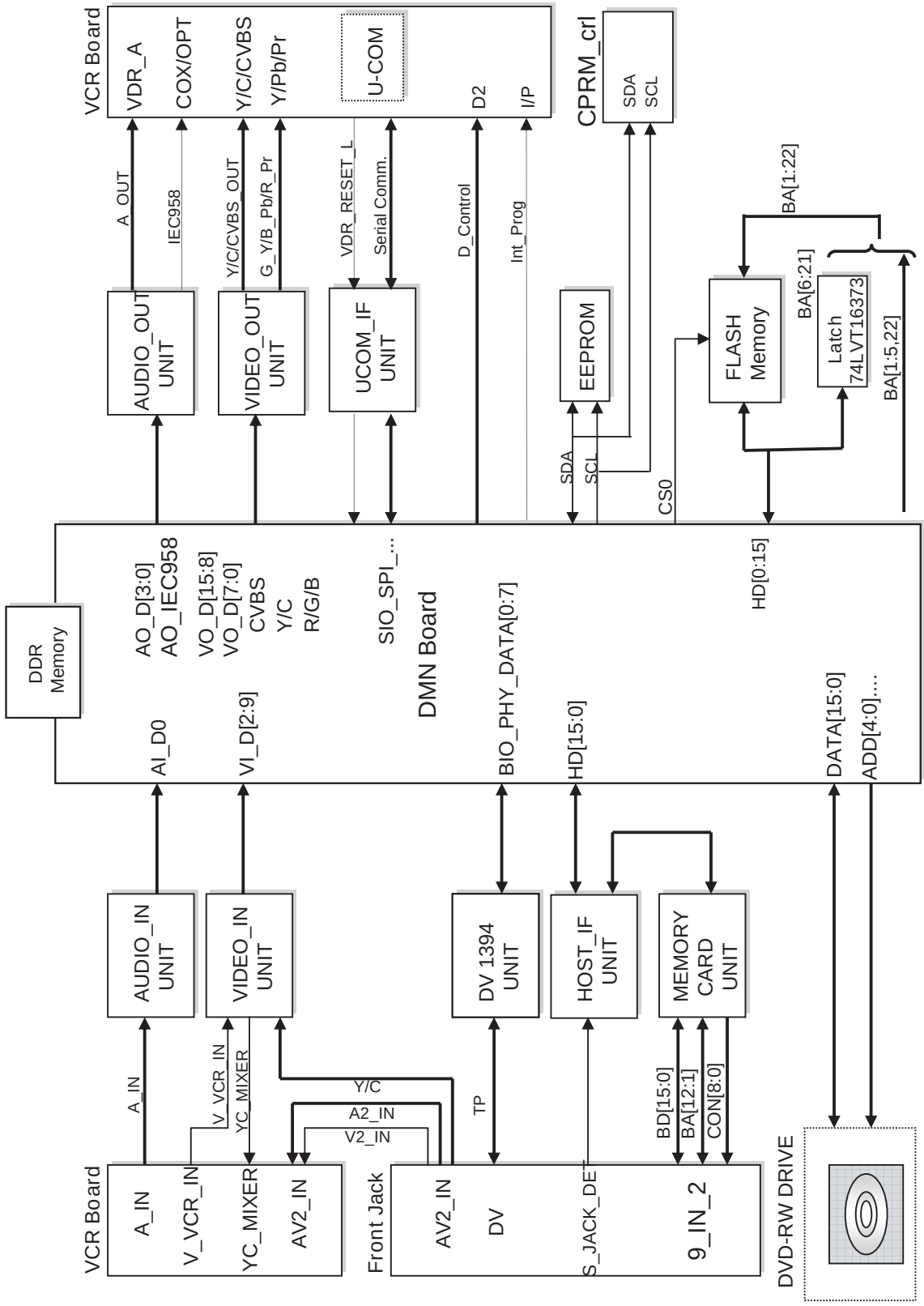


BLOCK DIAGRAMS

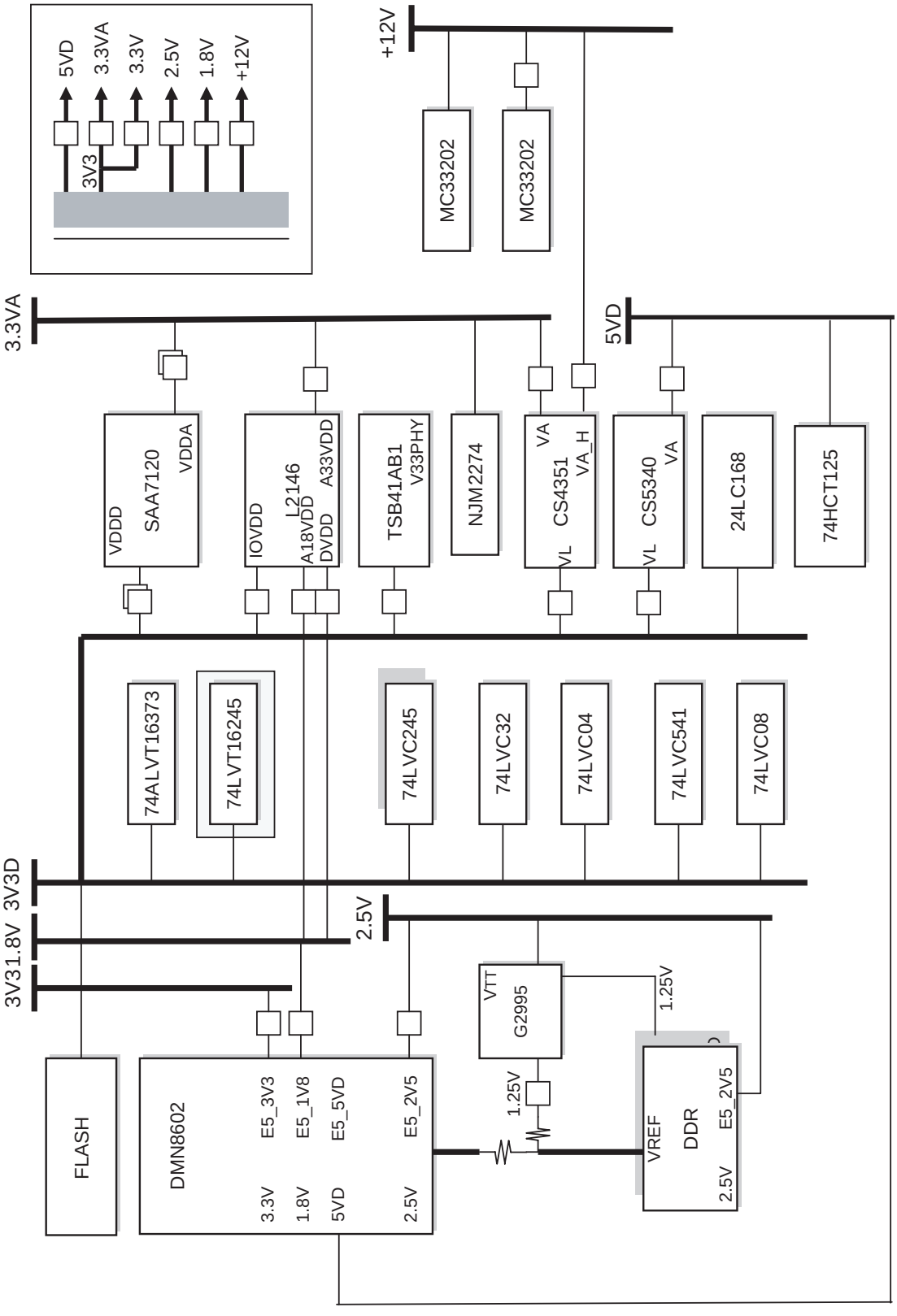
1. VDR SET TOTAL BLOCK DIAGRAM



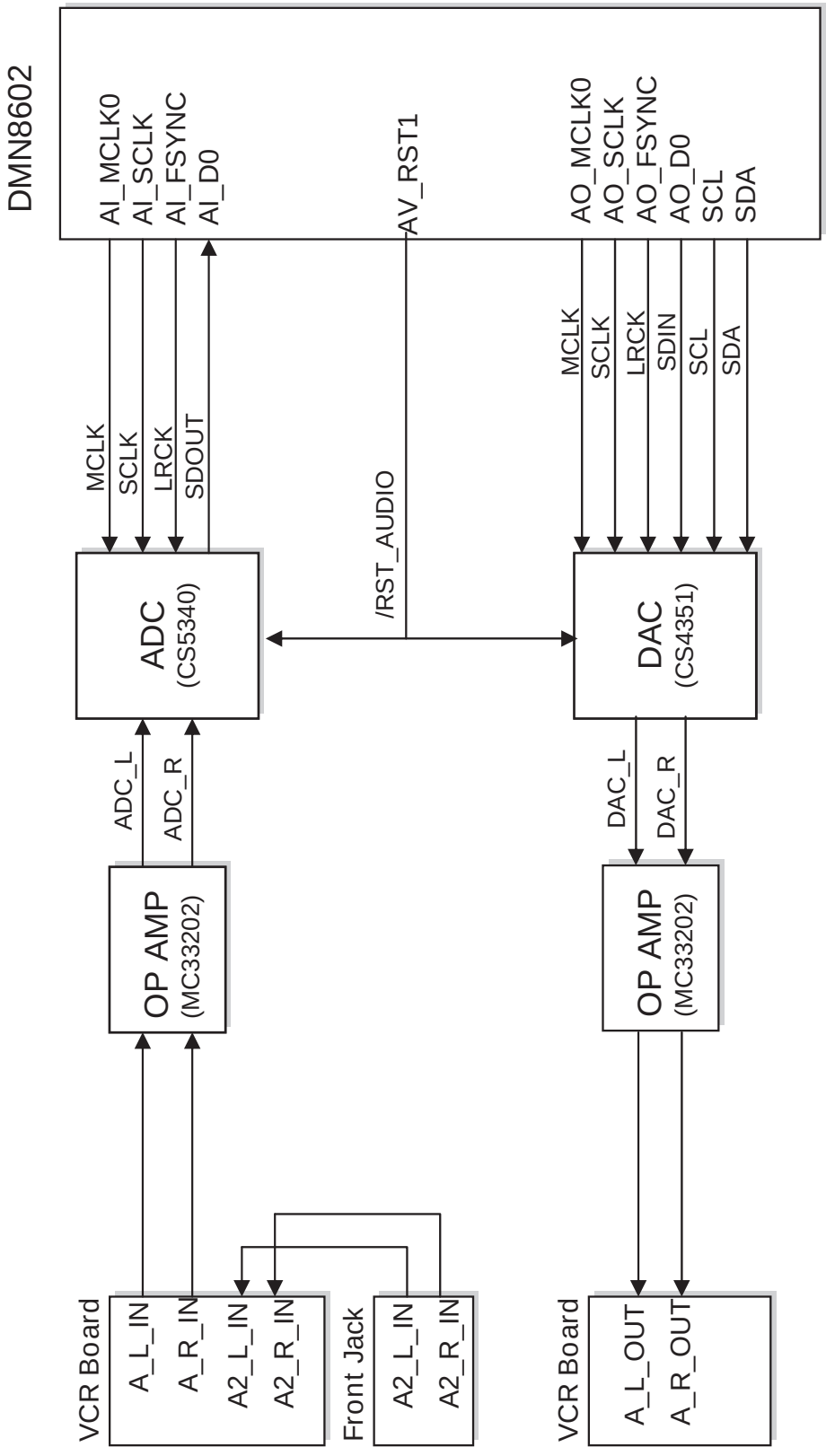
2. VDR MAIN H/ W BLOCK DIAGRAM



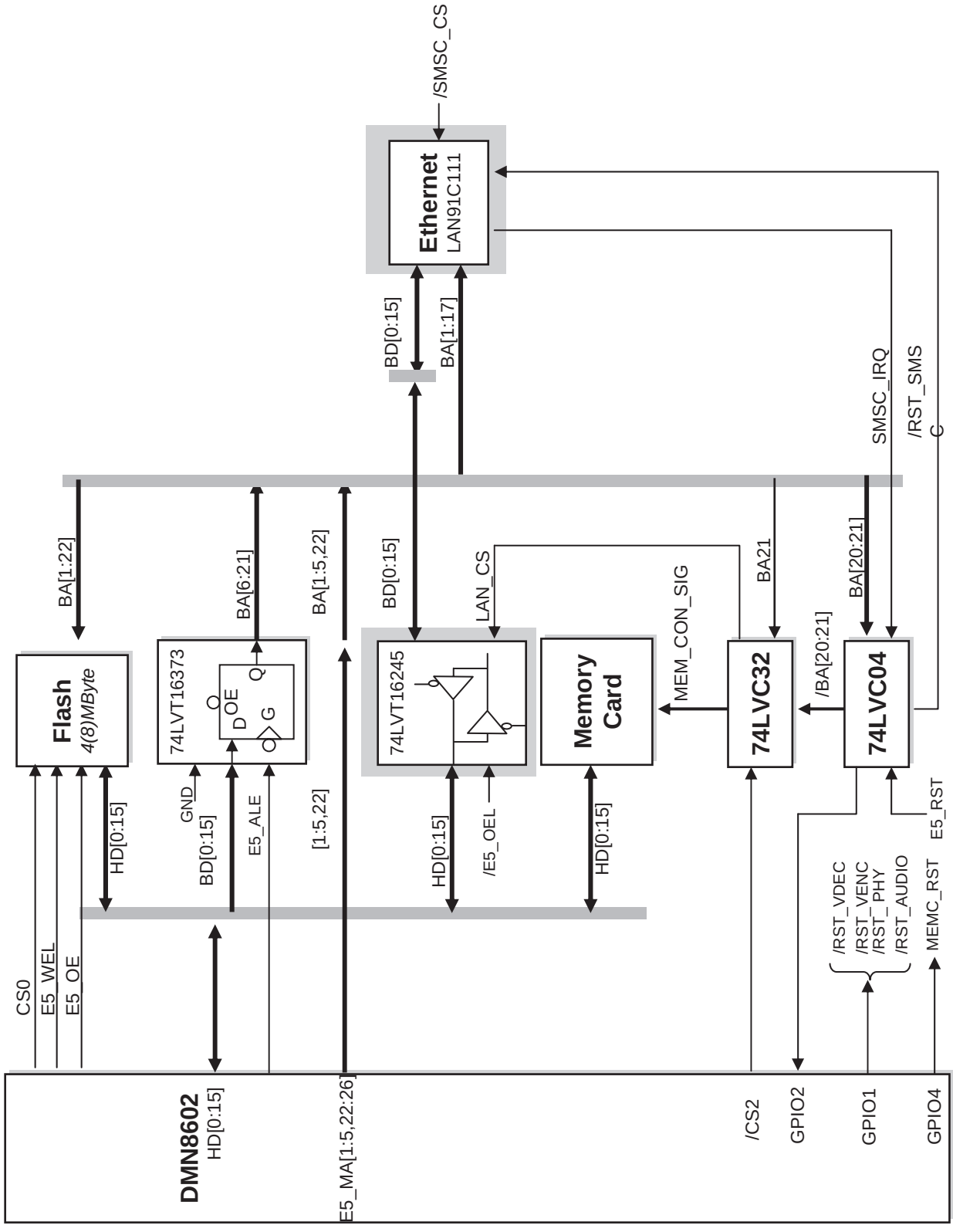
3. POWER BLOCK DIAGRAM



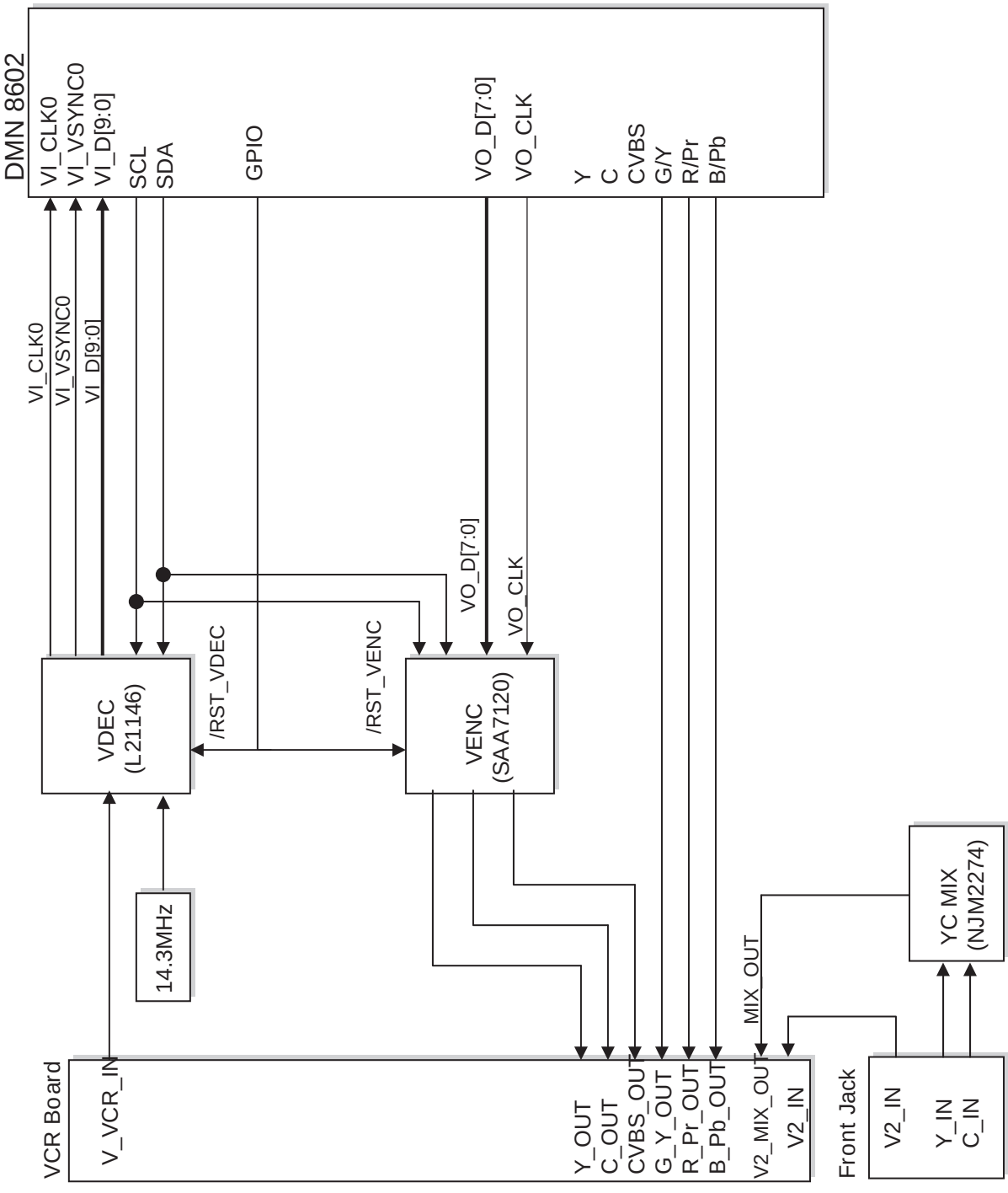
4. AUDIO IN/ OUT BLOCK DIAGRAM



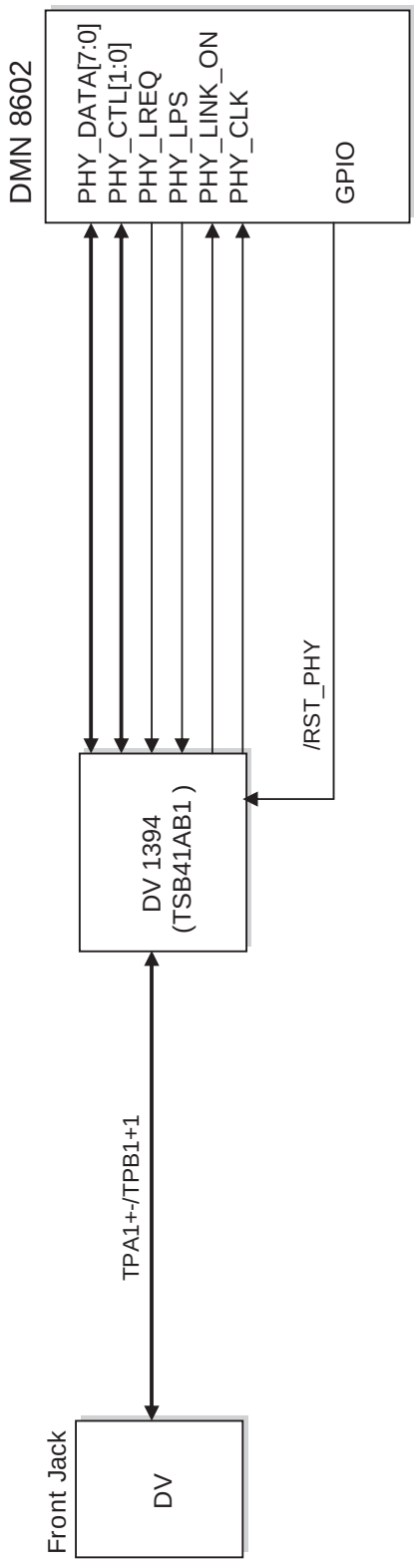
5. CPU & CONTROL REGISTER BLOCK DIAGRAM



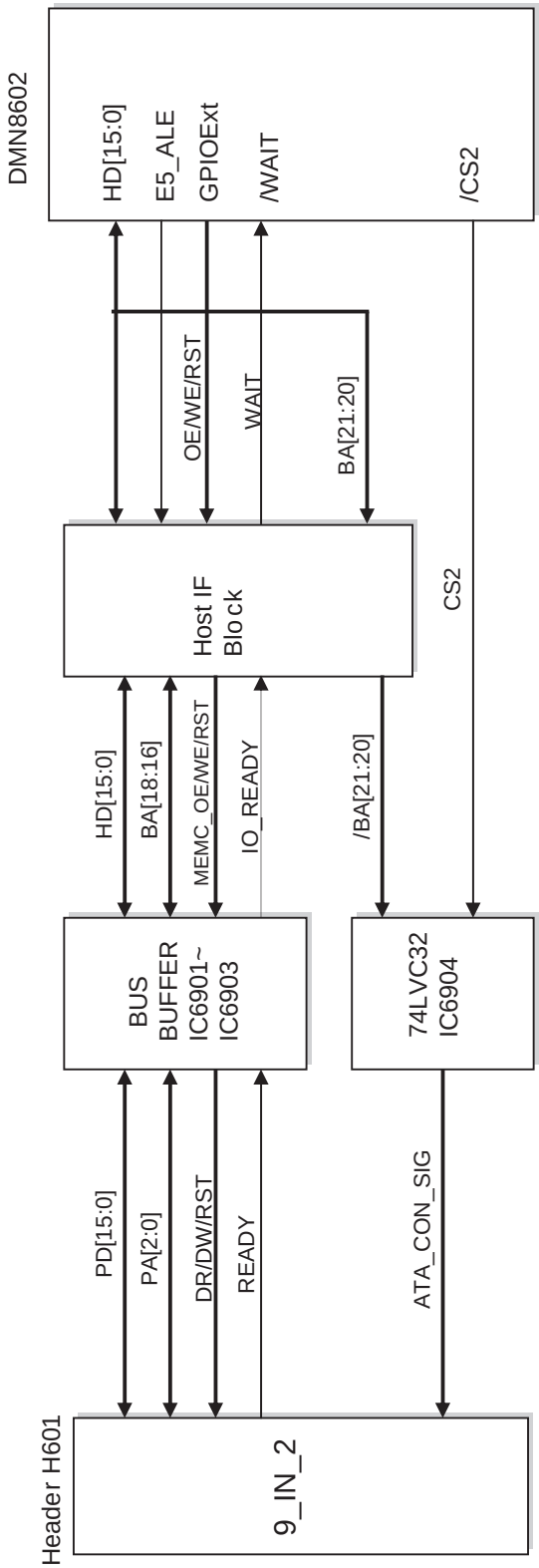
6. VIDEO IN/ OUT BLOCK DIAGRAM



7. DV 1394 IN/OUT BLOCK DIAGRAM



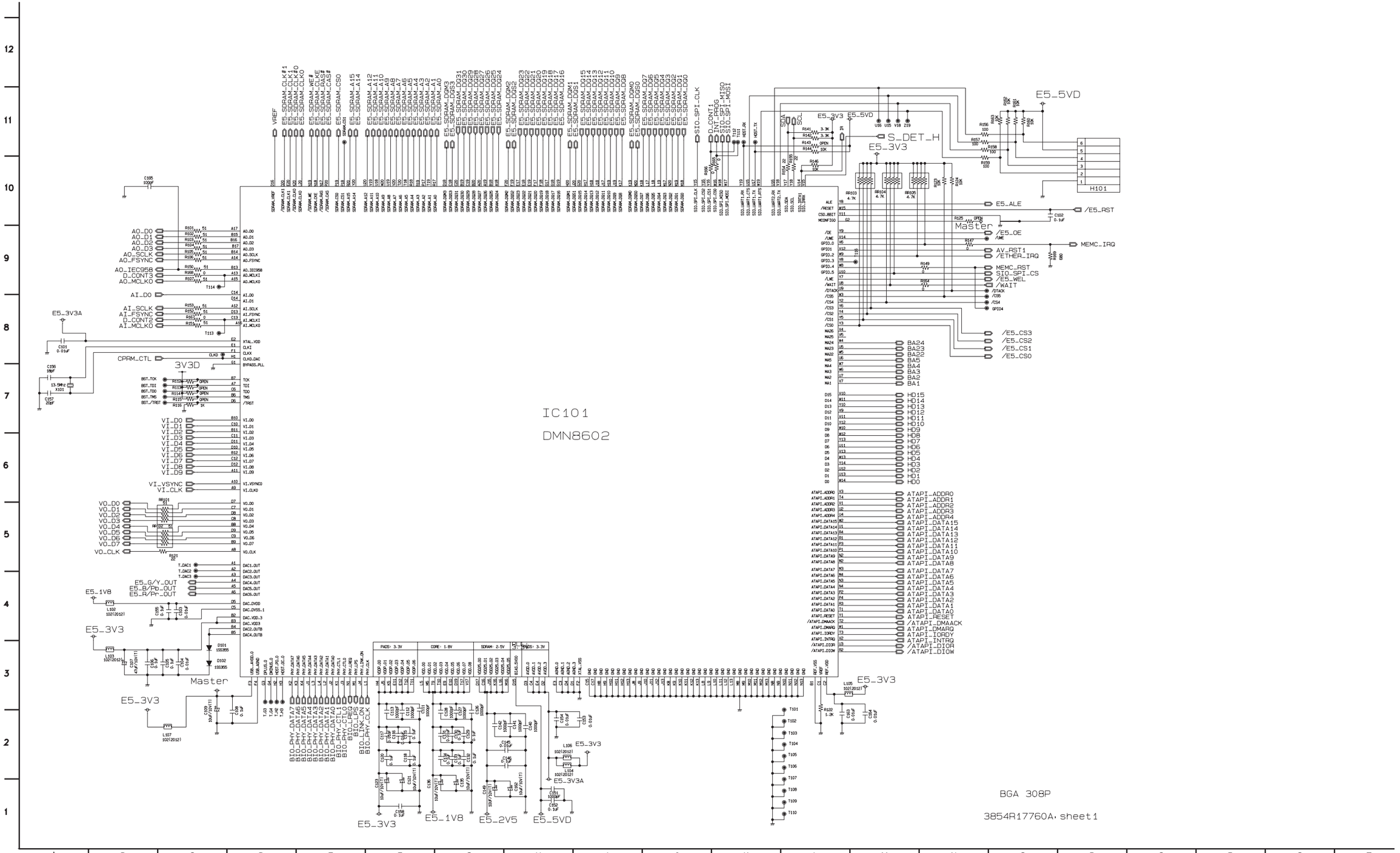
8. MEMORY CARD IN/ OUT BLOCK DIAGRAM



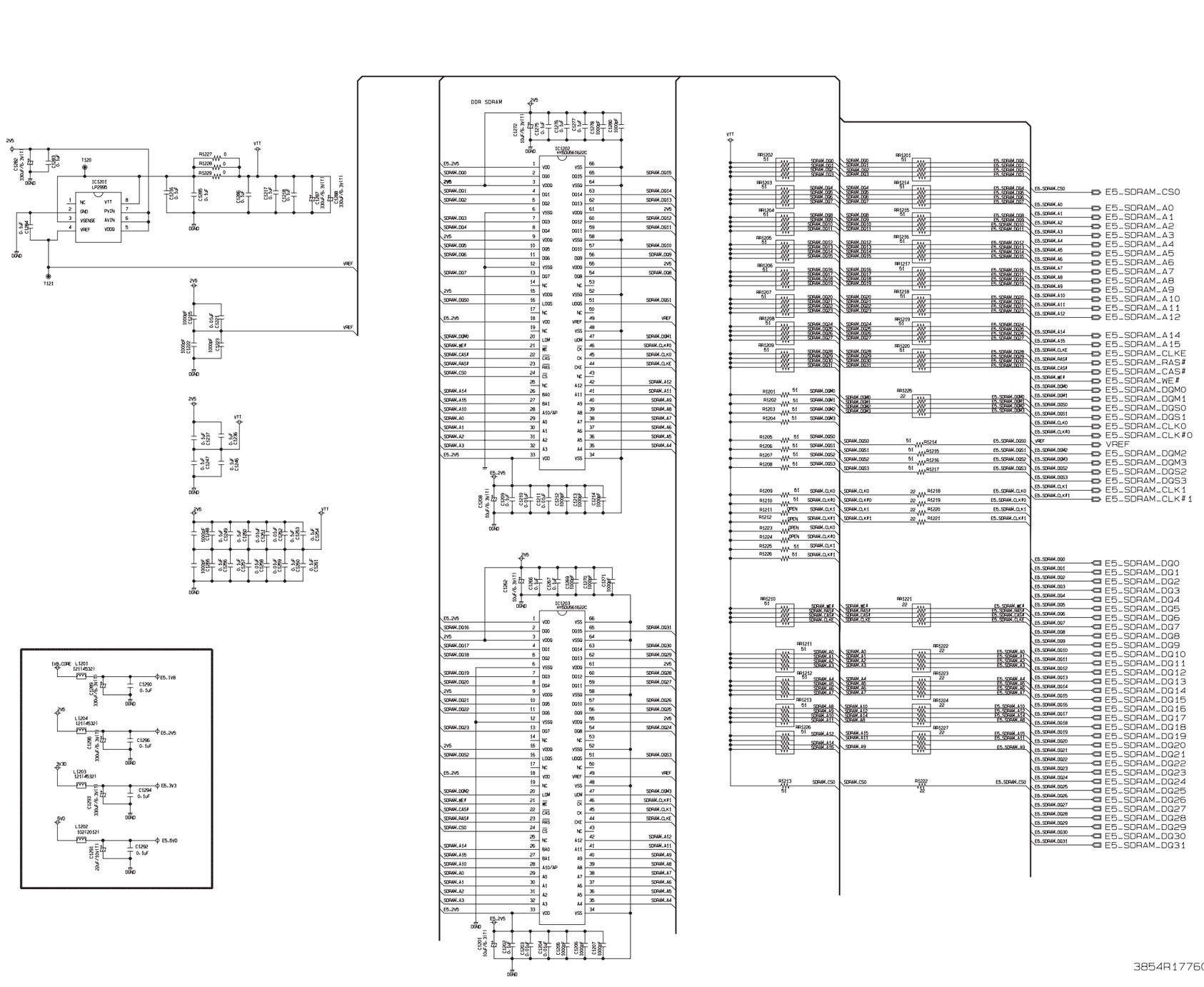
MEMO

CIRCUIT DIAGRAMS

1. BGA 308P CIRCUIT DIAGRAM

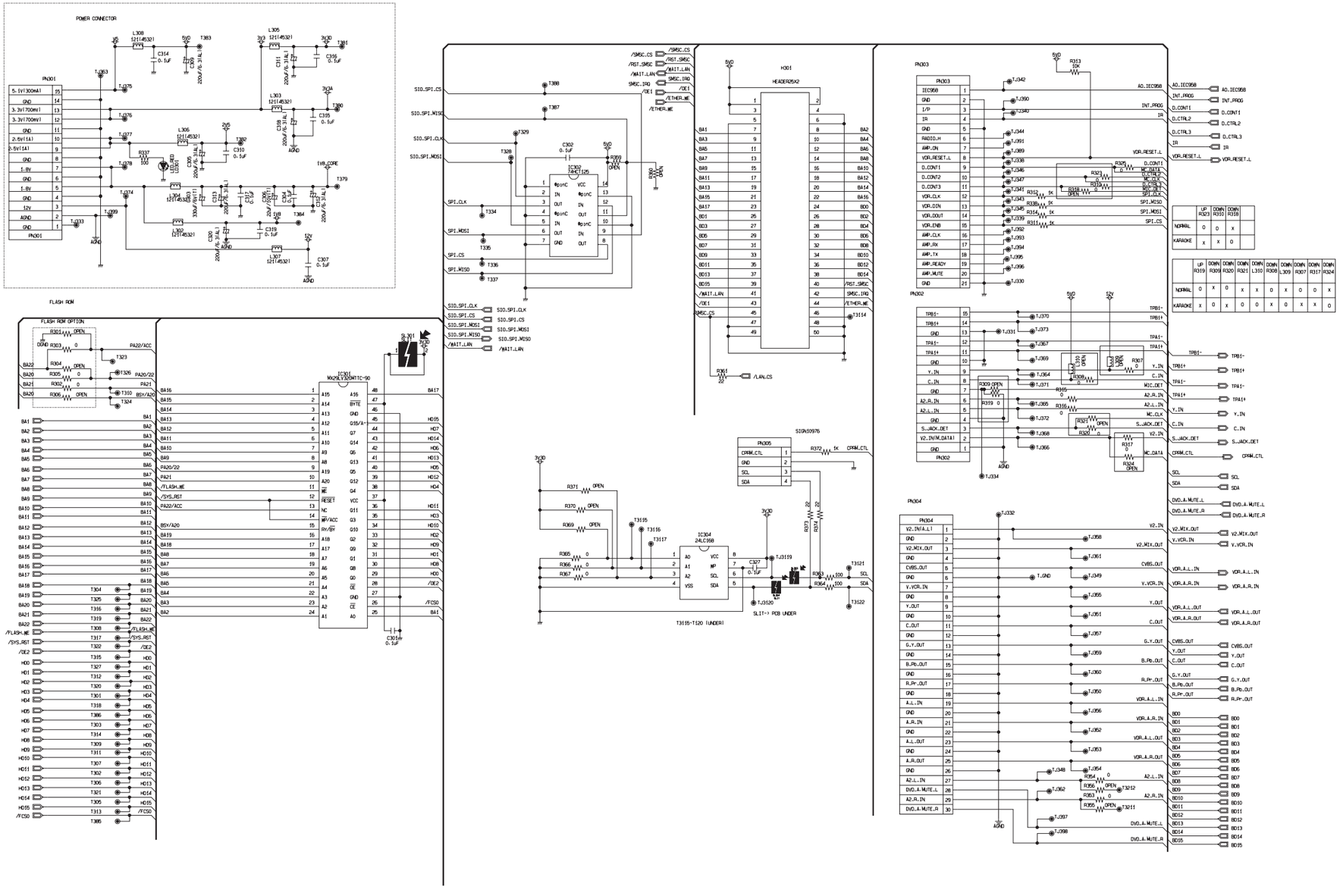


2. DDR & B TO B CONNECTOR CIRCUIT DIAGRAM

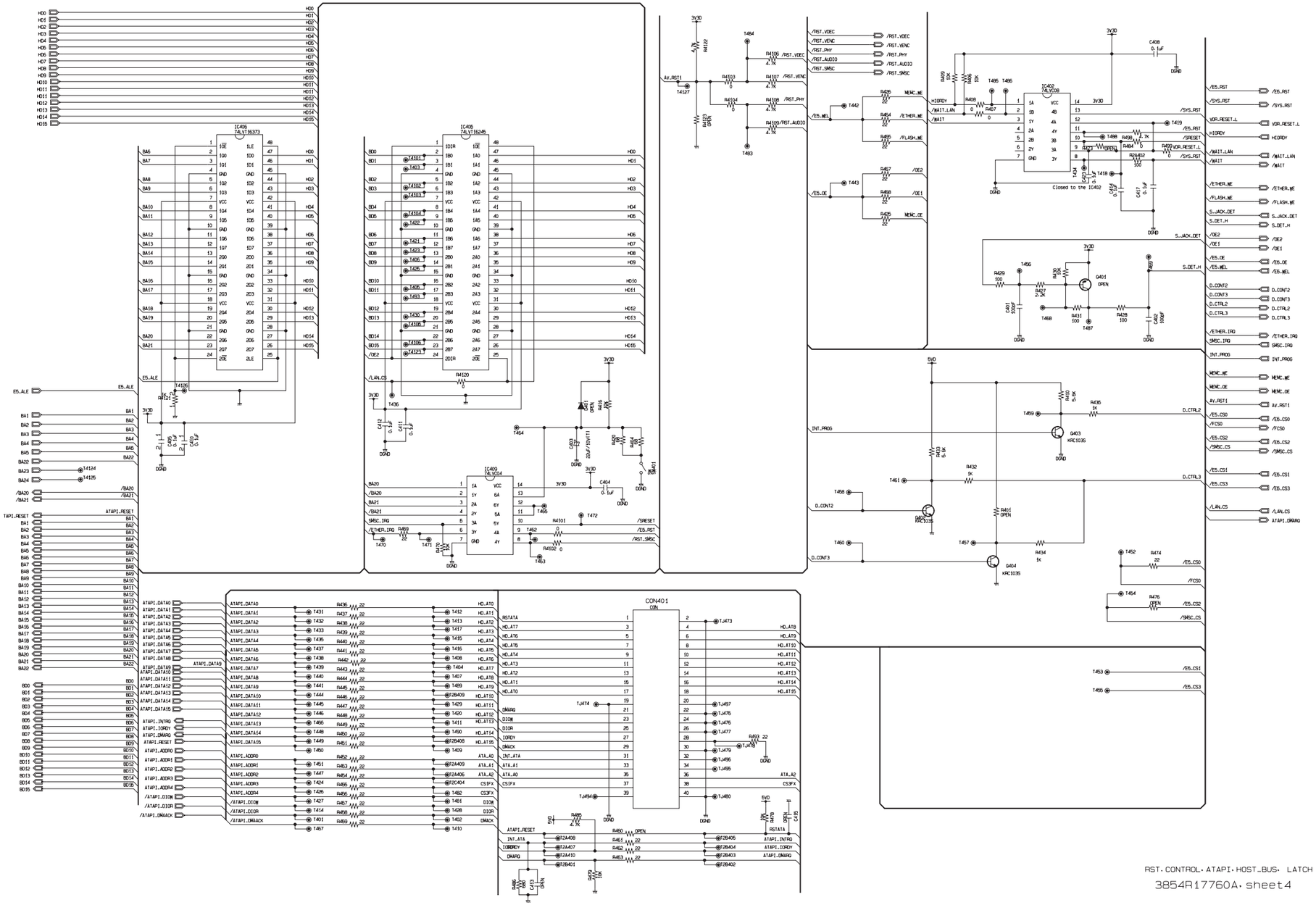


3854R17760A.sheet2

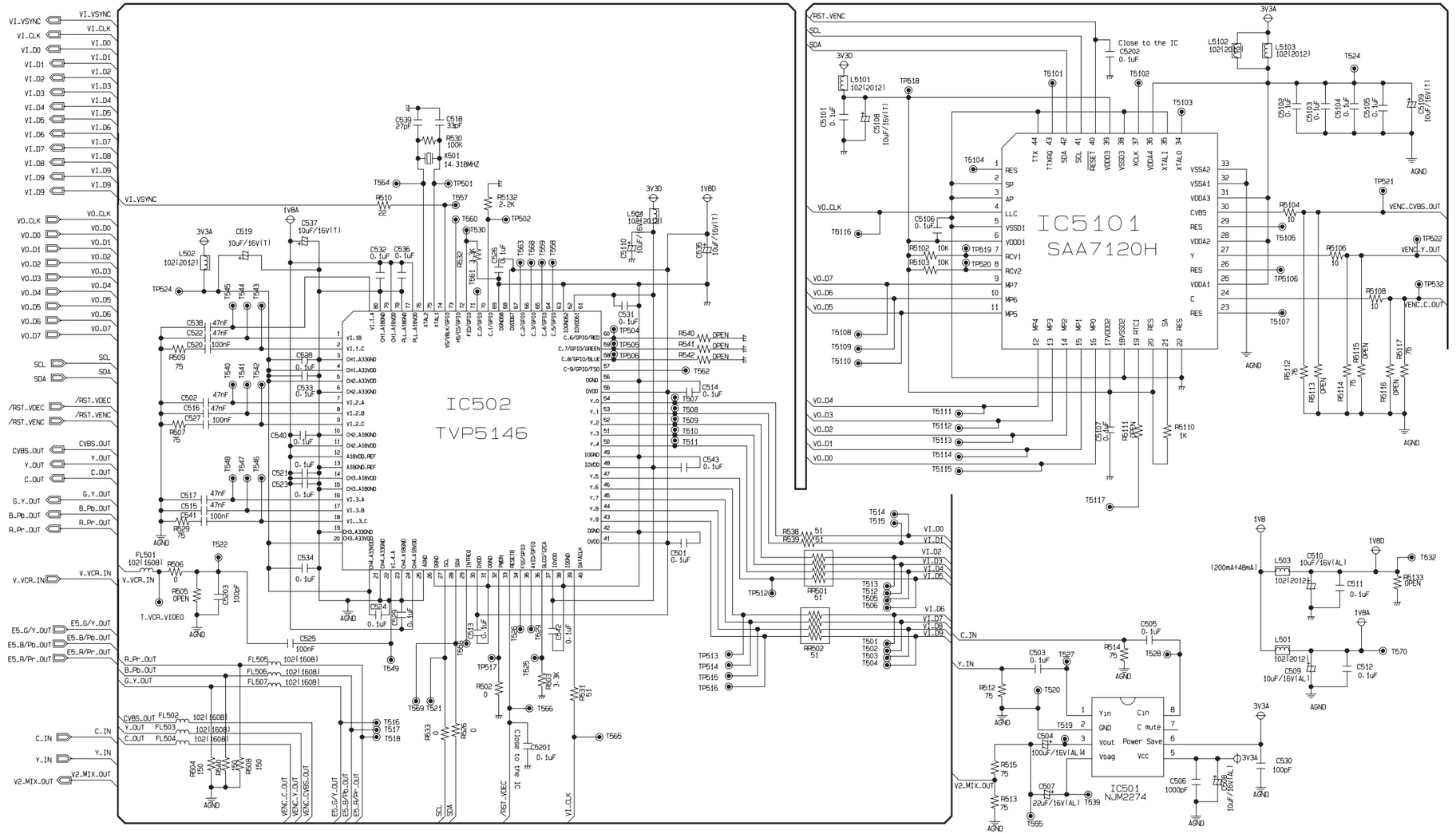
3. POWER, FLASH, CONNECTOR CIRCUIT DIAGRAM



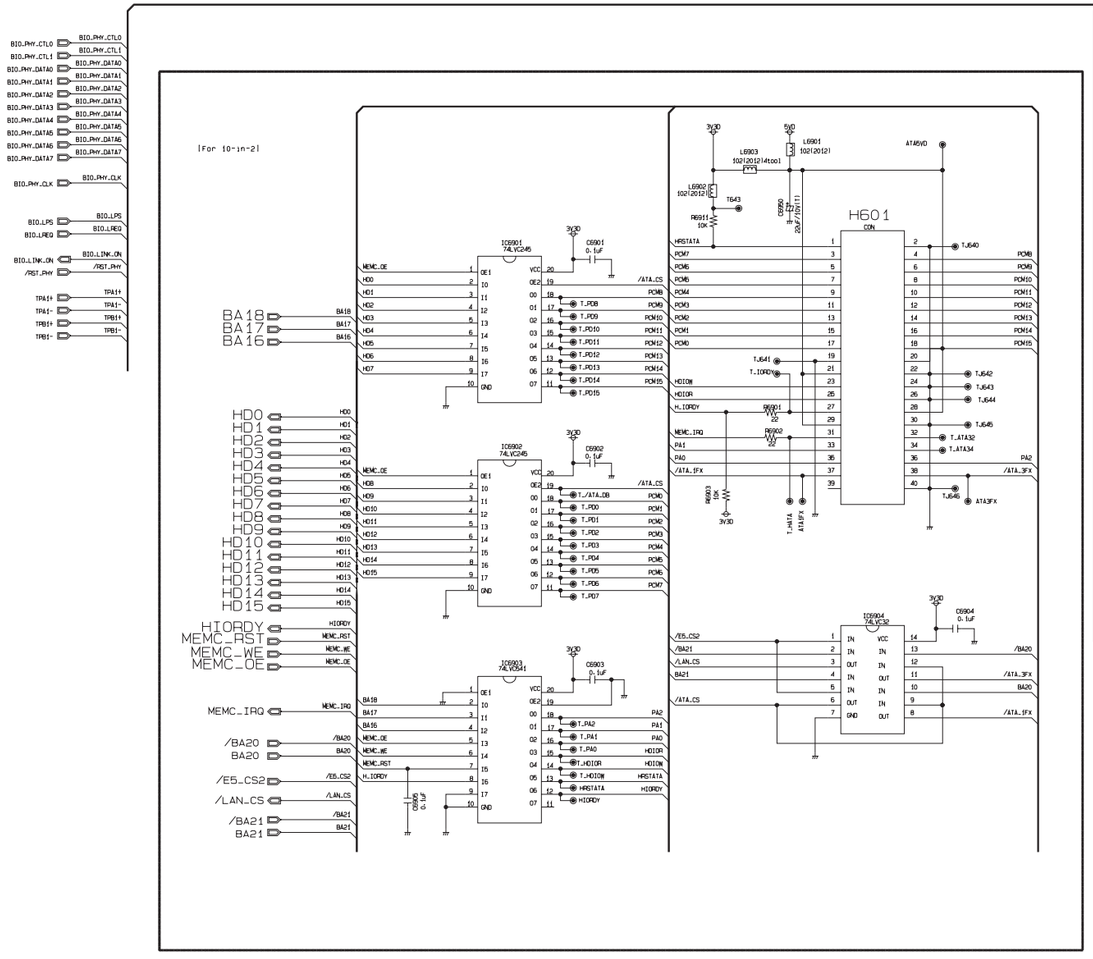
4. RST, CONTROL/STATUS_REG., ATAPI, HOST_CPLD, LATCH CIRCUIT DIAGRAM

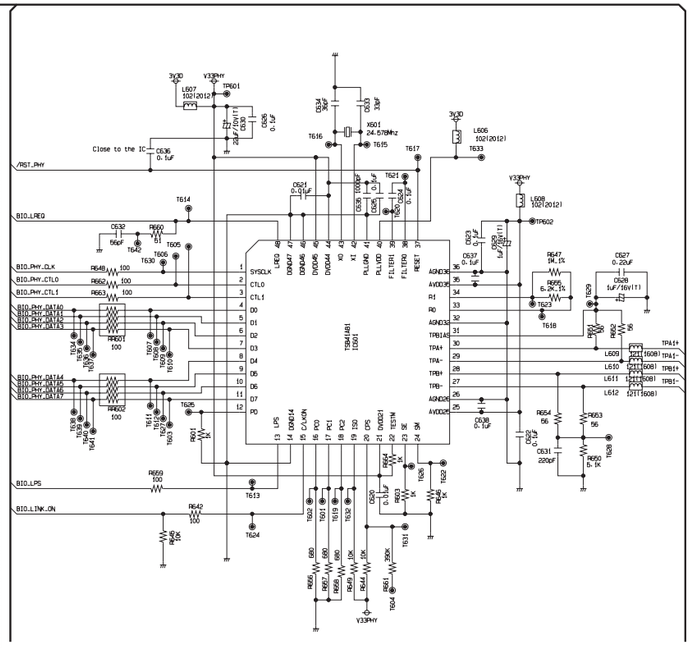


5. VIDEO_IN, VIDEO_OUT CIRCUIT DIAGRAM



6. DV1394, HDMI CIRCUIT DIAGRAM

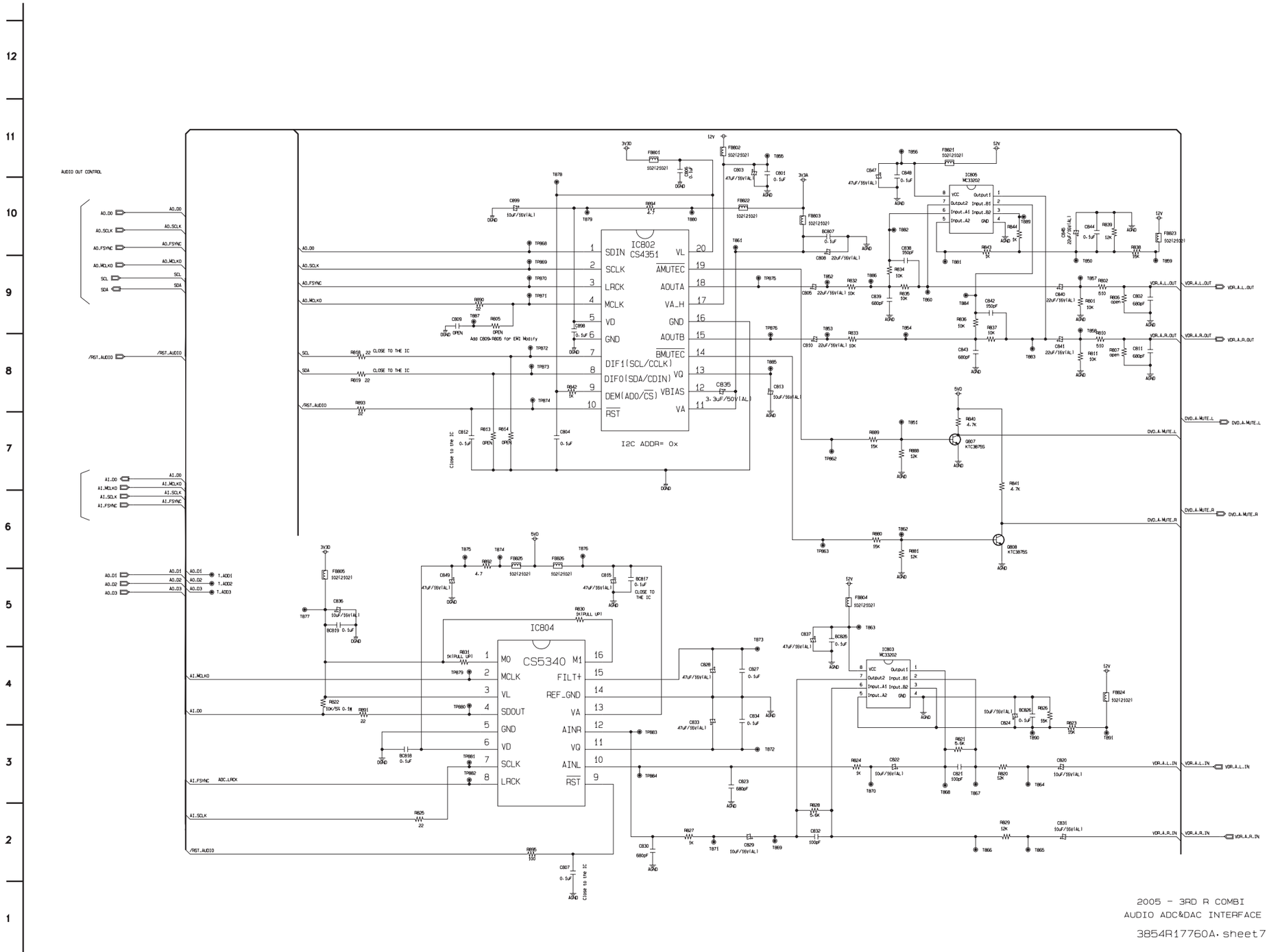




DV1394 · MEMORY

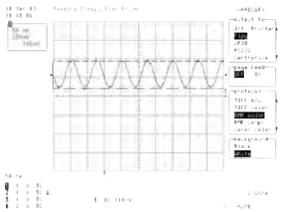
3854R17760A·sheet6

7. AUDIO IN/OUT CIRCUIT DIAGRAM



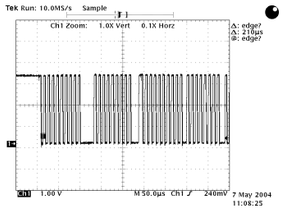
• WAVEFORMS

①



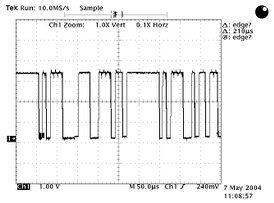
X101
13.5MHz

②



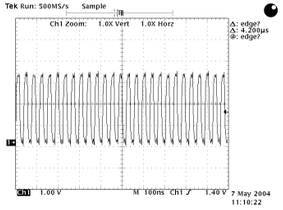
IC4009
PIN32
SDA

③



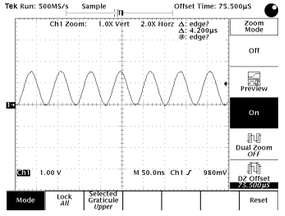
IC502
PIN29
SDA

④



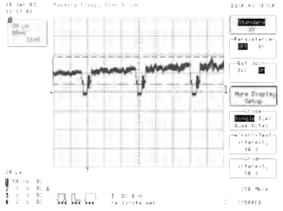
IC502
PIN40
VI_CLK

⑤



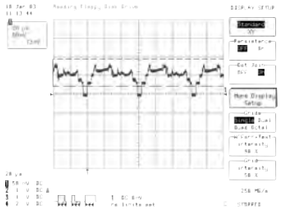
IC502
PIN74
14.318MHz

⑥



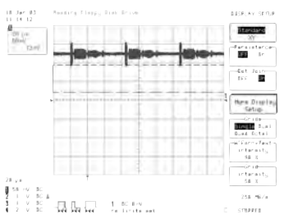
PN304
PIN5
CVBS_OUT

⑦



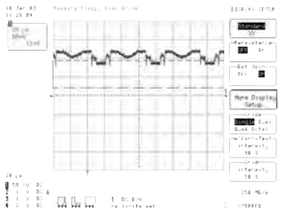
PN304
PIN9
Y_OUT

⑧



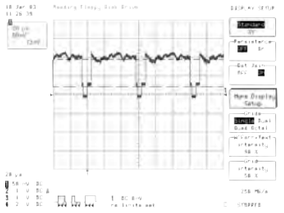
PN304
PIN11
C_OUT

⑨



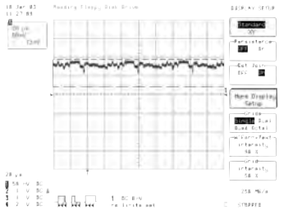
PN304
PIN17
R_Pr_OUT

⑩



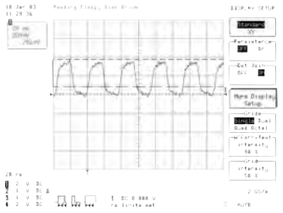
PN304
PIN13
G_Y_OUT

⑪



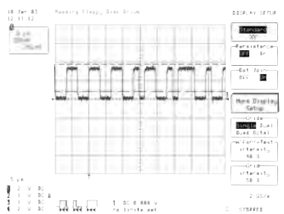
PN304
PIN15
B_Pb_OUT

⑫



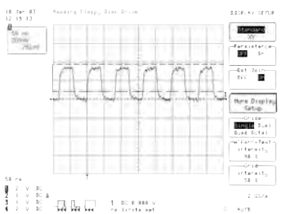
IC5101
PIN4
VO_CLK

⑬



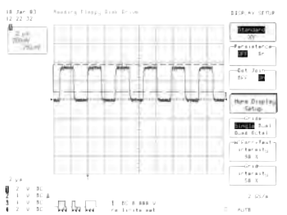
PN303
PIN1
IEC958

⑭



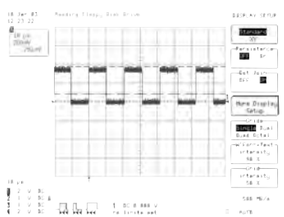
IC802
PIN3
ADAC_MCLK

⑮



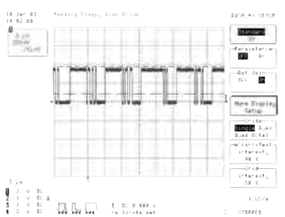
IC802
PIN5
ADAC_SCLK

⑯



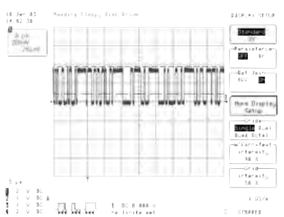
IC802
PIN4
ADAC_LRCK

⑰



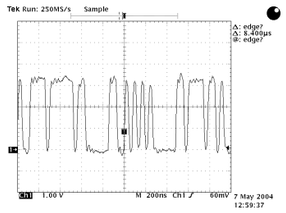
IC802
PIN6
ADC_SDATA(AI_D0)

⑱



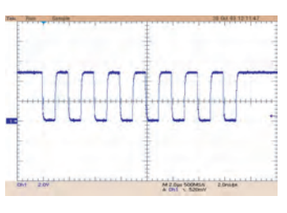
IC802
PIN7
DAC_SDATA(AO_D0)

⑲



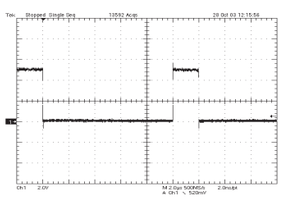
IC502
PIN53
VI_D1

⑳



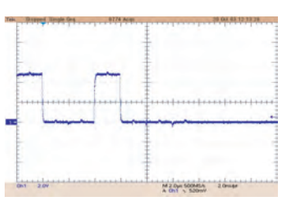
PN7401
PIN 12
VDR_CLK

㉑



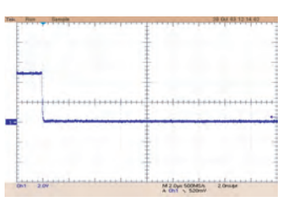
PN7401
PIN 13
VDR_DIN

㉒



PN7401
PIN 14
VDR_DOUT

㉓



PN7401
PIN 15
VDR_ENB

• CIRCUIT VOLTAGE CHART

MODE / PIN NO.	EE	PB	REC
IC1201			
1	0	0	0
2	0	0	0
3	1.02	1.02	1.23
4	1.02	1.01	1.23
5	2.37	2.48	2.47
6	2.34	2.48	2.47
7	2.34	2.48	2.47
8	1.08	1.22	1.22
IC302			
1	0	0	0
2	3.14	3.29	3.27
3	4.88	4.96	4.96
4	0	0	0
5	0	0	0
6	4.88	0.01	0.01
7	0	0	0
8	4.94	3.97	3.97
9	3.22	2.64	2.64
10	0	0	0
11	4.88	4.2	4.2
12	4.96	4.3	4.3
13	0	0	0
14	4.84	4.97	4.97
IC402			
1	3.14v	3.29	3.29
2	3.14v	3.32	3.32
3	3.14v	3.29	3.29
4	0.04	0.04	0
5	0	0.04	0
6	0	0	0
7	0	0	0
8	3.14	3.29	3.29
9	3.14	5.09	5.9
10	3.14	3.29	3.29
11	3.14	3.29	3.29
12	4.98	5.09	5.09
13	3.14	3.29	3.29
14	3.14	3.29	3.29
IC405			
1	3.28	3.28	3.29
2	3.31	0.19	0.19
3	3.22	0.19	0.19
4	0	0	0
5	0.19	0.19	0.19
6	0.19	0.19	0.19
7	3.29	3.29	3.29
8	0.19	0.19	0.19
9	0.19	0.19	0.19
10	0	0	0
11	0.19	0.19	0.19
12	0.19	0.19	0.19
13	0.19	0.19	0.19
14	3.31	0.19	0.19
15	0	0	0

MODE / PIN NO.	EE	PB	REC
16	0.19	0.19	0.19
17	0.19	0.19	0.19
18	3.29	3.29	3.29
19	0.19	0.19	0.19
20	0	0.19	0.19
21	0	0	0
22	0.19	0.19	0.19
23	0	0.19	0.19
24	3.28	3.29	3.29
25	3.29	3.29	3.29
26	0	0	0
27	0	0	0
28	0	0	0
29	0	0	0
30	0	0	0
31	3.29	3.29	3.29
32	0	0	0
33	0	0	0
34	0	0	0
35	0	0	0
36	0	0	0
37	0	0	0
38	0	0	0
39	0	0	0
40	0	0	0
41	0	0	0
42	0	0	0
43	0	0	0
44	0	0	0
45	0	0	0
46	0	2.92	0
47	0	2.92	0
48	3.29	3.29	3.29
IC406			
1	0	0	0
2	0	0.04	0.04
3	0	0.04	0.04
4	0	0	0
5	0	3.29	3.29
6	0	3.29	3.29
7	3.14	3.29	3.29
8	0	0.04	0.04
9	0	0.04	0.04
10	0	0	0
11	0	0.04	0.04
12	0	0.04	0.04
13	0	0.04	0.04
14	0	0.04	0.04
15	0	0	0
16	0	0.04	0.04
17	0	0.04	0.04
18	0	3.29	3.29
19	0	0.04	0.04
20	0	0.04	0.04
21	0	0	0

MODE / PIN NO.	EE	PB	REC
22	0	0.04	0.04
23	0	3.29	3.29
24	0	0	0
25	0	0.01	0.01
26	0	0	0
270	0	0	
28	0	0	0
29	0	0	0
30	0	0	0
31	0	3.29	3.29
32	0	0	0
33	0	0	0
34	0	0	0
35	0	0	0
36	0	0	0
37	0	0	0
38	0	0	0
39	0	0	0
40	0	0	0
41	0	0	0
42	3.16	3.29	3.29
43	0	0	0
44	0	0	0
45	0	0	0
46	0	0	0
47	0	0	0
48	0	0	0.01
IC502			
1	0	0.001	0.001
2	0	0.002	0.004
3	0	0	0
4	3.22	3.256	3.255
5	3.22	3.256	3.255
6	0	0	0
7	0	0.002	0.002
8	0	0.001	0.002
9	0	0.001	0.002
10	0	0	0
11	1.78v	1.854	1.851
12	1.78	1.854	1.851
13	0	0	0
14	1.78	1.854	1.851
15	0	0	0
16	0	0.002	0.002
17	0	0.001	0
18	0	0.002	0.002
19	0	0	0
20	3.22	3.255	3.255
21	3.22	3.255	3.255
22	0	0	0
23	1.08	0.17	0.17
24	0.	0	0
25	1.78	1.852	1.848
26	0	0	0
27	0	0	0

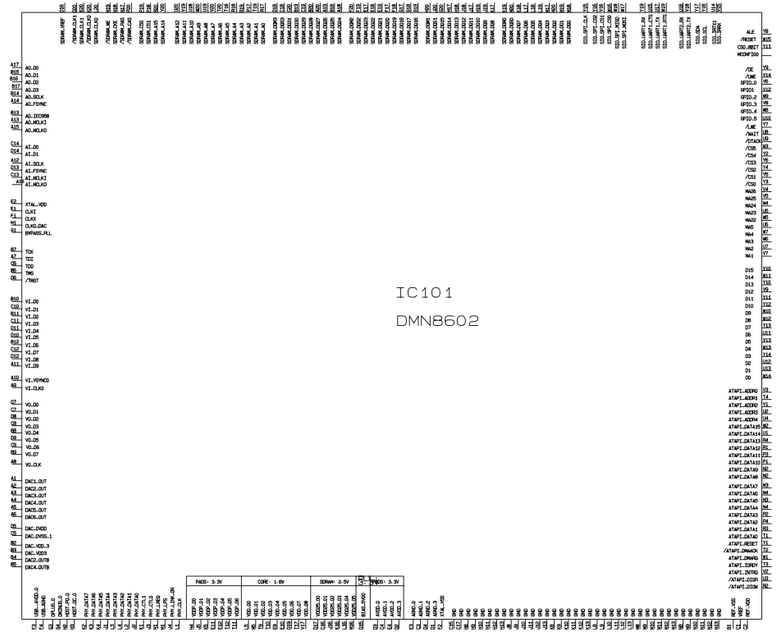
MODE / PIN NO.	EE	PB	REC
28	3.24	3.254	3.253
29	3.22	3.255	3.25
30	0	0.954	0.978
31	1.7	1.855	1.852
32	0	0	0
33	0	0	0
34	3.22	3.254	3.252
35	0	1.029	0.964
36	0	1.029	0.522
37	0	0	0
38	3.24	3.252	3.252
39	0	0	0
40	2.54	1.566	1.566
41	1.78	1.855	1.854
42	90m	0	0
43	3.08	1.642	1.642
44	2.88	1.643	0.199
45	2.88	0.399	0.405
46	2.92	1.299	1.303
47	2.68	0.369	0.37
48	3.24	3.252	0.252
49	0	0	0
50	2.64	0.372	0.376
51	2.64	0.369	0.379
52	2.64	0.382	0.372
53	2.64	0.392	0.397
54	2.64	1.855	0.382
55	1.28	0.39	1.852
56	20m	1.855	0
57	3.24	0	0.866
58	0	1.059	0.7
59	0	1.056	0.759
60	0	1.05	0.716
61	3.24	3.253	3.252
62	0	0	0.099
63	0	0.944	1.004
64	0	0.965	0.669
65	0	0.879	0.93
66	0	0.943	1.034
67	1.78	1.856	1.852
68	0	0	0
69	0	0	0
70	3.18	1.022	1.054
71	0	1.53	1.53
72	0	2.942	2.942
73	0.8m	0.082	0.082
74	0.8m	0.082	0.861
75	0	0.792	0.672
76	1.78	1.852	1.848
77	0	0	0
78	1.78	1.853	1.849
79	0	0	0
80	0	0.001	0.003
IC501			
1	1.32	1.322	1.325

MODE / PIN NO.	EE	PB	REC
2	0	0.004	0.006
3	32m	0.314	0.321
4	0	0.397	0.402
5	3.22	3.091	3.224
6	3.24	3.079	3.204
7	0	0.007	0.006
8	1.36	1.423	1.422
IC5101			
1	0	20mv	1.122
2	0	0.005	0.01
3	0	0.004	0.009
4	2.04	1.628	1.616
5	0	0.006	0.008
6	3.21	3.232	3.186
7	3.18	3.206	3.16
8	3.18	3.229	3.183
9	3.22	1.57	1.812
10	2.82	0.969	1.068
11	2.82	1.316	0.996
12	2.88	1.381	1.492
13	2.9	0.982	1.152
14	3.26	1.25	1.092
15	3.26	1.232	1.07
16	2.96	1.206	1.111
17	3.22	3.246	3.183
18	0	0.006	0.005
19	0	0.262	0.18
20	3.24	3.247	3.192
21	3.24	3.246	3.19
22	0	0.006	0.007
23	0	0.006	0.008
24	1.06	0.941	0.943
25	3.24	3.215	3.19
26	0	0.006	0.008
27	1.08	0.827	0.91
28	2.24	3.216	3.197
29	0	0.006	0.019
30	0	0.796	0.872
31	3.22	3.216	3.194
32	0	0.006	0.006
33	0	0.007	0.008
34	3.24	3.185	3.165
35	0	0.006	0.007
36	3.24	3.207	3.19
37	0	0.009	0.01
38	0	0.006	0.007
39	3.234	3.204	3.188
40	3.24	3.212	3.199
41	3.24	3.21	3.197
42	3.24	3.209	3.195
43	20m	0.009	0.011
44	20m	0.005	0.007
IC802			
1	3.24	3.12	2.52
2	23.24	3.12	2.5

MODE / PIN NO.	EE	PB	REC
3	3.24	3.18	1.68
4	2.24	2.82	1.64
5	3.16	3.14	1.65
6	0	0	1.64
7	3.24	3.24	1.64
8	3.22	3.24	0
9	3.22	3.24	4.94
10	3.22	3.24	4.94
11	3.24	3.24	3.25
12	1.22	1.12	3.25
13	12.2v	3.36	0.01
14	14.2v	1.2	3.25
15	4.28	0	2.42
16	0	14.2	2.49
17	14.2v	12.1	2.41
18	4.34	4.34	2.41
19	14.2	12.2	2.48
20	3.21	3.22	4.95
21	0	0	0.01
22	4.79	4.78	4.79
23	4.91	4.91	4.91
24	2.52	2.51	2.51
25	2.42	2.41	2.41
26	2.42	2.41	2.41
27	2.52	2.52	2.51
28	4.89	4.88	4.89
IC601	**EE**	**NO Conn.**	**REC**
1	2.64	2.64	1.62
2	3.42	3.52	1.06
3	3.42	3.48	0.01
4	3.54	3.58	0.5
5	3.56	3.62	0.5
6	0	0	0.02
7	0	0	0.02
8	0	0	0.02
9	0	0	0.02
10	0	0	0.02
11	0	0	0.02
12	0	0	0
13	3.26	3.27	3.26
14	0	0	0
15	0	0	0
1	60	0	0
17	0	0	0
18	0	0	0
19	3.04	3.24	3.23
20	3.04	3.26	3.11
21	3.04	3.26	3.26
22	3.04	3.2	3.25
23	0	0	0
24	0	0	0
25	3.24	3.24	3.26
26	0	0	0
27	0	0	1.83
28	0	0	1.83

MODE / PIN NO.	EE	PB	REC
29	3.12v	3.08	1.81
30	3.12v	3.12v	1.81
31	3.12	3.08v	1.82
32	0	0	0
33	0	0	0
34	1.24	1.22	1.21
35	3.24	1.22	3.26
36	0	8	0
37	3.24	3.1	3.26
38	0	1.48	0
39	1.34	3.22	1.4
40	3.28	3.28	3.26
41	0	3.22	0
42	1.48	1.48v	1.49
43	1.48	1.48v	1.49
44	2.96	3.24	3.26
45	3.24	3.24	3.26
46	0	0	0
47	0	0	0
48	2.88	2.88	0

• IC BLOCK DIAGRAMS



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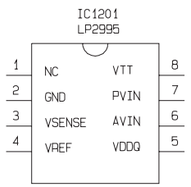

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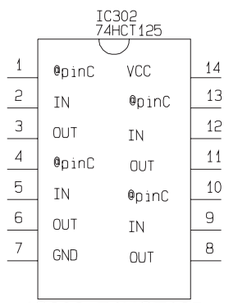

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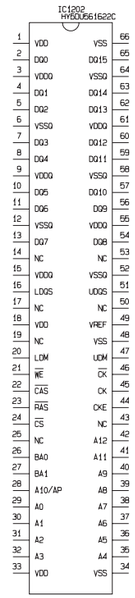

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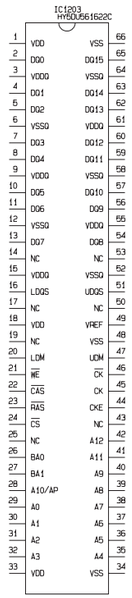

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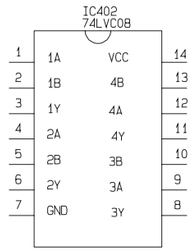

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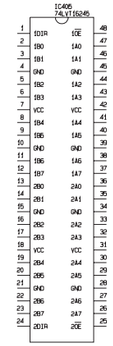

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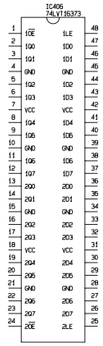

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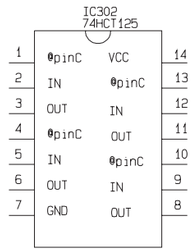

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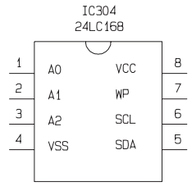

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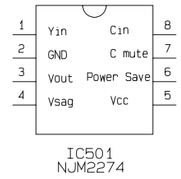

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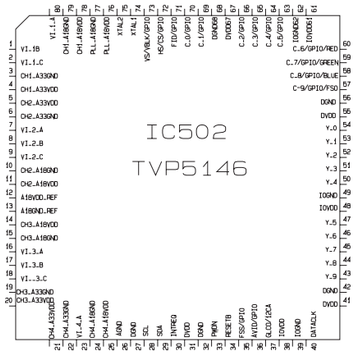

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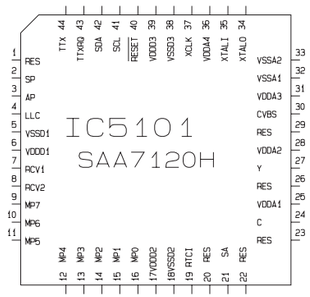

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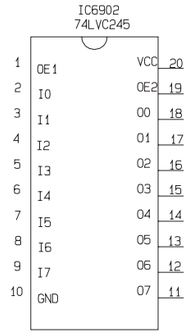

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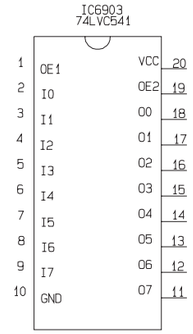

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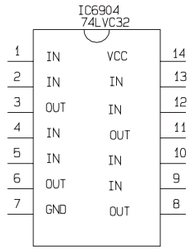

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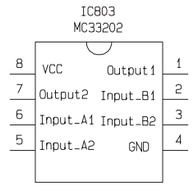

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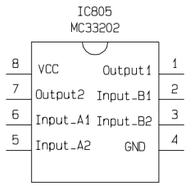

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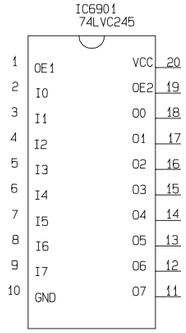

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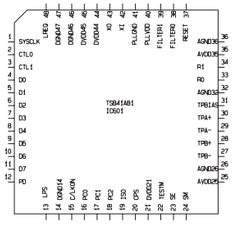

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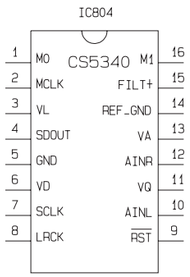

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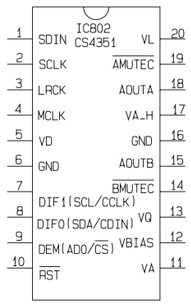
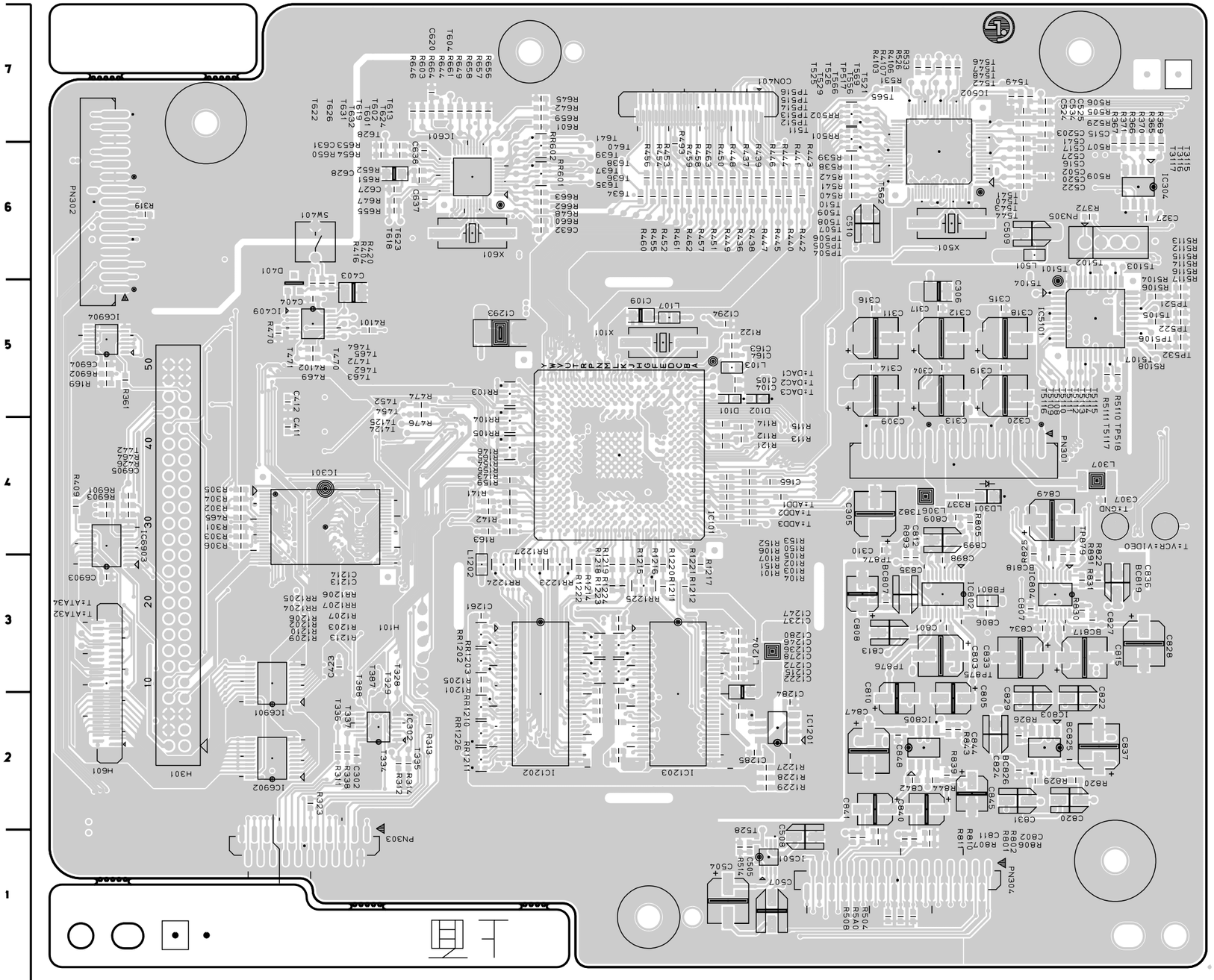


IC802_CS4351

PRINTED CIRCUIT DIAGRAMS

1. VDR P.C.BOARD(TOP VIEW)



LOCATION GUIDE

BC807 G3	C403 C5	C829 H2	L501 H6	R152 F4	R447 F6	R5A0 G1	RR1202 D3	T440 F6	T541 H6	T858 G1
BC817 H3	C404 C5	C831 H2	LD301 H4	R153 F4	R448 F6	R601 D7	RR1203 D3	T441 F6	T542 H6	T864 I2
BC818 H3	C411 B4	C833 H3	PN301 H4	R154 D4	R449 F6	R603 C7	RR1204 E3	T442 A4	T543 H6	T865 H2
BC819 I3	C412 B5	C834 H3	PN302 A6	R155 D4	R450 F6	R642 D7	RR1205 E3	T444 F6	T544 H6	T872 H3
BC825 H2	C423 C3	C835 G3	PN303 B1	R159 D4	R451 F6	R644 D7	RR1206 E3	T445 F6	T546 H7	T873 I3
BC826 H2	C502 H6	C836 I3	PN304 G1	R163 D4	R452 E6	R645 D7	RR1207 E3	T446 F6	T547 H7	T875 H4
C104 F5	C504 F1	C837 I2	PN305 I6	R165 D4	R453 E6	R646 C7	RR1210 D2	T447 E6	T548 H7	T876 H3
C105 F5	C505 F1	C840 G2	R101 F4	R169 A5	R454 E6	R647 C6	RR1211 D2	T448 F6	T549 H7	T877 I3
C109 E5	C507 F1	C841 G2	R102 F4	R301 B4	R455 E6	R648 D6	RR1223 D3	T449 F6	T556 G7	T878 H3
C1209 E2	C508 F1	C842 G2	R103 F4	R302 B4	R456 E6	R649 D7	RR1224 D3	T450 F6	T562 G6	T881 G2
C1210 E2	C509 H6	C844 H2	R104 F4	R303 B4	R457 F6	R650 C6	RR1225 E3	T451 E6	T565 G7	T885 G3
C1213 E3	C510 G6	C845 H2	R105 F4	R304 B4	R458 F6	R651 C6	RR1226 D2	T452 C5	T566 G7	T887 H4
C1214 E3	C515 H7	C847 G2	R106 F4	R305 B4	R459 E6	R652 C6	RR1227 D3	T454 C5	T569 G7	T889 G2
C1215 F2	C516 H6	C848 G2	R107 F4	R306 B4	R460 E6	R653 C6	RR501 G7	T462 C5	T601 D7	T890 H2
C1216 F2	C517 H7	C849 H4	R112 F4	R311 C2	R461 E6	R654 C6	RR502 G7	T463 C5	T602 D7	TP504 G6
C1217 E2	C520 H6	C898 G3	R113 F4	R312 C2	R462 E6	R655 C6	RR601 D6	T464 C5	T603 D6	TP505 G6
C1218 F2	C5203 H7	C899 G4	R114 F4	R313 C2	R463 F6	R656 D7	RR602 D6	T465 C5	T604 D7	TP506 G6
C1222 F2	C522 H6	CON401 F7	R115 F4	R314 C2	R464 A4	R657 D7	SW401 C6	T466 F6	T605 D6	TP5106 I5
C1236 F3	C524 H7	D101 F5	R1201 D3	R319 A6	R465 B4	R658 D7	T111 D4	T467 E6	T606 D6	TP512 G7
C1237 F3	C525 H7	D102 F5	R1202 E2	R323 C2	R469 C5	R659 D7	T120 F2	T470 C5	T607 D6	TP513 G7
C1246 F3	C527 H6	D401 B5	R1203 E2	R337 H4	R470 B5	R660 D6	T2A408 E6	T471 B5	T608 D6	TP514 G7
C1247 F3	C534 H7	FB801 H3	R1205 D3	R338 C2	R474 C5	R661 D7	T2B40F26	T472 C5	T609 D6	TP515 G7
C1261 D3	C541 H7	H101 C3	R1206 E3	R361 A5	R476 C5	R662 D6	T2B40E36	T484 G7	T610 D6	TP516 G7
C1272 F2	C620 C7	H301 B2	R1207 E3	R365 I6	R493 E6	R663 D6	T2B40E46	T507 G6	T611 D6	TP517 G7
C1278 F3	C627 C6	H601 A3	R1209 E2	R366 I6	R504 G1	R664 C7	T3115 I6	T508 G6	T612 D6	TP518 I5
C1280 F3	C628 C6	IC101 E4	R121 F4	R367 I6	R505 H7	R6901 A4	T3116 I6	T509 G6	T613 D7	TP521 I5
C1284 F2	C631 C6	IC1201 F2	R1210 E2	R369 I6	R506 H7	R6902 A5	T3117 I6	T510 G6	T614 D6	TP522 I5
C1285 F2	C632 D6	IC1202 D2	R1211 E3	R370 I6	R507 H6	R6903 A4	T328 C2	T5101 H6	T618 C6	TP532 I5
C1293 D5	C637 C6	IC1203 E2	R1212 E3	R371 I6	R508 G1	R801 G1	T329 C2	T5102 I6	T619 D7	TP874 G3
C1294 F5	C638 C6	IC301 C4	R1213 E2	R372 I6	R509 H6	R802 G1	T334 C2	T5103 I6	T622 C7	TP875 H3
C163 F5	C6903 A3	IC302 C2	R1214 E3	R404 C5	R5104 I5	R805 H4	T335 C2	T5104 H5	T623 C6	TP876 G3
C164 F5	C6904 A5	IC304 I6	R1215 E3	R409 A4	R5106 I5	R806 G1	T336 C2	T5105 I5	T624 D7	TP879 I3
C165 F4	C6905 A4	IC409 C5	R1216 E3	R4101 C5	R5108 I5	R807 G1	T337 C2	T5107 I5	T625 D7	T±ADD1 F4
C302 C2	C801 G3	IC501 F1	R1217 F3	R4102 C5	R5110 I5	R810 G1	T379 G6	T5108 H5	T626 C7	T±ADD2 F4
C304 G5	C802 G1	IC502 G6	R1218 E3	R4103 G7	R5111 I5	R811 G1	T382 G4	T5109 H5	T627 D6	T±ADD3 F4
C305 G4	C803 G3	IC5101 I5	R1219 E3	R4106 G7	R5112 I5	R820 H2	T387 C2	T511 G7	T628 C7	T±ATA32 A3
C306 G5	C805 H2	IC601 D6	R122 F5	R4107 G7	R5113 I5	R822 H3	T388 C2	T5110 H5	T630 D6	T±ATA34 A3
C307 I4	C806 H3	IC6901 B3	R1220 E3	R416 C5	R5114 I5	R825 H4	T401 F6	T5111 H5	T631 D7	T±DAC1 F5
C309 G5	C807 H3	IC6902 B2	R1221 E3	R420 C5	R5115 I5	R826 H2	T4124 C4	T5112 H5	T632 D7	T±DAC2 F5
C310 G4	C808 G3	IC6903 A4	R1222 E3	R426 A4	R5116 I5	R829 H2	T4125 C4	T5113 I5	T634 E6	T±DAC3 F5
C311 G5	C809 H4	IC6904 A5	R1223 E3	R436 F6	R5117 I5	R830 I3	T414 F6	T5114 I5	T635 E6	T±GND I4
C312 G5	C810 G2	IC802 G3	R1224 E3	R437 F6	R514 F1	R831 I3	T424 E6	T5115 I5	T636 E6	T±VCR±VIDEO I4
C313 G5	C811 G1	IC803 H2	R1227 F2	R438 F6	R526 G7	R839 G2	T426 E6	T5116 H5	T637 E6	X101 E5
C314 G5	C812 G3	IC804 H3	R1228 F2	R439 F6	R529 H7	R843 G2	T427 E6	T5117 I5	T638 E6	X501 H6
C315 H5	C813 G3	IC805 G2	R1229 F2	R440 F6	R531 G7	R844 G2	T431 F6	T521 H7	T639 E6	X601 D6
C316 G5	C815 I3	L103 F5	R141 D4	R441 F6	R533 H7	R890 F4	T432 F6	T522 H7	T640 E6	
C317 G5	C820 H2	L107 E5	R142 D4	R442 F6	R538 G6	R891 H3	T433 F6	T525 G7	T641 E7	
C318 H5	C822 I2	L1202 D3	R143 D4	R443 F6	R539 G6	R893 G3	T435 F6	T526 G7	T642 D6	
C319 H5	C824 H2	L1204 F3	R146 D4	R444 F6	R540 G6	RR103 D5	T437 F6	T528 F1	T850 H2	
C320 H5	C827 I3	L306 G4	R150 F4	R445 F6	R541 G6	RR104 D4	T438 F6	T529 G7	T856 G2	
C327 I6	C828 I3	L307 I4	R151 F4	R446 F6	R542 G6	RR105 D4	T439 F6	T540 H6	T857 G1	

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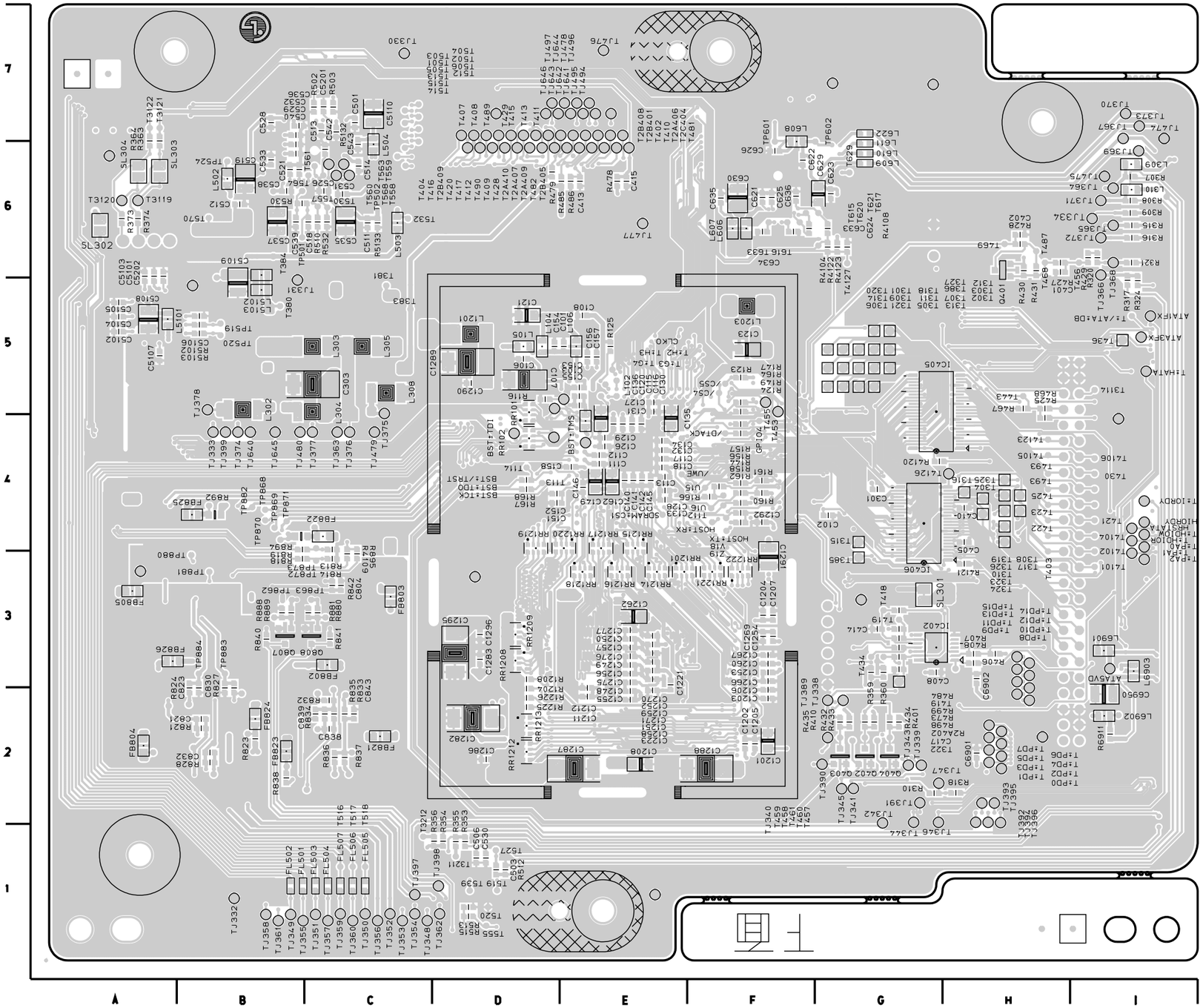
/CS4 F5	C1257 E3	C162 E4	C543 C6	IC406 G4	R158 F4	R432 G2	R889 B3	T301 G5	T4103 H4	T504 C7	T869 B2	TJ369 I6	TP868 B4
/CS5 F5	C1258 E3	C301 G4	C621 F6	L102 E4	R160 F4	R433 G2	R892 B4	T302 G5	T4104 I4	T505 C7	T870 B2	TJ370 I7	TP869 B4
/DTACK F4	C1259 E3	C303 C5	C622 F6	L104 D5	R161 F4	R434 G2	R894 B4	T303 G5	T4105 H4	T506 C7	T871 B2	TJ371 I6	TP870 B4
/UWE E4	C126 E4	C401 H6	C623 G6	L105 D5	R162 F4	R435 G2	R895 C3	T304 H4	T4106 I4	T512 C6	T874 B4	TJ372 I6	TP871 B4
ATA1FX I5	C1260 F3	C402 H6	C624 F6	L106 E5	R164 F5	R467 H5	RR101 D5	T305 G5	T411 D7	T513 C6	T879 B4	TJ373 I7	TP872 C3
ATA3FX I5	C1262 E3	C405 H4	C625 F6	L1201 D5	R166 F4	R468 H5	RR102 D4	T306 G5	T412 D6	T514 C6	T880 C4	TJ374 B4	TP873 C4
ATA5VD I3	C1266 F3	C408 G3	C626 F6	L1203 F5	R167 D4	R473 G3	RR1201 E3	T307 G5	T4123 H4	T515 C6	T882 C2	TJ375 C5	TP880 B3
BST±/EBS C1	C1267 F3	C410 H4	C629 G6	L302 B5	R168 D4	R478 E6	RR1208 D3	T308 H4	T4126 H4	T516 C1	T883 C2	TJ376 C4	TP881 B3
BST±TDK C4	C1269 F3	C413 E6	C630 F6	L303 C5	R2A40G 23	R479 D6	RR1209 D3	T309 G5	T4127 G6	T517 C1	T884 C2	TJ377 C4	TP882 B4
BST±TDI I4	C127 E5	C414 G3	C633 F6	L304 C5	R307 I6	R484 G3	RR1212 D2	T310 H4	T413 D7	T518 C1	T886 C2	TJ378 B5	TP883 B3
BST±TDO D5	C1270 E3	C415 E6	C634 F6	L305 C5	R308 I6	R485 E6	RR1213 D2	T311 G5	T415 D7	T519 D1	T891 B2	TJ389 G2	TP884 B3
BST±TMS E4	C1271 E3	C417 G3	C635 F6	L308 C5	R309 I6	R486 E6	RR1214 E3	T3114 I5	T416 D6	T520 D1	TJ3119 A6	TJ390 G2	I±/ATA±DB I5
C101 E5	C1275 E3	C501 C7	C636 F6	L309 I6	R310 G2	R498 G3	RR1215 E4	T312 G5	T417 D6	T524 B5	TJ3120 A6	TJ391 G2	T±G3 E5
C102 G4	C1276 E3	C503 D1	C6901H2	L310 I6	R315 I6	R499 G3	RR1216 E3	T3121 A7	T418 G3	T527 D1	TJ330 C7	TJ392 H2	T±G4 E5
C103 E5	C1277 E3	C506 D1	C6902H3	L502 B6	R316 I6	R502 C7	RR1217 E4	T3122 A7	T419 G3	T530 C6	TJ331 B5	TJ393 H2	T±H2 E5
C106 D5	C128 E4	C5101 A6	C6950I2	L503 C6	R317 I5	R503 C7	RR1218 E3	T313 G5	T420 D6	T532 C6	TJ332 B1	TJ394 H2	T±H3 E5
C107 D5	C1282 D2	C5102 A5	C804 C3	L504 C6	R318 H2	R510 C6	RR1219 D4	T314 G5	T421 I4	T539 D1	TJ333 B4	TJ395 H2	T±HATA I5
C108 E5	C1283 D3	C5103 A6	C821 B2	L5101 A5	R320 I6	R5102 B5	RR1220 E4	T315 G4	T422 H4	T545 B6	TJ334 I6	TJ396 H2	T±HDIORI4
C111 E4	C1286 D2	C5104 A5	C823 B2	L5102 B6	R321 I6	R5103 B5	RR1221 F3	T316 H4	T423 H4	T555 D1	TJ338 G2	TJ397 C1	T±HDIOWI4
C112 E4	C1287 E2	C5105 A5	C830 B2	L5103 B5	R324 I5	R512 D1	RR1222 F3	T317 H4	T425 H4	T557 C6	TJ339 G2	TJ398 D1	T±IORDYI4
C113 E4	C1288 F2	C5106 B5	C832 B2	L606 F6	R325 F4	R513 D1	SDRAM±CSI E4	T318 G5	T428 E6	T558 C6	TJ340 G2	TJ399 B4	T±PA0I4
C115 E4	C1289 D5	C5107 A5	C838 C2	L607 F6	R353 D1	R5132 C6	SL301 G3	T319 H4	T429 D7	T559 C6	TJ341 G2	TJ473 D7	T±PA1I3
C116 E4	C129 E4	C5108 A5	C839 C2	L608 F6	R354 D1	R5133 C6	SL302 A6	T320 G5	T430 I4	T560 C6	TJ342 G2	TJ474 I7	T±PA2I3
C117 E4	C1290 D5	C5109 B5	C843 C2	L609 G6	R355 D1	R515 D1	SL303 A6	T321 G5	T434 G3	T561 C6	TJ343 G2	TJ475 I6	T±PD0H2
C118 E4	C1291 F3	C511 C6	CLKO E5	L610 G6	R356 D1	R530 B6	SL304 A6	T3211 D1	T436 I5	T563 C6	TJ344 G2	TJ476 E7	T±PD1H2
C120 E4	C1292 F4	C5110 C7	FB802 C3	L611 G6	R359 G3	R532 C6	T101 A6	T3212 C1	T443 H5	T564 B6	TJ345 G2	TJ477 E6	T±PD10 H2
C1201 F2	C1295 D3	C512 B6	FB803 C3	L612 G7	R360 G3	R6911 I2	T102 B5	T322 G3	T453 F5	T568 C6	TJ346 G2	TJ478 E7	T±PD11 H3
C1202 F2	C1296 D3	C513 C7	FB804 A2	L6901 I3	R363 A6	R813 C4	T103 G7	T323 H4	T455 F5	T570 B6	TJ347 G2	TJ479 C4	T±PD12 H3
C1203 F2	C130 E4	C514 C6	FB805 A3	L6902 I2	R364 A6	R814 C3	T104 G7	T324 H4	T456 I6	T615 F6	TJ348 C1	TJ480 B4	T±PD13 H3
C1204 F3	C131 E5	C518 C6	FB821 C2	L6903 I3	R373 A6	R818 B3	T105 I4	T325 H4	T457 G2	T616 F6	TJ349 B1	TJ494 E7	T±PD14 H3
C1205 F2	C132 E4	C519 B6	FB822 C4	Q401 H6	R374 A6	R819 B4	T106 H2	T326 H4	T458 G2	T617 G6	TJ350 C1	TJ495 E7	T±PD15 H3
C1206 F2	C133 E4	C5201 C7	FB823 B2	Q402 G2	R401 G2	R821 B2	T107 G3	T327 G5	T459 G2	T620 F6	TJ351 C1	TJ496 E7	T±PD2H2
C1207 F3	C134 E4	C5202 A6	FB824 B2	Q403 G2	R406 H3	R823 B2	T108 E1	T380 B5	T460 G2	T621 F6	TJ352 C1	TJ497 D7	T±PD3H2
C1208 E2	C135 E4	C521 B6	FB825 B4	Q404 G2	R407 H3	R824 B2	T109 A3	T381 C5	T461 G2	T629 G6	TJ353 C1	TJ640 B4	T±PD4H2
C121 D5	C136 E4	C523 B6	FB826 A3	Q807 B3	R408 H3	R827 B2	T110 D3	T383 C5	T468 H6	T633 F6	TJ354 C1	TJ641 E7	T±PD5H2
C1211 E2	C140 E4	C526 C6	FL501 B1	Q808 C3	R410 G2	R828 B2	T112 F4	T384 B6	T469 H6	T643 I2	TJ355 B1	TJ642 E7	T±PD6H2
C1212 E2	C141 E4	C528 B7	FL502 B1	R116 D5	R4104 G6	R832 C2	T113 D4	T385 G3	T481 E7	T851 B3	TJ356 C1	TJ643 D7	T±PD7H2
C1221 E3	C142 E4	C529 B6	FL503 C1	R1204 D2	R4108 G6	R833 C2	T114 D4	T386 G5	T482 E6	T852 C2	TJ357 C1	TJ644 E7	T±PD8H2
C1223 E2	C145 E4	C530 D1	FL504 C1	R1208 D3	R4109 C3	R834 C2	T116 E4	T402 E7	T483 G6	T853 C2	TJ358 B1	TJ645 B4	T±PD9H2
C123 F5	C146 E4	C531 C6	FL505 C1	R1225 D2	R4120 G4	R835 C2	T121 D2	T403 H3	T485 H3	T854 C2	TJ359 C1	TJ646 D7	U15 F4
C1248 E2	C149 E4	C532 B7	FL506 C1	R1226 D2	R4121 H3	R836 C2	T2A406 E7	T404 D6	T486 H3	T855 C3	TJ360 C1	TP501 B6	U16 F4
C1249 E3	C151 D4	C533 B6	FL507 C1	R123 F5	R4122 G6	R837 C2	T2A407 E6	T405 I4	T487 H6	T859 B2	TJ361 B1	TP502 C6	V18 F4
C1250 E3	C152 D4	C535 C6	GPIO4 F4	R124 F4	R4123 G6	R838 B2	T2A409 E6	T406 I4	T488 G3	T860 C2	TJ362 D1	TP519 B5	Z19 F4
C1251 E3	C153 E5	C536 B7	HCORDY I4	R125 E5	R425 H4	R840 B3	T2A410 E6	T407 D7	T489 D7	T861 C3	TJ363 C4	TP520 B5	
C1252 E3	C154 D5	C537 B6	HOST±RX F4	R144 F4	R427 H6	R841 C3	T2B401 E7	T408 D7	T490 D6	T862 C3	TJ364 I6	TP524 B6	
C1253 F3	C155 E5	C538 B6	HOST±IX F4	R147 F5	R428 H6	R842 C3	T2B405 E6	T409 D6	T493 H4	T863 A2	TJ365 I6	TP601 F6	
C1254 F3	C156 E5	C539 B6	HRSTATA I4	R149 F4	R429 I6	R880 C3	T2B408 D7	T410 E7	T501 C7	T866 B2	TJ366 I6	TP602 G6	
C1255 E2	C157 E5	C540 B6	IC402 G3	R156 F4	R430 H6	R881 C3	T2B409 D6	T4101 I3	T502 C7	T867 B2	TJ367 I7	TP862 B3	
C1256 E3	C158 E4	C542 C7	IC405 G5	R157 F4	R431 H6	R888 B3	T2C404 E7	T4102 I3	T503 C7	T868 A2	TJ368 I6	TP863 C3	

2. VDR P.C.BOARD (BOTTOM VIEW)



MEMO

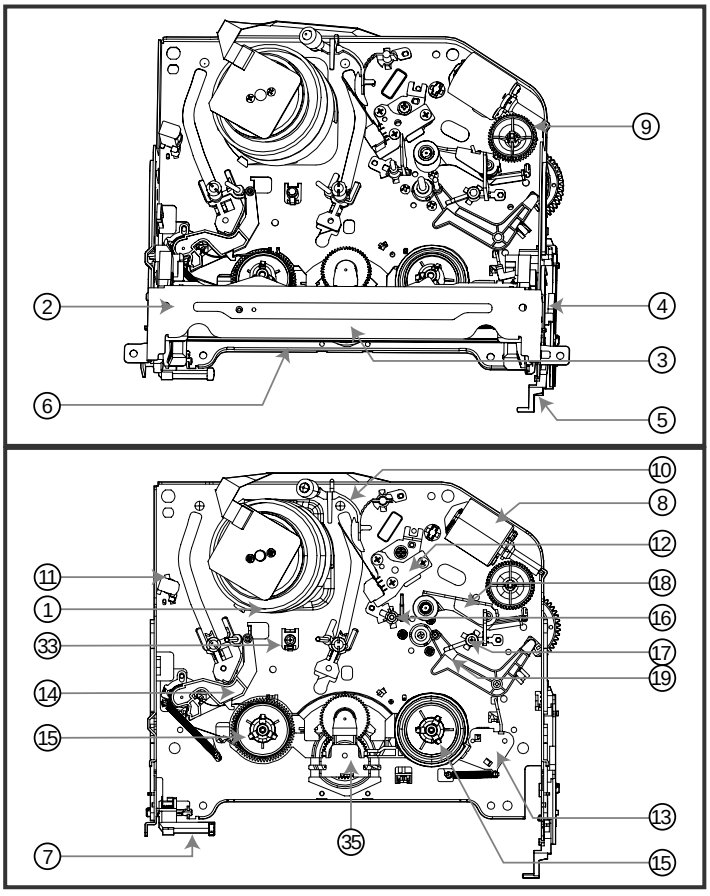
MEMO

SECTION 4 MECHANISM OF VCR PART(D-37)

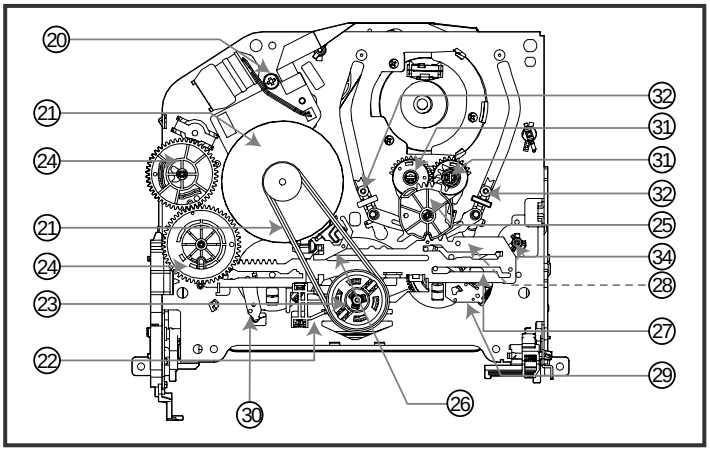
CONTENTS

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

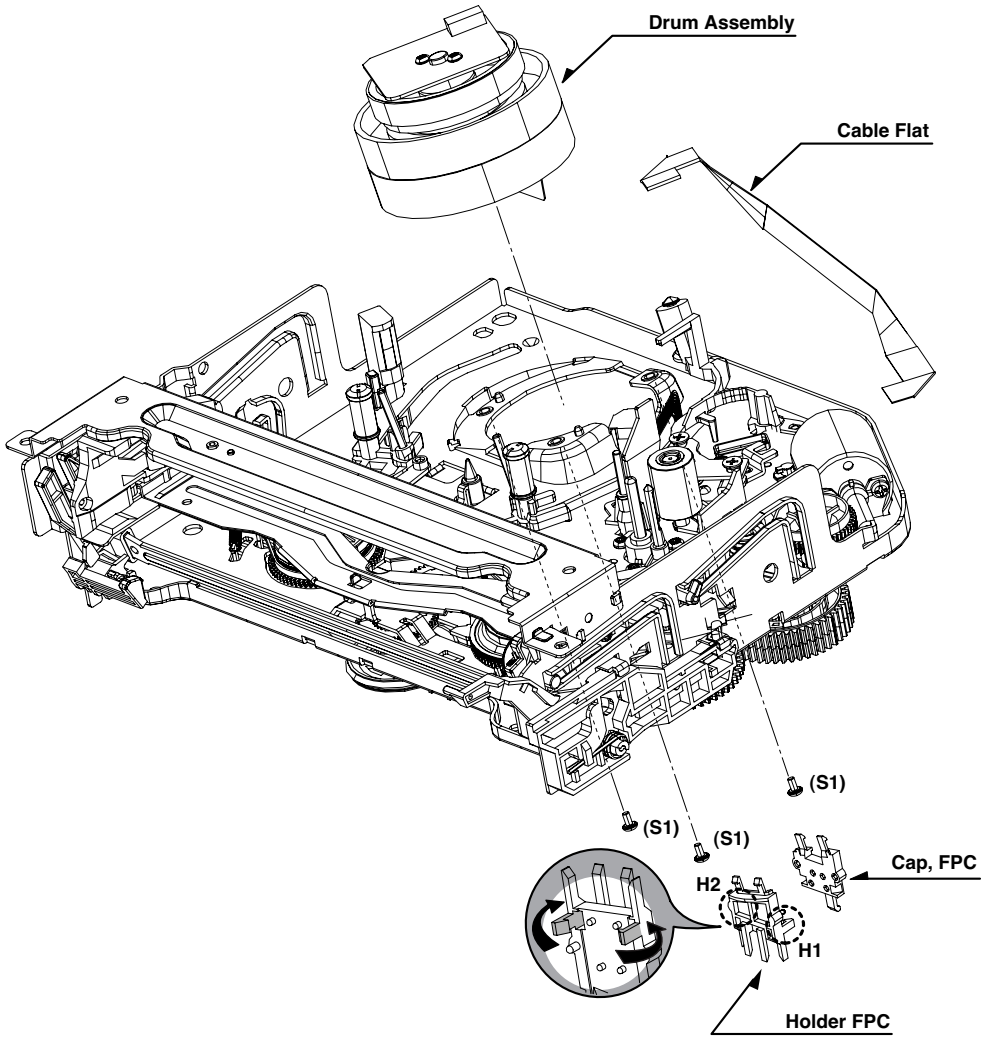
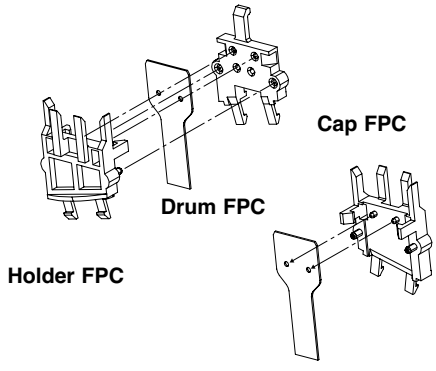


Fig. A-1

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

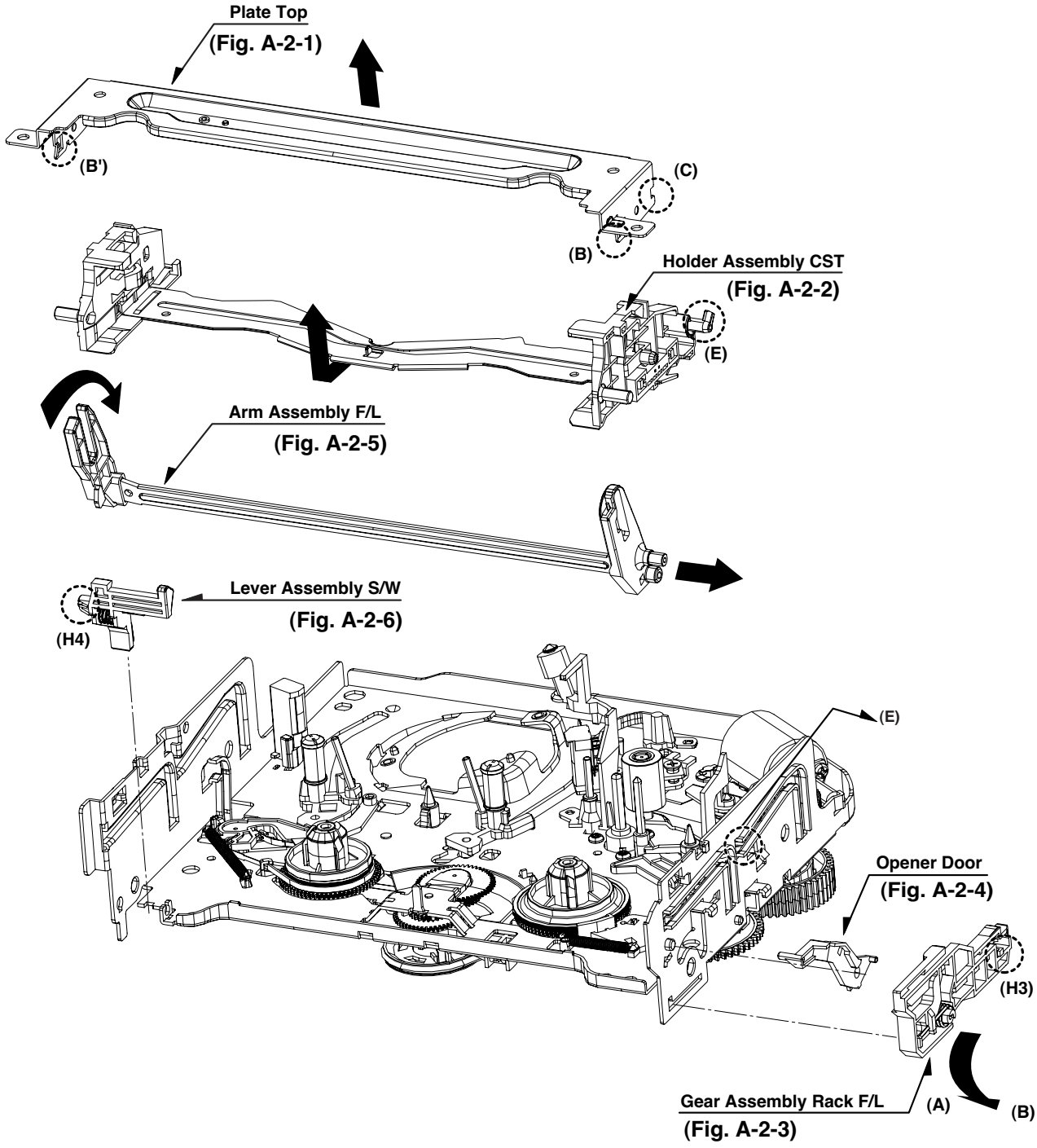


Fig. A-2

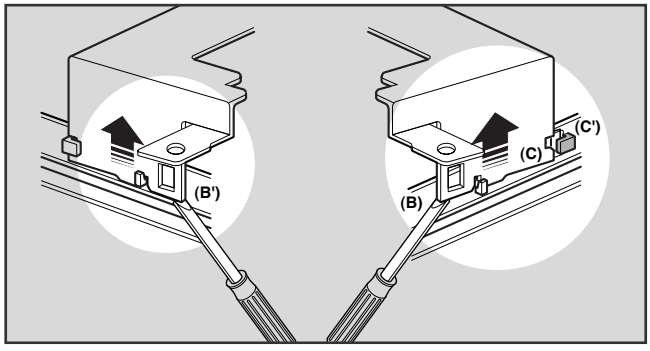
DISASSEMBLY AND ASSEMBLY OF DECK MECHANISM

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)

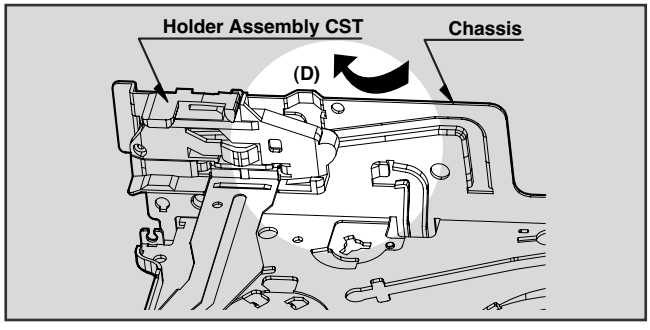
CAUTIONS

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

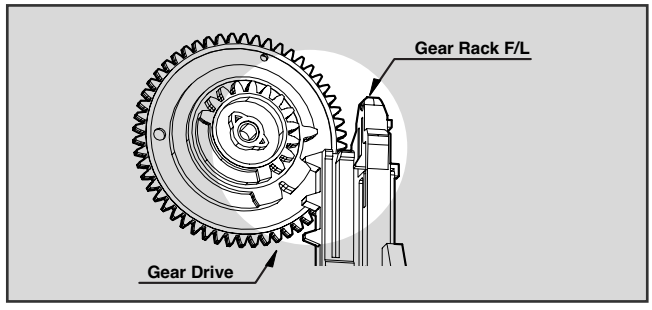
Assemble by inserting the left part after firstly inserting the (E) part of the holder assembly CST into the groove on the (E') part of chassis.

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)

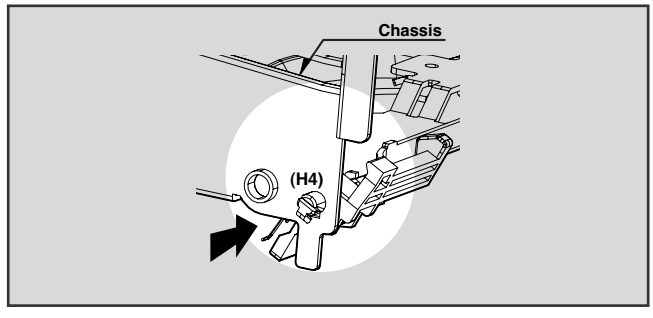
1) Separate the opener door ahead from the guide hole of chassis while turning it clockwise.

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

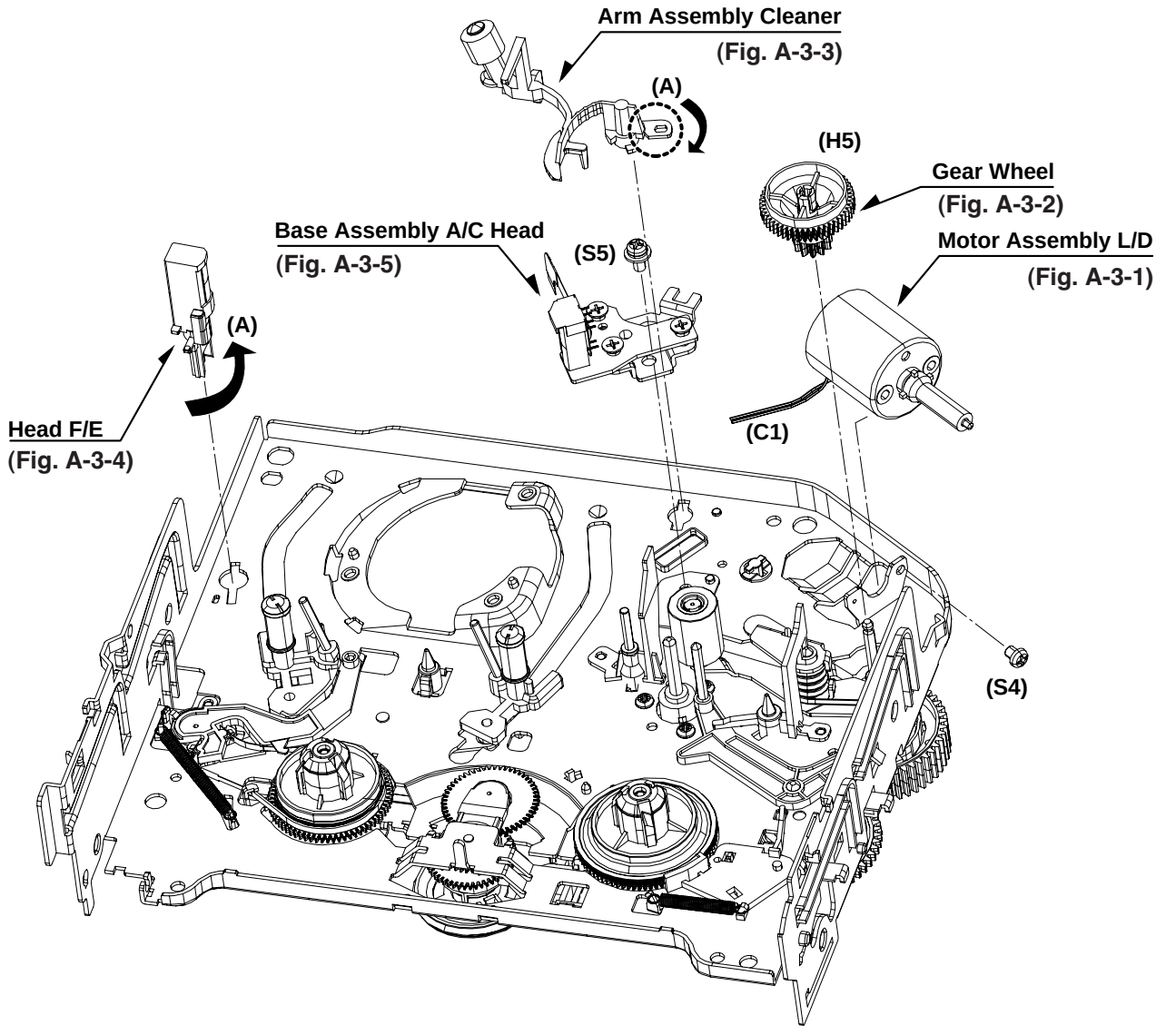


Fig. A-3

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

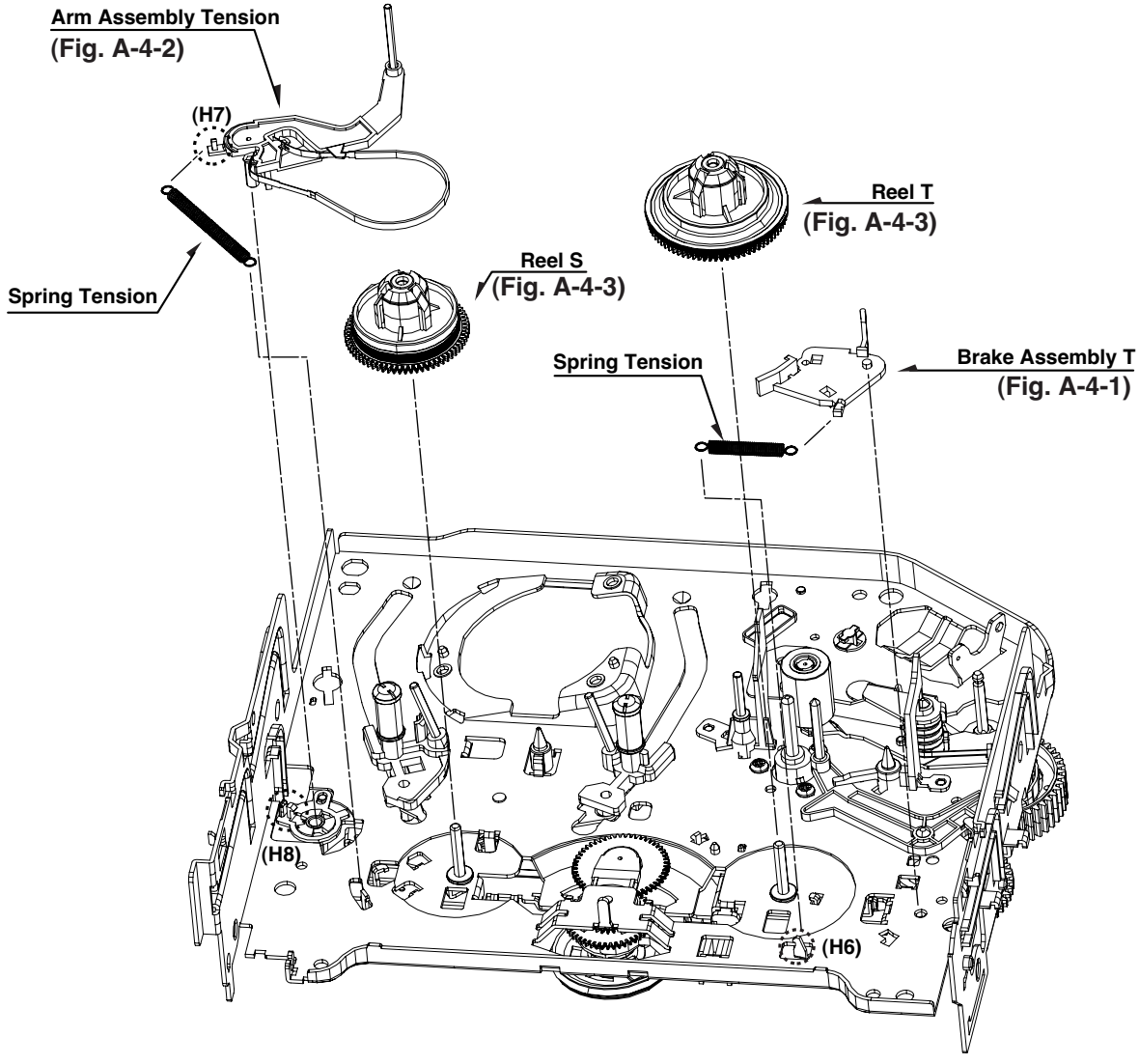


Fig. A-4

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)

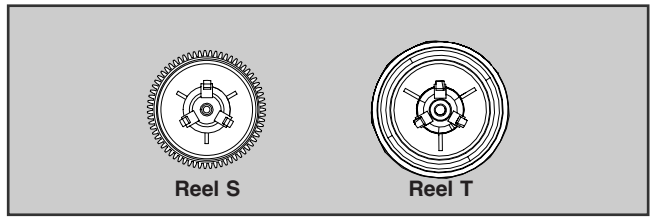
1) Release the spring tension the hook (H7) from the arm assembly tension.
2) After releasing the hook (H8) of the base tension, separate it while holding it up.

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

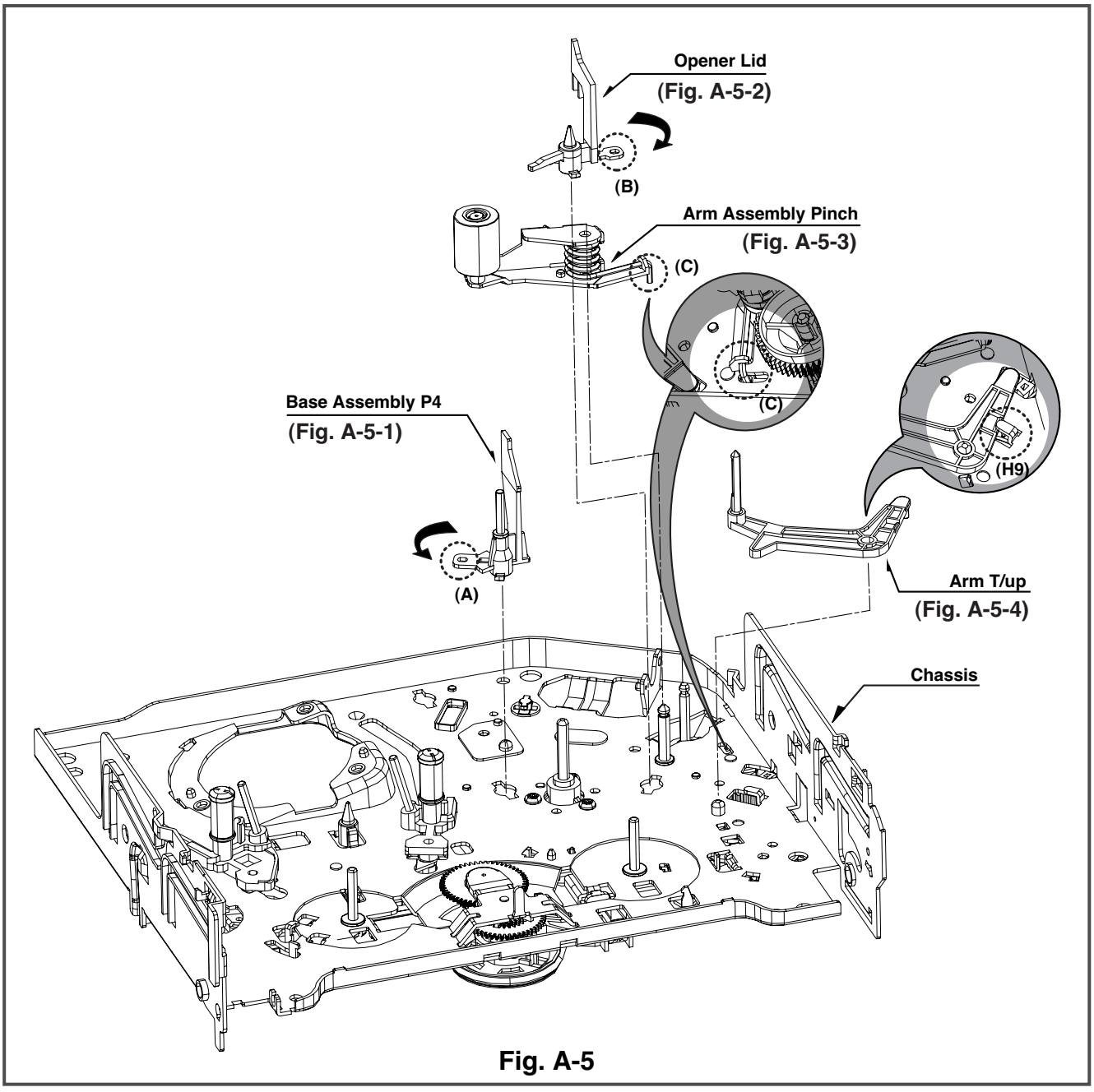


Fig. A-5

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

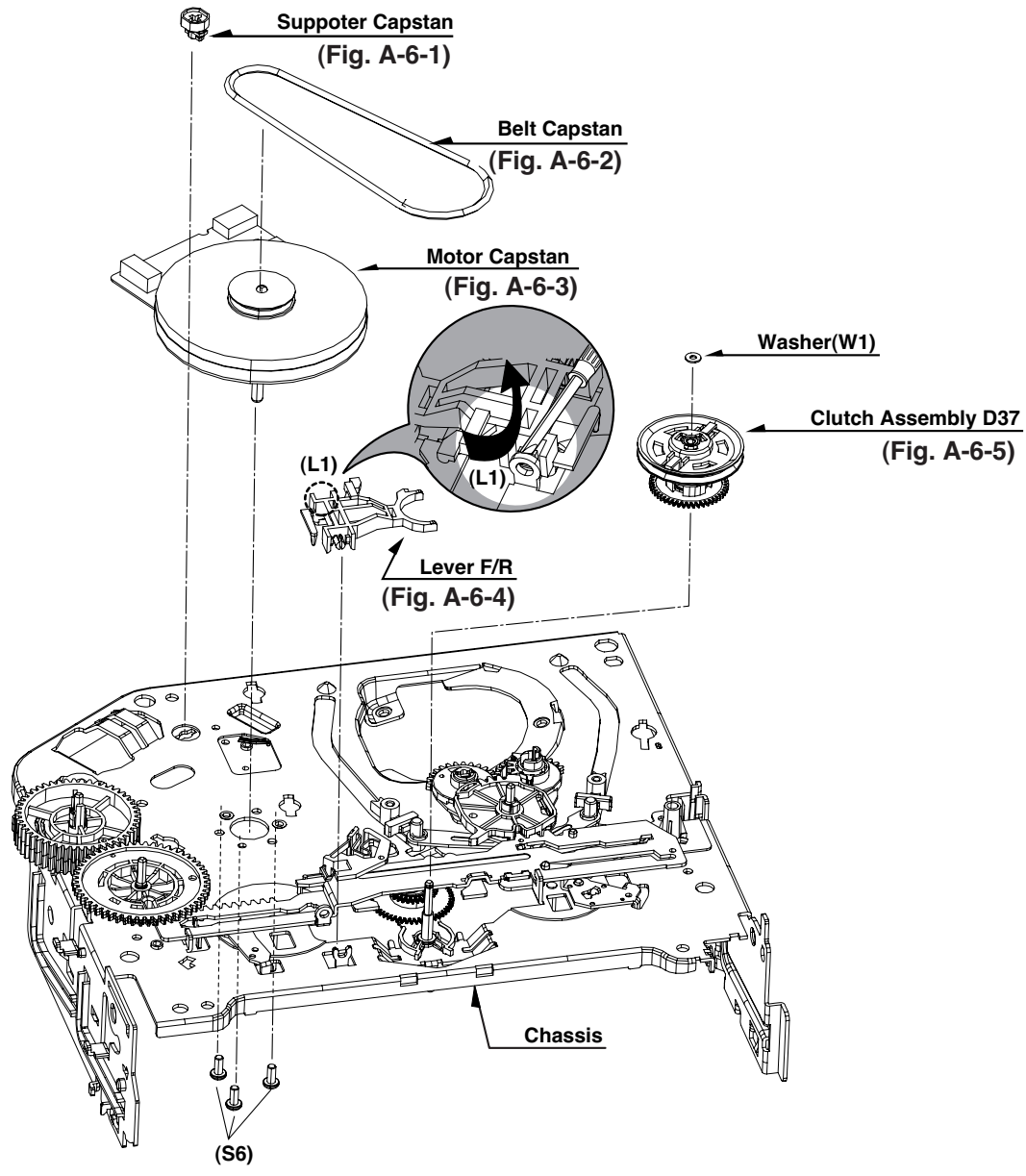


Fig. A-6

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

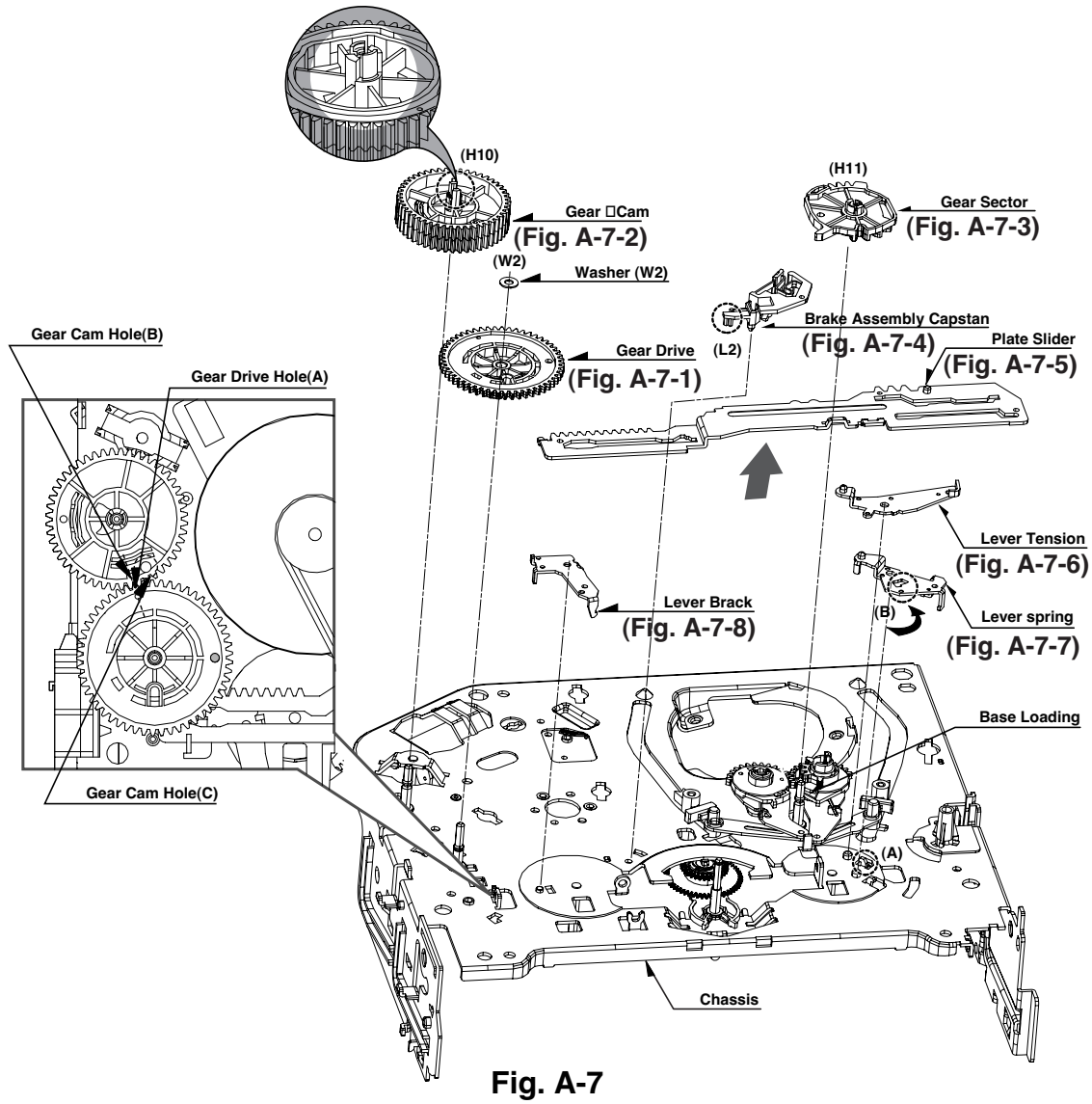


Fig. A-7

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

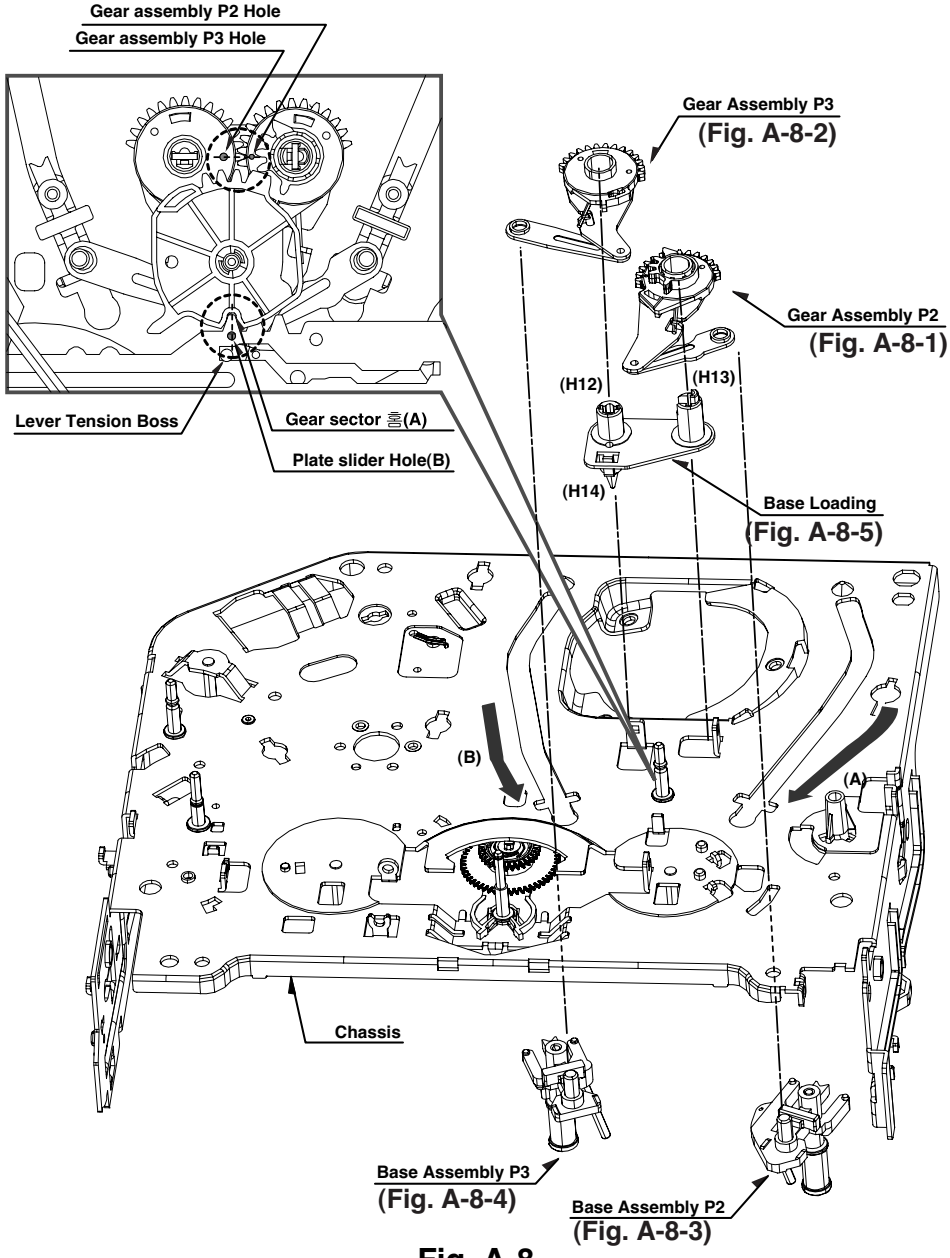


Fig. A-8

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.

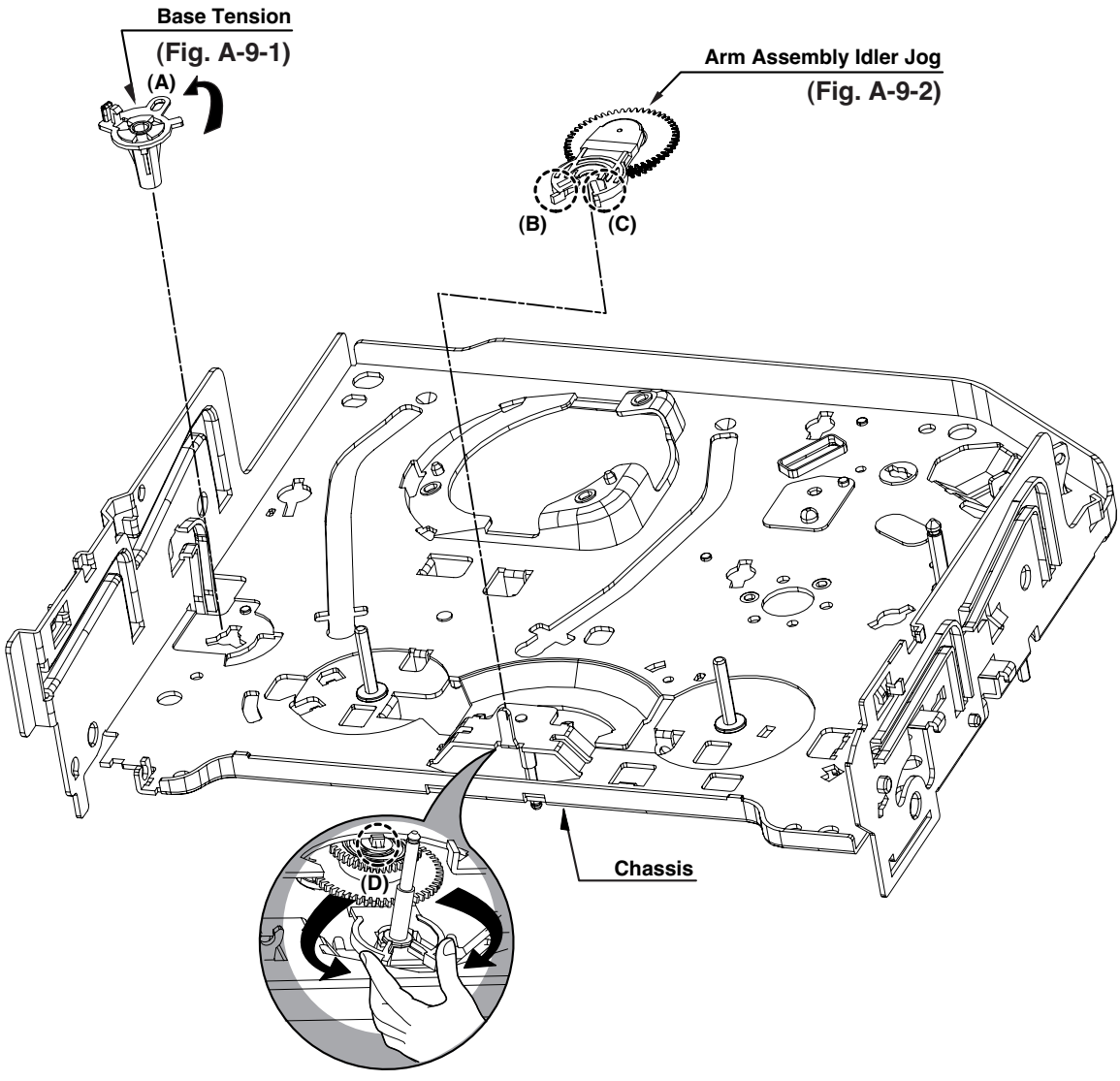


Fig. A-9

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)

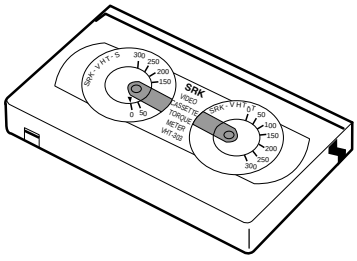
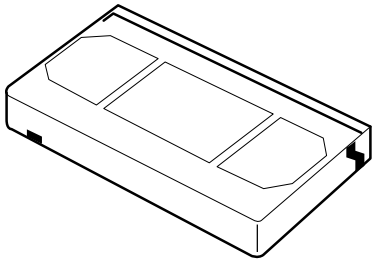
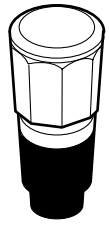
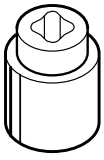
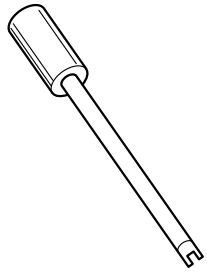
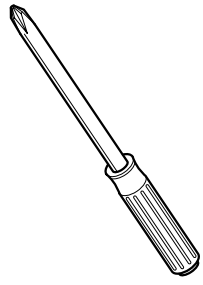
1) Push both (B), (C) parts in Fig. A-9-2 toward the arrow direction.
2) Disassemble the arm assembly idler upward.

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

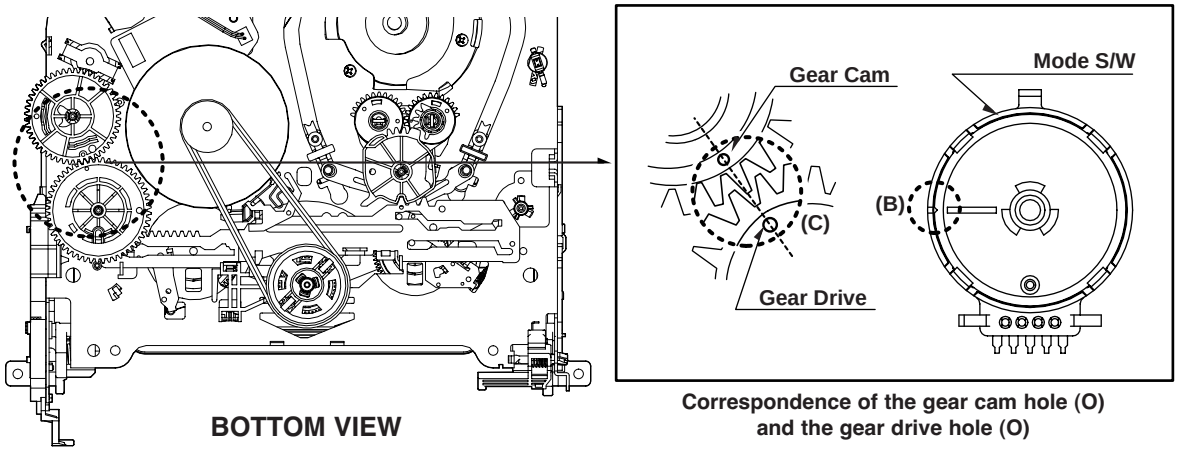


Fig. C-1

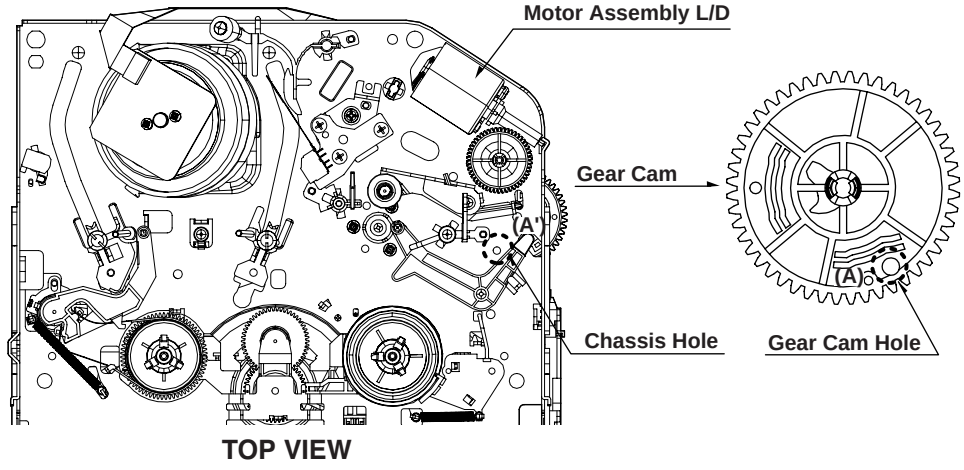


Fig. C-2

DECK MECHANISM ADJUSTMENT

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)

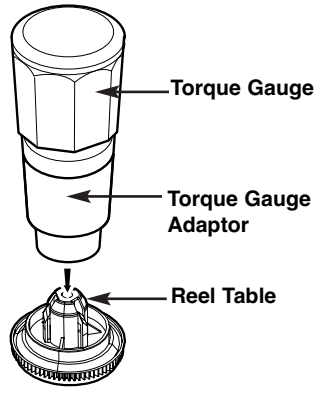


Fig. C-3-1

• Cassette Torque Meter (SRK-VHT-303)

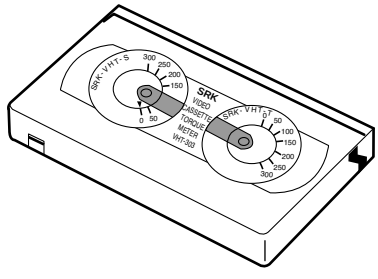


Fig. C-3-2

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

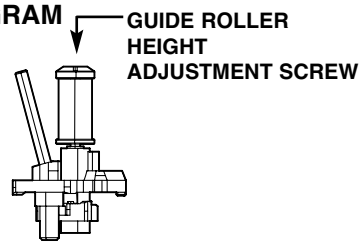


Fig. C-4-1

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

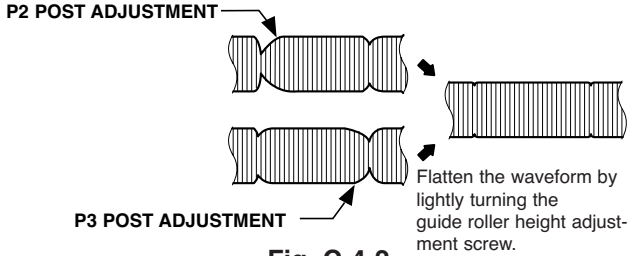


Fig. C-4-2

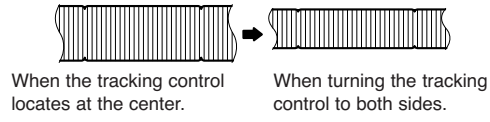
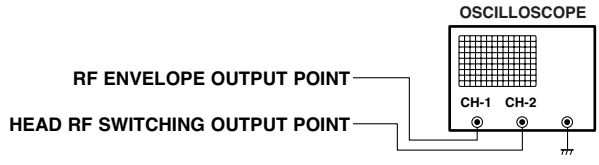


Fig. C-4-2

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)

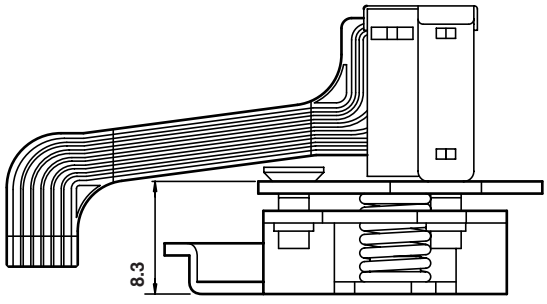
Fixtures and tools used	VCR (VCP) status	Adjustment position
• Blank Tape (Empty Tape) • Driver (+) Type ø 5	• Play the blank tape (empty tape).	• Tilt adjusting screw (C) • Height adjusting screw (B) • Azimuth adjusting screw (A)

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

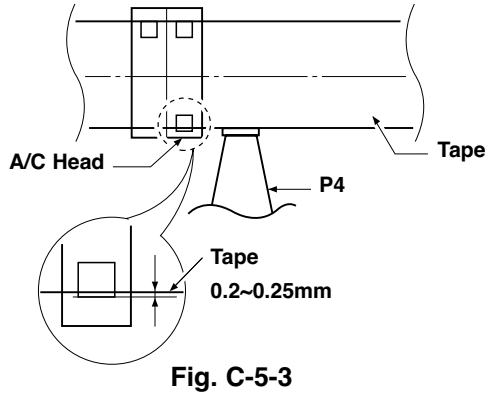
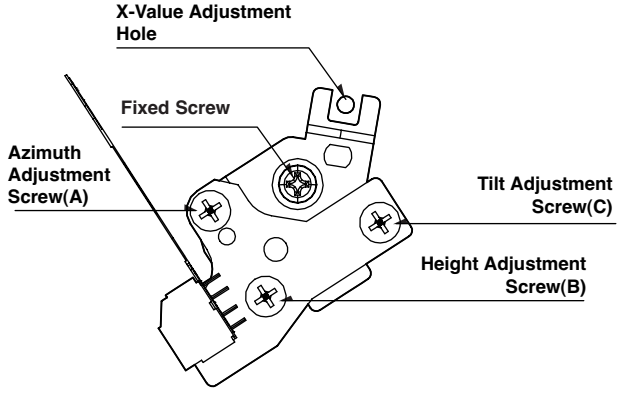


Fig. C-5-3



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).

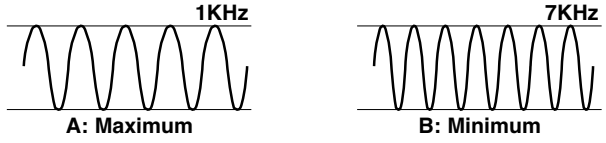
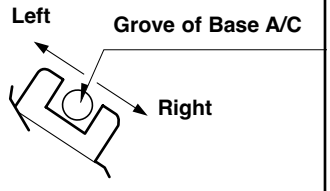


Fig. C-5-4

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

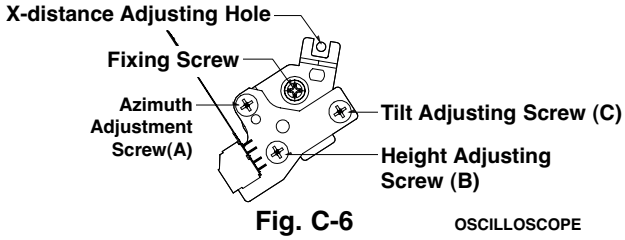
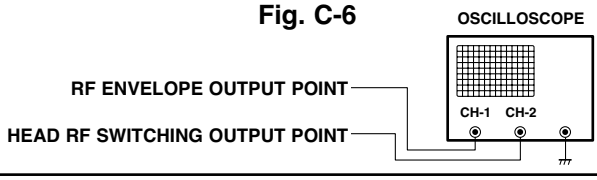


Fig. C-6



DECK MECHANISM ADJUSTMENT

7. Adjustment after Drum Assembly (Video Heads)

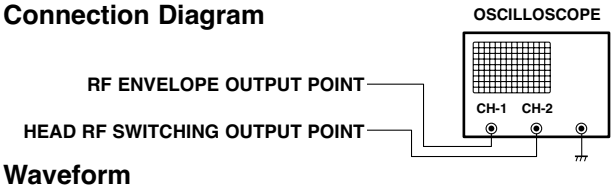
Purpose of adjustment : To adjust and stabilize the height change, X-distance change, etc depending on the guide roller after assembling the drum.

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

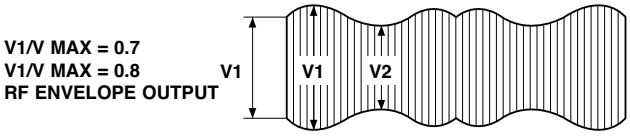
Checking/Adjustment Procedure

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.

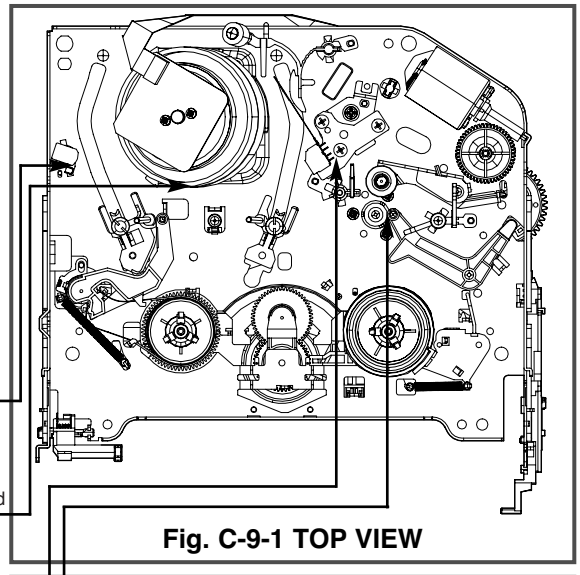


Fig. C-9-1 TOP VIEW

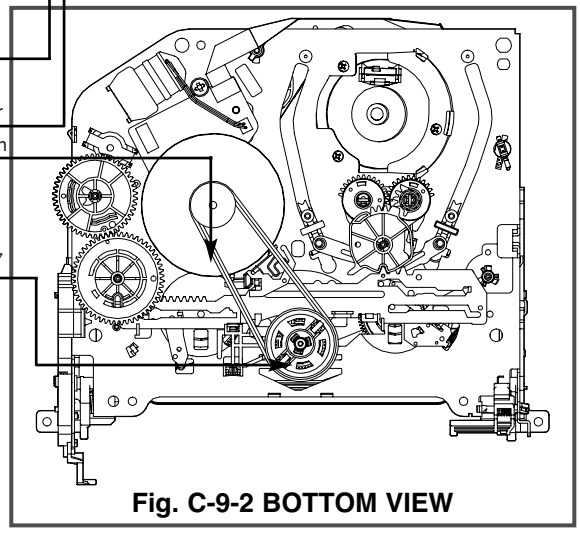


Fig. C-9-2 BOTTOM VIEW

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

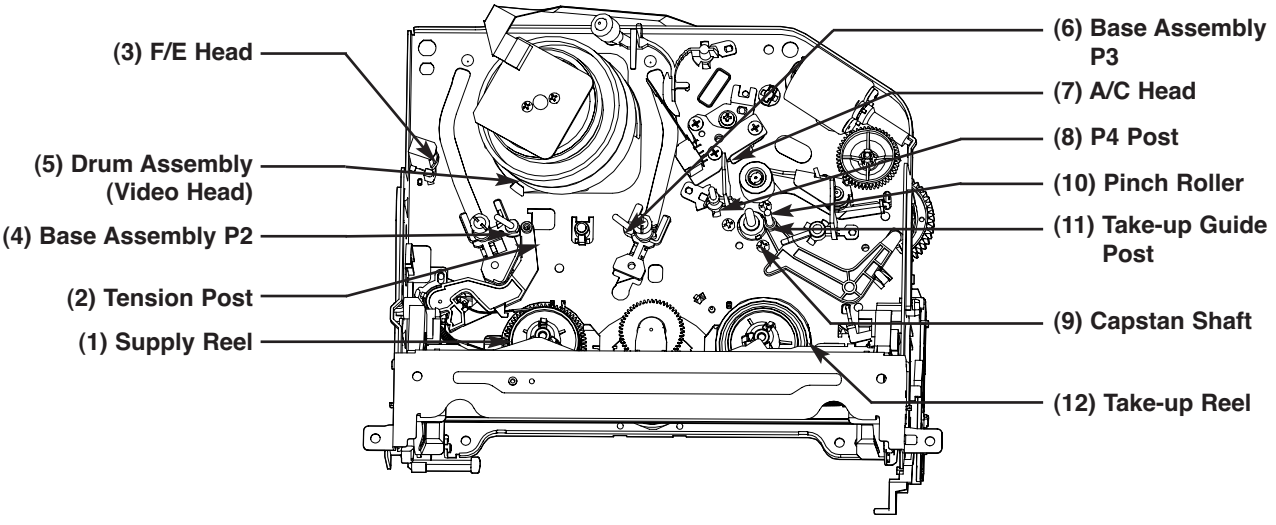


Fig. C-9-3 Tape Transport System

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.

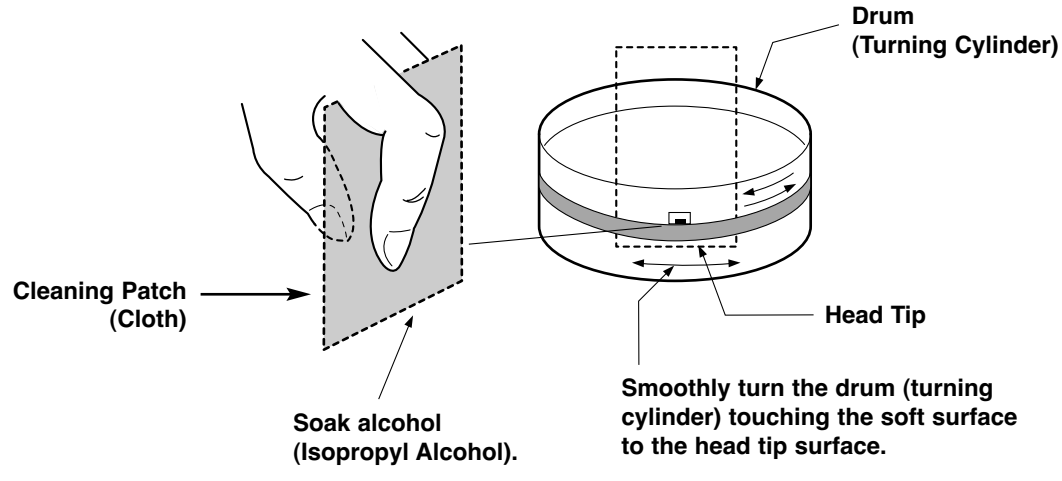


Fig. C-9-4

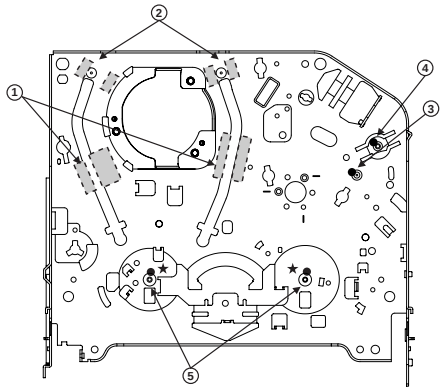
5-2) Grease Applications

(1) Grease Application Method

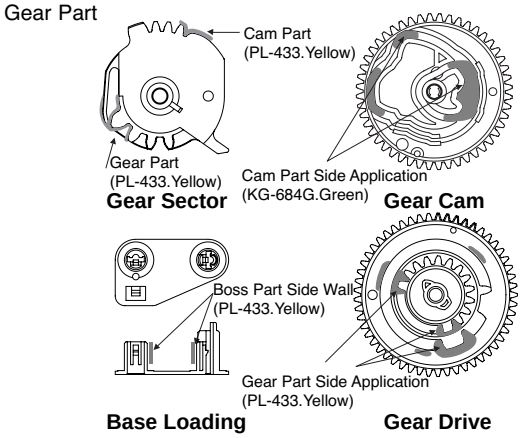
Apply grease by using a cloth swab or brush. Care must be exercised so that excess quantity should not be used. If the excessive quantity is applied, wipe it with the gauze soaked in alcohol (Isopropyl Alcohol).

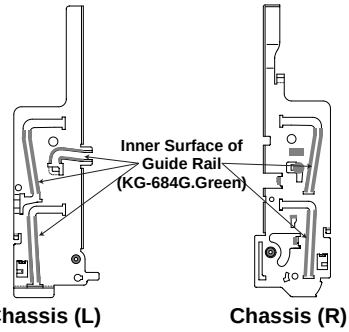
NOTE: POSITION OF GREASE APPLICATION

(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)

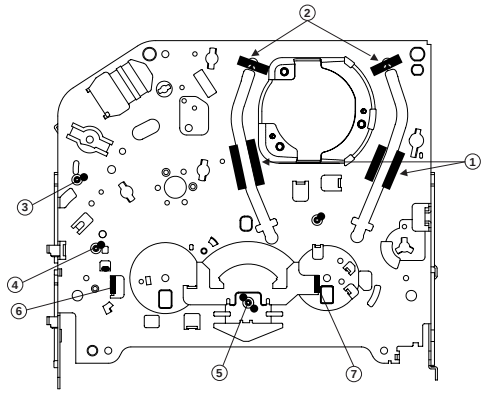




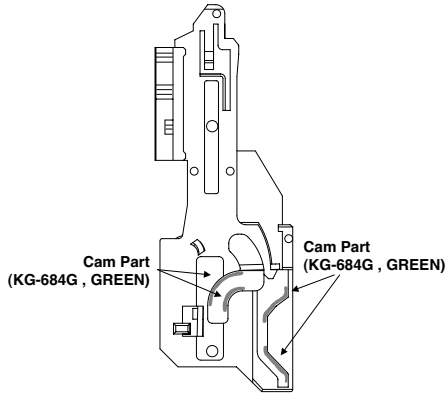
(2) Regular Grease Application

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

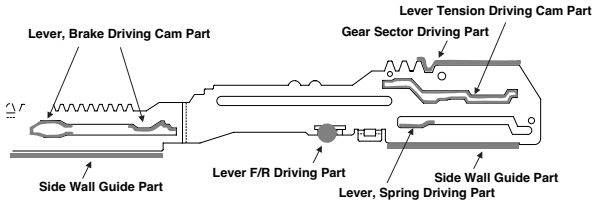
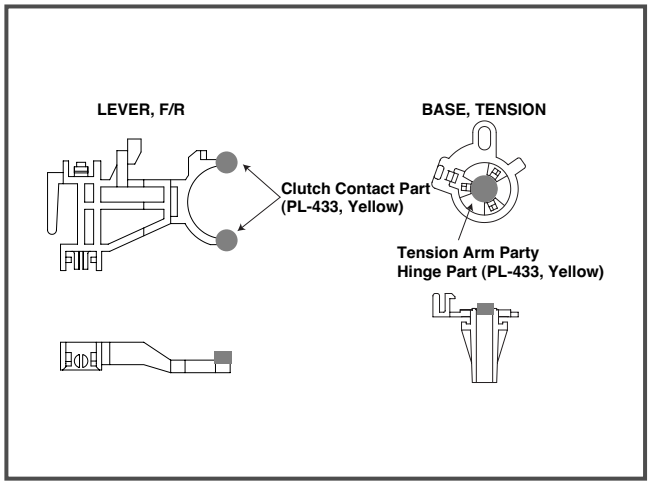
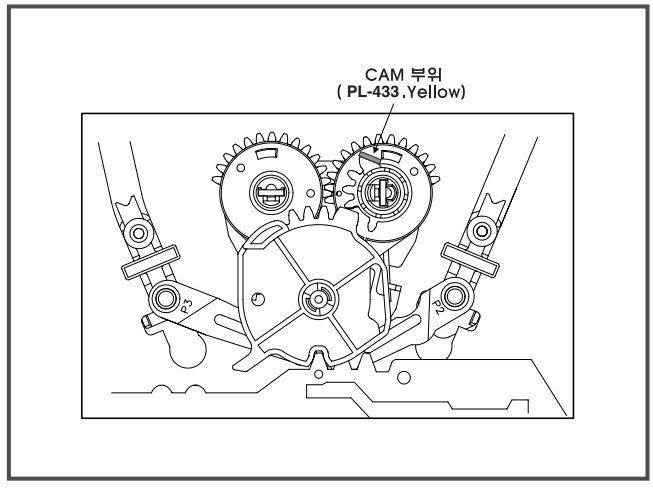


Plate Slider

Lever, F/R, Base, Tension

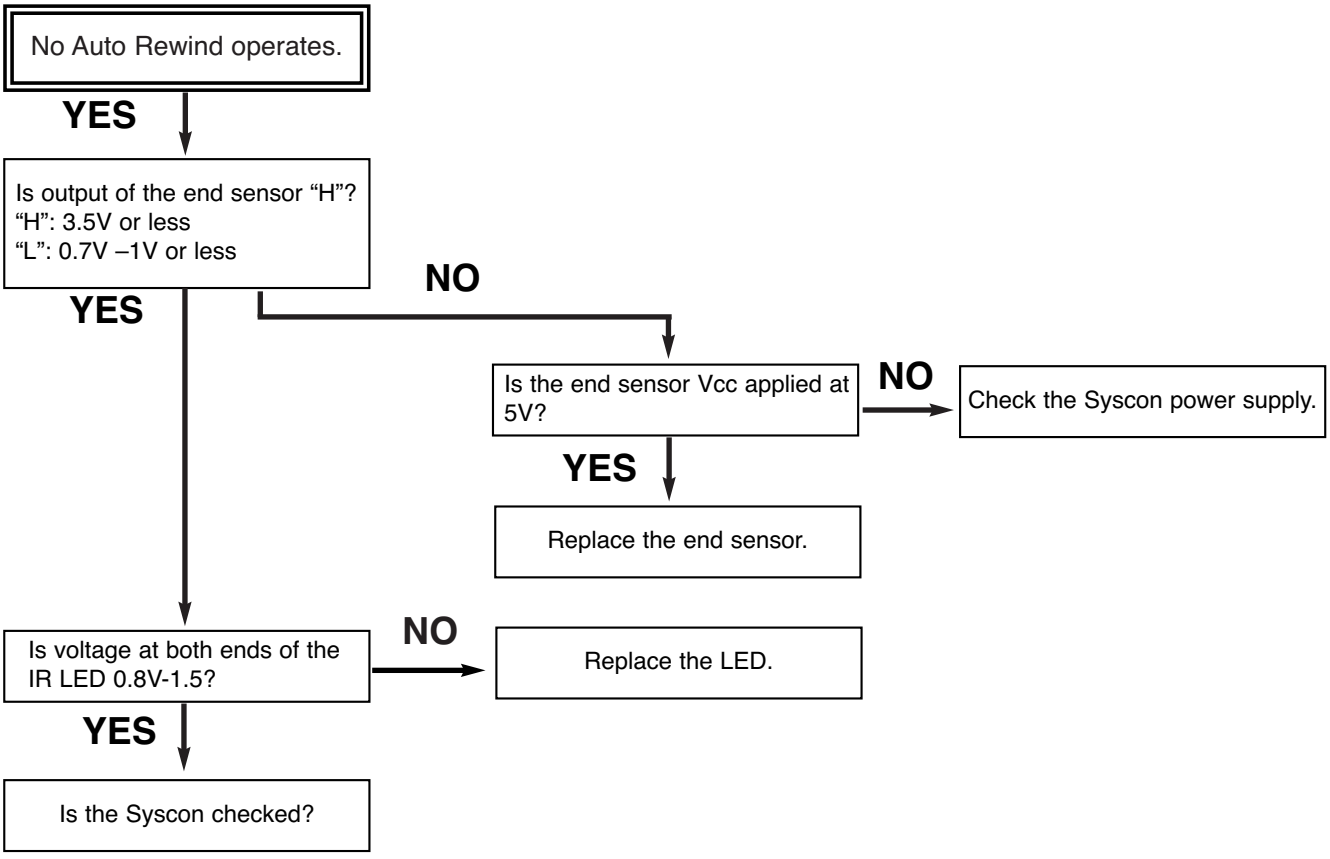


GEAR AY, P2 & P3

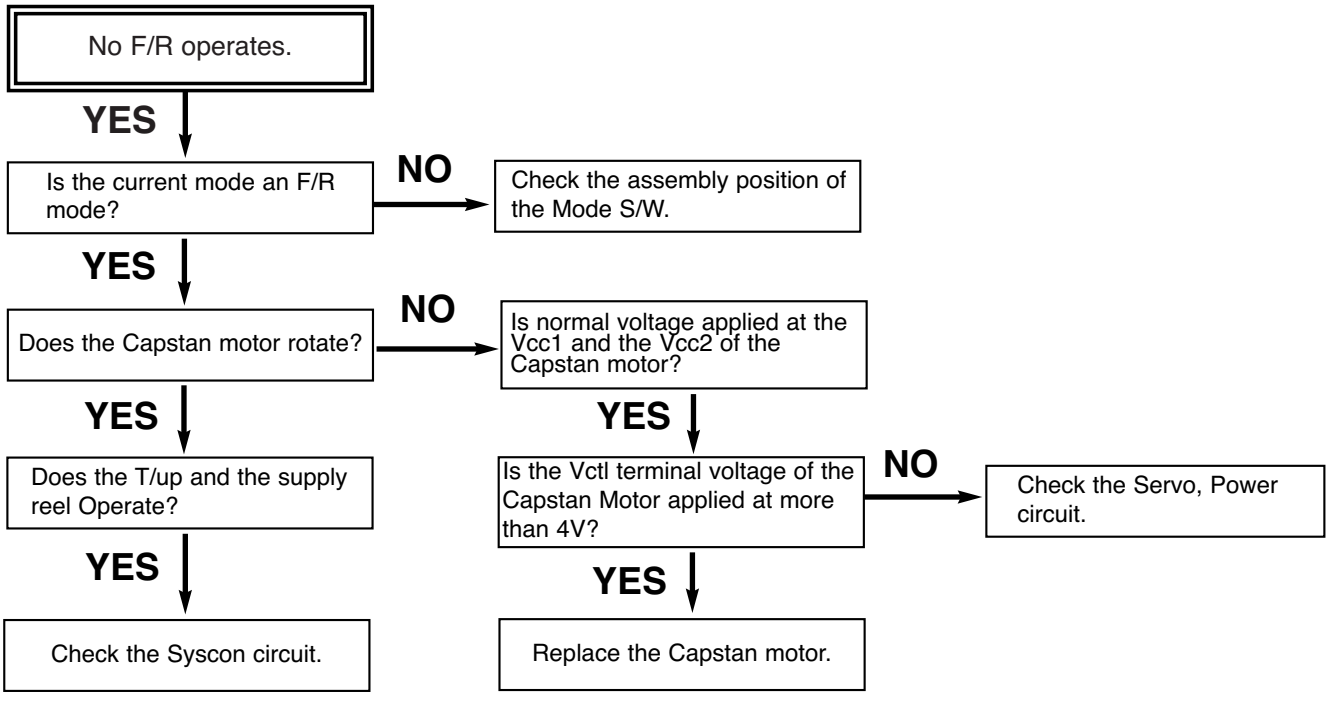


1.Deck Mechanism

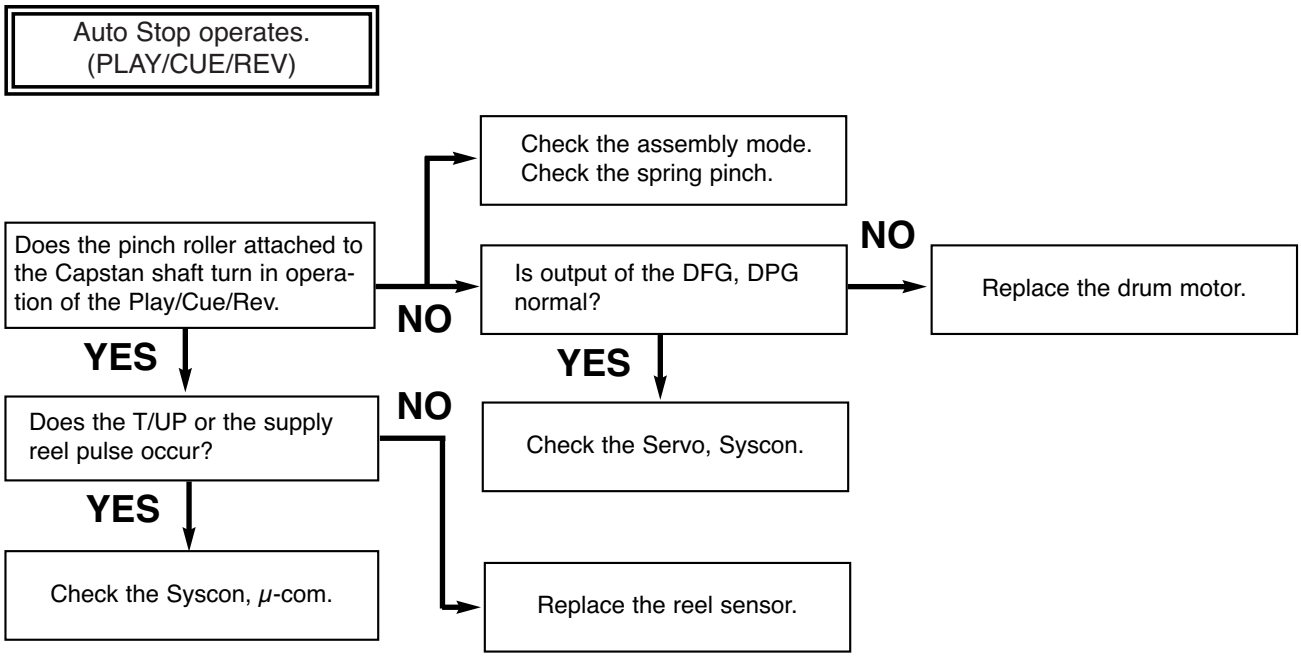
A.



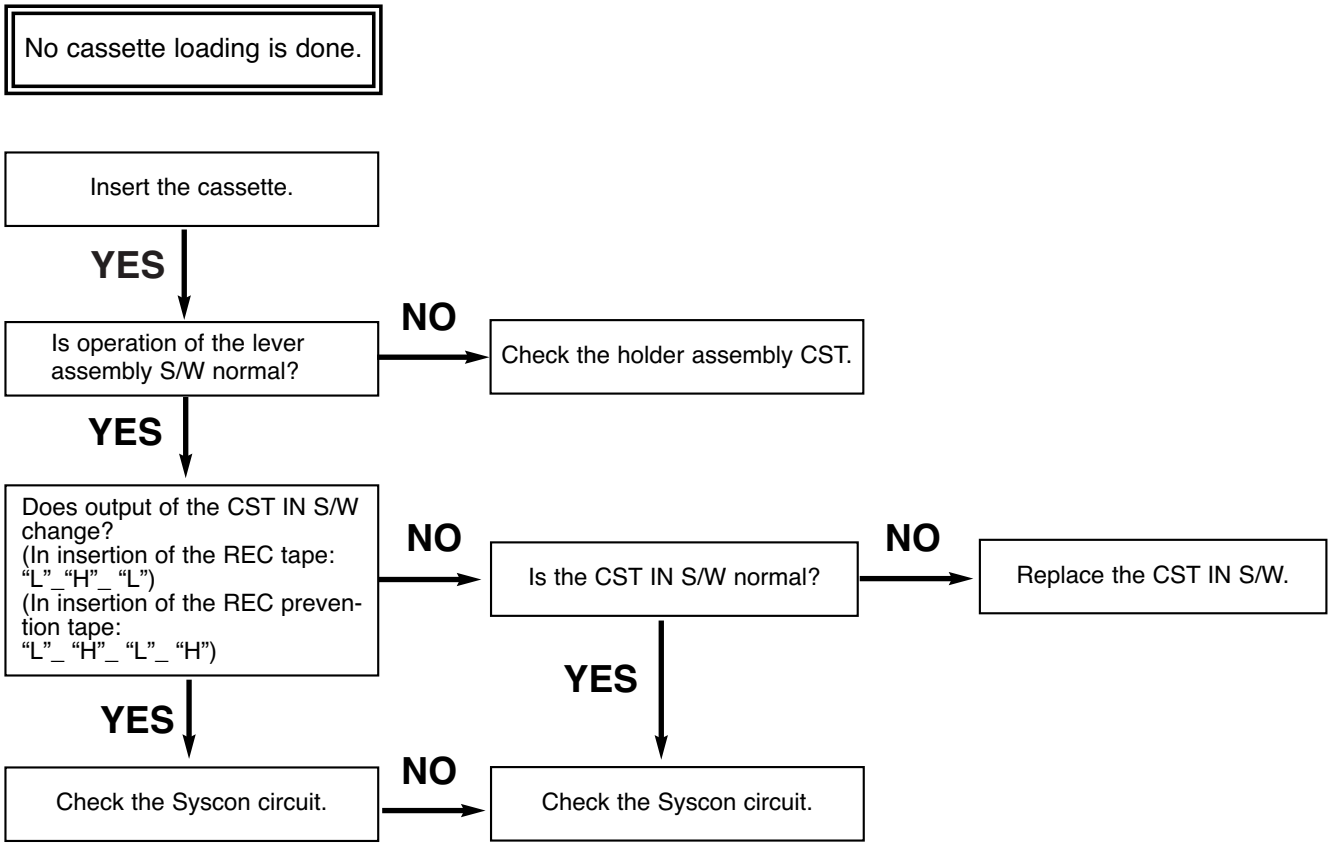
B.



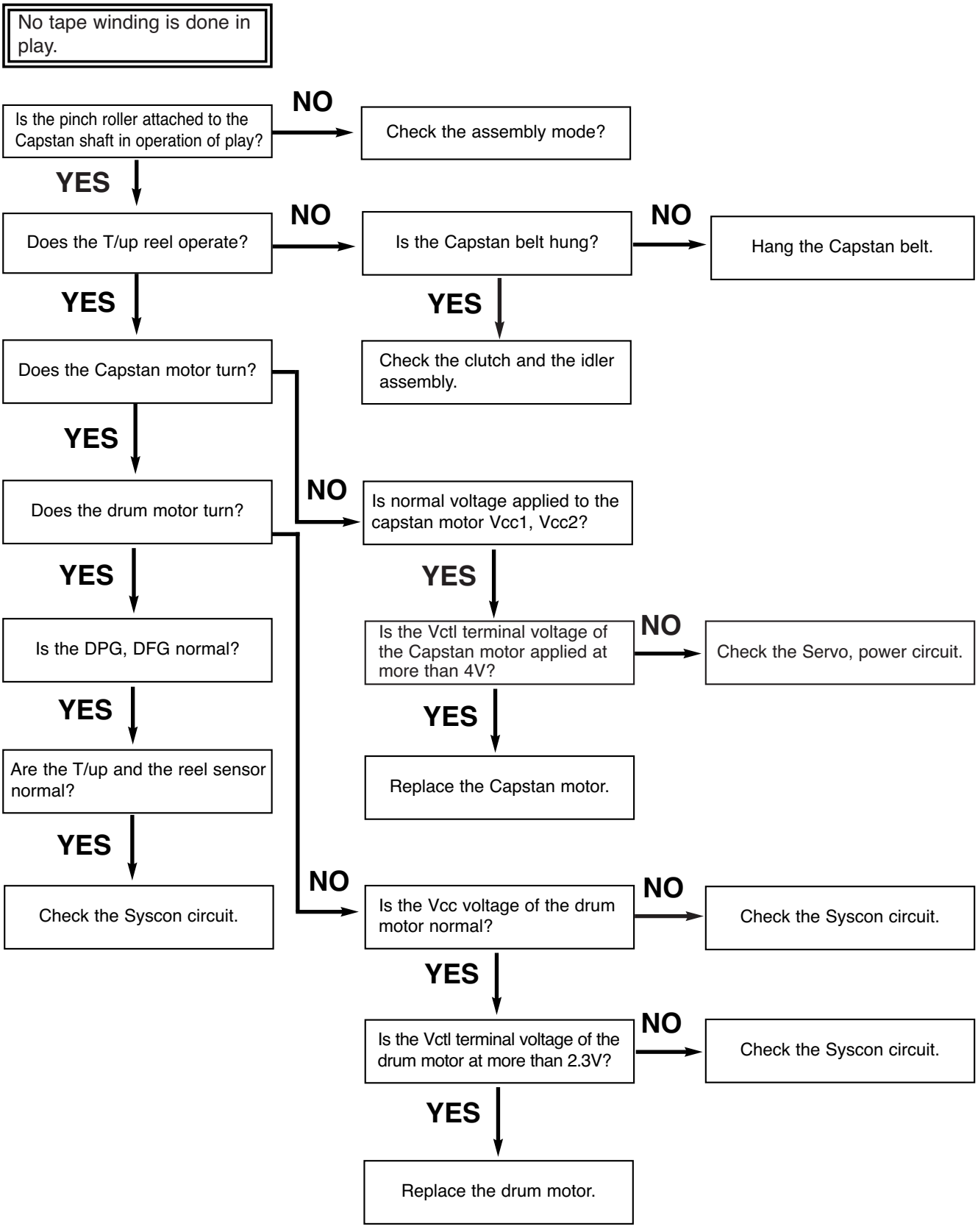
C.


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.

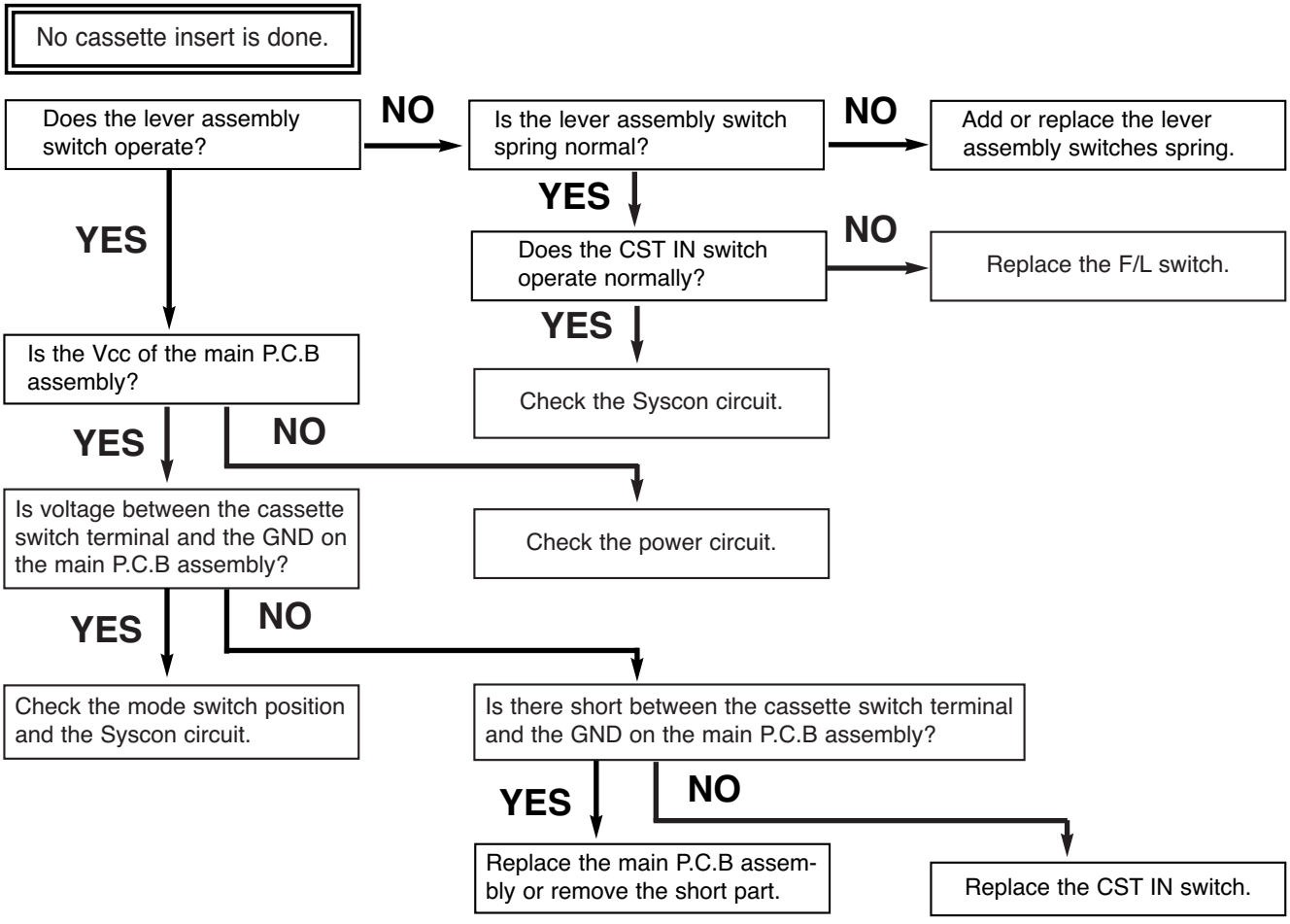

No cassette loading is done.
Insert the cassette.
YES
Is operation of the lever assembly S/W normal?
NO
Check the holder assembly CST.
YES
Does output of the CST IN S/W change?
(In insertion of the REC tape:
"L"_"H"_"L")
(In insertion of the REC prevention tape:
"L"_"H"_"L"_"H")
NO
Is the CST IN S/W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

E.

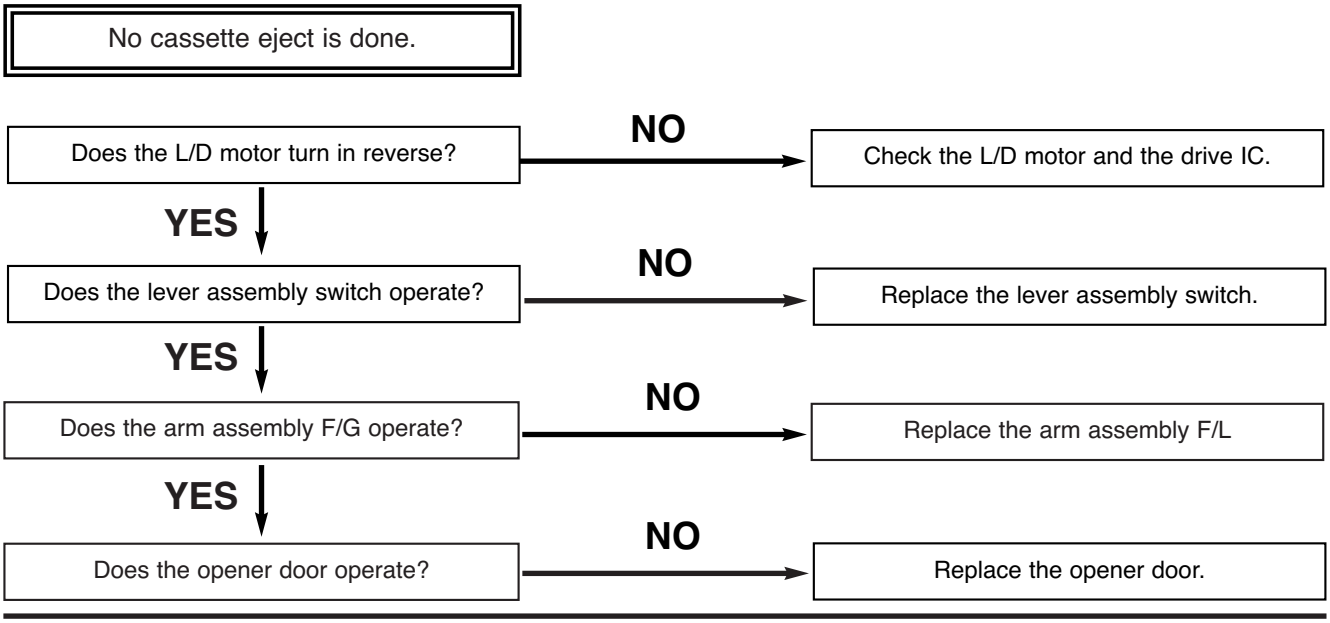

No tape winding is done in play.
Is the pinch roller attached to the Capstan shaft in operation of play?
NO
Check the assembly mode?
YES
Does the T/up reel operate?
NO
Is the Capstan belt hung?
NO
Hang the Capstan belt.
YES
YES
Check the clutch and the idler assembly.
Does the Capstan motor turn?
YES
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

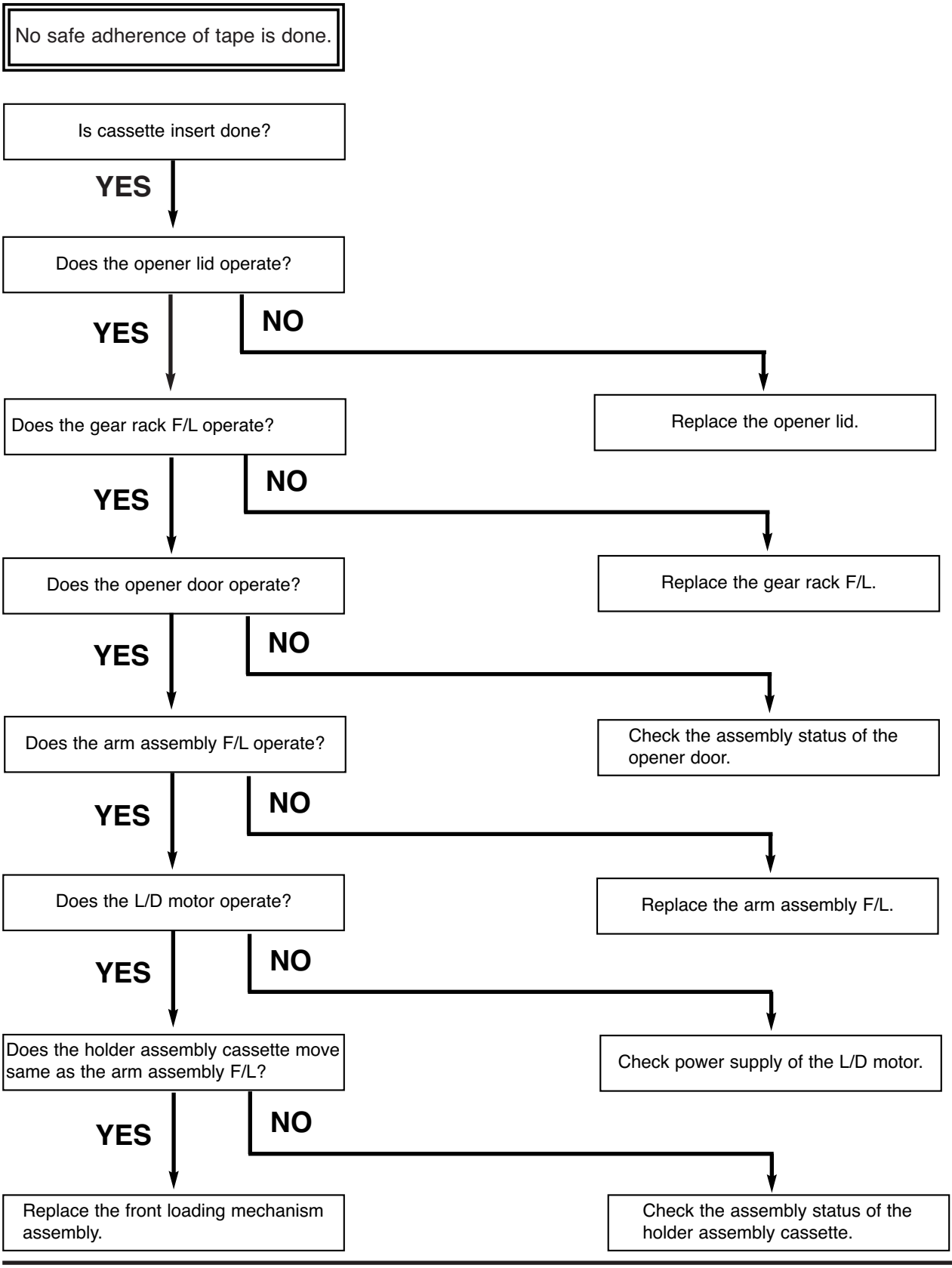
A.



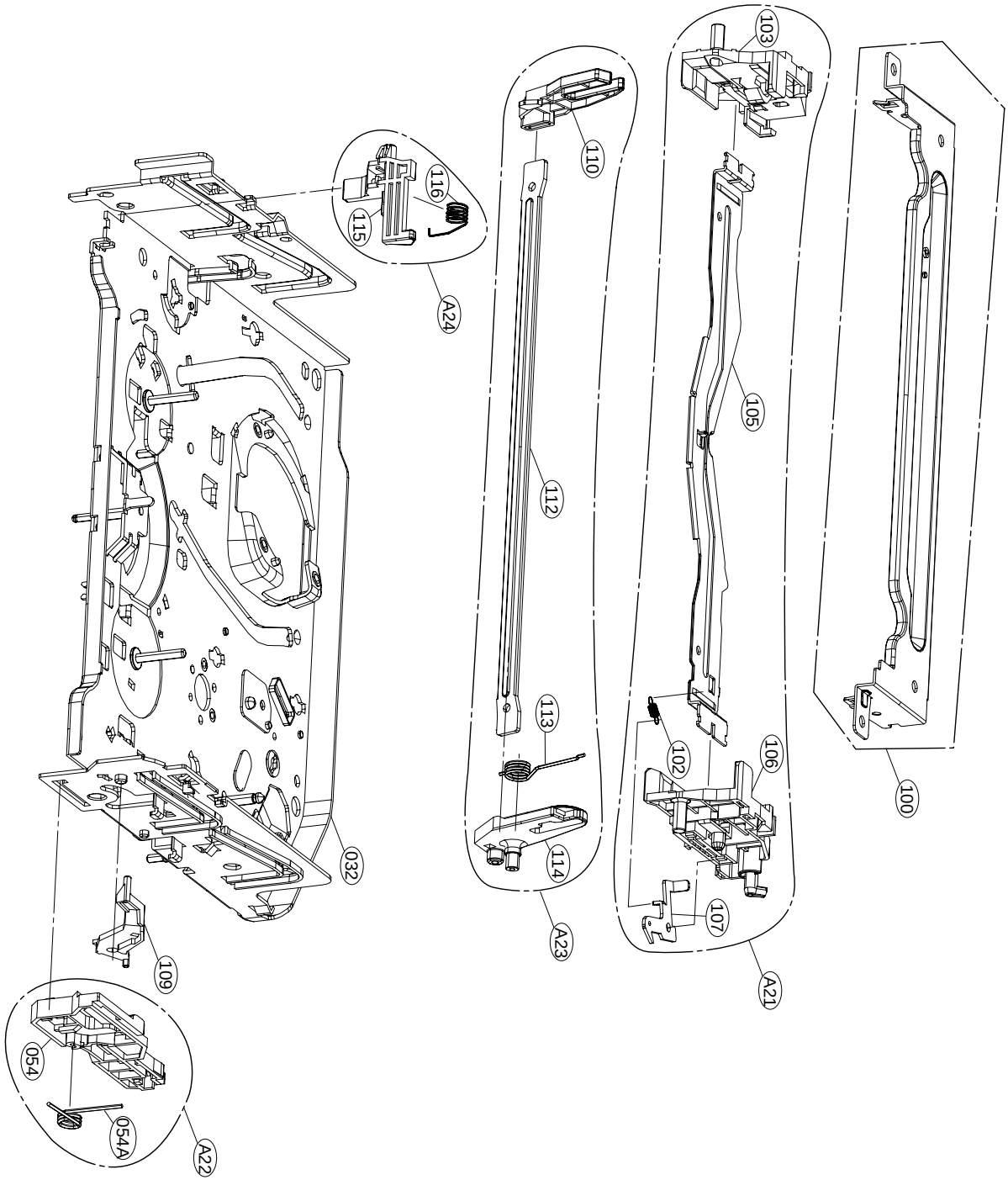
B.



C.

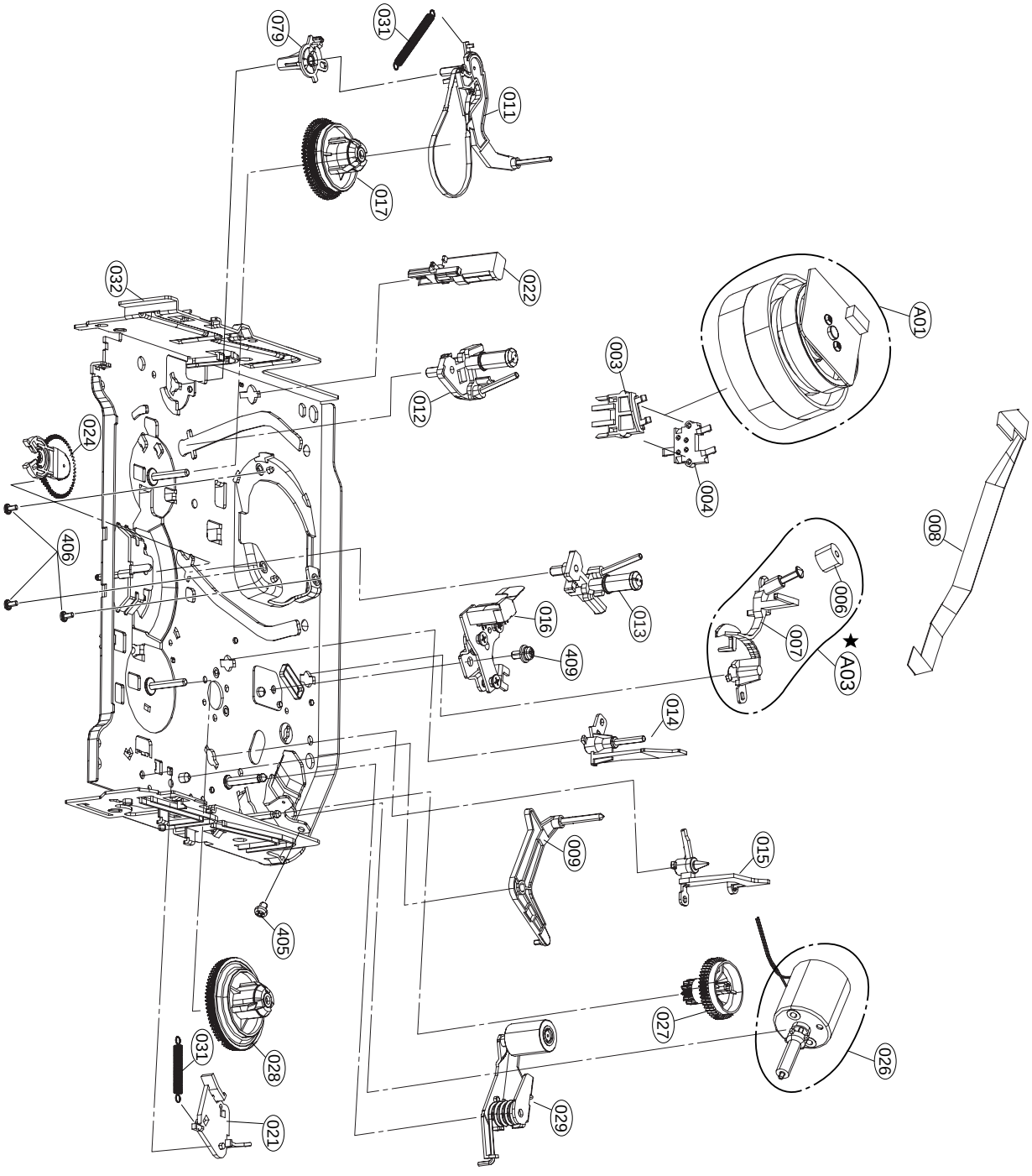

No safe adherence of tape is done.
Is cassette insert done?
YES
Does the opener lid operate?
YES
NO
Replace the opener lid.
Does the gear rack F/L operate?
YES
NO
Replace the gear rack F/L.
Does the opener door operate?
YES
NO
Check the assembly status of the opener door.
Does the arm assembly F/L operate?
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

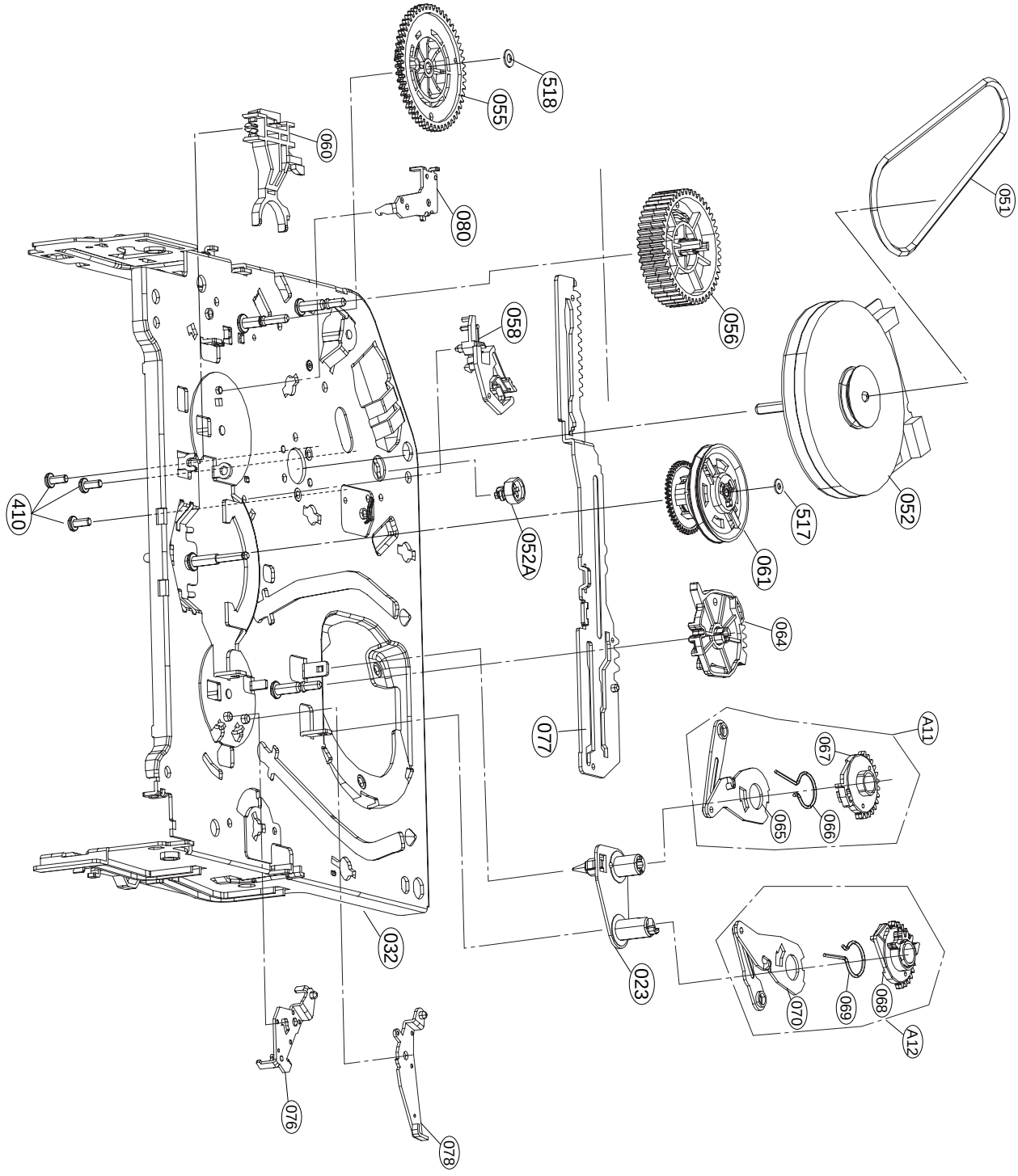


2. Moving Mechanism Section (1)

★ OPTIONAL PART



3. Moving Mechanism Section (2)



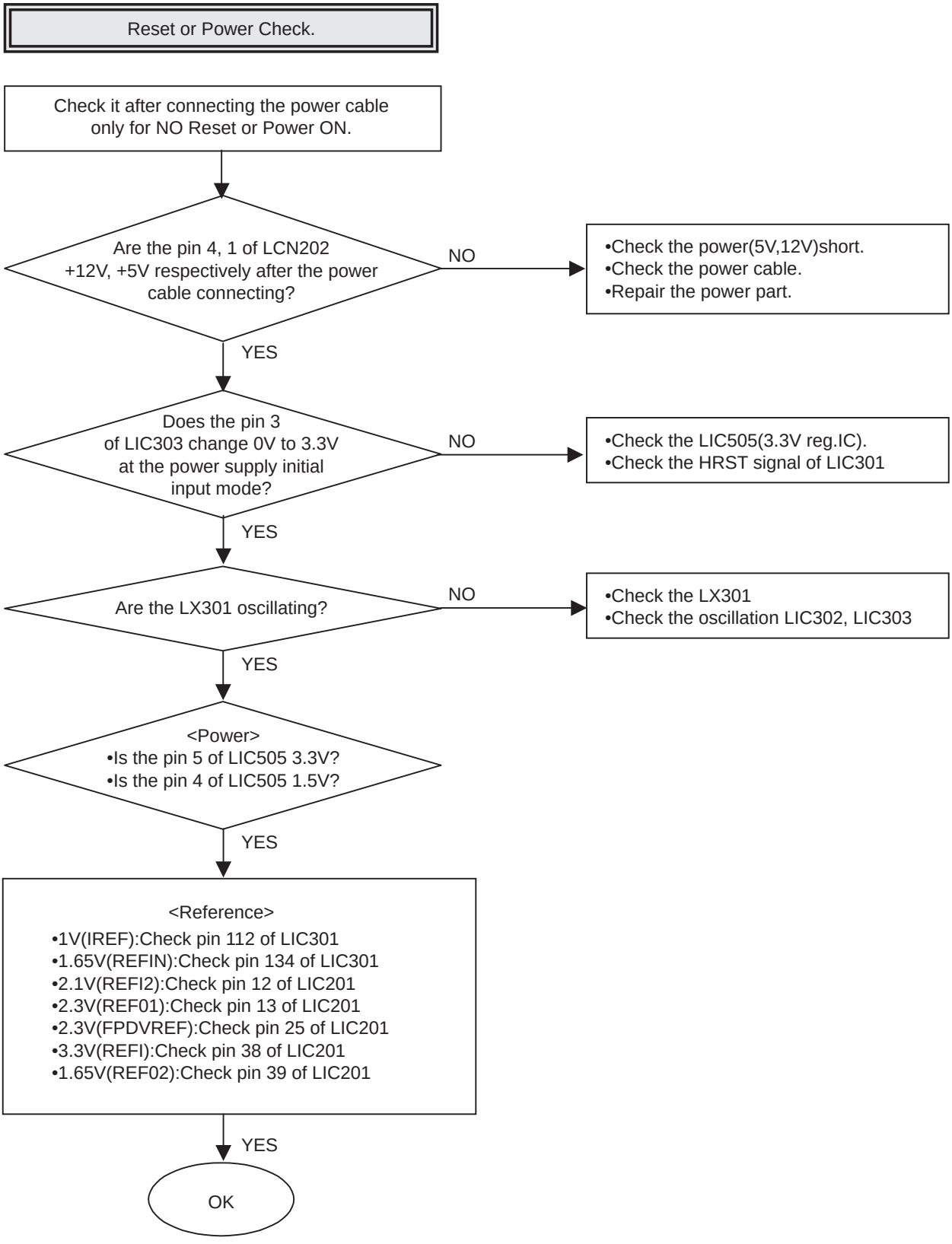
MEMO

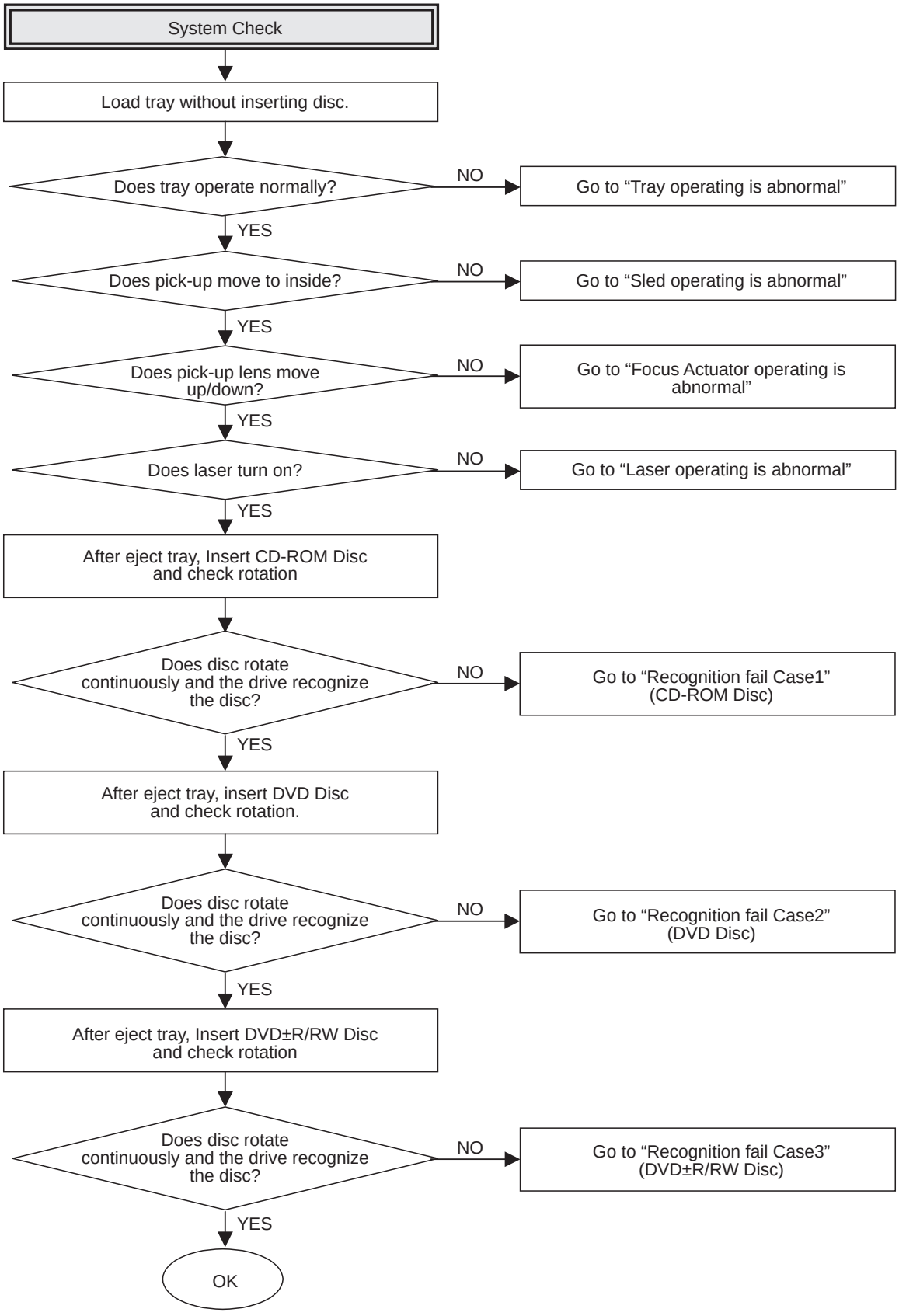
SECTION 5
RL-02A LOADER PART

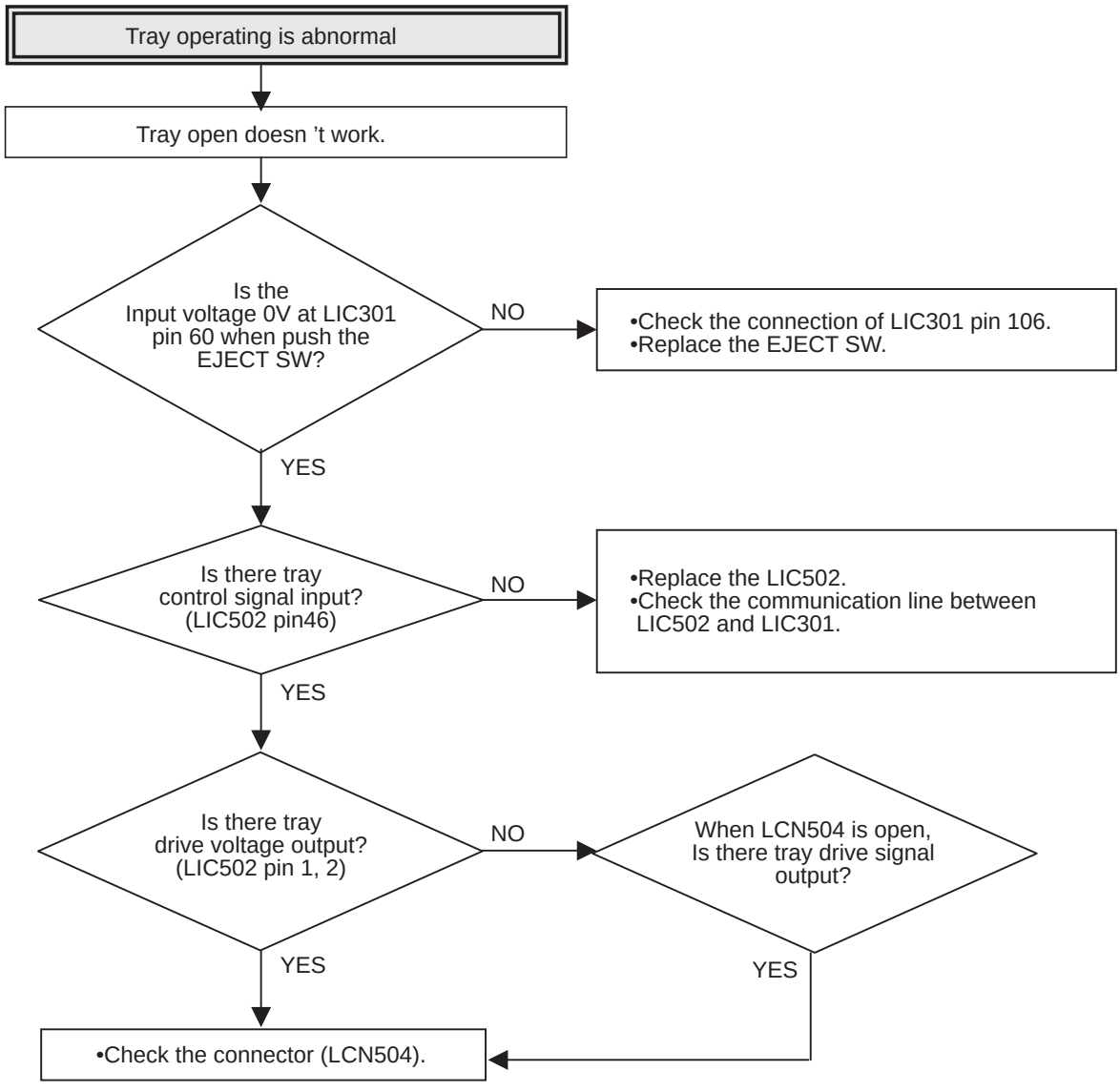
Note: It is not recommended for component repair on this RL-02A Loader Module but to replace the complete loader when it becomes defective.
The Information in this section is published for reference only.

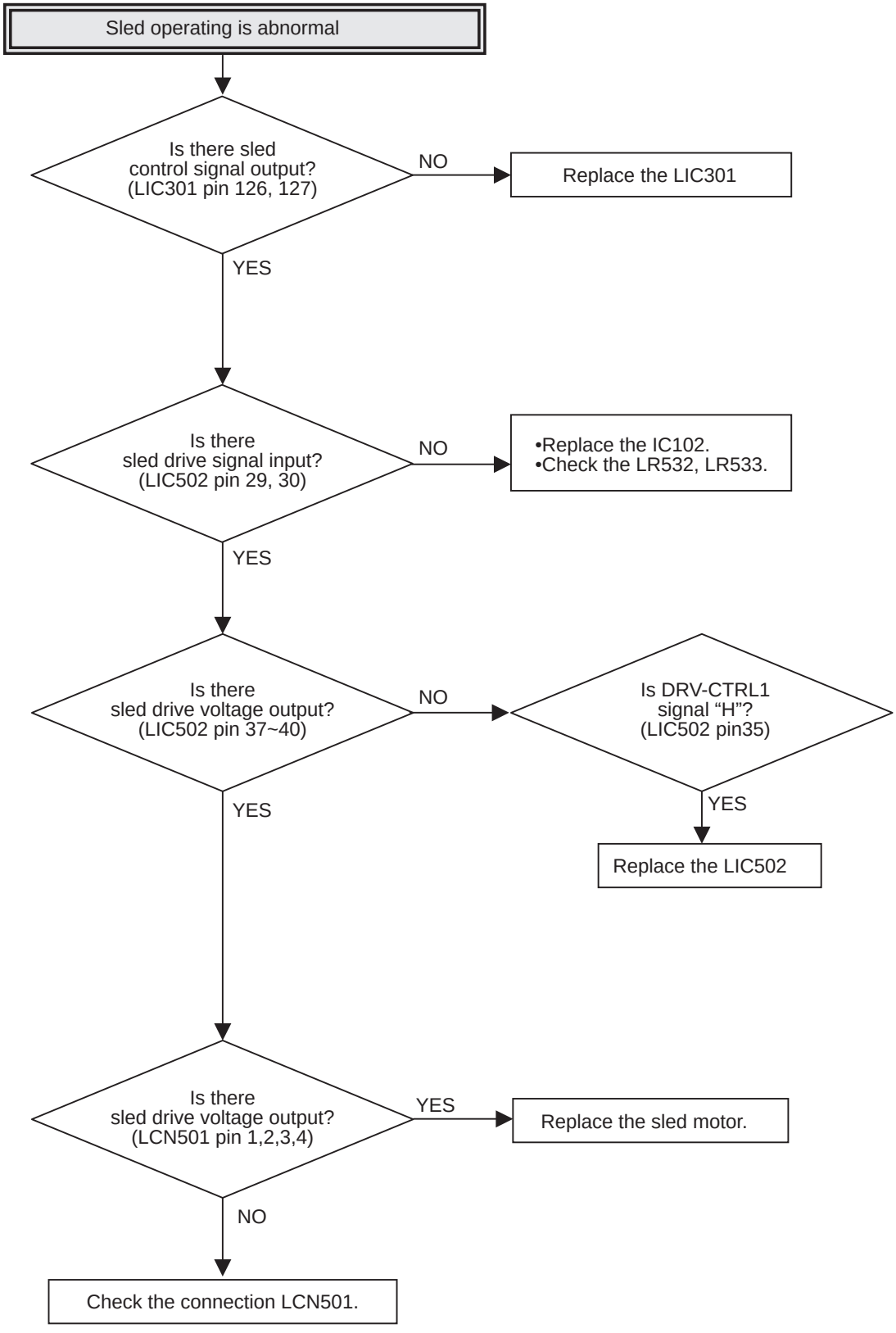
CONTENTS

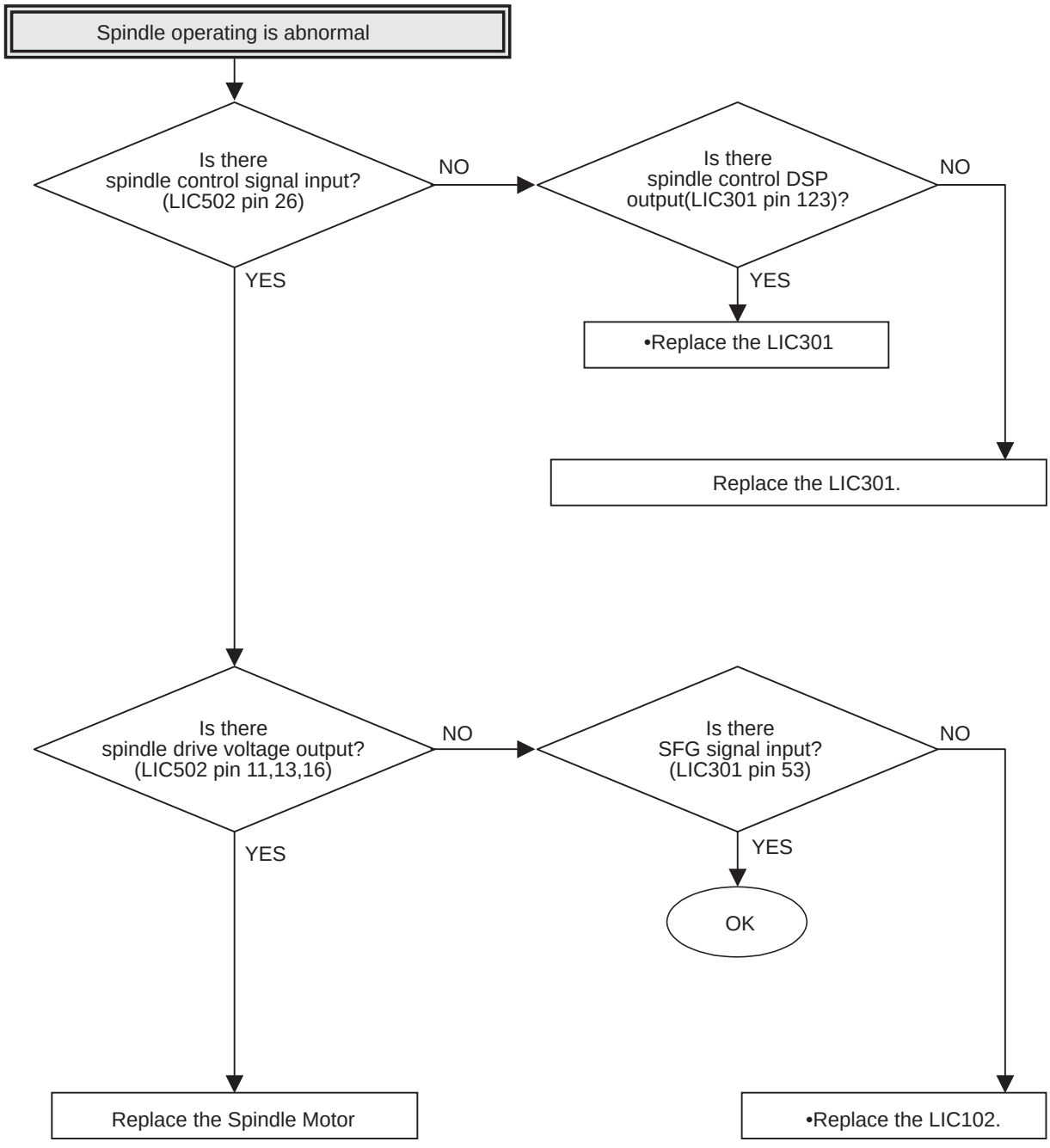
ELECTRICAL TROUBLESHOOTING GUIDE

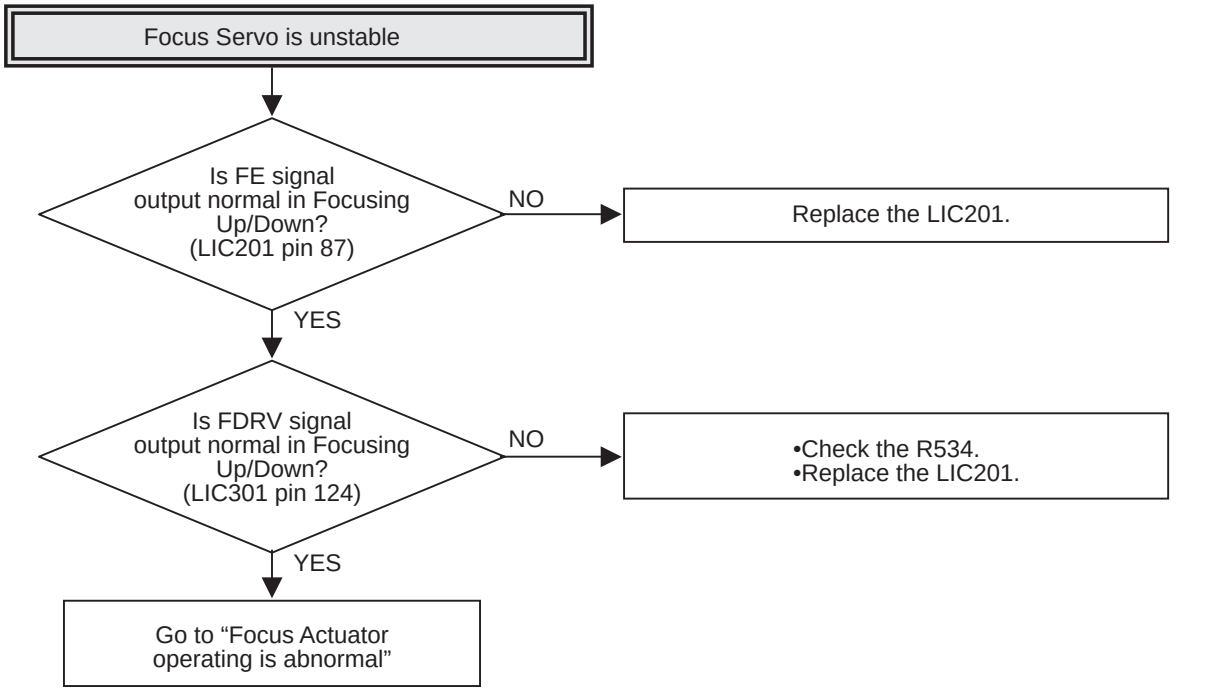


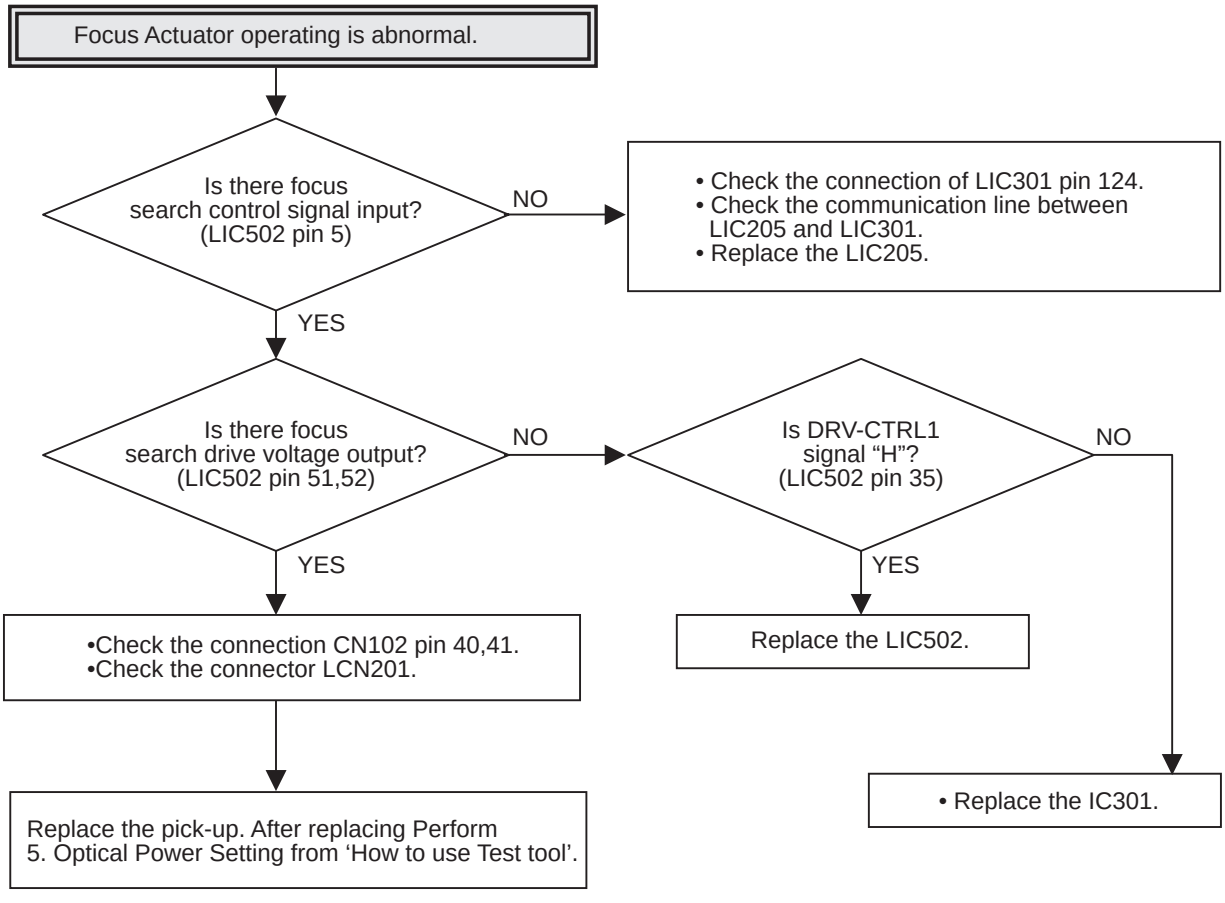

System Check
Load tray without inserting disc.
Does tray operate normally?
NO
Go to “Tray operating is abnormal”
YES
Does pick-up move to inside?
NO
Go to “Sled operating is abnormal”
YES
Does pick-up lens move up/down?
NO
Go to “Focus Actuator operating is abnormal”
YES
Does laser turn on?
NO
Go to “Laser operating is abnormal”
YES
After eject tray, Insert CD-ROM Disc and check rotation
Does disc rotate continuously and the drive recognize the disc?
NO
Go to “Recognition fail Case1” (CD-ROM Disc)
YES
After eject tray, insert DVD Disc and check rotation.
Does disc rotate continuously and the drive recognize the disc?
NO
Go to “Recognition fail Case2” (DVD Disc)
YES
After eject tray, Insert DVD±R/RW Disc and check rotation
Does disc rotate continuously and the drive recognize the disc?
NO
Go to “Recognition fail Case3” (DVD±R/RW Disc)
YES
OK

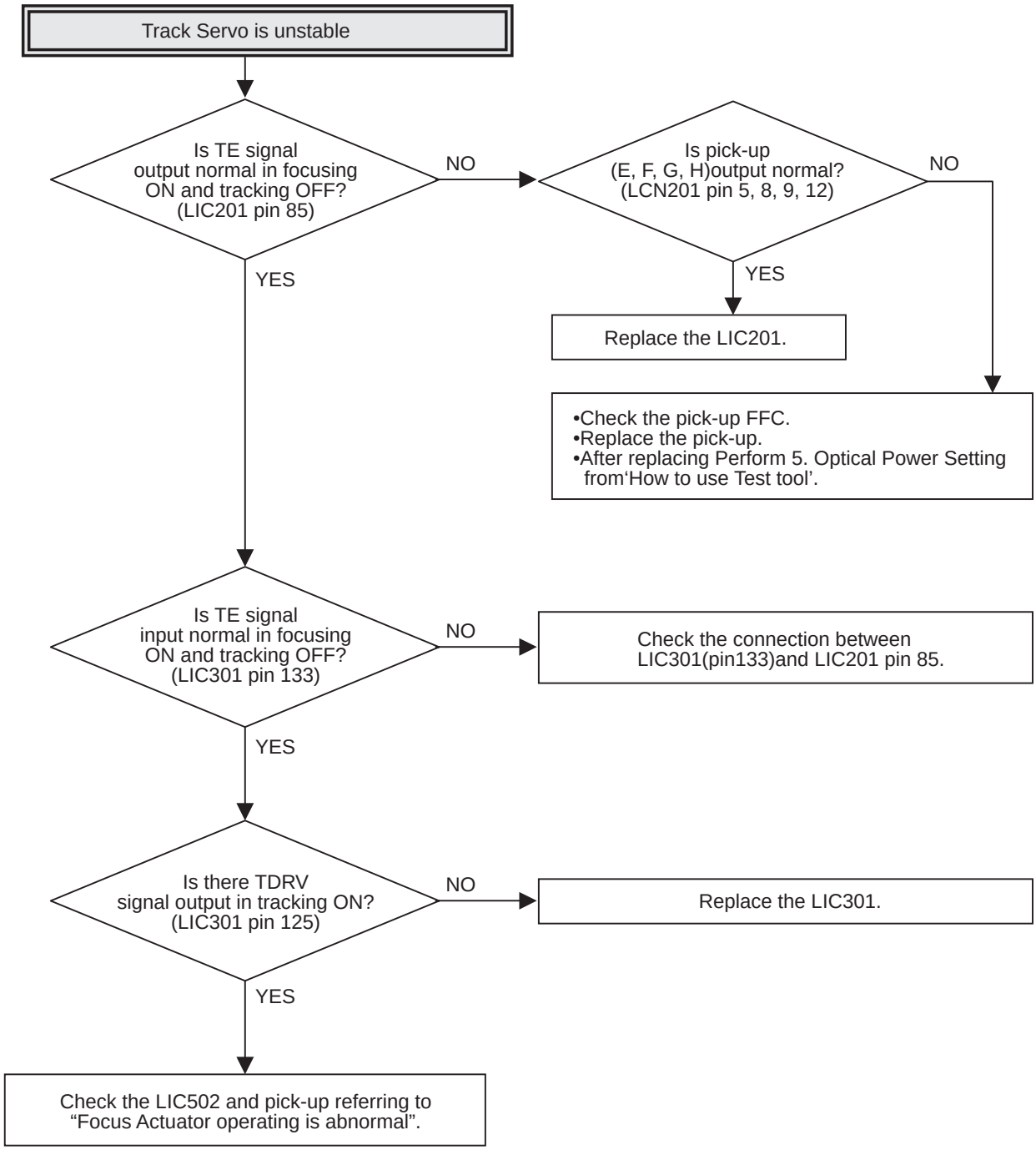

Tray operating is abnormal
Tray open doesn ’t work.
Is the
Input voltage 0V at LIC301
pin 60 when push the
EJECT SW?
NO
•Check the connection of LIC301 pin 106.
•Replace the EJECT SW.
YES
Is there tray
control signal input?
(LIC502 pin46)
NO
•Replace the LIC502.
•Check the communication line between
LIC502 and LIC301.
YES
Is there tray
drive voltage output?
(LIC502 pin 1, 2)
NO
When LCN504 is open,
Is there tray drive signal
output?
YES
YES
•Check the connector (LCN504).

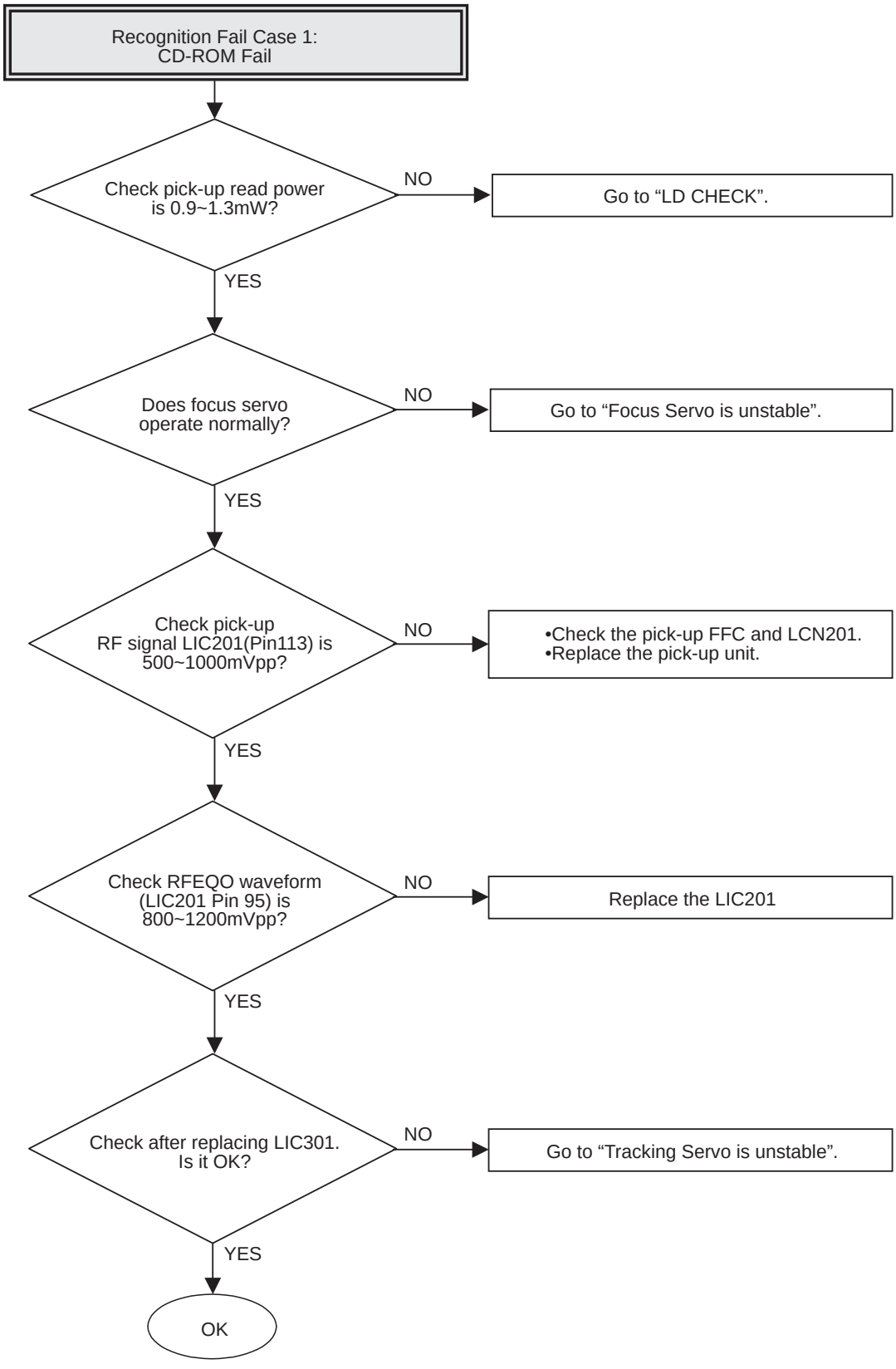

Sled operating is abnormal
Is there sled control signal output? (LIC301 pin 126, 127)
NO
Replace the LIC301
YES
Is there sled drive signal input? (LIC502 pin 29, 30)
NO
•Replace the IC102.
•Check the LR532, LR533.
YES
Is there sled drive voltage output? (LIC502 pin 37~40)
NO
Is DRV-CTRL1 signal “H”? (LIC502 pin35)
YES
Replace the LIC502
YES
Is there sled drive voltage output? (LCN501 pin 1,2,3,4)
YES
Replace the sled motor.
NO
Check the connection LCN501.

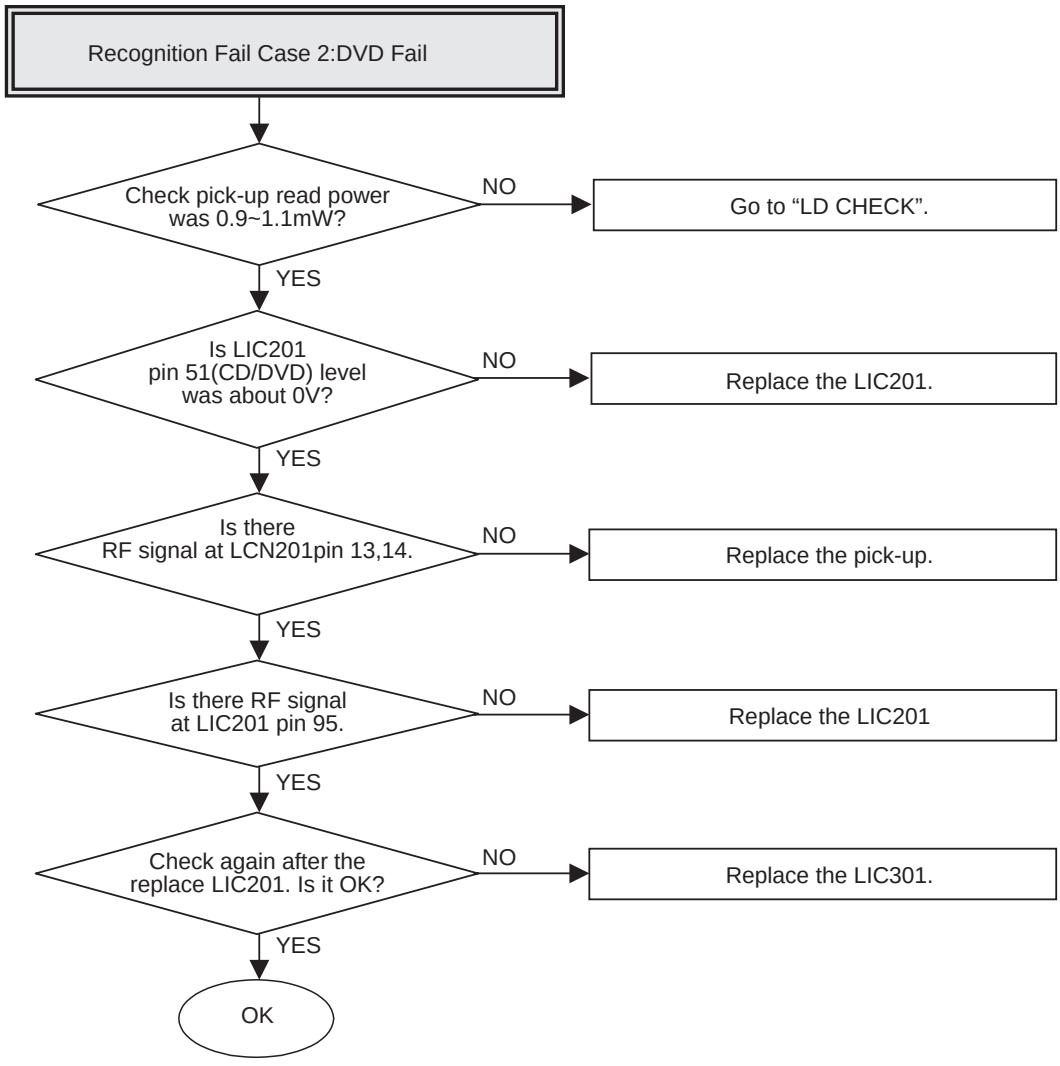

Spindle operating is abnormal
Is there spindle control signal input? (LIC502 pin 26)
NO
Is there spindle control DSP output(LIC301 pin 123)?
NO
YES
YES
•Replace the LIC301
Replace the LIC301.
Is there spindle drive voltage output? (LIC502 pin 11,13,16)
NO
Is there SFG signal input? (LIC301 pin 53)
NO
YES
YES
OK
Replace the Spindle Motor
•Replace the LIC102.

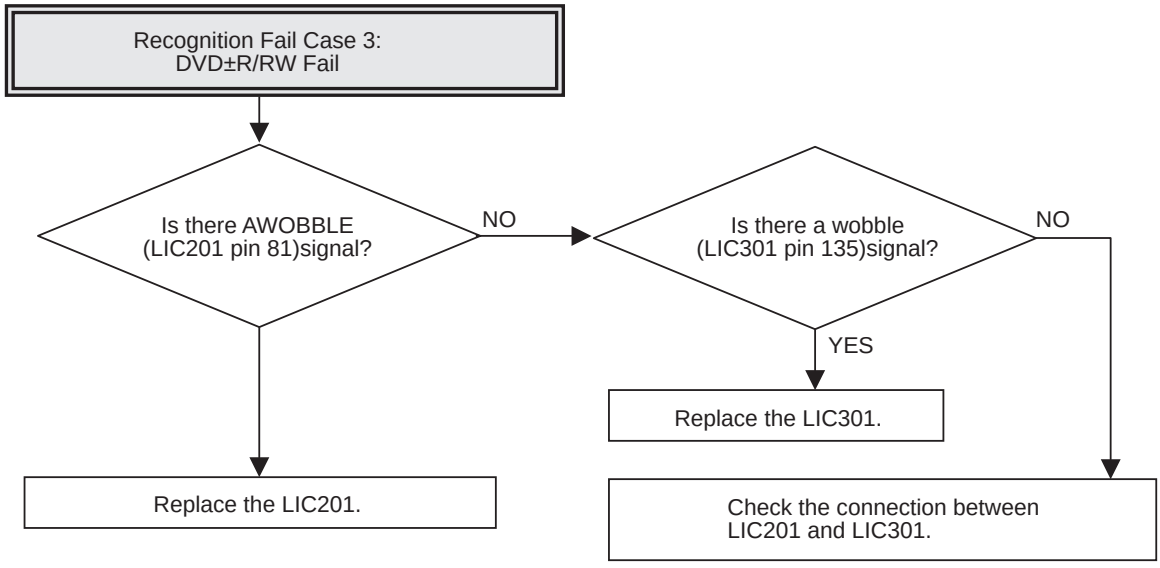

Focus Servo is unstable
Is FE signal output normal in Focusing Up/Down? (LIC201 pin 87)
NO
Replace the LIC201.
YES
Is FDRV signal output normal in Focusing Up/Down? (LIC301 pin 124)
NO
•Check the R534.
•Replace the LIC201.
YES
Go to “Focus Actuator operating is abnormal”

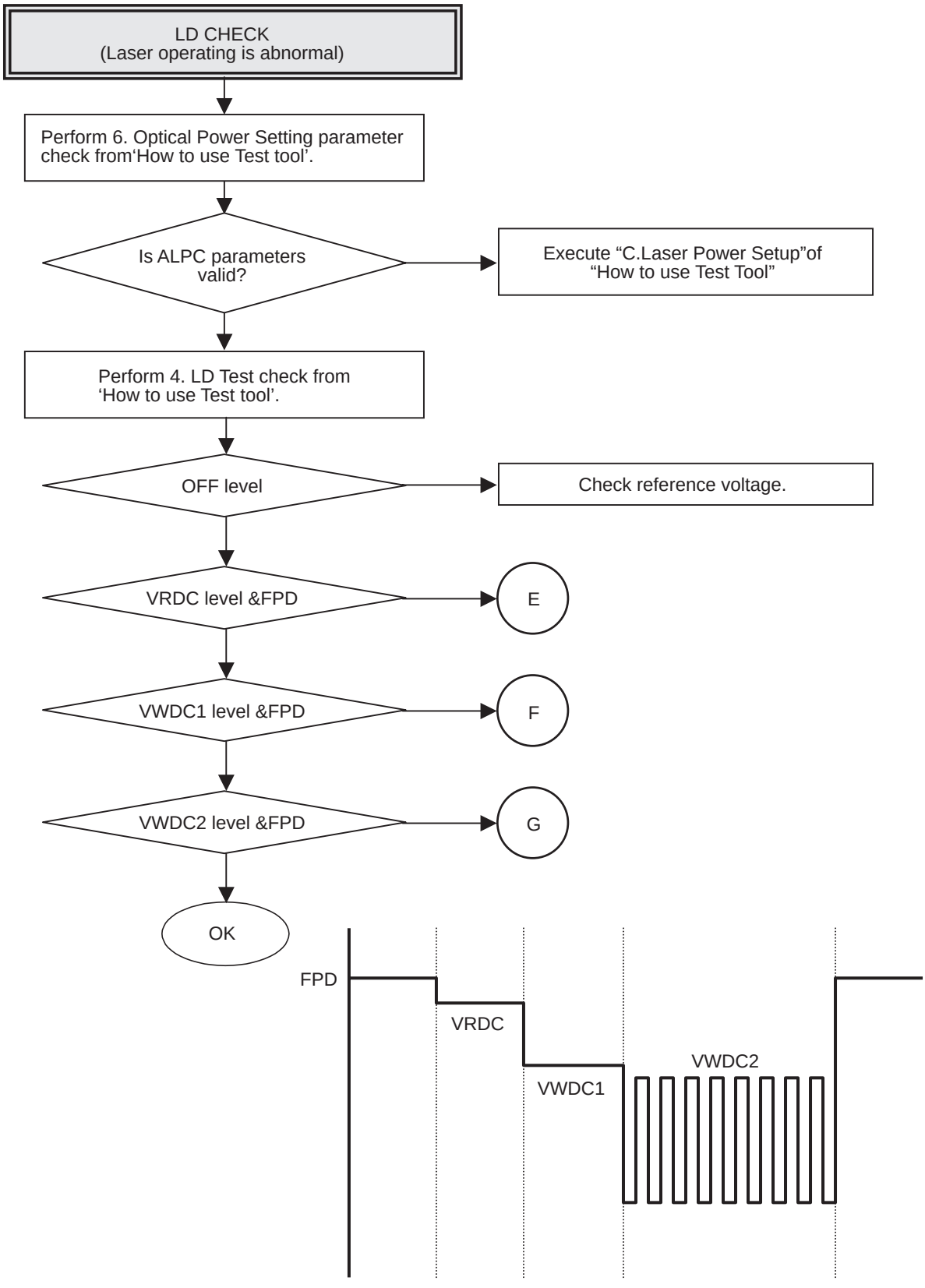

Focus Actuator operating is abnormal.
Is there focus search control signal input? (LIC502 pin 5)
NO
• Check the connection of LIC301 pin 124.
• Check the communication line between LIC205 and LIC301.
• Replace the LIC205.
YES
Is there focus search drive voltage output? (LIC502 pin 51,52)
NO
Is DRV-CTRL1 signal “H”? (LIC502 pin 35)
NO
YES
YES
•Check the connection CN102 pin 40,41.
•Check the connector LCN201.
Replace the LIC502.
• Replace the IC301.
Replace the pick-up. After replacing Perform 5. Optical Power Setting from ‘How to use Test tool’.

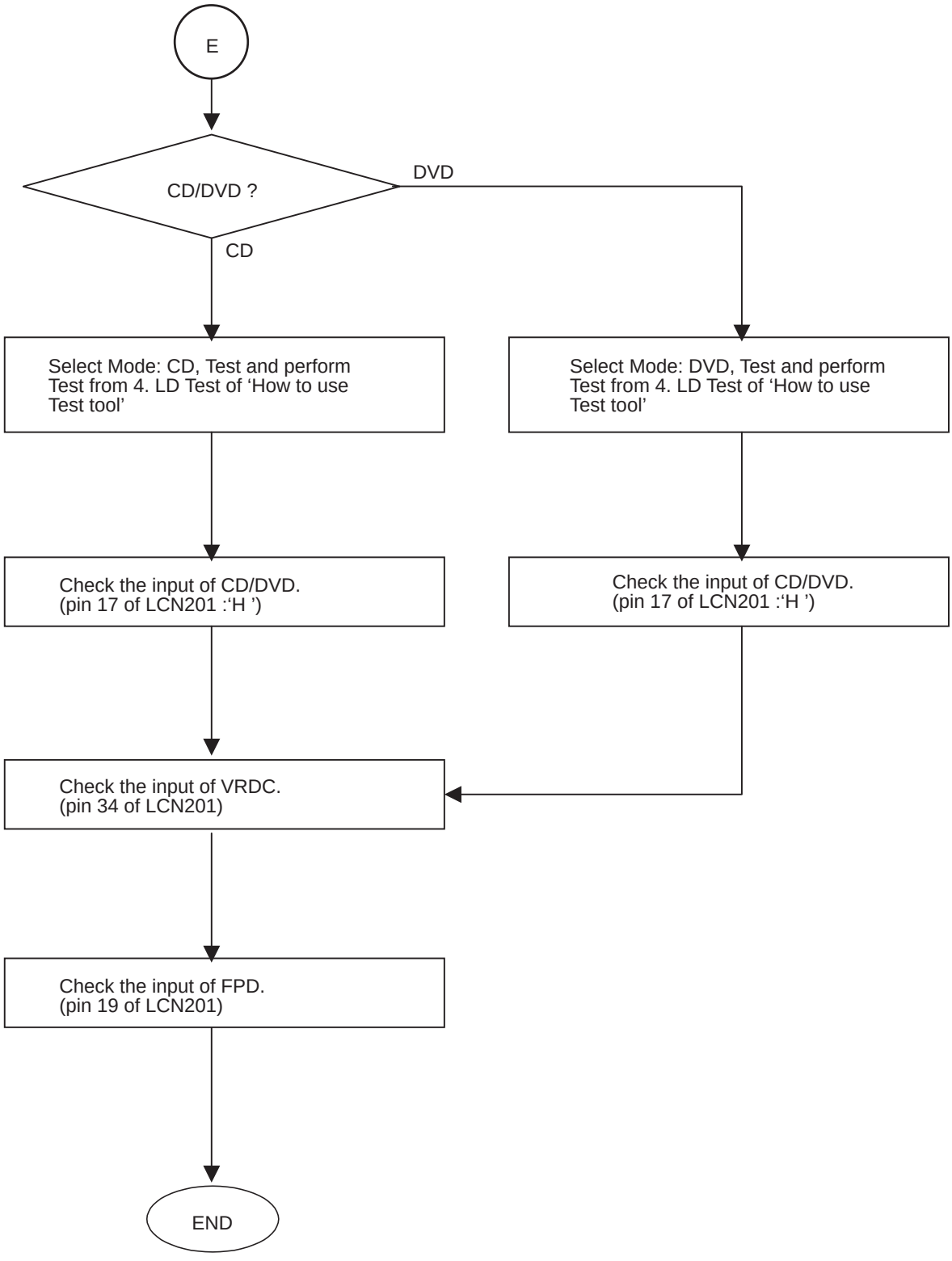

Track Servo is unstable
Is TE signal output normal in focusing ON and tracking OFF? (LIC201 pin 85)
NO
Is pick-up (E, F, G, H)output normal? (LCN201 pin 5, 8, 9, 12)
NO
YES
YES
Replace the LIC201.
•Check the pick-up FFC.
•Replace the pick-up.
•After replacing Perform 5. Optical Power Setting from‘How to use Test tool’.
Is TE signal input normal in focusing ON and tracking OFF? (LIC301 pin 133)
NO
Check the connection between LIC301(pin133)and LIC201 pin 85.
YES
Is there TDRV signal output in tracking ON? (LIC301 pin 125)
NO
Replace the LIC301.
YES
Check the LIC502 and pick-up referring to “Focus Actuator operating is abnormal”.

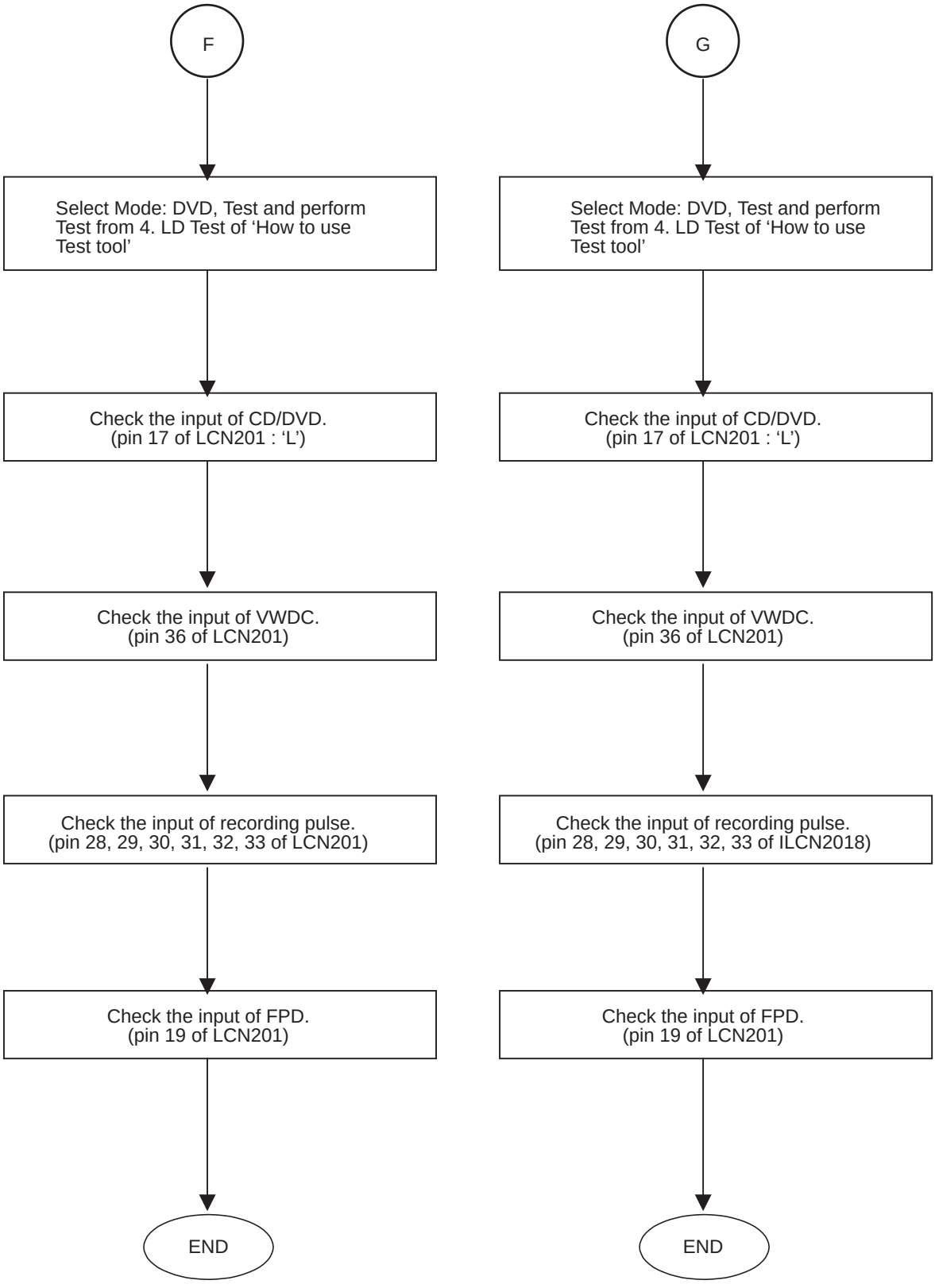

Recognition Fail Case 1:
CD-ROM Fail
Check pick-up read power is 0.9~1.3mW?
NO
Go to “LD CHECK”.
YES
Does focus servo operate normally?
NO
Go to “Focus Servo is unstable”.
YES
Check pick-up RF signal LIC201(Pin113) is 500~1000mVpp?
NO
•Check the pick-up FFC and LCN201.
•Replace the pick-up unit.
YES
Check RFEQO waveform (LIC201 Pin 95) is 800~1200mVpp?
NO
Replace the LIC201
YES
Check after replacing LIC301. Is it OK?
NO
Go to “Tracking Servo is unstable”.
YES
OK

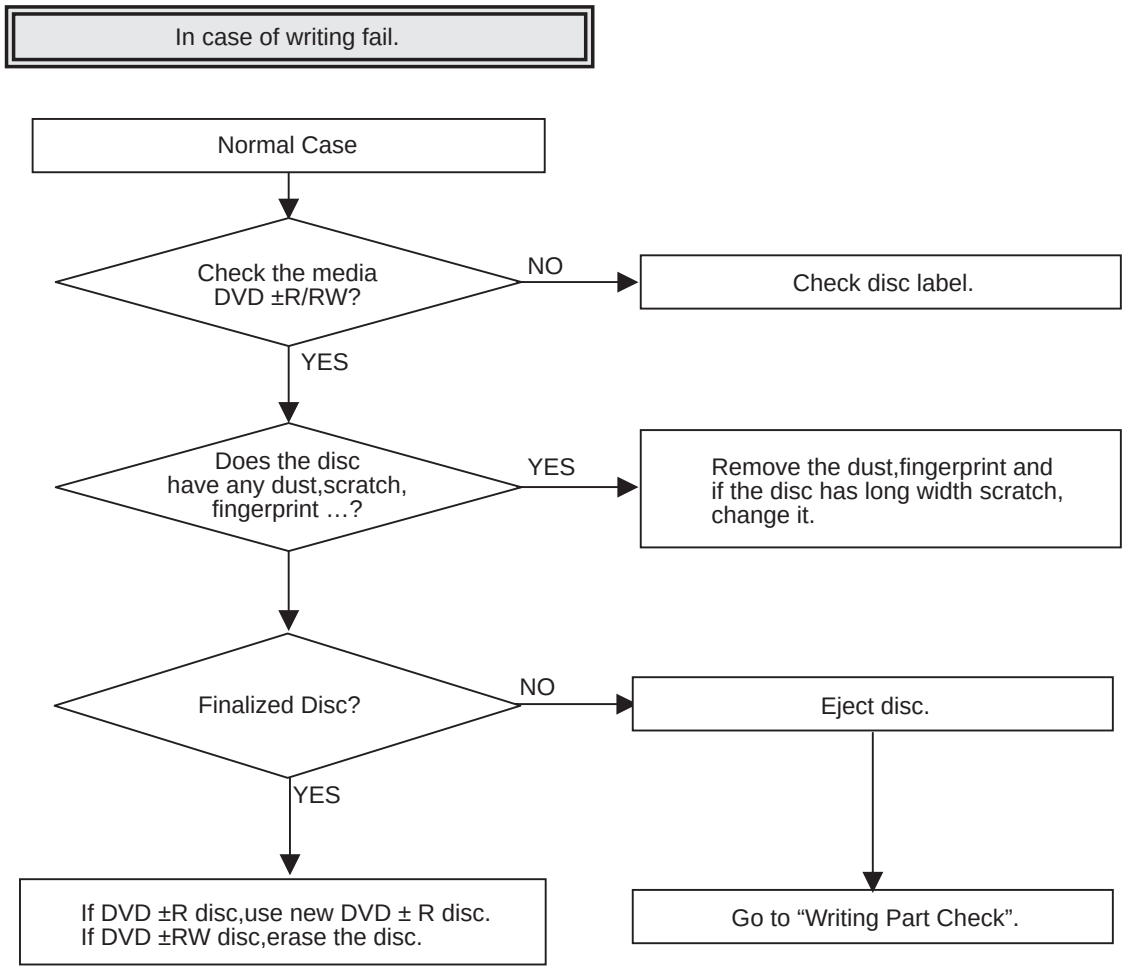

Recognition Fail Case 2:DVD Fail
Check pick-up read power was 0.9~1.1mW?
NO
Go to “LD CHECK”.
YES
Is LIC201 pin 51(CD/DVD) level was about 0V?
NO
Replace the LIC201.
YES
Is there RF signal at LCN201pin 13,14.
NO
Replace the pick-up.
YES
Is there RF signal at LIC201 pin 95.
NO
Replace the LIC201
YES
Check again after the replace LIC201. Is it OK?
NO
Replace the LIC301.
YES
OK

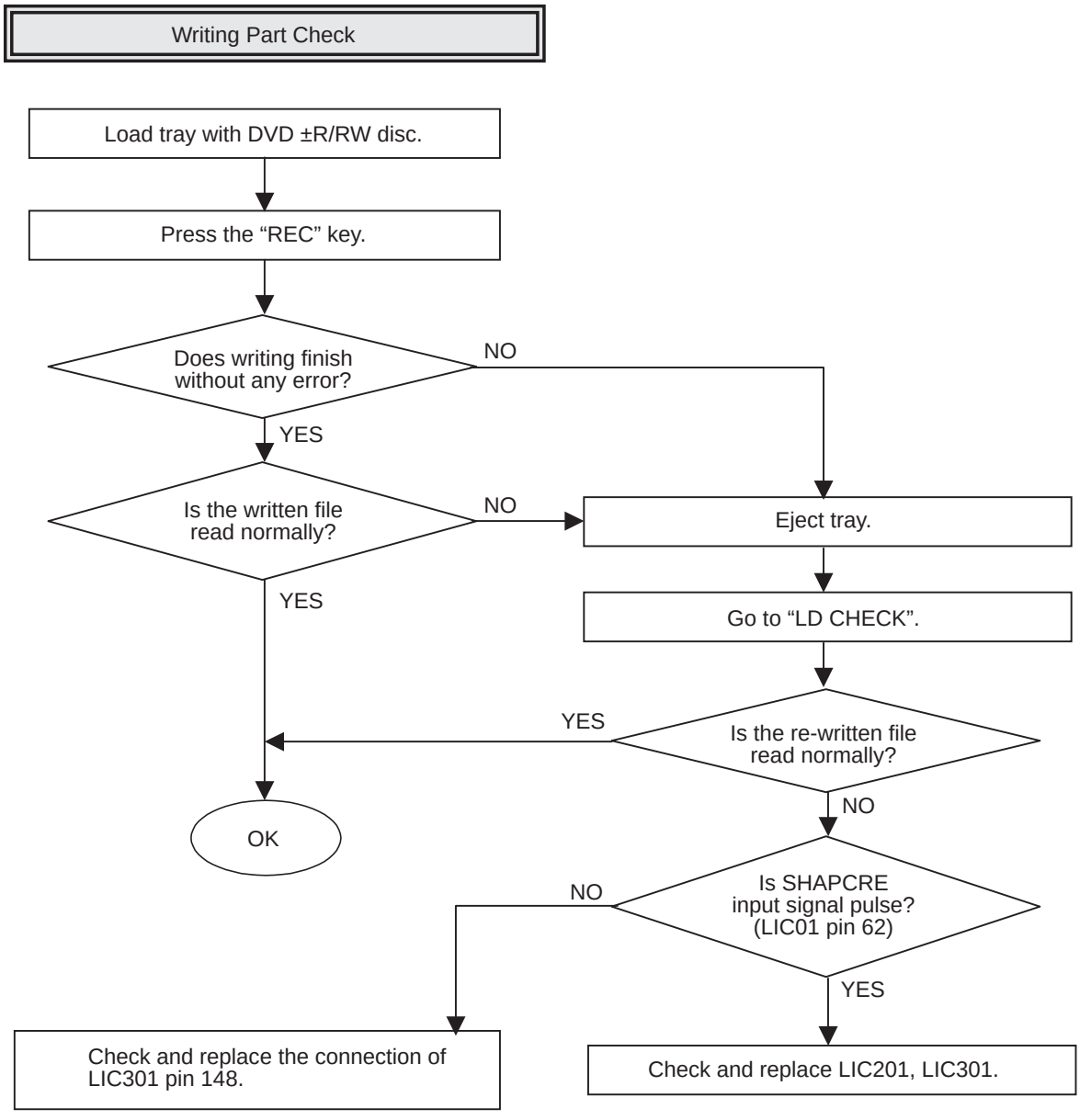

Recognition Fail Case 3: DVD±R/RW Fail
Is there AWOBBLE (LIC201 pin 81)signal?
NO
Is there a wobble (LIC301 pin 135)signal?
NO
YES
Replace the LIC301.
Replace the LIC201.
Check the connection between LIC201 and LIC301.


LD CHECK
(Laser operating is abnormal)
Perform 6. Optical Power Setting parameter check from'How to use Test tool'.
Is ALPC parameters valid?
Execute "C.Laser Power Setup"of "How to use Test Tool"
Perform 4. LD Test check from 'How to use Test tool'.
OFF level
Check reference voltage.
VRDC level &FPD
E
VWDC1 level &FPD
F
VWDC2 level &FPD
G
OK
FPD
VRDC
VWDC1
VWDC2


E
CD/DVD ?
DVD
CD
Select Mode: CD, Test and perform Test from 4. LD Test of 'How to use Test tool'
Select Mode: DVD, Test and perform Test from 4. LD Test of 'How to use Test tool'
Check the input of CD/DVD. (pin 17 of LCN201 :'H ')
Check the input of CD/DVD. (pin 17 of LCN201 :'H ')
Check the input of VRDC. (pin 34 of LCN201)
Check the input of FPD. (pin 19 of LCN201)
END

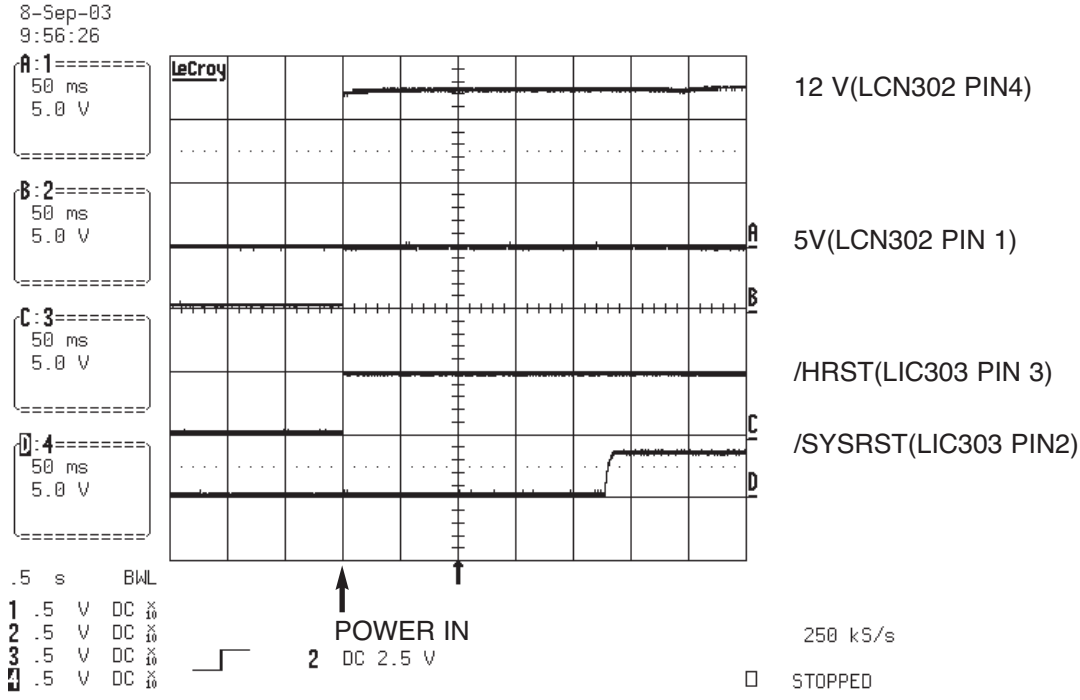

F
Select Mode: DVD, Test and perform Test from 4. LD Test of 'How to use Test tool'
Check the input of CD/DVD. (pin 17 of LCN201 : 'L')
Check the input of VWDC. (pin 36 of LCN201)
Check the input of recording pulse. (pin 28, 29, 30, 31, 32, 33 of LCN201)
Check the input of FPD. (pin 19 of LCN201)
END
G
Select Mode: DVD, Test and perform Test from 4. LD Test of 'How to use Test tool'
Check the input of CD/DVD. (pin 17 of LCN201 : 'L')
Check the input of VWDC. (pin 36 of LCN201)
Check the input of recording pulse. (pin 28, 29, 30, 31, 32, 33 of ILCN2018)
Check the input of FPD. (pin 19 of LCN201)
END


In case of writing fail.
Normal Case
Check the media
DVD ±R/RW?
NO
Check disc label.
YES
Does the disc
have any dust,scratch,
fingerprint …?
YES
Remove the dust,fingerprint and
if the disc has long width scratch,
change it.
Finalized Disc?
NO
Eject disc.
YES
If DVD ±R disc,use new DVD ± R disc.
If DVD ±RW disc,erase the disc.
Go to “Writing Part Check”.

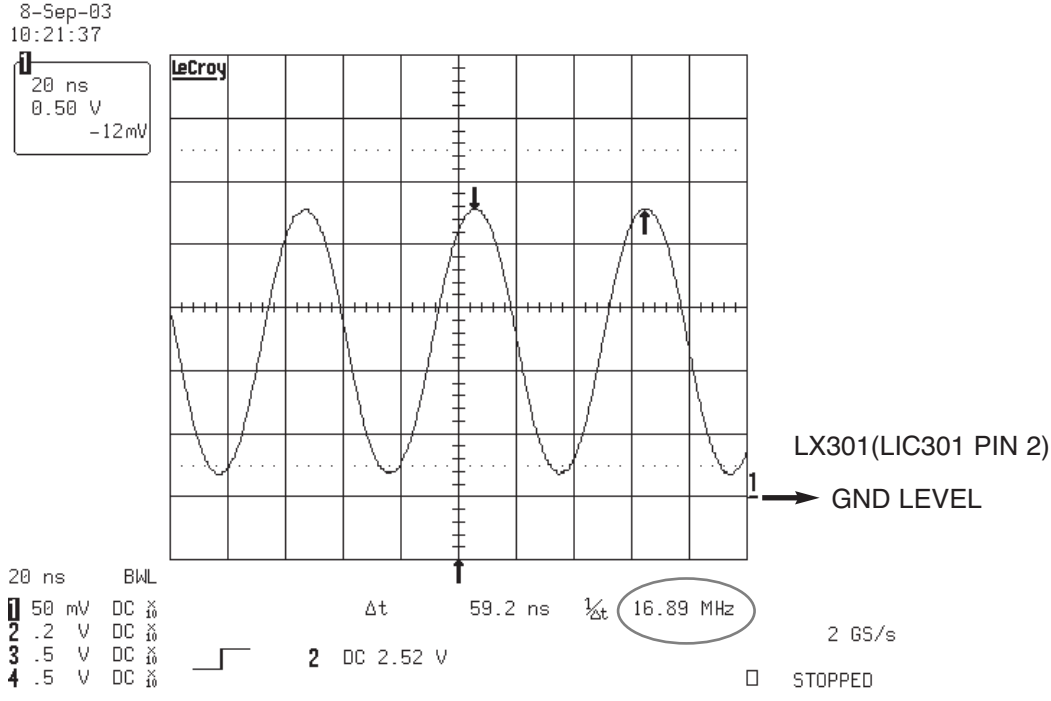

Writing Part Check
Load tray with DVD ±R/RW disc.
Press the “REC” key.
Does writing finish without any error?
NO
YES
Is the written file read normally?
NO
Eject tray.
YES
Go to “LD CHECK”.
Is the re-written file read normally?
YES
NO
OK
Is SHAPCRE input signal pulse? (LIC01 pin 62)
NO
YES
Check and replace the connection of LIC301 pin 148.
Check and replace LIC201, LIC301.

WAVEFORMS

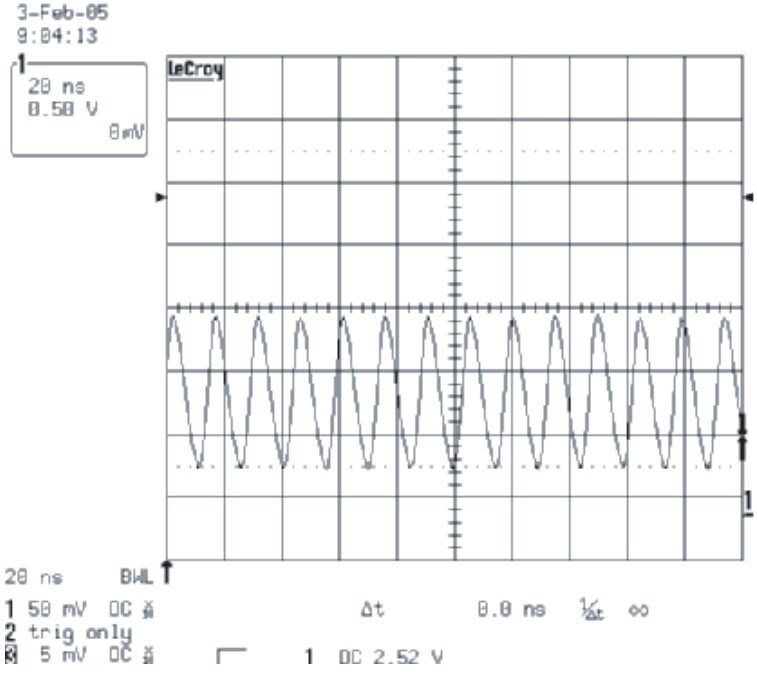
1. POWER & RESET Signal



2. Main Clock1 for IC202 (16.9MHz)

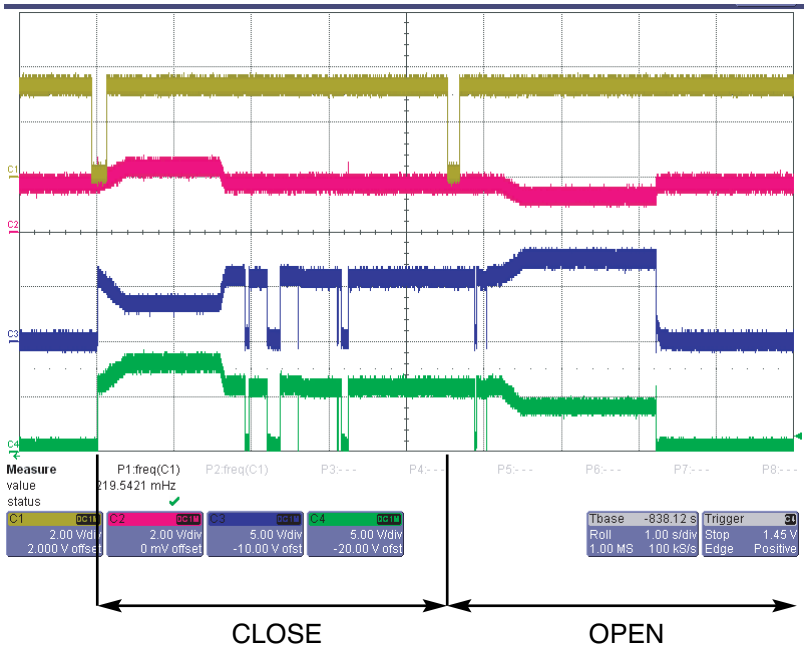


3. SDRAM Clock



MCLK(LIC304 PIN 35)

4. TRAY OPEN/CLOSE SIGNAL 1



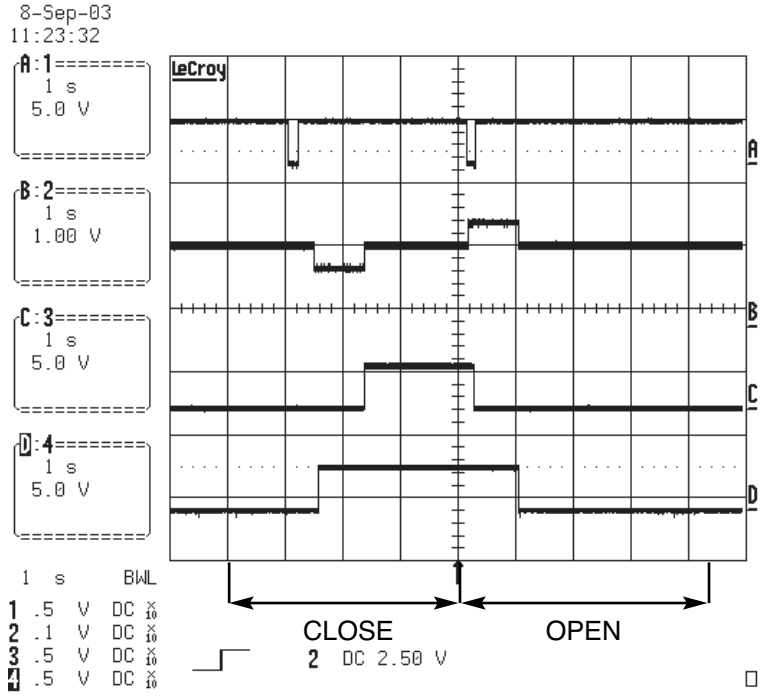
/EJECT-KEY (LR504)

TRAY-CTRL
(LIC502 PIN46)

TRAY+(LCN504 PIN 3)

TRAY-(LCN504 PIN 4)

5. TRAY OPEN/CLOSE SIGNAL 2



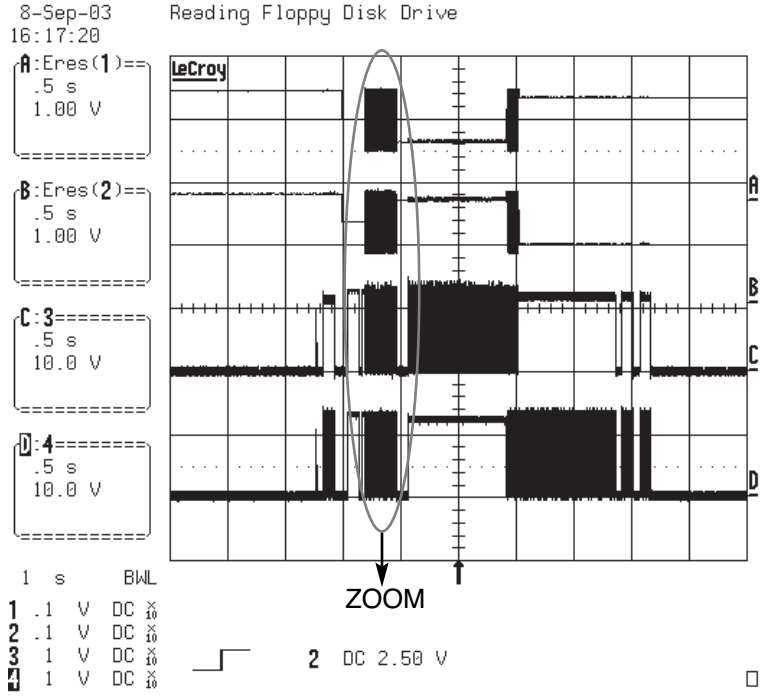
/EJECT-KEY(LR504)

TRAY-CTRL(LIC502 PIN46)

/OPEN-SW(LCN504 PIN 1)

/LOAD-SW
(LCN504 PIN 2)

6. SLED MOVE SIGNAL 1



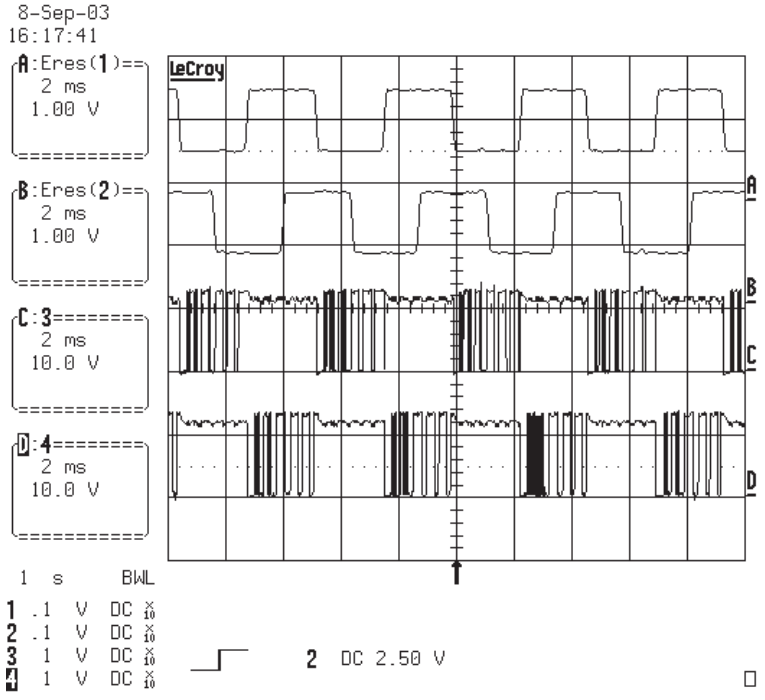
SDRV2(LIC502 PIN31)

SDRV1(LIC107 PIN29)

A+(LCN501PIN 2)

A-(LCN1501 PIN 1)

7. SLED MOVE SIGNAL 2



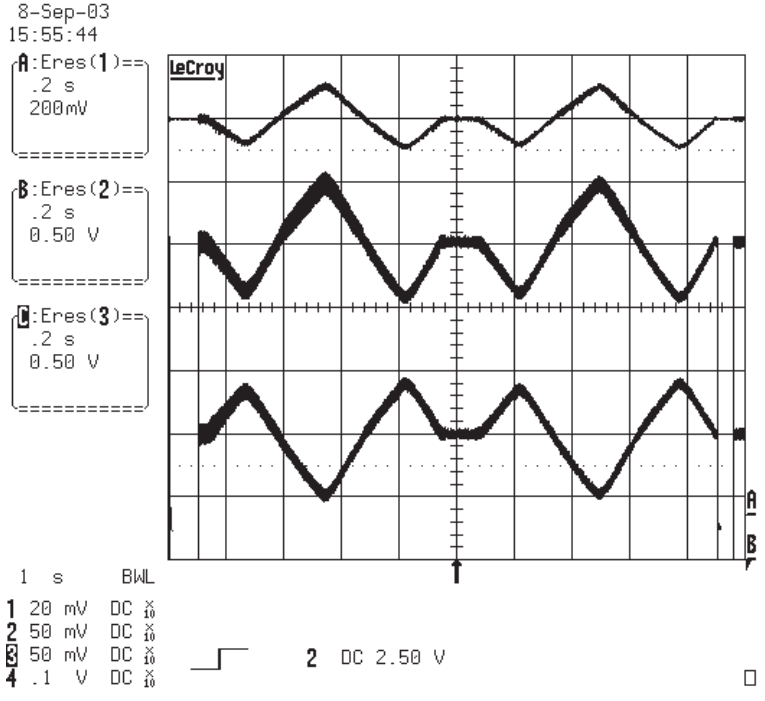
SDRV2(LIC502 PIN31)

SDRV1(LIC107 PIN29)

A+(LCN501PIN 2)

A-(LCN1501 PIN 1)

8. FOCUS SEARCH SIGNAL

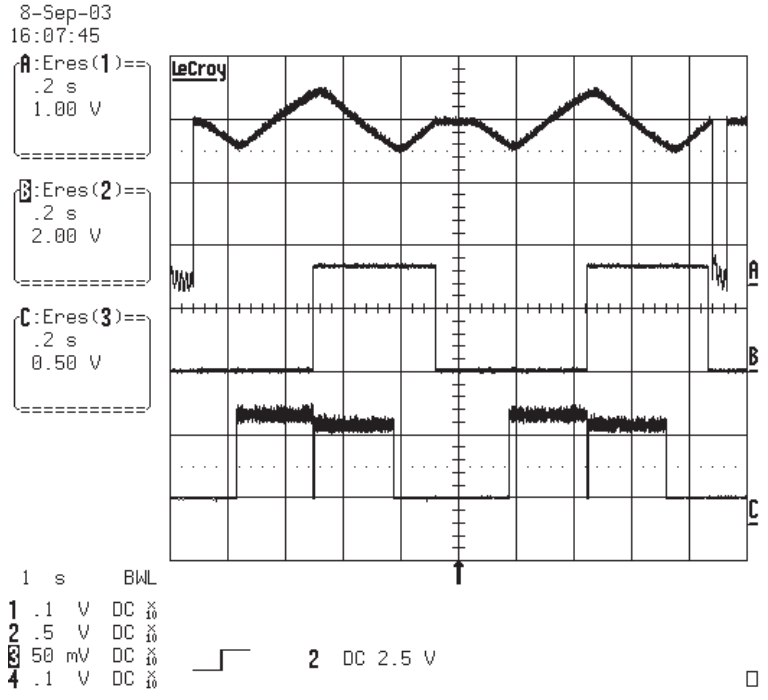


FDRV (LIC502 PIN 5)

F+ (LIC502 PIN 52)

F- (LIC502 PIN 51)

9. LASER TURN ON SIGNAL

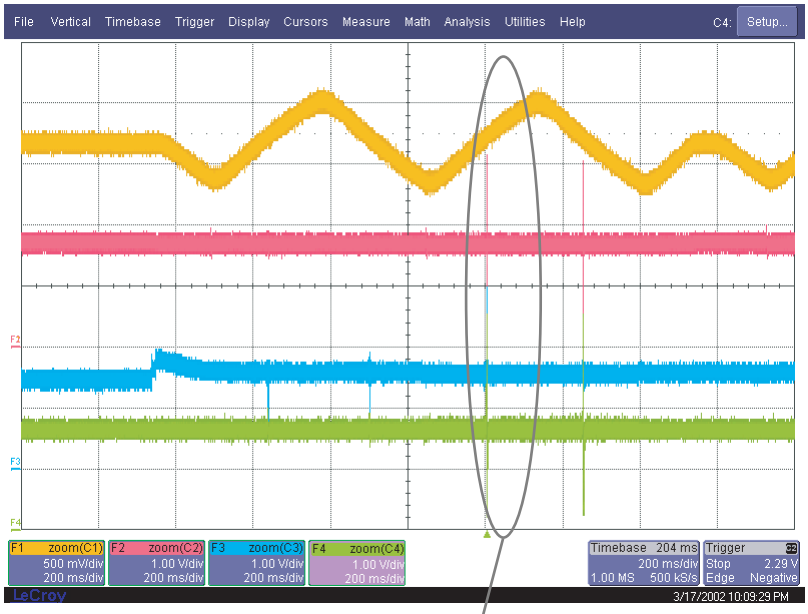


F+ (LIC502 PIN 52)

LDEN-DVD(LCN201 PIN17)

VRDC(LCN201PIN 34)

10. DISC TYPE JUDGEMENT WAVEFORM (CD SERIES)



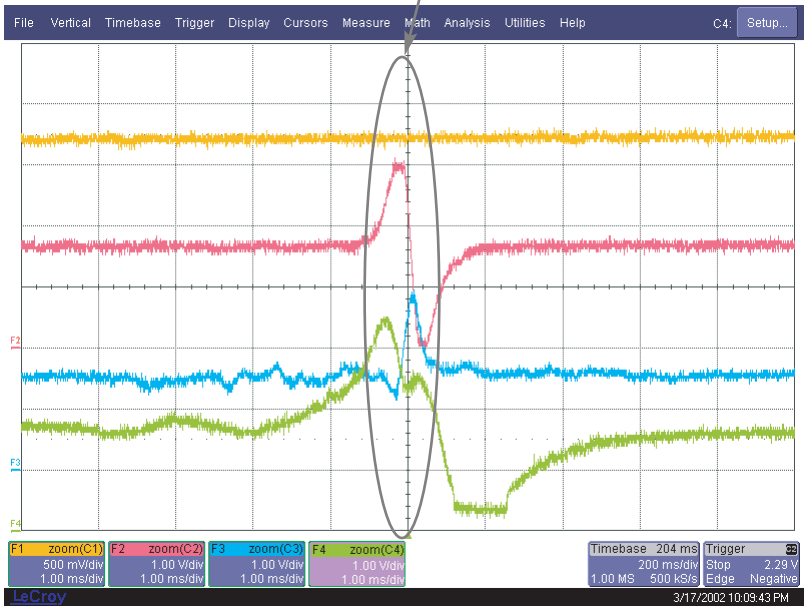
FDRV(LIC502 PIN 5)

FE(LIC201 PIN87)

TE(LIC201 PIN85)

RF(LIC201PIN 113)

11. DISC TYPE JUDGEMENT WAVEFORM (CD&CD-R)



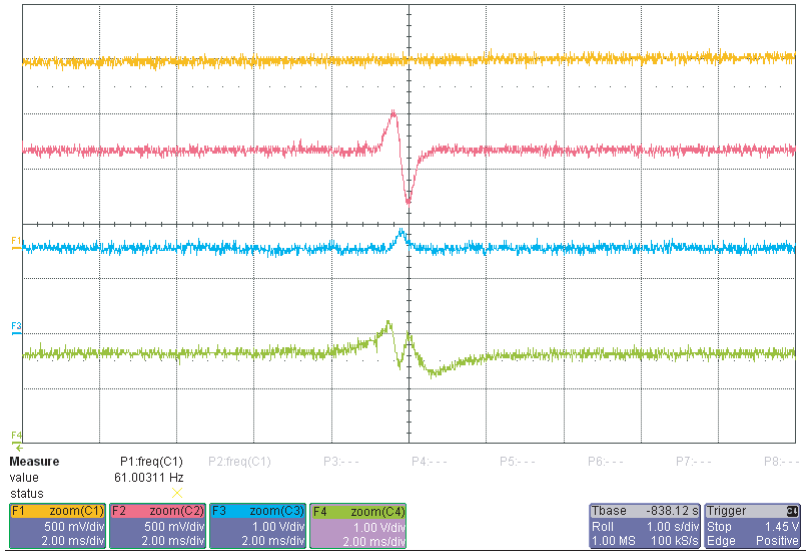
FDRV(LIC502 PIN 5)

FE(LIC201 PIN87)

TE(LIC201 PIN85)

RF(LIC201PIN 113)

12. DISC TYPE JUDGEMENT WAVEFORM (CD-RW)



FDRV(LIC502 PIN 5)

FE(LIC201 PIN87)

TE(LIC201 PIN85)

RF(LIC201PIN 113)

13. DISC TYPE JUDGEMENT WAVEFORM (DVD SERIES)

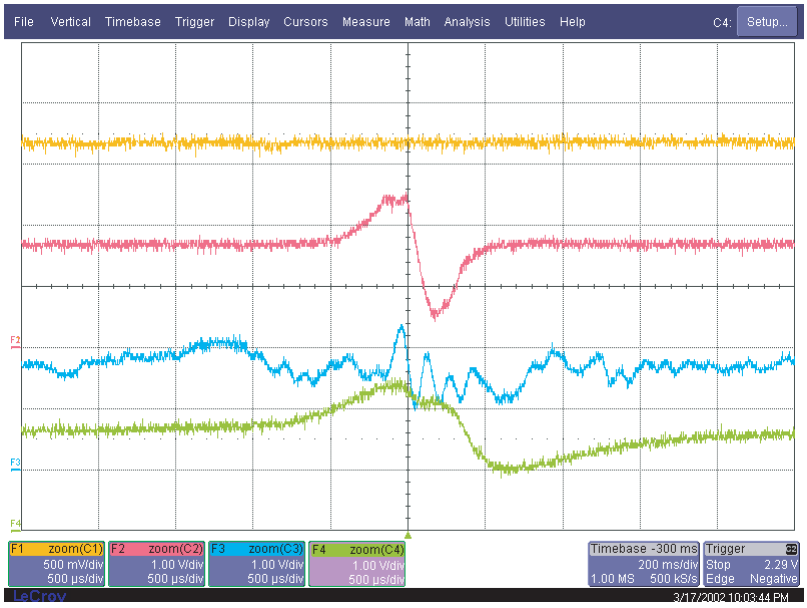
FDRV(LIC502 PIN 5)

FE(LIC201 PIN87)

TE(LIC201 PIN85)

RF(LIC201PIN 113)

14. DISC TYPE JUDGEMENT WAVEFORM (DVD_SINGLE&R)



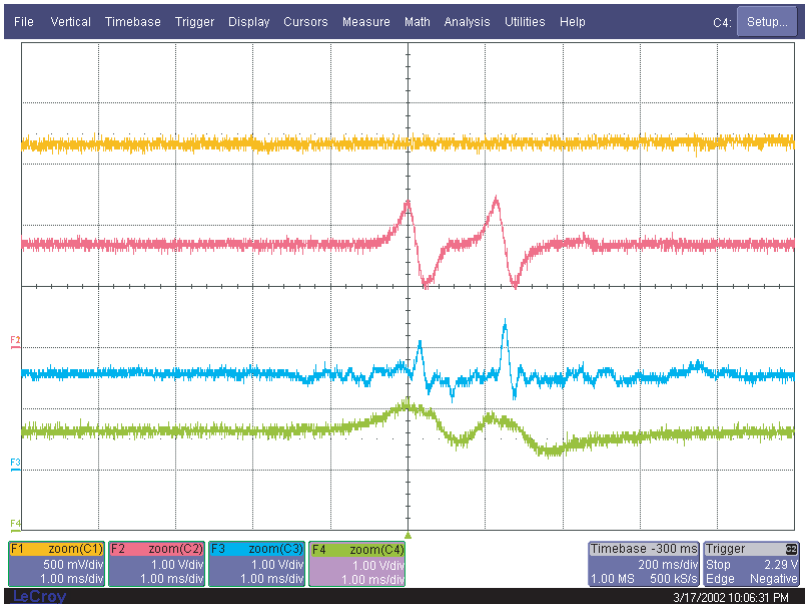
FDRV(LIC502 PIN 5)

FE(LIC201 PIN87)

TE(LIC201 PIN85)

RF(LIC201PIN 113)

15. DISC TYPE JUDGEMENT WAVEFORM (DVD _DUAL)



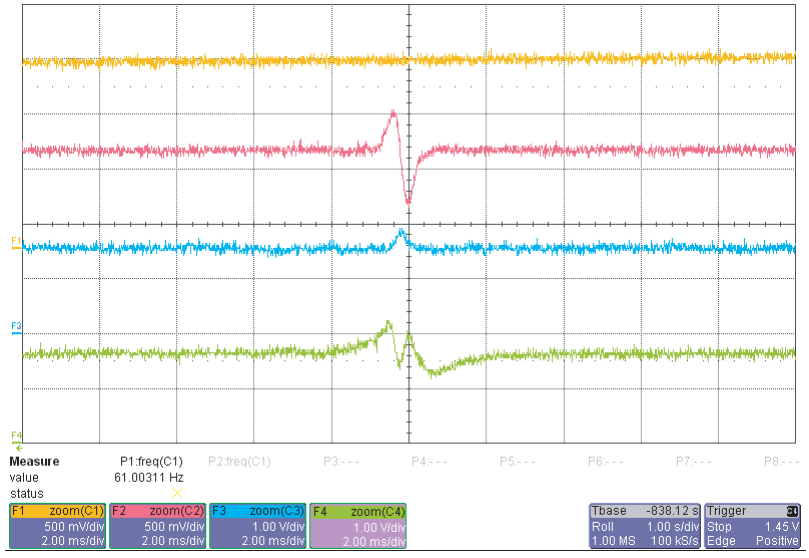
FDRV(LIC502 PIN 5)

FE(LIC201 PIN87)

TE(LIC201 PIN85)

RF(LIC201PIN 113)

16. DISC TYPE JUDGEMENT WAVEFORM (DVDRW)



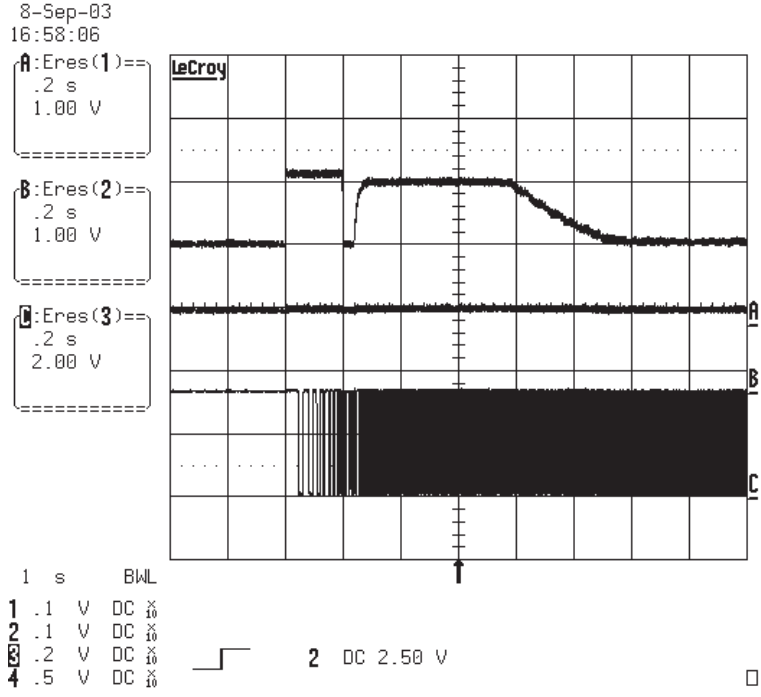
FDRV(LIC502 PIN 5)

FE(LIC201 PIN87)

TE(LIC201 PIN85)

RF(LIC201PIN 113)

17. SPINDLE WAVEFORM1

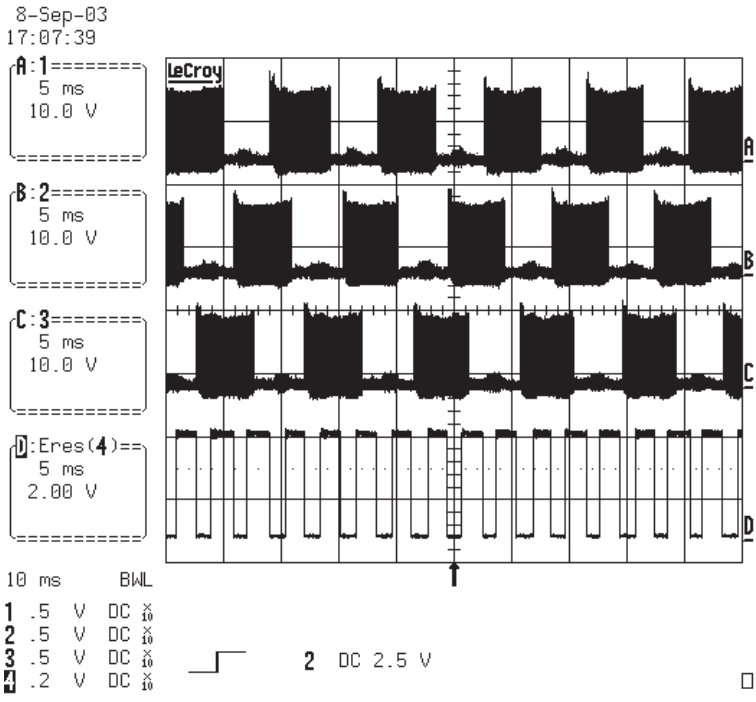


MDRV (LIC502 PIN 26)

REFOUT (LIC502 PIN 42)

SFG((LIC502 PIN43)

18. SPINDLE WAVEFORM2



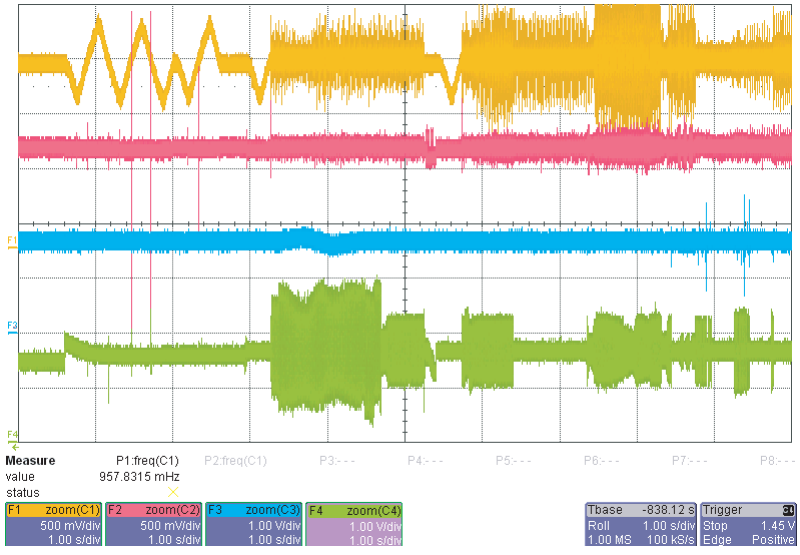
U((LIC502 PIN11)

V((LIC502 PIN13)

W((LIC502 PIN16)

SFG(LIC502 PIN43)

19. FOCUS ON SIGNAL(CD)



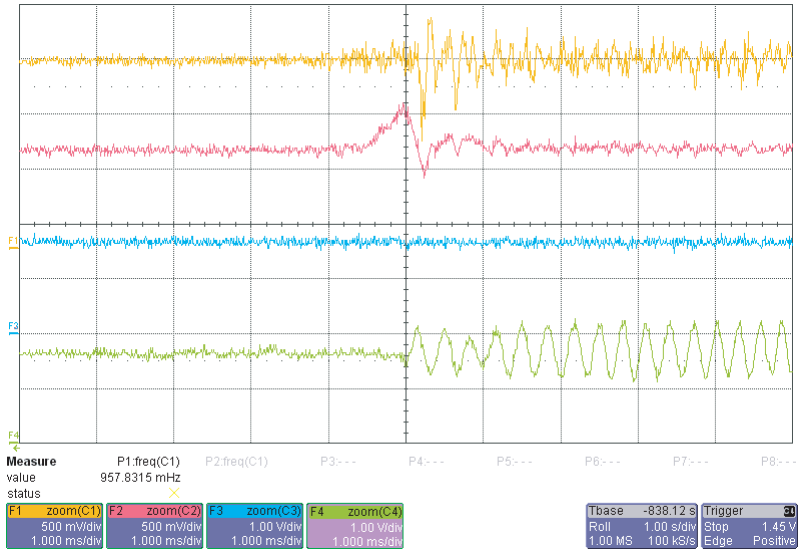
FDRV (LIC301 PIN 124)

FE (LIC201 PIN87)

TDRV (LIC301 PIN 125)

TE (LIC201 PIN85)

20. FOCUS ON SIGNAL(CD)



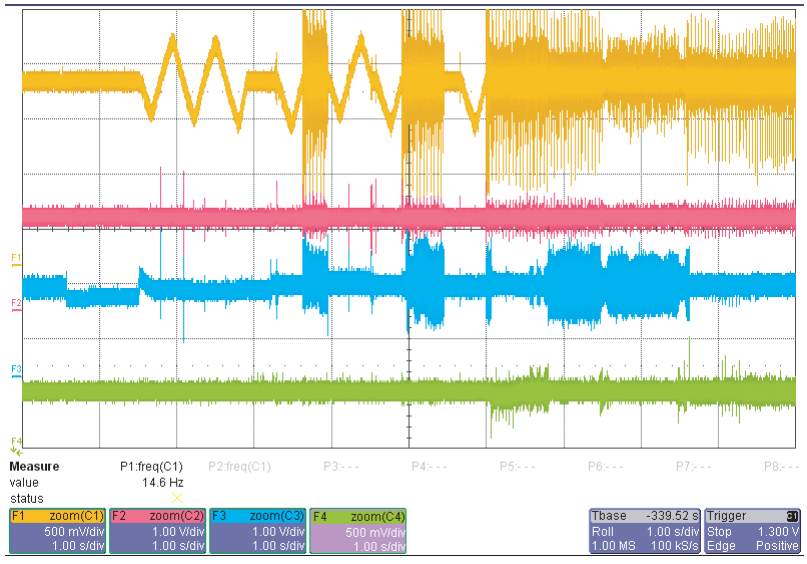
FDRV (LIC301 PIN 124)

FE (LIC201 PIN87)

TDRV (LIC301 PIN 125)

TE (LIC201 PIN85)

21. FOCUS ON SIGNAL(DVD)



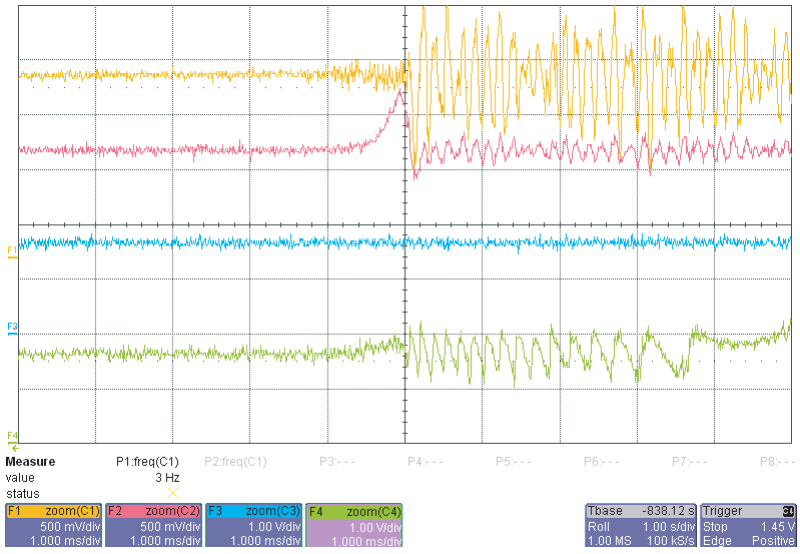
FDRV (LIC301 PIN 124)

FE (LIC201 PIN87)

TDRV (LIC301 PIN 125)

TE (LIC201 PIN85)

22. FOCUS ON SIGNAL (DVD)



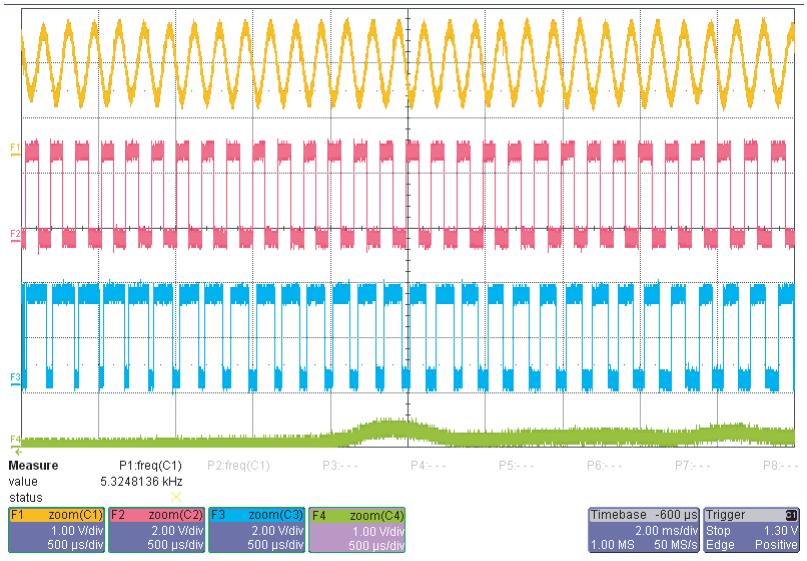
FDRV (LIC301 PIN 124)

FE (LIC201 PIN87)

TDRV (LIC301 PIN 125)

TE (LIC201 PIN85)

23. TRACK OFF SIGNAL(CD)

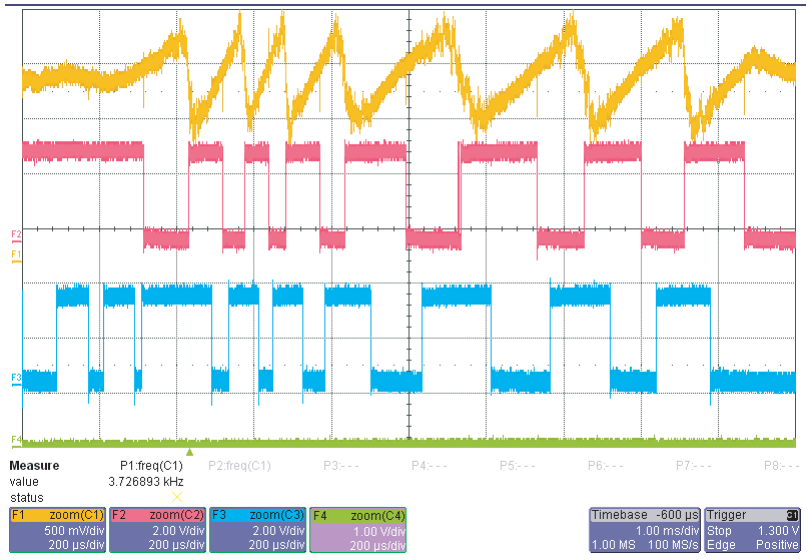


TE (LIC106 PIN85)

TZC(LIC106 PIN74)

MIRRBCA(LIC106 PIN77)

24. TRACK OFF SIGNAL(DVD)

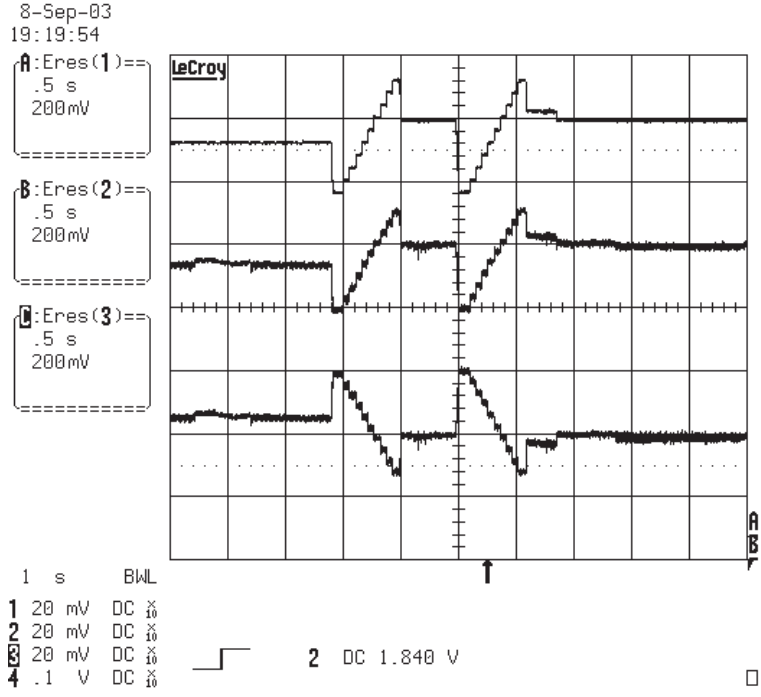


TE (LIC106 PIN85)

TZC(LIC106 PIN74)

MIRRBCA(LIC106 PIN77)

25. Tilt Driver signal(Disc reading)

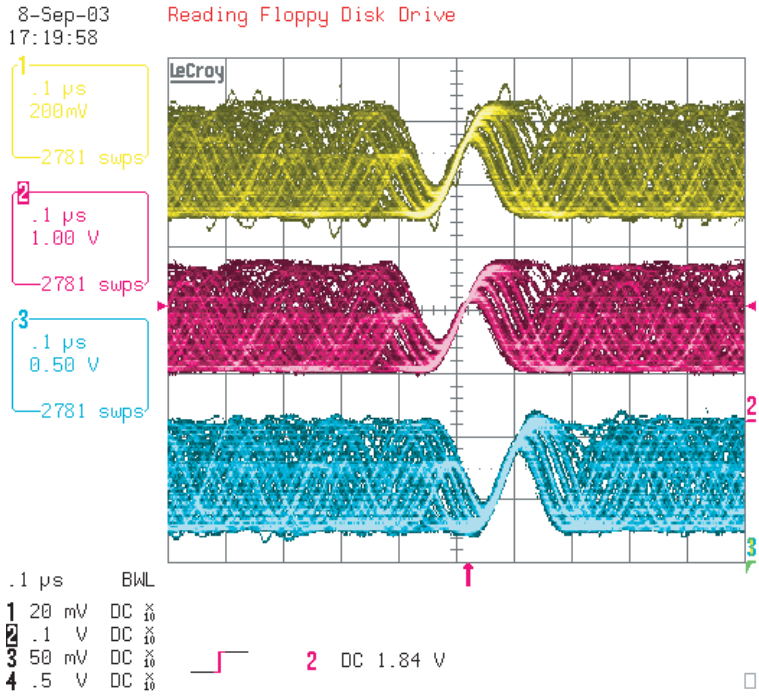


TILTDRV(LIC502 PIN47)

TILT+(LIC502 PIN50)

TILT-(LIC502 PIN49)

26. RF WAVEFORM(DVD)

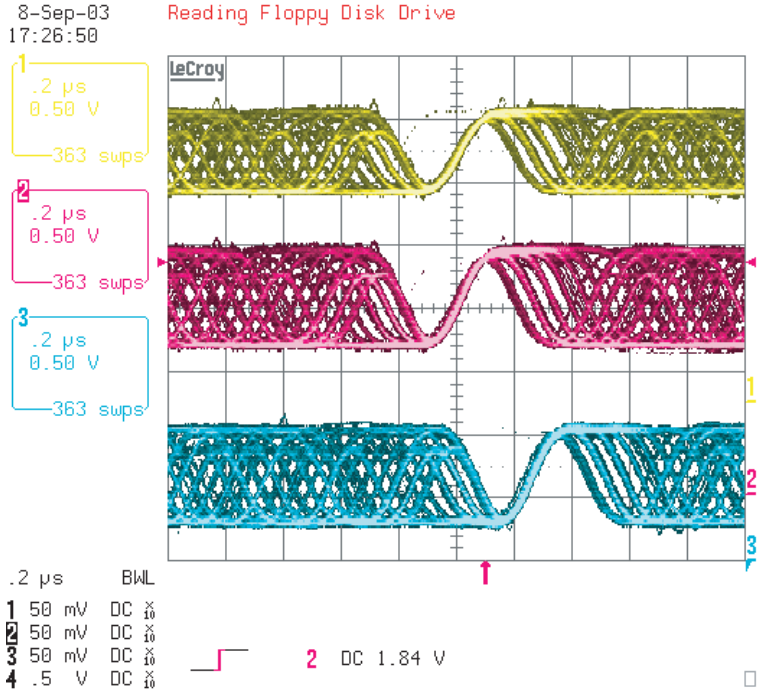


RFP(LIC201 PIN2)

RFO(LIC201PIN 113)

RFI(LIC201 PIN 95)

27. RF WAVEFORM(CD)

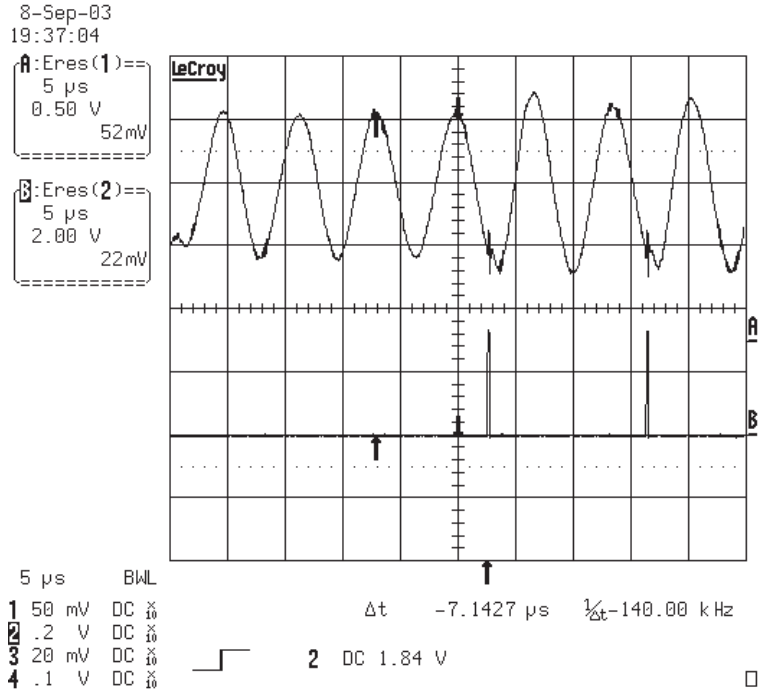


RFP(LIC201 PIN2)

RFO(LIC201PIN 113)

RFI(LIC201 PIN 95)

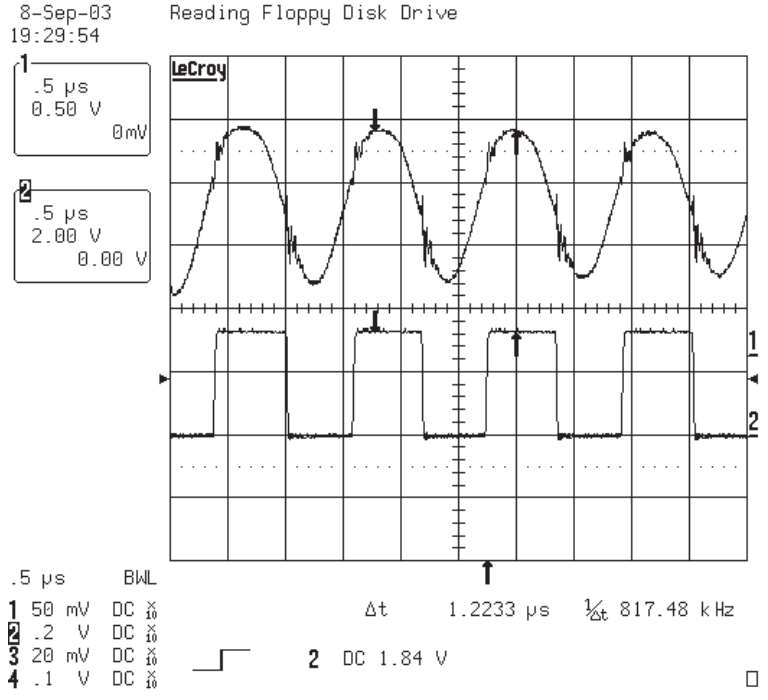
28. WOBBLE(DVD-R/RW)_READING



AWOBBLE(LIC201 PIN81)

LPP/HEAD(LIC201 PIN 73)

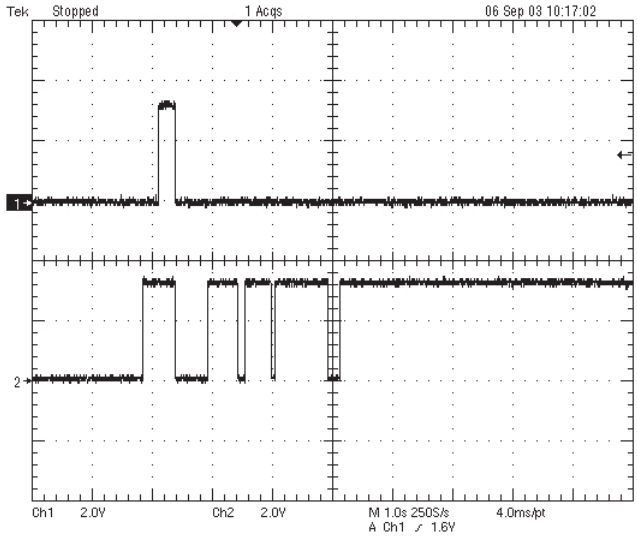
29. WOBBLE(DVD+R/RW)_READING& WRITING => X1 SPEED



AWOBBLE(LIC201 PIN81)

LPP/HEAD(LIC201PIN 73)

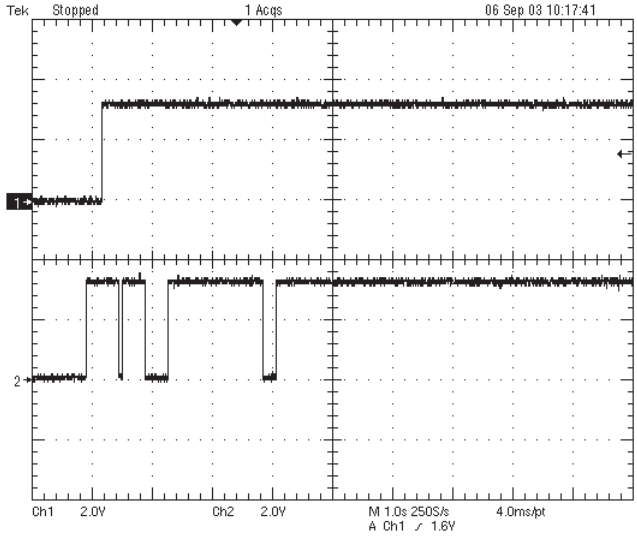
30. LD Enable(DVD)



CD/DVD(LCN201 PIN 17)

LDEN(LCN PIN 38)

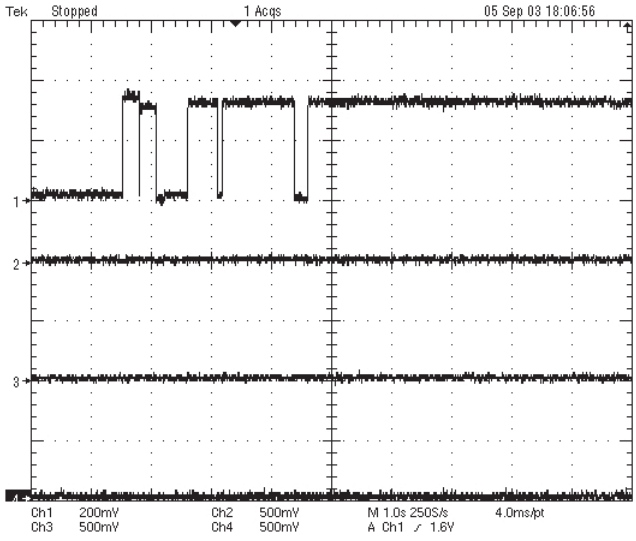
31. LD Enable(CD)



CD/DVD(LCN201 PIN 17)

LDEN(LCN102 PIN 38)

32. Laser Power(reading) _ DVD+RW



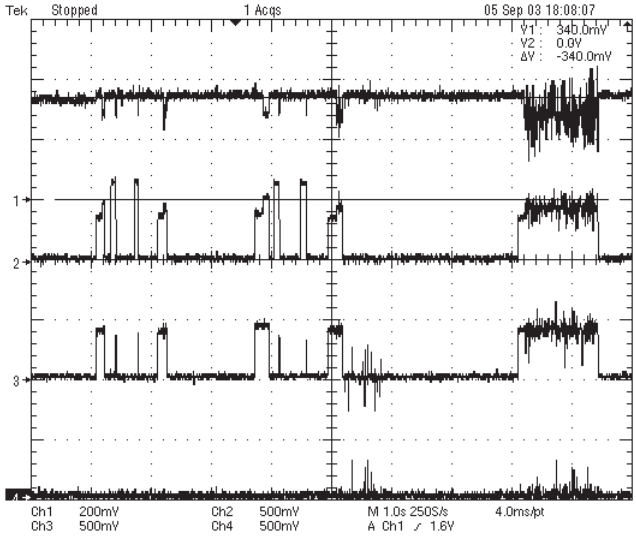
VRDC(LCN201 PIN 34)

VWDC(LCN201 PIN 36)

VWDC2(LCN201 PIN 35)

OPCTRG(LIC301 PIN 151)

33. Laser Power(Erase) _ DVD+RW



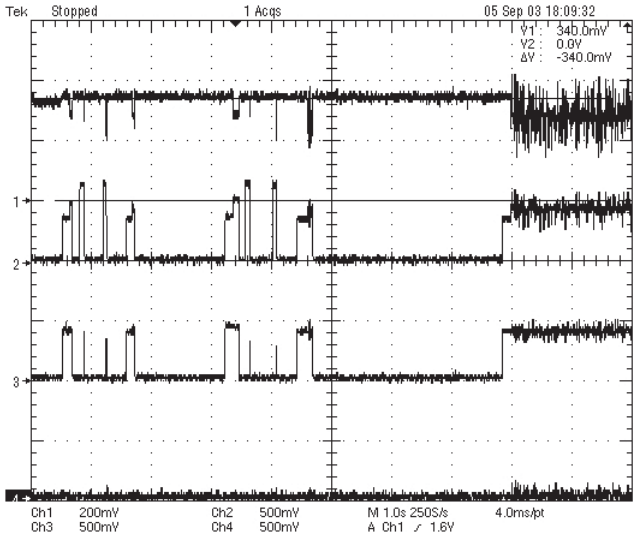
VRDC(LCN201 PIN 34)

VWDC(LCN201 PIN 36)

VWDC2(LCN201 PIN 35)

OPCTRG(LIC301 PIN 151)

34. Laser Power(Writing) _ initial state



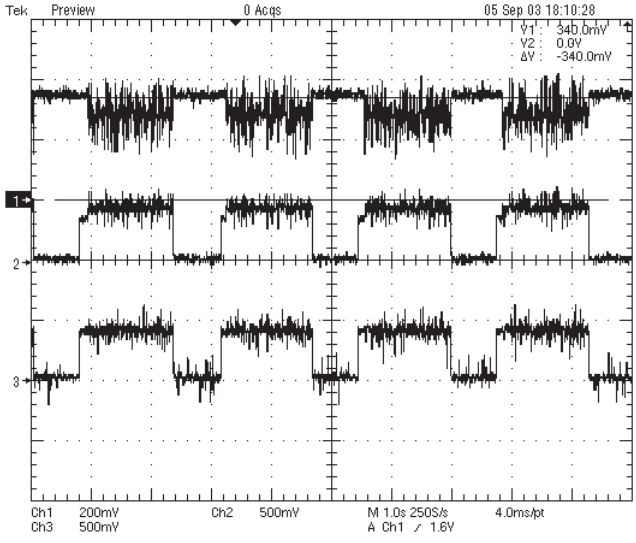
VRDC(LCN201 PIN 34)

VWDC(LCN201 PIN 36)

VWDC2(LCN102 PIN 35)

OPCTRG(LIC301 PIN 151)

35.Laser Power(Writing)_Processing



VRDC(LCN201 PIN 34)

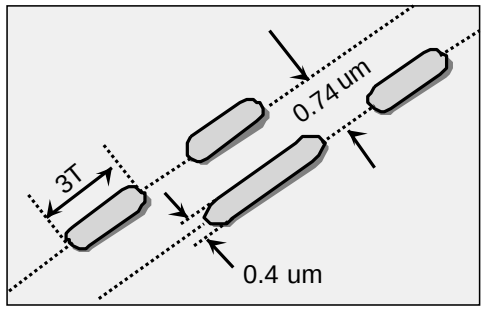
VWDC(LCN201 PIN 36)

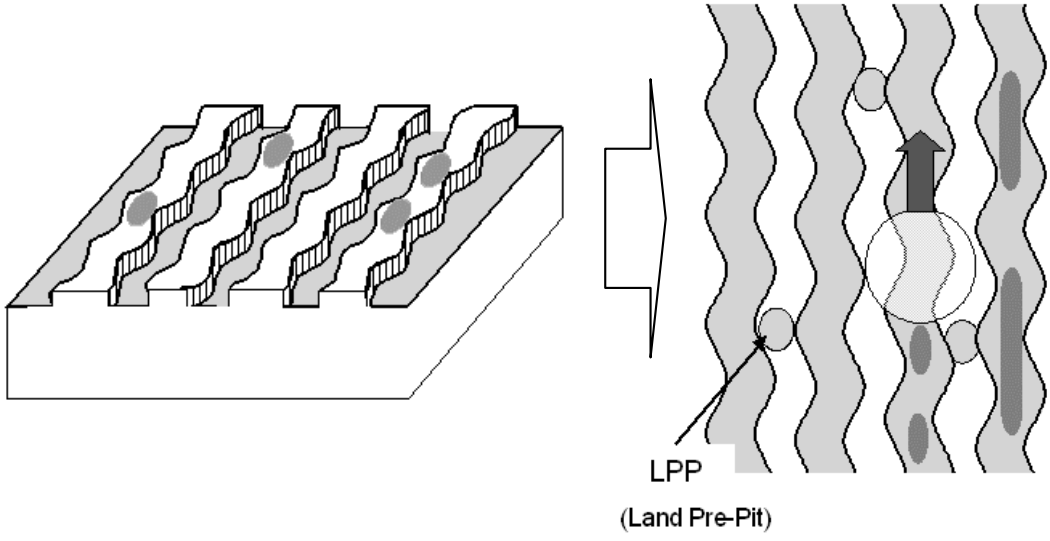
VWDC2(LCN201 PIN 35)

The difference of DVD-R/RW, DVD+R/RW discs and DVD-ROM

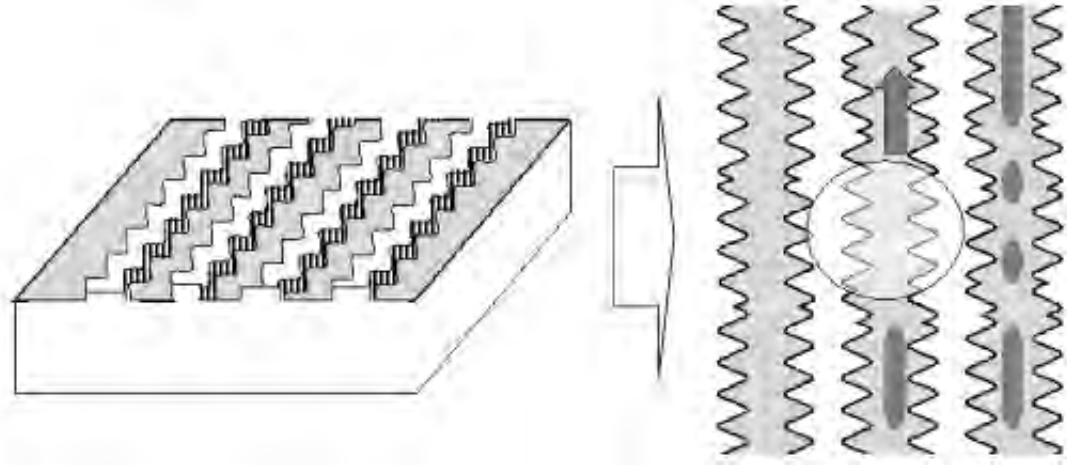
1. Recording Layer

- **DVD-ROM (Read Only Disc)**





- **DVD+R/RW Disc**



2. Disc Specification

	DVD-ROM		DVD-R	DVD-RW	DVD+R	DVD+RW
	Single-Layer	Dual-Layer				
Media Type	Read Only	Read Only	Dye	Phase change	Dye	Phase change
User data capacity	4.7GB	8.54GB	4.7GB	4.7GB	4.7GB	4.7GB
Wavelength	650nm	650nm	650nm	650nm	650nm	650nm
Reflectivity	45~85%	18~30nm	45~85%	18~30%	45~85%	18~30nm
Track pitch	0.74μm	0.74μm	0.74μm	0.74μm	0.74μm	0.74μm
Minimum pit length	0.4μm	0.4μm	0.4μm	0.4μm	0.4μm	0.4μm
Modulation	>0.6	>0.6	>0.6	>0.6	>0.6	>0.6
Channel bit-rate	26.16MHz	26.16MHz	26.16MHz	26.16MHz	26.16MHz	26.16MHz
Wobble Frequency	–	–	140KHz	140KHz	817.4KHz	817.4KHz
Addressing	26.16MHz	26.16MHz	Wobble & LPP	Wobble & LPP	Wobble(ADIP)	Wobble(ADIP)
Read Power (mW)					0.7 ± 0.1	0.7 ± 0.1
Write Power (mW)	–					
JItter	<8%	<8%	<8%	<8%	<9%	<9%

3. Disc Materials

1) DVD-ROM

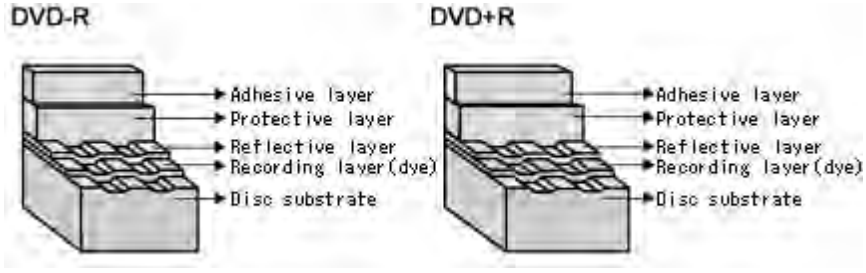
< Single Layer >

< Dual Layer >

2) Recording format using organic dye material (DVD-R / DVD+R)

The format that records data through the creation of recorded marks by changing the organic dye material with a laser beam.

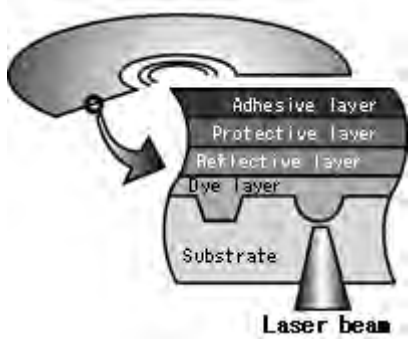
► Disc structure



► Recording principles

[Recording]
Recording is done by changing the organic dye layer and the substrate with a laser When a strong laser is applied to a disc, the temperature of the organic dye material goes up, the dye is decomposed and the substrate changes at the same time. At this time, a durable bit is created as is the case with a CD-ROM.

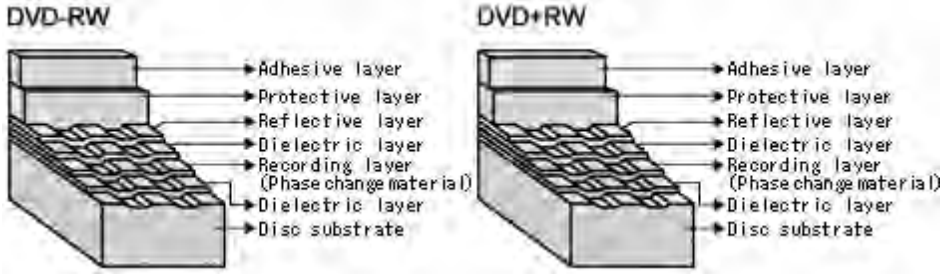
[Playback]
Signals are read with the differences of the reflection of a laser from pits.



3) Recording format using phase-change recording material (DVD-RW / DVD+RW)

• Data is recorded by changing the recording layer from the amorphous status to the crystalline status, and played back by reading the difference of the reflection coefficient.
Amorphous: Non-crystalline.

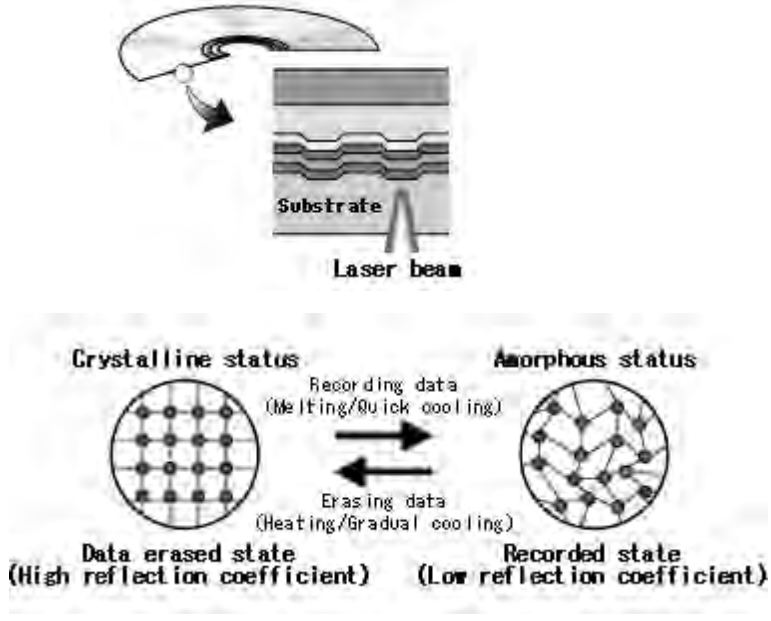
► Disc structure



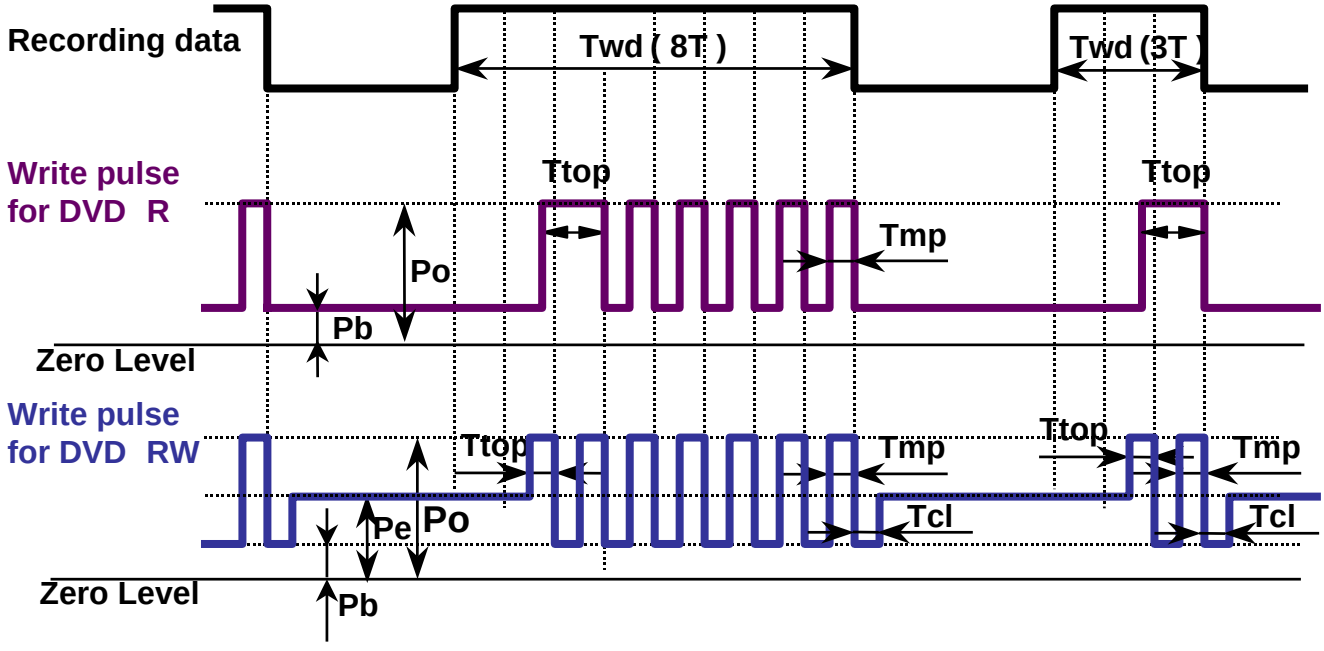
► Recording principles

[Recording]
When a high-power laser is applied to the recording material, it melts and then becomes amorphous with a low reflection coefficient when it quickly cools off. When a mid-power laser is applied to heat gradually the recording material and then gradually cools it off, it becomes crystal with a high reflection coefficient.

[Playback]
A low-power laser is used for playback. The amount of reflected light depends on the status (amorphous or crystalline) of the recording material. This is detected by an optical sensor.



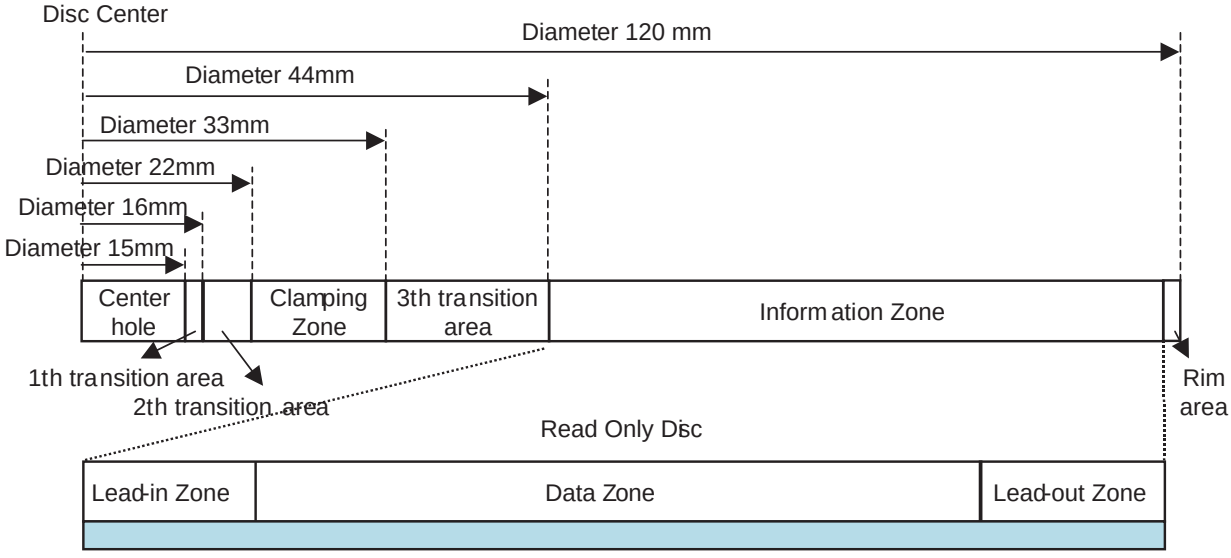
To make recordings, it is necessary to modulate the write pulse, which is called “Write Strategy”.
There can be many types in Write Strategy. Typically Write Strategy for DVD ±R has NMP(Non Multi-Pulse) type and MP(Multi-Pulse) type. In NMP type each single mark is created by subsequent separated short pulses. In MP type each single mark is created by one continuous pulse.
Write Strategy for DVD ±RW has Type 1 and Type2. In Type 1 the mark with nT width is created by one top pulse and (n-2) multi-pulses. Thus mark 3T is made by one top pulse and one multi-pulse. In Type 2 the mark with nT width is created by one top pulse and (n-3) multi-pulses. Thus mark 3T is made by one top pulse only.
RL-02A uses MP type Write Strategy for DVD ±R and Type 1 for DVD ±RW as shown below.



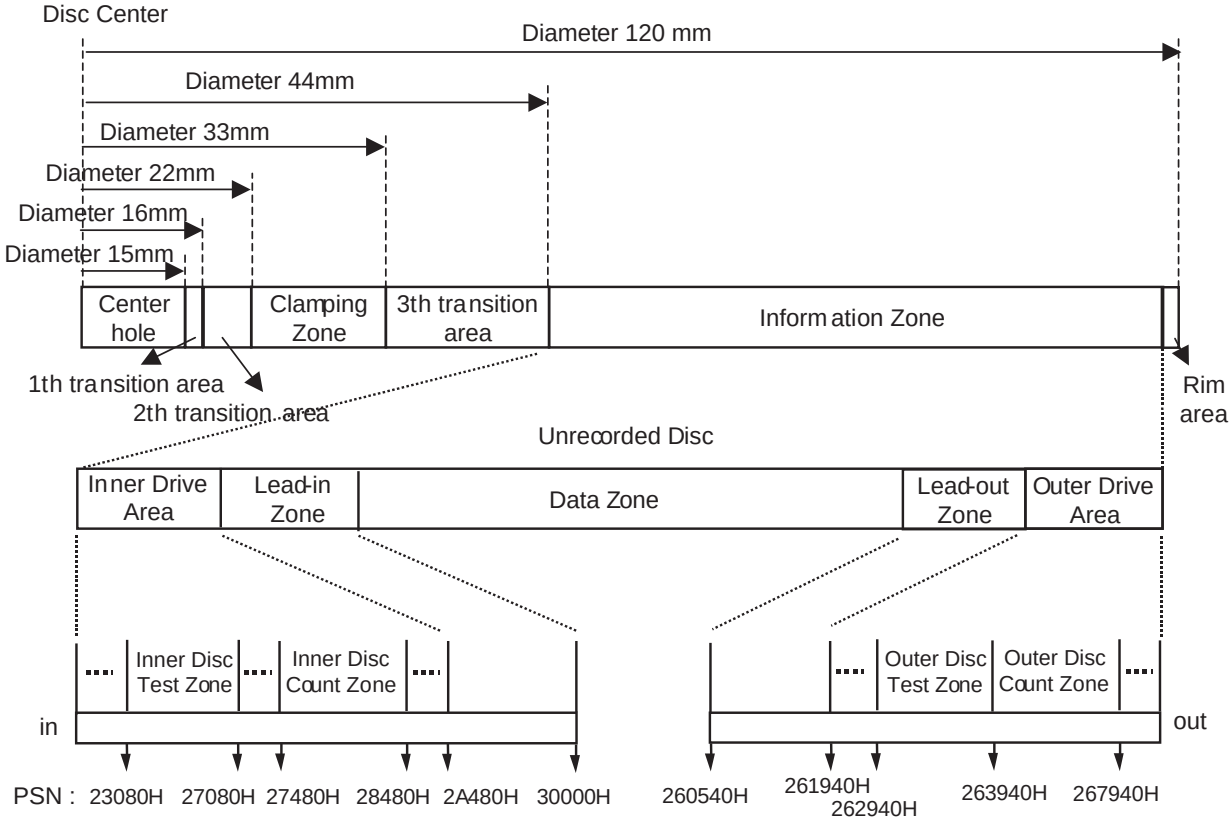
Po :Write Power (Peak Power)
Pe :Erase Power
Pb :Bias Power

4. Organization of the Inner Drive Area, Outer Drive Area, Lead-in Zone and Lead-out Zone

1) Layout of DVD-ROM disc

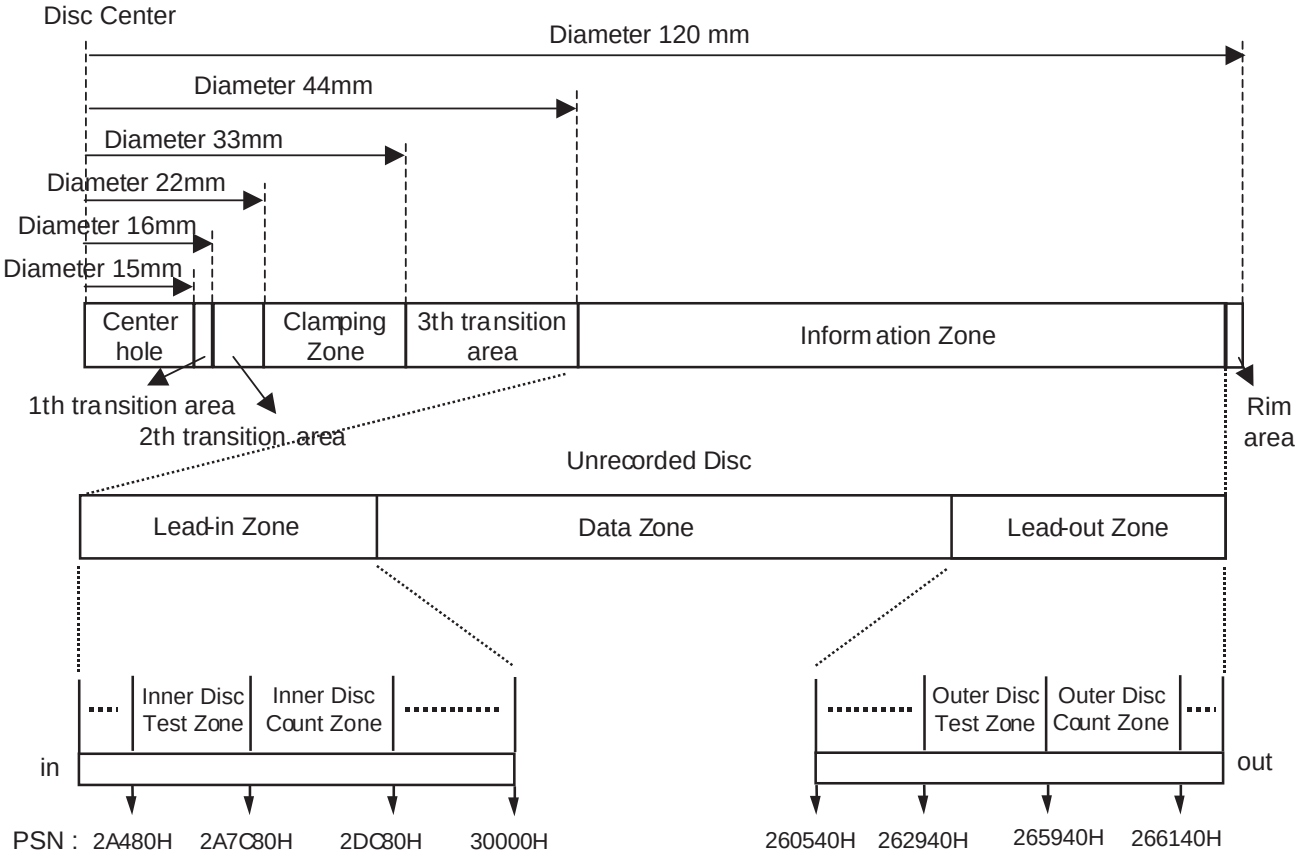


2) Layout of DVD+R disc



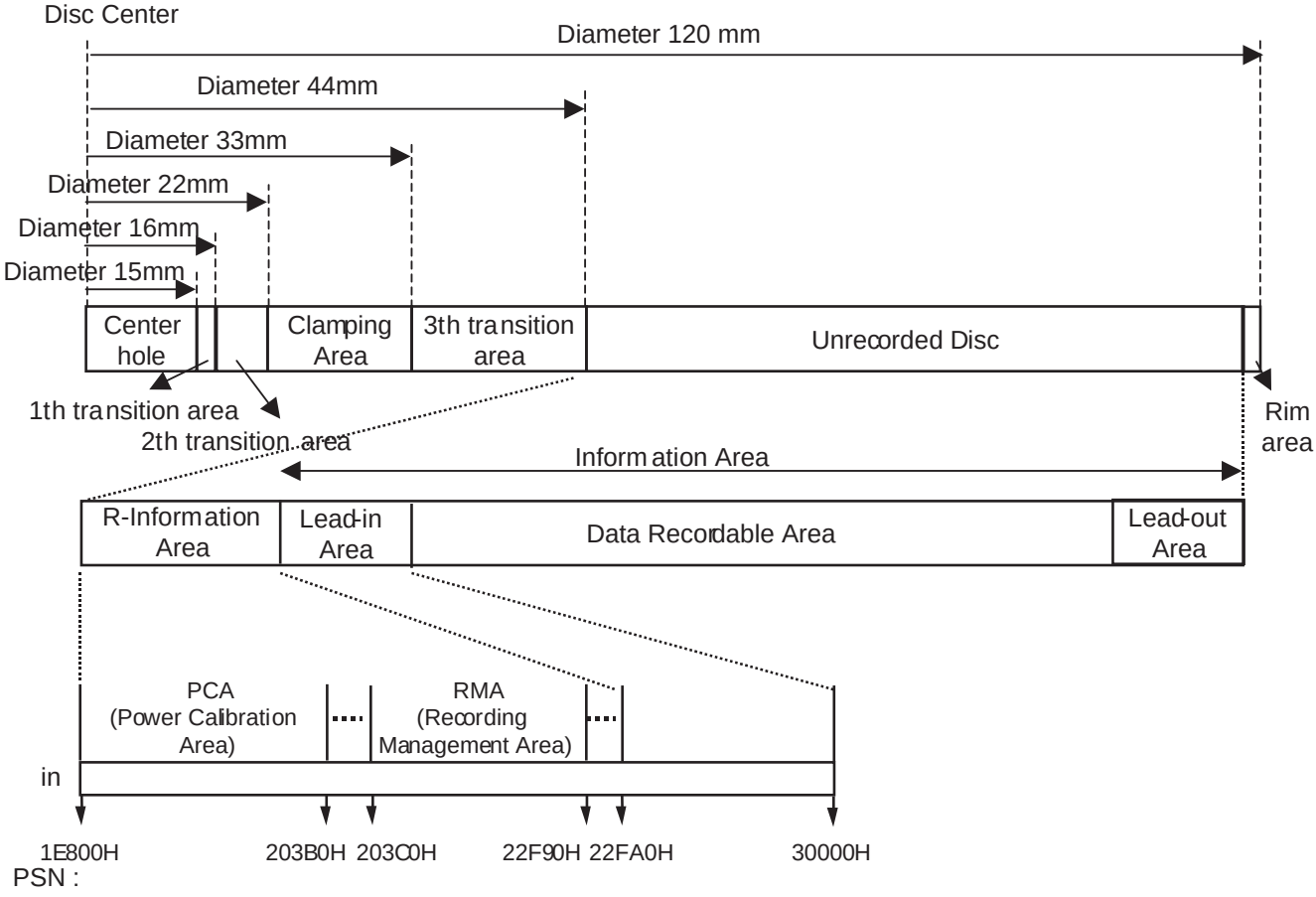
Inner Disc Test Zone : for performing OPC procedures.
Inner Disc Count Zone : For counting the number of OPC algorithm performed in IDT Zone.
Outer Disc Test Zone : for performing OPC procedures.
Outer Disc Count Zone : For counting the number of OPC algorithm performed in IDT Zone.

3) Layout of DVD+RW disc



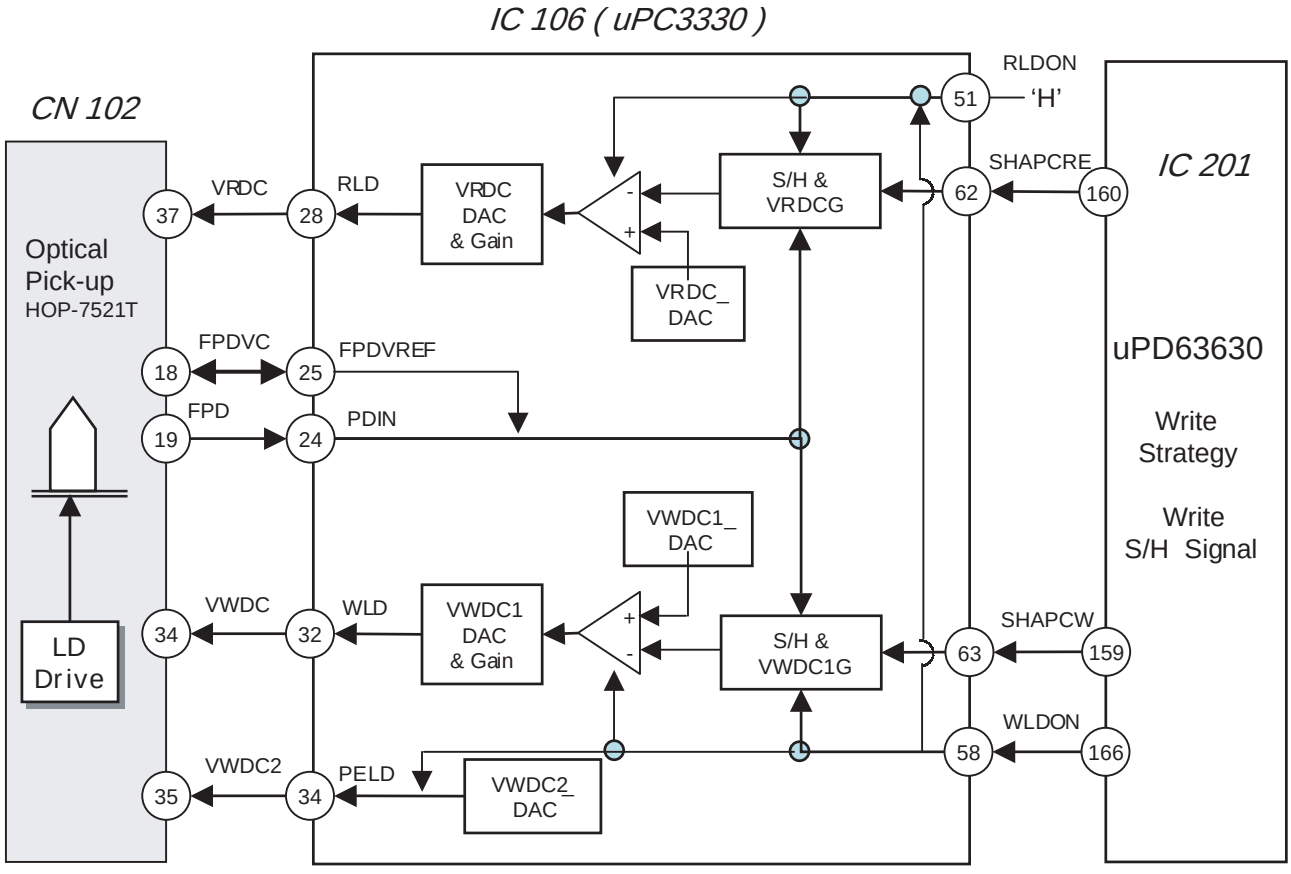
Inner Disc Test Zone : for performing OPC procedures.
Inner Disc Count Zone : For counting the number of OPC algorithm performed in IDT Zone.
Outer Disc Test Zone : for performing OPC procedures.
Outer Disc Count Zone : For counting the number of OPC algorithm performed in IDT Zone.

4) Layout of DVD-R/RW disc



5. ALPC(Automatic Laser Power Control) Circuit

1) Block Diagram



2) ALPC(Automatic Laser Power Control) Circuit Operation

ALPC function in CD-R/RW,DVD+R/RW analog front-end is for constant power level control purpose.
Based on the accurate power sensor(FPD) in OPU, ALPC feedback loop maintains constant power level against laser diode's temperature variation.
There are two power control loops in uPC3330, which are used with different combination for different applications. Generally, the first ALPC loop is used for read-power control. The 2nd ALPC loop is used for write(erase) power control for CD-R/RW and DVD+R/RW disc.
Owing to the small signal level in read-power control mode, the first ALPC loop amplifies the FPD signal to enhance the accuracy of read power control. The built-in 10-bit DAC(VRDC_DAC) is used to set the read power level.
Moreover, the 2nd ALPC loop is used for high power control. The built-in 10-bit DAC(VWDC1_DAC) is used to set the wanted power level.
And the register VWDC1G is employed to adjust the gain of FPD signal.
The following potentiometers(VRDC_DAC, VWDC1_DAC, and VWDC2_DAC) and amplifiers (VRDCG and VWDC1G) are used to set the wanted levels of the output pins RLD, WLD, and PELD

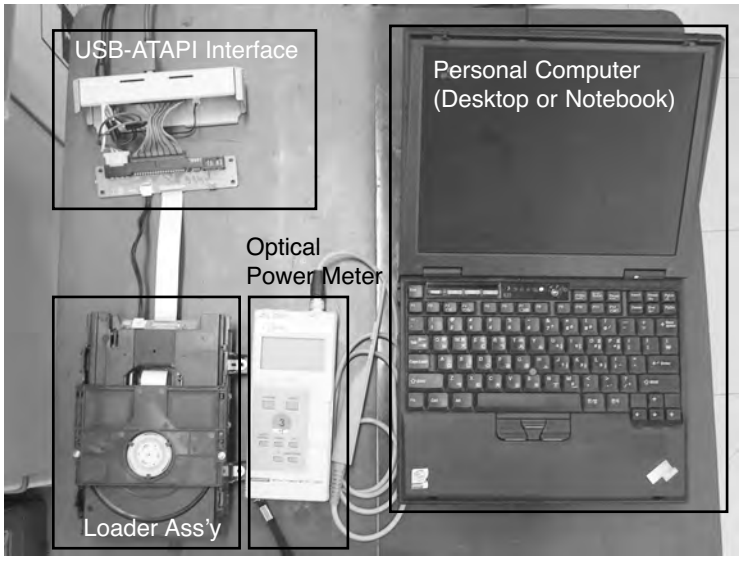
How to use test tool

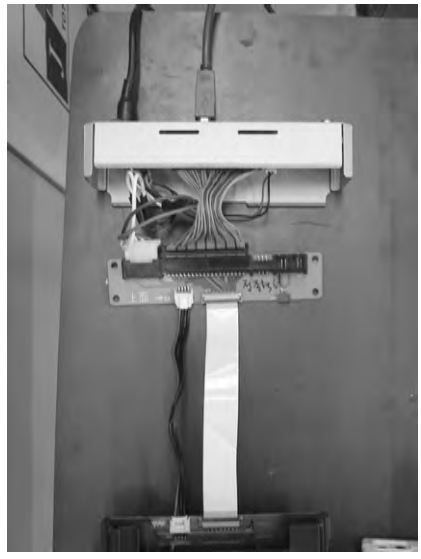
1. ALPC Measurement System Configuration

In order to measure and adjust DVD RW optical power, The following measurement equipments are needed.

- ◆ Compulsory equipment
  - ① Optical Power meter & Sensor (ADVANTEST, TQ8210/Q82017A or equivalent
  - ② Personal Computer (Pentium 3, 500MHz Above, , RAM:64M Above, Win98 Above)
  - ③ Adjustment Program (Dragon or ALPC) for SVC, ALPC Program recommended

- ◆ FI optional equipment
  - ①USB-ATAPI Interface (needed when using USB Port from the laptop computer without ATAPI interface or a desktop computer)
  - ②Connector-ATAPI Interface Board(Part Mo:6881R-7677A) (needed when ATAPI is not attached to Loader)





Connector-ATAPI Interface Board

2. ALPC Program Configuration

ALPC Program consists of total 4 files.

ALPC.exe
LgBada.dll
modelnm.txt
WNASPI32.DLL

These 4 files should be located in one directory.
ALPC.exe is a program execution file.
modelmn.txt is a configuration file.

Determine how to connect

The following contents are included when you open "modelnm.txt" file.

The following contents are included when you open LGE connect=0

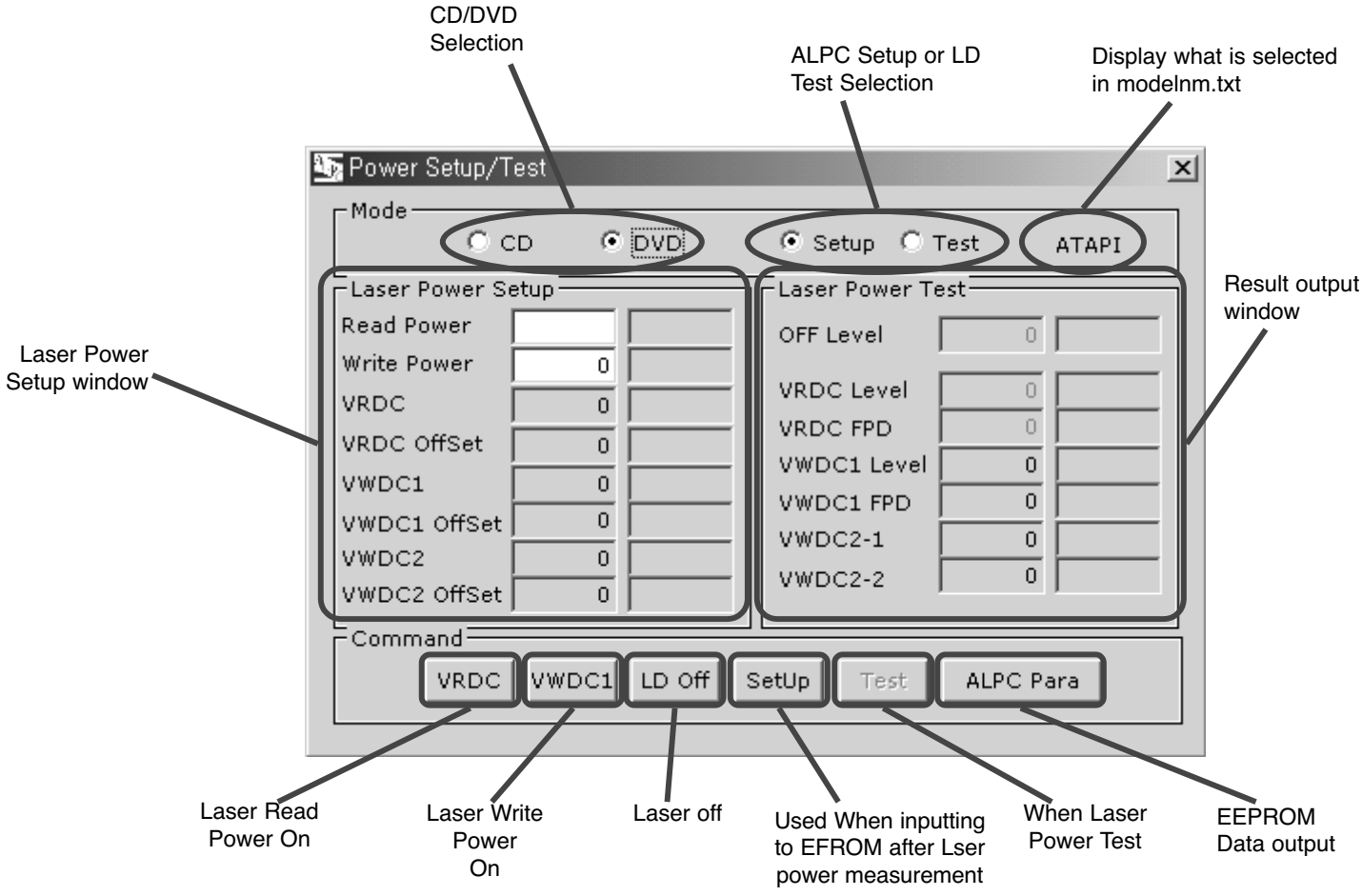
connect=0 is the item which you can determine whether you use Serial or ATAPI.

0 : ATAPI
1 : Serial

Thus, select connect=0 to use ATAPI, or select connect=1 to use Serial, then save the file.
(For SVC, ATAPI setting is recommended.)

3. Running ALPC Program

When running ALPC.exe file, the following screen appears.



4 LD Test

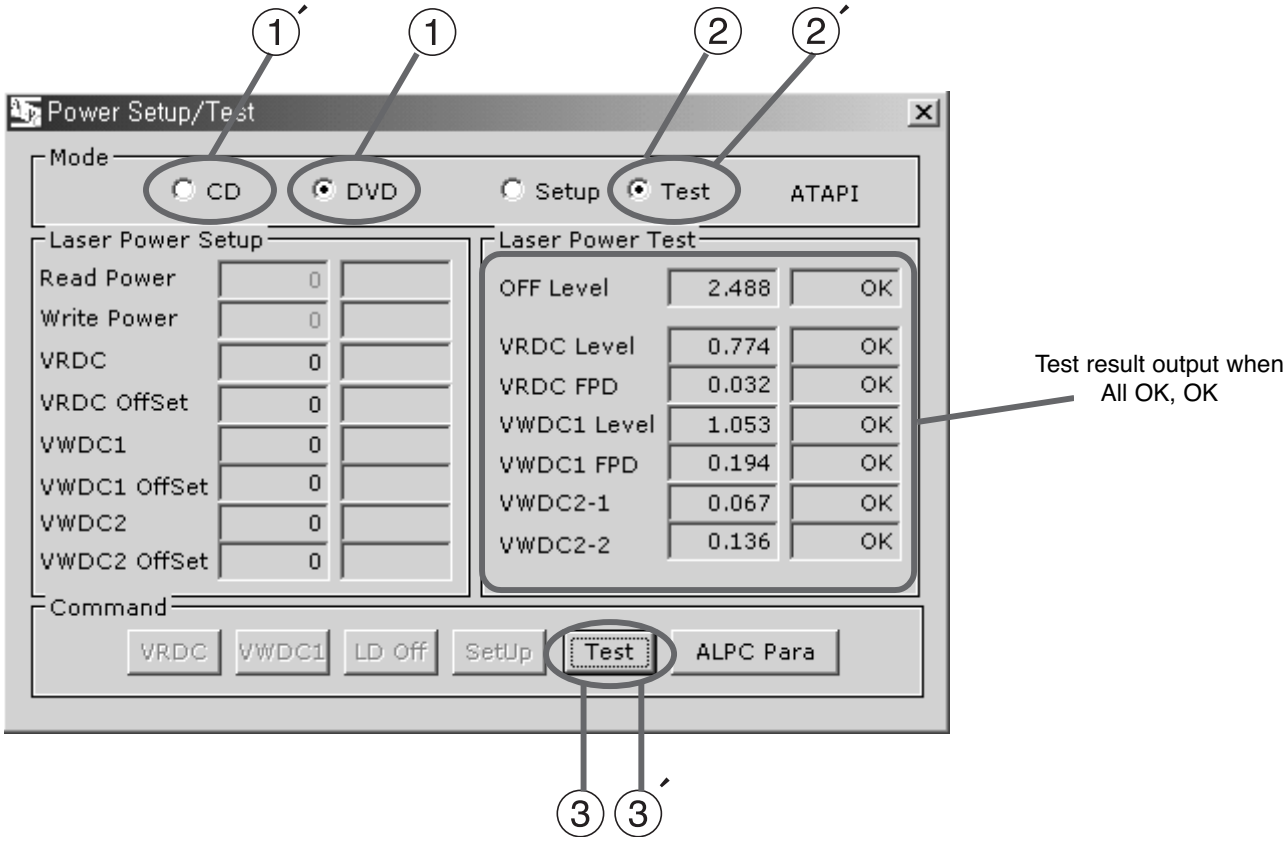
*** Test DVD LD**

① Select DVD mode
② Select Test mode
③ Click Test

*** Test DVD CD**

① Select CD mode
② Select Test mode
③ Click Test

Section	Off	VRDC	VR_FPD	VWDC1	VW_FPD	VW2-1	VW2-2
CD	2.4±0.08	0.53±0.22	0.02±0.01				
DVD	2.4±0.08	0.7±0.2	0.04±0.01	0.43±0.05	0.2±0.02	0.08±0.02	0.2±0.03



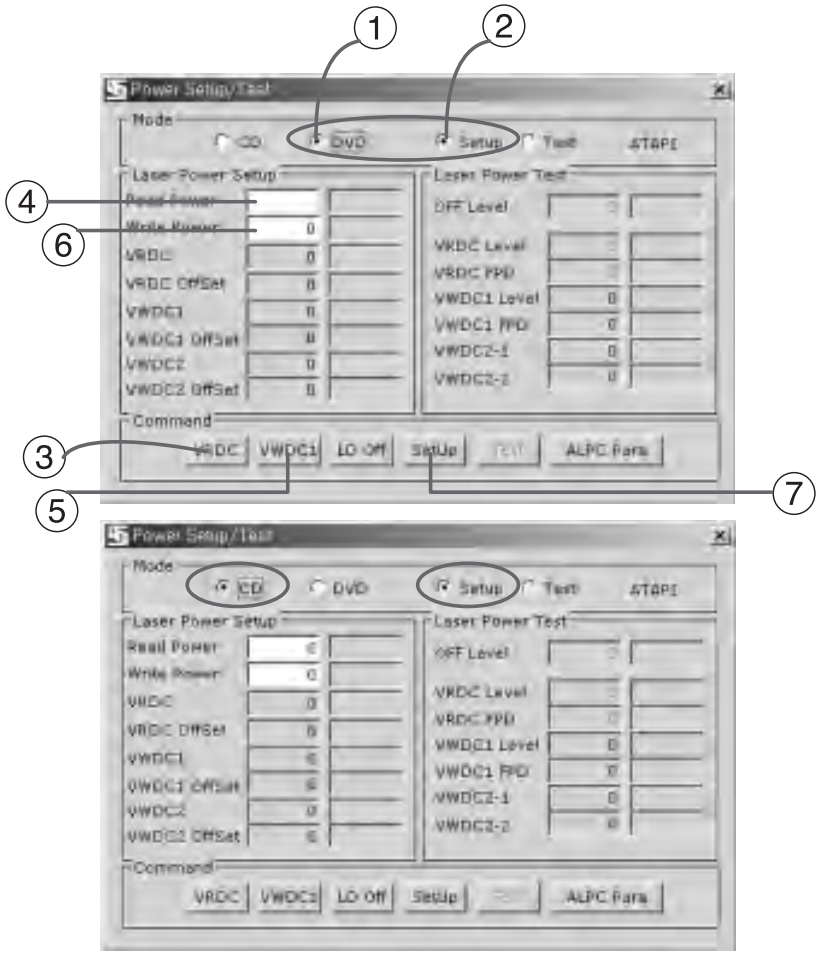
Specification can be changed according to pick-up type, circuit, program, and chipset.
If specifiction is changed, program can be sent by supervisor.
Specification above is temporary reference.

5. Optical Power Setting

When replacing Travers ass'y including Pick-up or Loader PCB, Optical Power Setting should be performed for Pick-up and Loading PCB's matching.

① DVD LD optocal Power Setting
- Select DVD and Setup mode
- Push VRDC. (Read Power On. Strong Red light can be seen from pick up optical lens.)
- Measure optical power.
- Write measurement value in Read Power.
- Push VWDC1. (Write power On.) (Caution) Light is very strong. Never look at the light directly.
- Measure optical power
- Write measurement value in Read Power and push LD off LD Off.
- Push SetUp. (Measurement value is inputted to EEPROM)

② DVD LD optocal Power Setting
- Select CD and Setup mode
- Push VRDC. (Read Power On. Weak Red light can be seen from pick up optical lens.)
- Measure optical power.
- Write measurement value in Read Power.
- Push VWDC1. (Write power On. Weak Red light can be seen.)
- Measure optical power and push LD off LD Off.
- Write measurement value in Read Power.
- Push SetUp. (Measurement value is inputted to EEPROM)



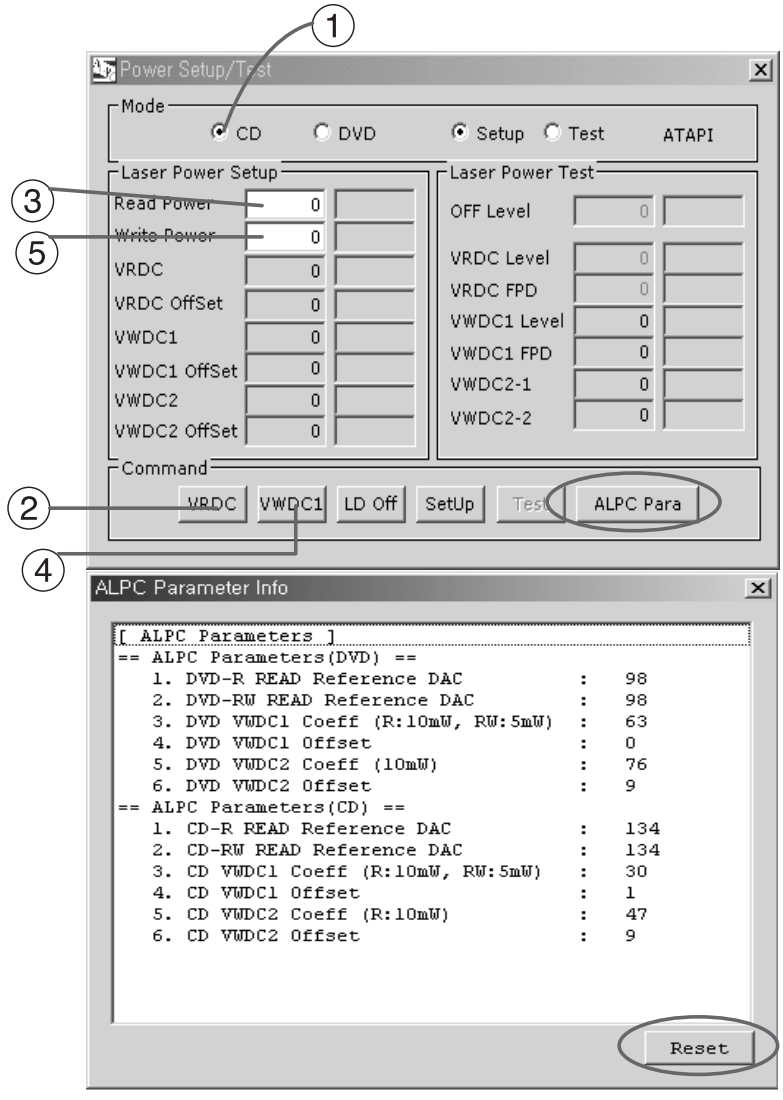
6. Optical Power Setting Parameter Check

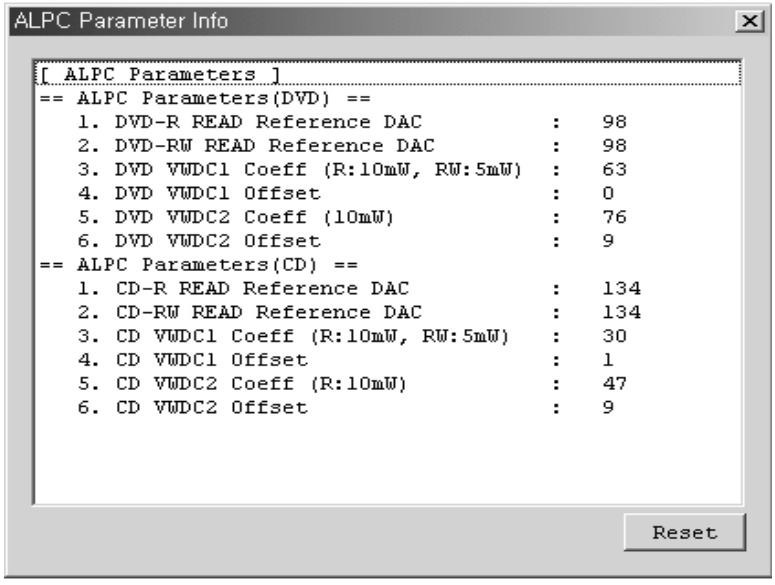
Use when defective happens even though LD test result is normal.

When defective can be found but power test result is OK, You need to check current settings whether they are proper or not. In this case, Pressing ALPC Para will display ALPC Parameter Info window and show current optical power settings recorded in EEPROM(IC302).

Write down these settings on the paper, perform optical power setting and press ALPC Para again, then new optical power settings will appear. Compare these two parameters. If there is a big difference, optical power setting may have been wrong at first or pick-up optical output may have been changed. If pick-up is normal, problem can be solved by resetting optical power without replacing pick-up.

In order to remove previous ALPC Parameter from ALPC Parameter Info, press Reset at the bottom of ALPC Parameter Info window.





[VALID ALPC Parameters]

<CD>

1) CD-R READ Reference DAC : 70 ~ 100
2) CD-RW READ Reference DAC : 70 ~ 100

<DVD>

1) DVD-R READ Reference DAC : 42 ~ 107
2) DVD-RW READ Reference DAC : 42 ~ 107
3) VWDC1 : 35 ~ 65
4) VWDC1 Offset : 0 ~ 6
5) VWDC2 : 20 ~ 43
6) VWDC2 Offset : 0 ~ 10

Appendix. How to measure optical power

Optical power measurement is measuring actual optical power coming out from an object lens with LD turned on.
thus, In order to measure optical power, LD should to be turned on and environment need to be dark enough.
If necessary, Cover the top side of the sensor with black paper or hand when measuring.
Generally, fluorecent light is about 50 μW, sun light is about 100 mW. so, If this is ignored, optical power setting may not be set correctly.

Optical power mesurement procedure

1. Adjust optical power meter's λ(wave length) to DVD. (Generally 660 nm)

2. Turn DVD LD on.

3. Place sensor less than 3mm apart from pick-up object lens, perpendicular to lens.
   Adjust position so that the center of object lens match to □ mark on the sensor.

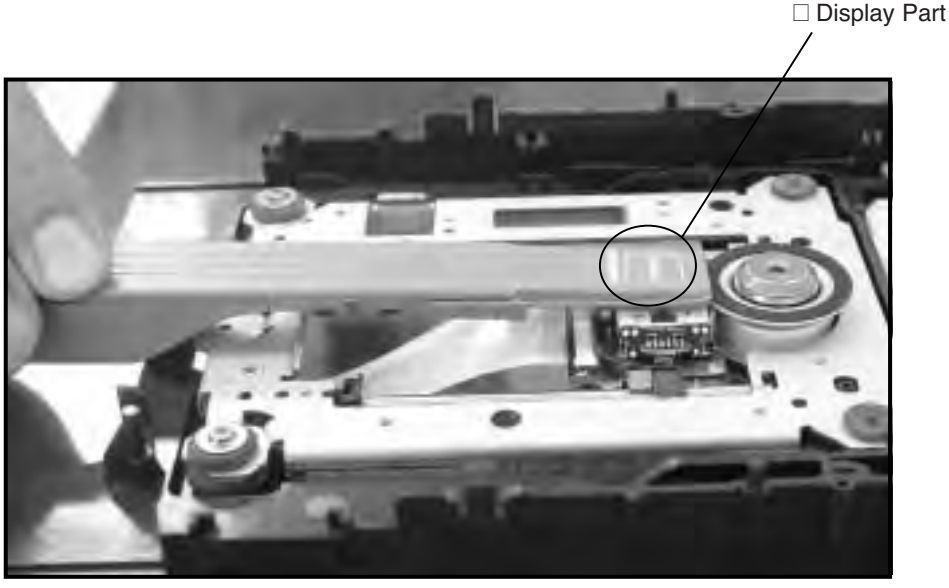
4. Read monitor's value. (Read Maximum value as moving position slightly)
   (Check working unit. Unit should be mW. When LD is dead, μW or nW unit may not be read correctly.)

5. Multiply monitor's value by 100, round off to the nearest integer, then write constant part.

6. Adjust optical power meter's λ (wave length) to CD. (Generally 780 nm)

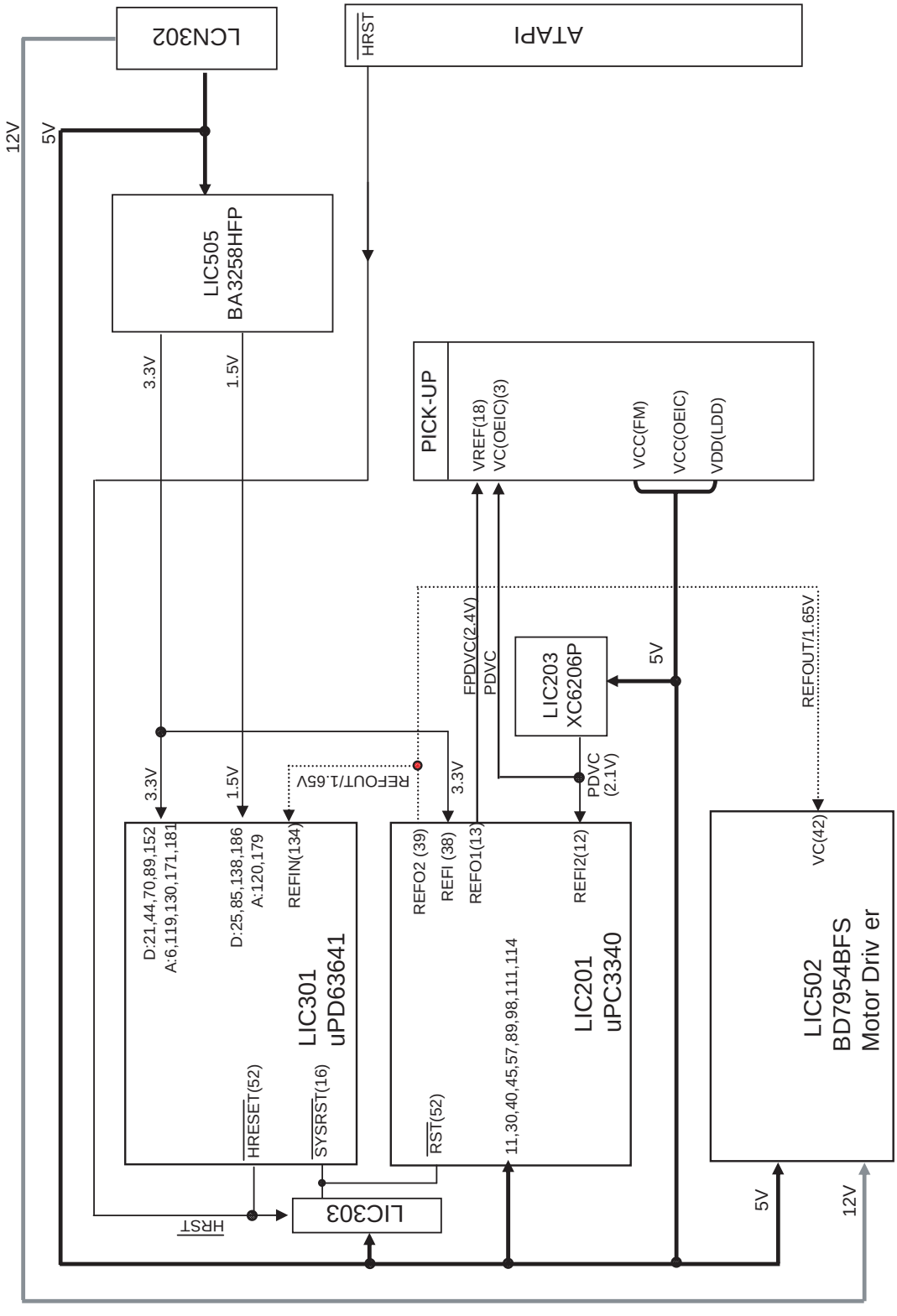
7. Turn CD LD on.

8. Repeat step 3~5 above.

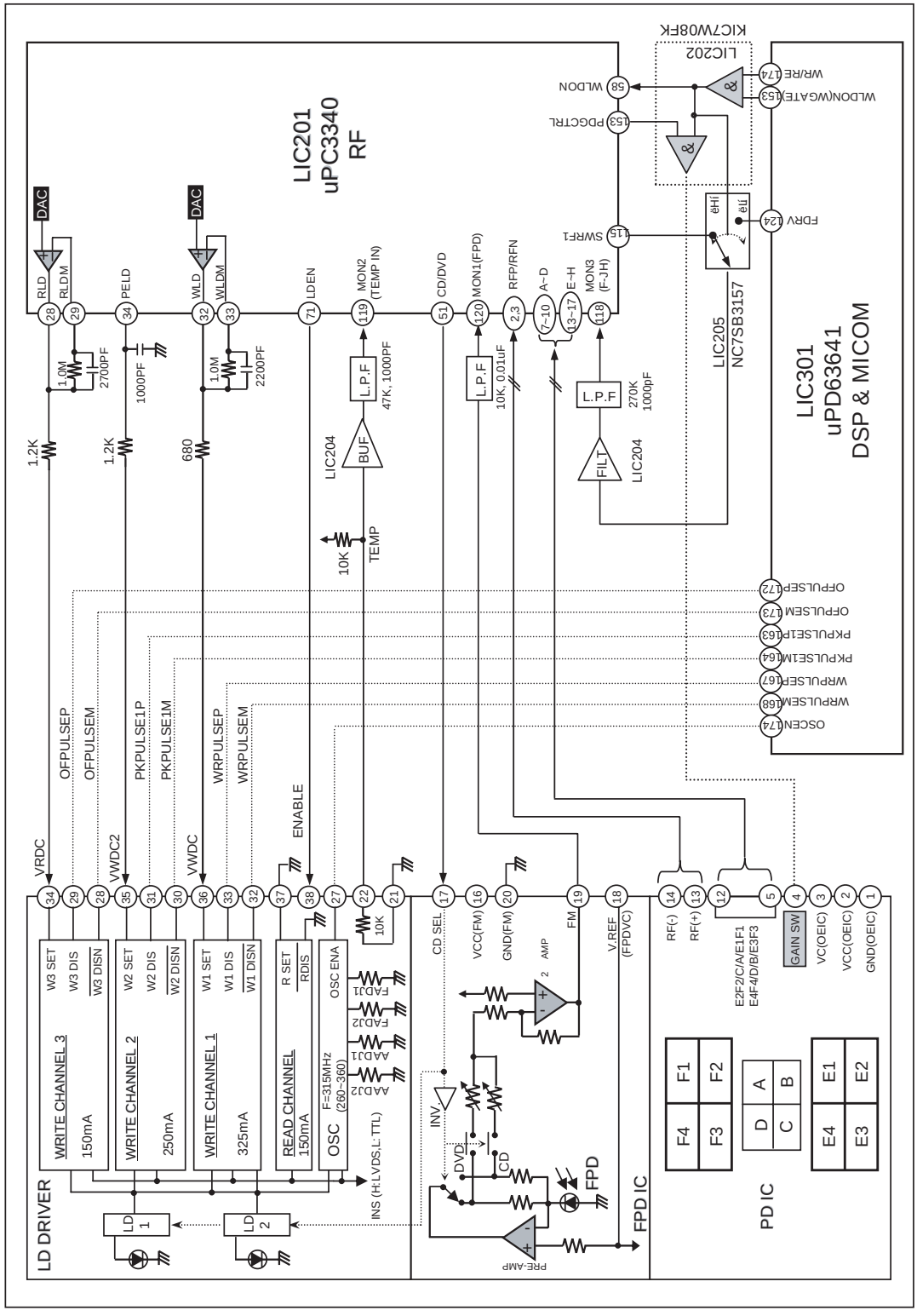


BLOCK DIAGRAMS

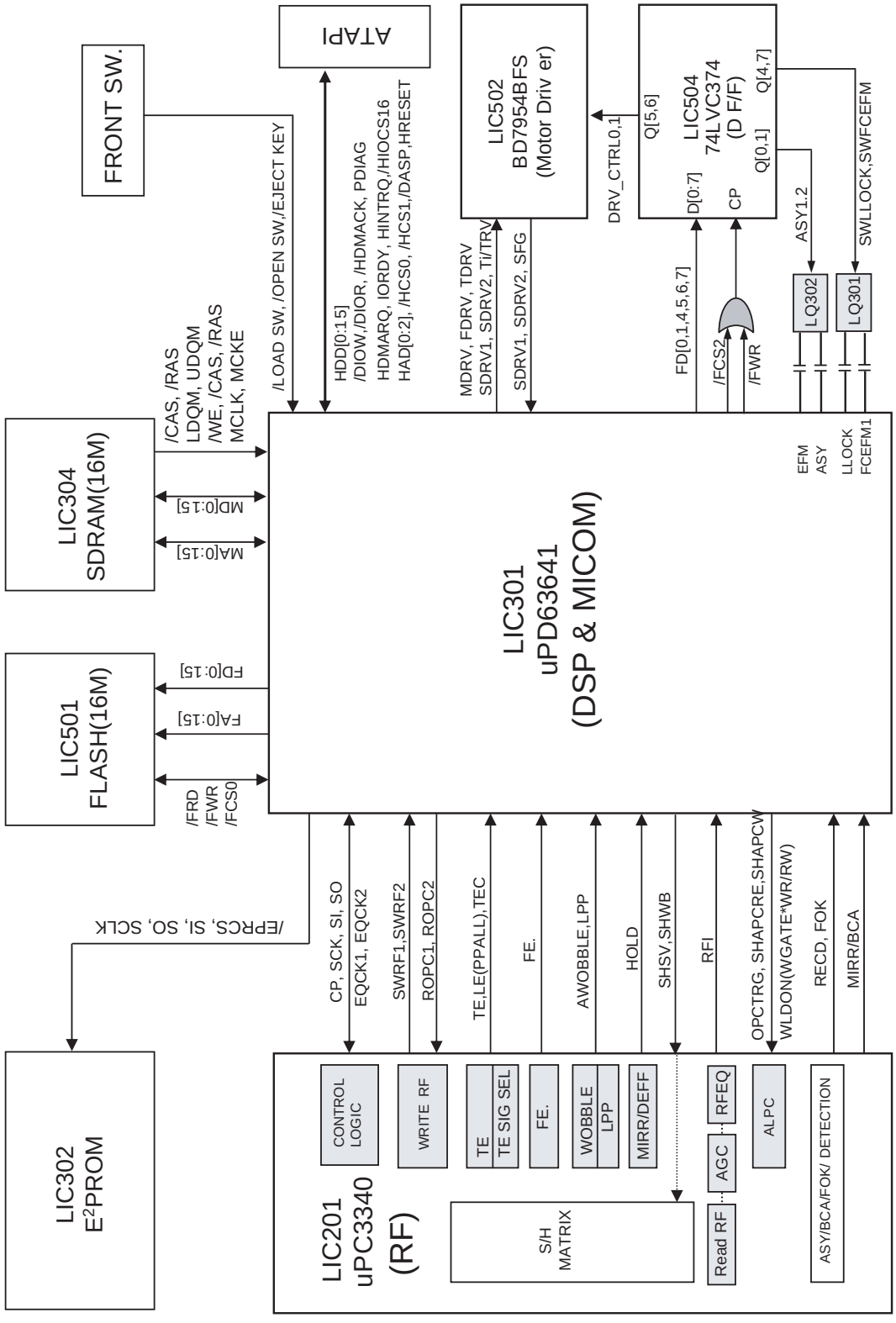
1. OVERALL BLOCK DIAGRAM



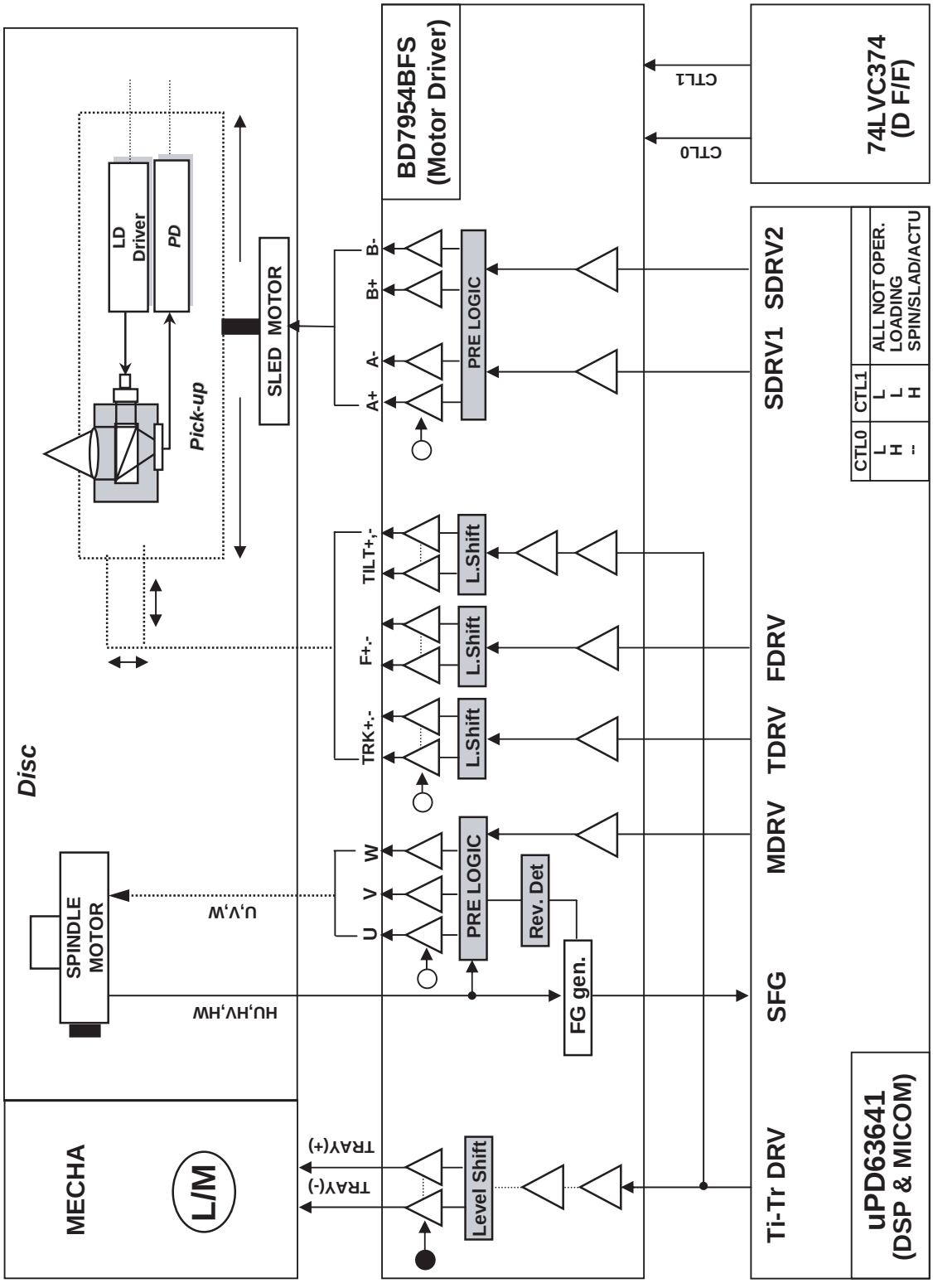
2. DSP BLOCK DIAGRAM



3. μ-COM BLOCK DIAGRAM

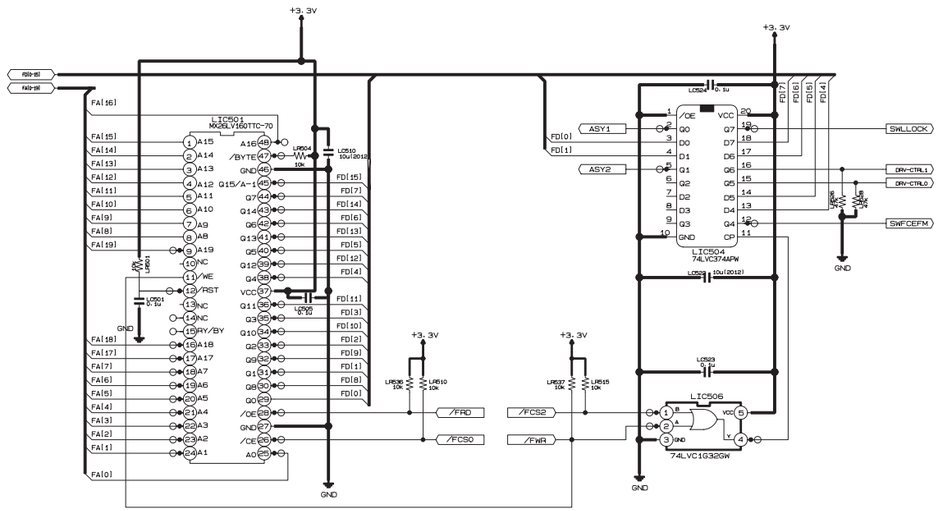


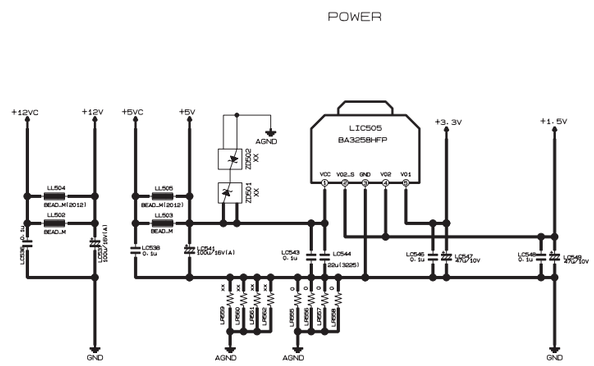
4. RF BLOCK DIAGRAM

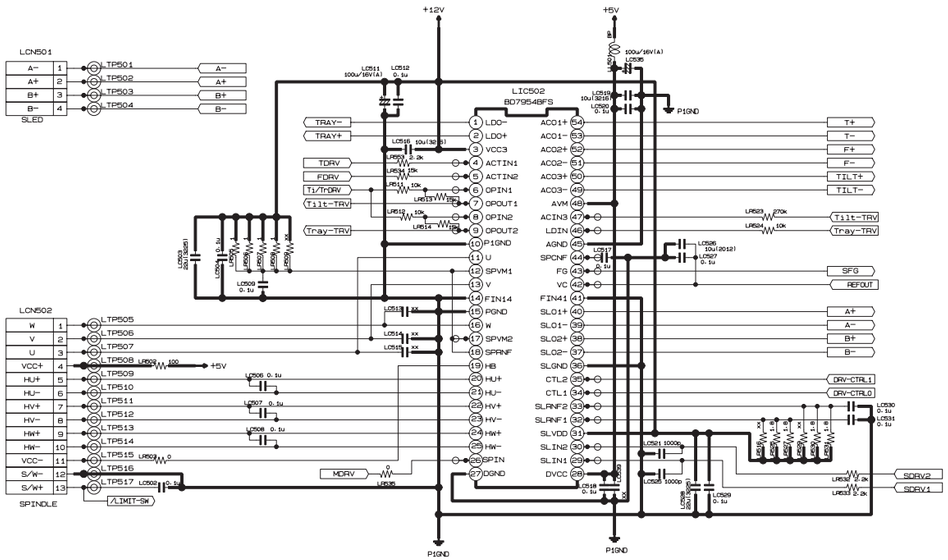


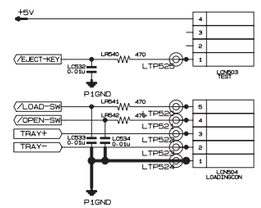
CIRCUIT DIAGRAMS

1. RF CIRCUIT DIAGRAM

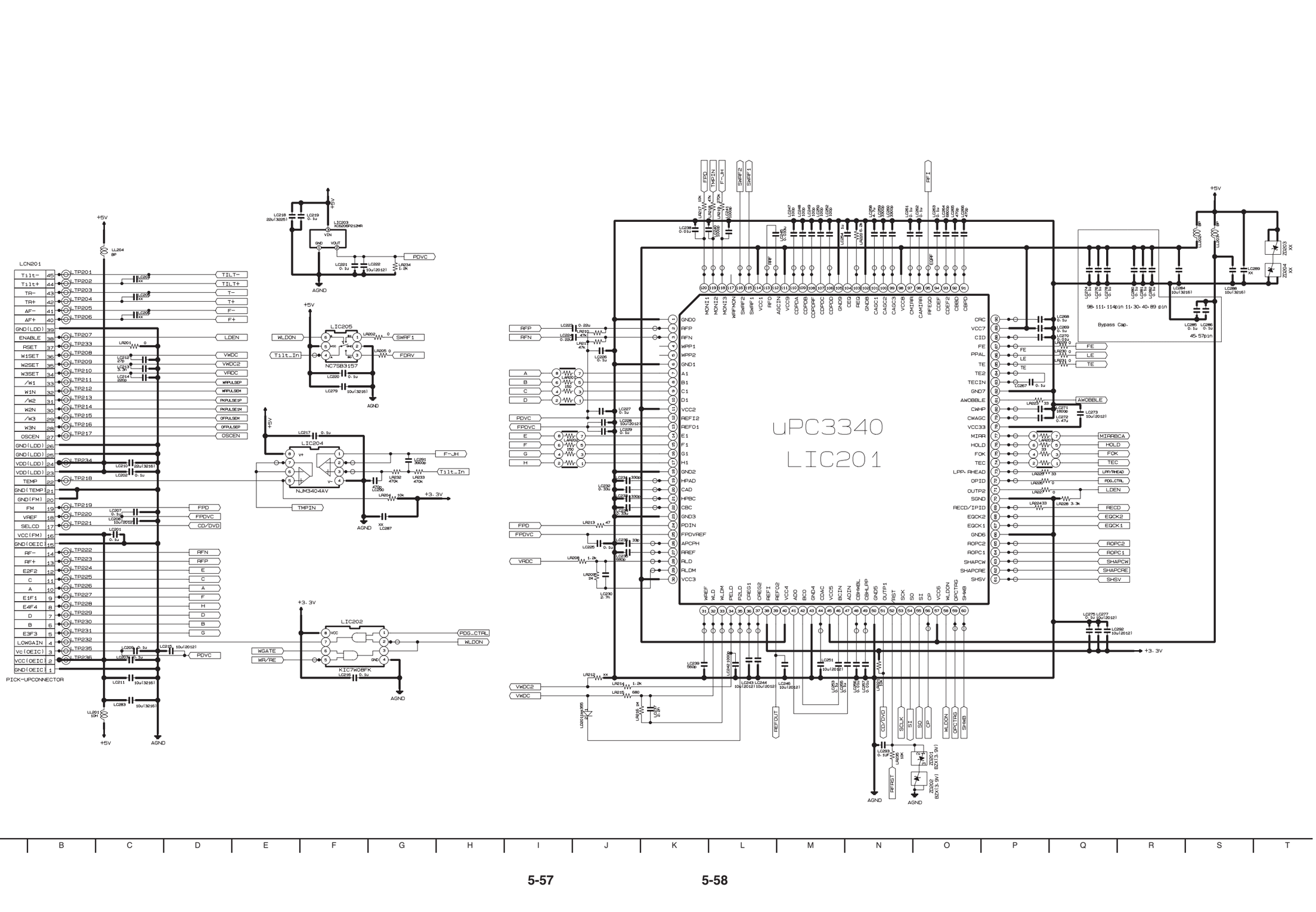




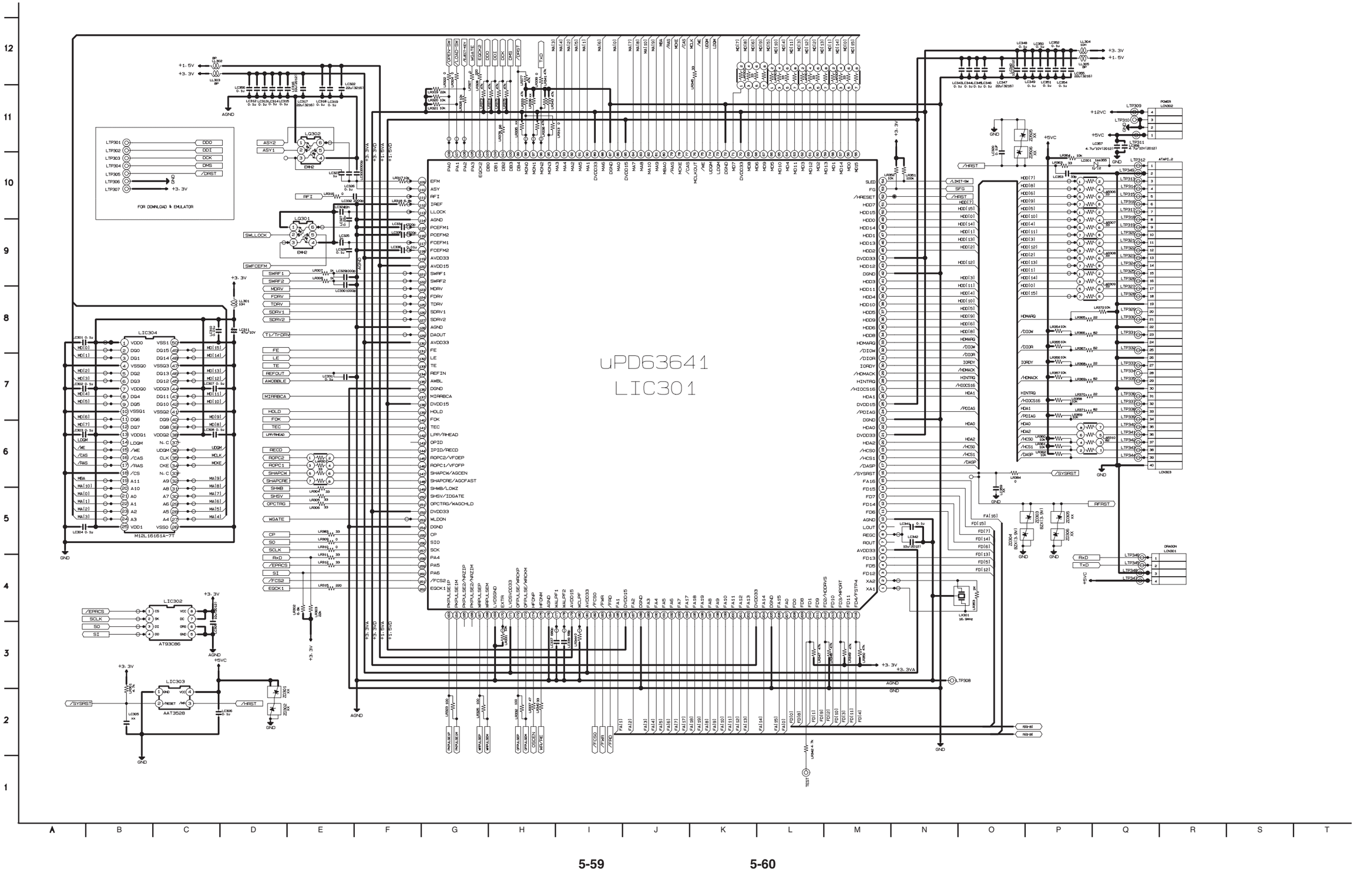




2. DSP CIRCUIT DIAGRAM



3. μ-COM CIRCUIT DIAGRAM



CIRCUIT VOLTAGE CHART

MODE / PIN NO.	STATE
LIC201	
1	0
2	2.35
3	2.35
4	2.36
5	2.36
6	0
7	2.14
8	2.14
9	2.14
10	2.14
11	5.07
12	2.13
13	2.38
14	2.14
15	2.14
16	2.14
17	2.14
18	0
19	2.39
20	0.11
21	2.38
22	0.11
23	0
24	2.38
25	2.38
26	1.71
27	0
28	0
29	0
30	5.06
31	0
32	0
33	0
34	0
35	0
36	2.52
37	2
38	3.34
39	1.68
40	5.07
41	1.57
42	1.61
43	0
44	1.26
45	5.07
46	2.36
47	2.36
48	2.41
49	2.43
50	0
51	0
52	3.34
53	3.34
54	3.34

MODE / PIN NO.	STATE
55	0
56	3.34
57	5.08
58	0
59	0
60	3.34
61	3.34
62	3.34
63	0
64	0
65	0
66	0
67	1.67
68	1.63
69	0
70	0
71	0
72	0
73	0
74	0
75	3.33
76	3.33
77	0
78	3.33
79	1.82
80	2.37
81	1.89
82	0
83	2.36
84	1.66
85	1.68
86	1.61
87	1.69
88	2.6
89	5.07
90	0
91	3.17
92	3.17
93	1.29
94	1.87
95	1.75
96	1.81
97	1.83
98	5.07
99	0
100	0
101	0
102	0
103	1.14
104	1.81
105	0
106	3.93
107	3.93
108	3.93
109	3.93

MODE / PIN NO.	STATE
110	3.93
111	5.07
112	2.9
113	1.64
114	5.07
115	0
116	0
117	0
118	1.65
119	1.3
120	2.38
LIC202	
1	3.33
2	0
3	0
4	0
5	0
6	0
7	0
8	3.34
LIC203	
1	0
2	2.13
3	5.08
LIC204	
1	1.7
2	1.69
3	1.55
4	0
5	0
6	1.35
7	1.35
8	5.08
LIC205	
1	1.97
2	0
3	1.68
4	1.68
5	5.07
6	0
LIC301	
1	1.61
2	1.45
3	1.42
4	0
5	0
6	3.34
7	3.34
8	0
9	0
10	0
11	0
12	0
13	0
14	0

MODE / PIN NO.	STATE
15	0
16	3.34
17	5.19
18	3.42
19	3.43
20	0
21	3.34
22	0
23	0
24	5.04
25	1.51
26	0
27	5.08
28	0
29	3.43
30	5.07
31	3.43
32	3.43
33	3.35
34	3.32
35	3.32
36	3.32
37	3.33
38	3.31
39	3.32
40	3.32
41	3.32
42	0
43	3.32
44	3.34
45	3.32
46	3.32
47	3.32
48	3.32
49	3.32
50	3.32
51	0
52	3.85
53	0
54	3.31
55	0
56	0
57	0
58	0
59	0
60	0
61	0
62	0
63	0
64	0
65	0
66	0
67	0
68	0
69	0

MODE / PIN NO.	STATE
70	3.34
71	0
72	0
73	3.34
74	3.34
75	3.34
76	1.02
77	3.33
78	3.34
79	3.34
80	0
81	0
82	0
83	0
84	0
85	1.51
86	0
87	0
88	0
89	3.34
90	0
91	0
92	0
93	0
94	0
95	0
96	3.34
97	0
98	0
99	0
100	3.32
101	3.32
102	3.32
103	0
104	1.64
105	0
106	3.33
107	3.34
108	0
109	1.67
110	1.67
111	1.66
112	0.72
113	0
114	0
115	1.66
116	1.66
117	1.84
118	3.34
119	3.29
120	1.51
121	1.01
122	2.29
123	1.67
124	1.68

MODE / PIN NO.	STATE
125	1.68
126	1.67
127	1.67
128	0
129	1.7
130	3.34
131	1.7
132	1.47
133	1.83
134	1.68
135	1.62
136	0
137	2.9
138	1.51
139	0
140	0
141	0
142	0
143	0
144	0
145	0
146	0
147	0
148	3.34
149	3.34
150	3.34
151	0
152	3.32
153	0
154	0
155	3.34
156	0
157	3.34
158	3.34
159	0
160	3.34
161	3.34
162	1.64
163	1.4
164	1.21
165	0
166	1.31
167	2.79
168	1.31
169	0
170	0
171	3.34
172	3.32
173	1.28
174	3.24
175	0
176	0
177	0
178	0
179	1.51

MODE / PIN NO.	STATE
180	0
181	3.34
182	0
183	3.34
184	3.34
185	0
186	1.5
187	0
188	0
189	0
190	0
191	0
192	0
193	0
194	0
195	0
196	0
197	0
198	0
199	0
200	0
201	0
202	0
203	3.34
204	0
205	0
206	0
207	0
208	0
209	0
210	3.33
211	0
212	0
213	0
214	3.33
215	0
216	3.33
LIC302	
1	0
2	3.34
3	0
4	3.34
5	0
6	0
7	0
8	0
LIC303	
1	0
2	3.34
3	3.85
4	5.11
LIC304	
1	3.34
2	0
3	0

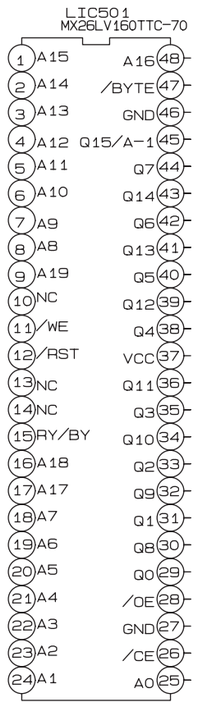
MODE / PIN NO.	STATE
4	0
5	0
6	0
7	3.34
8	0
9	0
10	0
11	0
12	0
13	3.34
14	3.34
15	3.34
16	3.34
17	3.34
18	0
19	0
20	3.34
21	0
22	0
23	0
24	0
25	3.34
26	0
27	0
28	0
29	0
30	0
31	0
32	0
33	0
34	3.34
35	1.02
36	3.4
37	0
38	0
39	0
40	0
41	0
42	0
43	0
44	3.34
45	0
46	0
47	0
48	0
49	0
50	0
LIC501	
1	0
2	0
3	0
4	0
5	0
6	0
7	0

MODE / PIN NO.	STATE
8	0
9	0
10	0
11	3.34
12	3.34
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0
22	0
23	0
24	0
25	0
26	3.34
27	0
28	3.34
29	0
30	0
31	3.33
32	0
33	0
34	0
35	0
36	0
37	0
38	0
39	0
40	0
41	0
42	0
43	0
44	0
45	0
46	0
47	0
48	0
LIC502	
1	0
2	0
3	12.92
4	1.68
5	1.67
6	1.7
7	1.7
8	1.7
9	1.7
10	0
11	0
12	12.92
13	0

MODE / PIN NO.	STATE
14	0
15	0
16	0
17	12.92
18	12.92
19	5.1
20	5.1
21	5.1
22	5.1
23	5.1
24	5.1
25	5.1
26	1.67
27	0
28	5.1
29	1.67
30	2.06
31	12.92
32	12.92
33	12.92
34	0
35	0
36	0
37	0
38	0
39	0
40	0
41	0
42	1.68
43	3.34
44	0
45	0
46	1.7
47	1.66
48	5.1
49	0
50	0
51	0
52	0
53	0
54	0
LIC504	
1	0
2	3.34
3	1.3
4	1.32
5	3.35
6	0
7	0
8	0
9	0
10	0
11	3.35
12	3.35
13	0.78

MODE / PIN NO.	STATE
141.27	
15	0
16	0
17	1.46
18	0
19	3.35
20	3.35
LIC505	
1	5.1
2	1.52
3	0
4	1.52
5	3.34
LIC506	
1	3.34
2	3.34
3	0
4	3.35
5	3.35

IC BLOCK DIAGRAMS



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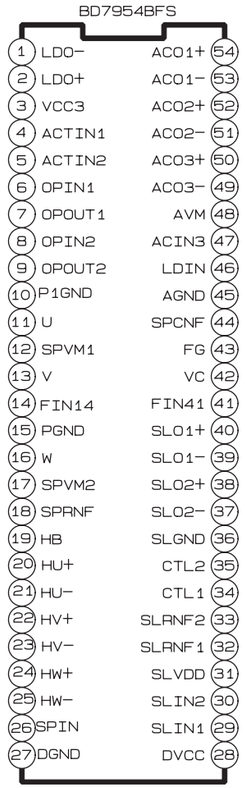

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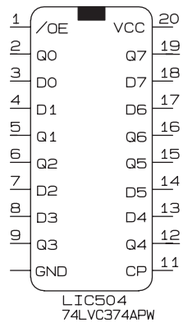

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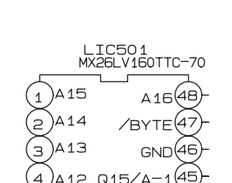

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LIC204_NJM3404AV

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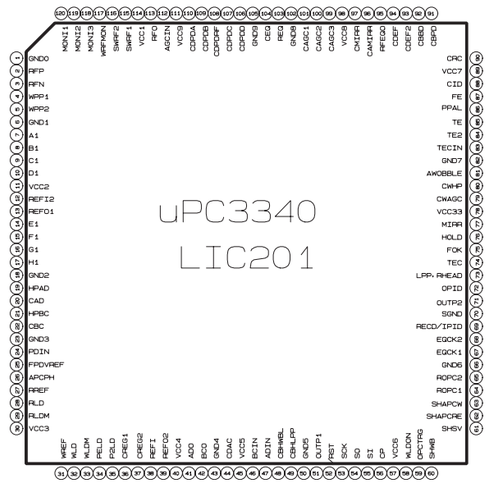
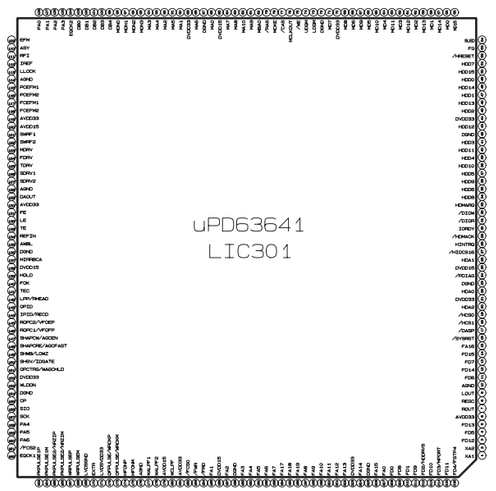


LIC201_UPC3340



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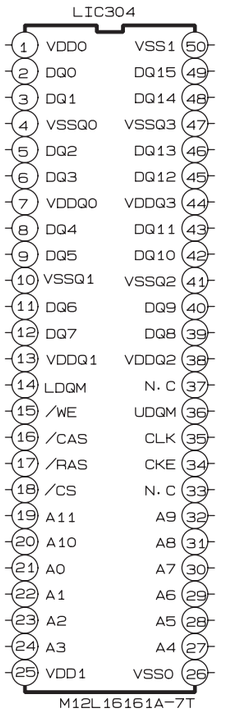

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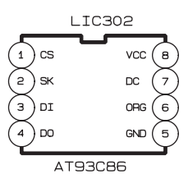

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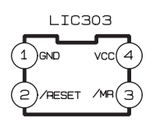

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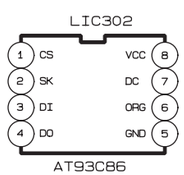
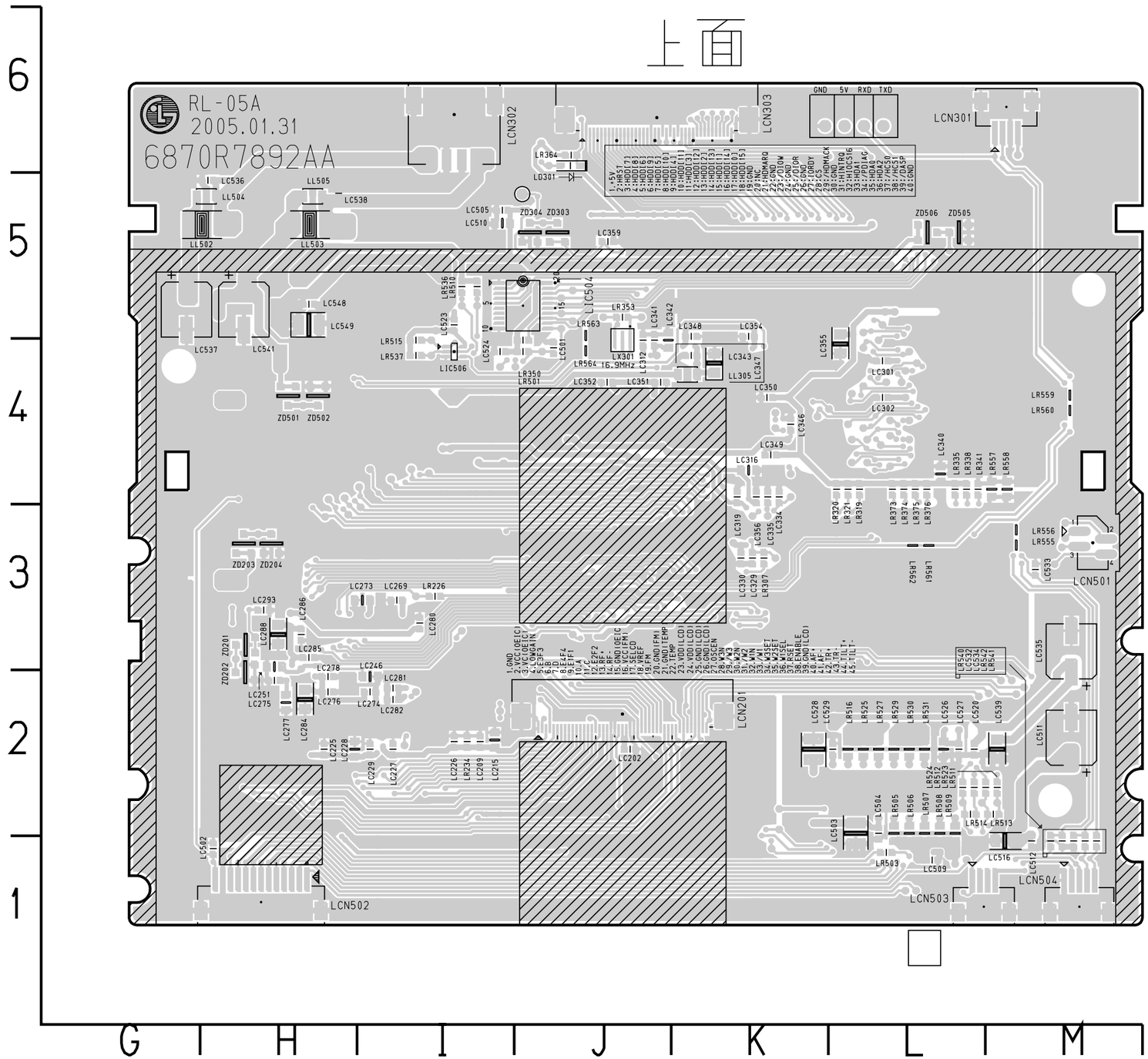


LIC302_AT93C86

PRINTED CIRCUIT DIAGRAMS

1. MAIN P.C.BOARD



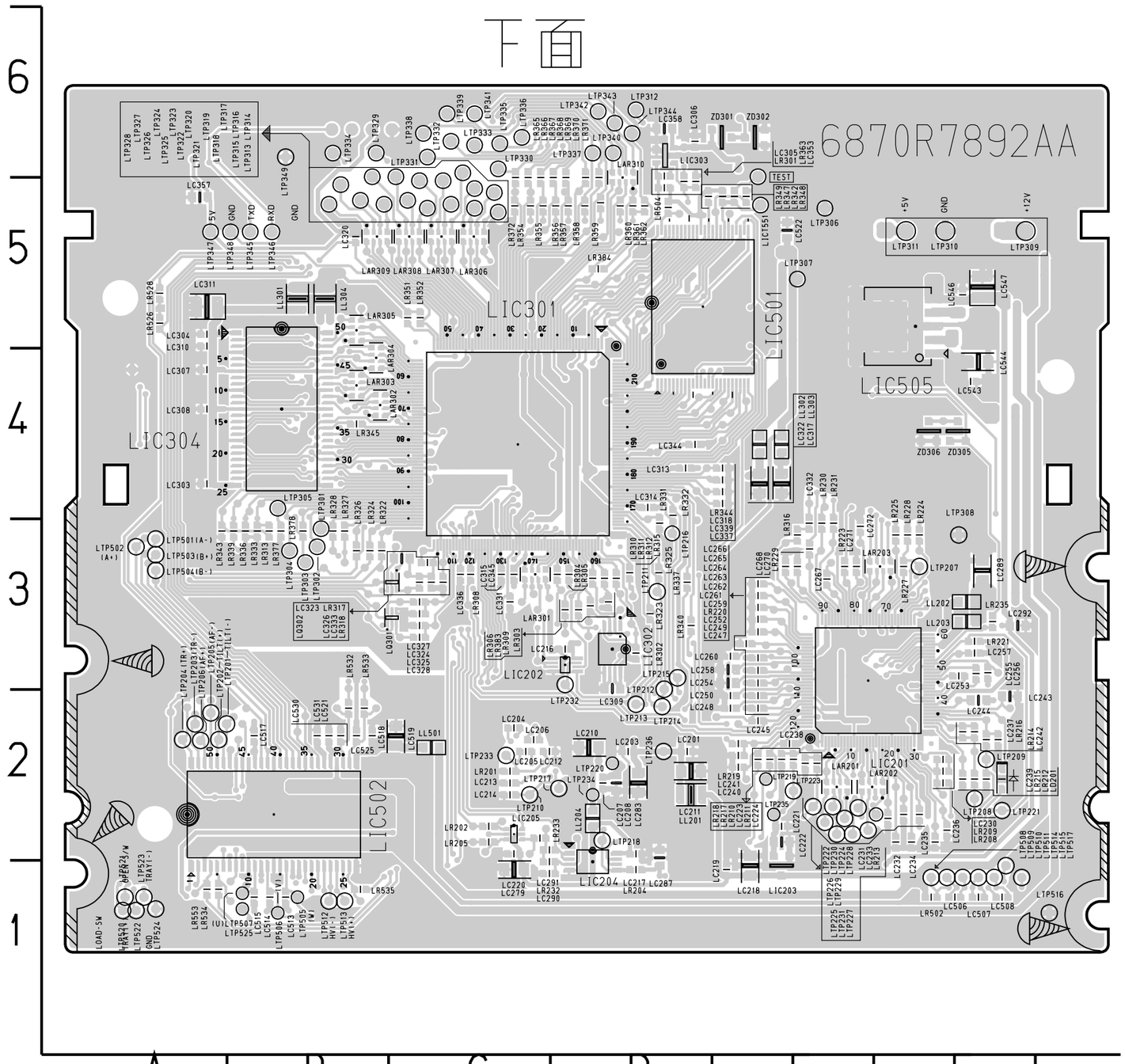
LOCATION GUIDE

LC202 J2	LC343 K4	LC541 H5	LICT318L4	LICT559L2	LR513 M2
LC209 I2	LC346 K4	LC548 H5	LICT319L4	LICT561L2	LR514 L2
LC215 I2	LC347 K4	LC549 H5	LICT321L4	LICT563L2	LR515 I4
LC225 H2	LC348 K5	LCN201 J2	LICT324L4	LICT566I4	LR516 L2
LC226 I2	LC349 K4	LCN301 M6	LICT325L4	LICT567I4	LR523 M2
LC227 I2	LC350 K4	LCN302 I6	LICT328L4	LICT568J5	LR524 L2
LC228 H2	LC351 J4	LCN303 J6	LICT329L4	LL305 K4	LR525 L2
LC229 I2	LC352 J4	LCN501 M3	LICT330K4	LL502 H5	LR527 L2
LC246 I2	LC354 K5	LCN502 H1	LICT331K4	LL503 H5	LR529 L2
LC251 H3	LC355 L4	LCN503 L1	LICT332L4	LL504 H5	LR530 L2
LC269 I3	LC356 K4	LCN504 M1	LICT333L4	LL505 H5	LR531 L2
LC273 I3	LC359 J5	LD301 J6	LICT335K4	LR226 I3	LR536 I5
LC274 I2	LC501 J4	LIC504 J5	LICT336L4	LR234 I2	LR537 I4
LC275 H2	LC502 H1	LIC506 I4	LICT337K1	LR307 K3	LR540 M1
LC276 H2	LC503 L2	LICT202J3	LICT339K2	LR319 L4	LR541 M1
LC277 H2	LC504 L2	LICT203I2	LICT353K3	LR320 L4	LR542 M1
LC278 H2	LC505 I5	LICT211 I2	LICT354K3	LR321 L4	LR555 M3
LC280 I3	LC509 L1	LICT238H3	LICT361K4	LR335 L4	LR556 M3
LC281 I2	LC510 I5	LICT247I3	LICT362K3	LR338 L4	LR557 M4
LC282 I2	LC511 M2	LICT265I3	LICT364K3	LR341 L4	LR558 M4
LC284 H2	LC512 M1	LICT277H3	LICT370J4	LR350 J4	LR559 M4
LC285 H3	LC516 M1	LICT301L4	LICT374J5	LR353 J5	LR560 M4
LC286 H3	LC520 L2	LICT302L5	LICT378J5	LR364 J6	LR561 L3
LC288 H3	LC523 I5	LICT303L5	LICT383J5	LR373 L4	LR562 L3
LC293 H3	LC524 I4	LICT304L4	LICT501J4	LR374 L4	LR563 J5
LC301 L4	LC526 L2	LICT305L4	LICT502I4	LR375 L4	LR564 J4
LC302 L4	LC527 L2	LICT306L4	LICT505L1	LR376 L4	LX301 J4
LC312 J4	LC528 K2	LICT307L4	LICT516L2	LR501 J4	ZD201 H3
LC316 K4	LC529 L2	LICT308L4	LICT517L2	LR503 L1	ZD202 H2
LC319 K4	LC532 M1	LICT309L4	LICT526J4	LR505 L2	ZD203 H3
LC329 K3	LC533 M3	LICT310L4	LICT539J5	LR506 L2	ZD204 H3
LC330 K3	LC534 M1	LICT311K4	LICT541J5	LR507 L2	ZD303 J5
LC334 K4	LC535 M3	LICT312L4	LICT543J5	LR508 L2	ZD304 J5
LC335 K4	LC536 H5	LICT313L4	LICT545J5	LR509 L2	ZD501 H4
LC340 L4	LC537 G5	LICT314L4	LICT554I5	LR510 I5	ZD502 H4
LC341 J4	LC538 H5	LICT315L4	LICT555I5	LR511 M2	ZD505 L5
LC342 J4	LC539 M2	LICT316L4	LICT558M2	LR512 L2	ZD506 L5

LOCATION GUIDE

EQRF E3	LC235 F2	LC292 F3	LC518 B2	LICT220E2	LICT272D3	LICT377D4	LICT544D5	LR220 E3	LR339 B3	LR553 A1	LTP305 B4	LTP346 B5
FE E3	LC236 F2	LC303 A4	LC519 C2	LICT221F2	LICT273C3	LICT384B5	LICT546D5	LR221 F3	LR340 D3	LTP201 A2	LTP306 E5	LTP347 A5
LAR201 E2	LC237 F2	LC304 A5	LC521 B2	LICT222E3	LICT274C3	LICT385C5	LICT547D5	LR223 E3	LR342 E5	LTP202 A2	LTP307 E5	LTP348 B5
LAR202 E2	LC238 E2	LC305 D6	LC522 E5	LICT223F2	LICT275C3	LICT386C5	LICT548D5	LR224 F3	LR343 A3	LTP203 A2	LTP308 F3	LTP349 B6
LAR203 F3	LC239 F2	LC306 D6	LC525 B2	LICT224C3	LICT276C3	LICT387C5	LICT549E5	LR225 F3	LR344 E4	LTP204 A2	LTP309 F5	LTP501 A3
LAR301 C3	LC240 E2	LC307 A4	LC530 B2	LICT225F2	LICT317B4	LICT388C5	LICT550D5	LR227 F3	LR345 B4	LTP205 A2	LTP310 F5	LTP502 A3
LAR302 B4	LC241 E2	LC308 A4	LC531 B2	LICT226C2	LICT320B5	LICT389C5	LICT551E5	LR228 F3	LR347 E5	LTP206 A2	LTP311 F5	LTP503 A3
LAR303 B4	LC242 F2	LC309 D3	LC543 F4	LICT227F2	LICT322B4	LICT390C5	LICT552E5	LR229 E3	LR348 E5	LTP207 F3	LTP312 D6	LTP504 A3
LAR304 B4	LC243 F2	LC310 A5	LC544 F4	LICT228F2	LICT323B4	LICT391C5	LICT556D4	LR230 E3	LR349 D5	LTP208 F2	LTP313 C5	LTP505 B1
LAR305 B5	LC244 F2	LC311 A5	LC546 F5	LICT230E2	LICT326B4	LICT392C5	LICT557D5	LR231 E3	LR351 C5	LTP209 F2	LTP314 C5	LTP506 B1
LAR306 C5	LC245 E2	LC313 D4	LC547 F5	LICT232E2	LICT327B4	LICT393C5	LICT560B1	LR232 C1	LR352 C5	LTP210 C2	LTP315 C5	LTP507 B1
LAR307 C5	LC247 E2	LC314 D4	LD201 F2	LICT234E2	LICT334B4	LICT394C5	LICT562B2	LR233 C2	LR354 C5	LTP211 D3	LTP316 C5	LTP508 F1
LAR308 C5	LC248 E2	LC315 C3	LE E3	LICT236E3	LICT338C2	LICT395C5	LICT564B2	LR235 F3	LR355 C5	LTP212 D2	LTP317 C6	LTP509 F1
LAR309 B5	LC249 E2	LC317 E4	LIC201 E3	LICT239E3	LICT340B3	LICT396C5	LICT565B2	LR301 D5	LR356 D5	LTP213 D2	LTP318 C5	LTP510 F1
LAR310 D5	LC250 E2	LC318 E4	LIC202 D3	LICT243E3	LICT341B3	LICT397C5	LL201 D2	LR302 D3	LR357 D5	LTP214 D2	LTP319 C5	LTP511 F1
LC201 D2	LC252 E3	LC320 B5	LIC203 E1	LICT244F3	LICT342A2	LICT503A1	LL202 F3	LR303 D3	LR358 D5	LTP215 D3	LTP320 C5	LTP512 B1
LC203 D2	LC253 F3	LC322 E4	LIC204 D1	LICT245F3	LICT343D5	LICT504B1	LL203 F3	LR304 D3	LR359 D5	LTP216 D3	LTP321 C5	LTP513 B1
LC204 C2	LC254 E3	LC323 C3	LIC205 C2	LICT246E3	LICT344D3	LICT506B1	LL204 D2	LR305 D3	LR360 D5	LTP217 D2	LTP322 C5	LTP514 F1
LC205 C2	LC255 F3	LC324 C3	LIC301 C4	LICT248E3	LICT345D3	LICT513B2	LL301 B5	LR306 D3	LR361 D5	LTP218 D2	LTP323 C5	LTP515 F1
LC206 C2	LC256 F3	LC325 C3	LIC302 D3	LICT249E3	LICT346D3	LICT514B2	LL302 E4	LR308 C3	LR362 D5	LTP219 E2	LTP324 B5	LTP516 G1
LC207 D2	LC257 F3	LC326 C3	LIC303 D6	LICT250E3	LICT347D3	LICT515B2	LL303 E4	LR309 D3	LR363 D5	LTP220 D2	LTP325 B5	LTP517 F1
LC208 D2	LC258 E3	LC327 C3	LIC304 B4	LICT251E3	LICT349C3	LICT518B2	LL304 B5	LR310 D3	LR365 C5	LTP221 F2	LTP326 B5	LTP520 A1
LC210 D2	LC259 E3	LC328 C3	LIC501 D5	LICT252E3	LICT350C3	LICT519B2	LL501 C2	LR311 D3	LR366 C5	LTP222 E2	LTP327 B5	LTP521 A1
LC211 D2	LC260 E3	LC331 C3	LIC502 B2	LICT253E3	LICT351C3	LICT520B3	LQ301 C3	LR312 D3	LR367 C5	LTP223 E2	LTP328 B5	LTP522 A1
LC212 C2	LC261 E3	LC332 E3	LIC505 F5	LICT254E3	LICT352C3	LICT521B3	LQ302 C3	LR313 B3	LR368 D5	LTP224 E2	LTP329 B6	LTP523 A1
LC213 C2	LC262 E3	LC333 C3	LICT201E2	LICT255E3	LICT355B3	LICT524B3	LR201 C2	LR315 D3	LR369 D5	LTP225 E2	LTP330 C6	LTP524 A1
LC214 C2	LC263 E3	LC336 C3	LICT204D2	LICT256E3	LICT356C3	LICT525D4	LR202 C2	LR316 E3	LR370 D5	LTP226 E2	LTP331 C6	LTP525 B1
LC216 D3	LC264 E3	LC337 E4	LICT205C3	LICT257E3	LICT357C3	LICT527B3	LR204 D1	LR317 C3	LR371 D5	LTP227 E2	LTP332 C6	RRF E2
LC217 D2	LC265 E3	LC339 E4	LICT206F2	LICT258E3	LICT358C3	LICT528D4	LR205 C2	LR318 C3	LR372 C5	LTP228 F2	LTP333 C6	TE E3
LC218 E1	LC266 E3	LC344 D4	LICT207F2	LICT259E3	LICT359E4	LICT529D4	LR208 F2	LR322 B3	LR377 B3	LTP229 E2	LTP334 B6	TEST E5
LC219 E1	LC267 E3	LC345 C3	LICT208F2	LICT260E3	LICT360C3	LICT530D4	LR209 F2	LR323 D3	LR378 B3	LTP230 E2	LTP335 C6	ZD301 E6
LC220 C2	LC268 E3	LC353 D5	LICT209F2	LICT261F3	LICT363C3	LICT531E4	LR210 E2	LR324 B3	LR383 D3	LTP231 E2	LTP336 C6	ZD302 E6
LC221 E2	LC270 E3	LC357 A5	LICT210E2	LICT262F3	LICT365B3	LICT532D4	LR211 E2	LR325 D3	LR384 D5	LTP232 D3	LTP337 D6	ZD305 F4
LC222 E2	LC271 E3	LC358 D6	LICT212F2	LICT263F3	LICT366B3	LICT533E4	LR212 F2	LR326 B3	LR502 F1	LTP233 C2	LTP338 C6	ZD306 F4
LC223 E2	LC272 E3	LC506 F1	LICT213F2	LICT264F3	LICT367B3	LICT534E4	LR213 F2	LR327 B3	LR504 D5	LTP234 D2	LTP339 C6	
LC224 E2	LC279 C1	LC507 F1	LICT214F2	LICT266D3	LICT368D3	LICT535E4	LR214 F2	LR328 B3	LR526 A5	LTP235 E2	LTP340 D6	
LC230 F2	LC283 D2	LC508 F1	LICT215F2	LICT267F3	LICT369D4	LICT536E4	LR215 F2	LR331 D3	LR528 A5	LTP236 D2	LTP341 C6	
LC231 F2	LC287 D2	LC513 B1	LICT216E2	LICT268C2	LICT371B4	LICT537D5	LR216 F2	LR332 D4	LR532 B2	LTP301 B3	LTP342 D6	
LC232 F2	LC289 F3	LC514 B1	LICT217F2	LICT269D3	LICT372B4	LICT538D5	LR217 E2	LR333 B3	LR533 B2	LTP302 B3	LTP343 D6	
LC233 F2	LC290 C1	LC515 B1	LICT218E2	LICT270D3	LICT373B4	LICT540D5	LR218 E2	LR336 B3	LR534 A1	LTP303 B3	LTP344 D6	
LC234 F2	LC291 C2	LC517 B2	LICT219F2	LICT271B3	LICT376D4	LICT542D5	LR219 E2	LR337 D3	LR535 B1	LTP304 B3	LTP345 B5	

2. MAIN P.C.BOARD



MEMO

MEMO

MECHANICAL & ACCESSORIES PARTS LIST

SET & PACKAGING PARTS (FOR PAGES 2-2 TO 2-3)

261	9965 000 25780		RUBBER FOOT	
264	9965 000 25779		FAN, DC 60X60X15MM	
265	9965 000 25546		HOLDER, POWER CORD	
266	9965 000 28797		BRACKET, MOUNTING	
274	9965 000 26264		PLATE, AV GND	
283	9965 000 25773		VCR DOOR	
284	4822 492 42785		SPRING DOOR	
285	9965 000 25774		DVD DOOR	
286	9965 000 25776		SPRING, DVD DOOR	
300	9965 000 28798	⚠	POWER CORD	/01/02/19
300	9965 000 26265	⚠	POWER CORD	/05
806	9965 000 25781		RF CABLE	
811	9965 000 25782		VIDEO CABLE YEL	
812	9965 000 25783		AUDIO CABLE WHITE/RED	
821	9965 000 26260		SCART TO SCART 21 PIN DT_HY_HI	
826	9965 000 28799		FILTER (CIRC), EMC	
900	9965 000 28800		REMOTE CONTROL DVDR3320V	
A00	9965 000 28801		VCR DECK MECH ASSEMBLY	
A43	9965 000 28802		FRONT PANEL ASSEMBLY	/01/02
A43	9965 000 28846		FRONT PANEL ASSEMBLY	/05
A43	9965 000 28849		FRONT PANEL ASSEMBLY	/19
A60	9965 000 28803		RL-05C LOADER (DVDR) MODULE	

VCR MECHANISM PARTS (FOR PAGES 4-28 TO 4-30)

3	9965 000 25625	HOLDER, FPCB(6CH) - D37C MO
4	9965 000 25626	CAP, FPCB - D37C MOLD
8	9965 000 25627	CABLE, FLAT 7PIN 17CM
9	9965 000 25628	ARM, T/UP OTHER - D37
11	9965 000 25629	ARM ASSEMBLY, TENSION - D37
12	9965 000 25630	BASE ASSEMBLY, P2 -D37
12 *	9965 000 28830	BASE ASSEMBLY
13	9965 000 25631	BASE ASSEMBLY, P3 - D37
13 *	9965 000 28831	BASE ASSEMBLY
14	9965 000 25632	BASE ASSEMBLY, P4 - D37
15	9965 000 25633	OPENER, LID OTHER - D37
16	9965 000 28832	BASE ASSEMBLY
16 *	9965 000 28833	BASE ASSEMBLY
17	9965 000 28834	REEL
17 *	9965 000 25635	REEL, S OTHER - D37
21	9965 000 25636	BRAKE ASSEMBLY, T - D37
22	9965 000 25637	HEAD(CIRC), ST FE HEAD FOR D37
22 *	9965 000 28835	HEAD(CIRC)
23	9965 000 25638	BASE, LOADING OTHER - D37
24	9965 000 25639	ARM ASSEMBLY, IDLER(H)
26	9965 000 25640	MOTOR ASSEMBLY, L/D - (DI) D37
26 *	9965 000 28836	MOTOR ASSEMBLY
27	9965 000 25641	GEAR, WHEEL OTHER - D37
28	9965 000 25642	REEL, T OTHER - D37
29	9965 000 25643	ARM ASSEMBLY, PINCH - D37 (CHON
29 *	9965 000 28837	ARM ASSEMBLY
29 *	9965 000 28838	ARM ASSEMBLY
31	9965 000 25644	SPRING, COIL TENSION - D37
51	9965 000 19315	CAPSTAN
52	9965 000 25645	MOTOR, CAPSTAN F2QVB66 SANKYO FO
52 *	9965 000 25645	MOTOR, CAPSTAN F2QVB66 SANKYO FO
52 *	9965 000 25645	MOTOR, CAPSTAN F2QVB66 SANKYO FO
52A	9965 000 25660	SUPPORTER, CAPSTAN OTHER - D37
55	9965 000 25646	GEAR, DRIVE OTHER - D37
56	9965 000 25647	GEAR, CAM OTHER - D37
58	9965 000 25648	BRAKE ASSEMBLY, CAPSTAN -D37
60	9965 000 25649	LEVER, F/R OTHER - D37
61	9965 000 25650	CLUTCH ASSEMBLY, D37(M)
64	9965 000 25651	GEAR, SECTOR OTHER - D37
76	9965 000 25652	LEVER, SPRING OTHER - D37
77	9965 000 25653	PLATE, SLIDER OTHER - D37
78	9965 000 25654	LEVER, TENSION OTHER - D37
79	9965 000 25655	BASE, TENSION OTHER - D37
80	9965 000 25656	LEVER, BRAKE OTHER - D37
100	9965 000 25657	PLATE ASSEMBLY, TOP - D37
109	9965 000 25658	OPENER, DOOR OTHER - D37
405	9965 000 28839	SCREW MACHINE,PAN HEAD
406	4822 502 21655	SCREW MACHINE,PAN HEAD SPR W
409	9965 000 19341	+ 1 D2.6 L5.0 SWRCH18A/FZY TAP
410	9965 000 19342	D2.6 L6.8 MSWR3/FZY
517	9965 000 28840	WASHER,DRAWING
517 *	9965 000 28841	WASHER,DRAWING
518	9965 000 28842	WASHER,DRAWING
A01	9965 000 25617	DRUM(CIRC) ASSEMBLY, D37-6CH PAL
A11	9965 000 25619	GEAR ASSEMBLY, P3 - D37
A12	9965 000 25620	GEAR ASSEMBLY, P2 - D37
A21	9965 000 25621	HOLDER ASSEMBLY, CST - D37
A22	9965 000 25622	GEAR ASSEMBLY, RACK F/L - D37
A23	9965 000 25623	ARM ASSEMBLY, F/L - D37
A24	9965 000 25624	LEVER ASSEMBLY, SWITCH(C) - D37

Note: * ALTERNATIVE PART CODE

Only the parts mentioned in this list are normal service spare parts.

ELECTRICAL PARTS LIST

VCR MAIN BOARD ASSEMBLY

MISCELLANEOUS

323	9965 000 25560	CASE ASSEMBLY
BC91	9965 000 18585	BEAD CORE BFS3550R2FD8,R T/P
BC92	9965 000 18585	BEAD CORE BFS3550R2FD8,R T/P
CS501	9965 000 25563	SWITCH MPU12970MLB0
ES501	9965 000 25564	HOLDER ASSY VCR DECK/MECHA END(S
ES502	9965 000 25564	HOLDER ASSY VCR DECK/MECHA END(S
F903	9965 000 18627	CFI06B1H101MF SAMHWA TP 2-5K
F904	9965 000 18627	CFI06B1H101MF SAMHWA TP 2-5K
F905	9965 000 18627	CFI06B1H101MF SAMHWA TP 2-5K
F906	9965 000 18627	CFI06B1H101MF SAMHWA TP 2-5K
JK901	9965 000 25795	DVD/VCR OUT - Y/PR/PB + L/R + CO
JK903	9965 000 25796	S-VIDEO OUT (REAR)
LD501	9965 000 25592	HOLDER ASSY, VCR DECK/MECHA END(
MS501	9965 000 25594	SWITCH SSS-51MD-3 5VDC 1MA D3
MS501 *	9965 000 25595	SWITCH MMS01080ZMBO 5VDC 1MA D37
P3D01	9965 000 25801	FLEX SOCKET 9PIN VERT
P3D02	9965 000 25802	FLEX SOCKET 6PIN VERT
P3D03	9965 000 25803	SOCKET GB201-2P-TS-B
PM601	9965 000 25804	SOCKET, TUC-P12P-B1 12P
PM602	9965 000 25805	SOCKET, TUC-P05P-B1 5P 2.0MM
PMC01	9965 000 25806	SOCKET JE612-A2T-12A 12P 2.0M
PMD01	9965 000 25807	FLEX SOCKET 15PIN VERT
PMD02	9965 000 25808	FLEX SOCKET 30PIN VERT
PMP01	9965 000 28812	8283/9073 15PIN 240M/M SHIELD
RS501	9965 000 25602	KIT-3001A REEL SENSOR
RS502	9965 000 25602	KIT-3001A REEL SENSOR
SC901	9965 000 25603	DOUBLE - SCART DSAM-0341
SW901	9965 000 25811	SLIDE SWITCH - RGB / COMPONENT
TU701	9965 000 25812	TUNER UNIT TADM-M901D /01/02/05 only
TU701	9965 000 25672	TUNER UNIT TADM-S101D /19 only
X301	9965 000 28814	HC-49/SM BUBANG 4.433619MHZ /
X501	9965 000 25815	X'TAL RESONATOR 14.31818MHZ
X502	9965 000 25611	X'TAL 32.768KHZ
X751	9965 000 18660	49U BUBANG 18432000HZ 30PPM 16

CAPACITORS

C313	9965 000 28804	0.022UF D 100V 5% PE TP5

RESISTORS

COILS & FILTERS

L201	9965 000 25797	INDUCTOR 10UH 10% /02/19 only
L300	9965 000 28805	39UH 5% 4X5 TR5
L302	9965 000 28806	100UH 5% TP 4 X 5 TR5 -
L303	9965 000 28807	150UH 5% 4X5 TR5
L305	9965 000 28805	39UH 5% 4X5 TR5
L306	9965 000 28806	100UH 5% TP 4 X 5 TR5 -
L307	9965 000 28808	12UH 10% R 3X5 TR5
L308	9965 000 28806	100UH 5% TP 4 X 5 TR5 -
L311	9965 000 28806	100UH 5% TP 4 X 5 TR5 -
L503	9965 000 18641	100M K 6X6 L5 TP
L504	9965 000 18646	10M K 6X6 L5 TP
L505	9965 000 25799	INDUCTOR 12UH
L506	9965 000 25591	INDUCTOR 1UH , CHIP2012
L507	9965 000 25591	INDUCTOR 1UH , CHIP2012
L701	9965 000 18641	100M K 6X6 L5 TP
L704	9965 000 18646	10M K 6X6 L5 TP
L705	9965 000 18646	10M K 6X6 L5 TP
L7M1	9965 000 18646	10M K 6X6 L5 TP
L7V1	9965 000 18641	100M K 6X6 L5 TP
L801	9965 000 18641	100M K 6X6 L5 TP
L802	9965 000 18641	100M K 6X6 L5 TP
L901	9965 000 19456	10UH, CHIP2012 CERATECH R/TP
L902	9965 000 19456	10UH, CHIP2012 CERATECH R/TP
L903	9965 000 19456	10UH, CHIP2012 CERATECH R/TP
L904	9965 000 19456	10UH, CHIP2012 CERATECH R/TP
L905	9965 000 19456	10UH, CHIP2012 CERATECH R/TP
L906	9965 000 19456	10UH, CHIP2012 CERATECH R/TP
L907	9965 000 19456	10UH, CHIP2012 CERATECH R/TP
L908	9965 000 19456	10UH, CHIP2012 CERATECH R/TP
L909	9965 000 19456	10UH, CHIP2012 CERATECH R/TP
L910	9965 000 19456	10UH, CHIP2012 CERATECH R/TP
L911	9965 000 18646	10M K 6X6 L5 TP
L912	9965 000 25591	INDUCTOR 1UH , CHIP2012
L913	9965 000 25591	INDUCTOR 1UH , CHIP2012

DIODES

D8C1	9965 000 18686	RL104 R. TP GULF SEMICONDUCTOR
D8C2	9965 000 18686	RL104 R. TP GULF SEMICONDUCTOR
D201	9965 000 18565	RL104F 400V 1A /19 only
D901	9965 000 18565	RL104F 400V 1A
D902	9965 000 18565	RL104F 400V 1A
D903	9965 000 18565	RL104F 400V 1A
D904	9965 000 18565	RL104F 400V 1A
D905	9965 000 18565	RL104F 400V 1A
D906	9965 000 18565	RL104F 400V 1A
ZD801	9965 000 25616	ZENER Z02W7.5V KEC R/TP SOT23 25
ZD802	9965 000 25616	ZENER Z02W7.5V KEC R/TP SOT23 25
ZD901	9965 000 25616	ZENER Z02W7.5V KEC R/TP SOT23 25
ZD902	9965 000 25616	ZENER Z02W7.5V KEC R/TP SOT23 25
ZD903	9965 000 25616	ZENER Z02W7.5V KEC R/TP SOT23 25
ZD904	9965 000 25616	ZENER Z02W7.5V KEC R/TP SOT23 25
ZD905	9965 000 25616	ZENER Z02W7.5V KEC R/TP SOT23 25
ZD906	9965 000 25616	ZENER Z02W7.5V KEC R/TP SOT23 25
ZD907	9965 000 25616	ZENER Z02W7.5V KEC R/TP SOT23 25
ZD908	9965 000 25616	ZENER Z02W7.5V KEC R/TP SOT23 25
ZD925	9965 000 25616	ZENER Z02W7.5V KEC R/TP SOT23 25
ZD926	9965 000 25616	ZENER Z02W7.5V KEC R/TP SOT23 25
ZD927	9965 000 25616	ZENER Z02W7.5V KEC R/TP SOT23 25
ZD928	9965 000 25616	ZENER Z02W7.5V KEC R/TP SOT23 25

ELECTRICAL PARTS LIST

TRANSISTORS

Q301	9965 000 18651	2SC5344Y TP
Q301 *	9965 000 25599	KTC3203 KEC TP TO92 50V 150MA
Q302	9965 000 25598	STB1277LY-AT TP TO-9 AUK KOREA
Q302 *	9965 000 25597	KSA928A-Y,TO-92L TP SAMSUNG TO
Q302 *	9965 000 25810	KTA1273-TP-Y (KTA966A)KEC
Q303	9965 000 28811	DTC124EK TP ROHM KOREA SOT23 3
Q303 *	9965 000 28813	AUK KOREA SRC1203S R/TP SOT23
Q303 *	9965 000 16624	CHIP TRANSISTOR KRC103S RTK
Q305	9965 000 25809	CHIP KTC3875S-GR-T1(ALG) KEC
Q306	9965 000 25809	CHIP KTC3875S-GR-T1(ALG) KEC
Q307	9965 000 26162	KRA103S-T1
Q310	9965 000 16622	CHIP TRANSISTOR KTA1504GR-RTK
Q501	9965 000 25809	CHIP KTC3875S-GR-T1(ALG) KEC
Q503	9965 000 25810	KTA1273-TP-Y (KTA966A)KEC
Q504	9965 000 16622	CHIP TRANSISTOR KTA1504GR-RTK
Q505	9965 000 16622	CHIP TRANSISTOR KTA1504GR-RTK
Q506	9965 000 25809	CHIP KTC3875S-GR-T1(ALG) KEC
Q514	9965 000 16624	CHIP TRANSISTOR KRC103S RTK
Q515	9965 000 16624	CHIP TRANSISTOR KRC103S RTK
Q701	9965 000 16624	CHIP TRANSISTOR KRC103S RTK
Q704	9965 000 25810	KTA1273-TP-Y (KTA966A)KEC
Q7S1	9965 000 25809	CHIP KTC3875S-GR-T1(ALG) KEC /19 only
Q7S2	9965 000 16624	CHIP TRANSISTOR KRC103S RTK /19 only
Q8C1	9965 000 16622	CHIP TRANSISTOR KTA1504GR-RTK
Q901	9965 000 16622	CHIP TRANSISTOR KTA1504GR-RTK
Q902	9965 000 25809	CHIP KTC3875S-GR-T1(ALG) KEC
Q903	9965 000 25809	CHIP KTC3875S-GR-T1(ALG) KEC
Q904	9965 000 16624	CHIP TRANSISTOR KRC103S RTK
Q905	9965 000 16622	CHIP TRANSISTOR KTA1504GR-RTK
Q906	9965 000 16624	CHIP TRANSISTOR KRC103S RTK
Q907	9965 000 16622	CHIP TRANSISTOR KTA1504GR-RTK
Q910	9965 000 25809	CHIP KTC3875S-GR-T1(ALG) KEC
Q911	9965 000 25809	CHIP KTC3875S-GR-T1(ALG) KEC
Q912	9965 000 25809	CHIP KTC3875S-GR-T1(ALG) KEC

INTEGRATED CIRCUITS

IC201	9965 000 25670	LA70100M-TRM SANYO /02/19 only
IC301	9965 000 28809	HA118725AF-E PB-FREE HITACHI 1
IC501	9965 000 28810	MN101D101F LJ MATSUSHITA 100PI
IC503	9965 000 18632	CAT24W16P 8P DIP ST 16K SERIAL
IC504	9965 000 18633	KIA7031P 3P 3.1V RESET(TAPING)
IC505	9965 000 18634	KIA7042P
IC751	9965 000 14760	AUD UP MSP3417G-QG-B8-V3
IC7V1	9965 000 25582	SDA5650X GEG MICRONAS 20PIN SO
IC801	9352 631 46557	IC SM TDA9605H/N2
IC802	9965 000 25583	MM1443XJBE MITSUMI 34PIN SSOP
IC901	9965 000 18573	MM1623XFBE MITSUMI 28PIN SOP R

Note: * ALTERNATIVE PART CODE

Only the parts mentioned in this list are normal service spare parts.

FRONT JACK PC BOARD

MISCELLANEOUS

JK761	9965 000 25958	S-VIDEO SOCKET
JK762	9965 000 26261	CINCH SOCKET WHITE
JK763	9965 000 26262	CINCH SOCKET RED
JK764	9965 000 26263	CINCH SOCKET YELLOW
JK765	9965 000 28829	DV-IN SOCKET

COILS & FILTERS

F701	9965 000 18585	BEAD CORE BFS3550R2FD8,R T/P
F702	9965 000 18585	BEAD CORE BFS3550R2FD8,R T/P
F703	9965 000 18585	BEAD CORE BFS3550R2FD8,R T/P
F704	9965 000 18585	BEAD CORE BFS3550R2FD8,R T/P
L701	9965 000 18585	BEAD CORE BFS3550R2FD8,R T/P
L702	9965 000 18585	BEAD CORE BFS3550R2FD8,R T/P
L703	9965 000 18585	BEAD CORE BFS3550R2FD8,R T/P
L704	9965 000 18648	100M K 2.3X3.4 L5 TP
L705	9965 000 18648	100M K 2.3X3.4 L5 TP

TIMER (DISPLAY) + KEY PC BOARDS

MISCELLANEOUS

DIG601	9965 000 25949	FTD DISPLAY HNV-12SM79T
P6M01	9965 000 25953	CONN. PLUG TUC-P12X-B1 12P
P6M03	9965 000 25954	CONN. PLUG TUC-P05X-B1 5PIN
RC601	9965 000 25955	REM RECEIVER TSOP2438SB1
RC601 *	9965 000 25956	REM RECEIVER TSOP1838RF1
SW601	9965 000 19257	THVV502GAA POSTECH DC 12 V 5-
SW601 *	9965 000 25957	TACT SWITCH SKQNQED 12V 50MA
SW602	9965 000 19257	THVV502GAA POSTECH DC 12 V 5-
SW602 *	9965 000 25957	TACT SWITCH SKQNQED 12V 50MA
SW603	9965 000 19257	THVV502GAA POSTECH DC 12 V 5-
SW603 *	9965 000 25957	TACT SWITCH SKQNQED 12V 50MA
SW604	9965 000 19257	THVV502GAA POSTECH DC 12 V 5-
SW604 *	9965 000 25957	TACT SWITCH SKQNQED 12V 50MA
SW605	9965 000 19257	THVV502GAA POSTECH DC 12 V 5-
SW605 *	9965 000 25957	TACT SWITCH SKQNQED 12V 50MA
SW606	9965 000 19257	THVV502GAA POSTECH DC 12 V 5-
SW606 *	9965 000 25957	TACT SWITCH SKQNQED 12V 50MA
SW607	9965 000 19257	THVV502GAA POSTECH DC 12 V 5-
SW607 *	9965 000 25957	TACT SWITCH SKQNQED 12V 50MA
SW608	9965 000 19257	THVV502GAA POSTECH DC 12 V 5-
SW610	9965 000 19257	THVV502GAA POSTECH DC 12 V 5-
SW610 *	9965 000 25957	TACT SWITCH SKQNQED 12V 50MA
SW611	9965 000 19257	THVV502GAA POSTECH DC 12 V 5-
SW611 *	9965 000 25957	TACT SWITCH SKQNQED 12V 50MA
SW612	9965 000 19257	THVV502GAA POSTECH DC 12 V 5-
SW612 *	9965 000 25957	TACT SWITCH SKQNQED 12V 50MA
SW613	9965 000 19257	THVV502GAA POSTECH DC 12 V 5-
SW613 *	9965 000 25957	TACT SWITCH SKQNQED 12V 50MA
SW614	9965 000 19257	THVV502GAA POSTECH DC 12 V 5-

ELECTRICAL PARTS LIST

MISCELLANEOUS

SW614 *	9965 000 25957	TACT SWITCH SKQNQED 12V 50MA

CAPACITORS

C602	9965 000 28828	TANTALUM CAP 220UF 10V 20%
C602 *	9965 000 28827	TANTALUM CAP 220UF 10V 20%

RESISTORS

R606	9965 000 25921	INDUCTOR, CHIP HB-1M1608-102JT
R607	9965 000 25921	INDUCTOR, CHIP HB-1M1608-102JT
R608	9965 000 25921	INDUCTOR, CHIP HB-1M1608-102JT
R609	9965 000 25921	INDUCTOR, CHIP HB-1M1608-102JT

COIL & FILTERS

L601	9965 000 19251	820UH 5% 4X5 TR5

DIODES

LED601	9965 000 25951	SA3417 TP RED
LED602	9965 000 25952	SY3517 BK AMBER
LED603	9965 000 25952	SY3517 BK AMBER
LED604	9965 000 25952	SY3517 BK AMBER
LED605	9965 000 25952	SY3517 BK AMBER
LED606	9965 000 25951	SA3417 TP RED
LED606 *	9965 000 26158	LED DL-11S2RNS RED
LED607	9965 000 25951	SA3417 TP RED
LED607 *	9965 000 26158	LED DL-11S2RNS RED

TRANSISTORS & INTEGRATED CIRCUITS

IC601	9965 000 25950	PT6315 PTC 44 LQFP TRAY VFD DR
Q601	9965 000 25809	CHIP KTC3875S-GR-T1(ALG) KEC
Q604	9965 000 25809	CHIP KTC3875S-GR-T1(ALG) KEC

Note: * ALTERNATIVE PART CODE

Only the parts mentioned in this list are normal service spare parts.

VDR (DIGITAL) BOARD

MISCELLANEOUS

CON401	9965 000 25920	FLEX SOCKET 40PIN VERT
PN301	9965 000 25941	CONN SOCKET 15PIN VERT
PN302	9965 000 25941	CONN SOCKET 15PIN VERT
PN303	9965 000 25942	FLEX SOCKET 15PIN VERT
PN304	9965 000 25943	FLEX SOCKET 30PIN VERT
X101	9965 000 25945	CRYSTAL RESONATOR 13.5 MHZ
X501	9965 000 25946	CRYSTAL RESONATOR 14.31818MHZ
X601	9965 000 25947	CRYSTAL RESONATOR 24.576MHZ

CAPACITORS

C107	9965 000 25907	TANTALUM CAP 47UF 10V 20%
C109	9965 000 25908	TANTALUM CAP 10UF 10V
C121	9965 000 25908	TANTALUM CAP 10UF 10V
C123	9965 000 25908	TANTALUM CAP 10UF 10V
C135	9965 000 25908	TANTALUM CAP 10UF 10V
C136	9965 000 25908	TANTALUM CAP 10UF 10V
C149	9965 000 25908	TANTALUM CAP 10UF 10V
C162	9965 000 25908	TANTALUM CAP 10UF 10V
C303	9965 000 25910	TANTALUM CAP 330UF 6.3V 20%
C305	9965 000 25911	ELCAP 220UF 6.3V
C306	9965 000 25912	TANTALUM CAP 22UF 10V
C309	9965 000 25911	ELCAP 220UF 6.3V
C311	9965 000 25911	ELCAP 220UF 6.3V
C312	9965 000 25911	ELCAP 220UF 6.3V
C313	9965 000 25911	ELCAP 220UF 6.3V
C318	9965 000 25911	ELCAP 220UF 6.3V
C320	9965 000 25911	ELCAP 220UF 6.3V
C403	9965 000 25912	TANTALUM CAP 22UF 10V
C504	9965 000 25913	ELCAP 100UF 16V
C507	9965 000 25914	ELCAP 22UF 16V
C508	9965 000 25915	ELCAP 10UF 16V
C509	9965 000 25915	ELCAP 10UF 16V
C510	9965 000 25915	ELCAP 10UF 16V
C519	9965 000 25916	TANTALUM CAP 10UF 16V 20%
C535	9965 000 25916	TANTALUM CAP 10UF 16V 20%
C537	9965 000 25916	TANTALUM CAP 10UF 16V 20%
C628	9965 000 25917	TANTALUM CAP 1UF 16V
C629	9965 000 25917	TANTALUM CAP 1UF 16V
C630	9965 000 25912	TANTALUM CAP 22UF 10V
C803	9965 000 25918	ELCAP 47UF 16V
C805	9965 000 25914	ELCAP 22UF 16V
C808	9965 000 25914	ELCAP 22UF 16V
C810	9965 000 25914	ELCAP 22UF 16V
C813	9965 000 25915	ELCAP 10UF 16V
C815	9965 000 25918	ELCAP 47UF 16V
C820	9965 000 25915	ELCAP 10UF 16V
C822	9965 000 25915	ELCAP 10UF 16V
C824	9965 000 25915	ELCAP 10UF 16V
C828	9965 000 25918	ELCAP 47UF 16V
C829	9965 000 25915	ELCAP 10UF 16V

ELECTRICAL PARTS LIST

CAPACITORS

C831	9965 000 25915	ELCAP 10UF 16V
C833	9965 000 25918	ELCAP 47UF 16V
C835	9965 000 28815	3.3UF 50V 20% 85STD (CYL) R/TP
C836	9965 000 25915	ELCAP 10UF 16V
C837	9965 000 25918	ELCAP 47UF 16V
C840	9965 000 25914	ELCAP 22UF 16V
C841	9965 000 25914	ELCAP 22UF 16V
C845	9965 000 25914	ELCAP 22UF 16V
C847	9965 000 25918	ELCAP 47UF 16V
C849	9965 000 25918	ELCAP 47UF 16V
C899	9965 000 25915	ELCAP 10UF 16V
C1201	9965 000 25843	TANTALUM CAP 10UF 6.3V 20%
C1208	9965 000 25843	TANTALUM CAP 10UF 6.3V 20%
C1262	9965 000 25843	TANTALUM CAP 10UF 6.3V 20%
C1272	9965 000 25843	TANTALUM CAP 10UF 6.3V 20%
C1282	9965 000 25910	TANTALUM CAP 330UF 6.3V 20%
C1282	9965 000 25909	TANTALUM CAP 330U F6.3V 20%
C1287	9965 000 25910	TANTALUM CAP 330UF 6.3V 20%
C1287	9965 000 25909	TANTALUM CAP 330U F6.3V 20%
C1288	9965 000 25910	TANTALUM CAP 330UF 6.3V 20%
C1288	9965 000 25909	TANTALUM CAP 330U F6.3V 20%
C1289	9965 000 25910	TANTALUM CAP 330UF 6.3V 20%
C1289	9965 000 25909	TANTALUM CAP 330U F6.3V 20%
C1291	9965 000 25839	TANTALUM CAP 22UF 16V 20%
C1293	9965 000 25909	TANTALUM CAP 330U F6.3V 20%
C1293	9965 000 25910	TANTALUM CAP 330UF 6.3V 20%
C1295	9965 000 25910	TANTALUM CAP 330UF 6.3V 20%
C1295	9965 000 25909	TANTALUM CAP 330U F6.3V 20%
C5108	9965 000 25916	TANTALUM CAP 10UF 16V 20%
C5109	9965 000 25916	TANTALUM CAP 10UF 16V 20%
C5110	9965 000 25916	TANTALUM CAP 10UF 16V 20%

RESISTORS

R307	9965 000 25921	INDUCTOR, CHIP HB-1M1608-102JT
R308	9965 000 25921	INDUCTOR, CHIP HB-1M1608-102JT
R506	9965 000 25921	INDUCTOR, CHIP HB-1M1608-102JT

COILS & FILTERS

FB801	9965 000 18575	HB-1M2012-102JT CERATECH TP
FB802	9965 000 18575	HB-1M2012-102JT CERATECH TP
FB803	9965 000 18575	HB-1M2012-102JT CERATECH TP
FB804	9965 000 18575	HB-1M2012-102JT CERATECH TP
FB805	9965 000 18575	HB-1M2012-102JT CERATECH TP
FB821	9965 000 18575	HB-1M2012-102JT CERATECH TP
FB822	9965 000 18575	HB-1M2012-102JT CERATECH TP
FB823	9965 000 18575	HB-1M2012-102JT CERATECH TP
FB824	9965 000 18575	HB-1M2012-102JT CERATECH TP
FB825	9965 000 18575	HB-1M2012-102JT CERATECH TP
FB826	9965 000 18575	HB-1M2012-102JT CERATECH TP
FL502	9965 000 25921	INDUCTOR, CHIP HB-1M1608-102JT
FL503	9965 000 25921	INDUCTOR, CHIP HB-1M1608-102JT
FL504	9965 000 25921	INDUCTOR, CHIP HB-1M1608-102JT
FL505	9965 000 25921	INDUCTOR, CHIP HB-1M1608-102JT
FL506	9965 000 25921	INDUCTOR, CHIP HB-1M1608-102JT
FL507	9965 000 25921	INDUCTOR, CHIP HB-1M1608-102JT
L102	9965 000 18575	HB-1M2012-102JT CERATECH TP
L103	9965 000 18575	HB-1M2012-102JT CERATECH TP
L104	9965 000 18575	HB-1M2012-102JT CERATECH TP
L105	9965 000 18575	HB-1M2012-102JT CERATECH TP
L106	9965 000 18575	HB-1M2012-102JT CERATECH TP
L107	9965 000 18575	HB-1M2012-102JT CERATECH TP
L302	9965 000 25939	BEAD C,HH-1H4532-121JT
L303	9965 000 25939	BEAD C,HH-1H4532-121JT
L304	9965 000 25939	BEAD C,HH-1H4532-121JT
L305	9965 000 25939	BEAD C,HH-1H4532-121JT
L306	9965 000 25939	BEAD C,HH-1H4532-121JT
L307	9965 000 25939	BEAD C,HH-1H4532-121JT
L308	9965 000 25939	BEAD C,HH-1H4532-121JT
L501	9965 000 18575	HB-1M2012-102JT CERATECH TP
L502	9965 000 18575	HB-1M2012-102JT CERATECH TP
L503	9965 000 18575	HB-1M2012-102JT CERATECH TP
L504	9965 000 18575	HB-1M2012-102JT CERATECH TP
L606	9965 000 18575	HB-1M2012-102JT CERATECH TP
L607	9965 000 18575	HB-1M2012-102JT CERATECH TP
L608	9965 000 18575	HB-1M2012-102JT CERATECH TP
L609	9965 000 28824	HB-1S1608-121 CERATECH TP
L610	9965 000 28824	HB-1S1608-121 CERATECH TP
L611	9965 000 28824	HB-1S1608-121 CERATECH TP
L612	9965 000 28824	HB-1S1608-121 CERATECH TP
L1201	9965 000 25939	BEAD C,HH-1H4532-121JT
L1202	9965 000 18575	HB-1M2012-102JT CERATECH TP
L1203	9965 000 25939	BEAD C,HH-1H4532-121JT
L1204	9965 000 25939	BEAD C,HH-1H4532-121JT
L5101	9965 000 18575	HB-1M2012-102JT CERATECH TP
L5102	9965 000 18575	HB-1M2012-102JT CERATECH TP
L5103	9965 000 18575	HB-1M2012-102JT CERATECH TP

DIODES

D101	4822 130 83649	1SS355
D102	4822 130 83649	1SS355

TRANSISTORS

Q402	9965 000 16624	CHIP TRANSISTOR KRC103S RTK
Q403	9965 000 16624	CHIP TRANSISTOR KRC103S RTK
Q404	9965 000 16624	CHIP TRANSISTOR KRC103S RTK
Q807	9965 000 25809	CHIP KTC3875S-GR-T1(ALG) KEC
Q808	9965 000 25809	CHIP KTC3875S-GR-T1(ALG) KEC

INTEGRATED CIRCUITS

IC101	9965 000 28816	DMN-8602 B0 LEAD FREE LSI LOGI
IC301A	9965 000 28819	FLASH IC W/SW PROGRAM
IC302	9965 000 25927	74HCT125 PHILIPS 14PIN,TSSOP R
IC304	9965 000 25928	S524A60X51-SCT0 8P SOP TP EEPR
IC402	9965 000 25929	74LVC08APW PHILIPS 14PIN TSSOP

ELECTRICAL PARTS LIST

INTEGRATED CIRCUITS

IC406	9965 000 25930	74LVT16373A DGG PHILIPS 48PIN
IC409	9965 000 25931	74LVC04APW PHILIPS 14PIN TSSOP
IC501	9965 000 25932	NJM2274R JRC VSP8 R/TP LOW POW
IC502	9965 000 28820	L2146 LSI LOGIC 80PIN,TQFP TRA
IC601	9965 000 25935	TSB41AB1PHP TEXAS INSTRUMENT 4
IC802	9965 000 28822	CS4351-CZZR CIRRUS LOGIC 20PIN
IC803	9965 000 25936	MC33202DR2 ON SEMI 8PIN SOP R/
IC804	9965 000 28823	CS5340-CZZR CIRRUS LOGIC 16PIN
IC805	9965 000 25936	MC33202DR2 ON SEMI 8PIN SOP R/
IC1201	9965 000 28817	G2995F1UF GMT 8PIN,SOP-8L R/TP
IC1202	9965 000 25924	HYB25D256160CE-6 INFINEON 66PI
IC1202	9965 000 25925	HY5DU561622C HYNIX 66PIN,TSOP
IC1202	9965 000 28818	HY5DU561622DT-J HYNIX 66PIN,TS
IC1203	9965 000 25924	HYB25D256160CE-6 INFINEON 66PI
IC1203	9965 000 28818	HY5DU561622DT-J HYNIX 66PIN,TS
IC1203	9965 000 25925	HY5DU561622C HYNIX 66PIN,TSOP
IC5101	9965 000 28821	SAA7120H PHILIPS 44 QFP TRAY V

Note: * ALTERNATIVE PART CODE

Only the parts mentioned in this list are normal service spare parts.

POWER (SMPS) BOARD MODULE

MISCELLANEOUS

BC101	9965 000 25876		BEAD CORE BFD3514R2F,R T/P
BC102	9965 000 25876		BEAD CORE BFD3514R2F,R T/P
BD101	9965 000 25877		GBL08 VISHAY BK GBL 800V 4A 20
F101	4822 070 31602	⚠	FUSE 1.6A 250V 2X20
PW101	9965 000 25897		CONN SOCKET 2PIN, AC IN
T101	9965 000 25900	⚠	EER2828 COMPLEX MODEL SOOJUNG
T102	9965 000 25901	⚠	EER2828 COMPLEX MODEL SOOJUNG
TH01	9965 000 25902		THERMISTOR, PTC 4.0OHM 15
V101	9965 000 19235	⚠	SVC681D-10A SAMHWA 4.O CUT

CAPACITORS

C101	9965 000 28825	⚠	MPX104K 275VAC BULK ETR
C101 *	9965 000 25878	⚠	PCX2 275V 0.1UF,M (PILKO)
C101 *	9965 000 18666	⚠	435D SUNIL ELECTRONICS 0.1UF/2
C102	9965 000 28825	⚠	MPX104K 275VAC BULK ETR
C102 *	9965 000 25878	⚠	PCX2 275V 0.1UF,M (PILKO)
C102 *	9965 000 18666	⚠	435D SUNIL ELECTRONICS 0.1UF/2
C103	9965 000 25879		ELCAP 150UF 400V 20%
C105	9965 000 18669		0.01UF D 630V K PE NI TP
C106	9965 000 25551		CAP HIGH-VOL 68PF 1KV
C110	9965 000 18672	⚠	1000PF 400V M E(Z5U) R
C111	9965 000 18672	⚠	1000PF 400V M E(Z5U) R
C115	9965 000 18669		0.01UF D 630V K PE NI TP
C116	9965 000 25551		CAP HIGH-VOL 68PF 1KV
C122	4822 124 40201		1000UF20% 16V
C123	9965 000 25552		ELCAP 2200UF 16V 20% BK7.5 FL
C125	4822 124 40184		1000UF20% 10V
C126	9965 000 25552		ELCAP 2200UF 16V 20% BK7.5 FL
C129	9965 000 25552		ELCAP 2200UF 16V 20% BK7.5 FL
C139	9965 000 25880		1000UF KMG 25V 20% BULK FL

RESISTORS

R100	9965 000 19226	1.5M OHM 1/2 W 5.00% MF10
R103	9965 000 19228	56K OHM 2 W 5.00% TR
R112	9965 000 19228	56K OHM 2 W 5.00% TR
R115	9965 000 19228	56K OHM 2 W 5.00% TR
R155	9965 000 25899	56 OHM 1 W 5.00% TR

COILS & FILTERS

L102	9965 000 25895	⚠	SQ2626 SAMWAH TECOM BK SQ2424
L121	9965 000 25588		CHOKE COIL TDK 22UH(=633-088G
L121 *	9965 000 19212		CHOCK(22MH) 5MM TOKO TP
L122	9965 000 25588		CHOKE COIL TDK 22UH(=633-088G
L122 *	9965 000 19212		CHOCK(22MH) 5MM TOKO TP
L123	9965 000 25896		BAR CHOKE COIL 2 PIN 10 UHCCAR
L125	9965 000 18641		100M K 6X6 L5 TP
L127	9965 000 19212		CHOCK(22MH) 5MM TOKO TP

DIODES

D101	9965 000 18682	ERA22-10 KFLB,TP ,R T/P,FUJI

ELECTRICAL PARTS LIST

DIODES

D102	9965 000 18683	EU01W(R-FORM) TP SANKEN
D103	9965 000 18682	ERA22-10 KFLB,TP ,R T/P,FUJI
D104	9965 000 18683	EU01W(R-FORM) TP SANKEN
D121	9965 000 25882	SB360-24A GULF BK DO201AD 60V
D121 *	9965 000 25881	D3S6M SHINDENGEN BK AX14 60V 1
D122	9965 000 18687	B10A45V1 BK KEC TO220 45V 10A
D123	9965 000 18687	B10A45V1 BK KEC TO220 45V 10A
D124	9965 000 25883	B5A60VI , 4MM CUTTING KEC ST T
D124 *	9965 000 28826	FSQ05A60 4MM CUTTING NIHON INT
D125	9965 000 18684	HER302 BK RECTRON DO201AD 100V
D125 *	9965 000 25554	DIODE RU4YX BK
D126	9965 000 18684	HER302 BK RECTRON DO201AD 100V
D126 *	9965 000 25554	DIODE RU4YX BK
D127	9965 000 18565	RL104F TP RECTRON NON 400V 1A
D128	9965 000 18683	EU01W(R-FORM) TP SANKEN
D129	9965 000 18565	RL104F TP RECTRON NON 400V 1A
D130	9965 000 18683	EU01W(R-FORM) TP SANKEN
D132	9965 000 18686	RL104 R. TP GULF SEMICONDUCTOR
D133	9965 000 18686	RL104 R. TP GULF SEMICONDUCTOR
D134	4822 130 32778	1SS133
D151	9965 000 18686	RL104 R. TP GULF SEMICONDUCTOR
D155	9965 000 18686	RL104 R. TP GULF SEMICONDUCTOR
ZD101	9965 000 25559	ZENER UZ-22BSB 26MM
ZD101 *	9965 000 25903	MTZ22B T-77 TP ROHM
ZD102	9965 000 25559	ZENER UZ-22BSB 26MM
ZD102 *	9965 000 25903	MTZ22B T-77 TP ROHM
ZD151	9965 000 19243	UZ-3.3BSB 26MM TP PYUNG CHANG
ZD151 *	9965 000 25906	MTZ3.3B,T-77(26MMTP) TP ROHM -
ZD151 *	9965 000 25905	MTZJ3.3B TP ROHM-K DO34 0.5W 3
ZD151 *	9965 000 25904	GDZJ3.3B TP GRANDE DO34 0.5W 3
ZD152	9965 000 25613	ZENER UZ-13BSA 26MM
ZD153	9965 000 19244	UZ-30BSC 26MM PYUNG CHANG TP D

TRANSISTORS

Q120	4822 130 63857	KTD1414
Q121	9965 000 19214	SRA2203 TP AUK TO92 22K,22K
Q122	9965 000 19224	2SC5343-L TP AUK TO92
Q122 *	4822 130 41319	2SC1815BL
Q123	9965 000 19225	KTA1268-BL TP KEC
Q124	9965 000 25810	KTA1273-TP-Y (KTA966A)KEC
Q125	4822 130 41319	2SC1815BL
Q125 *	9965 000 19224	2SC5343-L TP AUK TO92
Q126	4822 130 41306	2SC1815GR

INTEGRATED CIRCUITS

IC101	9965 000 25555		IC FSDL0365RN 8PIN,DIP
IC102	9965 000 18689	⚠	LTV-817B,PHOTO COUPLER(LITEON)
IC102 *	9965 000 25884	⚠	PC123YN2 SHARP PHOTOCOUPLER
IC103	4822 209 12767		KIA431
IC104	9965 000 25555		IC FSDL0365RN 8PIN,DIP
IC105	9965 000 18689	⚠	LTV-817B,PHOTO COUPLER(LITEON)
IC105 *	9965 000 25884	⚠	PC123YN2 SHARP PHOTOCOUPLER
IC106	4822 209 12767		KIA431
IC151	9965 000 25887		KIA278R05PI-CU KEC 4PIN,TO220I
IC151 *	9965 000 25886		KA278R05TSTU FAIRCHILD 4PIN,TO
IC152	9965 000 25888		KIA78R25PICU KEC 4PIN,TO-220IS
IC152 *	9965 000 25889		G9125 GMT 4PIN,TO 220F-4L ST 1
IC154	9965 000 25890		G9233 GMT 4PIN, TO 220F-4L ST
IC154 *	9965 000 25891		KA278R33TSTU FAIRCHILD 4PIN TO
IC154 *	9965 000 19210		KIA278R33PI-CU KEC 4PIN TO-220
IC157	9965 000 25893		KIA278R12PI-CU KEC 4PIN,TO220I
IC157 *	9965 000 25892		KA278R12TSTU FAIRCHILD 4P TO-2
IC160	9965 000 25894		PQ070VK02LZH SHARP 5PIN,DIP ST

Note: * Alternative parts

Only the parts mentioned in this list are normal service spare parts.