PRODUCT SAFETY SERVICING GUIDELINES FOR VIDEO PRODUCTS

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

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

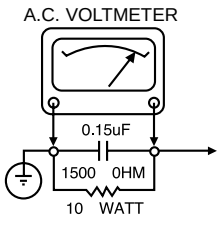
WHILE SERVICING, USE AN ISOLATION TRANSFORMER FOR PROTECTION FROM A.C. LINE SHOCK.

SAFETY CHECKS

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

SUBJECT : FIRE & SHOCK HAZARD

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



GOOD EARTH GROUND SUCH AS THE WATER PIPE. CONDUIT. ETC

PLACE THIS PROBE ON EACH EXPOSED METAL PART

SUBJECT: GRAPHIC SYMBOLS

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

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

SUBJECT : X-RADIATION

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

SUBJECT: IMPLOSION

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

SUBJECT : TIPS ON PROPER INSTALLATION

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

SERVICING PRECAUTIONS

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

General Servicing Precautions

1. Always unplug the DVD player AC power cord from the AC power source before:
   (1) Removing or reinstalling any component, circuit board, module, or any other assembly.
   (2) Disconnection or reconnecting any internal electrical plug or other electrical connection.
   (3) Connecting a test substitute in parallel with an electrolytic capacitor.
   Caution : A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.

2. Do not spray chemicals on or near this DVD player 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 DVD player and/or any of its electrical assemblies unless all solid-state device heat sinks are cerrectly installed.

6. Always connect test instrument ground lead to the appropriate ground before connection the test instrument positive lead. Always remove the test instrument ground lead last.

Insulation Checking Procedure

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

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

Electrostatically Sensitive (ES) Devices

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

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.

2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.

3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.

4. Use only an anti-static solder removal device. Some solder removal devices not classified a “anti-static” can generate electrical charges sufficient to damage ES devices.

5. Do not use freon-propelled chemicals. These can generate electrical charge sufficient to damage ES devices.

6. Do not remove a replacement ES device from its protec tive 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.)

SPECIFICATIONS

DVD VIDEO PLAYER

Power supply	100~240V, 50/60Hz
Power consumtion	20W
Mass	3.5kg(7.7lbs)
External dimensions	430 x 80 x 298 (W x H x D)
Signal system	NTSC
Laser	Semiconductor laser, wavelength 655nm(DVD)/795nm(CD)
Frequency range (digital audio)	2Hz to 44kHz
Signal-to-noise ratio (digital audio)	More than 105dB (EIAJ)
Audio dynamic range (digital audio)	More than 95dB (EIAJ)
Harmonic distortion(digital audio)	0.003%
Wow and flutter	Below measurable level (less than +0.001%(W.PEAK)) (EIAJ)
Operations	Temperature : 5˚C(41˚F) to 35˚C(95˚F), Operation status : Horizontal

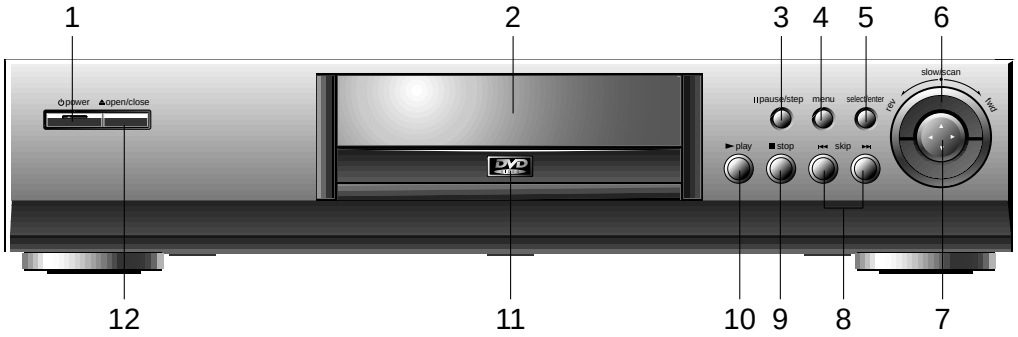
OUTPUTS

Video outputs	1.0V(p-p), 75Ω, negative sync., RCA jack x 1
S video outputs	(Y)1.0V(p-p), 75Ω, negative sync.,Mini DIN 4-pin x 1 (C)0.286V(p-p), 75Ω
Component video output	(Y)1.0V(p-p), 75Ω,negative sync., RCA jack x 1 (Pb)/(Pr) 0.7V(p-p), 75Ω
Audio output(digital audio)	0.5V(p-p), 75Ω, RCA jack X 1
Audio output(optical audio)	Optical connector x 1
Audio output(analog audio)	2.0Vrms (1kHz, 0dB), 330Ω, RCA jack (L, R) x 1

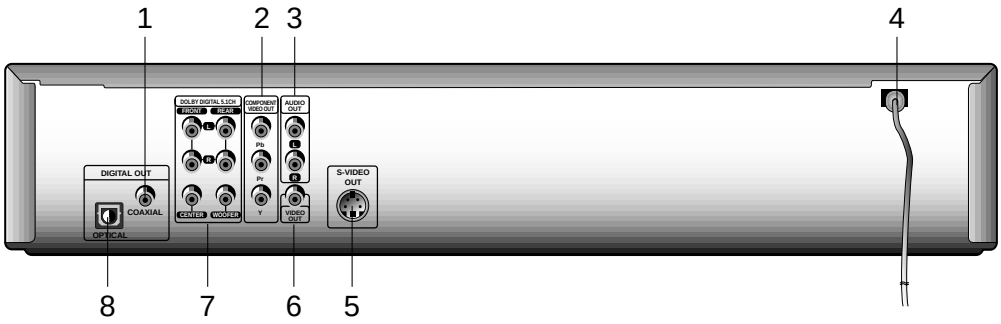
*Designs and specifications are subject to change without notice.
*Weight and dimensions shown are approximate.

LOCATION OF CUSTOMER CONTROLS

FRONT PANEL



REAR PANEL



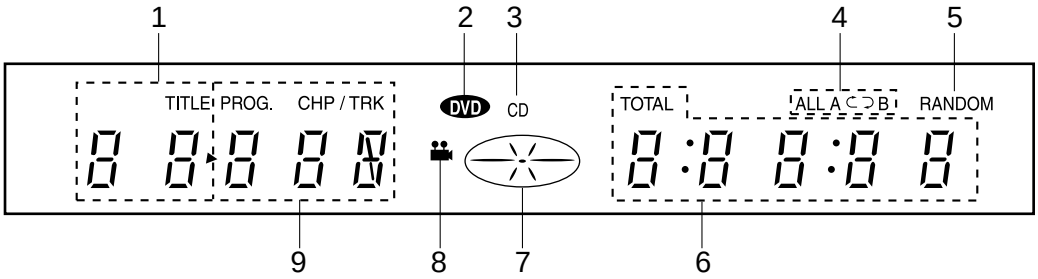
FRONT PANEL

1. POWER/STANDBY BUTTON AND INDICATOR
2. DISPLAY WINDOW
3. PAUSE/STEP BUTTON
4. MENU BUTTON
5. SELECT/ENTER BUTTON
6. SHUTTLE RING
7. ARROW BUTTONS
8. SKIP BUTTONS
9. STOP BUTTON
10. PLAY BUTTON
11. DISK TRAY
12. OPEN/CLOSE BUTTON

REAR PANEL

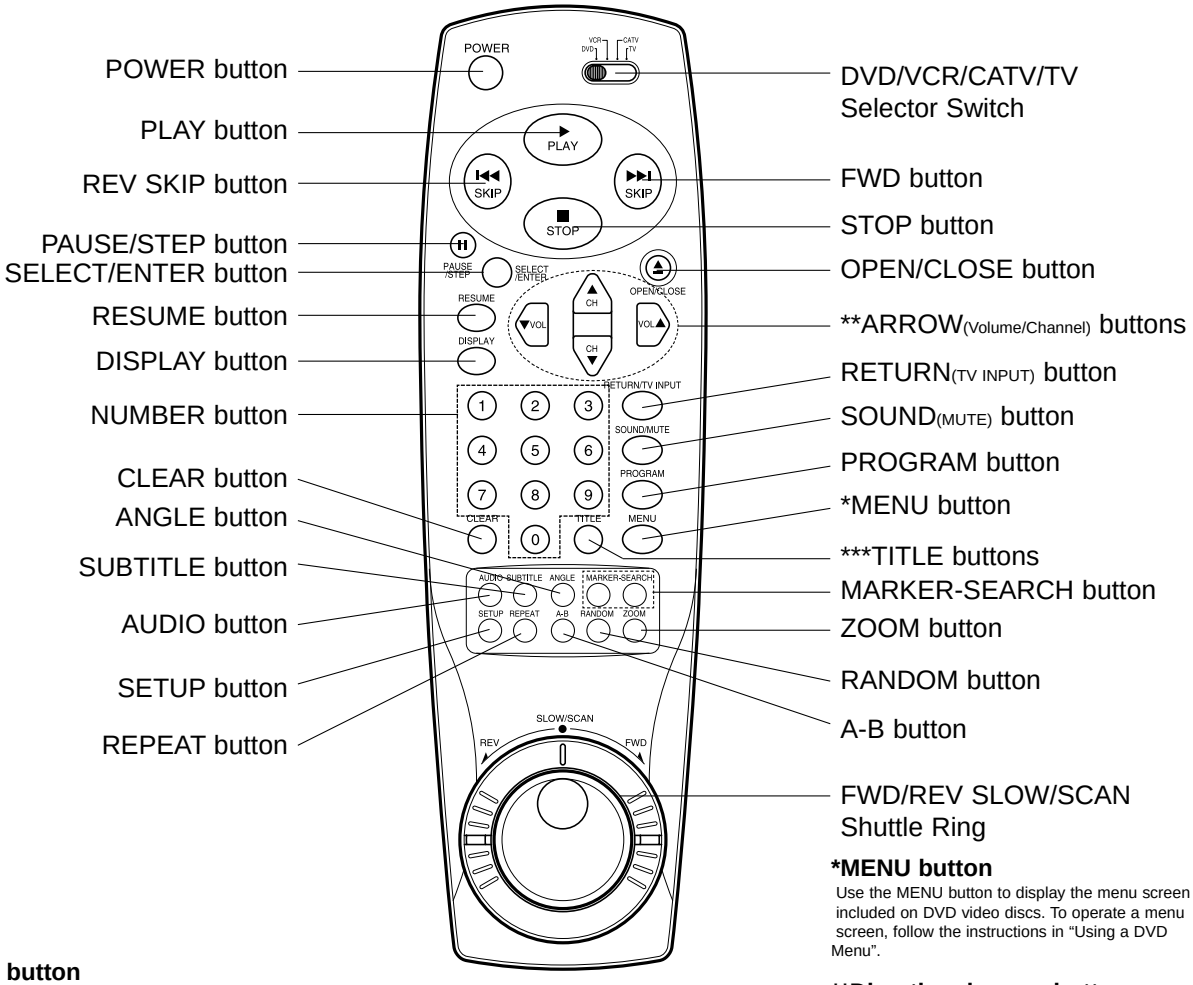
1. COAXIAL DIGITAL AUDIO OUT JACK
2. COMPONENT VIDEO OUT JACKS
3. AUDIO OUT(R/L) JACKS
4. POWER CORD
5. S-VIDEO OUT JACK
6. VIDEO OUT JACK
7. DOLBY DIGITAL AUDIO OUT JACKS
8. OPTICAL DIGITAL AUDIO OUT JACKS

Display Window



1. Title number indicator
2. DVD indicator
3. CD indicator
4. Repeat playback mode indicators
5. RANDOM indicator
6. Total playing time /elapsed time indicator
7. Operating status indicator
8. Angle icon indicator
9. Chapter/Track number indicator

REMOTE CONTROL



*****TITLE button**

Use the TITLE button to display the title screen included on DVD video discs. To operate a menu screen, follow the instructions in “Using a Title Menu”.

***MENU button**

Use the MENU button to display the menu screen included on DVD video discs. To operate a menu screen, follow the instructions in “Using a DVD Menu”.

****Directional arrow buttons**

(up, down, left, right) for use in highlighting a selection on a GUI menu screen, TITLE and MENU screen.

DISASSEMBLY

CAUTION BEFORE STARTING SERVICING

Electronic parts are susceptible to static electricity and may easily damaged, so do not forget to take a proper grounding treatment as required.

Many screws are used inside the unit. To prevent missing, dropping, etc. of the screws, always use a magnetized screw driver in servicing. Several kinds of screws are used and some of them need special cautions. That is, take care of the tapping screws securing molded patrs and fine pitch screws used to secure metal parts. If they are used improperly, the screw holes will be easily damaged and the parts can not be fixed.

CABINET DISASSEMBLY

1. Top Case

1. Release 7 screws (A). (See Fig. 2-1)
2. Lift the top case with holding the back of it, and remove it in the direction of the arrow

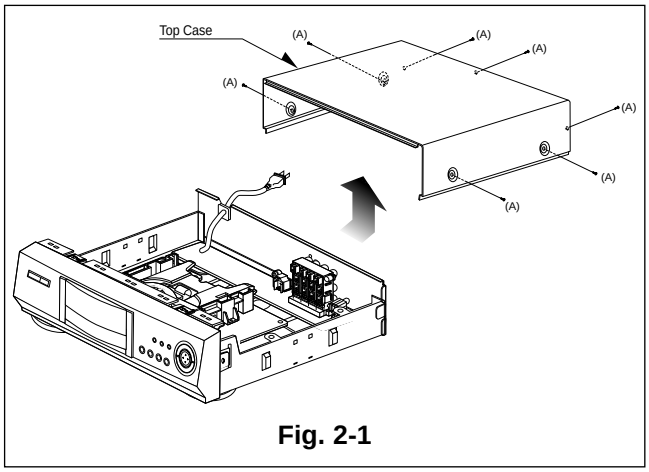


Fig. 2-1

2. Tray Door

1. Eject the disc tray.
2. Lift up the tray door in the direction of the arrow.

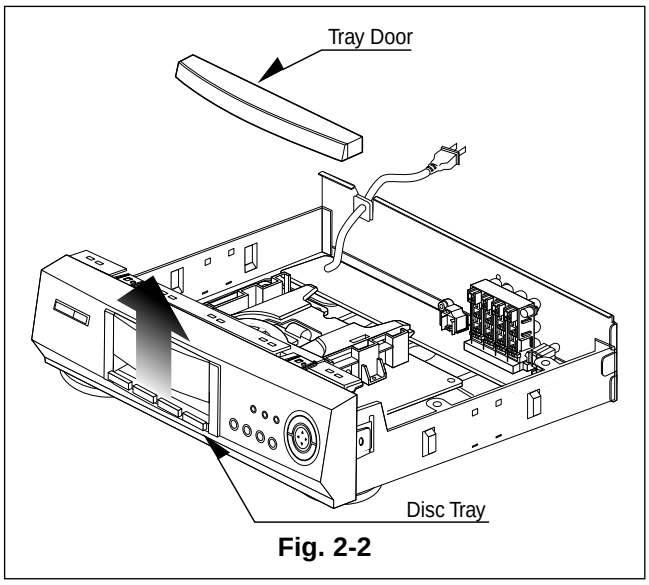


Fig. 2-2

3. Front Panel

1. Eject the disc tray. (See Fig. 2-2)
2. Remove the tray door. (See Fig. 2-2)
3. Release 2 screws (B).
4. Pull the front panel toward you while pressing 7 stoppers to disengage, and remove the front panel. (See Fig. 2-3)

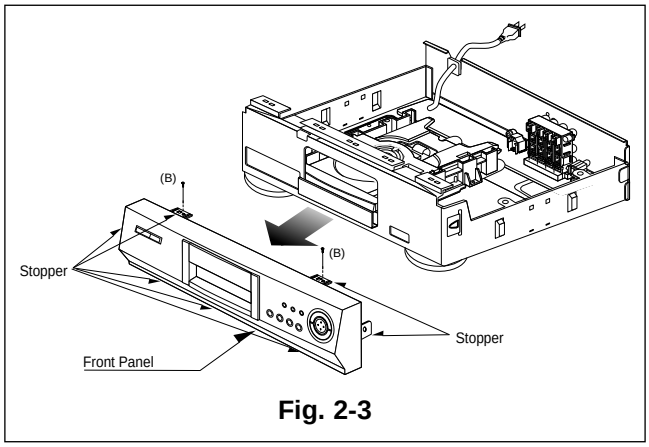


Fig. 2-3

CIRCUIT BOARD DISASSEMBLY

Note:

Before removing the main circuit board, be sure to shortcircuit the laserdiode output land.

After replacing the main circuit board, open the land after inserting the flexible connector.

(Refer to Mechanism Disassembly)

1. Main/A/V Circuit Board

1. Remove the top case.(See Fig.2-1)
2. Release 10 screws (C), and take out the main / AV circuit board.(See Fig.2-4)
3. Remove the flexible connectors and the connector from main circuit board.
4. Then, remove the main A/V circuit board.

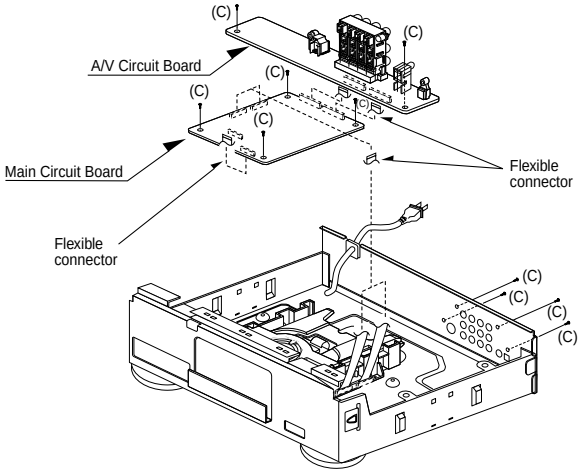


Fig. 2-4

2. Power Circuit Board

1. Relrase 4 screws(D). (See Fig. 2-5)

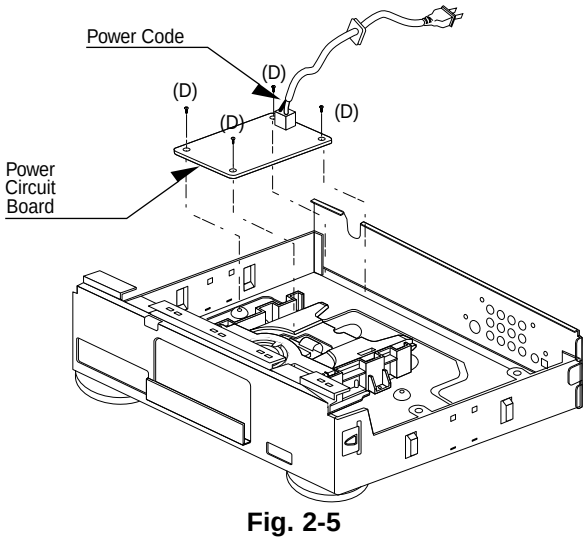


Fig. 2-5

3. Digitron and Key Circuit Board

1. Remove the front panel.(See Fig. 2-3)
2. Release 8 screws(E), and remove the digitron circuit board.

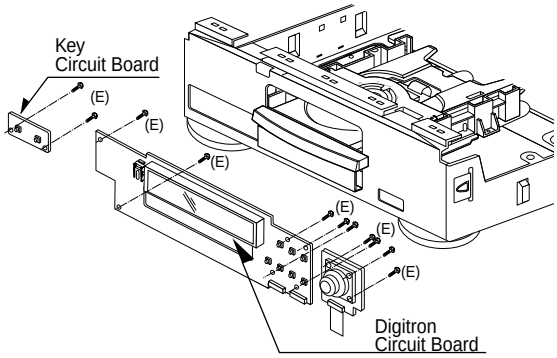
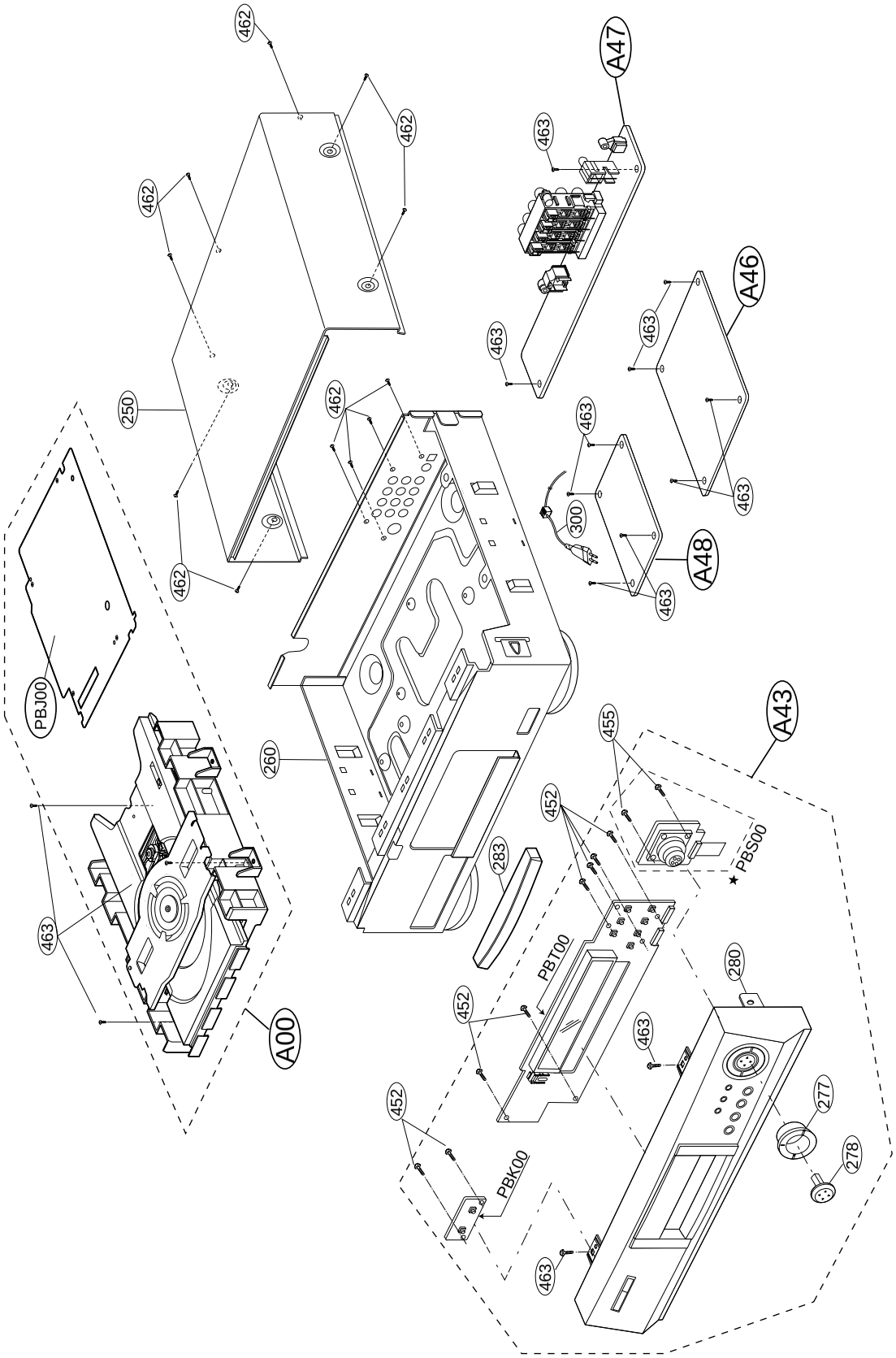


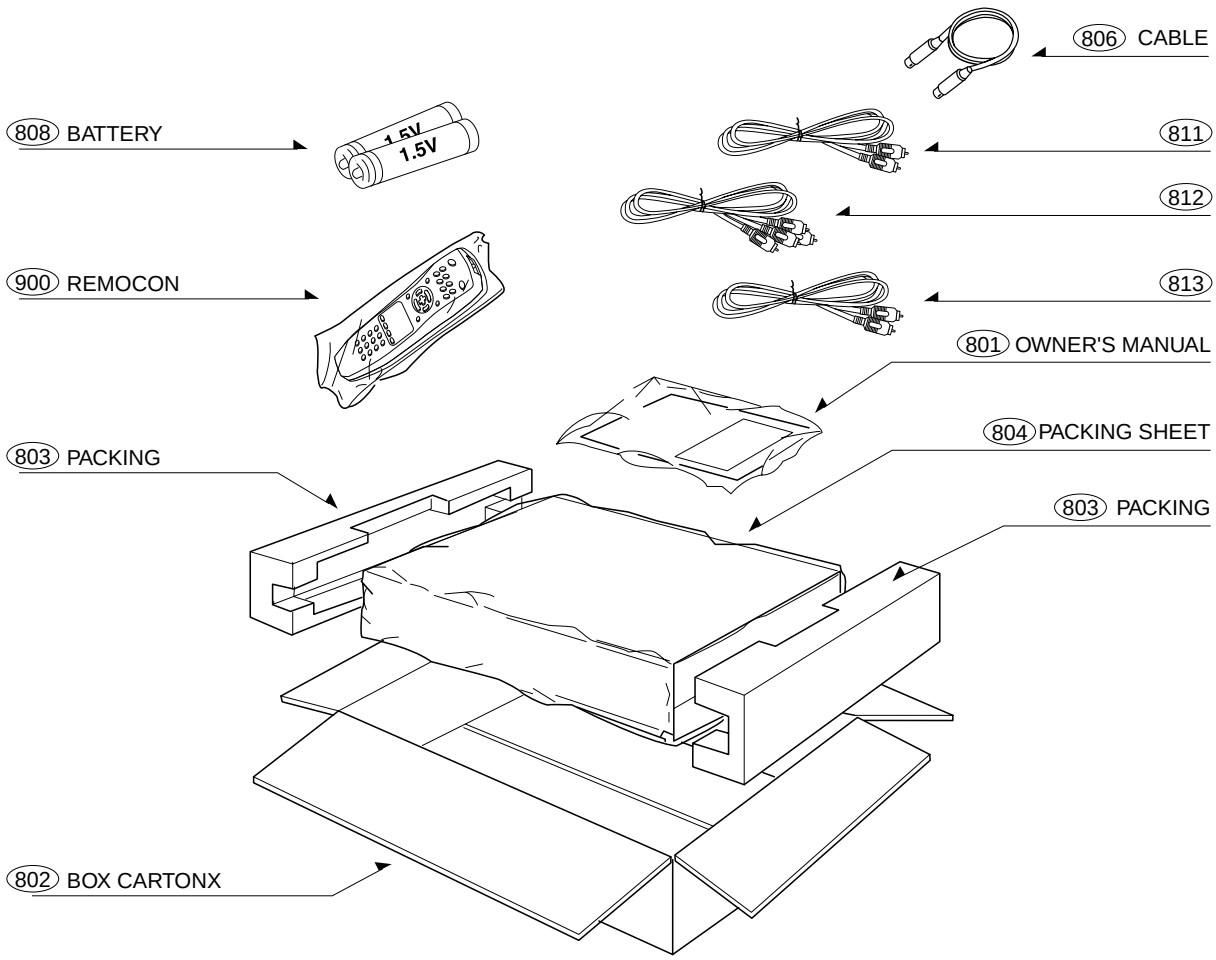
Fig. 2-6

EXPLODED VIEWS

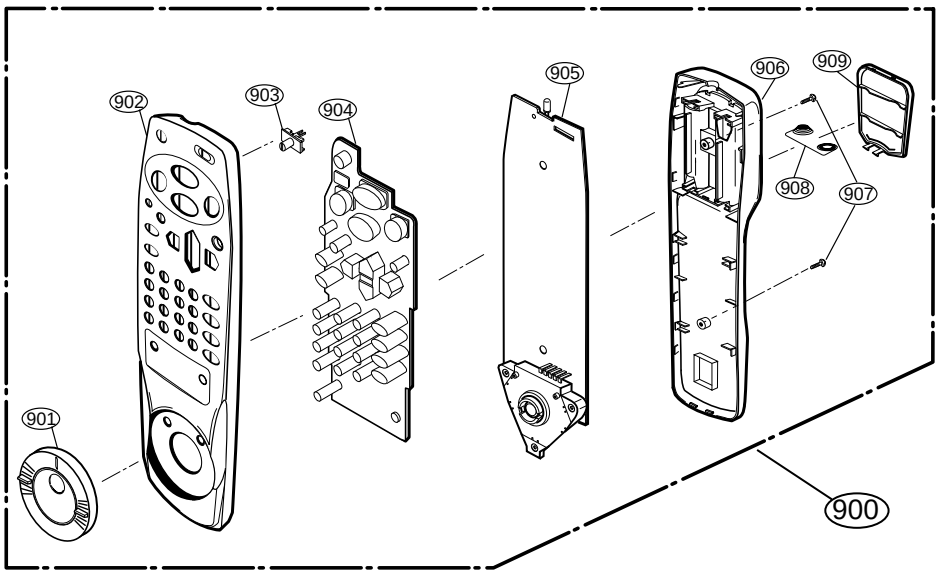
1. Cabinet and Main Frame Section



2.Packing Accessory Section



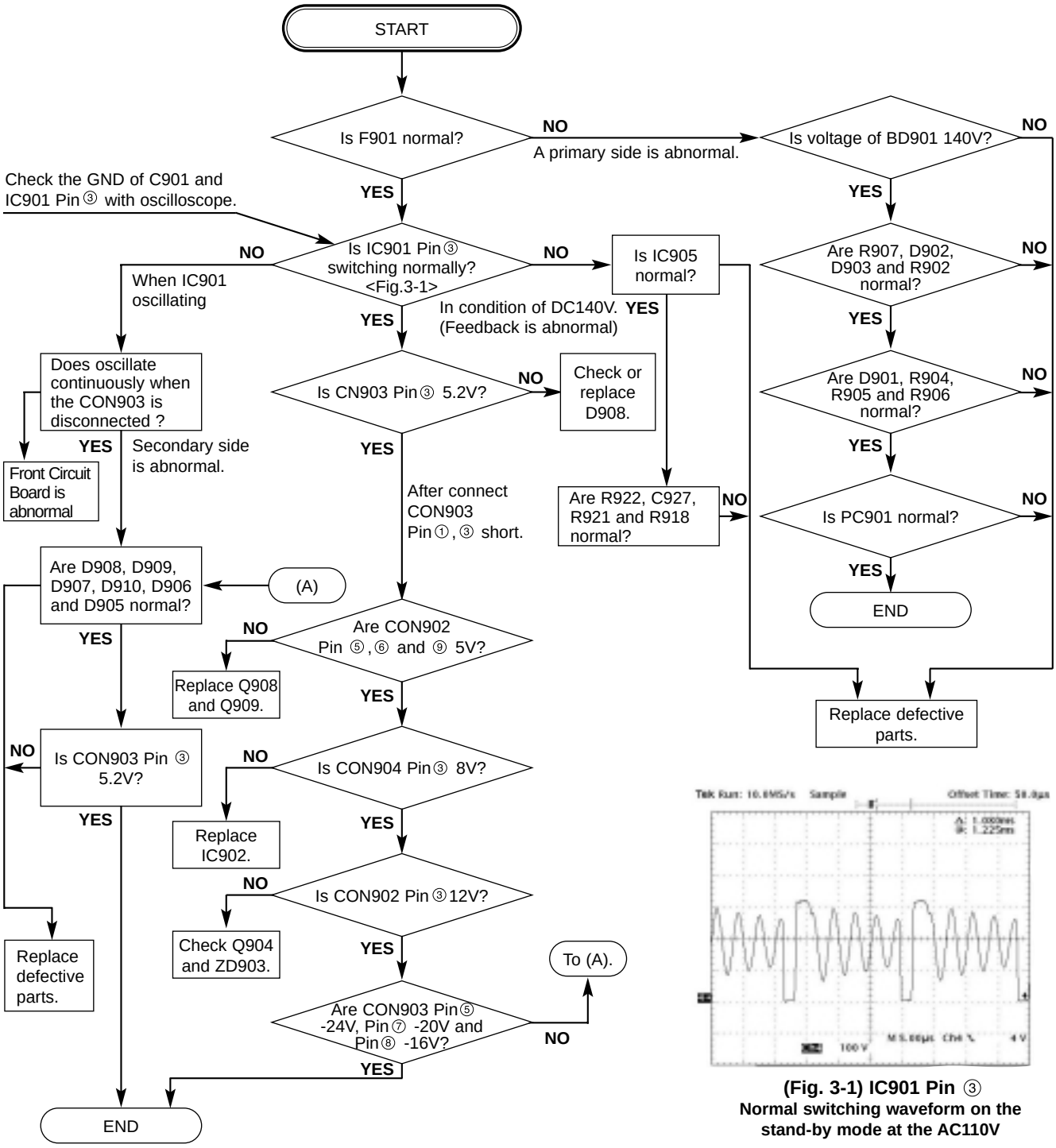
3.Remote Control Section



ELECTRICAL TROUBLESHOOTING GUIDE

1. Power Circuit

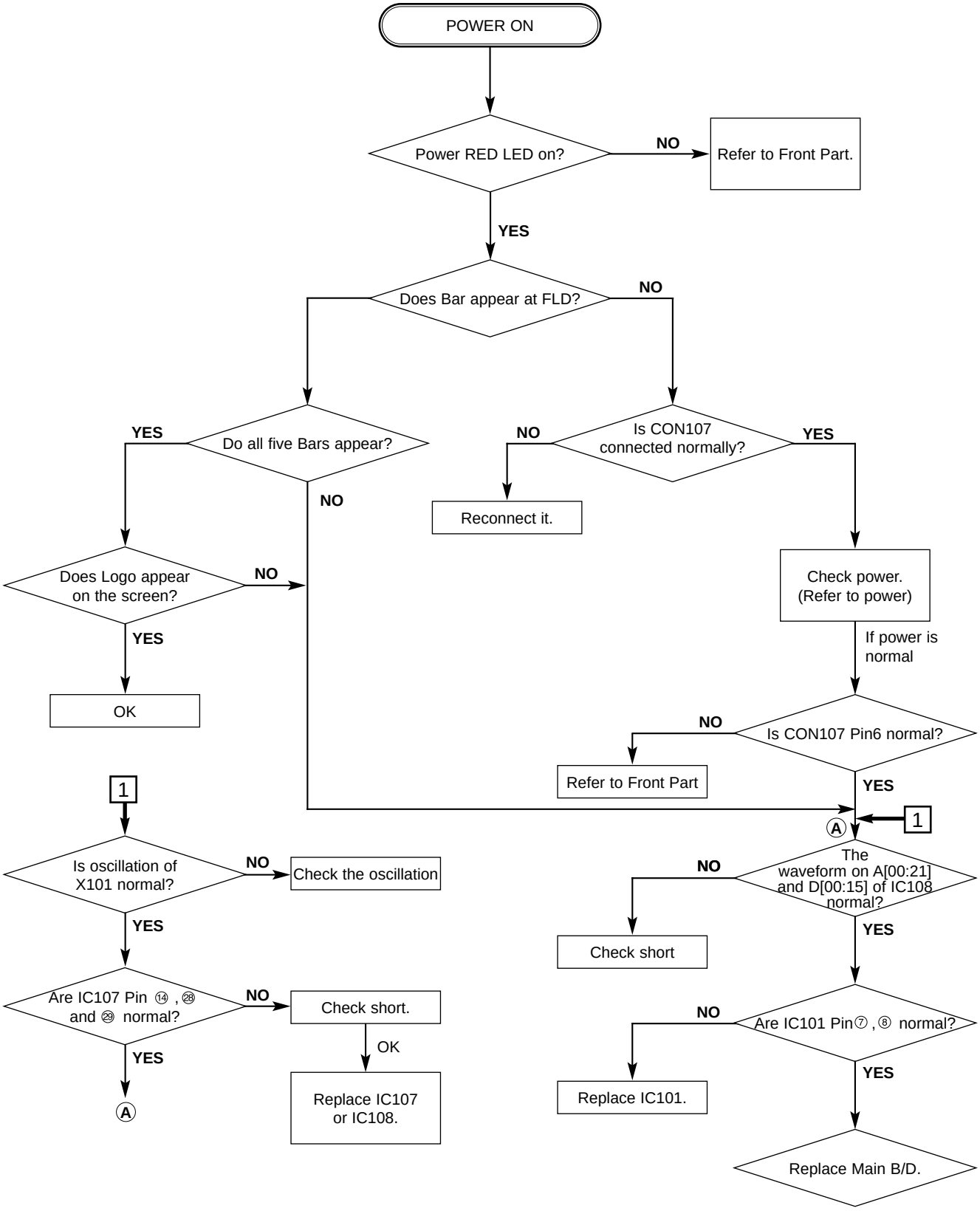
- Input Voltage : 90V - 135V
- It is possible to malfunction, if the unload condition is left for a long time when power is on. (More than Dummy load 100mA)
- A Primary side is abnormal when the fuse is short, secondary side is abnormal when the IC103 oscillates intermittently.
- The resistor value of both terminal is measured with DVM crossing each other to check the each element is normal or abnormal. (It is normal when the numerical value is different each other.)



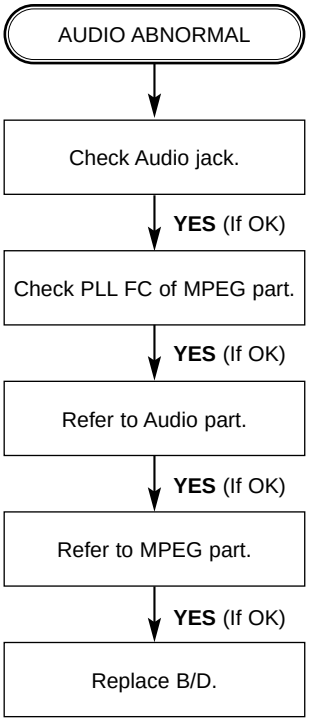
(Fig. 3-1) IC901 Pin ③
Normal switching waveform on the stand-by mode at the AC110V

2. µ-COM Circuit

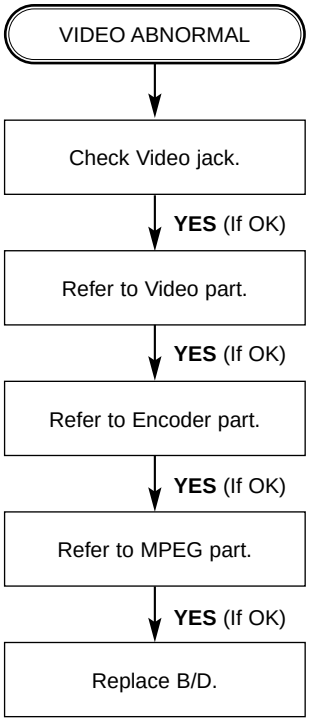
A. No Power



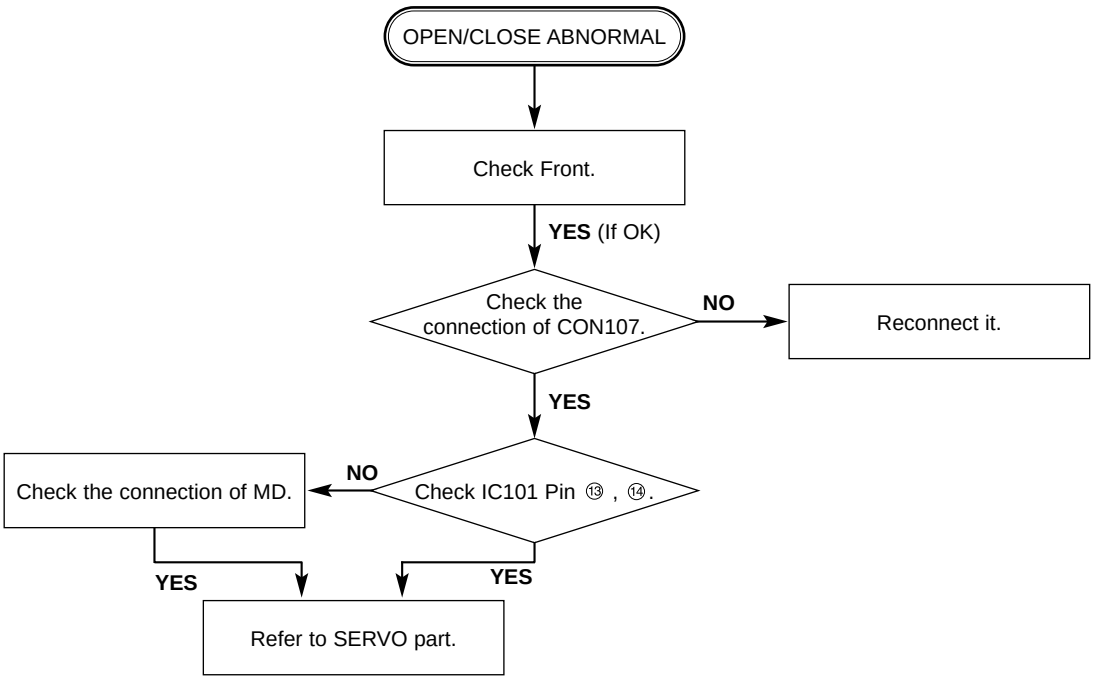
B. Audio abnormal



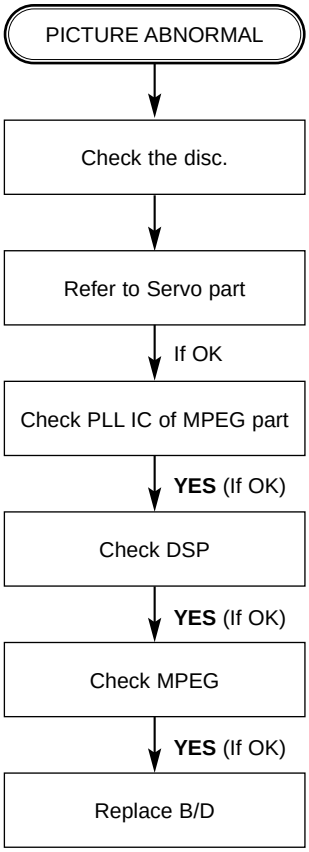
C. Video abnormal



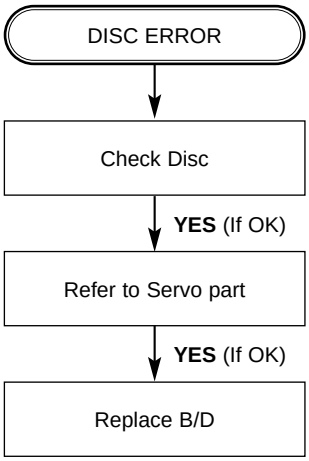
D. Open/Close abnormal



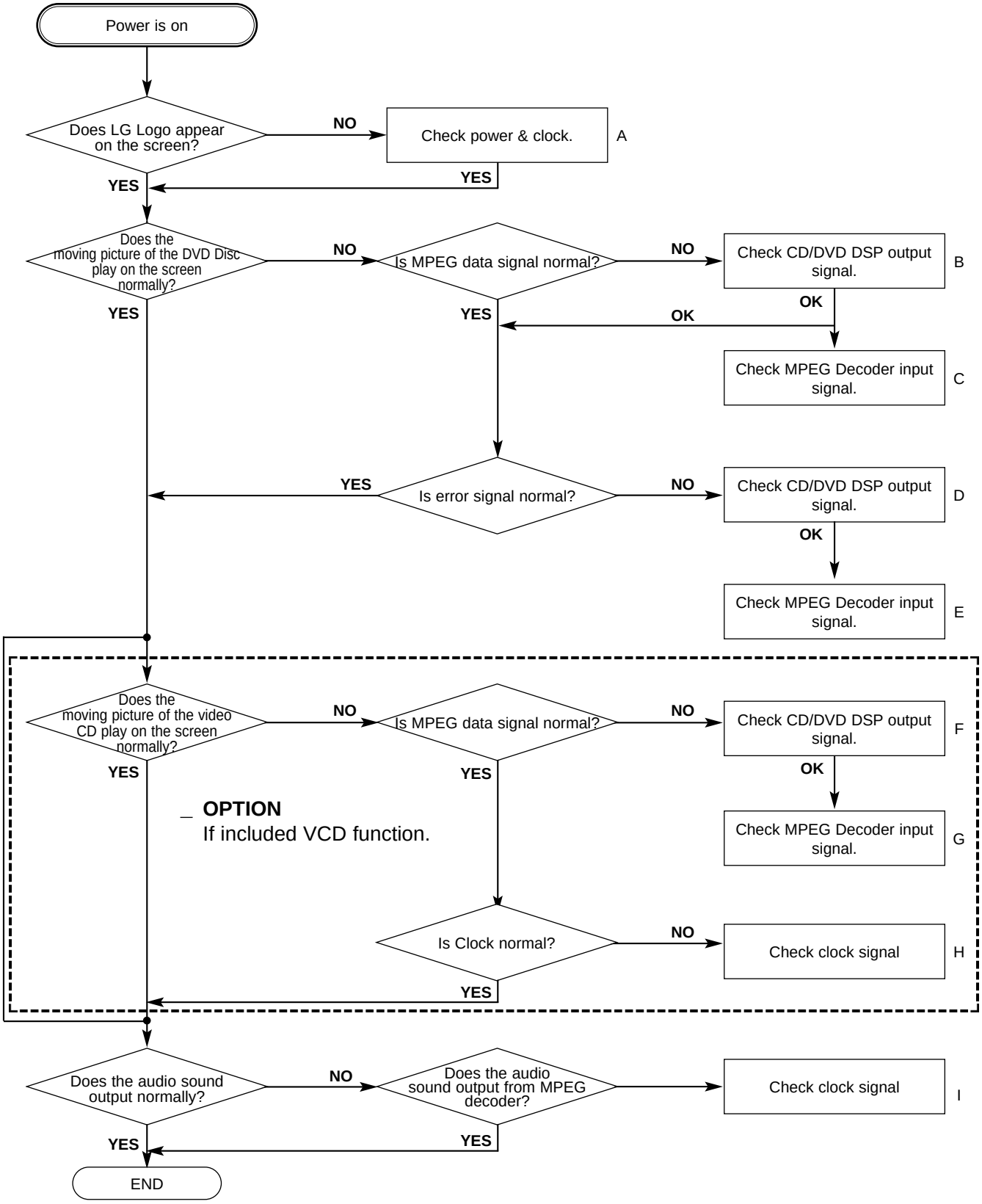
E. Picture abnormal



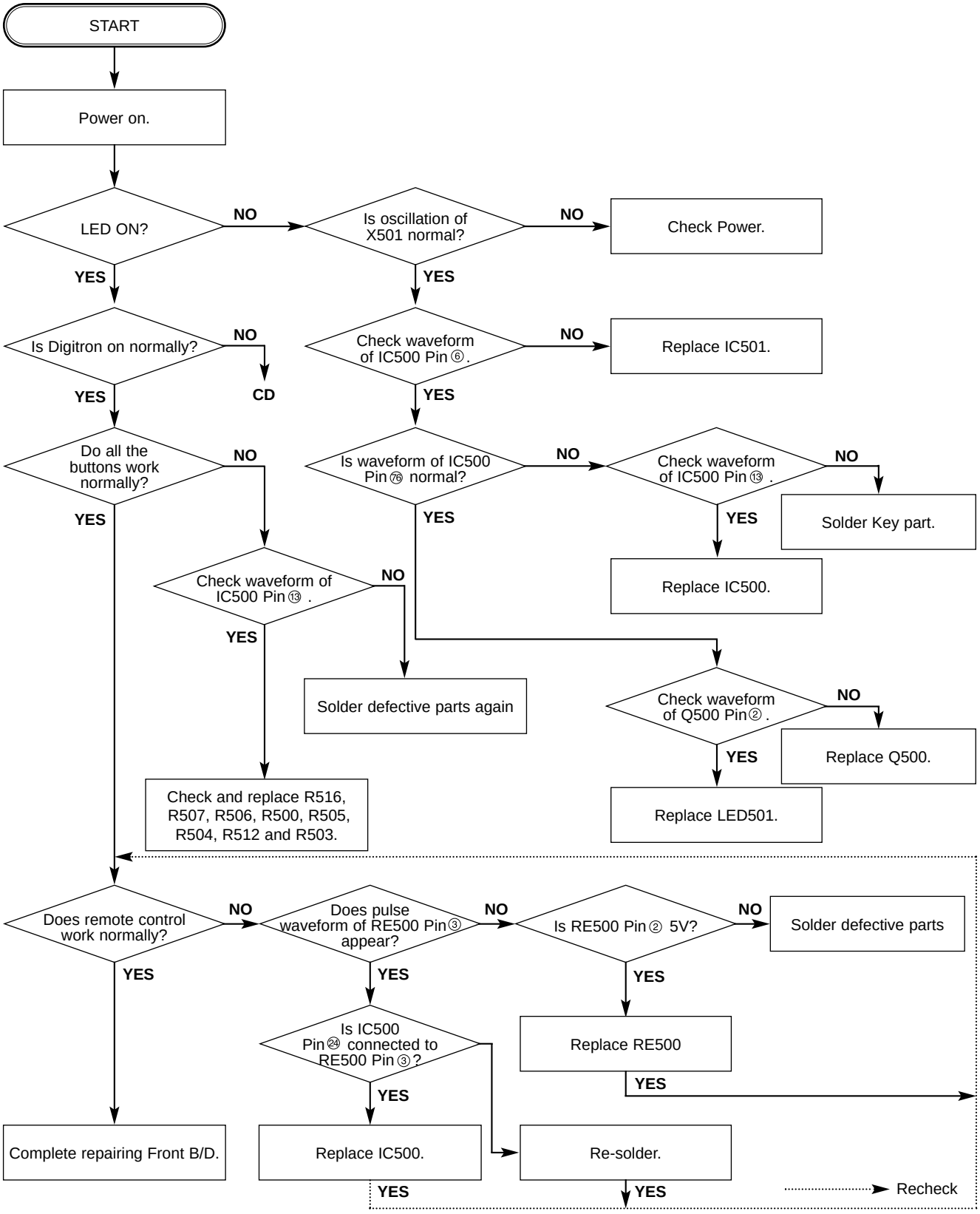
F. Disc Error



3. MPEG Circuit

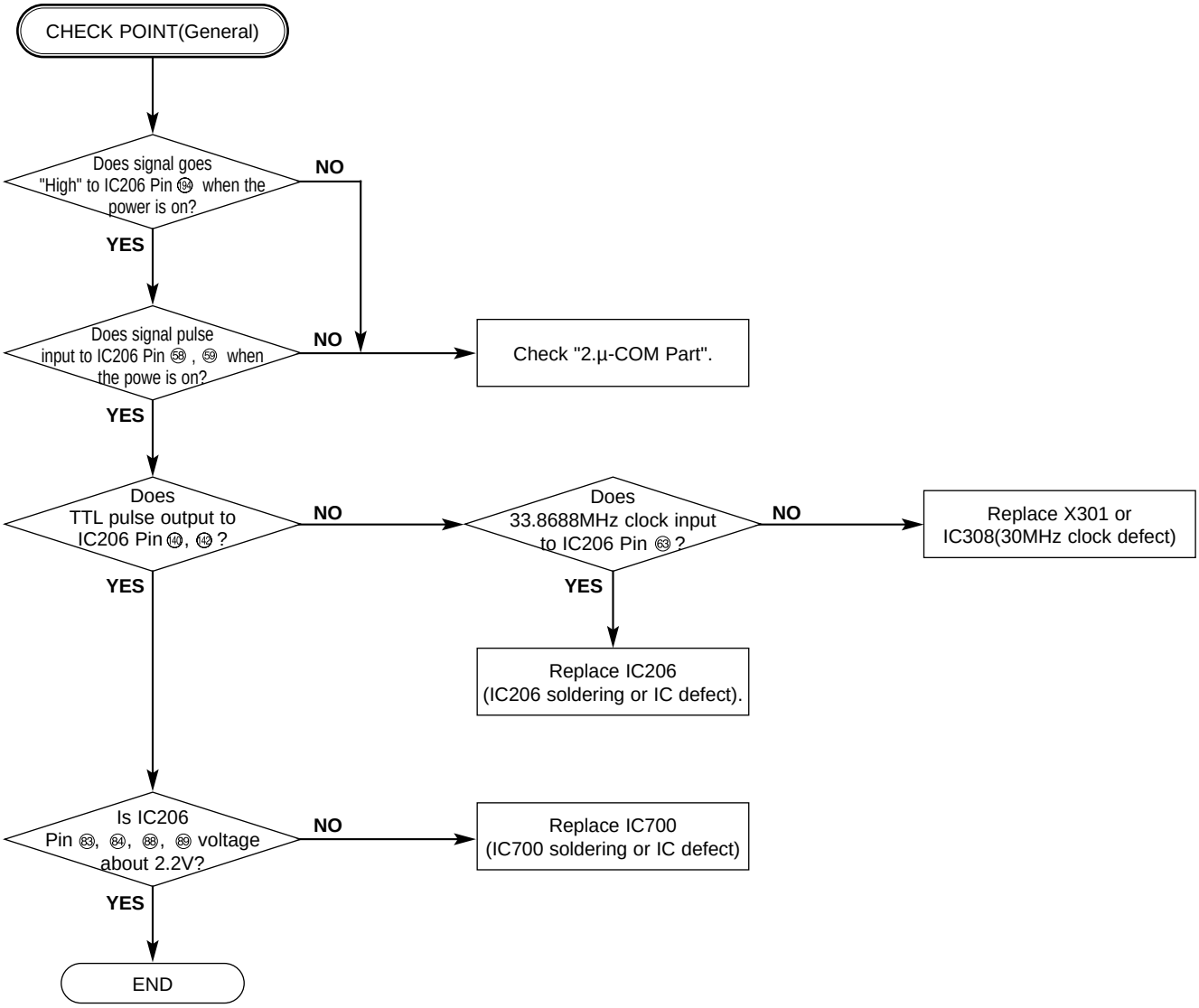


4. Front Circuit (Digitron & key)



5. RF/Servo Circuit

A.



B.

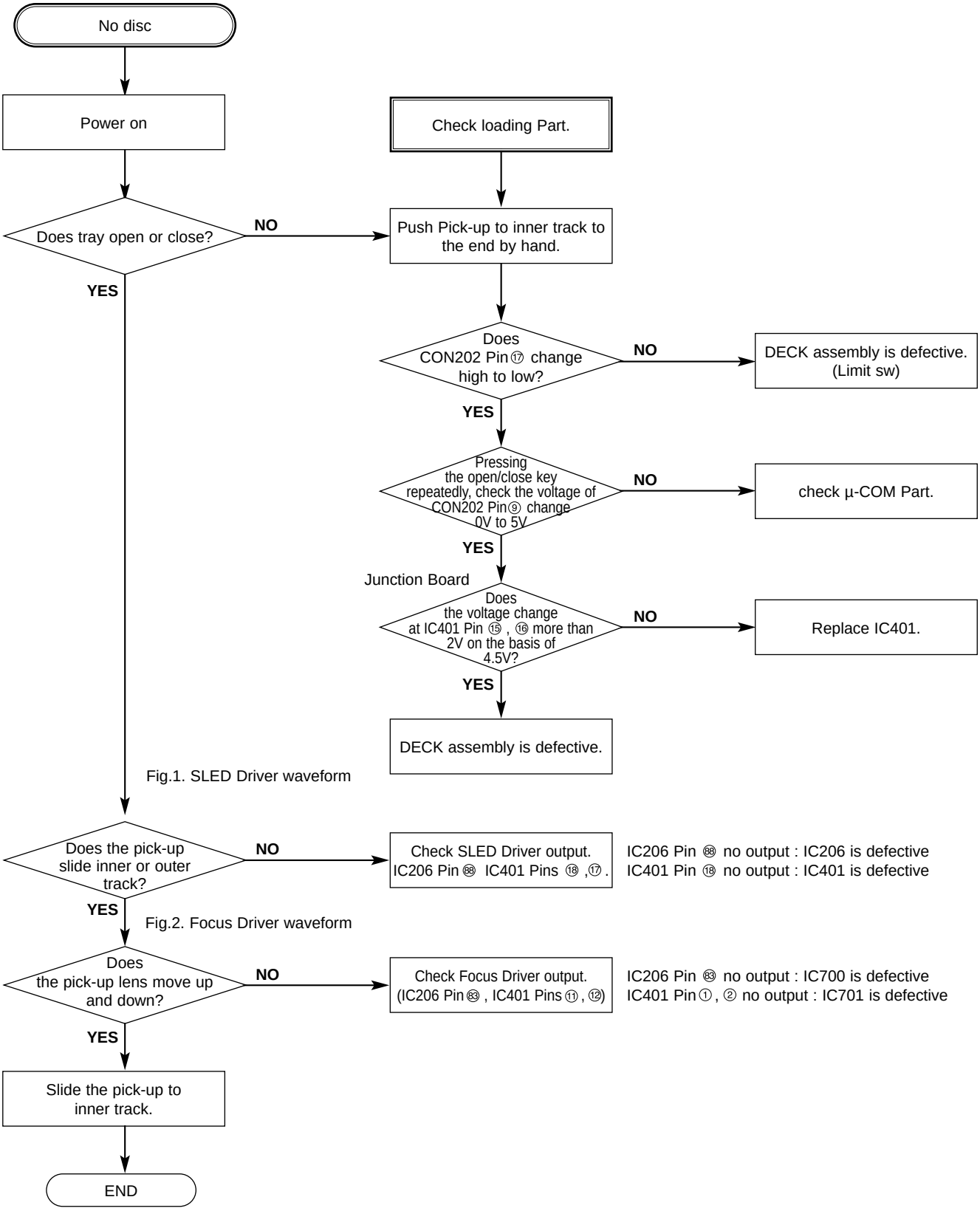


Fig.1. SLED Driver waveform

Fig.2. Focus Driver waveform

C.

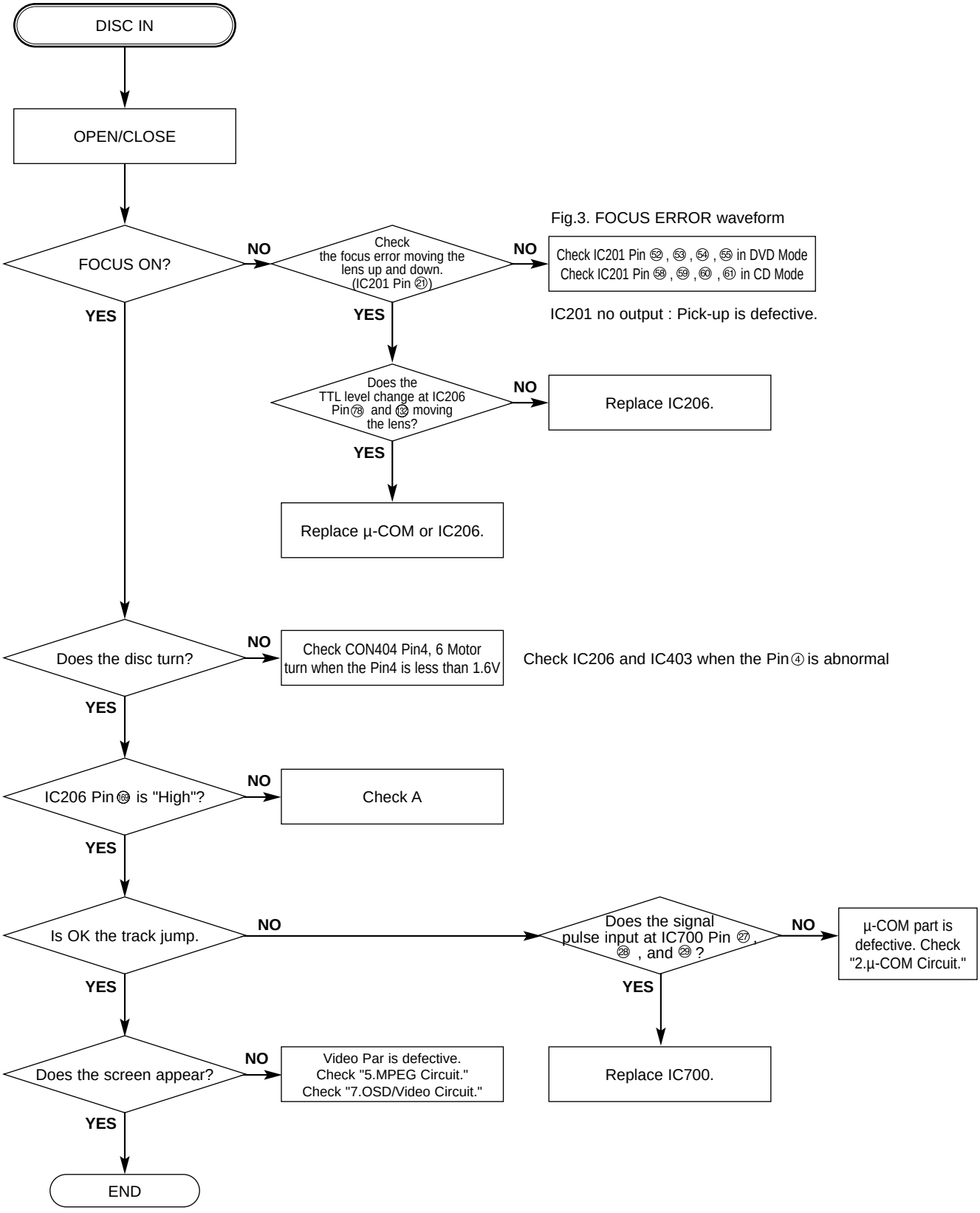
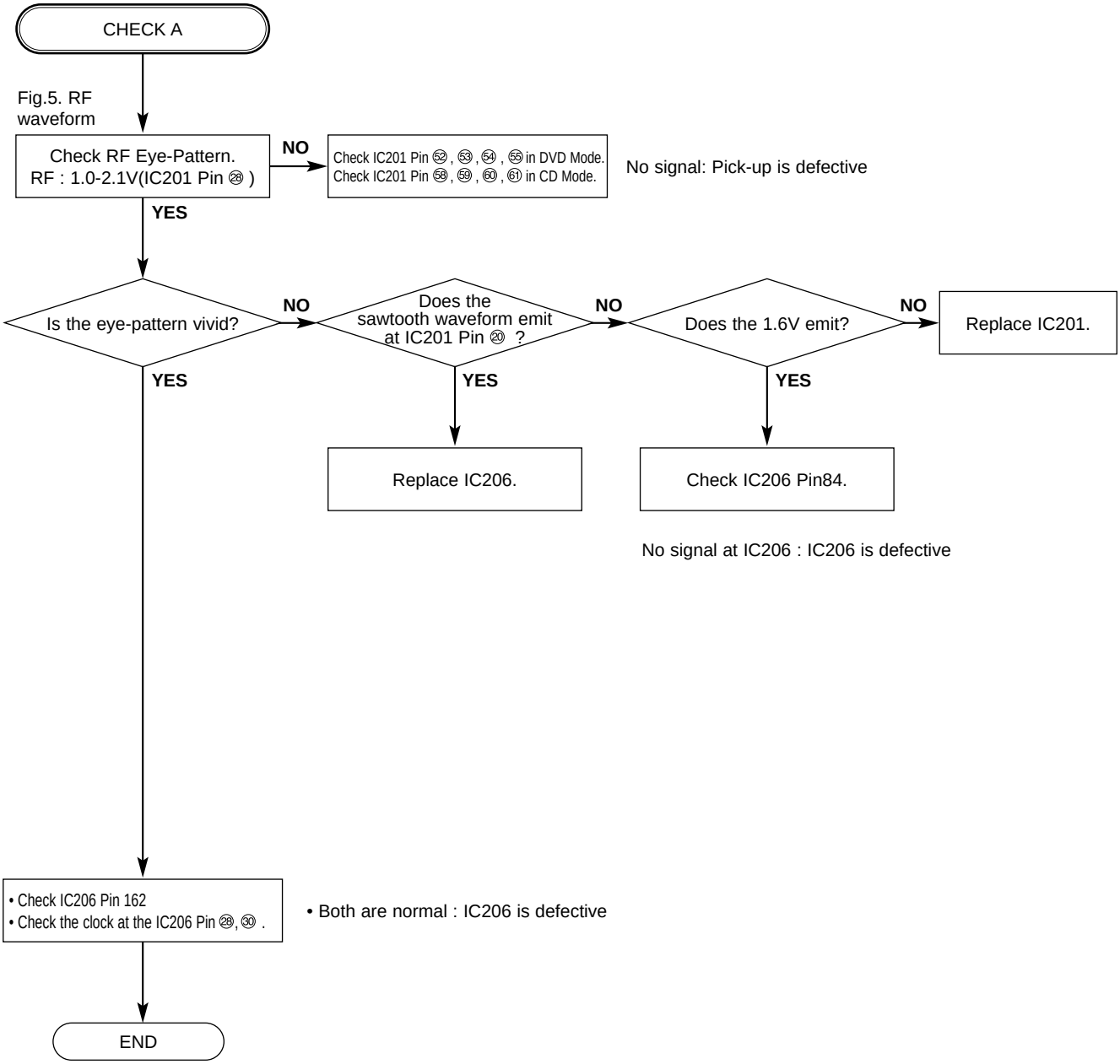


Fig.3. FOCUS ERROR waveform

IC201 no output : Pick-up is defective.

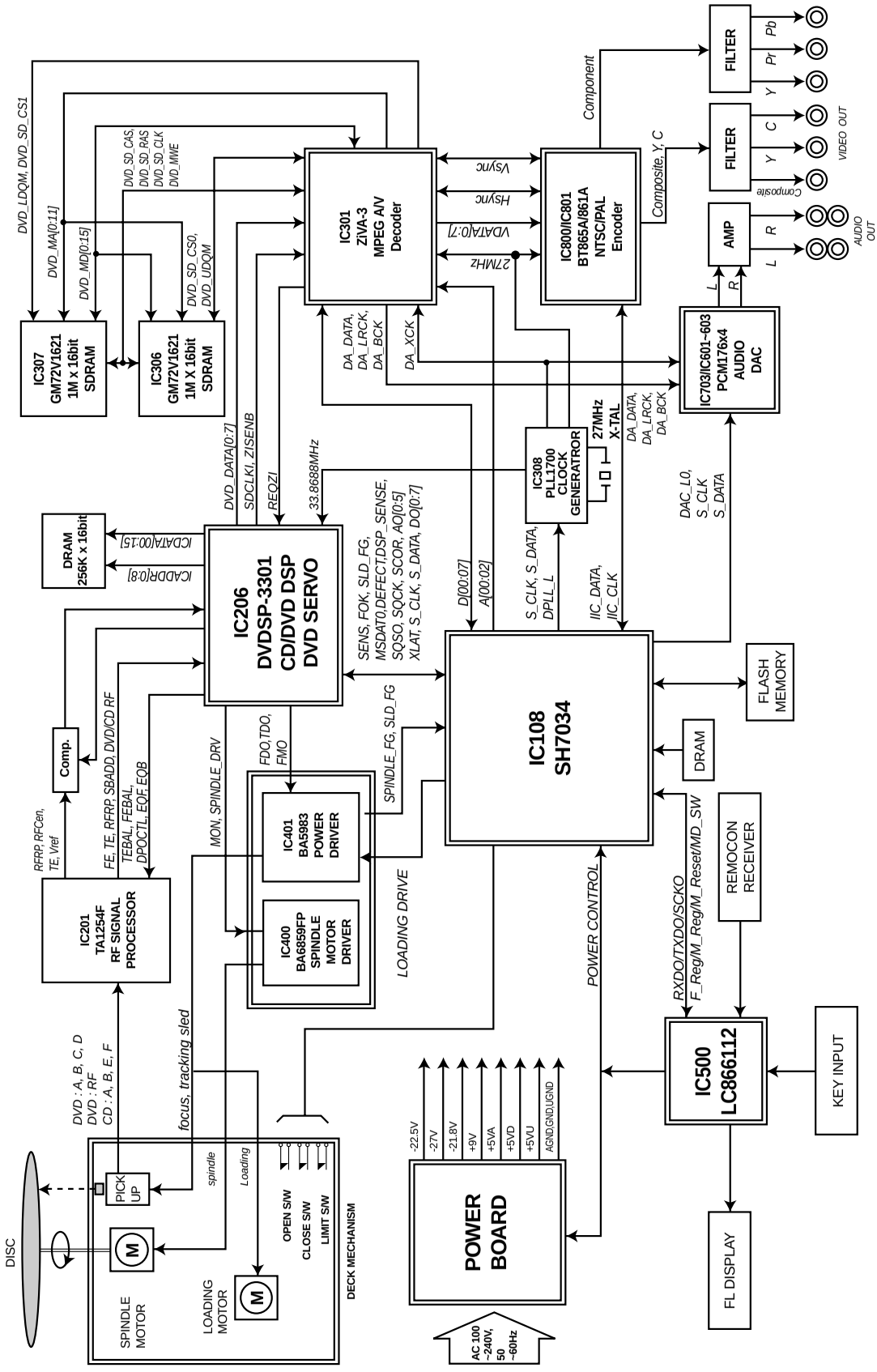
Check IC206 and IC403 when the Pin ④ is abnormal

D.

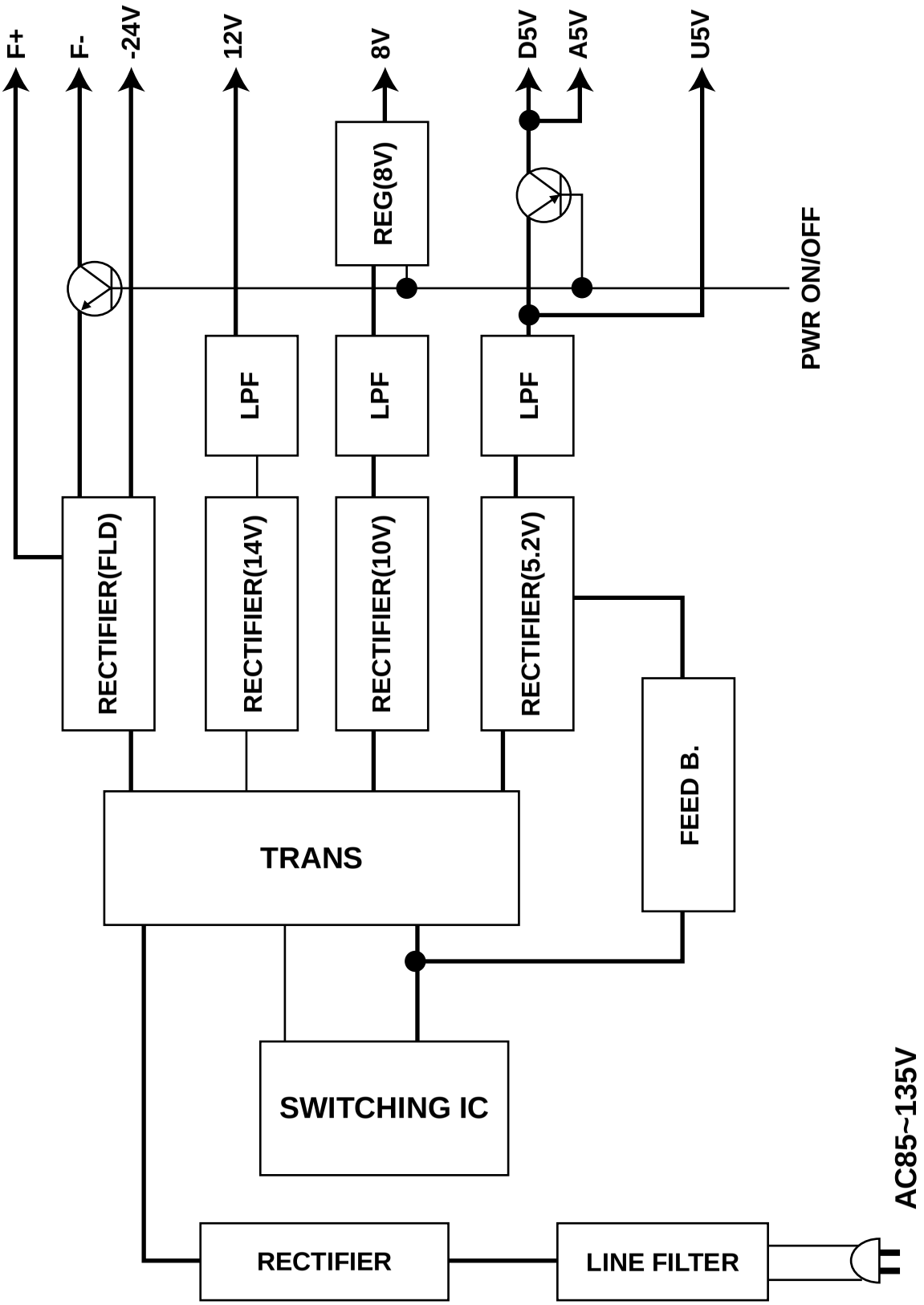

CHECK A
Fig.5. RF waveform
Check RF Eye-Pattern.
RF : 1.0-2.1V(IC201 Pin ㉘)
NO
Check IC201 Pin ㊷ , ㊸ , ㊹ , ㊺ in DVD Mode.
Check IC201 Pin ㊽ , ㊾ , ㊿ , (61) in CD Mode.
No signal: Pick-up is defective
YES
Is the eye-pattern vivid?
NO
Does the sawtooth waveform emit at IC201 Pin ⑳ ?
NO
Does the 1.6V emit?
NO
Replace IC201.
YES
YES
YES
Replace IC206.
Check IC206 Pin84.
No signal at IC206 : IC206 is defective
• Check IC206 Pin 162
• Check the clock at the IC206 Pin ㉘, ㉚ .
• Both are normal : IC206 is defective
END

BLOCK DIAGRAMS

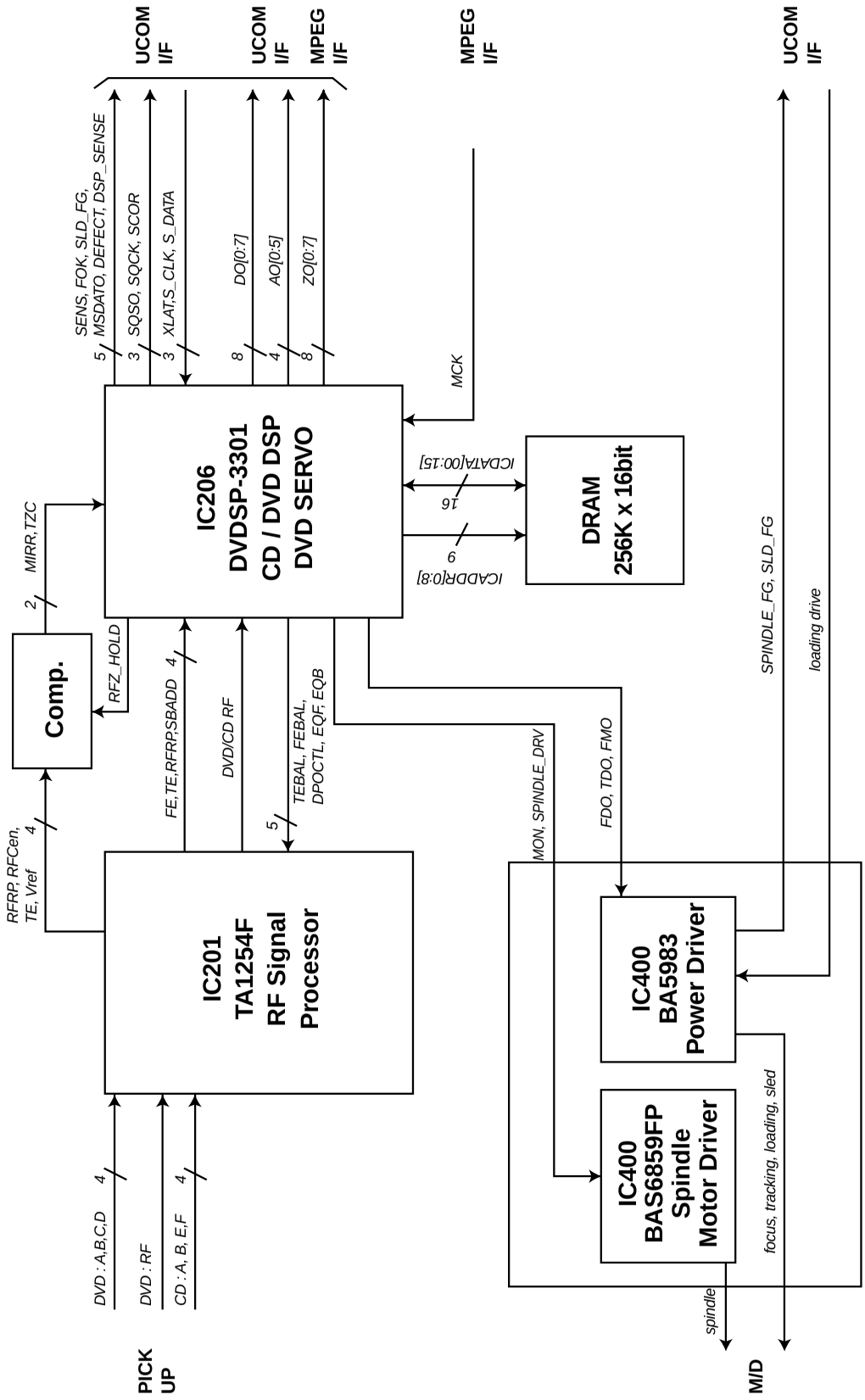
1. Overall Block Diagram



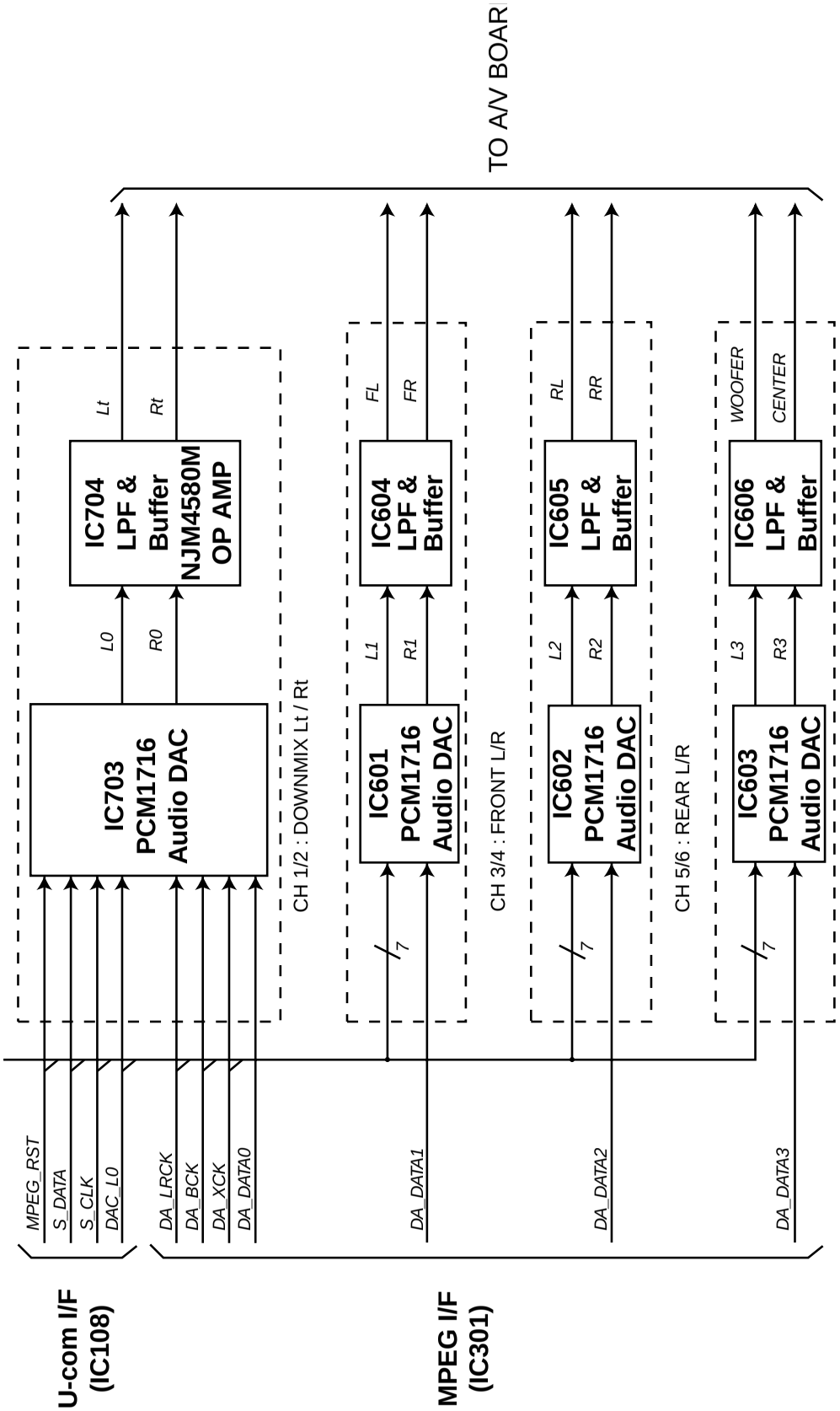
2. Power(SMPS) Block Diagram



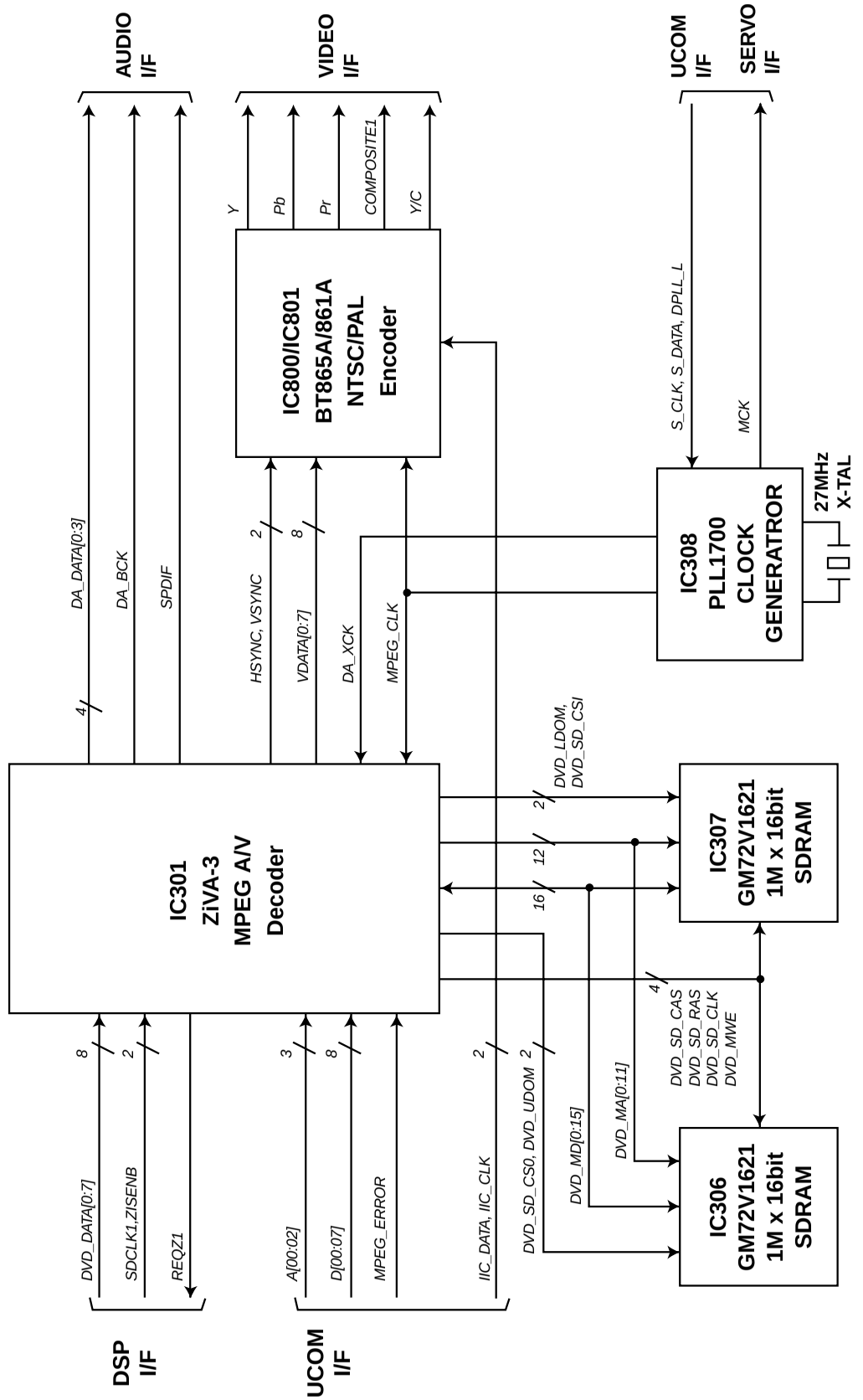
3. RF/CD DSP/DVD DSP/DVD SERVO Block Diagram

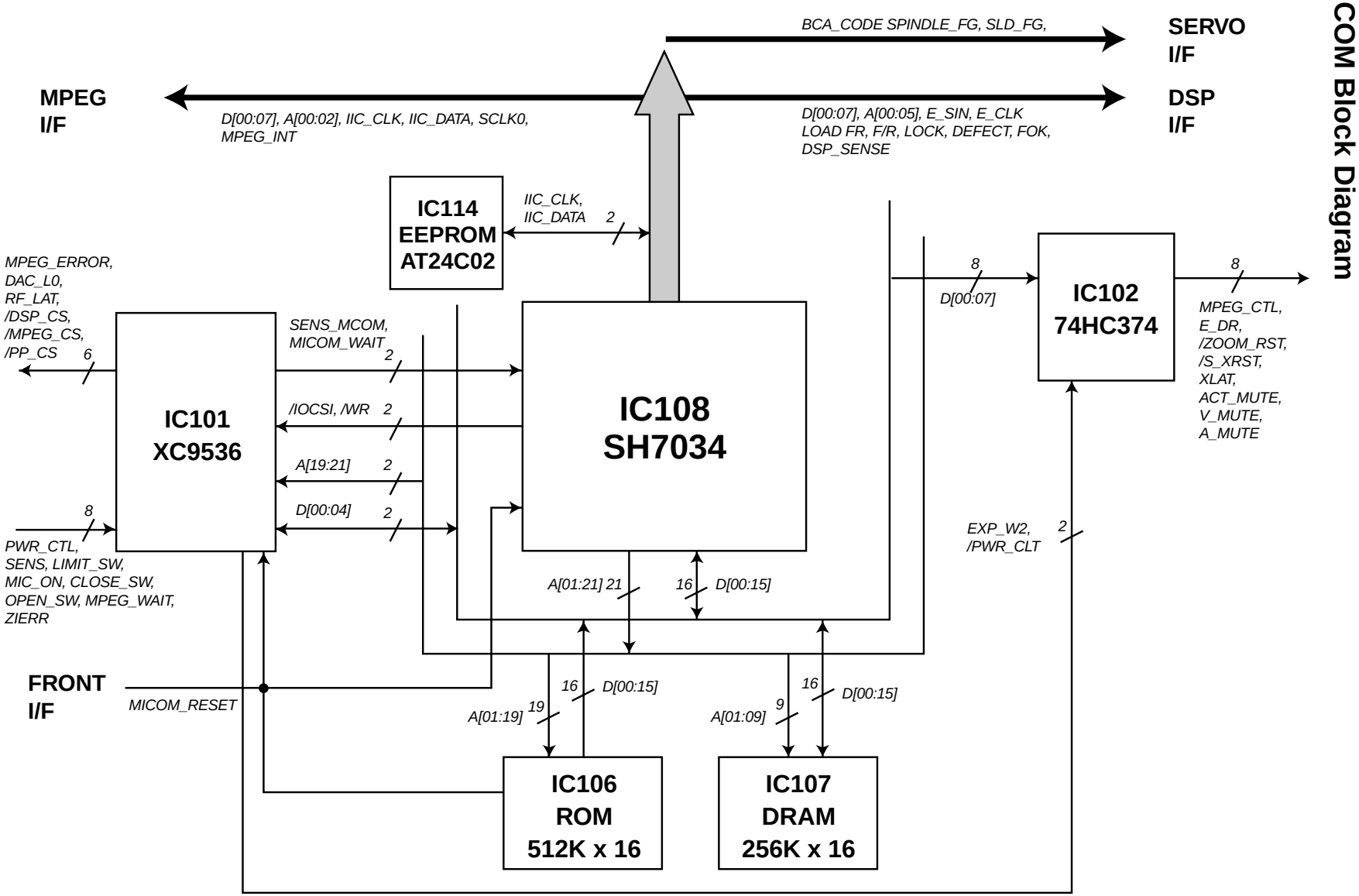


4. Audio Block Diagram



5. MPEG Block Diagram




BCA_CODE SPINDLE_FG, SLD_FG,
SERVO I/F
MPEG I/F
DSP I/F
D[00:07], A[00:02], IIC_CLK, IIC_DATA, SCLK0, MPEG_INT
D[00:07], A[00:05], E_SIN, E_CLK LOAD FR, F/R, LOCK, DEFECT, FOK, DSP_SENSE
IC114 EEPROM AT24C02
IIC_CLK, IIC_DATA 2
MPEG_ERROR, DAC_L0, RF_LAT, /DSP_CS, /MPEG_CS, /PP_CS 6
IC101 XC9536
SENS_MCOM, MICOM_WAIT 2
/IOCSI, /WR 2
A[19:21] 2
D[00:04] 2
IC108 SH7034
8 D[00:07]
IC102 74HC374
8 MPEG_CTL, E_DR, /ZOOM_RST, /S_XRST, XLAT, ACT_MUTE, V_MUTE, A_MUTE
8 PWR_CTL, SENS, LIMIT_SW, MIC_ON, CLOSE_SW, OPEN_SW, MPEG_WAIT, ZIERR
EXP_W2, /PWR_CLT 2
A[01:21] 21
16 D[00:15]
FRONT I/F
MICOM_RESET
A[01:19] 19
16 D[00:15]
A[01:09] 9
16 D[00:15]
IC106 ROM 512K x 16
IC107 DRAM 256K x 16

CIRCUIT DIAGRAM

1. POWER(SMPS) CIRCUIT DIAGRAM

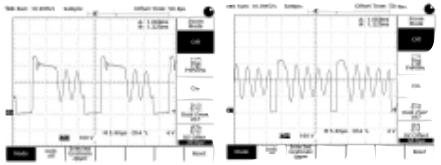
IMPORTANT SAFETY NOTICE

WHEN SERVICING THIS CHASSIS, UNDER NO CIRCUMSTANCES SHOULD THE ORIGINAL DESIGN BE MODIFIED OR ALTETED WITHOUT PERMISSION FROM THE ZENITH ELECTRONICS CORPORATION ALL COMPONENTS SHOULD BE REPLACED ONLY WITH TYPES IDENTICAL TO THOSE IN THE ORIGINAL CIRCUIT SPECIAL COMPONTS 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.

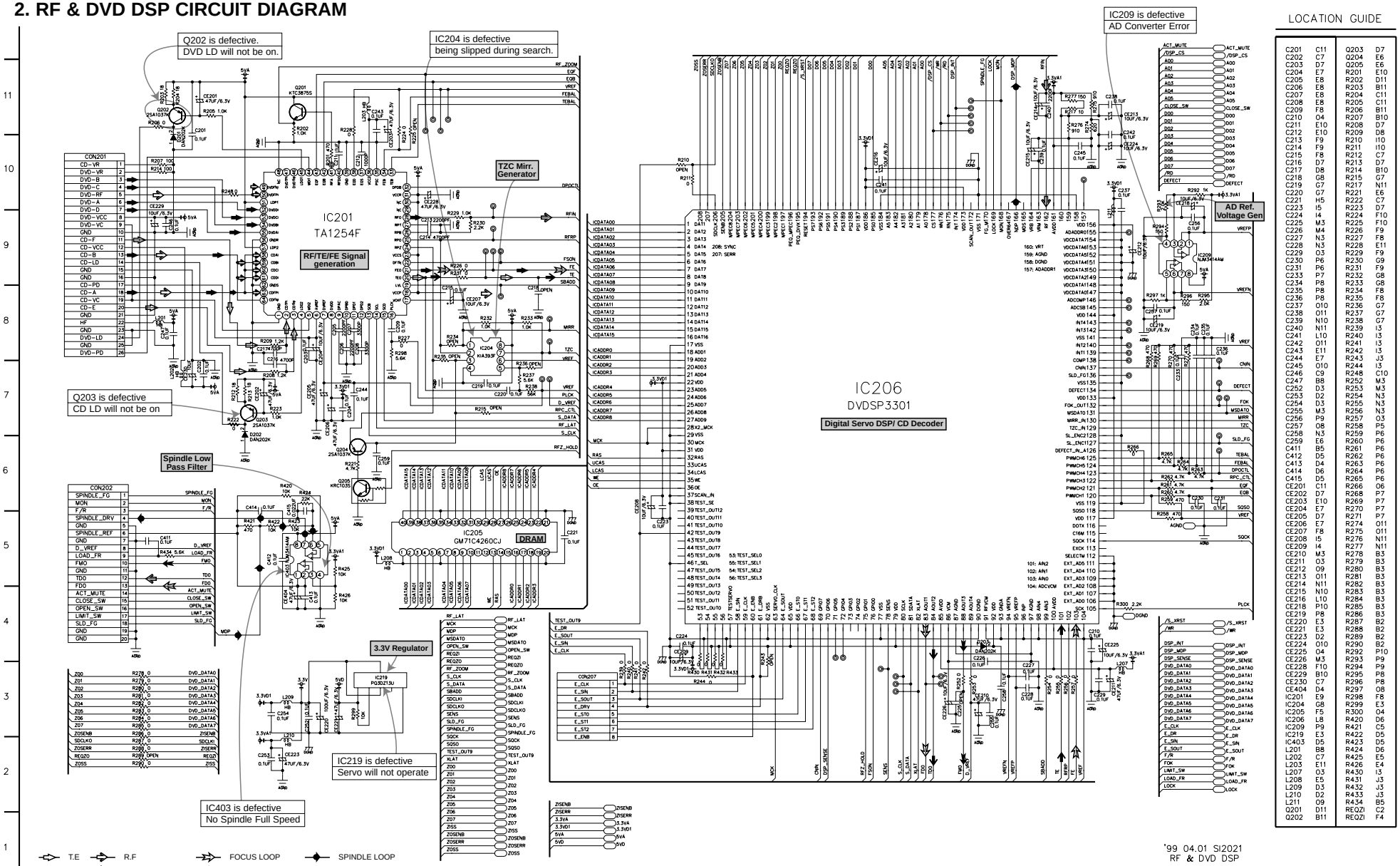


IC903 PIN3 (AC110V, PLAY) IC901 PIN3 (AC110V, STAND-BY)

LOCATION GUIDE

BD901	B5	IC905	E2
C901	A3	L902	E6
C902	A4	L903	E5
C903	B3	L904	E5
C904	B3	LB901	C2
C905	B5	LB902	G5
C906	C5	LF901	A4
C907	C4	PC901	D3
C908	C2	PT901	C6
C909	C2	Q901	F4
C910	D2	Q902	F4
C911	D2	Q903	F3
C913	D6	Q904	F2
C914	D5	Q908	F5
C915	D5	Q909	F4
C916	D4	R901	B4
C917	D3	R902	C2
C918	E6	R903	A5
C919	E5	R904	C5
C920	E4	R905	C5
C921	E6	R906	C5
C922	E5	R907	C4
C923	E4	R909	C2
C924	G6	R910	A4
C925	G5	R911	C2
C926	G4	R913	D6
C927	E2	R914	D5
C934	E3	R915	D5
CON901	A2	R917	E3
CON902	H6	R918	E2
CON903	H3	R921	E3
CON904	H4	R922	E2
D901	C5	R923	F6
D902	C4	R924	F4
D903	C3	R926	G2
D905	D4	R928	F5
D906	D4	R929	F3
D907	D6	R930	F3
D908	D5	R931	G5
D909	D5	R932	F5
D910	D5	R933	E3
D913	F4	R938	H4
F901	A3	Z901	A3
F902	G5	ZD901	D4
IC901	B3	ZD902	E3
IC902	F6		

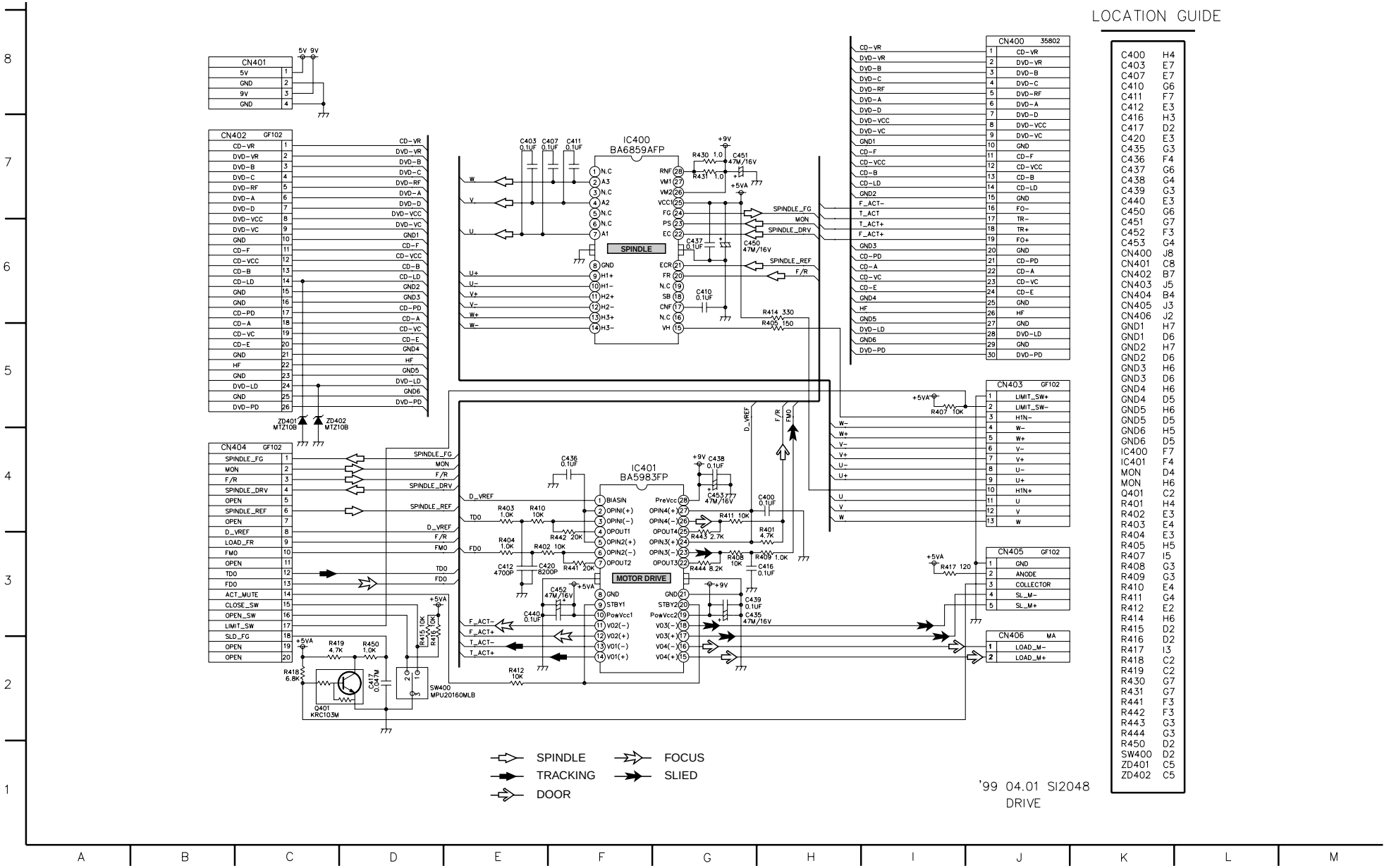
2. RF & DVD DSP CIRCUIT DIAGRAM



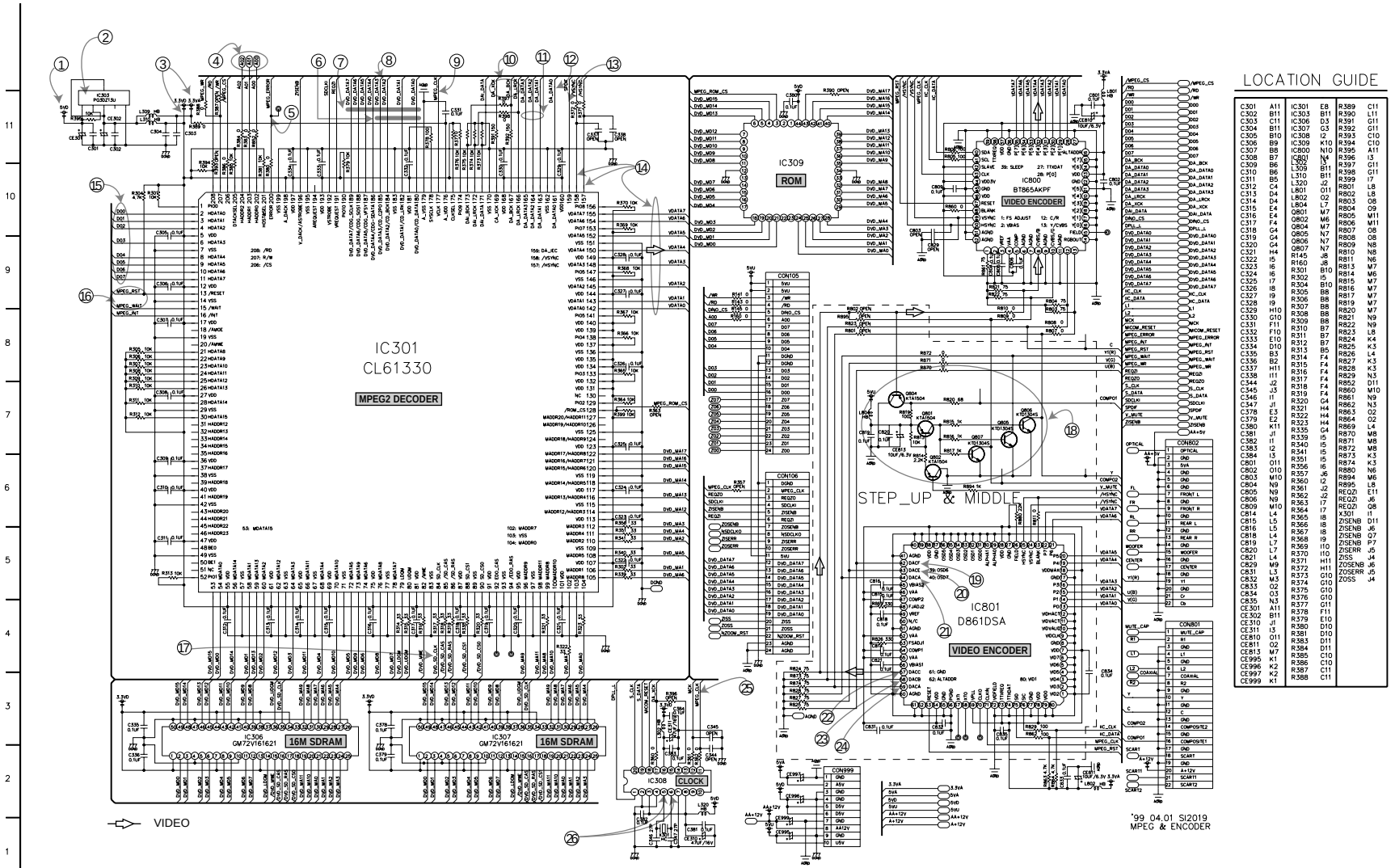
LOCATION GUIDE

C201	C11	Q203	D7
C202	C7	Q204	E6
C203	D7	Q205	E6
C204	E7	R201	E10
C205	E8	R202	D11
C206	E8	R203	B11
C207	E8	R204	C11
C208	E8	R205	C11
C209	F8	R206	B11
C210	O4	R207	B10
C211	E10	R208	D7
C212	E10	R209	D8
C213	F9	R210	I10
C214	F9	R211	I10
C215	F8	R212	C7
C216	D7	R213	D7
C217	D8	R214	B10
C218	G8	R215	G7
C219	G7	R217	N11
C220	G7	R221	E6
C221	H5	R222	C7
C223	I5	R223	D7
C224	I4	R224	F10
C225	M3	R225	F10
C226	M4	R226	F9
C227	N3	R227	F8
C228	N3	R228	E11
C229	O3	R229	F9
C230	P6	R230	G9
C231	P6	R231	F9
C233	P7	R232	G8
C234	P8	R233	G8
C235	P8	R234	F8
C236	P8	R235	F8
C237	O10	R236	G7
C238	O11	R237	G7
C239	N10	R238	G7
C240	N11	R239	I3
C241	L10	R240	I3
C242	O11	R241	I3
C243	E11	R242	I3
C244	E7	R243	J3
C245	O10	R244	I3
C246	C9	R248	C10
C247	B8	R252	M3
C252	D3	R253	M3
C253	D2	R254	N3
C254	D3	R255	N3
C255	M3	R256	N3
C256	P9	R257	O3
C257	O8	R258	P5
C258	N3	R259	P6
C259	E6	R260	P6
C411	B5	R261	P6
C412	D5	R262	P6
C413	D4	R263	P6
C414	D6	R264	P6
C415	D5	R265	P6
CE201	C11	R266	O6
CE202	D7	R268	P7
CE203	E10	R269	P7
CE204	E7	R270	P7
CE205	D7	R271	P7
CE206	E7	R274	O11
CE207	F8	R275	O11
CE208	I5	R276	N11
CE209	I4	R277	N11
CE210	M3	R278	B3
CE211	O3	R279	B3
CE212	O9	R280	B3
CE213	O11	R281	B3
CE214	N11	R282	B3
CE215	N10	R283	B3
CE216	L10	R284	B3
CE218	P11	R285	B3
CE219	P8	R286	B3
CE220	E3	R287	B2
CE221	E3	R288	B2
CE223	D2	R289	B2
CE224	O10	R290	B2
CE225	O4	R292	P10
CE226	M3	R293	P9
CE228	F10	R294	P9
CE229	B10	R295	P8
CE230	C7	R296	P8
CE404	D4	R297	O8
IC201	E9	R298	F8
IC204	G8	R299	E3
IC205	F5	R300	O4
IC206	L8	R420	D6
IC209	P9	R421	C5
IC219	E3	R422	D5
IC403	D5	R423	D5
L201	B8	R424	D6
L202	C7	R425	E5
L203	E11	R426	E4
L207	O3	R430	I3
L208	E5	R431	J3
L209	D3	R432	J3
L210	D2	R433	J3
L211	O9	R434	B5
Q201	D11	REQZI	C2
Q202	B11	REQZI	F4

3. DRIVE CIRCUIT DIAGRAM



4. MPEG & ENCODER CIRCUIT DIAGRAM

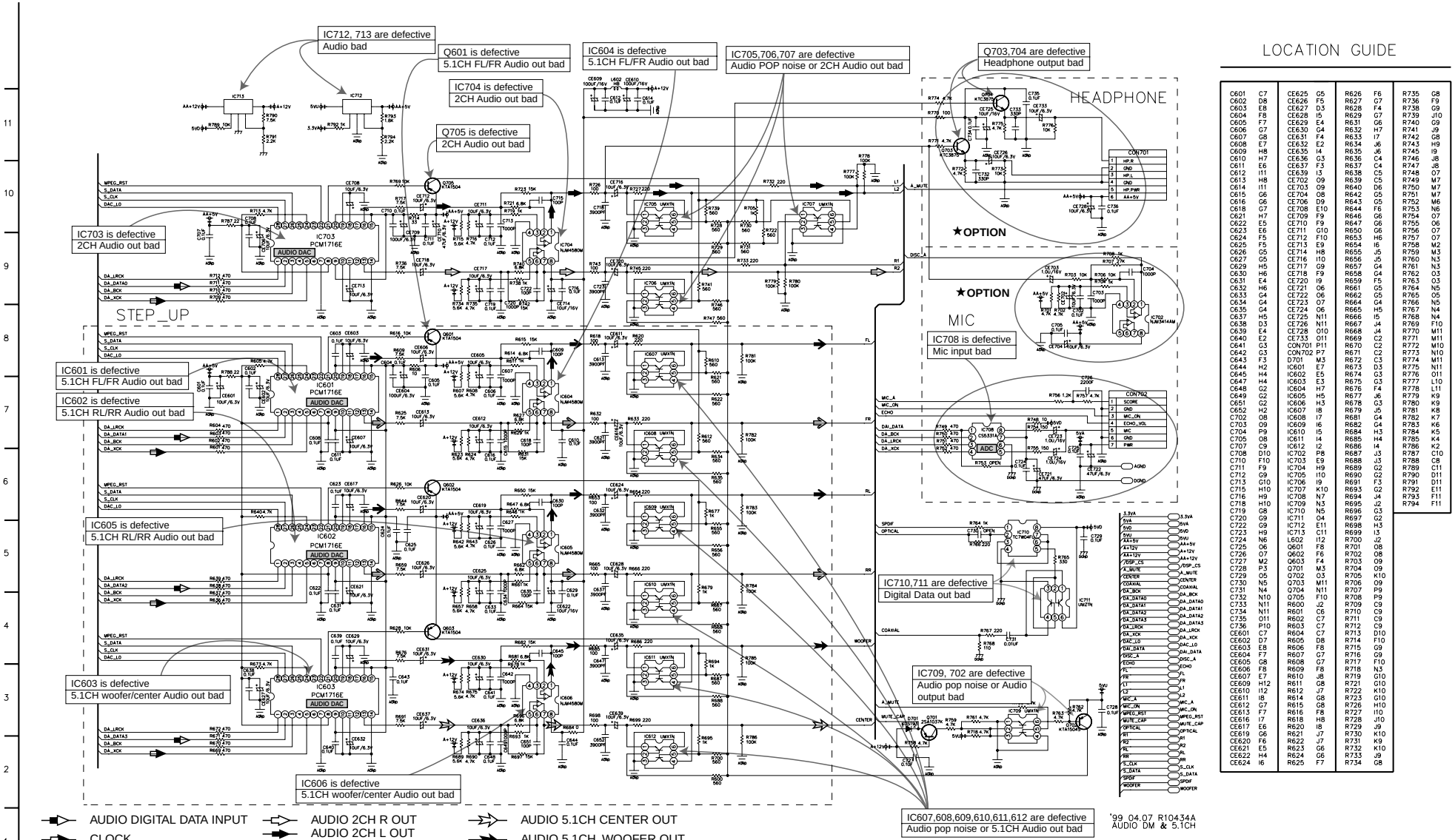


LOCATION GUIDE

C301	A11	IC301	E8	R389	C11
C302	B11	IC303	B11	R390	L11
C303	C11	IC306	D3	R391	G11
C304	B11	IC307	G3	R392	C11
C305	B10	IC308	I2	R393	C10
C306	B9	IC309	K10	R394	C10
C307	B8	IC800	N10	R395	A11
C308	B7	IC801	N4	R396	I3
C309	B6	L308	B11	R397	G11
C310	B6	L309	B11	R398	G11
C311	B5	L310	B11	R399	I7
C312	C4	L320	J2	R801	L8
C313	D4	L801	O11	R802	L8
C314	D4	L802	O2	R803	O8
C315	E4	L804	L7	R804	O9
C316	E4	Q801	M7	R805	M11
C317	F4	Q802	M6	R806	M11
C318	G4	Q804	M7	R807	O8
C319	G4	Q805	N7	R808	O8
C320	G4	Q806	N7	R809	N8
C321	H4	Q807	N7	R810	N8
C322	I5	R145	J8	R811	N6
C323	I6	R160	J8	R813	M7
C324	I6	R301	B10	R814	M6
C325	I7	R302	I5	R815	M7
C326	I8	R304	B10	R816	M7
C327	I9	R305	B8	R817	M7
C328	I9	R306	B8	R819	M7
C329	H10	R307	B8	R820	M7
C330	G10	R308	B8	R821	N9
C331	F11	R309	B8	R822	N9
C332	F10	R310	B7	R823	L8
C333	E10	R311	B7	R824	K4
C334	D10	R312	B7	R825	K3
C335	B3	R313	B5	R826	L4
C336	B2	R314	F4	R827	K3
C337	H11	R315	F4	R828	K3
C338	I11	R316	F4	R829	N3
C344	J2	R317	F4	R852	D11
C345	J3	R318	F4	R860	M10
C346	I1	R319	F4	R861	N9
C347	J1	R320	G4	R862	N3
C378	E3	R321	H4	R863	O2
C379	E3	R322	H4	R864	O2
C380	K11	R323	H4	R869	L4
C381	J1	R335	G4	R870	M8
C382	I1	R339	I5	R871	M8
C383	I2	R340	I5	R872	M8
C384	L3	R341	I5	R873	K3
C801	O11	R351	I5	R874	K3
C802	O10	R356	I6	R880	N6
C803	M10	R357	J6	R894	M6
C804	N9	R360	I2	R895	L8
C805	N9	R361	J2	REQZI	E11
C806	M9	R362	J2	REQZI	J6
C809	M10	R363	I7	REQZI	Q8
C814	L4	R364	I7	X301	I1
C815	L5	R365	I8	ZISENB	D11
C816	L5	R366	I8	ZISENB	J6
C818	L6	R367	I8	ZISENB	Q7
C819	L7	R368	I9	ZISENB	P7
C820	L7	R369	I10	ZISERR	J5
C821	L4	R370	I10	ZOSS	J4
C829	M9	R371	H11	ZOSENB	J6
C831	L3	R372	H11	ZOSERR	J5
C832	M3	R373	G10	ZOSS	J4
C833	O2	R374	G10		
C834	O3	R376	G10		
C835	N3	R377	G11		
CE301	A11	R378	F11		
CE302	B11	R379	E10		
CE310	J1	R380	D10		
CE311	I3	R381	D10		
CE810	O11	R383	D11		
CE811	O2	R384	D11		
CE813	M7	R385	C10		
CE995	K1	R386	C10		
CE996	K2	R387	C11		
CE997	K2	R388	C11		
CE999	K1				

① No power on
② 3.3V Reg.
③ No power on
④ No power on
µ-com->MPEG address
⑤ The screen is distorted(DVD)
Over 3V->Data error. GND:OK
⑥ No VCD screen display(option).
No CD sound out.
⑦ No DVD screen display
⑧ Over 3V->Data error. GND:OK
(CD/VCD option)
⑨ No power on
⑩ No Audio(check clock)
⑪ No 5.1CH Audio
⑫ No 2CH Audio
⑬ Audio signal doesn't appear
⑭ No screen
⑮ No power on
µ-com->MPEG command data
⑯ No power on
over 3V: normal
⑰ No power on
Check 89MHz
⑱ Video Mute doesn't
operate in power on/off
⑲ No Pb output
⑳ No Pr output
㉑ No Y output
㉒ No composite video output
㉓ No Luminance output
in Y/C Video
㉔ No Chrominance
output in Y/C Video
㉕ No power on
㉖ No power on

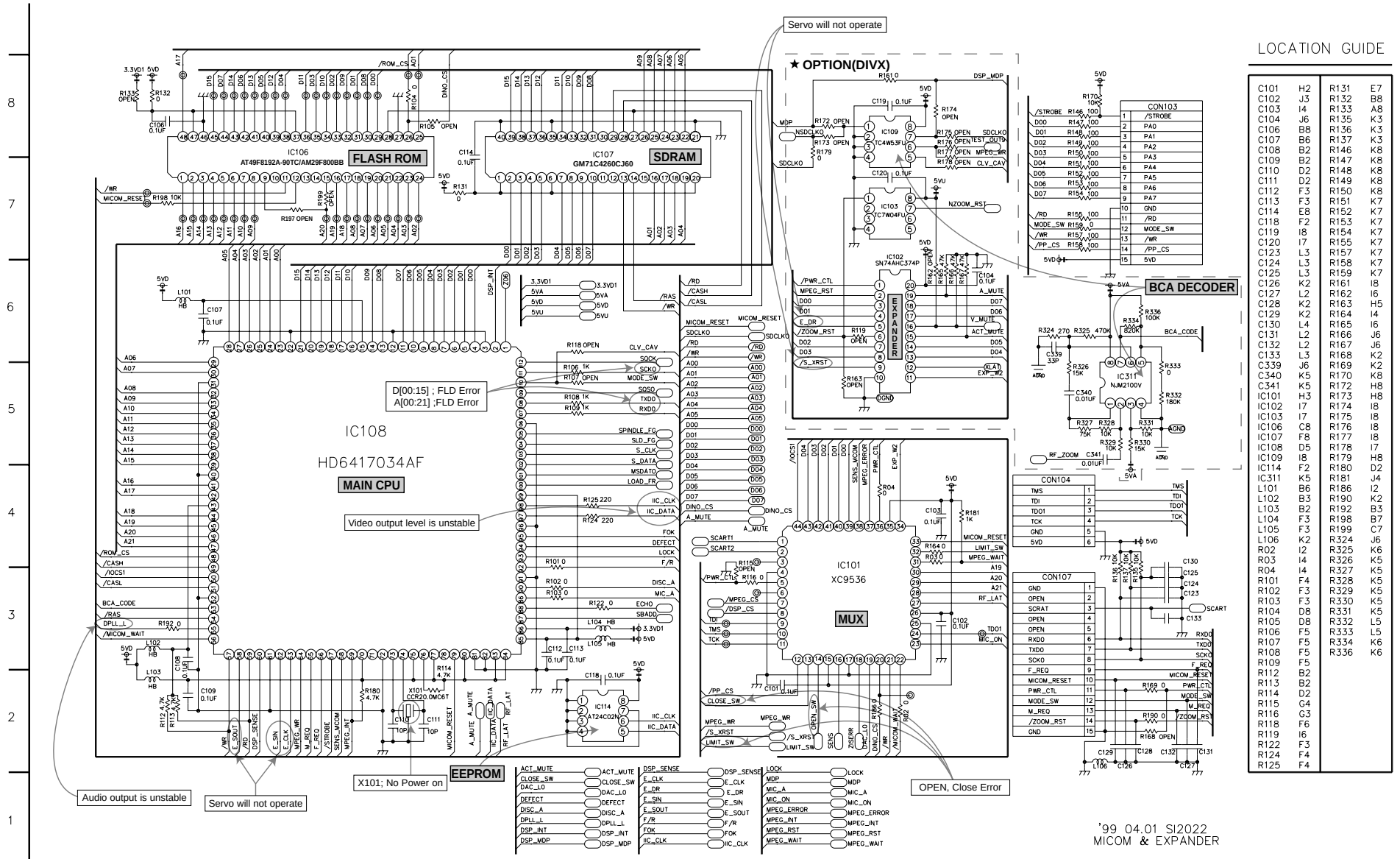
5. AUDIO CIRCUIT DIAGRAM



LOCATION GUIDE

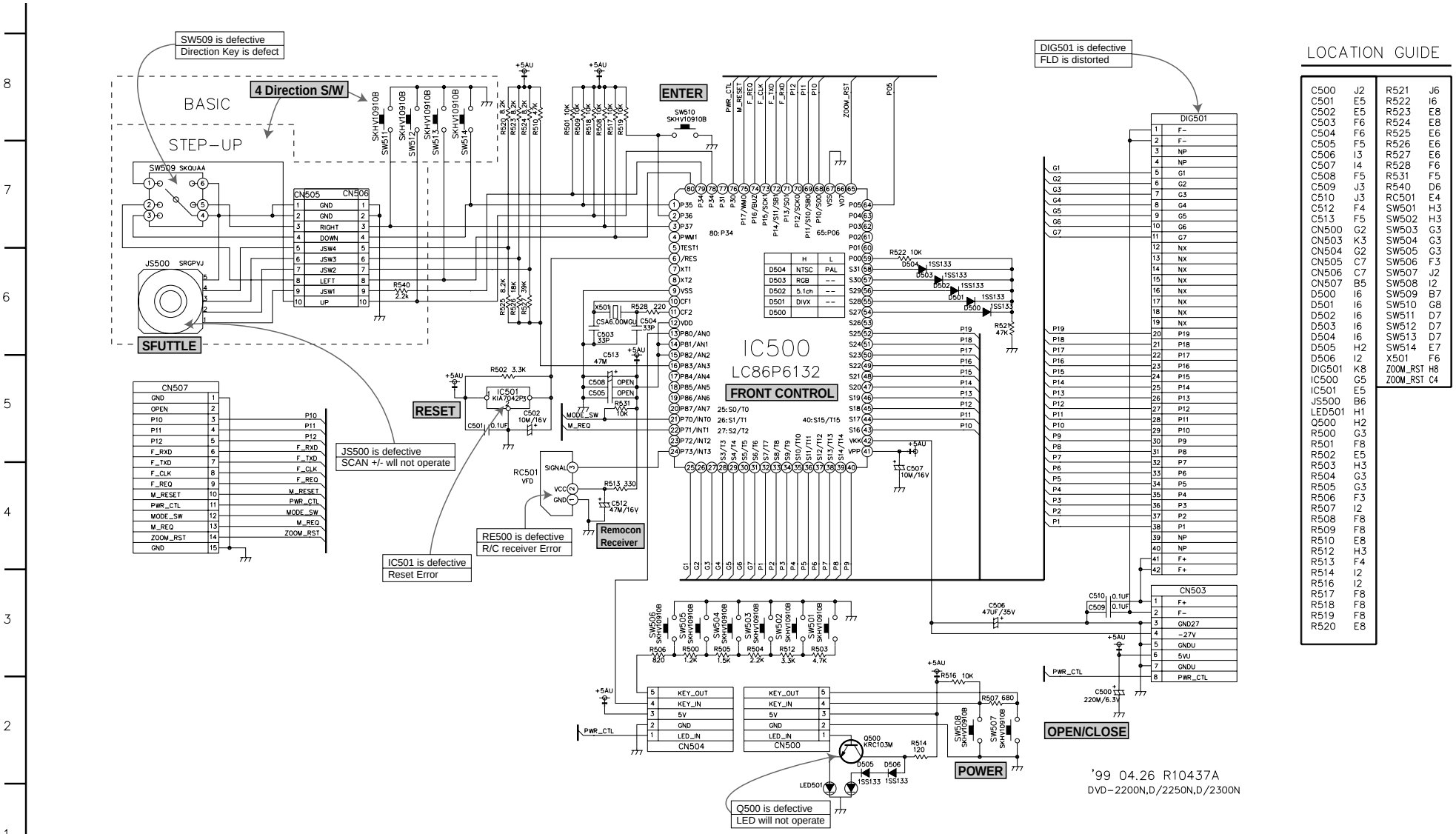
C601	C7	CE625	G5	R626	F6	R735	G8
C602	D8	CE626	F5	R627	G7	R736	F9
C603	E8	CE627	D3	R628	F4	R738	G9
C604	F8	CE628	I5	R629	G7	R739	J10
C605	F7	CE629	E4	R631	G6	R740	G9
C606	G7	CE630	G4	R632	H7	R741	J9
C607	G8	CE631	F4	R633	I7	R742	G8
C608	E7	CE632	E2	R634	J6	R743	H9
C609	H8	CE635	I4	R635	J6	R745	I9
C610	H7	CE636	G3	R636	C4	R746	J8
C611	E6	CE637	F3	R637	C4	R747	J8
C612	I11	CE639	I3	R638	C5	R748	O7
C613	H8	CE702	O9	R639	C5	R749	M7
C614	I11	CE703	O9	R640	D6	R750	M7
C615	G6	CE704	O8	R642	G5	R751	M7
C616	G6	CE706	D9	R643	G5	R752	M6
C618	G7	CE708	E10	R644	F6	R753	N6
C621	H7	CE709	F9	R646	G6	R754	O7
C622	E5	CE710	F9	R647	G6	R755	O6
C623	E6	CE711	G10	R650	G6	R756	O7
C624	F5	CE712	F10	R655	H6	R757	O7
C625	F5	CE713	E9	R654	I6	R758	M2
C626	G5	CE714	H8	R655	J5	R759	M3
C627	G5	CE716	I10	R656	J5	R760	N3
C629	H5	CE717	G9	R657	G4	R761	N3
C630	H6	CE718	F9	R658	G4	R762	O3
C631	E4	CE720	I9	R659	F5	R763	O3
C632	H6	CE721	O6	R661	G5	R764	N5
C633	G4	CE722	O6	R662	G5	R765	O5
C634	G4	CE723	O7	R664	G4	R766	N5
C635	G4	CE724	O6	R665	H5	R767	N4
C637	H5	CE725	N11	R666	I5	R768	N4
C638	D3	CE726	N11	R667	J4	R769	F10
C639	E4	CE728	O10	R668	J4	R770	M11
C640	E2	CE733	O11	R669	C2	R771	M11
C641	G3	CON701	P11	R670	C2	R772	M10
C642	G3	CON702	P7	R671	C2	R773	N10
C643	F3	D701	M3	R672	C3	R774	M11
C644	H2	IC601	E7	R673	D3	R775	N11
C645	H4	IC602	E5	R674	G3	R776	O11
C647	H4	IC603	E3	R675	G3	R777	L10
C648	G2	IC604	H7	R676	F4	R778	L11
C649	G2	IC605	H5	R677	J6	R779	K9
C651	G2	IC606	H3	R678	G3	R780	K9
C652	H2	IC607	I8	R679	J5	R781	K8
C702	O8	IC608	I7	R681	G4	R782	K7
C703	O9	IC609	I6	R682	G4	R783	K6
C704	P9	IC610	I5	R684	H3	R784	K5
C705	O8	IC611	I4	R685	H4	R785	K4
C707	O9	IC612	J2	R686	I4	R786	K2
C708	D10	IC702	P8	R687	J3	R787	C10
C710	F10	IC703	E9	R688	J3	R788	C8
C711	F9	IC704	H9	R689	G2	R789	C11
C712	G9	IC705	I10	R690	G2	R790	D11
C713	G10	IC706	I9	R691	F3	R791	D11
C715	H10	IC707	K10	R693	G2	R792	E11
C716	H9	IC708	N7	R694	J4	R793	F11
C718	H10	IC709	N3	R695	J2	R794	F11
C719	G8	IC710	N5	R696	G3		
C720	G9	IC711	O4	R697	G2		
C722	G9	IC712	E11	R698	H3		
C723	H9	IC713	C11	R699	I3		
C724	N6	L602	I12	R700	J2		
C725	O6	Q601	F6	R701	O8		
C726	O7	Q602	F6	R702	O8		
C727	M2	Q603	F4	R703	O9		
C728	P3	Q701	M3	R704	O9		
C729	O5	Q702	O3	R705	K10		
C730	N5	Q703	M11	R706	O9		
C731	N4	Q704	N11	R707	P9		
C732	N10	Q705	F10	R708	P9		
C733	N11	R600	J2	R709	C9		
C734	N11	R601	C6	R710	C9		
C735	O11	R602	C7	R711	C9		
C736	P10	R603	C7	R712	C9		
CE601	C7	R604	C7	R713	D10		
CE602	D7	R605	D8	R714	F10		
CE603	E8	R606	F8	R715	G9		
CE604	F7	R607	G7	R716	G9		
CE605	G8	R608	G7	R717	F10		
CE606	F8	R609	F8	R718	N3		
CE607	E7	R610	J8	R719	G10		
CE609	H12	R611	G8	R721	G10		
CE610	I12	R612	J7	R722	K10		
CE611	I8	R614	G8	R723	G10		
CE612	G7	R615	G8	R726	H10		
CE613	F7	R616	F8	R727	I10		
CE616	I7	R618	H8	R728	J10		
CE617	E6	R620	I8	R729	J9		
CE619	G6	R621	J7	R730	K10		
CE620	F6	R622	J7	R731	K9		
CE621	E5	R623	G6	R732	K10		
CE622	H4	R624	G6	R733	J9		
CE624	I6	R625	F7	R734	G8		

6. µ-COM/EXPANDER CIRCUIT DIAGRAM



C101	H2	R131	E7
C102	J3	R132	B8
C103	I4	R133	A8
C104	J6	R135	K3
C106	B8	R136	K3
C107	B6	R137	K3
C108	B2	R146	K8
C109	B2	R147	K8
C110	D2	R148	K8
C111	D2	R149	K8
C112	F3	R150	K8
C113	F3	R151	K7
C114	E8	R152	K7
C118	F2	R153	K7
C119	I8	R154	K7
C120	I7	R155	K7
C123	L3	R157	K7
C124	L3	R158	K7
C125	L3	R159	K7
C126	K2	R161	I8
C127	L2	R162	I6
C128	K2	R163	H5
C129	K2	R164	I4
C130	L4	R165	I6
C131	L2	R166	J6
C132	L2	R167	J6
C133	L3	R168	K2
C339	J6	R169	K2
C340	K5	R170	K8
C341	K5	R172	H8
IC101	H3	R173	H8
IC102	I7	R174	I8
IC103	I7	R175	I8
IC106	C8	R176	I8
IC107	F8	R177	I8
IC108	D5	R178	I7
IC109	I8	R179	H8
IC114	F2	R180	D2
IC311	K5	R181	J4
L101	B6	R186	I2
L102	B3	R190	K2
L103	B2	R192	B3
L104	F3	R198	B7
L105	F3	R199	C7
L106	K2	R324	J6
R02	I2	R325	K6
R03	I4	R326	K5
R04	I4	R327	K5
R101	F4	R328	K5
R102	F3	R329	K5
R103	F3	R330	K5
R104	D8	R331	K5
R105	D8	R332	L5
R106	F5	R333	L5
R107	F5	R334	K6
R108	F5	R336	K6
R109	F5		
R112	B2		
R113	B2		
R114	D2		
R115	G4		
R116	G3		
R118	F6		
R119	I6		
R122	F3		
R124	F4		
R125	F4		

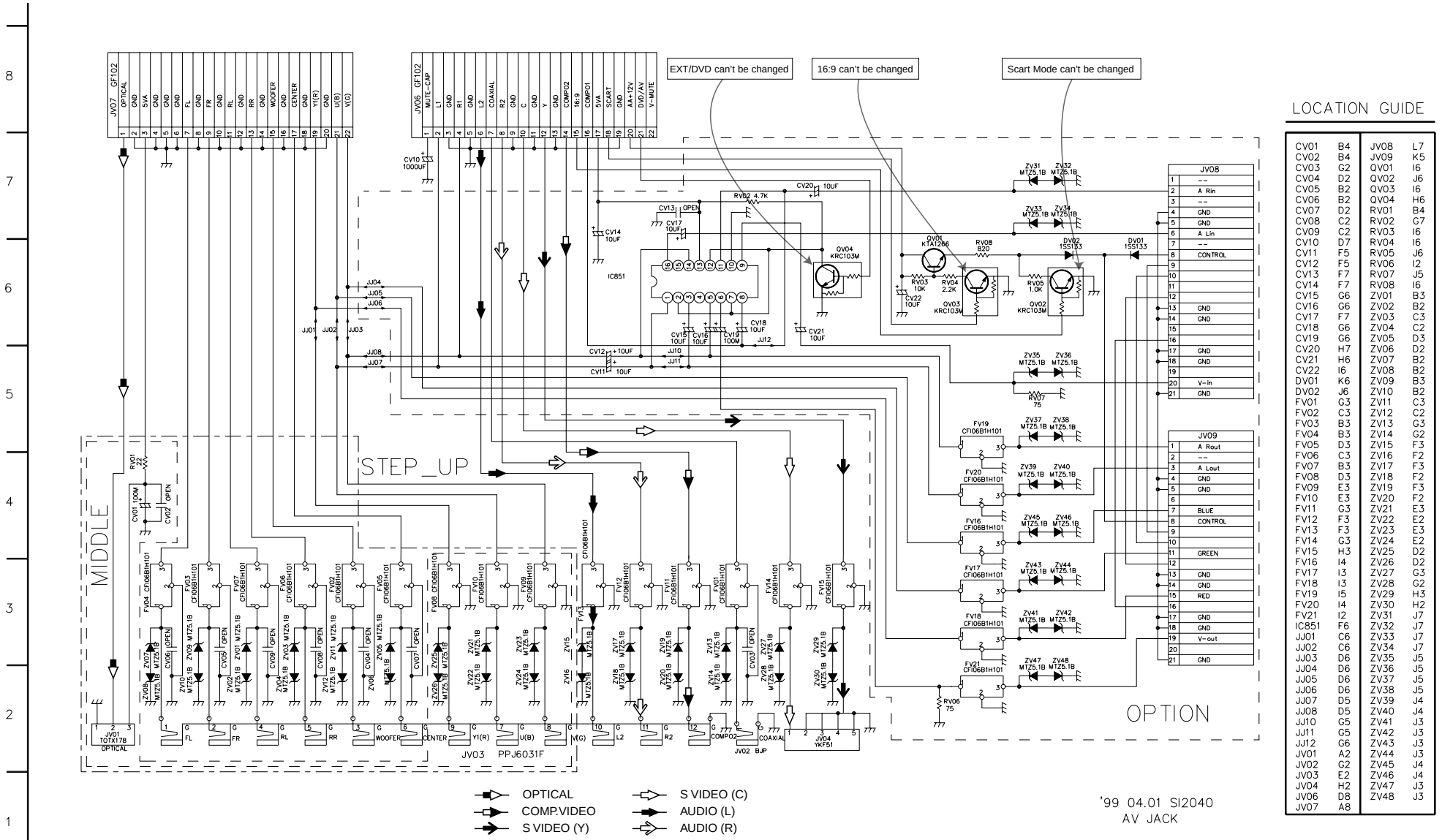
7. FRONT(TIMER) & KEY CIRCUIT DIAGRAM



LOCATION GUIDE

C500	J2	R521	J6
C501	E5	R522	I6
C502	E5	R523	E8
C503	F6	R524	E8
C504	F6	R525	E6
C505	F5	R526	E6
C506	I3	R527	E6
C507	I4	R528	F6
C508	F5	R531	F5
C509	J3	R540	D6
C510	J3	RC501	E4
C512	F4	SW501	H3
C513	F5	SW502	H3
CN500	G2	SW503	G3
CN503	K3	SW504	G3
CN504	G2	SW505	G3
CN505	C7	SW506	F3
CN506	C7	SW507	J2
CN507	B5	SW508	I2
D500	I6	SW509	B7
D501	I6	SW510	G8
D502	I6	SW511	D7
D503	I6	SW512	D7
D504	I6	SW513	D7
D505	H2	SW514	E7
D506	I2	X501	F6
DIG501	K8	ZOOM_RST	H8
IC500	G5	ZOOM_RST	C4
IC501	E5		
JS500	B6		
LED501	H1		
Q500	H2		
R500	G3		
R501	F8		
R502	E5		
R503	H3		
R504	G3		
R505	G3		
R506	F3		
R507	I2		
R508	F8		
R509	F8		
R510	E8		
R512	H3		
R513	F4		
R514	I2		
R516	I2		
R517	F8		
R518	F8		
R519	F8		
R520	E8		

8. JACK CIRCUIT DIAGRAM



LOCATION GUIDE

CV01	B4	JV08	L7
CV02	B4	JV09	K5
CV03	G2	QV01	I6
CV04	D2	QV02	J6
CV05	B2	QV03	I6
CV06	B2	QV04	H6
CV07	D2	RV01	B4
CV08	C2	RV02	G7
CV09	C2	RV03	I6
CV10	D7	RV04	I6
CV11	F5	RV05	J6
CV12	F5	RV06	I2
CV13	F7	RV07	J5
CV14	F7	RV08	I6
CV15	G6	ZV01	B3
CV16	G6	ZV02	B2
CV17	F7	ZV03	C3
CV18	G6	ZV04	C2
CV19	G6	ZV05	D3
CV20	H7	ZV06	D2
CV21	H6	ZV07	B2
CV22	I6	ZV08	B2
DV01	K6	ZV09	B3
DV02	J6	ZV10	B2
FV01	G3	ZV11	C3
FV02	C3	ZV12	C2
FV03	B3	ZV13	G3
FV04	B3	ZV14	G2
FV05	D3	ZV15	F3
FV06	C3	ZV16	F2
FV07	B3	ZV17	F3
FV08	D3	ZV18	F2
FV09	E3	ZV19	F3
FV10	E3	ZV20	F2
FV11	G3	ZV21	E3
FV12	F3	ZV22	E2
FV13	F3	ZV23	E3
FV14	G3	ZV24	E2
FV15	H3	ZV25	D2
FV16	I4	ZV26	D2
FV17	I3	ZV27	G3
FV18	I3	ZV28	G2
FV19	I5	ZV29	H3
FV20	I4	ZV30	H2
FV21	I2	ZV31	J7
IC851	F6	ZV32	J7
JJ01	C6	ZV33	J7
JJ02	C6	ZV34	J7
JJ03	D6	ZV35	J5
JJ04	D6	ZV36	J5
JJ05	D6	ZV37	J5
JJ06	D6	ZV38	J5
JJ07	D5	ZV39	J4
JJ08	D5	ZV40	J4
JJ10	G5	ZV41	J3
JJ11	G5	ZV42	J3
JJ12	G6	ZV43	J3
JV01	A2	ZV44	J3
JV02	G2	ZV45	J4
JV03	E2	ZV46	J4
JV04	H2	ZV47	J3
JV06	D8	ZV48	J3
JV07	A8		